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Reply to: Milligan/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
May 22-23, 1996 : Santa Clara, CA

Agenda

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Results of Meeting

1. Opening Remarks

Gene Milligan called the meeting to order at 9:00 a.m., Wednesday May 24, 1996. He thanked Mark Evans of Quantum Corp. for hosting the meeting.

The Chair requested that Larry Lamers take 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 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 along with copies handed out at the meeting was used as a basis for the meeting.

The agenda was approved as distributed.

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.

Lawrence	Lamers	Adaptec, Inc.	A1
David	Roe	Adaptec, Inc.	
Ron	Roberts	Apple Computer	A
Joe	Chen	Cirrus Logic Inc.	P
Hale	Landis	Consultant	P
I. Dal	Allan	ENDL	P
Robert	Liu	Fujitsu Computer Products	P
Tony	Goodfellow	GSI	P

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Dan	Colegrove	IBM Corp.	P
Pete	McLean	Maxtor Corp.	P
Robert	Griffith	Oak Technology	A
Mark	Evans	Quantum Corp.	P
Gene	Milligan	Seagate Technology	P
Marc	Noblitt	Seagate Technology	A
Yogi	Schaffner	Silicon Systems	P
David	Evans	Symbios Logic	G
Mike	Winchell	Symbios Logic	G
Tom	Hanan	Western Digital Corp.	P
Masa	Morizumi	Yamaha	P
Jerry	Saltzman	Zen Research	
Greg	Alvey	Solution Technology	
Franco	Iacobelli	National Semiconductor	G

4. Document Distribution

The following documents were distributed:

- Proposed working draft for ATA-4 - 1153D revision 3 [McLean]
- Proposal for ATA Overlap - D96104r4 [McLean]
- Proposal for Vendor Specific and Optional - D96125r3 [Evans]

5. Review of Old Action Items

Gene reported that he had taken the appropriate actions to have project 1120 withdrawn.

Gene Milligan reported that he has sent the rev 7 of ATA-3 to X3 for further processing.

Gene Milligan reported that he has sent the project proposal for Technical Report for Enhanced BIOS Disk Drive to X3 for further processing.

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

It was discovered in the course of the meeting that the heading for the command sections was trashed in the ATA-2 final draft due to an erroneous format character. Larry Lamers eliminated the spurious format character and the Acting Chair requested that he send a copy of the document with the corrected clause numbers to the X3 Secretariat to replace the defective copy.

7. ATA-3 - Project 2008D

See 5.

8. ATA-4 - Project 1153D

Pete conducted a page by page review starting with clause 8. Clause 8 review was completed. Clause 9 was also reviewed, completing the first pass through the draft. In part, the recommended modifications are in item 8.3.

The working group revised the agenda order so that the items below are in order of priority based on the poll taken at the January meeting.

8.1 Vendor specific and Optional Command Zero Budgeting [Evans] (D96125r4)

Dan Colegrove pointed out that a number of devices return status on a SET FEATURES before the cache is flushed. The outcome is pending the cache flush proposal. The consensus is to state that a cache flush is initiated when the cache is disabled.

When the EXECUTE DRIVE DIAGNOSTICS is issued the command registers are ignored but not when the status is read. Mark Evans will incorporate Dave Evans' table from the foil to describe the results of the EXECUTE diagnostics.

The recommendation on reverting to defaults being made obsolete was rejected. The words '..greater than 80h..' were deleted from 8.32.18.

FORMAT TRACK wording to be revised to better state what happens with a device that does not really do the command.

Tom Hanan moved and Dave Evans seconded that the CORR bit be made obsolete instead of retired. Tom's objection is to the possibility of reclaiming the bit. The motion failed 3:4.

Gene Milligan stated that a third key word may be a better solution. This led to reexamining the definition of "Obsolete". With refreshment on "Obsolete" Gene, having voted on the winning side (against) moved that the main motion be reconsidered. There was no objection to reconsideration and the Hanan / Evans motion passed 12:3 upon reconsideration. Chair's note: The initial draft of the minutes missed the reconsideration. Consequently the precise vote tally may be slightly in error but it is substantially correct.

8.2 Enhanced BIOS Disk Drive Technical Report [Stevens] (D96139r0)

See 10.2. A proposal has not been submitted.

8.3 Interrupt Glitches (Determination) [Stevens] ()

Curtis Stevens was not present due to a conflicting meeting in Japan.

8.4 Get Features [Roberts] ()

Ron Roberts reported that a proposal was not yet available. Pete McLean proposed adding 4 words to indicate current and default parameters which will address this issue. This would address the issues of get features as well as some of the issues in item 8.1.

8.5 Strong Command Overlap and Command Queuing [McLean] (96D104r4)

Marc Noblitt requested that the UIRQ bit be removed from the proposal. He stated that he had polled several of the other drive vendors and they were in agreement on removing it.

Tom Hanan stated that the DMA engines needed to be able to look at a single bit to determine if a DRQ is pending; the original idea was to have a DMA pending bit. Tom stated that the bit should not be removed until the WinTel folks agree to it as well as the BIOS guys.

Pete reported that he and Devon reached an agreement not to grandfather the mistakes of the past into ATA-4.

Tom Hanan moved and Yogi Schaffner seconded that the discussion of the UIRQ be postponed to the next meeting. Joe Chen asked that the timing from asserting of PDIAG to asserting of UIRQ be defined. There was no objection to the motion which passed by unanimous consent.

Marc Noblitt requested that the dual polarity of the IRQ be removed. It is questionable if a reliable high-transition shared IRQ can be done. This is even more difficult in a 3-volt/5-volt environment. The consensus except for Tom Hanan, is to remove the wire-or'd high asserted interrupt.

Hale Landis questioned when the effect of the Set Features takes effect on the bus to invoke the reversal. This issue needs to be revisited in light of the effect on command overlapping. The change takes effect when the Set Features command completes, the Set Features command posts its interrupt with the method in effect when the Set Features command was received. If two devices are present on the cable, both devices must be issued the Set Features in sequence before the new interrupt mode may be used.

Tom Hanan indicated that he has had requests from the BIOS guys to establish completion times for the Set Features command.

Yogi Schaffner moved and Marc Noblitt seconded that the dual polarity be removed as currently defined and the shared wire-or'd interrupts shall operate as active low only. The motion carried 6:3.
Opposed by Apple, WD, and Quantum.

Marc Noblitt asked to remove the three bits in the sector count register of READ DMA OVERLAP and WRITE DMA OVERLAP to avoid any potential confusion regarding what is going on. It is assumed that the host knows what command has been issued and therefore knows the direction of data transfer and whether it is command or data.

The consensus was that the SERVICE COMMAND remains as is; READ DMA OVERLAP and WRITE DMA OVERLAP will have the IO and C/D- bits changed to not applicable.

Joe Chen moved and Ron Roberts seconded that the READ DMA OVERLAP and WRITE DMA OVERLAP commands be restricted to LBA only with the LBA set. The motion failed 2:11.

8.6 Cache Flush [Roberts] (D96106r0)

Ron Roberts reported that the mechanism proposed at the last meeting using soft reset or SET FEATURES is not adequate. A proposal for a new command will be re-submitted.

8.7 ATA Protected Area Proposal [Colegrove] (D96137)

Dan Colegrove stated that he has not received any comments. A detailed review is planned for the next working group.

8.8 ATA Mode X Analog Issues [Chen] ()

No activity.

8.9 Non-512 Byte Transfer Blocks [Bonke] ()

No activity.

8.10 ATA Cable Issues and Definitions [McGrath] ()

Terminators still not available.

8.11 Defect Management [Landis] ()

Deleted for lack of a committed proposal.

8.12 Out of order transfers [Worrell] ()

No activity. Tom Hanan committed to have a proposal at the next meeting or an agreement to drop the item.

8.13 Status for Failing Soft Reset [Roberts]

With the re-emergence of the command for cache flush this item is dropped.

8.14 400 ns delay between reading data and status register [Landis] ()

On newer processors the 400ns delay is extremely long for a software loop. Unfortunately some existing silicon has problems with shorter times.

8.15 SMART Proposal [Evans] (96131r1)

A revised proposal is still pending. It should be available prior to the next meeting.

8.16 Review of Hard and Soft Reset [Evans] (D96142r0)

Mark Evans presented a summary of the reset sequences and effects. There is a need to say something regarding power stabilization, especially for systems that rely on 3.3 volt system logic with a 5.25 volt drive. Add a note to indicate when the decision for device 0 or device 1 is made (prior to step D).

Joe Chen prepared an overhead showing the voltage relationship to reset. He suggested that all devices should assert DASP at power-on and release it when and if the device determines it is a master. This approach needs a proposal so that it can have adequate review before being considered for adoption.

Pete McLean raised a question regarding how device 0 should act if device 1 fails its diagnostics. While no specific motion was passed, there seemed to be a consensus for device zero ignoring subsequent commands to device 1 allowing the host to probe the reasons for the diagnostic failure.

Hale Landis asked how the ATAPI portion of the reset process should be documented.

Need to add the device reset protocol because it differs from the soft reset protocol. The ad hoc suggested that it be treated like the EXECUTE DIAGNOSTICS command.

There is an error in 9.2.1 and 9.2.2 regarding the handling of BSY in steps h) and l). This error exists all the way back to ATA-2. BSY should not be cleared until both activities are completed.

For Device Reset the only difference between ATA and ATAPI devices is the signature. The Device Reset does not go through the DASP/PDIAG handshake and does not wait for SRST to be cleared.

Add requirement that packet devices do not do an internal reset when a soft reset is issued. It is recommended that a host not issue a soft reset while a packet command is executing.

8.17 Core Command Set [Stevens] (D96135r0)

There was no business to conduct.

9. Old Business

9.1 Items from the Open Issues List [] ()

9.1.1 Removable device feature set needs further work

The Chair had contacted Microsoft but the requested proposals have not yet been received.

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

The address for the ftp site is x3t13.wdc.com, the web site is www.x3t13.wdc.com, and the reflector is x3t13@dt.wdc.com. These are in service now, however the current ftp site, fission.dt.wdc.com, should be used until Tom notifies the group that the new site is fully operational.

10. New Business

10.1 SFF-8020 Issues [Hanan] ()

There was no business to conduct.

10.2 Technical Report for Enhanced BIOS Disk Drive Technical Report [Stevens] ()

Gene Milligan reported that the project proposal has been submitted to X3.

11. 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.

12. Open Issues List Summary

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

- 1) 8-bit register access timing in Table 21.

13. Review of New Action Items

There were none.

14. Meeting Schedule

The next plenary meeting of X3T13 will be August 2, 1996 beginning at 0900 in the Seagate Building 5 cafeteria training room in San Jose, California hosted by Seagate.

Seagate
Building 5
San Jose, CA 95134
Tel: 408-456-4500
Fax: 408-456-4501

The next working group meeting will be June 19-21, 1996 at the Western Digital facility in Irvine, CA hosted by Western Digital.

The July and August meeting are at the Seagate Facility on Zanker Road in Building 5.
The September meeting is planned for Irvine, CA.
The October meeting is planned for Honolulu, HA.

15. Adjournment

The meeting was adjourned at the completion of all agenda items.

