Accredited Standards Committee
X3, Information Technology

To: Membership of X3T10

From: Ralph Weber, Secretary X3T10
                John Lohmeyer, Chair X3T10

Subject: Minutes of X3T10 SCSI Working Group Meeting
                Harrisburg, PA -- May 9-10, 1995

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Agenda

1. Opening Remarks

2. Approval of Agenda

3. Attendance and Membership

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5. Protocol Topics
    5.1 Addressability of TARGET RESET task management function (95-236r1) [Snively]
    5.2 Public Review Comment Resolution on SAM (95-202r1) [Monia]
    5.3 Public Review Comment Resolution on FCP (95-204r1) [Snively]
        5.3.1 Confirmation of FCP Response (95-203r0) [Binford]
    5.4 FCP use of Disconnect-Reconnect Mode Page (95-208r0) [Gardner]
    5.5 SIP Items [Milligan]
    5.6 Xfer_ready write disable [Frazier]

6. Command Set Topics
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    6.2 Multiple Port Operations (94-233r1) [Snively]
    6.3 What should be done with CCS References in SPC? [Tewell]
    6.4 Distributed SCSI (95-159r0) [Sloan]
    6.5 CD-ROM parameters mode page (0Dh) vs. power control mode page (0Dh) [Houlder]
    6.6 Set/Sense Environmental Services Function [Snively]
    6.7 LUN Discovery Problem/Solution (Reflector Message) [Frazier]
    6.8 Error Notification Log Page [Frazier]
    6.9 SBC Issues [Tewell]
    6.10 SSC Issues [Lappin]

7. Other Topics
    7.1 Proposal for SCSI Multi Controller, Multi-bus Failover Extensions [Steve Sicola] {Tuesday p.m.}
    7.2 What is in a name? [Milligan]
    7.3 Overlapped Letter Ballot and Public Review [Lohmeyer]
    7.4 QIC request for Density Codes & Medium Type Codes [Lohmeyer]

8. Meeting Schedule

9. Adjournment

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Results of Meeting

1.   Opening Remarks

John Lohmeyer, the X3T10 Chair, called the meeting to order at 9:00 a.m., Tuesday May 9, 1995. He thanked Chuck Brill of AMP, Inc. for arranging and hosting the meeting.

As is customary, the people attending introduced themselves and a copy of the attendance list was circulated. Copies of the draft agenda and general information on X3T10 were made available to those attending.

2.   Approval of Agenda

The draft agenda was approved with the following changes:

Removed:
        5.4 - Public Review Comment Resolution of SBP (deferred until July)

Added:
        5.4 - FCP use of Disconnect-Reconnect Mode Page (95-208r0) [Gardner]
        5.5 - SIP Items [Milligan]
        6.8 - Error Notification Log Page [Frazier]
        6.9 - SBC Issues [Tewell]
        6.10 - SSC Issues [Lappin]
        7.1 - What is in a name? [Milligan]

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:

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          Name          S        Organization        Electronic Mail Address
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Mr. Lawrence J. Lamers  A#  Adaptec, Inc.             ljlamers@aol.com
Mr. Edward Fong         P   Amdahl Corp.              esf10@amail.amdahl.com
Mr. Charles Brill       P   AMP, Inc.                 cebrill@amp.com
Mr. Ron Roberts         A   Apple Computer            rkroberts@aol.com
Mr. Bob Gannon          O   C&M Corp.                 bobg848740@aol.com
Mr. Louis Grantham      P   Dallas Semiconductor      grantham@dalsemi.com
Mr. Charles Monia       P   Digital Equipment Corp.   monia@shr.dec.com
Mr. Douglas Hagerman    A#  Digital Equipment Corp.   hagerman@starch.enet.dec.
                                                      com
Mr. William Dallas      A#  Digital Equipment Corp.   dallas@wasted.enet.dec.co
                                                      m
Dr. William Ham         A#  Digital Equipment Corp.   ham@subsys.enet.dec.com
Mr. Stephen J. Sicola   O   Digital Equipment Corp.   sicola@peaks.dec.com
Mr. I. Dal Allan        P   ENDL                      2501752@mcimail.com
Mr. Kenneth J. Hallam   A   ENDL                      3450626@mcimail.com
Mr. Ralph O. Weber      A#  ENDL Associate            roweber@acm.org
Mr. Edward Lappin       P   Exabyte Corp.             tedl@exabyte.com
Mr. Gary R. Stephens    P   FSI Consulting Services   6363897@mcimail.com
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Mr. Stephen Holmstead	P	Hewlett Packard Co.	stephen@mail.boi.hp.com
Mr. J. R. Sims	A#	Hewlett Packard Co.	robsims@depeche.lvld.hp.com
Mr. Bill Hutchison	O	Hewlett Packard Co.	hutch@boi.hp.com
Mr. Pat Edsall	O	Hewlett Packard Co.	edsall@hpdmd48.boi.hp.com
Mr. Paul Boulay	A#	Hitachi Computer Products	p_boulay@hitachi.com
Mr. Frank Liburdi	O	Hollingsworth	
Mr. George Penokie	P	IBM Corp.	gop@rchvmp3.vnet.ibm.com
Mr. Giles Frazier	O	IBM Corp.	gfrazier@ausvm6.vnet.ibm.com
Mr. Michael A. Brewer	O	IBM Corp.	mabrewer@vnet.ibm.com
Mr. Dean Wallace	P	Linfinity Micro	
Mr. Chuck Grant	A	Madison Cable Corp.	charles_grant@madisonusa.ccmail.compuserve.com
Mr. Pete McLean	P	Maxtor Corp.	pete_mclean@maxtor.com
Mr. Peter Gossler	O	NSM Jukebox GmbH	73503.3467@compuserve.com
Mr. Stephen F. Heil	P	Panasonic Technologies, Inc	sfh@research.panasonic.com
Mr. Skip Jones	P	QLogic Corp.	sk_jones@qlc.com
Mr. James McGrath	P	Quantum Corp.	JMCGRATH@QNTM.COM
Mr. Edward A. Gardner	A	Quantum Corp.	gardner@acm.org
Mr. Gene Milligan	P	Seagate Technology	Gene_Milligan@notes.seagate.com
Mr. Gerald Houlder	A	Seagate Technology	Gerry_Houlder@notes.seagate.com
Mr. Thomas 'Rick' Tewell	P	Sequoia Advanced Tech., Inc.	thomas.tewell@seqadvtech.com
Mr. Erich Oetting	P	Storage Technology Corp.	Erich_Oetting@Stortek.com
Mr. Robert N. Snively	P	Sun Microsystems Computer Co	bob.snively@eng.sun.com
Mr. Vit Novak	A	Sun Microsystems, Inc.	vit.novak@sun.com
Mr. John Lohmeyer	P	Symbios Logic Inc.	john.lohmeyer@symbios.com
Mr. Charles Binford	V	Symbios Logic Inc.	Charles.Binford@Symbios.com
Mr. Gary M. Watson	P	Trimm Technologies	trimm@netcom.com
Mr. Paul D. Aloisi	P	Unitrode Integrated Circuits	Aloisi@uicc.com
Mr. Tak Asami	A	Western Digital Corporation	asami@dt.wdc.com

44 People Present

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Status Key:  P    -  Principal
             A,A# -  Alternate
             O    -  Observer
             L    -  Liaison
             V    -  Visitor
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4.   Physical Topics

4.1   Next-Generation SPI Proposals Report

John described the results of the SPI Futures Study Group meeting (minutes 95-209). John noted that the five projects previously discussed have been reduced to a single SPI-2 project proposal plus one or two technical

reports. John described the highlights of the several proposals. John said that forwarding of the SPI-2 project proposal might be considered at the upcoming plenary meeting.

John presented a brief description of the DiffSense plan for low-power differential (see 95-209 for details). The essence of the idea is that the DiffSense line will be driven roughly half-way between ground and 5 V to indicate low power differential.

In a discussion of forwarding plans for SPI-2, Bill Ham noted that all the topics listed in the project proposal already have preliminary proposals under discussion. John noted that the scheduled forwarding date is July 1997. In the absence of any objections, the working group recommended forwarding the SPI-2 project proposal to X3 for further processing.

5.   Protocol Topics

5.1   Addressability of TARGET RESET task management function (95-236r1) [Snively]

Bob requested that work on this topic be deferred until July.

5.2   Public Review Comment Resolution on SAM (95-202r1) [Monia]

Charles Monia led a complete review of the comments resolutions for the SAM public review.

While discussing one of the SAM comments, the working group agreed to remove SCSI-1 and CCS references from all SCSI-3 documents. Also, the group agreed to describe SCSI-2 and SCSI-3 as references to architectures described in specific documents and not the documents themselves (this avoids a problem with ANSI editorial policy).

The working group discussed the options and methods for proceeding from here. The goal is to develop SAM revision 17, based on the public review comments and responses, and hold a meeting vote to forward to second public review at the July plenary meeting. Charles announced that he plans to send SAM revision 17 to the principle members in a separate mailing. The separate mailing will go out to the principal X3T10 members at least two weeks prior to the July plenary meeting.

The working group discussed whether the changes should be made at all, in light of the delay in SAM publication that will result from doing so. With one exception, the working group supported creating a SAM revision 17 for forwarding to second public review.

5.3   Public Review Comment Resolution on FCP (95-204r1) [Snively]

Bob lead a review of the resolutions for the FCP public review comments (document 95-204r1). He focused on those areas where substantial technical changes were made or where a comment was partially or fully rejected.

There was a lengthy discussion of the Digital comments. Many of the comments concern the relationship between FCP and SAM. The working group accepted Bob's statement that addressing some of the Digital comments requires a substantial rewrite of FCP. Bob agreed to accept the comments as input to FCP-2 and undertook to write the FCP-2 project proposal quickly.

Bob reported on off-line discussions regarding the FSI comments. He noted that the second comment requires some changes. The problems concern use of the FQXID definition in ways that FCP does not anticipate. Bob will add an explicit statement noting that some non-FCP FQXID uses are ignored by FCP. The list of accepted FSI comments is 2, 17, and 18.

In summary, Bob reported one substantial, must-fix technical problem (the HP-1 comment). In addition there are two serious editorial issues (the Digital comments) whose final resolution should be deferred to FCP-2.

Giles Frazier described problems that he has with FCP transfer ready transactions. As currently defined, transfer is always on or always off. Giles proposed that the disable transfer ready login setting be changed to mean "disable transfer ready on the first sequence in a write command." The working group agreed with the change that Giles proposed.

The working group discussed whether to forward FCP revision 11 to second public review at the May plenary meeting. Based on the need for changes beyond revision 11, the working group agreed that forwarding should wait until the July plenary meeting.

5.3.1   Confirmation of FCP Response (95-203r0) [Binford]

Charles Binford described a problem with retrieving sense data in an AutoSense condition. In some cases, the sense data might be sent but lost in the fabric. Charles proposed adding an acknowledgment to ensure delivery of sense data. He noted that other proposals have been made.

Giles Frazier presented a different solution. Giles proposed a log page that tracks sense data.

After several hours of discussion the following straw poll was taken:

	Multiple Votes per Person	One Vote per Person
Do None	5	3
Do protocol-spec.	5	1
Do log page	7	7
Do both	9	7

The conclusion of this straw poll was to expedite development on the log page proposal as 14 of the 18 people felt it should be done. Giles agreed to work on the proposal for possible plenary meeting action (see item 6.8, below).

5.4   FCP use of Disconnect-Reconnect Mode Page (95-208r0) [Gardner]

After discussion of the issues raised by his proposal, Ed agreed to revise the proposal. Based on a straw-poll (7-5), Ed was advised to include a protocol identifier in the revised proposal.

5.5   SIP Items [Milligan]

Gene Milligan raised a concern that ACA is optional in most protocol documents but mandatory in SIP. George Penokie, the SIP Editor, took note of the concern.

5.6   Xfer_ready write disable [Frazier]

Bob Snively reported that the proposed change will be added to the next (second public review) draft of FCP. He noted that the change will be introduced in the login clause. He noted that other changes will be required in tables showing when Xfer_ready is to be used. In the absence of any objections, the working group authorized Bob to make the changes in the next revision of FCP.

6.   Command Set Topics

6.1   Public Review Comment Resolution on SCC

John noted that the public review period has not yet ended. However, it was agreed to discuss the review comments received to date.

George reviewed a comment from IBM to the effect that, "All SCC devices shall save their current configurations throughout all task management functions and power outages." George proposed to accept the IBM comment. Some opposition was raised about the required (non-optional) nature of the proposal.

Public review comments from Symbios (95-212r0) produced substantial discussion. Significant problems were discussed concerning the addressing of LUNs belonging to non-SCC devices configured under an SCC device. George agreed to add a new addressing mode to handle this case. George stated that resolution of this problem is a basic requirement for a useful SCC. As such, George felt that making the changes and taking the hit for a second SCC public review is necessary.

Most of the Symbios comments were accepted. Comments 13, 14, and 21 were rejected. George and Charles Binford reached mutually acceptable resolutions for all Symbios comments.

6.2   Multiple Port Operations (94-233r1) [Snively]

Bob Snively described the persistent reserve concept and implementation design using handwritten foils. Bob received substantial input regarding the proposal. Bob agreed to provide a written document for the mailing.

6.3   What should be done with CCS References in SPC? [Tewell]

Ralph reported that an earlier working group discussion decided to drop all references to SCSI-1 and CCS from the SPC. Where code values are defined to represent either SCSI-1 or CCS, the code values will be changed to "Reserved for historical usage."

6.4   Distributed SCSI (95-159r0) [Sloan]

This item was deferred to July. Lansing Sloan could not attend the meeting.

6.5   CD-ROM parameters mode page (0Dh) vs. power control mode page (0Dh) [Houlder]

Gerry Houlder noted that both the CD-ROM mode page and the Power Condition mode page share the 0Dh page code. The working group noted that this problem has been discussed before. The working group agreed to assign an unused mode page code to the Power Condition mode page for usage by all device types. The Power Condition mode page would then be moved to the SPC. SBC would retain the 0Dh page, but would include a recommendation to use the new page code.

Rick Tewell noted that the page codes between 15h and 1Fh (inclusive) are marked vendor-specific in the streaming (tape) commands, but reserved for future standardization everywhere else. The working group agreed to announce that the 15h through 1Fh mode page codes are being reclaimed as reserved for future standardization. Ted will change the 15h in SSC to 20h in the next draft.

Ralph Weber will publicize both these changes on the SCSI Reflector.

6.6   Set/Sense Environmental Services Function [Snively]

Bob Snively described the Environmental Services Interface (ESI) work being done in SFF. The need in SCSI described by Bob was for a command that can send or receive a serial string. Use of WRITE BUFFER and READ BUFFER was suggested as a solution. SEND/RECEIVE DIAGNOSTIC also was suggested. Use of appropriate SCC commands was suggested. A straw poll vote was taken. 2 favored READ/WRITE BUFFER. 12 favored SEND/RECEIVE DIAGNOSTIC. No one favored using the SCC commands. Bob will develop a proposal.

6.7   LUN Discovery Problem/Solution (Reflector Message) [Frazier]

Giles described a problem with discovering the LUNs in a SCSI-3 device. With LUN values being up to 64-bits wide, a polling style discovery function takes too long (in time). Giles proposed use of existing commands from the SCC command set to accomplish the LUN discovery function.

Ralph and Giles will draft a proposal for a new SPC command to address this problem.

6.8 Error Notification Log Page [Frazier]

Giles presented a hand-drafted proposal for a Last N Deferred Errors log page, based on the existing Last N Errors log page. The page is intended to address possible loss of deferred error data on the serial protocols.

Giles presented a proposed wording change for the SPC that will produce the desired results. The working group reviewed the proposed wording.

6.9 SBC Issues [Tewell]

Rick asked for working group advice regarding the access medium codes and optical memory density codes. Updates for these codes present substantial problems for the committee and the documents' technical editors. Ted Lappin said that he is working on a proposal that would get the committee out of the loop by letting product designers describe their product rather than use codes. Rick and Ted will coordinate efforts in this area.

Rick asked about handling the RESERVE and RELEASE commands. The working group provided guidance on defining usage of RESERVE and RELEASE in the SBC with the command functional reference pointing to the SPC.

Rick asked about the status of the PORT STATUS command. He was told that PORT STATUS is in the process of being removed from SCSI-3.

Rick asked that a SCSI-3 commands document column be added to table 21 in the SPC. Ralph agreed to add the column.

6.10 SSC Issues [Lappin]

Ted described a new mechanism for handling density codes (95-224r0).

Ted presented document 94-152r3 (Medium Partition Page (1-4) enhancements for SCSI-3) to the working group. In the absence of any objections, the working group recommended that the document be adopted for inclusion in the SSC at the next plenary meeting.

7. Other Topics

7.1 Proposal for SCSI Multi Controller, Multi-bus Failover Extensions [Steve Sicola] {Tuesday p.m.}

Steve presented information on current hot-spare methods for array controllers. Steve's PowerPoint slides are available as document 95-217r0. The working group discussed the methods for modeling multi-controller configurations in the context of SCC. Some issues were easily resolved (e.g., modeling the two controllers as components of an SCC system). Other issues were harder (e.g., modeling the two controllers as two separate SCC systems). The later problem appeared to affect the SAM.

Questions were raised about whether this is a standards-body issue (or should the issue be handled in the RAID Advisory Board)? John proposed authorizing a study group to investigate the issues further. Gene Milligan suggested that the System Issues study group be the site for such discussions.

Steve agreed to present the idea to the RAID Advisory Board. Also, the working group recommended that X3T10 authorize a study group for July 10th in Colorado Springs.

7.2 What is in a name? [Milligan]

Gene asked that this item be added to discuss SCSI-3 naming conventions. Due to Gene's responsibilities in other meetings, this item was deferred to the July working group meeting.

7.3   Overlapped Letter Ballot and Public Review [Lohmeyer]

John described a new option for handling Technical Committee letter ballots and public review. Under the new rules, the letter ballot and the public review can be processed concurrently. Several negative views were expressed regarding concurrent letter ballots and public reviews. The sense of the working group was that letter ballots should be held prior to (not concurrent with) public reviews.

7.4   QIC request for Density Codes & Medium Type Codes [Lohmeyer]

John presented a letter from Raymond Freeman requesting 16 density codes and 16 medium type codes for assignment by QIC. John noted that the request will be presented for consideration at the plenary meeting.

8.   Meeting Schedule

The next meeting of X3T10 SCSI Working Group will be July 11-12, 1995, in Colorado Springs, CO at the Red Lion Inn (719-576-8900), hosted by Symbios Logic Inc.

9.   Adjournment

The meeting was adjourned at 5:46 p.m. on Wednesday May 10, 1995.