

Accredited Standards Committee\*  
**X3, Information Processing Systems**

**Doc. No.:** X3T10/94-013r1

**Date:** January 28, 1994

**Project:**

**Ref. Doc.:**

**Reply to:** J. Lohmeyer

To: Membership of X3T10

From: Lamers/Lohmeyer

Subject: Minutes of X3T9.2 General Working Group January 11-12, 1994

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**Agenda**

1. Opening Remarks
2. Attendance and Membership
3. Approval of Agenda
4. Physical Topics
  - 4.1 SCSI-3 Physical Interface (Project 855 rev 12b) [Lamers]
    - 4.1.1 Proposed Changes to SPI (93-149r2) [Aloisi]
5. Protocol Topics
  - 5.1 SCSI-3 Architecture Model - SAM (X3T10/994D) [Monia]
  - 5.2 SCSI-3 Interlocked Protocol (Project 856D) [Lamers]
  - 5.3 SCSI-3 Generic Packetized Protocol (Project 991D) [Stephens]
  - 5.4 SCSI-3 Serial Bus Protocol (Project 992D) [Lamers]
  - 5.5 SCSI-3 Fibre Channel Protocol (Project 993D) [Snively]
6. Command Set Topics
  - 6.1 SCSI-3 Block Commands (Project 996D) []
  - 6.2 SCSI-3 Stream Commands (Project 997D) [Stephens]
  - 6.3 SCSI-3 Graphics Commands (Project 998D) [Stephens]
  - 6.4 SCSI-3 Medium Changer Commands (Project 999D) [Stephens]
7. General Working Group Items
  - 7.1 Ultra-SCSI () [Ham]
  - 7.2 RAID (94-xxxxr0) [Penokie]
  - 7.3 PnP SCSI () [Lohmeyer]
  - 7.4 Message Handling (93-184r1) [Houlder]
  - 7.5 Multi-Media Project Proposal (93-178r0) [Harris]
8. Meeting Schedule
9. Adjournment

**Results of Meeting**

**1. Opening Remarks**

John Lohmeyer the Chair, called the meeting to order at 9:00 a.m., Tuesday, January 11, 1994. He thanked Vitro 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 X3T10 and would be conducted under the X3 rules. Ad hoc meetings take no final actions, but prepare recommendations for approval by the X3T10 task group. The voting rules for the meeting are those of the parent committee, X3T10. These rules are: one vote per company; and any participating company member may vote.

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

John noted that X3.131 had passed the X3 letter ballot and was at ANSI for compliance review. He also stated that OMC had recommended that X3T10 be established and an accelerated letter ballot will be done.

**2. 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 company to attend and to express their opinion on the subjects being discussed.

The following people attended the meeting:

Meeting Attenders -- SCSI Working Group January 12, 1994

Name	Organization	Electronic Mail Address
Mr. Norm Harris	Adaptec, Inc.	nharris@adaptec.com
Mr. David Skinner	Advanced Micro Devices	skinner@brahms.amd.com
Mr. Jerrie L. Allen	Amdahl	
Mr. Ken Scherzinger	Amphenol Spectra-Strip	
Mr. Gary Porter	Ancot Corp.	garyp@ancot.com
Mr. Christian Mollard	BULL Systems	
Mr. William Galloway	Compaq Computer Corp.	bill=galloway%hw=stor%sys=hou\@bangate.compaq.com
Mr. Joseph Wach	Conner Peripherals	
Mr. Charles Monia	Digital Equipment Corp.	monia@starch.enet.dec.com
Mr. Edward A. Gardner	Digital Equipment Corp.	gardner@ssag.enet.dec.com
Dr. William Ham	Digital Equipment Corp.	ham@subsys.enet.dec.com
Mr. Ralph Weber	Digital Equipment Corp.	weber@star.enet.dec.com
Mr. Kenneth J. Hallam	ENDL	khallam@endlas.com
Mr. Edward Lappin	Exabyte Corp.	tedl@exabyte.com
Mr. Robert Liu	Fujitsu Computer Products, Am	
Mr. Jeffrey L. Williams	Hewlett Packard Co.	jlw@hpdmd48.boi.hp.com
Mr. Kurt Chan	Hewlett Packard Co.	kc@core.rose.hp.com
Ms. Nancy Cheng	Hitachi Computer Product	
Dr. Sam Karunanithi	Hitachi Micro Systems, Inc.	skarunan@hmsi.hitachi.com
Mr. George Penokie	IBM Corp.	gop@rchvmp3.vnet.ibm.com
Mr. John P. Scheible	IBM Corp.	Scheible@vnet.ibm.com
Mr. Robert Kembel	IBM Corp.	rkembel@vnet.ibm.com
Mr. Giles Frazier	IBM Corp.	gfrazier@ausvm6.vnet.ibm.com

Mr. Dean Wallace	Linfinity Micro	
Mr. Lawrence J. Lamers	Maxtor Corp.	larry_lamers@maxtor.com
Mr. John Lohmeyer	NCR Corp.	john.lohmeyer@ftcollinsco.ncr.com
Mr. Charles Binford	NCR Corp.	Charles.Binford@WichitaKS.NCR.COM
Mr. Gerald Houlder	Seagate Technology	Gerry_Houlder@notes.seagate.com
Mr. Stephen G. Finch	Silicon Systems, Inc.	5723283@mcimail.com
Mr. Erich Oetting	Storage Technology Corp.	Erich_Oetting@Stortek.com
Mr. Robert N. Snively	Sun Microsystems, Inc.	Bob.Snively@eng.sun.com
Mr. Bill Boyd	Texas Instruments	
Mr. Paul D. Aloisi	Unitrode Integrated Circuits	Aloisi@uicc.com
Mr. Jeff Stai	Western Digital	stai@dt.wdc.com
Mr. Devon Worrell	Western Digital	

35 People Present

Status Key: P - Principal  
A - Alternate  
O - Observer  
L - Liaison  
S,V - Visitor

**3. Approval of Agenda**

The proposed agenda was approved.

**4. Physical Topics**

**4.1 SCSI-3 Physical Interface (Project 855 rev 12b) [Lamers]**

SPI is at public review. The public review closes on February 22, 1994. The pre-edit has been completed by the ANSI editor and a markup returned to the Project Editor.

**4.1.1 Proposed Changes to SPI (93-149r2) [Aloisi]**

Paul Aloisi stated that the capacitor to decouple the low frequency in the terminator needs limits to prevent glitches during hot plugging.

Bill Galoway pointed out that turned off switchable terminators need a capacitance limit to prevent excessive current at power-on.

Bob Snively pointed out that in Figure 10 of SCSI-2 a 10 uf capacitor is specified for the Boulay terminator. This is an issue for devices that use a removable terminator pack and leave the regulator and capacitor on the device.

A maximum of 5 uf was proposed for devices that are not terminating the bus and a maximum of 50 uf for ones that are.

All persons are charged (to what level depends on their capacitance) with investigating their implementations and providing information on what the limits should be at the next meeting.

Paul also noted recommended changes to Annex G to add a clause on glitching restrictions. Active termination is required for hot-swap units.

Items 4 and 5 of Paul's proposal have already been thrashed through several times and not accepted.

## **5. Protocol Topics**

### **5.1 SCSI-3 Architecture Model - SAM (Project 994D) [Monia]**

Charles Monia went through several issues on SAM.

Autosense is allowed but cannot be relied on.

Queuing is optional but the messages must be rejected appropriately to avoid hanging the bus.

Task set - each task set basis has properties - Annex A disposition? Needs to be determined this week.

Currently SAM does not specifically allow alternative task set basis definition.

Should all CDB's be limited to 16-bytes? Yes.

Bit significance in status byte - will be eliminated and encoded status.

Should duplicate nexus checking be required? No - but if detected the reporting mechanism is specified.

Must the service delivery subsystem preserve transaction ordering - The only thing that matters is order of arrival at the peripheral.

Transaction ordering is not required to be preserved. If a driver wants to have ordered delivery it must take the appropriate steps to do so - using synchronized transactions.

Is an entity allowed to have more than one address? No specified.

Should a CLEAR ACA while an ACA is in effect unconditionally abort a task in the enabled state?

Can more than task management function exist per I\_T\_L?

### **5.2 SCSI-3 Interlocked Protocol (Project 856D) [Lamers]**

### **5.3 SCSI-3 Generic Packetized Protocol (Project 991D) [Stephens]**

### **5.4 SCSI-3 Serial Bus Protocol (Project 992D) [Lamers]**

### **5.5 SCSI-3 Fibre Channel Protocol (Project 993D) [Snively]**

Bob Snively reviewed the proposed responses to the letter ballot comments on FCP (see 94-014). He plans to incorporate these responses in a revision 8 document.

## **6. Command Set Topics**

- 6.1 SCSI-3 Block Commands (Project 996D) []
- 6.2 SCSI-3 Stream Commands (Project 997D) [Stephens]
- 6.3 SCSI-3 Graphics Commands (Project 998D) [Stephens]
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- 7. General Working Group Items
  - 7.1 Ultra-SCSI (X3T10/94-023r0) [Ham]

Bill Ham presented test data on a 40 Mb/sec transfer rate differential SCSI. TI is planning to manufacture a 9-channel transceiver in Q2 94 that supports these data rates.

Data on s/e being gathered.

Concerns from the group:

- multiple stubs (up to 16)
- research old worst case configurations
- different cable type
- stub concentrations
- drivers not near the terminators
- forced temperature difference
- forced difference in transceivers

**7.2 RAID (94-031r0) [Penokie]**

George presented a proposal for extended logical unit addressing for use with SCA command set devices.

**7.3 PnP SCSI () [Lohmeyer]**

Revision 0.97 has been completed incorporating the results of last weeks meeting in Colo Spgs, CO. The document is on the SCSI BBS and on Compuserve.

**7.4 Message Handling (94-032r0) [Houlder]**

Gerry Houlder presented a chart that details message sequences and allowed responses. In several cases SCSI-2 does not provide a clear response sequence when an error occurs.

Gerry would like to see this document become an informative annex in SIP.

**7.5 Multi-Media Project Proposal (X3T9.2/93-178r0) [Harris]**

Norm Harris, technical editor of MMC, reported that an initial proposal for a working draft is completed. It is based on the existing chapter 14 of SCSI-2. It is focused on CD-ROM devices at this time but is likely to encompass other multimedia devices. Items that need to be worked on include an update for CD-XA, multisession, CD-R, CD-I, photo CD. attenuation level control, and command modifications.

A working group meeting is planned for late February '94. Contact Norm Harris. (nharris@adaptec.com) TEL: 408-945-8600.

**8. Meeting Schedule**

The next working group meetings will be March 13-18, 1994 at the Hyatt Newporter Hotel (714-729-1234) in Newport Beach, CA hosted by Qlogic Corporation. The room rates are \$99.00 including tax. The reservation deadline for these rates is February 1, 1994. The group name is X3T10. The host contact is Skip Jones at TEL: 714-688-5058, FAX: 714-688-5008, (s\_jones@qlc.com).

**9. Adjournment**

The meeting was adjourned at 4:00 p.m. on Wednesday January 11, 1994.