

Accredited Standards Committee*

National Committee for Information Technology Standards (NCITS)

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Date: May 20, 1999

Reply to: John Lohmeyer

To: T10 Membership
From: Ralph Weber / John Lohmeyer
Subject: Minutes of T10 Plenary Meeting #31 -- May 6, 1999
Manchester, NH

Agenda

1. Opening Remarks
2. Approval of Agenda
3. Attendance and Membership
4. Approval of Minutes - March '99 Meeting Harrisburg, PA (T10/99-137r1)
5. Document Distribution
6. Call for Patents
7. Review of Old Action Items
8. Project Status Reports
 - 8.1 Project Status Summary and NCITS Liaison [Lohmeyer]
 - 8.2 SCSI Common Access Method - 3 (CAM-3) Status {Project 990-D} [Dallas]
 - 8.3 SCSI-3 Stream Commands (SSC) Status {Project 997-D} [Peterson]
 - 8.4 SCSI Enhanced Parallel Interface (EPI) Technical Report {Project 1143-D} [Ham]
 - 8.5 SCSI Fibre Channel Protocol - 2 (FCP-2) {Project 1144-D} [Snively]
 - 8.6 Serial Bus Protocol - 2 (SBP-2) {Project 1155-D} [Johansson]
 - 8.7 SCSI Architecture Model - 2 (SAM-2) {Project 1157-D} [Weber]
 - 8.8 Multimedia Command Set - 2 (MMC-2) Status {Project 1228-D} [Roberts]
 - 8.9 SCSI Primary Commands - 2 (SPC-2) Status {Project 1236-D} [Weber]
 - 8.10 Reduced Block Commands (RBC) {Project 1240-D} [McLean]
 - 8.11 SCSI Socket/SSL Services Command Set (SSS) {Project 1246-D} [Parker]
 - 8.12 SCSI Parallel Interface - 3 (SPI-3) {Project 1302-D} [Penokie]
 - 8.13 SCSI Enclosure Profile (SEP) Technical Report {Project 1303-DT} [Weber]
9. Old Business
 - 9.1 Extended Copy command in SPC-2 (99-143r1) [Snively]
 - 9.2 Making TTD and CIOP Obsolete (99-147r0) [Snively]
10. New Business
 - 10.1 Recommendation that NCITS withdraw X3.276:1997 SCSI-3 Controller Commands
 - 10.2 Recommendation that NCITS withdraw X3.253:1995 SCSI-3 Parallel Interface & its Amendment
 - 10.3 Recommendation that NCITS withdraw X3.292:1997 SCSI-3 Interlocked Protocol
 - 10.4 Recommendation that NCITS withdraw X3.277:1996 Fast-20
 - 10.5 Recommendation that NCITS close the Project 0990-D, Common Access Method - 3 (CAM-3)
 - 10.6 Recommendation that NCITS close the Project 1246-D, SCSI Socket/SSL Services Command Set (SSS)
 - 10.7 Actions on Working Group Recommendations
 - 10.7.1 Cable Testing Requirements (99-111) [Daggett]
 - 10.7.2 Packet Protocol Extensions (99-139r4) [Lamers/Penokie/Milligan]
 - 10.7.3 Proposed Physical Layer Integrity Check Annex (98-235r4) [Lohmeyer]
 - 10.7.4 Protection for the Asynchronous Information Phases (99-119r3) [Evans & Leshay]

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- 10.7.5 Fairness Feature Control in SPI-3 (99-160r1) [Elliott/Houlder]
- 10.7.6 Proposed Modifications to Annex A (99-174r0) [Aloisi/et.al.]
- 10.7.7 Slow DT Timing Revision Proposal for SPI-3 (99-183r1) [Milligan]
- 10.7.8 Groundwork for Expander Communication (99-169r1) [Lamers/Bastiani]
- 10.7.9 Packetized cleanup and improvements (99-170r1) [Galloway]
- 10.7.10 Restrict QAS to Packetized (99-173r0) [Galloway]
- 10.7.11 SPI-3 Technical Changes (99-184r1) [Penokie]
- 10.7.12 Project Proposal for SPI-4 (Ultra320 SCSI) (99-140r3) [Lamers]
- 10.7.13 Fairness Feature Control in SPC-2 and FCP-2 (99-160r2) [Elliott/Houlder]
- 10.7.14 Suggested changes to REPORT LUNS command for SPC-2 and SAM-2 (99-144r1) [Snively]
- 10.7.15 Still more on Persistent Reservations parts II and III in SPC-2 (99-182r1) [Coughlan]
- 10.7.16 Make SEND command optional in processor command set in SPC-2 [Lamers]
- 10.8 Clarification of T10 Standards Development Policy and Procedures (94-198r3) [Milligan]
- 10.9 Project Proposals for RMC and MMC-3 (99-154r1 and 99-153r1) [Roberts]
- 10.10 Addition of Version Descriptors in SPC-2 [Snively]
- 11. ISO
 - 11.1 ISO Report [Milligan]
 - 11.2 ISO Business [Milligan]
- 12. Liaison Reports
 - 12.1 T11 Liaison Report [Cummings]
 - 12.2 T13 Liaison Report [Milligan]
 - 12.3 SFF Industry Group [Allan]
 - 12.4 IEEE 1394 [Johansson]
 - 12.5 IEEE P1285 Status
 - 12.6 IEEE P1596.8 Status
 - 12.7 SCSI Trade Association (STA) [Jones/Aloisi]
- 13. Review of Action Items
- 14. Meeting Schedule
 - 14.1 Authorization of Working Group Meetings
 - 14.2 Increasing T10's Maximum Hotel Room Rate
- 15. Adjournment

Results of Meeting

1. Opening Remarks

John Lohmeyer, the T10 Chair, called the meeting to order at 9:00 a.m., Thursday May 6, 1999. He thanked Zane Daggett of Hitachi Cable Manchester for hosting the meeting.

John said that NCITS Subgroup Membership forms and the T10 Mailing Subscription form were available on the document table. He said that people should use the NCITS forms to insure the NCITS Secretariat has the latest membership information. These forms should be mailed directly to the NCITS Secretariat.

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 T10 were made available to those attending.

2. Approval of Agenda

The draft agenda was approved with the following additions/changes:

- 10.7.5 Fairness Feature Control in SPI-3 (99-160r1) [Elliott/Houlder]

- 10.7.6 Making TTD and CIOP obsolete (99-147r0) [Snively/Lamers]
- 10.7.7 Proposed Modifications to Annex A (99-174r0) [Aloisi/et.al.]
- 10.7.8 Slow DT Timing Revision Proposal for SPI-3 (99-183r1) [Milligan]
- 10.7.9 Groundwork for Expander Communication (99-169r1) [Lamers/Bastiani]
- 10.7.10 Packetized cleanup and improvements (99-170r1) [Galloway]
- 10.7.11 Restrict QAS to Packetized (99-173r0) [Galloway]
- 10.7.12 Packetized Extensions (99-139r4) [Lamers/Penokie/Milligan]
- 10.7.13 SPI-3 Technical Changes (99-184r0) [Penokie]
- 10.7.14 Project Proposal for SPI-4 (Ultra320 SCSI) (99-140r3) [Lamers]
- 10.7.15 Fairness Feature Control in SPC-2 and FCP-2 (99-160r2) [Elliott/Houlder]
- 10.7.16 Suggested changes to REPORT LUNS command for SPC-2 and SAM-2 (99-144r1) [Snively]
- 10.7.17 Still more on Persistent Reservations parts II and III (99-182r1) [Coughlan]
- 10.7.18 Make SEND command optional in processor command set in SPC-2 [Lamers]

The following agenda items were added/revised during the course of the meeting:

- 8.1 Project Status Summary and NCITS Liaison [Lohmeyer] {OMC removed}
- 10.9 Project Proposals for RMC and MMC-3 (99-154r1 and 99-153r1) [Roberts]

3. Attendance and Membership

The membership requirements were reviewed. NCITS rules permit one vote per organization. An individual from a new organization must attend two out of three consecutive plenary meetings. He/she may apply for voting membership the second meeting via a letter to the Chair of T10. The individual may apply for membership and begin voting at anytime following adjournment of the first meeting. Typically, the individual applies for membership and start casting votes at the second plenary meeting. Working group and other ad hoc meetings do not count toward attendance requirements.

A recent change in the NCITS rules permits a person attending their first meeting to become a voting member immediately following that meeting, provided their NCITS fees have been paid. This change permits a new member to vote on letter ballots issued between his/her first and second meetings.

To maintain membership, organizations must pay the NCITS Service Fee (\$300). The ANSI International Program Fee (also \$300) is billed at the same time.

John briefly discussed the mailing fees. Complete pricing information is contained in the 1999 membership form (available at ftp://ftp.symbios.com/t10/pub/standards/io/t10/mem_form.txt).

There are also minimum attendance requirements to maintain voting membership on T10. If a member organization fails to attend two of the last three T10 meetings, they are warned that failing to attend the next T10 meeting would result in their membership being terminated. The Chair said he had sent letters to 10 people from 5 organizations informing them that their membership was in jeopardy due to non-attendance (see 98-026r0) and that their membership would be terminated if they did not attend this meeting. The following organizations were in attendance jeopardy:

Distributed Processing Tech.
 KnowledgeTek, Inc.
 Montrose/CDT
 Sony Electronics, Inc.
 Western Digital Corporation

All of the organizations were present except:

Montrose/CDT
Sony Electronics, Inc.

They were terminated due to lack of attendance (i.e., the principal member was changed to observer status and the first alternate member, if any, was dropped; additional alternates, if any, were changed to observers).

The following organization requested new (or reinstated) membership at this meeting:

Crossroads Systems, Inc.
Dallas Semiconductor

The T10 membership during the meeting was 47 organizations unchanged from 47 organizations following the last meeting. Enclosure (1) is the list of the people present at the meeting and enclosure (2) is the current T10 membership list.

4. Approval of Minutes - March '99 Meeting Harrisburg, PA (T10/99-137r1)

The minutes were approved as written.

5. Document Distribution

Members who have any problems with their mailing subscription should deal directly with Judy Gales (jgales@itic.org) (202) 626-5741.

John Lohmeyer requested that all documents for the next mailing be in his hands in electronic format by 10:30 a.m. on Thursday May 13, 1999. Documents received after this time will go into a subsequent mailing.

John reminded the committee of the requirements for document submission. Since T10 meets its document retention requirements by preparing mailings, documents included in the mailing must be suitable for archiving. This means that native-format and/or Portable Document Format (PDF) electronic originals with proper identification must be submitted.

The electronic copies can be sent directly to John by e-mail (at lohmeyer@ix.netcom.com), or they can be transferred by ftp protocol to ftp.symbios.com and placed in the /pub/standards/io/incoming directory. In the latter case, please also send e-mail to John informing him of the file name and location of the file.

Minutes are available on the T10 World Wide Web page (see below), and are distributed to the T10 Reflector.

To be added to the T10 Reflector, send an e-mail to majordomo@symbios.com with the line 'subscribe t10' in the message body. The NCITS Secretariat maintains a World Wide Web page at <http://www.ncits.org/>. LSI Logic maintains a World Wide Web page on behalf of T10 at <http://www.symbios.com/t10/>.

The current document register is enclosure (3). The T10 document register is also available at <ftp://ftp.symbios.com/pub/standards/io/t10/dr.txt>.

NOTE: The symbios.com addresses will be changing to t10.org addresses soon.

6. Call for Patents

This is a regular agenda item to identify any potential patent issues with developing standards.

In the previous minutes, it was noted that 99-138 had been received from Adaptec. It should have been noted that 99-138 pertains to project 1302-D, SPI-3.

A document is available from ANSI, "Procedures for the Development and Coordination of American National Standards", at no charge. This document is also on the WWW at http://www.ncits.org/help/ansi_sdo.html. Section 1.2.11 contains the ANSI patent policy. Amy Marasco manages patent issues for ANSI and can be contacted at amarasco@ansi.org or 212-642-4954.

No patents were disclosed at this meeting.

7. Review of Old Action Items

- 266) All project editors will return the project abstract forms regarding their project(s) to the Chair. *Overtaken by events -- abstracts are now required as part of the first public review package.*
- 294) John Lohmeyer will add an item to the May Plenary agenda to withdraw the CAM-3 project and to notify the project editor of this pending action. *Complete.*
- 295) John Lohmeyer will add an item to the May Plenary agenda to withdraw the SSS project and to notify the project editor of this pending action. *Complete.*
- 296) John Lohmeyer will notify NCITS of the T10 recommendation to close project 1303-DT (SEP). *Complete.*
- 297) Mike Bryan will prepare RBC revision 8 for forwarding to NCITS. *Complete.*
- 298) John Lohmeyer will forward RBC revision 8 to NCITS for further processing towards first public review. *Complete.*
- 299) John Lohmeyer will notify NCITS that T10 recommends the reaffirmation of X3.131:1994, Small Computer System Interface - 2 (SCSI-2). *Complete.*
- 300) John Lohmeyer will notify NCITS that T10 recommends the withdrawal of ANSI/ISO 9315:1989 [1994] Interfaces between flexible disk cartridges and their host controllers. *Complete.*
- 301) John Lohmeyer will notify the T10 Reflector that the committee intends to recommend the withdrawal the following standards at its May meeting: X3.276:1997 SCSI-3 Controller Commands, X3.253:1995 SCSI-3 Parallel Interface, X3.292:1997 SCSI-3 Interlocked Protocol, X3.253/AM1:1998 SPI Amendment, and X3.277:1996 Fast-20. *Complete.*
- 302) Gene Milligan will take the necessary steps to withdraw SPI and Fast-20 as international projects. *Complete.*
- 303) Gene Milligan will take the necessary steps to process MMC using the international fast track process. *Complete.*
- 304) Gene Milligan will take the necessary steps to process SBC using the international fast track process. *Complete.*
- 305) Gene Milligan will use 99-128r1 as the basis for an affirmative response to the ballot on CD 14776-381. *Complete.*

8. Project Status Reports

8.1 Project Status Summary and NCITS Liaison [Lohmeyer]

John Lohmeyer said that the current T10 project status summary was included in the T10 Information Packages distributed prior to the meeting and will be included in the mailing as usual.

8.2 SCSI Common Access Method - 3 (CAM-3) Status {Project 990-D} [Dallas]

Bill Dallas reported that the next revision of CAM-3 should be ready by the July meeting. Larry Lamers questioned how the group will handle conducting a review of CAM-3 and Bill suggested that a review meeting in New Hampshire would be the effective. The group discussed the relationship of CAM-3 to Linux and other UNIX products. Several of those present cited examples of CAM implementations to counter the impression of some members that CAM is not used much in the industry.

Bill proposed that November be the target date for forwarding CAM-3 to NCITS.

Based on a request from Larry Lamers, the committee authorized a CAM-3 Working Group meeting on 29 and 30 June in Nashua, NH with the exact location to be determined by Bill and Larry.

8.3 SCSI-3 Stream Commands (SSC) Status {Project 997-D} [Peterson]

Erich Oetting reported that Dave Peterson will prepare SSC revision 17 for a T10 letter ballot. Erich also reported on the activities of the FC Tape group (minutes in 99-193).

Dave Peterson took an action item to prepare SSC revision 17 for letter ballot. John Lohmeyer took an action item to conduct a letter ballot on SSC revision 17 for forwarding to first public review. Ralph Weber took an action item to assign an SPC-2 version descriptor code to SSC revision 17.

8.4 SCSI Enhanced Parallel Interface (EPI) Technical Report {Project 1143-D} [Ham]

John Lohmeyer reported that EPI has been published as NCITS TR-23:1999. He congratulated Bill Ham. This item will be removed from future agendas.

8.5 SCSI Fibre Channel Protocol - 2 (FCP-2) {Project 1144-D} [Snively]

Bob Snively reported on the activities of the FCP-2 review meeting (minutes in 99-193). Bob described the change list for the next revision of FCP-2, which can be found in 99-168r3. Bob noted that the next revision of FCP-2 would not be available in time for the next committee mailing.

8.6 Serial Bus Protocol - 2 (SBP-2) {Project 1155-D} [Johansson]

John Lohmeyer reported that SBP-2 has been published as ANSI NCITS.325:1998. John congratulated Peter Johansson. This item will be removed from future agendas.

8.7 SCSI Architecture Model - 2 (SAM-2) {Project 1157-D} [Weber]

Ralph Weber reported that revision 10 of SAM-2 was prepared for the previous committee mailing. Revision 10 contained changes approved at plenary meetings since September. Ralph noted that the work on multi-port devices is still pending in SAM-2, edged out by EXTENDED COPY work during the past two months. There is one change to SAM-2 up for consideration at this meeting; Ralph was indecisive regarding whether he would prepare a new revision of SAM-2 to contain only that one change.

8.8 Multimedia Command Set - 2 (MMC-2) Status {Project 1228-D} [Roberts]

Ron Roberts reported that 98-230 contains the comments resolution for MMC-2. He noted that the final comments resolution document will not be available until after this meeting.

Ron asked John Lohmeyer to add a specific item to the July agenda to approve MMC-2 comments resolution and to forward MMC-2 to first public review.

8.9 SCSI Primary Commands - 2 (SPC-2) Status {Project 1236-D} [Weber]

Ralph Weber reported that SPC-2 revision 9 was prepared for the previous committee mailing. Revision 9 contains all plenary approved changes to date. He stated that SPC-2 revision 10 will be prepared for the next committee mailing and will contain all changes approved by this meeting.

8.10 Reduced Block Commands (RBC) {Project 1240-D} [McLean]

John Lohmeyer reported that RBC is at first public review, which closes June 6, 1999. Ron Roberts is the new project editor.

8.11 SCSI Socket/SSL Services Command Set (SSS) {Project 1246-D} [Parker]

In the absence of Keith Parker, no report was available for this meeting. John Lohmeyer confirmed that he had sent e-mail to Keith regarding the status of SSS and received neither a reply nor a bounce report.

8.12 SCSI Parallel Interface - 3 (SPI-3) {Project 1302-D} [Penokie]

George Penokie reported on the activities of the SPI-3 working group, minutes in 99-175. George stated his intention to have SPI-3 revision 6 ready for the next committee mailing.

George Penokie moved that the technical content of SPI-3 revision 6 be stabilized. Larry Lamers seconded the motion. Zane Daggett raised concerns about stabilizing the cable testing content. Dal Allan stated that stabilization would be more appropriate at the next meeting. Mark Evans asked if his proposal (99-119) would be subject to post stabilization voting rules. George stated that the answer would be yes, but that getting the necessary two-thirds vote should not be a big hurdle.

In response to George, Mark Evans stated that SPI-3 revision 6 is not available for inspection at the time of the meeting (and clearly has not been available for two weeks). Mark then invoked the 'two weeks rule'. Larry Lamers objected to invocation of the 'two weeks rule', stating that the action in the motion was procedural and not subject to the 'two weeks rule'.

The Chair ruled that the motion would stabilize a specific document that has not been available for two weeks and therefore the 'two weeks rule' does indeed apply.

In accordance with the 'two weeks rule', consideration of the motion to stabilize was terminated. Larry Lamers protested the Chair's decision based on the principle that the motion was procedural.

8.13 SCSI Enclosure Profile (SEP) Technical Report {Project 1303-DT} [Weber]

T10 has recommend that NCITS close this project. John Lohmeyer did not have confirmation of NCITS actions to close the SEP project at this meeting, but promised to have information for the next meeting.

9. Old Business

9.1 Extended Copy command in SPC-2 (99-143r1) [Snively]

Ralph Weber reported that the working group has decided to substitute 99-163 for 99-143 as the definition of EXTENDED COPY. This proposal is slated for eventual inclusion in SPC-2. 99-163 is still under development and Ralph stated that approval of an EXTENDED COPY draft would be premature at this time.

Bob Snively raised concerns that incorporation of this document might fail to make SPC-2. Ralph assured him that any action to stabilize or forward SPC-2 would be worded in such a way that EXTENDED COPY would be present in the document.

9.2 Making TTD and CIOP Obsolete (99-147r0) [Snively]

Bob Snively moved that 99-147r0 be approved for inclusion in SPI-3. Charley Riegger seconded the motion. The motion passed 23:1:0:23=47.

At the request of Dal Allan, Bob Snively agreed to take an action item to correspond with the one person who had responded to the reflector message in favor of retaining TTD and CIOP to solicit corrections for the known problems.

10. New Business

10.1 Recommendation that NCITS withdraw X3.276:1997 SCSI-3 Controller Commands

At the request of George Penokie, the committee agreed to defer consideration of this topic to the July meeting.

10.2 Recommendation that NCITS withdraw X3.253:1995 SCSI-3 Parallel Interface & its Amendment

At the request of George Penokie, the committee agreed to defer consideration of this topic to the July meeting.

10.3 Recommendation that NCITS withdraw X3.292:1997 SCSI-3 Interlocked Protocol

At the request of George Penokie, the committee agreed to defer consideration of this topic to the July meeting.

10.4 Recommendation that NCITS withdraw X3.277:1996 Fast-20

At the request of George Penokie, the committee agreed to defer consideration of this topic to the July meeting.

10.5 Recommendation that NCITS close the Project 0990-D, Common Access Method - 3 (CAM-3)

In light of the report provided by Bill Dallas (see 8.2), no motion was made to close the CAM-3 project. This item will be dropped from future agendas.

10.6 Recommendation that NCITS close the Project 1246-D, SCSI Socket/SSL Services Command Set (SSS)

John Lohmeyer reported that he notified Keith Parker of the T10 intention to close the SSS project due to lack of progress and had received no response.

Dal Allan moved that T10 recommend to NCITS that project 1246-D (SSS) be closed. Bill Galloway seconded the motion. The motion passed 31:0:0:16=47.

John Lohmeyer took an action item to notify NCITS that T10 recommends that project 1246-D (SSS) be closed.

10.7 Actions on Working Group Recommendations

10.7.1 Cable Testing Requirements (99-111) [Daggett]

John Lohmeyer pointed out that the January SPI-3 working group had passed a motion '...that the technical content of this proposal be adopted for cable media and be incorporated into SPI-3'. The referenced proposal was 99-111r0. John further noted that the January motion had carried 20:0:1.

George Penokie reported that Madison Cable has requested an opportunity to present data showing that some requirements changed by the 99-111r0 proposal should not be changed. Representatives of Madison Cable agreed to present the new data at a cable testing meeting scheduled for next week.

In absence of any objections, the committee deferred action on this proposal to the July meeting.

10.7.2 Packet Protocol Extensions (99-139r4) [Lamers/Penokie/Milligan]

Based on the unanimous recommendations of two working groups, George Penokie moved that 99-139r4 be approved for inclusion in SPI-3. Bill Galloway seconded the motion. In the absence of any objections, the motion passed unanimously.

10.7.3 Proposed Physical Layer Integrity Check Annex (98-235r4) [Lohmeyer]

John Lohmeyer reviewed the history of the proposal to add an informative Annex in SPI-3 describing physical layer integrity checking. He noted that the April SPI-3 working group recommended approval on a vote of 7:3:3. John Lohmeyer moved that 98-235r4 be approved for inclusion in SPI-3. Bill Galloway seconded the motion.

George Penokie moved to amend the motion to approve inclusion of all of 98-235r4 except all statements regarding margining. Jeff Williams seconded the motion to amend. George noted that margining is not thoroughly defined. John Lohmeyer pointed out that the working group, in effect, rejected a similar motion. He stated that companies are implementing margin checking and that removing the definition will not stop this work. Larry Lamers stated that no one has come to the meetings and shown that margining has value. He further noted that putting margining in an annex sets a level of expectation that cannot be met. Jeff Williams expressed similar concerns about including margining at this time.

The motion to amend passed 16:6:6.

George Penokie moved that the motion be amended to change the document where the proposal will be placed from SPI-3 to SPC-2. Larry Lamers seconded the motion. George and Larry accepted a friendly amendment from Ralph Weber changing 'SPC-2' to 'SPC-2 or SAM-2'. John Lohmeyer stated that this topic is specific to parallel SCSI only, thus the annex should be placed in SPI-3. Bob Snively supported John. The motion to amend failed 4:16:4:23=47.

The original motion (amended to remove discussion of margining) passed 19:3:5:20=47.

10.7.4 Protection for the Asynchronous Information Phases (99-119r3) [Evans & Leshay]

John Lohmeyer reported that the April working group recommended that 99-119 be incorporated in SPI-3. During the May working group, additional corrections were incorporated. Since the revised document has not been available for two weeks, John said that action on this item as been deferred to the July meeting, with additional consideration of the revised proposal to be scheduled for the July SPI-3 working group meeting. In the absence of any objections, action was deferred to the July meeting.

10.7.5 Fairness Feature Control in SPI-3 (99-160r1) [Elliott/Houlder]

In the absence of any objections, the committee agreed to defer consideration of this proposal to the July meeting.

10.7.6 Proposed Modifications to Annex A (99-174r0) [Aloisi/et.al.]

George reported that the April working group identified several inconsistencies in Annex A with 99-174r0 addressing those problems. Paul Aloisi moved that 99-174r0 be approved for inclusion in SPI-3. The motion passed

21:2:1:23=47. Gerry Houlder stated that his negative vote is based on concerns that the document does not show how changes affect compatibility with SPI-2.

10.7.7 Slow DT Timing Revision Proposal for SPI-3 (99-183r1) [Milligan]

In the absence of Gene Milligan, George Penokie moved that 99-183r1 be approved for inclusion in SPI-3. Bill Galloway seconded the motion. The motion passed 22:0:3:22=47.

10.7.8 Groundwork for Expander Communication (99-169r1) [Lamers/Bastiani]

Larry Lamers moved that 99-169r1 be approved for inclusion in SPI-3. Bill Galloway seconded the motion. In the absence of any objections, the motion passed unanimously.

10.7.9 Packetized cleanup and improvements (99-170r1) [Galloway]

Based on the unanimous recommendation of the working group, Bill Galloway moved that 99-170r1 be approved for inclusion in SPI-3. Gerry Houlder seconded the motion. In the absence of any objections, the motion passed unanimously.

10.7.10 Restrict QAS to Packetized (99-173r0) [Galloway]

Based on the unanimous recommendation of the working group, Bill Galloway moved that 99-173r0 be approved for inclusion in SPI-3. Larry Lamers seconded the motion. Jeff Williams noted that QAS has usefulness in both modes and he expressed a preference to fix QAS in non-packetized rather than throwing it out. Bill Galloway described the difficulty of fixing non-QAS mode related to the exponential increase in the number of cases to be studied. Larry Lamers stated an intention to continue studying the problem for possible future enhancements. The motion passed 16:1:4:26=47. Jeff Williams stated that his negative vote was based on issues he raised during the discussion of the motion.

10.7.11 SPI-3 Technical Changes (99-184r1) [Penokie]

George Penokie moved that 99-184r1 be approved for inclusion in SPI-3. John Lohmeyer seconded the motion.

Jeff Williams moved to amend the motion to approve inclusion of all items in 99-184r1 except those that disallow disconnects in the middle of a packet. Dal Allan seconded the motion. Jeff stated the belief that the amendment returns SPI-3 to the originally intended definition. George Penokie expressed the belief that mid-packet disconnects were never intended in the definition of packetized. Larry Lamers stated that breaking the packet runs counter to the design of packetized SCSI.

Dal Allan demonstrated that the argument boils down to whether parallel packets map to fibre channel frames or sequences. If sequences, then mid-packet disconnects should be allowed. If frames, then they should be disallowed.

The motion to amend failed 2:8:14:23=47.

The original motion passed 13:1:10:23=47. Jeff Williams stated that his negative vote was based on the proposed requirement that disconnects are not allowed in the middle of a packet.

10.7.12 Project Proposal for SPI-4 (Ultra320 SCSI) (99-140r3) [Lamers]

Larry Lamers reviewed the history of the SPI-4 project proposal. John Lohmeyer stated that George Penokie has volunteered to be the project editor for SPI-4. Larry Lamers moved that 99-140r3 be forwarded to NCITS as a new project proposal for a SPI-4 standard. Paul Aloisi seconded the motion. The motion passed 24:0:0:23=47.

John Lohmeyer took an action item to forward 99-140r3 to NCITS as a project proposal for SPI-4.

10.7.13 Fairness Feature Control in SPC-2 and FCP-2 (99-160r2) [Elliott/Houlder]

Rob Elliott moved that 99-160r2 be approved for inclusion in SPC-2 and FCP-2. Bill Galloway seconded the motion. The motion passed 20:0:0:27=47

10.7.14 Suggested changes to REPORT LUNS command for SPC-2 and SAM-2 (99-144r1) [Snively]

Based on the unanimous recommendation of the working group, Bob Snively moved that 99-144r1 be approved for inclusion in SPC-2 and SAM-2. Bill Galloway seconded the motion. The motion passed 24:0:0:23=47.

10.7.15 Still more on Persistent Reservations parts II and III in SPC-2 (99-182r1) [Coughlan]

Based on the unanimous recommendation of the working group, Tom Coughlan moved that 99-182r1 be approved for inclusion in SPC-2. Bill Galloway seconded the motion. The motion passed 24:0:0:23=47.

Based on a requested from Bob Snively, Ralph Weber agreed to take an action item to review editorially the second sentence of item c in clause 5.3.2.5.3 before including 99-182r1.

10.7.16 Make SEND command optional in processor command set in SPC-2 [Lamers]

Larry Lamers moved that the SEND command be made optional in the processor command set. Bob Snively seconded the motion. The committee discussed the usage of the SEND command. The motion passed 17:1:4:25=47. Jeff Williams stated that his negative vote was based on the absence of a written proposal.

10.8 Clarification of T10 Standards Development Policy and Procedures (94-198r3) [Milligan]

John Lohmeyer took an action item to arrange a conference call to discuss changes in 94-198r3 (T10 Standards Development Policy and Procedures).

10.9 Project Proposals for RMC and MMC-3 (99-154r1 and 99-153r1) [Roberts]

The committee reviewed 99-153r1 and requested some corrections. Ron Roberts moved that T10 forward 99-153r2 (r1 as modified) to NCITS as a new project proposal for MMC-3. Bob Snively seconded the motion. The motion passed 26:0:0:21=47.

Ron Roberts took an action item to prepare 99-153r2 for forwarding to NCITS as a new project proposal for MMC-3. John Lohmeyer took an action item to forward 99-153r2 to NCITS as a new project proposal for MMC-3.

The committee reviewed 99-154r1 and requested some corrections. Ron Roberts moved that T10 forward 99-154r2 (r1 as modified) to NCITS as a new project proposal for RMC (Reduced Multi-media Commands). Bob Snively seconded the motion. The motion passed 26:0:0:21=47.

Ron Roberts took an action item to prepare 99-154r2 for forwarding to NCITS as a new project proposal for RMC (Reduced Multi-media Commands). John Lohmeyer took an action item to forward 99-154r2 to NCITS as a new project proposal for RMC (Reduced Multi-media Commands).

10.10 Addition of Version Descriptors in SPC-2 [Snively]

Bob Snively moved that the following standards and draft standards be assigned version descriptor codes in SPC-2: FC-PLDA ANSI NCITS TR-19:1998, FC-PLDA T11/1162-DT revision 2.1, FC-FLA ANSI NCITS TR-20:1998, FC-FLA T11/1235-DT revision 7, FC-Tape T11/1315-DT revision 1.16, and FC-AL-2 T11/1133-D revision 7.0. Ralph Weber seconded the motion. In the absence of any objections, the motion passed unanimously.

Ralph Weber took an action item to assign SPC-2 version descriptor codes for FC-PLDA ANSI NCITS TR-19:1998, FC-PLDA T11/1162-DT revision 2.1, FC-FLA ANSI NCITS TR-20:1998, FC-FLA T11/1235-DT revision 7, FC-Tape T11/1315-DT revision 1.16, and FC-AL-2 T11/1133-D revision 7.0.

11. ISO

11.1 ISO Report [Milligan]

Gene Milligan was unable to attend. However, he provided an electronic report contained in 99-186r0. John Lohmeyer offered to read the report to the committee, but by unanimous consent, the committee waived the reading of the ISO report.

11.2 ISO Business [Milligan]

Gene Milligan (IR) was given an action item to contact Peter Johansson for a recommendation regarding whether SBP-2 should be submitted for ISO standardization and whether Peter is willing to edit the resulting ISO project.

John Lohmeyer moved that the IR be instructed to submit a NWIP and a CD contribution for RBC to ISO/IEC for consideration. Larry Lamers seconded the motion. The motion passed on a roll-call vote of 24:1:0:22=47, details of the vote are as follows:

Organization	Stat	Name	Yes	No	Abs	NP
Adaptec, Inc.	P	Mr. Lawrence J. Lamers	1			
AMP, Inc.	P	Mr. Scott Lindstrom				1
Amphenol Interconnect	P	Mr. Bill Mable				1
Ancot Corp.	P	Mr. Bart Raudebaugh				1
Apple Computer	A	Mr. Ron Roberts	1			
Berg Electronics	P	Mr. Douglas Wagner				1
BREA Technologies, Inc.	P	Mr. Bill Galloway	1			
Circuit Assembly Corp.	P	Mr. Ian Morrell				1
CMD Technology	P	Mr. Edward Haske				1
Compaq Computer Corp.	P	Mr. Robert C. Elliott	1			
Crossroads Systems, Inc.	A	Mr. Stephen K. Wilson	1			
Dallas Semiconductor	P	Mr. Charles Tashbook				1
Distributed Processing Tech.	P	Mr. Roger Cummings	1			
ENDL	P	Mr. I. Dal Allan		1		
Exabyte Corp.	P	Mr. Tom Jackson				1
Fujitsu (FCPA)	P	Mr. Ben-Koon Lin	1			
Harting, Inc. of N. America	P	Mr. Marcos Barrionuevo				1
Hewlett Packard Co.	P	Mr. J. R. Sims				1
Hitachi Cable Manchester	A	Ms. Jacqueline Sylvia	1			
Hitachi Storage Products	P	Mr. Anthony Yang				1
Honda Connectors	P	Mr. Thomas J. Kulesza				1
IBM Corp.	P	Mr. George O. Penokie	1			
Iomega Corp.	P	Mr. Tim Bradshaw				1
KnowledgeTek, Inc.	P	Mr. Dennis Moore	1			
Lasercard Systems Corp.	P	Mr. Hayden Smith				1
Linfinity Micro	P	Mr. Louis Grantham	1			
LSI Logic Corp.	P	Mr. John Lohmeyer	1			
Madison Cable Corp.	P	Ms. Jie Fan	1			
Maxtor Corp.	P	Mr. Pete McLean	1			
Methode Electronics, Inc.	P	Mr. Bob Masterson				1
Molex Inc.	P	Mr. Joe Dambach				1

Mylex Corp.	P	Mr. Brian McKean	1	
Ophidian Designs	P	Mr. Edward A. Gardner		1
Panasonic Technologies, Inc	P	Mr. Han Zou		1
Philips Electronics	P	Mr. William P. McFerrin	1	
QLogic Corp.	P	Mr. Skip Jones		1
Quantum Corp.	P	Mr. Mark Evans	1	
Seagate Technology	A	Mr. Gerald Houlder	1	
Silicon Systems, Inc.	P	Mr. Robert Morris	1	
Storage Technology Corp.	P	Mr. Erich Oetting	1	
Sun Microsystems Computer Co	P	Mr. Robert N. Snively	1	
The JPM Company	P	Mr. Bill Youngman		1
Toshiba America Elec. Comp.	P	Mr. Tasuku Kasebayashi	1	
UNISYS Corporation	P	Mr. Kenneth J. Hallam		1
Unitrode Corporation	P	Mr. Paul D. Aloisi	1	
Western Digital Corporation	P	Mr. Jeffrey L. Williams	1	
Woven Electronics	P	Mr. Doug Piper		1

24 1 0 22 = 47

Dal Allan stated that the reason for his negative vote was opposition to ISO rubber-stamping of ANSI standards.

Gene Milligan was given an action item to submit a NWIP and a CD contribution for RBC to ISO/IEC for consideration.

Erich Oetting moved to approve the T10 delegation to the WG 4 delegation to Berlin comprising Gene Milligan as the head of delegation. Jeff Williams seconded the motion. In the absence of any objections, the motion passed unanimously. John Lohmeyer noted that the T11 delegation is Kumar Malavali and Gene Milligan.

12. Liaison Reports

12.1 T11 Liaison Report [Cummings]

No report.

12.2 T13 Liaison Report [Milligan]

Gene Milligan provided the following electronic report for the minutes:

T13 met last week in Longmont hosted by Seagate.

Files Support for SMART Read/Write Logging and SMART Attributes and Thresholds (D99104r1) optional feature was unanimously voted to be incorporated in proposed the ATA/ATPI-5 draft standard.

Ultra DMA 66 proposal D98133r4 was unanimously incorporated in the ATA/ATAPI-5 draft and the issue of timings at the sender was added to the open issues list.

ATA/ATAPI-5 draft was reviewed and the next revision of 1321D was unanimously approved as working draft revision 1 and an appropriate minor revision number in the Identify data will be assigned. 11:0:0:8.

The current schedule was extended three months resulting in the letter ballot 8/99 with forwarding in 9/99 and public review in 11/99.

The EDD v3.0 New Technical project was approved by and project number 1386-D was assigned.

A page by page review of the initial proposal for a Method for Booting Reserved Area Boot Code standard was completed.

Two proposals for a Really Big LBA were reviewed. D98142R2 garnered general interest in pursuing as the approach to expanded LBA addressing.

CFA Set Features (D98144r2) was unanimously approved for inclusion in the ATA/ATAPI-5 draft.

An errata was approved correcting row alignment in Table 13 of ATA/ATAPI-4.

Pete McLean provided a liaison report that the EPA has posted a third revision of the MOU. There is no longer a specification for time from low power to active state. There is no time to ready requirements for disk drives. IDEMA will be having a meeting on May 10 to discuss power consumption by disk drives.

Circuit Assembly provided a letter offering to license their patents concerning the 80 line cable with the offer extended to license beyond member companies in accordance with the ANSI patent policy.

T13 is currently addressing issues regarding: ATA/ATAPI-5 Termination of the DMA protocols due to an error is not clear; can a device terminate a DMA transfer before the sector count is exhausted?; existing operating systems do not respect restriction 1) in 8.21.4, Packet command byte count limit may not be zero. Should ATA/ATAPI-5 be changed to remove this restriction?; both minimum receiver and sender timing is specified for Ultra DMA. Should the timing be at the receiver only or should it be reduced to be closer to the calculated budget?

A working group meeting was authorized for May 19-20 in San Jose CA, hosted by Phoenix Technologies.

The next plenary meeting of T13 is 22-25 June, 1999 hosted by Phoenix Technology at their facility in Irvine, California.

John Lohmeyer offered to read the report to the committee, but by unanimous consent, the committee waived the reading of the T13 liaison report.

12.3 SFF Industry Group [Allan]

Dal Allan provided the following electronic report for the minutes:

The HSS (High Speed Serial) Testing SSWG (Specific Subject Working Group) has finished its work on copper connectors, and the specification is almost complete. The SSWG will continue, and work on optical connectors.

The proposed recovery of 3.3V and Spindle Sync pins from SFF-8045 for SCA-2 (Single Connector Attach) Fibre Channel drives generated a number of requests for functions which appeared overwhelming. A solution was achieved which satisfied everybody present at the SSWG.

Although SFF-8441 for VHDCI (Very High Density Cable Interconnects) has been published, it will be revised to include the integrated EMI shielding proposed by Molex.

The issues on SFF-8420 for HSSDC (High Speed Serial Data Connector) appear to have been resolved. Since there is an interoperability issue with products presently in the field, the next revision will include the date on which each vendor believes its product was compliant to the SFF Specification.

INF-8090i for ATAPI DVD (Digital Video Disc) passed the ballot and will be distributed as an Information specification.

The SSWG recommended that the proposed 68-pin connector for Fibre Channel tape drives be ported to 80-pin SCA-2 because there may be other devices which need special pin assignments. A 68-pin SCA-2 is not available. Confusion with a 3 1/2" form factor SCSI device can be avoided by offsetting from centerline.

Dal Allan offered to make an oral report to the committee, but by unanimous consent, the committee waived presentation of the oral SFF liaison report.

12.4 IEEE 1394 [Johansson]

No report.

12.5 IEEE P1285 Status

No report.

12.6 IEEE P1596.8 Status

No report. The committee agreed to remove this item from future agendas.

12.7 SCSI Trade Association (STA) [Jones/Aloisi]

Paul Aloisi reported that the STA meeting program is going strong.

The STA web site is receiving many hits. The 'ask a SCSI expert' is receiving 10 to 15 questions per day. Paul's request for support regarding Apple questions brought discussion and suggestions from the committee.

Paul reported on the release of a SCSI roadmap in mid April and the several trade press articles that resulted. The committee discussed with Paul the general status of trade press articles, which are on the increase since formation of STA.

Paul noted that a new database of SCSI suppliers is coming to the STA web site, with direct links to each supplier's www home page.

Paul turned to the STA Tech activities and reported that SCSI Harbor prototypes are being built for testing, with the main building activities being performed by Intel and Silicon Graphics (SGI).

Paul reported that the next STA Marcom meeting has already begun at noon today and that the next STA Tech meeting will start after this meeting and will discuss primarily the SCSI Harbor activities.

13. Review of Action Items

- 306) Dave Peterson will prepare SSC revision 17 for letter ballot.
- 307) John Lohmeyer will conduct a letter ballot on SSC revision 17 for forwarding to first public review.
- 308) Ralph Weber will assign an SPC-2 version descriptor code to SSC revision 17.
- 309) Bob Snively will correspond with the one person who had responded to the reflector message in favor of retaining TTD and CIOP to solicit corrections for the known problems.
- 310) John Lohmeyer will notify NCITS that T10 recommends that project 1246-D (SSS) be closed.
- 311) John Lohmeyer will forward 99-140r4 to NCITS as a new project proposal for SPI-4.
- 312) Ralph Weber will review editorially the second sentence of item c in clause 5.3.2.5.3 before including 99-182r1.
- 313) John Lohmeyer will arrange a conference call to discuss changes in 94-198r3 (T10 Standards Development Policy and Procedures).
- 314) Ron Roberts will prepare 99-153r2 for forwarding to NCITS as a new project proposal for MMC-3.
- 315) John Lohmeyer will forward 99-153r2 to NCITS as a new project proposal for MMC-3.

- 316) Ron Roberts will prepare 99-154r2 for forwarding to NCITS as a new project proposal for RMC (Reduced Multi-media Commands).
- 317) John Lohmeyer will forward 99-154r2 to NCITS as a new project proposal RMC (Reduced Multi-media Commands).
- 318) Gene Milligan (IR) will contact Peter Johansson for a recommendation regarding whether SBP-2 should be submitted for ISO standardization and whether Peter is willing to edit for the resulting ISO project.
- 319) Gene Milligan will submit a NWIP and a CD contribution for RBC to ISO/IEC for consideration.
- 320) Ralph Weber took an action item to assign SPC-2 version descriptor codes for FC-PLDA ANSI NCITS TR-19:1998, FC-PLDA T11/1162-DT revision 2.1, FC-FLA ANSI NCITS TR-20:1998, FC-FLA T11/1235-DT revision 7, FC-Tape T11/1315-DT revision 1.16, and FC-AL-2 T11/1133-D revision 7.0.

14. Meeting Schedule

The next plenary meeting of T10 will be July 15, 1999 in Colorado Springs, CO at the Doubletree Hotel (719-576-8900), hosted by LSI Logic. The meeting will begin at 9:00 a.m. on Thursday.

The meeting list for the next plenary week is:

July '99 Meeting Map
(5/6/99 Version)

Monday 7/12	9	10	11	12	1	2	3	4	5	6	7	8	9			
	+-----+															
	RBC (if needed) SPI-3 WG												(50)			
	+-----+															
	T11.3 FC-AL-3 / FC-AL-2												(40)			
	+-----+															
	Mt. Fuji - 4 WG												(20)			
	+-----+															
Tuesday 7/13	9	10	11	12	1	2	3	4	5	6	7	8	9			
	+-----+															
	SPI-3 WG												(50)			
	+-----+															
	MMC-2 WG												(20)			
	+-----+															
	FC-AL-2					SSC/FCP-2/FC-Tape joint WG										(40)
	+-----+															
Wednesday 7/14	9	10	11	12	1	2	3	4	5	6	7	8	9			
	+-----+															
	SCSI WG												(50)			
	+-----+															
	MMC-2 WG												(20)			
	+-----+															
						SFF SSWGs				SFF				(40)		
	+-----+															
	T11 FC-VI												(15)			
	+-----+															
Thursday 7/15	9	10	11	12	1	2	3	4	5	6	7	8				
	+-----+															
	T10 Plenary										/ STA Tech (*)				(60/40)	
	+-----+															
						STA Marcom								(15)		
	+-----+															
(*) - STA Technical meeting (includes SCSI Harbor) begins 30 minutes after the T10 plenary meeting but not before 2:30 pm																
Friday 7/16	8	9	10	11	12	1	2	3	4	5						
	+-----+															
	SCSI Trade Association (STA)												(30)			
	+-----+															

Meetings marked with == are T10-authorized meetings.
Meetings marked with -- are authorized by other groups and may change without notice.

Other T10-authorized meetings:

Meeting	Date		Location / Contact

T10/T11.3 Joint Tape WG (FC-Tape, SSC, FCP-2)	6/9	Wed	Minneapolis, MN / T11
Cable Perf.	5/11	Tue	Manchester, NH / Zane Daggett
SPI-3 Edit	5/17 1:00pm	Mon	Colorado Springs, CO / John Lohmeyer

5/18 Tue
 SPI-3 Timing 5/26 1:00pm Wed Colorado Springs, CO / John Lohmeyer
 Budget 5/27 Thu
 CAM-3 6/29-30 Tue-Wed Nashua, NH / Bill Dallas or Larry Lamers

Meeting Map Abbreviation Key:

Amnd: Amendment
 CAM: Common Access Method
 CAM-3: Next generation CAM for SCSI-3
 EPI: SCSI Enhanced Parallel Interface (Technical Report)
 Encl Profile Enclosure Profile Study Group
 Fast-20: Data Transfer at 20 Mega-transfers/second (a.k.a., Ultra)
 Fast-40: Data Transfer at 40 Mega-transfers/second (a.k.a., Ultra2)
 Fast-80: Data Transfer at 80 Mega-transfers/second (a.k.a., Ultra3)
 FC: Fibre Channel
 FC-AL: Fibre Channel - Arbitrated Loop (a T11 project)
 FCLC: Fibre Channel Loop Community (not an NCITS activity)
 I/F: Interface
 HAP: High Availability Profile (Technical Report)
 LB: Letter Ballot
 MMC-2: Multimedia Commands - 2 (CD-ROM, DVD, etc.)
 PH: Physical (Connectors, Cables, Transceivers, etc.)
 Plenary: Full Committee Meeting
 RAID: Redundant Array of Independent Devices
 RBC: Reduced Block Commands
 SBC: SCSI-3 Block Commands
 SBP-2: Serial Bus Protocol for IEEE 1394 (2nd generation protocol)
 SCC-2: SCSI Controller Commands - 2 (2nd generation RAID command set)
 SCSI: Small Computer System Interface
 SES: SCSI Enclosure Services
 SCSI Harbor: A STA project on defining a wrapper for SCSI devices
 SFF: SFF Industry Group (not an NCITS activity)
 SG: Study Group
 SMC: SCSI-3 Medium Changer Commands
 SPC-2: SCSI Primary Commands - 2 (2nd generation)
 SPI-2: Second Generation SCSI Parallel Interface
 SPI-3: Third Generation SCSI Parallel Interface
 SSA: Serial Storage Interface
 SSC: SCSI-3 Stream Commands (includes Tape)
 SSWG: Specific-Subject Working Groups
 STA: SCSI Trade Association (not an NCITS activity)
 STA Tech: STA Technical Meeting (T10 members invited)
 T10: Lower Level Interfaces Technical Committee
 WG: Working Group (same as Ad Hoc Group)

For more information about T10 activities, please contact the following people:

Activity	Contact	Telephone/Email
CAM-3	Bill Dallas	(603) 881-2508 dallas@zk3.dec.com
EPI	Bill Ham	(508) 841-2629 bill.ham@digital.com
FCP, FCP-2, SES	Robert Snively	(415) 336-5332 Bob.Snively@eng.sun.com
GPP	Gary Stephens	(602) 321-1725

SBC	Gene Milligan	grsfsi@aol.com (405) 324-3070 gene_milligan@notes.seagate.com
MMC, MMC-2	Ron Roberts	(916) 677-5714 rkroberts@aol.com
SBP-2 or RBC	Pete McLean	(303) 678-2149 pete_mclean@maxtor.com
SBP-2	Peter Johansson	(510) 527-3926 pjohansson@aol.com
SCC-2, SPI-2, SPI-3	George Penokie	(507) 253-5208 gop@us.ibm.com
SMC	Erich Oetting	(303) 673-2178 Erich_Oetting@Stortek.com
SPC, SPC-2, SAM-2	Ralph Weber	(972) 503-3205 x228 roweber@acm.org
SSA-PH1, -PH2, -TL1, -TL2	Larry Lamers	(408) 957-7817 ljlammers@ix.netcom.com
SSA-S2P & -S3P	John Scheible	(512) 823-8208 Scheible@vnet.ibm.com
SSC	Dave Peterson	(612) 391-1008 dap@network.com
Other Activities	John Lohmeyer	(719) 533-7560 lohmeier@ix.netcom.com

The long-term T10 meeting week schedule is:

Date	Location	Host/Comments
Jul 12-16, 1999	Colorado Springs, CO	LSI Logic
Sep 13-17, 1999	Huntington Beach, CA	QLogic
Nov 1-5, 1999	Monterey, CA	Adaptec / dates changed
Jan 10-14, 2000	Brisbane, Australia	ENDL Pacific Technologies
Mar 6-10, 2000	Dallas, TX	Unitrode
May 8-12, 2000	Manchester, NH	Hitachi Cable
Jul 10-14, 2000	Colorado Springs, CO	LSI Logic
Sep 11-15, 2000	Huntington Beach, CA	QLogic
Oct 30-Nov 3, 2000	Monterey, CA	Adaptec / dates changed

John Lohmeyer presented a preliminary 2001 meeting schedule and asked committee members and potential hosts to come prepared to finalize the dates at the July meeting. The preliminary 2001 meeting schedule presented by John was:

Jan 15-19, 2001
 Mar 5-9, 2001
 May 7-11, 2001
 Jul 16-20, 2001
 Sep 10-14, 2001
 Nov 5-9, 2001

14.1 Authorization of Working Group Meetings

John noted that the working group meetings are required to operate under the same voting procedures as does T10 (that is, one vote per organization) and the results of a working group are not binding on the parent committee. Ad hoc groups should strive to achieve consensus prior to bringing issues to T10.

Erich Oetting moved that T10 authorize the T10-related meetings and events in the list above. Gerry Houlder seconded the motion. In the absence of any objections, the motion passed unanimously.

14.2 Increasing T10's Maximum Hotel Room Rate

Bob Snively moved that the T10 room night rate cap be increased to \$175 including taxes and parking. Paul Aloisi seconded the motion. The motion passed 20:0:3:24=47.

15. Adjournment

The meeting was adjourned at 1:30 p.m. on Thursday May 6, 1999.

Meeting Attendees -- Enclosure (1)

Name	S	Organization	Electronic Mail Address
Mr. Lawrence J. Lamers	P	Adaptec, Inc.	ljlamers@ieee.org
Mr. Bill Mable	P	Amphenol Interconnect	bmable@spectra.net
Mr. Gregg Neely	O	Andataco	greggn@andataco.com
Mr. Ron Roberts	A	Apple Computer	rkroberts@aol.com
Mr. Douglas Wagner	P	Berg Electronics	wagnerdl@bergelect.com
Mr. Bill Galloway	P	BREA Technologies, Inc.	billg@breatech.com
Mr. Dennis Lang	A	Circuit Assembly Corp.	dennisl@circuitassembly.com
Mr. Robert C. Elliott	P	Compaq Computer Corp.	Robert.Elliott@compaq.com
Mr. Tom Coughlan	V	Compaq Computer Corp.	tom.coughlan@digital.com
Mr. Stephen K. Wilson	A	Crossroads Systems, Inc.	steve@crossroads.com
Mr. Charles Tashbook	P	Dallas Semiconductor	charles.tashbook@dalsemi.com
Mr. Roger Cummings	P	Distributed Processing Tech.	cummings_roger@dpt.com
Mr. I. Dal Allan	P	ENDL	endlcom@ibm.net
Mr. Ben-Koon Lin	P	Fujitsu (FCPA)	blin@fcpa.fujitsu.com
Ms. Jacqueline Sylvia	A	Hitachi Cable Manchester	jsylvia@hcm.hitachi.com
Mr. Zane Daggett	P	Hitachi Cable Manchester, Inc	zdaggett@hcm.hitachi.com
Mr. George O. Penokie	P	IBM Corp.	gop@us.ibm.com
Mr. Dan Colegrove	A#	IBM Corp.	colegrov@us.ibm.com
Mr. Tim Bradshaw	P	Iomega Corp.	bradshat@iomega.com
Mr. Dennis Moore	P	KnowledgeTek, Inc.	dmoore@ix.netcom.com
Mr. Louis Grantham	P	Linfinit Micro	lgrantham@linfinity.com
Mr. John Lohmeyer	P	LSI Logic Corp.	lohmeier@ix.netcom.com
Mr. Ralph O. Weber	A	LSI Logic Corp.	roweber@acm.org
Ms. Jie Fan	P	Madison Cable Corp.	jfan@madisoncable.com
Mr. Chuck Grant	A	Madison Cable Corp.	cgrant@madisoncable.com
Mr. Pete McLean	P	Maxtor Corp.	pete_mclean@maxtor.com
Mr. Charley Riegger	A	Maxtor Corp.	charles_riegger@maxtor.com
Mr. Jay Neer	A	Molex Inc.	jneer@molex.com
Mr. Allen King	A	Mylex Corp.	allenk@mylex.com
Mr. Han Zou	P	Panasonic Technologies, Inc	hanzou@research.panasonic.com
Mr. William P. McFerrin	P	Philips Electronics	BMcFerrin@aol.com
Mr. Keiji Katata	V	Pioneer Electronic Corp.	keiji_Katata@post.pioneer.co.jp
Mr. Takeshi Kohda	V	Pioneer Electronics Corp.	takeshi_kohda@post.pioneer.co.jp
Mr. Toshiro Tanikawa	V	Pioneer Electronics Corp.	tanikawa@post.pioneer.co.jp
Mr. Mark Evans	P	Quantum Corp.	mark.evans@quantum.com
Mr. Gerald Houlder	A	Seagate Technology	Gerry_Houlder@notes.seagate.com
Mr. Robert Morris	P	Silicon Systems, Inc.	bob.morris@ti.com
Mr. Paresh Sheth	V	Silicon Systems, Inc.	paresh.sheth@ti.com
Mr. Erich Oetting	P	Storage Technology Corp.	erich_oetting@stortek.com
Mr. Robert N. Snively	P	Sun Microsystems Computer Co	bob.snively@sun.com
Mr. Tasuku Kasebayashi	P	Toshiba America Elec. Comp.	task.kasebayashi@taec.toshiba.com
Mr. Kenneth J. Hallam	P	UNISYS Corporation	ken.hallam@unisys.com

Mr. Paul D. Aloisi	P	Unitrode Corporation	aloisi@unitrode.com
Mr. Richard S. DeMars	V	Unitrode Corporation	demars@unitrode.com
Mr. Jeffrey L. Williams	P	Western Digital Corporation	Jeffrey.L.Williams@wdc.com
Mr. Masahiro Ito	V	Yamagata Fujitsu Ltd.	mike@yfl.cs.fujitsu.co.jp

46 People Present

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

T10 Attendance Database on 1999/05/11 at 22:41:34 -- Enclosure (2)

Mr. Lawrence J. Lamers (P) Phone: (408) 957-7817
Adaptec, Inc. Fax: (408) 957-7193
691 S. Milpitas Blvd. Email: ljlammers@ieee.org
Milpitas, CA 95035

Mr. Vincent Bastiani (A#) Phone: (408) 957-7153
Adaptec, Inc. Fax:
691 S. Milpitas Blvd. Email: bastiani@corp.adaptec.com
Milpitas, CA 95035

Mr. Wally Bridgewater (A#) Phone: (408) 945-8600
Adaptec, Inc. Fax:
691 S. Milpitas Blvd. Email: wally@eng.adaptec.com
Milpitas, CA 95035

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T10 Document Database on 1999/05/11 at 22:40:45 -- Enclosure (3)

T10/99-001R0	Date: 1999/03/18	Author: John Lohmeyer	Mailing: 1999_1
Agenda for T10 Meeting #31 (May '99)			
T10/99-001R1	Date: 1999/03/24	Author: John Lohmeyer	Mailing: 1999_1
Agenda for T10 Meeting #31 (May '99)			
T10/99-002R0	Date: 1999/03/18	Author: John Lohmeyer	Mailing: 1999_1
T10 Project Summary - Mar '99			
T10/99-003R0	Date: 1999/03/18	Author: John Lohmeyer	Mailing: 1999_1
Jeopardy letter for May '99 meeting			
T10/99-004R0	Date: 1999/05/11	Author: John Lohmeyer	Mailing: 1999_2
Agenda for T10 Meeting #32 (July '99)			
T10/99-005R0	Date: 1999/05/11	Author: John Lohmeyer	Mailing: 1999_2
T10 Project Summary - May '99			
T10/99-006R0	Date: 1999/05/11	Author: John Lohmeyer	Mailing: 1999_2
Jeopardy letter for July '99 meeting			
T10/99-101R0	Date: 1998/12/04	Author: Ron Roberts	Mailing: 1999_1
Minutes of MMC-2 Working Group - 11/30 - 12/2/98			
T10/99-102R0	Date: 1998/12/08	Author: Larry Lamers	Mailing: 1999_1
Unexpected Bus Free Timeout Function			
T10/99-102R1	Date: 1999/01/25	Author: Larry Lamers	Mailing: 1999_1
UBF Timeout Function			
T10/99-102R2	Date: 1999/01/27	Author: Larry Lamers	Mailing: 1999_1
Synchronous Transfer Timeout Function			
T10/99-102R3	Date: 1999/01/28	Author: Larry Lamers	Mailing: 1999_1
STT Timeout Function			
T10/99-102R4	Date: 1999/02/05	Author: Larry Lamers	Mailing: 1999_1
STT Timeout Function			
T10/99-102R5	Date: 1999/03/10	Author: Larry Lamers	Mailing: 1999_1
STT Timeout Function			
T10/99-103R0	Date: 1998/12/17	Author: John Lohmeyer	Mailing: 1999_1
Minutes of SPI-3 Working Group - January 26-27, 1999			
T10/99-104R0	Date: 1999/01/10	Author: George Penokie	Mailing: 1999_1
Message Information Unit Definition			
T10/99-104R1	Date: 1999/03/09	Author: George Penokie	Mailing: 1999_1
Message Information Unit Definition			
T10/99-105R0	Date: 1999/01/06	Author: Stewart Wyatt	Mailing: 1999_1
Minutes of Fibre Channel Tape Profile Meeting - 12/16/98			
T10/99-106R0	Date: 1999/01/06	Author: Penman, Mottahedin, Nazir, & Moore	Mailing: 1999_1

Case Study: Fast-80 Setup and Hold Timings

T10/99-107R0 Date: 1998/12/10 Author: ISO/IEC JTC 1/SC Mailing: 1999_1
25
Optical Memory Card Device Commands (SCSI OMC)

T10/99-108R0 Date: 1999/01/07 Author: John Lohmeyer Mailing: 1999_1
Clarification of interaction of SDTR/WDTR messages with PPR message

T10/99-108R1 Date: 1999/01/27 Author: John Lohmeyer Mailing: 1999_1
Clarification of interaction of SDTR/WDTR messages with PPR message

T10/99-108R2 Date: 1999/02/09 Author: John Lohmeyer Mailing: 1999_1
Clarification of interaction of SDTR/WDTR messages with PPR message

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Clarification of interaction of SDTR/WDTR messages with PPR message

T10/99-109R0 Date: 1999/01/07 Author: John Lohmeyer Mailing: 1999_1
Clarification of MODIFY DATA POINTER message

T10/99-110R0 Date: 1999/01/07 Author: Gene Milligan Mailing: 1999_1
SCSI Version Proposal Flavor Two for SPC-2

T10/99-110R1 Date: 1999/03/04 Author: Gene Milligan Mailing: 1999_1
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T10/99-111R0 Date: 1999/01/26 Author: Zane Daggett Mailing: 1999_1
Recommended changes to SPI-3 Tables

T10/99-112R0 Date: 1999/01/22 Author: Bill Galloway Mailing: 1999_1
Synchronous ATN timing

T10/99-112R1 Date: 1999/03/07 Author: Bill Galloway Mailing: 1999_1
Synchronous ATN timing

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Synchronous ATN timing

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DiffSense Timing

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DiffSense Timing

T10/99-114R0 Date: 1999/01/22 Author: Bill Galloway Mailing: 1999_1
LVD Receiver offset voltage

T10/99-115R0 Date: 1999/01/22 Author: Keld Simonsen Mailing: 1999_1
Tips & Techniques for JTC 1 web-based distribution

T10/99-116R0 Date: 1999/01/22 Author: Jie Fan Mailing: 1999_1
Cable Testing Requirements

T10/99-116R1 Date: 1999/01/26 Author: Jie Fan Mailing: 1999_1
Cable Testing Requirements

T10/99-117R0 Date: 1999/01/22 Author: ISO Mailing: 1999_1
ISO's long-range strategies 1999-2001

T10/99-118R0 Date: 1999/01/25 Author: Jim McGrath Mailing: 1999_1
Common CRC for DT and Packetized SCSI

T10/99-119R0 Date: 1999/02/26 Author: Jim McGrath Mailing: 1999_1
Protection for the Asynchronous Information phases (Command, Message, Status)

T10/99-119R1 Date: 1999/03/05 Author: Jim McGrath Mailing: 1999_1
Protection for the Asynchronous Information phases (Command, Message, Status)

T10/99-119R2 Date: 1999/04/06 Author: Mark Evans and Bruce Leshay Mailing: 1999_2
Protection for the Asynchronous Information phases (Command, Message, Status)

T10/99-119R3 Date: 1999/04/21 Author: Mark Evans and Bruce Leshay Mailing: 1999_2
Protection for the Asynchronous Information phases (Command, Message, Status)

T10/99-119R4 Date: 1999/04/23 Author: Mark Evans and Bruce Leshay Mailing: 1999_2
Protection for the Asynchronous Information phases (Command, Message, Status)

T10/99-120R0 Date: 1999/01/22 Author: Gene Milligan Mailing: 1999_1
SCSI ATN Timing Sort of Proposal for SPI-3

T10/99-121R0 Date: 1999/02/10 Author: Rob Sims Mailing: 1999_1
Mt. Fuji Commands for Multimedia Devices

T10/99-122R0 Date: 1999/01/25 Author: Frank Gasparik Mailing: 1999_1
SPI-3 LVD Setup/Hold Time Issues

T10/99-123R0 Date: 1999/01/26 Author: Vince Bastiani Mailing: 1999_1
Setup and Hold Time Measurements

T10/99-124R0 Date: 1999/01/24 Author: Bruce Leshay Mailing: 1999_1
Packetized CRC Proposal

T10/99-125R0 Date: 1999/01/27 Author: Ron Roberts Mailing: 1999_1
Minutes of MMC-2 Working Group - 1/25-27/99

T10/99-126R0 Date: Author: Mailing:
not used

T10/99-127R0 Date: 1999/01/27 Author: Paul Aloisi Mailing: 1999_1
Proposed changes to SPI-3 LVD AC timing diagrams

T10/99-127R1 Date: 1999/01/28 Author: Paul Aloisi Mailing: 1999_1
Proposed changes to SPI-3 LVD AC timing diagrams

T10/99-127R2 Date: 1999/03/09 Author: Paul Aloisi Mailing: 1999_1
LVD Timing Diagram Correction

T10/99-127R3 Date: 1999/03/09 Author: Paul Aloisi Mailing: 1999_1

LVD Timing Diagram Correction

T10/99-127R4 Date: 1999/03/09 Author: Paul Aloisi Mailing: 1999_1
LVD Timing Diagram Correction

T10/99-127R5 Date: 1999/05/05 Author: Paul Aloisi Mailing: 1999_2
LVD Timing Diagram Correction

T10/99-128R0 Date: 1999/02/02 Author: Hayden Smith Mailing: 1999_1
Comments on Draft 14776-381 (SCSI OMC)

T10/99-128R1 Date: 1999/03/16 Author: Hayden Smith Mailing: 1999_1
Comments on Draft 14776-381 (SCSI OMC)

T10/99-129R0 Date: 1999/02/02 Author: Ralph Weber & George Penokie Mailing: 1999_1
Minutes of SPC-2 Working Group - 1/28/99

T10/99-130R0 Date: 1999/02/10 Author: George Penokie Mailing: 1999_1
Changes to INQUIRY

T10/99-130R1 Date: 1999/03/10 Author: George Penokie Mailing: 1999_1
Changes to INQUIRY

T10/99-131R0 Date: 1999/02/05 Author: Tariq Abou-Jeyab / Vince Bastiani Mailing: 1999_1
Setup and hold time measurements for Ultra 160/m

T10/99-132R0 Date: 1999/03/07 Author: Bill Galloway Mailing: 1999_1
Removing zero length data transfers with CRC

T10/99-133R0 Date: 1999/03/07 Author: Bill Galloway Mailing: 1999_1
Timing for SCSI RST line

T10/99-134R0 Date: 1999/03/07 Author: Bill Galloway Mailing: 1999_1
PPR Protocol options negotiation

T10/99-134R1 Date: 1999/03/13 Author: Bill Galloway Mailing: 1999_1
PPR Protocol options negotiation

T10/99-135R0 Date: 1999/03/16 Author: Weber & Lohmeyer Mailing: 1999_1
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Minutes of SPI-3 Working Group - March 9, 1999

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T10/99-137R0 Date: 1999/03/17 Author: Weber & Lohmeyer Mailing: 1999_1
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T10/99-138R0 Date: 1999/02/09 Author: Larry Lamers Mailing: 1999_1
Patent Letter for SPI-3 from Adaptec

T10/99-139R0 Date: 1999/03/04 Author: Gene Milligan, Mailing: 1999_1

George Penokie,
& Larry Lamers

Packet Protocol Extensions

T10/99-139R1 Date: 1999/03/10 Author: Gene Milligan, George Penokie, & Larry Lamers Mailing: 1999_1

Packet Protocol Extensions

T10/99-139R2 Date: 1999/03/10 Author: Gene Milligan, George Penokie, & Larry Lamers Mailing: 1999_1

Packet Protocol Extensions

T10/99-139R3 Date: 1999/03/15 Author: Gene Milligan, George Penokie, & Larry Lamers Mailing: 1999_1

Packet Protocol Extensions

T10/99-139R4 Date: 1999/04/08 Author: Gene Milligan, George Penokie, & Larry Lamers Mailing: 1999_2

Packet Protocol Extensions

T10/99-140R0 Date: 1999/02/28 Author: Larry Lamers Mailing: 1999_1
Project Proposal for SCSI Parallel Interface - 4 (SPI-4)

T10/99-140R1 Date: 1999/03/24 Author: Larry Lamers Mailing: 1999_1
Project Proposal for SCSI Parallel Interface - 4 (SPI-4)

T10/99-140R2 Date: 1999/05/06 Author: Larry Lamers Mailing: 1999_2
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T10/99-140R3 Date: 1999/05/06 Author: Larry Lamers Mailing: 1999_2
Project Proposal for SCSI Parallel Interface - 4 (SPI-4)

T10/99-141R0 Date: 1999/02/26 Author: Larry Lamers Mailing: 1999_2
A Common CRC Method for Packetized and Legacy Devices

T10/99-142R0 Date: 1999/02/26 Author: Larry Lamers Mailing: 1999_2
System Considerations for Parallel SCSI

T10/99-143R0 Date: 1999/03/02 Author: Steve Wilson Mailing: 1999_1
Extended Copy Command

T10/99-143R1 Date: 1999/04/02 Author: Steve Wilson Mailing: 1999_2
Extended Copy Command

T10/99-144R0 Date: 1999/03/01 Author: Bob Snively Mailing: 1999_1
Suggested changes to REPORT LUNS command for SPC-2

T10/99-144R1 Date: 1999/03/15 Author: Bob Snively Mailing: 1999_1
Suggested changes to REPORT LUNS command for SPC-2

T10/99-145R0 Date: 1999/03/01 Author: Stewart Wyatt Mailing: 1999_1
Minutes of Joint T11/T10 FC-TAPE Meeting - 2/10-11/99

T10/99-146R0 Date: 1999/03/02 Author: Bob Snively Mailing: 1999_1
Correction in interaction of persistent and legacy reservations

T10/99-146R1 Date: 1999/03/15 Author: Bob Snively Mailing: 1999_1
Correction in interaction of persistent and legacy reservations

T10/99-147R0 Date: 1999/03/05 Author: Bob Snively Mailing: 1999_1
Make CT and TTD obsolete

T10/99-148R0 Date: 1999/03/18 Author: Ian 'Sid' Mailing: 1999_1
Crighton
Memory in Cartridge proposal

T10/99-149R0 Date: 1999/03/08 Author: Bill Ham Mailing: 1999_1
Revised SPI-3 Timing Diagram

T10/99-150R0 Date: 1999/03/08 Author: Richard Mailing: 1999_1
Tomaszewski, Tom
Grieff, & Rob
Elliott
Justification for asynchronous information phase protection

T10/99-151R0 Date: 1999/03/04 Author: Gene Milligan, Mailing: 1999_1
George Penokie,
and Larry Lamers
Packet Protocol Extensions Illustrations (see 99-139r3)

T10/99-152R0 Date: 1999/03/09 Author: Ron Roberts Mailing: 1999_1
Minutes of MMC-2 Working Group - 3/9-10/99

T10/99-153R0 Date: 1999/05/06 Author: Ron Roberts Mailing: 1999_2
Project Proposal for MMC-3

T10/99-153R1 Date: 1999/05/06 Author: Ron Roberts Mailing: 1999_2
Project Proposal for MMC-3

T10/99-153R2 Date: 1999/05/06 Author: Ron Roberts Mailing: 1999_2
Project Proposal for MMC-3

T10/99-154R0 Date: 1999/05/06 Author: Ron Roberts Mailing: 1999_2
Project Proposal for RMC

T10/99-154R1 Date: 1999/05/06 Author: Ron Roberts Mailing: 1999_2
Project Proposal for RMC

T10/99-154R2 Date: 1999/05/06 Author: Ron Roberts Mailing: 1999_2
Project Proposal for RMC

T10/99-155R0 Date: 1999/03/09 Author: Gene Milligan Mailing: 1999_1
Timing Diagram

T10/99-156R0 Date: 1999/03/09 Author: Bill Ham and Mailing: 1999_1
Zane Daggett
Report from the SCSI Cable Testing Ad hoc -- March 2, 1999

T10/99-157R0 Date: 1999/03/10 Author: Bruce Leshay Mailing: 1999_1
Proposed edit to SPI-3 on P_CRCA transitions during DT transfers

T10/99-157R1 Date: 1999/03/17 Author: Bruce Leshay Mailing: 1999_2
Proposed edit to SPI-3 on P_CRCA transitions during DT transfers

T10/99-158R0	Date: 1999/03/10	Author: Bob Snively	Mailing: 1999_1
Very long CDBs in FCP-2 and SPI-3			
T10/99-158R1	Date: 1999/03/15	Author: Bob Snively	Mailing: 1999_1
Very long CDBs in FCP-2 and SPI-3			
T10/99-158R2	Date: 1999/03/17	Author: Bob Snively	Mailing: 1999_1
Very long CDBs in FCP-2 and SPI-3			
T10/99-158R3	Date: 1999/03/17	Author: Bob Snively	Mailing: 1999_2
Very long CDBs in FCP-2 and SPI-3			
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Very long CDBs in FCP-2 and SPI-3			
T10/99-159R0	Date: 1999/03/09	Author: Dale LaFollette	Mailing: 1999_1
Joint T10/T11 FC-TAPE / SSC / FCP-2 Liaison Report			
T10/99-160R0	Date: 1999/04/01	Author: Rob Elliott & Gerry Houlder	Mailing: 1999_2
Arbitration Fairness Control (in SPC-2/SPI-3/FCP-2)			
T10/99-160R1	Date: 1999/04/21	Author: Rob Elliott & Gerry Houlder	Mailing: 1999_2
Arbitration Fairness Control (in SPC-2/SPI-3/FCP-2)			
T10/99-160R2	Date: 1999/05/05	Author: Rob Elliott & Gerry Houlder	Mailing: 1999_2
Arbitration Fairness Control (in SPC-2/SPI-3/FCP-2)			
T10/99-161R0	Date: 1999/03/11	Author: Larry Lamers	Mailing: 1999_1
Meeting Notice - SPI-3 Working Group 4/7-8/99			
T10/99-162R0	Date: 1999/03/15	Author: Stewart Wyatt	Mailing: 1999_1
Minutes of Joint T11/T10 FC-TAPE Meeting - 3/9/99			
T10/99-163R0	Date: 1999/05/01	Author: Ralph Weber	Mailing: 1999_2
Comments on Extended Copy			
T10/99-164R0	Date: 1999/03/11	Author: Gene Milligan	Mailing: 1999_1
ISO Report for March 1999			
T10/99-165R0	Date: 1999/03/22	Author: Lamers and Lohmeyer	Mailing: 1999_1
CONTINUE TASK Message			
T10/99-166R0	Date: 1999/03/24	Author: Larry Lamers	Mailing: 1999_1
Enabling Upper Byte Hamming			
T10/99-166R1	Date: 1999/03/26	Author: Larry Lamers	Mailing: 1999_2
Enabling Upper Byte Hamming			
T10/99-166R2	Date: 1999/03/31	Author: Larry Lamers	Mailing: 1999_2
Enabling Upper Byte Hamming			
T10/99-166R3	Date: 1999/04/07	Author: Larry Lamers	Mailing: 1999_2
Enabling Upper Byte Hamming			
T10/99-167R0	Date: 1999/04/08	Author: John Lohmeyer	Mailing: 1999_2

Minutes of SPI-3 Working Group - April 7-8, 1999

T10/99-167R1 Date: 1999/04/13 Author: John Lohmeyer Mailing: 1999_2
Minutes of SPI-3 Working Group - April 7-8, 1999

T10/99-168R0 Date: 1999/03/15 Author: Bob Snively Mailing: 1999_2
FCP-2 changes from revision 0 to revision 1

T10/99-168R1 Date: 1999/03/31 Author: Bob Snively Mailing: 1999_2
FCP-2 changes from revision 0 to revision 1

T10/99-168R2 Date: 1999/04/27 Author: Bob Snively Mailing: 1999_2
FCP-2 changes from revision 0 to revision 1

T10/99-169R0 Date: 1999/03/31 Author: Larry Lamers & Vince Bastiani Mailing: 1999_2
Groundwork for Expander Communication

T10/99-169R1 Date: 1999/04/08 Author: Larry Lamers & Vince Bastiani Mailing: 1999_2
Groundwork for Expander Communication

T10/99-170R0 Date: 1999/04/04 Author: Bill Galloway Mailing: 1999_2
Packetized cleanup and improvements

T10/99-170R1 Date: 1999/04/09 Author: Bill Galloway Mailing: 1999_2
Packetized cleanup and improvements

T10/99-171R0 Date: 1999/04/07 Author: Bill Ham Mailing: 1999_2
Implied Assumptions in SPI-3 Timing Budget

T10/99-172R0 Date: 1999/04/07 Author: Bill Ham & Zane Daggett Mailing: 1999_2
Report on April 6th Cable Performance meeting

T10/99-173R0 Date: 1999/04/08 Author: Bill Galloway Mailing: 1999_2
Restrict QAS to Packetized

T10/99-174R0 Date: 1999/04/12 Author: George Penokie Mailing: 1999_2
Annex A Modification

T10/99-175R0 Date: 1999/05/07 Author: Weber & Lohmeyer Mailing: 1999_2
Minutes of SPI-3 Working Group - May 2-3, 1999

T10/99-175R1 Date: 1999/05/10 Author: Weber & Lohmeyer Mailing: 1999_2
Minutes of SPI-3 Working Group - May 2-3, 1999

T10/99-176R0 Date: 1999/05/10 Author: Weber & Lohmeyer Mailing: 1999_2
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T10/99-177R0 Date: 1999/04/16 Author: Weber & Lohmeyer Mailing: 1999_2
Minutes of T10 Plenary Meeting #31 - May 6, 1999

T10/99-178R0 Date: 1999/04/20 Author: Stewart Wyatt Mailing: 1999_2
Minutes of Joint T11/T10 FC-Tape Working Group - April 14-15, 1999

T10/99-179R0 Date: 1999/04/26 Author: Mark Evans Mailing: 1999_2
Hard Drive Self Tests

T10/99-180R0 Date: 1999/04/22 Author: Gerry Houlder Mailing: 1999_2
Application Client Log Page proposal

T10/99-181R0 Date: 1999/04/23 Author: Rob Elliott and Mailing: 1999_2
Carl Zeitler
SSC Compression Algorithm default values

T10/99-182R0 Date: 1999/04/27 Author: Tom Coughlan Mailing: 1999_2
Still more on Persistent Reservations

T10/99-182R1 Date: 1999/05/05 Author: Tom Coughlan Mailing: 1999_2
Still more on Persistent Reservations

T10/99-183R0 Date: 1999/04/27 Author: Gene Milligan Mailing: 1999_2
Slow DT Timing Revision Proposal for SPI-3

T10/99-183R1 Date: 1999/05/02 Author: Gene Milligan Mailing: 1999_2
Slow DT Timing Revision Proposal for SPI-3

T10/99-184R0 Date: 1999/04/29 Author: George Penokie Mailing: 1999_2
Miscellaneous SPI-3 Technical Changes

T10/99-184R1 Date: 1999/04/29 Author: George Penokie Mailing: 1999_2
Miscellaneous SPI-3 Technical Changes

T10/99-185R0 Date: 1999/05/01 Author: Rob Elliott & Mailing: 1999_2
Keith Childs
Change CRC timing values

T10/99-186R0 Date: 1999/05/03 Author: Gene Milligan Mailing: 1999_2
ISO Report for May 1999

T10/99-187R0 Date: 1999/05/10 Author: John Lohmeyer Mailing: 1999_2
Proposal to change MSE High-Z Current Specification in SPI-3

T10/99-188R0 Date: 1999/05/04 Author: Dan Smith Mailing: 1999_2
SPI-3 Section 7 Table Redefinition

T10/99-189R0 Date: 1999/05/05 Author: Gerry Houlder Mailing: 1999_2
SBC-2: Clarification of ECC Correction Span Field (>255 bits)

T10/99-190R0 Date: 1999/05/06 Author: Ron Roberts Mailing: 1999_2
Minutes of MMC-2 Working Group - May 3-4, 1999

T10/99-191R0 Date: 1999/05/10 Author: Richard Moore Mailing: 1999_2
Release Glitch Management for QAS

T10/99-192R0 Date: 1999/05/11 Author: Barry Blount Mailing: 1999_2
Compaq patent position re US Patent 5,586,272 pertaining to SPI-2

T10/99-193R0 Date: 1999/05/11 Author: Stewart Wyatt Mailing: 1999_2
Minutes of Joint T10/T11 FC_TAPE Meeting - May 4, 1999