

Accredited Standards Committee
NCITS, National Committee for Information Technology Standards*

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Project:
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Reply to: Gene Milligan

To: Membership of T13
From: Lawrence J. Lamers, Secretary T13
Gene Milligan, Chair T13
Subject: Minutes of T13 Working Group
February 18-21, 1997 : Ft. Collins, CO

Agenda

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Results of Meeting

1. Opening Remarks

Gene Milligan called the meeting to order at 9:00 a.m., Tuesday, February 18, 1997. He thanked Mike Winchell of Symbios Logic for hosting the meeting.

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 T13 and would be conducted under the NCITS rules. Ad hoc meetings take no final actions, but prepare recommendations for approval by the technical committee. The voting rules for the meeting are those of the parent committee, T13. For the ad hoc, other than straw votes, the voting rules are: one vote per participating company.

Gene Milligan reminded the attendees that, as Chair of T13, he preferred to be a "Non-voting Chair" with another Seagate employee Marc Noblitt functioning as the voting member. He indicated the motivation was to facilitate an attempt to Chair the meetings without bias to a specific faction's position. However, even in this mode he would reserve the right to cast a vote in the event there were no Seagate representatives present.

The minutes of this meeting will be posted to the T13 ftp and the ATA Reflector and will be included in the next T13 committee mailing.

2. Approval of Agenda

The electronically distributed agenda was used as a basis for the meeting with adjustments as reflected in these minutes.

3. Attendance

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

Lawrence	Lamers	Adaptec, Inc.	A1
Irv	Tjomsland	Award	G
Ben	Chang	Cirrus Logic Inc.	P
Hale	Landis	Consultant	P
Paul	Raikunen	Digital	P
Anthony	Yang	Hitachi America Ltd.	P
Dan	Colegrove	IBM Corp.	P
Pat	La Varre	Iomega	A
Ron	Stephens	Iomega Corp.	P
Hugh	Curley	Knowledgetek	G
Pete	McLean	Maxtor Corp.	P
Curtis	Stevens	Phoenix Technologies	P
Greg	Elkins	QLogic Corp.	P
Mark	Evans	Quantum Corp.	P
Yasuyuki	Suemori	Sanyo Electric Co., Ltd.	A
Gene	Milligan	Seagate Technology	P
Marc	Noblitt	Seagate Technology	A
Yogi	Schaffner	Silicon Systems, Inc.	P
Tommy	Morris	Texas Instruments	G
Tokuyuki	Totani	Toshiba America Info.	P

4. Document Distribution

The following documents were distributed:

T13 Document Register - 1996
T13 Document Register - 1997
T13/1153D Rev 9 ATA/ATAPI-4 [McLean]
T13/1226DT Rev 2 [Stevens]
D97113r0 Tom Hanan's Action Items

5. Review of Old Action Items

- 66) Devon Worrell to provide list of items in word 82 and 85 not applicable to ATAPI. Expired.
- 68) Devon to document the proper behavior of ATAPI soft reset. Expired.
- 70) Tom Hanan to generate a proposed replacement for sub-clause 5.3 of ATA/ATAPI-4. Carried over.
- 71) Dan Colegrove to revise Fig 5 & 6 into a single flow chart. Carried over.
- 72) Tom Hanan to define the effects of all possible values in byte count low and byte count high. Completed.
- 73) Tom Hanan to check all identify words in the SFF specification. Completed.
- 74) Tom Hanan to check on major version and minor version in ATAPI as it is not compliant with ATA. Completed.

6. ATA/ATAPI-4 - Project 1153D

6.1 Review of working draft

Pete McLean stated that rev 9 contains rev 3 Ultra DMA, when rev 4 is available it will be incorporated; the Security Erase feature; Yogi's proposal for register access; and the Set Max Address proposal.

Status Register Bit descriptions - Err Bit and Error Register clarified by removal of Error register from signature in 9.1; change bits 5 and 7 of Device/Head register to be obsolete except as required to be zero at end of power-on/reset protocol.

Revise definition of word 1,3, and 6 of Table 9 so that if zero the drive must be addressed using LBA.

What values are in word 51? Agreement that word 51 it will be 00h, 01h, 02h, and values 03h - FFh are reserved.

Set Transfer Mode of SET FEATURES is mandatory.

Pete McLean moved and Yogi Schaffner seconded that Table E.4 be removed. The motion carried 10:3

Pete McLean moved and Marc Noblitt seconded that AMNF be made obsolete. The motion carried unanimously.

Set Max - Curtis Stevens wants to restrict the use of SET MAX to the BIOS. A token passing scheme could limit its use to the first user; or you could restrict the address so that setting the address lower is prevented but higher is not. The problem is that if two applications try use the set max feature both could wind up with scrambled data.

Dan Colegrove volunteered to write a complete procedure detailing how SET MAX and INITIALIZE DRIVE PARAMETERS interoperate.

Single word DMA is no longer supported in ATA-4. The consensus was to move the Queue Depth from word 73 to word 75 to resolve an SFF 8020 conflict.

The changes to Ultra DMA agreed to at the last meeting (rev 4) are not yet in rev 9. Those changes should be incorporated into the next revision.

Single device configurations may have further host issues if the host depends on the signature to indicate device presence. The host should issue commands to adequately determine device presence.

6.1.1 DMA Data Transfers Error Handling

Devices are allowed to stop on error, the host has to monitor the device to determine if the transfer has ended. Pete agreed to put together a separate flow chart for the DMA engine and reference it in the other figures.

6.1.2 DMA Data Transfers

Figure 12 does not clearly show how the data transfer is paused. Pete will clarify the flow chart.

Should the bus be allowed to be released during a data transfer so the other device can be accessed? No. Add a statement to prohibit this.

When BSY = 0 and DRQ = 1 you are allowed to write the command register, but the result is undefined. There is an exception for DEVICE RESET if the command is implemented.

During DMA transfers for register based devices the data transfer shall be continuously enveloped with either BSY = 1 or DRQ = 1.

6.1.3 INTRQ timing

Interrupt timing - document states if a device has an interrupt pending it asserts INTRQ when selected; the host is not required to service the INTRQ of the selected device, it may select the other device. Nothing is said about how the first device should behave. Need timing for deselection to release and selection to assertion of INTRQ.

Add requirement: When an interrupt is pending the device has a maximum time of 400 ns from the edge of IOW for the device bit to release INTRQ if being deselected or to assert INTRQ if being selected.

Add a similar rule for the time to clear INTRQ from the edge of IOR for the status register.

6.1.4 Vital Product Data

Dan Colegrove requested an option to allow the return of vendor specific data, similar to vital product data in SCSI. His inclination was to request a feature register value for this and make it part of the SMART command. The first result is that the group recommended that all the unused SMART codes be reserved and Dan will bring in a proposal.

For overlap devices setting SERV and DRQ when ready to transfer data following a release violates the fundamental rule that the device doesn't own the command registers if BSY = 0. Pete will fix page 38 by adding an item to allow this.

6.1.5 Byte Count Values

IF a packet command does not transfer data the byte count is ignored.
The byte count does not apply to the transfer of the command packet.

Inputs

If the PACKET command results in data transfer:

a) the host shall not set byte count limit of zero. The device shall abort the command if zero is set.

- b) the value set into the byte count limit shall be even if the total requested data transfer length is greater than the byte count limit.
- c) the value set into the byte count limit may be odd if the total requested data transfer length is equal to or less than the byte count limit..
- d) a byte count limit value FFFFh is interpreted by the device as though it were FFFEh.

Outputs.

- a) the byte count shall be less than or equal to the byte count limit value from the host.
- b) the byte count shall not be zero.
- c) the byte count shall be even except for the last transfer of a command.
- d) the byte count shall be less than or equal to FFFEh.
- e) if the byte count is odd the last valid byte transferred is on DD[7:0] and the data on DD[15:8] is a pad byte of undefined value.
- f) if the last transfer of a command has a pad byte the byte count shall be odd.

7. Enhanced BIOS Disk Drive Technical Report - Project 1226DT

Curtis Stevens brought in rev 2 of EDD. The document was reviewed. See 8.1.1.

8. Old Business

8.1 Items from the Open Issues List [] ()

8.1.1 Enhanced FDPT signature of A0h

Resolved in Table 4 of EDD draft rev 2 by changing it to Axh.

8.2 Definition of ATAPI protocol for device one only []

Completed at last meeting.

8.3 Support for Removable Media [] ()

8.3.1 MSN 1.03 Commands [Stephens] ()

Ron Stephens reported that he has nearly completed a proposal and expects to have it ready for the March meeting.

8.4 LUNS [Worrell] ()

There was no input from the proponents. This agenda item will be carried over only through the March meeting.

8.5 Tailgate [Hanmann] (D97107r0)

Pete McLean reported that all the open technical issues have been addressed. An editorial review will be held during the T10 plenary week. Jonathan agreed to upload the latest revision to the T13 ftp site. See D97109

9. New Business

9.1 80 Conductor cable [] ()

A proposal is being considered that would connect PDIAG only between device 0 and device 1 and not connected it to the host. PDIAG signal would be grounded in the host connector to indicate that an 80-conductor cable is connected. If accepted this would go into the SFF specification and will be addressed at the next meeting. A further consideration is to fix the device 0 location with CSEL to prevent excessive stub length with a device 0 only configuration.

The question is do any hosts monitor PDIAG today and for what purposes? They should not since ATA requires that they make no connection to PDIAG.

10. 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 T13 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.

10.1 European Patent Application Number 95201658.2

The chair reported that he had forwarded the ANSI patent policy information to the legal consul representing Oak but has not yet heard a response.

It was reported that Dal Allan had posted a letter to European Patent Office detailing some of the early activity on the subject.

11. Open Issues List Summary

There are no open issues beyond completion of the action items.

12. Review of New Action Items

75) Pete McLean and Jonathan Hanmann to obtain a recommended resolution of the byte count issue from the Tailgate ad hoc meeting.

13. Meeting Schedule

The next plenary meeting of T13 will be April 25, 1997 at the Western Digital facility, in Irvine, CA hosted by Western Digital.

The next ad hoc on Tailgate held jointly with X3T10 SBP-2 ad hoc will be March 10-11, 1997 in San Diego, CA hosted by QLogic.

The next ad hoc meeting for all projects will be March 18-21, 1997 at the Seagate facility hosted by Seagate. The long term meeting schedule is:

The subsequent working group meeting will be April 23-24, 1997 at the Western Digital facility, in Irvine, CA hosted by Western Digital.

Date	Location	Host	Contact
January 22-24, 1997 *	San Jose, CA	Seagate	Marc Noblitt
February 18-21, 1997	Ft. Collins, CO	Symbios Logic	Mike Winchell
March 18-21, 1997	San Jose, CA	Seagate	Marc Noblitt
April 23-25, 1997 *	Irvine, CA	Western Digital	Tom Hanan
May 21-23, 1997	Estes Park, 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	Longmont, CA	SSI/TI	Yogi Schaffner
September 24-26, 1997	Irvine, CA	Phoenix Technologies	Curtis Stevens
October 22-24, 1997*	TBD, HI	Quantum	Mark Evans
December 3-5, 1997	Irvine, CA	Western Digital	Tom Hanan
January 21-23, 1998*	San Jose, CA	Seagate	Marc Noblitt
February 18-20, 1998	Colorado	Symbios Logic (?)	Mike Winchell
March 25-27, 1998		Maxtor (?)	Pete McLean
April 15-17, 1998 *	Irvine, CA	Western Digital	Tom Hanan
May 20-22, 1998			
June 17-19, 1998	Irvine, CA	Western Digital	Tom Hanan
July 22-24, 1997 *			

* Plenary on Friday

14. Adjournment

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