Accredited Standards Committee*
X3, Information Technology

To: Membership of X3T10

From: Ralph Weber, Secretary X3T10
                Larry Lamers, Vice-chair X3T10
                John Lohmeyer, Chair X3T10

Subject: Minutes of X3T10 SCSI Working Group Meeting
                San Diego, CA -- March 12-13, 1996

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Agenda

1. Opening Remarks

2. Approval of Agenda

3. Attendance and Membership

4. Physical Topics
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    4.2 SPI Amendment (96-130) [Lamers]

5. Protocol Topics
    5.1 Resolution of SCSI-3 Interlocked Protocol (SIP) Forwarding Comments (96-120) [Penokie]
    5.2 Problem with Non-interlocked Busses (95-352r2) [Monia]
    5.3 SIP and Command Queuing (96-112r0) [McGrath]

6. Command Set Topics
    6.1 Resolution of the SCSI-3 Primary Commands (SPC) Forwarding Comments [Weber]
    6.2 Review of Enclosure Services Interface (ESI) [Snively]
    6.3 Secure Multiple Port Operations (95-322) [Snively]
    6.4 Addition of software write protect to Mode Page Ah (96-121r1) [Houlder]
    6.5 Granularity of Block Size for Tape (96-114) [Lappin]
    6.6 Reporting non-deferred errors in Log Sense [Dekoning]
    6.7 Informational Exceptions Log Page [Milligan]
    6.8 Clarification of sleep mode (96-140) [Penokie]
    6.9 Clarification of Set Capacity feature (96-143) [Houlder]
    6.10 SCSI-3 Block Commands (SBC) Review [Milligan]
    6.11 SCC-2 Discussion [Penokie]
    6.12 Security Erase [Schultz/Lohmeyer]

7. Other Topics
    7.1 Systems Issues Considerations (95-321r2) [Penman]
    7.2 High Availability SCSI Profile (95-314) [Hagerman]

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 1:23 p.m., Tuesday March 12, 1996. He thanked Skip Jones of QLogic for 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 additions:

> 6.9 Clarification of Set Capacity feature (96-143) [Houlder]
> 6.10 SCSI-3 Block Commands (SBC) Review [Milligan]
> 6.11 SCC-2 Discussion [Penokie]
> 6.12 Securty Erase [Schultz]

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. Ajay Malik          O  Adaptec, Inc.              ajay_malik@corp.adaptec.
                                                      com
Mr. Edward Fong         P  Amdahl Corp.               esf10@amail.amdahl.com
Mr. Gary Porter         A  Ancot Corp.                garyp@ancot.com
Dr. Benjamin Monderer   V  Box Hill Systems Corp.     ben@boxhill.com
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Jr.
Mr. Raymond Lutz        V  Cognisys, Inc.             raylutz@cognisys.com
Mr. Peter Johansson     P  Congruent Software, Inc.   pjohansson@aol.com
Mr. Ken Jeffries        V  Dell Computer Corporation  ken@volente.us.dell.com
Mr. Charles Monia       P  Digital Equipment Corp.    monia@shr.dec.com
Mr. Douglas Hagerman    A# Digital Equipment Corp.    hagerman@starch.enet.dec.
                                                      com
Dr. William Ham         A# Digital Equipment Corp.    ham@subsys.enet.dec.com
Mr. William Dallas      A# Digital Equipment Corp.    dallas@wasted.enet.dec.com
Mr. Roger Cummings      O  Distributed Processing     cummings_roger@dpt.com
                           Tech.
Mr. Ralph O. Weber      P  ENDL Associate             roweber@acm.org
Mr. Edward Lappin       P  Exabyte Corp.              tedl@exabyte.com
Mr. Andy Chen           A  Fujitsu Computer Prods     achen@fcpa.fujitsu.com
                           Amer
Mr. Stephen Holmstead   P  Hewlett Packard Co.        stephen@mail.boi.hp.com
Mr. William Martin      A  Hewlett Packard Co.        kc@core.rose.hp.com
Mr. George Penokie      P  IBM Corp.                  gop@rchvmp3.vnet.ibm.com
Mr. Dan Colegrove       A# IBM Corp.                  colegrove@vnet.ibm.com
Mr. Pat Buckland        V  IBM Corp.                  buckland@austin.ibm.com
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Mr. Gregory Weaver	O	Iomega Corp.	weaver@iomega.com
Mr. Dennis Moore	P	KnowledgeTek, Inc.	dmoore@netcom.com
Mr. Dean Wallace	P	Linfinity Micro	75671.3443@compuserve.com
Mr. Pete McLean	P	Maxtor Corp.	pete_mclean@maxtor.com
Mr. Jay Neer	A	Molex Inc.	jneer@molex.com
Mr. Edward A. Gardner	P	Ophidian Designs	gardner@acm.org
Mr. Skip Jones	P	QLogic Corp.	sk_jones@qlc.com
Mr. Gene Milligan	P	Seagate Technology	Gene_Milligan@notes. seagate.com
Mr. Gerald Houlder	A	Seagate Technology	Gerry_Houlder@notes. seagate.com
Mr. Dave Guss	P	Silicon Systems, Inc.	dave.guss@tus.ssi1.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. John Lohmeyer	P	Symbios Logic Inc.	john.lohmeyer@symbios.com
Mr. Rod DeKoning	V	Symbios Logic Inc.	rod.dekoning@symbios.com
Mr. Akram Atallah	A	SyQuest Technology, Inc.	akram.atallah@syquest.com
Mr. Kenneth J. Hallam	P	UNISYS Corporation	ken.hallam@mv.unisys.com
Mr. Paul D. Aloisi	P	Unitrode Integrated Circuits	Aloisi@uicc.com
Dr. Sheldon Schultz	V	Univ. of Cal. at San Diego	sschultz@ucsd.edu
Mr. Eric Swartz	O	Verisys	eric@verisys.com
Mr. Jeff Stai	P	Western Digital Corporation	stai@dt.wdc.com
Mr. Tom Hanan	V	Western Digital Corporation	hanan_t@a1.wdc.com
Mr. Arnold Limjoco	O	Yamaichi Electronics	6371175@mcimail.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   LVD SCSI Glitch Tolerance [Ham/Lohmeyer]

John reported that he started documenting when bus release glitches can occur. He to have a proposal by the next SPI-2 LVD meeting.

4.2   SPI Amendment (96-130) [Lamers]

Larry reported that the functional information in the SPI amendment was included in the last mailing. No concerns were raised regarding the already noted inaccuracies.

Additional needs for corrections were presented by Gerry Houlder and George Penokie. George reported that his problem concerned the table 9, describing DB8-15 and DBP(1) in the P Cable description. Information in the table did not appear to match the text. After some discussion, the working group agreed that the table defines the actions of the transmitter (they do not drive the upper data bus signals), while the text concerns the signals as observed by receivers (they may observe invalid parity on the upper data bus signals -- actually, if they look, they WILL observe invalid parity on the upper data bus). As such, it was agreed that the text is correct, as

written, even though a stronger word than 'may' could be used. George raised concerns that the text does not clearly state that it applies to receivers.

Larry Lamers stated that George's issue is a clarification, not an amendment. After some discussion, George asked that an action item be recorded for him to provide a written description of the issue so that clarifications can be made in SPI-2.

Gerry reported that the description of Reselection is missing a "not" in bullet f) in section 10.4.1. Referencing the equivalent text in the Selection section, Gerry noted that the Selection description contains the "not". Also, the Reselection text reads as making an outlandish requirement with the "not" missing.

John stated that he would like to see the amendment document forwarded at the May meeting. Larry asked that an action item be recorded for him to prepare the SPI amendment document.

Gene Milligan described a problem with SCAM. After some discussion, the group agreed that no changes (added wording in the amendment) are necessary as a result of Gene's issue.

In the absence of any objections, the working group recommended that the plenary approve requesting changes in the ISO version of SPI covering the amendment text accumulated before the meeting (recorded in 96-130) and the missing "not" identified by Gerry (recorded in 96-144).

5.   Protocol Topics

5.1   Resolution of SCSI-3 Interlocked Protocol (SIP) Forwarding Comments (96-120) [Penokie]

George noted that all letter ballot comments were resolved during the January meeting and a revised SIP was distributed in the last mailing. Gene Milligan reminded George that the comments resolutions discussed during the January meetings were later amended. George described the problem as concerning figures 32 and 33 (pages 45 and 46). In effect, the initiator figure 32 should connect to the target figure 33 at the point where the initiator selection connects to the message out box in the target figure. George has agreed to make the change in figures 32 and 33.

George noted that the plenary needs to vote on accepting the comments resolutions and forward the revised SIP to public review. Additional discussion concerned what document changes to forward to public review. The group agreed to recommend the forwarding of a document containing the corrections that connect figures 32 and 33.

The need for protocol glitch filtering wording in SIP was discussed. After some discussion, the group agreed that glitch filtering must be covered in SPI, not SIP.

5.2   Problem with Non-interlocked Busses (95-352r2) [Monia]

Charles Monia reviewed his concerns with lost command ordering interlocks on serial busses. There was a lengthy discussion of the needs identified by Charles. Distilled to its essence, Charles' proposal would require that BUSY, RESERVATION CONFLICT, ACA ACTIVE, and QUEUE FULL status values initiate an ACA-like condition. The only difference between the current ACA definition and the ACA-like condition described by Charles would be that the ACA-like condition has no sense data associated with it.

Charles agreed to prepare a detailed proposal for the needed feature, as an option. He will bring the detailed proposal to the next working group meeting.

5.3   SIP and Command Queuing (96-112r0) [McGrath]

In the absence of Jim McGrath, discussion of this topic was deferred to the next meeting.

6.   Command Set Topics

6.1   Resolution of the SCSI-3 Primary Commands (SPC) Forwarding Comments [Weber]

John reported that the letter ballot to forward SPC to public review passed 37:3:0:9=49. Comments were received from Exabyte, IBM, Seagate, Symbios, Unisys, and Unitrode.

Ralph lead a review of the comments (96-148). Ralph received advice on all the issues that concerned him and several others.

The group took a series of straw polls regarding the location of processor commands and enclosure services. Four choices were provided for the straw poll:

1)   Remove the processor commands from the SPC. Place both the processor commands and the ESI commands in a new document.
2)   Keep the processor commands in the SPC. Place both the processor commands and the ESI commands in SPC-2.
3)   Remove the processor commands from the SPC. Place the processor commands in a new document. Place the ESI commands in a new document, different from the processor commands document.
4)   Keep the processor commands in the SPC. Place the ESI commands in a new document.

Three votes were taken. The first vote allowed multiple votes per person and included all four choices. The second vote allowed only one vote per person and included only the first and fourth choices. The third vote allowed only one vote per person and included only the winner of the second vote and the second choice. The results of the votes were as follows:

Choice / Vote

	1	2	3
1	9	8	
2	12		7
3	0		
4	9	9	15

Choice 4 won. Bob Snively and John Lohmeyer agreed to work together in writing a project proposal for an ESI standards project.

The working group requested authorization for an SPC editing session on April 17 and 18 in the San Jose area. In addition, a editing review meeting was requested for the Monday afternoon at the May X3T10 meeting week.

6.2   Review of Enclosure Services Interface (ESI) [Snively]

Bob Snively described the ESI changes that are required in existing SPC data formats and commands. The goal was to define the minimum needed SPC changes thus allowing the introduction of the changes before the SPC public review.

Bob then described the ESI diagnostic pages and device model. Only about one-fifth of the proposal was reviewed before the available time ran out. The group also discussed the relationship between ESI and SCC. [Note from the chair: An ad-hoc meeting was convened on Thursday morning, March 14, to review the remainder of the ESI proposal. The ad-hoc meeting succeeded in reviewing the complete ESI proposal.]

For this meeting, all the ESI changes were contained in document 95-324r3.

6.3   Secure Multiple Port Operations (95-322) [Snively]

At the request of Bob Snively, this item was dropped from this and future agendas. The group agreed that this or similar topics can be added to future agendas if needed.

6.4   Addition of software write protect to Mode Page Ah (96-121r1) [Houlder]

Gerry presented his revised proposal. Further minor revisions were made. In the absence of any objections, the working group recommended that the plenary approve inclusion of the revised text in the SPC.

6.5   Granularity of Block Size for Tape (96-114) [Lappin]

Ted Lappin presented 96-114r1, a proposal that allows devices to restrict the granularities of the block sizes that they support. In the absence of any objections, the working group recommended that the proposal be approved for inclusion in the SSC.

6.6   Reporting non-deferred errors in Log Sense [Dekoning]

Rod DeKoning presented a request to expand the definition of the last n deferred error events log page. After a brief description of the problem, Rod proposed minor wording changes for section 8.2.3. He asked that the section title be changed from "deferred error events" to "deferred errors or asynchronous events" and that throughout the clause "deferred errors" be changed to "asynchronous events or deferred errors".

In the absence of any objections, the working group agreed to handle making the change as if it were a letter ballot comment. The change will be added to the Symbios comments list in the SPC comments document.

6.7   Informational Exceptions Log Page [Milligan]

Gene Milligan presented a proposal for a new log page. The group observed that there was no apparent need for the new log page as the data could be retrieved by other means. Gene mentioned that the proposed log page would enable working around a software bug in a recent operating system. The group had little desire to modify a standard when the software could be fixed instead. The group rejected the proposal.

6.8   Clarification of sleep mode (96-140) [Penokie]

George described a change for handling of power condition 5 in the START/STOP UNIT command. He accepted several comments for corrections in his proposal. He agreed to prepare a revised proposal, to distribute it on the SCSI Reflector, and to bring the topic back for discussion at the next working group meeting.

6.9   Clarification of Set Capacity feature (96-143) [Houlder]

Gerry presented a proposal to make permanent saving of the set capacity conditional on the SP bit being one. The group generally rejected the idea of having the SP bit apply to mode header data.

6.10   SCSI-3 Block Commands (SBC) Review [Milligan]

The group discussed scheduling an editing session for SBC as part of the May X3T10 meeting week. The group requested scheduling of the editing meeting for all day Friday of the May meeting week.

Gene described the changes made to SBC in revision 2. Gene then brought several technical issues to the attention of the working group. The working group provided Gene with advice about the issues he raised.

In the absence of any objections, the working group recommended that the Plenary accept SBC revision 2 as the current working draft for the project.

6.11   SCC-2 Discussion [Penokie]

The working group agreed to generate a project proposal for SCC-2. John Lohmeyer took an action item to generate a draft SCC-2 project proposal.

6.12   Security Erase [Schultz/Lohmeyer]

Dr. Sheldon Schultz of the University of California at San Diego Center for Magnetic Recording Research described a governmental requirement for complete erasure of a disk drive. The group discussed the needs and mechanisms for introducing the needed changes to the SBC. John Lohmeyer volunteered to work with Gene Milligan to develop a proposal. Bob Snively volunteered to work with John conducting an investigation of existing commands that might be used unmodified to perform the requested function.

7.   Other Topics

7.1   Systems Issues Considerations (95-321r2) [Penman]

John Lohmeyer reported that Duncan Penman believes that the technical report document has content that is ready for forwarding. John and Larry Lamers discussed hiring an editor to restructure the existing information into a technical report format.

Gene Milligan asked if the work needs to be coordinated with IEEE and SC26 open boot projects. John expressed the belief that some X3T13 members might be more familiar with possible coordination issues.

7.2   High Availability SCSI Profile (95-314) [Hagerman]

Doug Hagerman described the possibility of writing a profile for SCSI devices that are used in high availability systems. The first order of discussion was determining the correct group to be the owner of the work. X3T10 and STA (the SCSI Trade Association) were two choices for the owning group. It was agreed that the high availability profile issue belongs in X3T10. John agreed to help Doug write a project proposal for the high availability technical report.

8.   Meeting Schedule

John reviewed the proposed meeting week schedule for March 1996. The next meeting of X3T10 SCSI Working Group will be May 7-8, 1996, in Fort Lauderdale, FL at the Fort Lauderdale Marriott North (305-771-0440), hosted by Adaptec, Inc.

9.   Adjournment

The meeting was adjourned at 6:33 p.m. on Wednesday March 13, 1996.