

T10/98-005 R0

Voting Results on T10 Letter Ballot 97-038r0 on
Forwarding SBP-2 to first public review

Organization	Name	S	Vote	Add'l	Info
Adaptec, Inc.	Lawrence J. Lamers	P	YesC	Cmnts	
AMP, Inc.	Charles Brill	P	Yes		
Amphenol Interconnect	Michael Wingard	P	Yes		
Ancot Corp.	Gary Porter	P	Yes		
Apple Computer	Harlan Andrews	P	Yes		
Berg Electronics	Doug Wagner	P	Yes		
Cable Design Technologies	richard wagner	P	Yes		
Ciprico Inc.	Gerry Johnsen	P	Yes		
Circuit Assembly Corp.	Ian Morrell	P	Yes		
Tandem, a Compaq Company	Pete Tobias	P	Yes		
Congruent Software, Inc.	Peter Johansson	P	YesC	Cmnts	
Dallas Semiconductor	Charles Tashbook	P	Yes		
Data General / Clariion	Gary S. Peterson	P	Yes		
Digital Equipment Corp.	Douglas Hagerman	P	Yes		
Diogenes SCSI	Keith W. Parker	P	Yes		
Distributed Processing Tech.			DNV		
Eastman Kodak Co.	Robert Reisch	P	Yes		
ENDL	I D Allan	P	Yes		
Exabyte Corp.	Constance L. Kephart	P	Yes		
FSI Consulting Services			DNV		
Fujitsu	Chris Nieves	P	Yes		
Harting, Inc. of N. America	Marcos Barrionuevo	P	Yes		
Hewlett Packard Co.	J. R. Sims, III	P	Yes		
Hitachi Cable Manchester, Inc	Zane Daggett	P	Yes		
Hitachi Storage Products	Anthony Yang	P	Yes		
Honda Connectors	Thomas J. Kulesza	P	Yes		
IBM Corp.	George Penokie	P	Yes		
Iomega Corp.	tim bradshaw	P	Yes		
KnowledgeTek, Inc.	Dennis Moore	P	Yes		
Linfinit Micro	Dean Wallace	P	Yes		
LSI Logic Corp.	Alan Littlewood	P	Yes		
Madison Cable Corp.	Robert A. Bellino	P	Yes		
Maxtor Corp.	Pete McLean	P	Yes		
Methode Electronics, Inc.	Bob Masterson	P	Yes		
Molex Inc.	Joe Dambach	P	Yes		
Oak Technology, Inc.	Robin Freeze	P	Yes		
Ophidian Designs	Edward A. Gardner	P	Yes	IV	
Philips Key Modules	Bill McFerrin	P	Yes		
QLogic Corp.	skip jones	P	Yes		
Quantum Corp.	James McGrath	A	Yes		
Seagate Technology	Gene Milligan	P	YesC	IV Cmnts	
Silicon Systems, Inc.	Stephen Finch	A	No	IV Cmnts	
Sony Electronics, Inc.	Jan F. Rebalski	A	Yes		
Storage Technology Corp.	Erich Oetting	P	Yes		
Sun Microsystems Computer Co	Robert Snively	P	Yes		
Symbios, Inc.	John Lohmeyer	P	Yes		
SyQuest Technology, Inc.	Patrick Mercer	P	Yes		
Toshiba America Info Sys	Tokuyuki Totani	P	Yes		
UNISYS Corporation	Ken Hallam	P	Yes		
Unitrode Corporation	Paul D. Aloisi	P	Yes		
Western Digital Corporation	Jeffrey L Williams	P	YesC	Cmnts	
Woven Electronics	Doug Piper	P	Yes		

Key:

P Voter indicated he/she is principal member
A Voter indicated he/she is alternate member
O Voter indicated he/she is observer member
? Voter indicated he/she is not member or does not know status

YesC Yes with comments vote
 Abs Abstain vote
 DNV Organization did not vote
 IV Individual vote (not organizational vote)
 Cmnts Comments were included with ballot
 NoCmnts No comments were included with a vote that requires comments
 DUP Duplicate ballot (last ballot received from org. is counted)
 PSWD The password was not correct (vote not counted)
 ORG? Organization is not voting member of T10 (vote not counted)

Ballot totals:

49 Yes
 1 No
 0 Abstain
 2 Organization(s) did not vote
 52 Total voting organizations
 5 Ballot(s) included comments

This 2/3rds majority ballot passed.

Comments attached to YesC ballot from Lawrence J. Lamers of
 Adaptec, Inc.:

Adaptec votes YES on forwarding SBP-2 with the following comments:

Comment 1

Figure D-2 (SCSI configuration ROM) in section D.2 (SCSI command set target) of Annex D (informative) (Sample configuration ROM) uses a key value which does not have a definition in any other standard. The ninth (quadlet) entry has a key type of 0, a key value of 17 hex and an information field of "model_ID." The last paragraph of section D.2.1 (Unit_Directory) says: "The Model_ID entry in the unit directory, with a key field of 17 (subscript 16), has an immediate value whose meaning is specified by the module vendor. Immediately following the Model_ID entry is a textual descriptor leaf entry, with a key field of 81 (subscript 16), whose indirect_offset value of 5 points

to a leaf that contains the ASCII string "QQQQ".

Furthermore, ISO/IEC 13213 ANSI/IEEE Std 1212, in section 8.6 (Key definitions), specifies that key values 17 hex to 2F hex are reserved for future definition by the CSR Architecture.

Thus, it appears that the informative annex does not comply with 13213/1212 CSR Architecture.

Comment 2

There are issues in the Configuration ROM for target devices regarding the desire to provide textual descriptors and, perhaps, special identifier values for the class driver and type class driver of the Microsoft device driver stack. Various proposals which have made "loose" use of textual descriptor leaves, bus_dependent_info and "model_name" entries. Compatibility among many

target device types as well as many initiator types need these issues need to be cleared up.

Lawrence J. Lamers
 Ljlamers@corp.adaptec.com

Comments attached to YesC ballot from Peter Johansson of
Congruent Software, Inc.:

These comments accompany my ballot to forward SBP-2 to NCITS for
further processing. They are split into two groups, editorial and
technical comments.

Page	Clause	Editorial comment
vi	Foreword	In the first sentence of the first paragraph the word 'such' should be deleted.
5	3.1.2.3	In the definition of a device server, 'function' should either be changed to 'functional' or deleted.
	3.1.2.4	Correct 'is' to 'are' to agree with plural 'terabytes'.
6	3.1.2.8	Here and throughout the draft, correct usage of 'isochronous cycle' to match 'isochronous period' terminology used by P1394a.
	3.1.2.10	Change the definition of 'listener' to: A node that receives stream packet(s) for a channel. A listener that receives isochronous data typically observes a single stream packet each isochronous period. There may be zero, one or more listeners for any given channel. The revised definition matches the P1394a changes with respect to asynchronous streams and 'loose' isochronous.
	3.1.2.15	The term 'asynchronous command block' is nowhere used in the draft. The second sentence of the definition should be changed to read: Asynchronous Serial Bus transfers are used to effect the data transfer.
7	3.1.2.29	The end of the sentence should read '... not specified by this standard.'
17	4.6	The second sentence of the second paragraph should read, 'A consequence of ordering is that...'
21	4.7.3	A phrase in the first sentence should be changed to read '... receive reports of all errors ...'
24	5.1	In the paragraph immediately below Figure 14, a period following 'ORB' should be a comma.
25	5.1.2	In the note, change '... appropriate for ...' to '... well-suited to ... '.
28	5.1.3	In the third sentence of the first paragraph, '... isochronous requests ...' should be '... isochronous commands ...'.
39	5.1.4.3	In Figure 29 and the paragraph below, it might be clearer to refer to stream_ID in place of login_ID.
72	9.1.4	In the second paragraph below Figure 58, the introductory phrase is missing a space after 'Transition'.
77	10.1	The definition of 'working set' should be reinforced by a reference here. For example, the last sentence of the second paragraph might conclude, '...the ORB's already fetched by the target (the working set).'
	10.1	The last paragraph is unclear with respect to a normal task set. Replace the second sentence with:

Although this one-to-one association between a normal task set (the task set created by a login request) and a logical unit is retained, the concept is extended by SBP-2 to permit multiple stream task sets per logical unit.

	10.2	There is a redundant 'is' in the first sentence of the last paragraph on the page.
79	10.4.1	Procedural list paragraph d) has a typographical error; correct REQUEST to REQUEST COMPLETE.
82	10.4.6	A sentence should be added to the first paragraph that says: Targets that implement other task management models may optionally support terminate task.
124	G.4	In Figure G-3, the numeric value for command_set_spec_ID is missing a space before the subscript '16'.

The following comments are technical.

Page	Clause	Technical comment
33	5.1.4	The paragraph below Figure 21 should specify that the notify bit shall be one.
35	5.1.4.1	The paragraph below Figure 22 hasn't been corrected to reflect the inclusion of Annex C on password security.
47	5.3	The table of possible sbp_status values should be updated to include 0x0B to correspond to ack_tardy defined by IEEE P1394a. The error occurs if the addressed node continues to return ack_tardy after some time limit.

Comments attached to YesC ballot from Gene Milligan of Seagate Technology:

The SBP-2 draft standard is very well documented. But I do have some comments to improve it:

- 1) The T10 format uses both an ISO/IEC and a NCITS document number. However the final document is editorially slightly different. If this practice is to continue, SBP-2 should be 14776-TBD. I can provide the TBD when back in the office.
- 2) The 1394 reflector subscription address has changed.
- 3) Regarding the abstract my recollection of the 1394 title is that it is somewhat different than 'Serial Bus'.
- 4) I assumed SBP-2 was not limited to isochronous.
- 5) The draft is missing the patent statement.
- 6) Annex F needs an expanded title since it is not the SCSI architecture model.
- 7) Regarding the foreword operating systems and embedded applications are not initiators. In this instance

initiators should be replaced with upper layer protocols.

8) Change 'Vendors that wish to implement devices that connect to Serial Bus may follow the requirements of this and other standards to manufacture an SBP-2 compliant device.' to 'Vendors that wish to implement devices that connect to Serial Bus may follow the requirements of this and other normatively referenced standards to manufacture an SBP-2 compliant device.'

9) Change 'This standard was developed by T10 during 1996 and 1997.' to 'This standard was developed by T10 during 1996 through early 1998.'

10) I think the foreword should have a statement about why this is SBP-2 rather than SBP.

11) The membership list for NCITS looks like a remarkably old X3 list.

12) Delete the revision history but it would be nice to keep it in a separate document.

13) Regarding the scope I doubt that SBP-2 conforms to other standards. This should be restated to the fact that SBP-2 requires implementations to conform to the other standards.

14) I suggest changing the purpose towards the 1394 not just a serial interface which was previously accomplished and moving all the desired information to the foreword.

15) IEC 61883/FDIS is actually five standards each with a slightly different title. All five should be listed unless certain ones among the family should not be referenced.

16) Is there a reason not to list the published SAM and other command sets?

17) It would be better to include the key words listed under conformance in a Key Word clause as is done in most of the other SCSI standards.

18) Expected should be compared to the other SCSI standards to determine why the definition should be different.

19) I prefer the reserved definition in this draft to that in other SCSI standards but the last sentence 'The recipient of a defined object shall check its value and reject reserved code values.' seems to disagree with the bulk of the definition. I think the problem is object as opposed to field.

20) Regarding 3.1.2.1 are bytes only used for data?

21) Regarding 3.1.2.2 there seem to be extraneous '-'s as there are in 3.1.2.34.

22) In SBP-2 the device server definition is '3.1.2.3 device server: A function component of a logical unit responsible to execute tasks initiated by command blocks that specify data transfer or other device operations.' T10 should consider this definition for SPI-2 which is missing

the
definition.

23) Change '3.1.2.4 initial node space: The 256 terabytes of Serial Bus address space that is available to each node.' to '3.1.2.4 initial node space: The 256 terabytes of Serial Bus address space that may be available to each node.' as I presume not every implementation will populate all 256 terabytes.

24) In 3.1.2.8 change 'During an isochronous cycle, the bus is available to isochronous talkers, only.' to 'During an isochronous cycle, the bus is available to isochronous talkers only.'

25) The definition 'A task has a lifetime, which commences when the task is signaled to the target, proceeds through a period of execution by the target and finishes when completion status is stored at the initiator. While a task is active, it makes use of both target resources and initiator resources.' is very clear but my understanding of a task was that it began when a nexus or I/O operation was entered into the task set.

26) The abbreviations should include msb and lsb and the use of MSB and LSB as in all other SCSI standards should be considered.

27) Make a global deletion of 'precisely' (e.g. change 'precisely defines' to 'defines').

28) Regarding one of the unlabeled tables it is of no value to have mandatory requirements for what a standard contains, the only value for mandatory requirements is for implementations. Consequently and for typo reasons change 'The meaning of the field shall be defined by the bus standard, in this case IEEE Std 1394-1995' to 'The meaning of the field is defined by IEEE Std 1394-1995'.

29) What does 'The meaning of the field shall be defined by the organization responsible for the unit architecture' mean? How is it different than vendor dependent (which in other SCSI standards is vendor specific)?

30) I assume the use of terms differing from other members of the SCSI family of standards is not NIH but is congruence with 1394 and/or 13213. If the assumption is correct, it would be helpful to add an informative annex providing a correlation table of 1394/SCSI terms (e.g. lsb/LSB; vendor dependent/vendor specific). If I am wrong and it is NIH then change the terms to the SCSI family terms.

31) Add a glossary definition of 'node'.

32) Above other unlabeled tables, what is the difference between 'may be specified by the terms below' and 'shall be specified by the terms below'? Since the requirements should

not
 be for the editor, I think
 both should be 'is specified by the terms below'.

33) In Clause for, due to the baggage 'may' carries, I suggest changing
 'which
 may be neither the initiator
 nor an SBP-2 device.' to 'which may be an initiator, a target, or a device
 that is not a SBP-2 device.'

34) I think the two paragraphs of clause 4 should be reversed.

35) Does 'In CSR architecture and Serial Bus terminology, devices implemented
 to this standard (targets)
 are units.' mean that initiators are not implemented to this standard?

36) With regard to figure 6, is the ground symbol at the end of a linked list
 conforming to some standard for
 illustrating linked lists? To me it seems odd.

37) In 4.5 change 'The time-critical nature of isochronous operations
 requires
 that stream control agents
 support linked lists of requests, just as command block agents.' to 'The
 time-critical nature of isochronous
 operations requires that stream control agents support linked lists of
 requests, just as command block agents
 do.'

38) Assuming there is a reason to keep clause 4 from being normative, in 4.6
 change 'The ordered model
 specifies both that tasks shall be executed in order and that completion
 status
 shall be returned in the same
 order.' to 'The ordered model assumes both that tasks are executed in order
 and
 that completion status is
 returned in the same order.'

39) Change 'A consequence of ordering that completion status for one task
 implicitly indicates successful
 completion status for all tasks that preceded it in the ordered list.' to 'A
 consequence of ordering is that
 completion status for one task implicitly indicates successful completion
 status for all tasks that preceded it
 in the ordered list.'

40) Change 'Unrestricted reordering places the responsibility for the
 assurance
 of data integrity on the
 initiator.' to 'Unrestricted reordering leaves the responsibility for the
 assurance of data integrity with the
 initiator.'

41) I think figure 9 needs additional labels to convey the information I
 assume
 was intended by the author.
 Some of the lines of explosion(?) leave me with a 'Huh?').

42) In 4.7.1 change 'Isochronous data is essentially time-ordered. As a
 consequence, the isochronous data
 transferred to or from the device medium must be presented in correct order.
 Therefore no reordering of
 isochronous commands is permitted within the task set associated with an

isochronous stream and the failure of any one task requires that all subsequent tasks be aborted.

This requires not only that tasks in a stream task set are executed in order but also that their completion status reported in the same order.' to

'Isochronous data is essentially time-ordered. As a consequence, the isochronous data transferred to or from the device medium needs to be presented in correct order. Therefore no reordering of isochronous commands is done within the task set associated with an isochronous stream and the failure of any one task results in all subsequent tasks being aborted.

Not only are tasks in a stream task set executed in order but also their completion status is reported in the same order.'

43) In clause 5 change 'The node_ID field shall specify the Serial Bus node for which the address pointer is valid, as defined by IEEE Std 1394-1995.' to 'The node_ID field shall contain the Serial Bus node for which the address pointer is valid, as defined by IEEE Std 1394-1995.'

44) The break lines (I presume) in Figure 14 are peculiar.

45) In 5.1 change 'If the request completes with an error condition, the value of notify is ignored and a status block shall be stored at the status_FIFO address.' to 'If the request completes with an error condition, the value of notify is ignored and a status block shall be stored at the status_FIFO address specified in the ORB or, if not specified in the ORB. at the address supplied in the login or create stream request.' or to 'If the request completes with an error condition, the value of notify is ignored and a status block shall be stored.'

46) Regarding 'A target's command set and device type determine the length of the ORB's which shall be fixed for a particular command set and device type.' in 5.1.2, some command sets have different length command blocks. Should this be 'A target's command set maximum length and device type determine the length of the ORB's which shall be fixed for a particular command set and device type.'? If so is padding defined somewhere?

47) Regarding 'There are two kinds of command block ORB, one for normal (asynchronous) operations and one for isochronous operations.', but are they the same size as defined above?

48) I think there are many places where 'specify' should be replaced with 'contain'.

49) Regarding figure 16, how do you determine the length of the command block

since the device seems to
be able to choose a fixed length?

50) The unlabeled table does not seem to match the numbering convention. It seems odd the 0-8 have no subscripts but F does.

51) What does 'enqueued' mean? My 1922 Funk and Wagnells does not have 'enqueued' but based upon its lengthy discussion of 'en' which was gravitating to 'in' it appears that 'enqueued' is the feminine version of 'queued'.

52) Below figure 24 change 'All of these buffers shall be in the same node as the initiator; consequently the node_ID field of these addresses shall be reserved.' to 'All of these buffers shall be in the same node as the initiator; consequently the node_ID field of these addresses is reserved.'

53) Change '5.1.4.3 Create stream ORB Before any stream requests can be made of a target, the initiator shall first complete a create stream procedure that uses the ORB format shown below.' to Change '5.1.4.3 Create stream ORB Before any stream requests are made of a target, the initiator shall first complete a create stream procedure that uses the ORB format shown below.'

54) Change 'Valid values for idf are encoded in the table below.' to 'Valid values for idf are shown in the table below.'

55) In 5.1.4.5 change 'When an initiator wishes to relinquish its access privileges for a logical unit or an isochronous stream, it shall perform a logout with the ORB format shown below.' to 'In order to relinquish its access privileges for a logical unit or an isochronous stream, an initiator shall perform a logout with the ORB format shown below.'

56) The unnumbered note 'NOTE - In the case of TARGET RESET, which does not pertain to any one task set, login_ID shall be set to a value obtained as the result of any successful login completed by the initiator.' should be made part of the body text or changed to eliminate the mandatory requirement.

57) 5.3 is redundant to the requirements of 5.1. It would be better if 5.1 deleted the requirements in favor of 5.3.

58) The unnumbered note 'NOTE - An SBP-2 response code of ILLEGAL REQUEST shall not be used to indicate unsupported fields or bit values in the command set-dependent portion of the ORB. This response code shall be used only to indicate an error in the first 20 bytes of the ORB.' should be made part of the body text or changed to eliminate the mandatory requirements.

- 59) Regarding an unlabeled table what is the difference between 'Reserved (not to be used)' and 'Reserved for future standardization'?
- 60) I think Std may be a standard abbreviation for standard but I do not think it is for ANSI. I suggest that a 'Std' be globally replaced with 'standard'.
- 61) Since all the other SCSI standards use ISO/IEC rules for decimal values and any desired ISO/IEC standard for SBP-2 will use the ISO/IEC rules, I suggest SBP-2 be revised to include and conform with those rules at this time (e.g. '24.576 MHz' changes to '24,576 MHz'). Be sure to add the conventions statement to avoid US 24 GHz implementations.
- 62) In 7 shouldn't 'all other directories and leaves' be 'all other directories and leafs'?
- 63) In 7.4.1, 'The value indicates that the NCITS Secretariat is responsible for the software interface definition.' Say what?
- 64) Referring to 8.1 'Targets shall implement a logical unit reservation protocol that by itself supports neither persistent reservations nor passwords;' does this mean it shall be vendor dependent except that it must not support persistent reservations? Does this mean an exception to SPC by making persistent reservations prohibited?
- 65) The unnumbered note 'NOTE - The speed at which the block write request to the MANAGEMENT_AGENT register is received shall determine the speed used by the target for all subsequent requests to read the initiator's configuration ROM, fetch ORB's from initiator memory or store status at the initiator's status_FIFO. Command block ORB's separately specify the speed for requests addressed to the data buffer or page table.' should be made part of the body text or changed to eliminate the mandatory requirement.
- 66) The unnumbered note 'NOTE - Upon playback (when the target is a talker), the aggregate maximum isochronous payload shall reflect the total of all channels recorded on the medium—not just the aggregation of payload(s) for the channels to be transmitted on Serial Bus. This is essential since the target reads all of the data from the medium even though the channel mask may select a small subset for playback.' should be made part of the body text or changed to eliminate the mandatory requirement.
- 67) Larger and/or darker font in figure 58 would be helpful.
- 68) The unnumbered note 'NOTE - The fetch agent may issue either an 8-byte

block read request (to fetch just the next_ORB field) or it may reread the entire ORB. The initiator shall insure that system memory occupied by the ORB remains accessible, as described in 9.3.' should be made part of the body text or changed to eliminate the mandatory requirement.

69) The paragraph above the note in 10.2 is redundant to the model clause 4.6.

The redundancy can be resolved by changing the wording of 4.6 to eliminate the mandatory requirements in the informative clause.

70) The combination of suggestions and mandatory requirements in 10.4.1 'Otherwise, the target should perform the following actions in response to a task management ORB with the ABORT TASK function:

- a) The target should not issue additional data transfer requests for the task;
 - b) The target shall wait for responses to pending data transfer requests and, once all such responses are received, shall not issue additional data transfer requests for the task;
 - c) So long as none of the target medium, data buffer or status FIFO have been modified as the result of partial execution of the task, the target shall store completion status of REQUEST COMPLETE with an sbp_status field that indicates dummy ORB completed;
 - d) Otherwise, if task execution has commenced and any one of the target medium, data buffer or status FIFO has been modified, then the target shall store completion status of REQUEST with an sbp_status field that indicates request aborted.'
- may lead to confusion. I think the shalls in this sequence should be shoulds.

71) I suggest that the Terminate Task definition should end immediately after 'FUNCTION REJECTED.'

72) In 11.2, 12.3, and Annex G identify which parts of 61883 are being referenced.

73) Delete 'notable' from the first paragraph of 12.1.

74) Regarding 'See section 9 for a more detailed description;' of what? Regarding 'the information is as applicable to stream control ORB's as it is to normal command block requests and stream command block ORB's.' which information?

75) In Annex A does 'In addition to those minimum capabilities defined by IEEE Std 1394-1995, this annex specifies the minimum capabilities that an initiator or a target shall support in order to implement SBP-2.' that the list in 1394 is to be ignored or that Annex A is an incremental addition to the list?

76) The unnumbered note 'NOTE - The value of STATE_CLEAR. dreq shall be unaffected by a Serial Bus reset. The target may automatically set dreq to zero (request initiation enabled) upon a power reset or a

command reset.' should be made part of the body text or changed to eliminate the mandatory requirement.

77) Clause A.2 would be strengthened by being more specific several places than 'this capability'.

78) Regarding 'A Serial Bus reset, by itself, shall not alter a target's responsiveness to request subactions.', should there be some mention of what might make the reset more virile and make it not 'by itself'?

79) The unnumbered note 'NOTE - While initializing after a power reset, a target shall respond to quadlet read requests addressed to FFFF F000 040016 with either a response data value of zero or acknowledge the request subaction with ack_tardy, as specified by draft standard IEEE P1394a. This indicates that the remainder of configuration ROM, as well as other target CSR's, are not accessible.' should be made part of the body text or changed to eliminate the mandatory requirement.

80)) The unnumbered note 'NOTE - SBP-2 permits the return of a status block between two and eight quadlets in length. When a truncated status block is stored, the omitted quadlets shall be interpreted as if zero values were stored.' should be made part of the body text or changed to eliminate the mandatory requirement.

81) There are several mandatory requirements in informative Annex E including those in notes, these should either be reworded to remove the mandatory requirements or Annex E made normative. In any case the offending note should be corrected.

82) Regarding 'F.8 Hard reset A Serial Bus reset causes the target to execute a hard reset, as defined by SAM-2.' does Annex A 'A Serial Bus reset, by itself, shall not alter a target's responsiveness to request subactions.' match the F.8 claim?

83) Regarding Annex G there is also an EIA 1394/61883 specification being developed that perhaps should be referenced.

84) Either rewrite Annex G to be normative or change 'The len field indicates the size of the status block and shall have a value of four.' to 'The len field indicates the size of the status block and has a value of four.'

Comments attached to No ballot from Stephen Finch of Silicon Systems, Inc.:

The following comments are provided. These comments can be divided into three categories: purely editorial and not the basis of the NO vote; technical issues that should be resolved but are not individually the basis

of the NO vote, although if a number of these aren't resolved to my satisfaction anyone of them could be the basis of a NO vote; and, significant technical issues that are the basis of the NO vote. Each comment is numbered separately. Each number is followed by (E), (M) or (N) to indicate whether the comment is editorial, an area needing technical correction, or the reason for the NO vote.

1. (N) This document provides a definition of several basic functions: access control; task management; asynchronous command, data and status transportation; isochronous command, data and status transportation; isochronous control and status transportation; and, isochronous control commands. The definition and documentation of most of these are fairly mature with the exception of the those sections dealing with isochronous operation. This, I believe, is a direct result of insufficient participation by experts from the A/V and consumer electronics fields and a lack of attention to the subject matter by the storage manufacturers present. While we have made a valent attempt to obtain the inputs and participation from the A/V and consumer electronics industry, and some of the participants from storage manufacturers have spent a lot of individual time studying documents generated by other groups, I believe we can not assume we have accomplished this goal, especially not to the extent of setting it in concrete, i.e., including it into a standard. I recommend that the information pertaining to isochronous commands and isochronous operation be removed from this standard and that a new project be authorized to document these aspects. The need for isochronous storage devices is not so near that it needs to be documented immediately. I believe it is much more important that such documentation be complete and correct. I know of individuals who are willing to chair such a group and edit such a document. I have input from some A/V manufacturers that they want to pursue this mode of operation starting this year, so there participation can be expected. I think we had the best of intensions when we included isochronous operators in the scope of this project, but is was just too early to get the appropriate attention of those with the appropriate knowledge and experience. I do not want to see the asynchronous portion of this standard delayed.

2. (E) Remove the text title "Revision history" on pages ix through xviii. This information is not appropriate for inclusion in a standard.

3. (E) Section 1.1, change first sentence to read: "This standard defines a transport protocol for exchanging commands, data and status on the High Performance Serial Bus,..."

4. (E) Section 2 lists normative references. Is there a method of listing informative references? I think we should add this to cover cases such as the reference in Annex G to the "1394 Trade Associate Specification for AV/C Digital Interface Command Set, Version 2.0, April 22, 1997". Note that this document reference is now out of date.

5. (M) Section 3.1.2 The term "target" is used extensively through out this document and is not defined. Add a definition for target. In some places in the document target is used when node is meant. I have tried to note these in my comments. I suggest the following definition:

"3.1.2.x target: A device containing logical units that receive and execute commands from one or more initiators. A target is a unit as defined in CSR architecture and Serial Bus terminology."

6. (M) Section 3.1.2 The term "initiator" is used extensively through out this document and is not defined. Add a definition for initiator. I suggest the following definition:

"3.1.2.x initiator: A device containing application clients that originate commands to be processed in a target."

7. (M) Section 3.1.2 The term "request" is used extensively through out this document. This term has specific a meaning in IEEE 1394-1995 which is different from the usage in this document. Add a definition for "request" and for a second term "request subaction". I suggest the following definitions:

"3.1.2.x request: An ORB constructed by an initiator for processing by a target. The term request is not a request packet as defined by IEEE 1394-1995"

"3.1.2.x request subaction: A request packet as defined by IEEE 1394-1995."

8. (M) Section 3.1.2 The term "response" is used extensively through out this document. This term has specific a meaning in IEEE 1394-1995 which is different from the usage in this document. Add a definition for "response" and for a second term "response subaction". I suggest the following definitions:

"3.1.2.x response: An block of data constructed by a target in response to a request which is stored in the initiators system memory by the target. Login Response and Status are examples of responses." The term response is not a response packet as defined by IEEE 1394-1995"

"3.1.2.x response subaction: A response packet as defined by IEEE 1394-1995."

9. (E) Section 3.1.2 There are a lot of related and/or similarly named terms such as command block, normal command block, stream command block, command descriptor block, stream command ORB, stream command block ORB, and other combinations of these terms with other terms such as agent. I don't believe these are consistantly used and nor adequately defined. I propose that we limit the number of such terms to the following list, define these terms in section 3.1.2, and review the document to make sure the usage of these terms is consistant:

command_block

a field with a Command ORB

Command ORB

either a Normal Command ORB or a Stream Command ORB

Command Agent

an agent the processes either a Normal Command ORB or a Stream Command ORB

CDB, SCSI CDB or command block descriptor

what is placed in the command_block of a Normal Command ORB when the target to which the request has been signaled is expecting a SCSI command.

Normal Command ORB

an ORB signaled to a normal command agent whose address was returned as part of a Login response.

Normal Command Agent

an agent the processes Normal Command ORB's

Normal Command Task Set

a linked set of Normal Command ORBs available for the target to execute

Stream Command ORB

an ORB signaled to a stream command agent whose address was returned as part of a Create stream response.

Stream Command Agent

an agent the processes Stream Command ORB's

Stream Command Task Set

a linked set of Stream Command ORBs available for the target to execute

Stream Control ORB

an ORB signaled to a stream control agent whose address was returned as part of a Create stream response.

Stream Control Agent

an agent the processes Stream Control ORB's

Stream Control Task Set

a linked set of Stream Control ORBs available for the target to execute

Management ORB

a generic term to describe an ORB which was signaled to a Management agent of a target. This includes the: Login ORB, Query login ORB, Create stream ORB, Reconnect ORB, Logout ORB and the task management ORBs (Terminate Task ORB, Abort Task ORB, Abort Task Set ORB, Clear Task Set ORB, Logical Unit Reset ORB, and Target Reset ORB)

Management Agent

an agent the processes Management ORB's

Login ORB

a specific type of Management ORB

Query login ORB

a specific type of Management ORB

Create stream ORB

a specific type of Management ORB

Reconnect ORB

a specific type of Management ORB

Logout ORB

a specific type of Management ORB

Task management ORBs

a sub-type of Management ORB, a generic term for any of the following: Terminate Task ORB, Abort Task ORB, Abort Task Set ORB, Clear Task Set ORB, Logical Unit Reset ORB, and Target Reset ORB

Terminate Task ORB

a specific type of Management ORB of the sub-type Task Management ORB

Abort Task ORB

a specific type of Management ORB of the sub-type Task Management ORB

Abort Task Set ORB

a specific type of Management ORB of the sub-type Task Management ORB

Clear Task Set ORB

a specific type of Management ORB of the sub-type Task Management ORB

Logical Unit Reset ORB

a specific type of Management ORB of the sub-type Task Management ORB

Target Reset ORB

a specific type of Management ORB of the sub-type Task Management ORB

9. (E) Section 3.1.2.3, change "function component" to "functional component", and change "responsible to execute tasks" to "responsible for the execution of tasks".
10. (M) Section 3.1.2.7, change "and one or more nodes that are listeners" to "and zero or more nodes that are listeners". As currently stated, it directly contradicts the statement in the definition of listener (3.1.2.10) which states "There may be zero, one or more listeners for any given isochronous channel."
11. (E) Section 3.1.2.15, delete the last sentence which reads "Sometimes referred to as an asynchronous command block, since asynchronous Serial Bus transfers are used to effect the data transfer." There are no other occurrences of the term "asynchronous command block" in the document.
12. (E) Section 3.1.2.20, change "request and response subactions" to "request subaction and response subaction".
13. (M) Section 3.1.2.22, change "A data structure written to" to "A data structure which may be written to". The return of status blocks is optional for commands which do not have the notify bit set and which complete without error.
14. (M) Section 3.1.2.24, states "requires coordination with stream control ORB's". This is not true. Language has been added to the standard which allows for isochronous operation when stream control functionality is provided by means that do not utilize stream control ORB's. I recommend we delete the second.
15. (E) Section 3.1.2.25, change "stream ID" to "stream identifier (stream ID)".
16. (E) Section 3.1.2.26, change "common example of nodes that make system memory addressable" to "common example of nodes which might make system memory addressable".
17. (M) Section 3.1.2.28, according to this section, if the notify bit is zero and the target device chooses not to return status, the task is never complete.
18. (M) Section 3.1.2.28: the use of the term "stored" is not clear. Wherever "store" is used, replace with "is written to the initiator by the target via a write quadlet request or a write block request" or "is written to the target by the initiator via a write quadlet request or a write block request". It might be easier to include a definition of "store".
19. (M) Section 3.1.2.29, delete the entire second sentence. The intent of this sentence is not clear and doesn't add any useful information
20. (E) Section 3.1.2.31, this definition is too lengthy and, argueably, wrong. I suggest we use a slight modification of the definition from IEEE 1394-1995: "A request subaction and the corresponding response subaction.

The response subaction may be null for transactions with broadcast destination addresses, or the need for a response subaction may be met by an `ack_complete` being returned in response to the initial request subaction."

21. (E) Section 4, second paragraph, first sentence, change "describes components of the SBP-2 model" to "describes typical components and operation of the SBP-2 model".

22. (E) Section 4.3, in paragraph proceeding Figure 6, change "Login and management requests are directed to agents" to "Management requests, including Login Requests, are directed to an agent". After this first sentence, add "These requests do not contain a field which allows multiple ORB's to be linked together."

23. (E) Section 4.4, change the first sentence by replacing "and" with "and, for those commands which transfer data,"

24. (E) Section 4.4, last paragraph, delete "(or a scatter/gather list)". This terminology is used only twice, each time as parenthetical adjunct to insert a second name for an unrestricted page table. This second name is never used elsewhere, so there is no reason to include it at all. The other location is in section 5.1.2.1.

25. (M) Section 4.5, there are statements that seem to indicate that the normal command agent and the stream command agent. These two agents are distinct and may operate differently, depending upon implementation. The paragraph which includes the second set of bullets reads:

"There are three defined target agents:

- management;
- command block; and
- stream control."

Change this to read:

"There are four defined target agents:

- management;
- normal command;
- stream command; and
- stream control."

Change the next to last paragraph,

"A successful login request returns the address of a normal command block agent. A successful create stream returns the address of a stream command block agent. Both of these types of command block agents service requests that are organized in linked lists. Each linked list is managed by a separate command block agent."

26. (M) Section 4.5, last paragraph includes "(e.g., plug control registers as specified by IEEE P1394a)". Plug control registers are not defined in that standard. The easiest solution is to delete the parenthetical phrase.

27. (M) Section 4.5, last paragraph, last sentence, delete "The time critical nature of isochronous operations requires that". This is not necessarily true, depending upon the isochronous control ORB's that are issues and the functionality supported by a target device.

28. (M) Section 4.6, last sentence of first paragraph uses the term "mass storage" when what is meant is "random access storage". The term "mass storage" includes, at least in my mind, tape drives, writeable CD's and other devices where there is positional context. If we agree that "mass storage" is not the same as "random access storage", then there are a number of places within this document that need to be changed.

29. (E) Section 4.7, third paragraph, change "The presentation of this data is controlled by ORB's that request data transfer to or from the medium and, optionally, other ORB's that control its flow on Serial Bus. The second type of ORB, the stream control ORB is not required if the target has other facilities to control the flow of isochronous data from or to Serial Bus.", to "The presentation of this data is controlled by stream command ORB's that request data transfer to or from the medium and, optionally, stream control ORB's that control its flow on Serial Bus. The stream control ORB is not required if the target has other facilities to control the flow of isochronous data from or to Serial Bus."

30. (E) Figure 9 has gray scale material that leads to understanding of the figure. When I printed out the .pdf file, the differences in the gray scales is marginal at best. I suggest that the gray scale be changed to some type of fill pattern to aid in the reliable production of the standard.

31. (E) Figure 10, and text in section 4.7 introduce the concept of "Flow control" and "Stream task set". I believe that these terms are actually referring to Stream Control ORB's and Agents, and Stream Command ORB's and Agents.

32. (M) In the note below figure 10, in section 4.7 it states: "NOTE - When a target does not implement a stream control agent, the left-hand side of the figure (which shows flow control ORB's and their fetch agent) is not present. Other facilities, such as plug control registers, provide a means to specify channel number(s) while the flow control functions START, PAUSE and STOP are typically part of the command set used in the stream command block ORB's." I know of no method or command set that allows the passing of any stream control ORBs (sic) via the stream command ORB agent. I suggest that we change this to: "NOTE - When a target does not implement a stream control agent, the left-hand side of the figure (which shows stream control ORB's and their fetch and execution agents) are not present. Control functions and methodologies that are used when a Stream Control Agent is not present are beyond the scope of this standard."

33. (E) Section 4.7.1, change the first paragraph to read: "Both a normal (or asynchronous) task set and a stream task set consist of a set of commands that request data transfer to or from a device's medium. A stream task set is different in two important respects:

- no system memory addresses; and
- implicit order relationships."

To read: "A stream command task set consists of a set of commands that request data transfer to or from a device's medium. A Stream command ORB is different from a Normal command ORB in that there is no system memory address contained in the ORB. In addition, stream control task sets are executed sequentially."

34. (M) Section 4.7.2, the last paragraph states:

"Stream controller actions may be queued by the target. This permits time-critical operations to be specified in advance and avoids latency problems that could arise if the stream controller could accept no more than one request at a time. Within the queue of requests to the stream controller, each is executed in order as the preceding stream control ORB completes."

While I agree that this may be a valid implementation, I don't think it has been established that this is the only implementation nor that it is the implementation desired when using isochronous streams. Delete this paragraph or at least the last sentence of the paragraph. The remainder of

this section stands by itself.

35. (E) Section 5, first sentence. "Serial Bus Protocol" has been retracted, change to either "this standard" or "Serial Bus Protocol-2".

36. (E) Section 5, paragraph above Figure 12 begins: "ORB's shall be allocated at the initiator's node and may be organized into a linked list. Since the node ID is known for all ORB's in a give list, ..." to "All ORB's shall be allocated at the initiator's node. Some types of ORB's are organized as linked lists and contain a forward address pointer. Since the node ID is known for all ORB's in such a list, ..."

37. (E) Section 5, last paragraph: change the last sentence from "In this case the target shall ignore the ORB offset fields." to "In this case the target shall ignore the offset_hi and offset_lo fields." The term "ORB offset fields" is not defined.

38. (E) Section 5.1.2, first paragraph, last sentence, change: "...in configuration ROM..." to "...in its configuration ROM..."

39. (E) Section 5.1.2, delete the NOTE. It adds nothing to the standard and makes a statement which may or may not be true.

40. (M) Section 5.1.2.1, Table 1. Table 1 indicates that the values for 3-7 are "As standardized by P1394a", yet an I can not find any table or set of values in P1394a that correspond to the values of 0-2 and their meaning as shown in this table, so interpreting values for 3-7 are not possible. I recommend we state the values as 3 equals S800, 4 equals S1600 and 5 equals S3200 and 6-7 are reserved.

41. (M) Section 5.1.2.1, second paragraph after Table 1, change the second sentence to "When data_descriptor addresses a page table, this bit shall be one." While the sentence as currently written is true, it is a bit obtuse.

42. (M) Section 5.1.2.1, fourth paragraph after Table 1, delete "(also known as a scatter/gather list)". This terminology is used only twice, each time as parenthetical adjunct to insert a second name for an unrestricted page table. This second name is never used elsewhere, so there is no reason to include it at all. The other location is in section 4.4.

43. (M) Section 5.1.2.2, the cm field and the associated text that follows are intertwined in a way that I find confusing. I believe that this field should be devided into two fields: cycle_mark_start and stream_start. If cycle_mark_start is one, then cycle_mark_offset specifies the location of the first CYCLE MARK as an offset, in quadlets, relative..., else the location of the CYCLE MARK, even if present, is undefined. If stream_start is one, the cycle_mark_offset specifies the the location of the first quadlet of the isochronous data as an offset, in quadlets, relative..., else the offset is zero and the data begins with the first data byte specified by the command.

I see no reason to tie these two conditions together and I can visualize a case where the stream offset is non-zero and there is no CYCLE MARK to be pointed to.

44. (M) Section 5.1.2.2, general comment: if a cycle offset mark is specified, I think it MUST be limited to pointing to a location within the first block of a block oriented device. If a device has 512 byte blocks, then the maximum value of the offset is 127 (quadlets). Currently, there is no restriction on the value in this field, so if the command transfers 256 blocks (32k quadlets), the offset could be a large number. This makes the target's life unduely complicated.

If the above isn't acceptable, at least limit the value of the

cycle_mark_offset field to be less than or equal to the stream_length.

45. (E) Section 5.1.3, first paragraph, change "... then records the data on the medium as specified by isochronous requests." to "... then records the data on the medium as specified by stream command ORB's."

46. (E) Section 5.1.3, the change the term "stream_ctrl-dependent" to "stream_ctrl_dependent", the use of a "-" isn't required and, at first glance, the use of the "-" and the fact that "dependent" isn't italicized may lead someone to think that this syntax has some special meaning.

47. (M) Section 5.1.3, in the paragraph describing the STOP control function: if a stream which is set up for recording (listening) is stopped its data is "made available to the isochronous commands previously enqueued at the stream command block agent." (In the above, isochronous commands should be changed to Stream Command ORB's.) There is no statement, here or elsewhere, that this data must be written to the media nor that the current stream command ORB should be considered complete and a status returned to indicate a partial write, nor that any commands currently pending on the stream command linked list should be discarded or completed with an error. In other words, how does one gracefully stop a stream?

Similarly, if a device is talking, the text says the buffers are flushed, but what of the stream command ORB's still pending? Are these commands, i.e. the task set, also flushed?

In both cases, should the stream command block agent be transitioned to the dead state?

48. (E) Through out section 5 and possibly other sections, the term "isochronous command(s)" is used instead of "stream command ORB('s)". Either replace them all or add isochronous command to the glossary (and to the section on stream command ORB's).

49. (M) Section 5.1.3, in the paragraph immediately below Figure 19, delete "specified by login_ID" in the third sentence. What has login_ID to do with this function?

50. (M) Section 5.1.3: why do we have both a Channel Mask and a Configure Channels? If we had only a Configure Channel function and added a one bit field for this function, we could accomplish the same thing. In addition, this would allow changing the channel mask functionality when the stream is not stopped.

51. (E) Section 5.1.3, in the second paragraph below Figure 19, delete the second sentence. This sentence adds nothing and appears to describe the transformation in at a general level but only covers one case. Everything contained in this sentence is contained and stated more clearly in later sentences.

52. (M) Section 5.1.3, delete the NOTE after Figure 19 or clarify. If you want to include it, I can come up with a thousand more "usage" notes. Why add this one only?

53. (M) Section 5.1.3: SET ERROR MODE and the rpt field are insufficient. A general concept was established within SBP-2 that errors cause: 1) the associated fetch engine to go to the dead state, and 2) the task set to be flushed. Errors in the isochronous case are not exempted from this. The SET ERROR MODE command and the rpt field appear to change this for ALL errors. For the list of errors in section 12.3, I believe we want a granularity. For example, we might want to ignore missing CYCLE START packets and Data CRC errors, but cause fatal errors if the other errors listed occur.

54. (E) Section 5.1.3: Add a table that shows which fields are valid for which command and, in appropriate cases, what values within a field are valid on a per command basis. For example, the `stream_event` field is only valid for `START`, `STOP`, `PAUSE` or `UPDATE CHANNEL MASK` commands, and the values that are valid for these commands depend on whether the stream is a listener or a talker.

55. (E) Section 5.1.3: I believe the organization of this section could be enhanced by making each of the commands described as subsections. For example, 5.1.3.1 would be the `START` command, 5.1.3.2 would be the `STOP` command, etc. This would require that the field definitions which follow the command descriptions be moved to a position before the definition of the commands. Some of the information associated with the field usage should then be moved into the command definitions. I believe the resulting clarity would be of great benefit.

56. (N) Section 5.1.4, Table 2: delete the entry for `TERMINATE TASK`, make the value `Reserved` for future standardization. Section 10.2 states "Targets shall support, at a minimum, a basic task management model.", section 10.4.6 states "Targets that implement the basic task management model shall not support `TERMINATE TASK`...". This means that `TERMINATE TASK` shall not be supported by any SBP-2 device. Why are we definiting a command that can not be used? Remove this command from the table and delete section 10.4.6 and any refereneces in SBP-2 to `TERMINATE TASK` through out this standard including any reference in any changes I may have recommended.

57. (N) Section 5.1.4, first paragraph below Figure 21: add the following sentence: "The notify bit shall be set to one by the initiator and the target need not check the notify bit and shall always return a status for any completed management ORB." I can find no method that an initiator can determine if a management command completed if a target should decide to not return a status when a command completes without error. The above behavior must be mandatory.

58. (N) Section 5.1.4, Table 2: I believe we need to allow command sets the freedom to define an additional management command if such a command is required by the functionality of the device type. Change "5-6 Reserved for future standardization" to two entries "5 Command set specific" and "6 Reserved for future standardization".

59. (M) Section 5.1.4.1, first paragraph after Figure 22: states that the usage of password data is beyond the scope of this standard, yet Annex C (Normative) defines it. This is inconsistant.

60. (M) Section 5.1.4.1, second paragraph after Figure 22: add "The `login_response_length` shall be set to a value of 12 by the initiator and may be ignored by the target." The length of the login response is fixed and it make no sense to allow the initiator to set a different value nor cause the target device to check for a minimum length.

61. (M) Section 5.1.4.1, second paragraph after Figure 22, last sentence, change "no response data shall be stored" to "with the exception of a transport error during the transmission of the login response, the target device shall not send a login response." I have argued repeatedly that the term "shall be stored" is insufficient. Does it mean that the target shall not send or that the host shall accept it and keep it around until the status is received and then, based upon the status, store it or throw it.

62. (M) Section 5.1.4.1, sixth paragraph after Figure 22, add a sentence: "The `status_FIFO` field is subject to the definition of the `status_FIFO` field for all management commands."

63. (M) Section 5.1.4.1, Figure 23 show the length field to be a value of 12, and in the paragraph below Figure 23 change the paragraph to read "The

length field shall specify the length, in bytes, of the login response data and shall be 12." The login response data is useless unless complete and there is no reason to force checking for odd conditions.

64. (E) Section 5.1.4.2, third paragraph after Figure 24, delete "and status_FIFO" as this is already defined. Change the wording of the second sentence from "All of these buffers" to "This buffer" and "these addresses" to "this address".

65. (M) Section 5.1.4.2, first paragraph after Figure 25, move the last sentence to be the second sentence and then add the following sentences after the last: "The target shall limit the transmission of the login response to the length specified in the query logins ORB. If the query login response is smaller than the buffer allocated by the initiator, the target shall not pad the response to meet the allocated length."

66. (M) Section 5.1.4.3, Figure 26: the channels field is too long. It should be shortened to 6 bits.

67. (M) Section 5.1.4.3, there is no way to indicate during the create stream process whether stream control is to be accomplished via a stream control agent or via some other means as indicated in section 4.5, 4.7, and Annex F. A 2 bit field in the create stream ORB should be assigned to indicate the method of stream control. A value of zero can mean via a stream control agent, a value of one can mean via AV/C as defined in IEC 61883, the value of 2 and 3 should be reserved.

68. (M) Section 5.1.4.3, the table after Figure 26 has for value of zero an unstructured format. In discussions within the committee, it was suggested that such an unstructured format may mean to meter out the data in the file in a fashion that would imply the contents of the data on the media did not include any isochronous packet headers and was encapsulated into isochronous packets of fixed size by the stream engine. If this is so, how is the packet size communicated to the stream engine? To do this as part of the create stream is one option, another is to have a stream control command which does it. Neither are defined in this standard.

69. (M) Section 5.1.4.3, in the table after Figure 26 change the term "structured" in the name entry for values of 2 and 3 to "Isochronous data interchange format", as it is called in section 11. Also add "(See Clause 11.)" I believe other structured formats may be defined in future versions or addendums to this standard, so the name should be explicit and not general.

70. (M) Section 5.1.4.3, in the paragraph describing max_aggregate_payload add a sentence to the effect "This information is provided to the target to aid it in the determination if sufficient internal resources are available. During operation, the target device is not required to check to see if this limit is exceeded.

71. (M) Section 5.1.4.3, in the paragraph describing create_stream_response and create_stream_response_length, add the following sentence: "The value of create_stream_response_length shall be set to 24 by the initiator and may be ignored by the target." The length of the create stream response is fixed and it make no sense to allow the initiator to set a different value nor cause the target device to check for a minimum length.

72. (M) Section 5.1.4.3, Figure 27, change command_block_agent to stream_command_block_agent. The command_block_agent was returned in the login response, this field is not the same and should have a unique name to prevent confusion. Also, change all occurrences of command_block_agent to stream_command_block_agent where appropriate in this section (and throughout the document?).

73. (M) Section 5.1.4.3, in the second paragraph below Figure 27, add a sentence "If the create stream request indicated that flow control was by a means other than a stream control agent, then `stream_control_agent` field is reserved."

COMMENT: I wonder how many other things haven't been considered as required options for the create stream command.

74. (M) Section 5.1.4.4, first paragraph provides information on operation which typically is not included in section 5. This information should be moved to section 8.3.

75. (E) Section 5.1.4.6, Figure 30: the `ORB_offset` field should be changed to `ORB_offset_lo` as indicated in the text below.

76. (M) Section 5.1.4.6, change "TERMINATE TASK or ABORT TASK" to "ABORT TASK".

77. (M) Section 5.1.4.6, in the paragraph defining the function field, delete "TERMINATE TASK".

78. (M) Section 5.1.4.6, add a new paragraph after the NOTE: "If the `login_ID` is that obtained from a create stream response, then the task management function applies to both the stream control and stream command task sets."

79. (E) Section 5.2, second paragraph, why is *via* in italics?

80. (E) Section 5.2, second paragraph, add the following sentence before the last sentence in this paragraph: "Each page table element is eight bytes in length."

81. (E) Section 5.2.2, first paragraph, change "`data_length` less than or equal to" to "`data_length` less than or equal to `data_size * 8` and less than or equal to". This adds wording similar to that in the first paragraph of section 5.2.1.

82. (E) Section 5.2.2, add the following to the last sentence of the NOTE: "i.e., `page_size` is equal to 4."

83. (E) Section 5.2.2, in the table, change the column heading "Element" to "Element position in the page table", change "0" to "First", "1 - n-2" to "Middle", "n-1" to "Last", and swap the table entries for "1 - n-2" and "n-1" under column labeled "2". I have had more questions from the engineers that work for me about this table than any other portion of this document. When I have redrawn this table as I suggest here, the idea has become immediately clear.

84. (E) Section 5.2.3, first paragraph, next to last sentence, change from "Otherwise, the target shall store the status block at the `status_FIFO` address provided by the initiator as part of the login or create stream request." to "Otherwise, the target shall store the status block at the `status_FIFO` address provided by the initiator as part of the login, if the ORB to which the status pertains was a normal command block, or create stream request, if the ORB to which the status pertains was a stream command block or a stream control block."

85. (M) Section 5.2.3, first paragraph, add the following to the end of this paragraph "Unsolicited status associated with a specific task set, but not a specific task, shall be reported to each initiator logged in to that task set."

86. (M) Section 5.2.3, first table after Figure 33, add the following text to the description for value 3 "Such a status block can only be placed on a

status_FIFO identified during a create stream command."

87. (M/E) Section 5.2.3 does not describe all status formats and values. Section 12.3 defines formats and values associated with isochronous streams. These two sections overlap in some areas and disagree in others. Those portions of 12.3 that define status formats and fields should be moved to section 5.2.3.

88. (E) Section 6.4, the paragraph follow table in that section describes how the base address is obtained for the normal command agent. It should be expanded to state how the base is obtained from the create stream. Change this paragraph to read:

"The base address of each set of fetch agent's CSR's is obtained from:

- the `command_block_agent` field in the login response returned by the target as part of a successful login,
- the `stream_command_block_agent` field in the create stream response return by the target as part of a successful create stream, or
- the `stream_control_agent` field in the create stream response return by the target as part of a successful create stream, if one is provided.

89. (E) Section 6.4.3, first paragraph after Figure 37, doesn't read clearly to me. I suggest replacing this paragraph with the following: "The `ORB_offset_hi` and `ORB_offset_lo` fields together form an `ORB_offset` field. The Serial Bus address used to fetch an ORB shall be formed from the concatenation of the 16-bit node ID of the initiator (available to the target as a result of a login), the `ORB_offset` field and two least significant bits of zero."

90. (M) Section 7.1, first paragraph. Add the following sentence to the end of the paragraph: "The results of reads to other portions of the configuration during the initialization process is unpredictable."

91. (M) Section 7.2, in the paraphgraph describing `max_rec`, delete the second sentence. While this statement is true for 1394A, 1394B will break this. Since this limit is in the base standard, it need not be repeated here and imply a limit imposed by SBP-2.

92. (M) Section 7.4.8, Figure 52 and related text, and section 7.5.4: The `mgt_ORB_timeout` field is not a logical unit characteristic, it is a unit (target) characteristic. In fact, if there are multiple logical units with different characteristics, there could be multiple instances of this entry, and there is no mandate that this field be consistant throughout. I suggest a "Unit_Characteristics" entry be defined that contains this field.

93. (E) Section 7.6 shows the first quadlet of the leaf as having a size and CRC. This quadlet exists for the unit directory and the logical unit director but sections 7.4 (unit directory) and 7.5 (logical unit directory) do not mention these fields.

94. (E) Section 8, first paragraph talks about commands to a target when it is discussing commands to a logical unit. Change the paragraph to read: "Before an initiator may signal commands to a logical unit or task management requests to a target related to a logical unit, access privileges shall first be granted by the target. The criteria for the grant of access may include resource availability or other target requirements. This section specifies the target facilities that support access control and the methods by which an initiator requests access to a logical unit and eventually relinquishes access when it is no longer required."

95. (E) Section 8.1, second paragraph, first bullet: change "and the `login_ID` used by the initiator to identify the login" to "and the `login_ID` returned to the initiator in the `login_response` data and used by the initiator to identify the login."

96. (E) Section 8.2, change title from "Login requests" to "Access requests" as 8.2.2 contains a description of create stream operation.
97. (E) Section 8.2.1, change the Note to read:
 "NOTE - The speed at which the block write request to the `MANAGEMENT_AGENT` register is received shall determine the speed used by the target for:
 - all subsequent requests to read the EUI-64 from the initiator's configuration ROM
 - all subsequent requests to read ORB's from initiator memory, or store status at the initiator's `status_FIFO` associated with the logical unit once
 access to the logical unit has been granted to the initiator.
 Command block ORB's separately specify the speed for requests addressed to the data buffer or page table."
98. (M) Section 8.2.1, second paragraph after the Note: change "The target shall perform the following..." to "The target shall perform, in any order, the following...".
99. (M) Section 8.2.1, in the list of items to be validated, labeled "a)" through "e)", item "a)" is not a validation but a step in performing the validation contained in "b)". Merge these two bullets to make one validation step.
100. (M) Section 8.2.1, in the list of items to be validated, item "e)" is not a validation step, but a function performed by the target.
101. (M) Section 8.2.1, item "e)", change the first sentence to "The target shall determine if a free `login_descriptor` is available for the logical unit." The target might choose to support multiple initiator access to its logical units, but reserve at least one `login_descriptor` for each logical unit thus preventing the initiators using up all of the `login_descriptors` to access a single logical unit.
102. (M) Section 8.2.1, after the list of validation items, add the following note: "NOTE - In the case of an unsuccessful login request, target access of the EUI-64 may or may not have occurred."
103. (E) Section 8.2.1, an observation: This section (and similarly section 8.2.2 in regards to create streams) covers some of the actions of both the initiator and the target. For example, the text says that the initiator signals the login ORB to the target, and we state that the target reads the EUI-64 and returns a login response, but we never say the target reads the ORB nor that the target returns a status. I feel that we should make this be a more definitive list of the actions of both sides.
104. (M) Section 8.2.2, in the paragraph after the three bullet items, we need to indicate that a target may use the mode of operation, listener or talker, in determining whether resources are available. Change the paragraph to read "The mode of operation, listener or talker, and the maximum number of channels to be supported may be used by the target to allocate sufficient and appropriate resources."
105. (M) Section 8.2.2, item "b)" in the list of things a target validates for a create stream is not a validation item, but a resource allocation. Merge the lead-in sentence to the list with item "a)" and make item "b)" a separate paragraph.
106. (M) Section 8.2.2., item "b)", first sentence, change to read "if a free `login_descriptor` is available" to "if a free `stream_descriptor` for the stream is available". The term `login_descriptor` is applied to both logins and create stream and there is a different set of information that needs to be stored in each case. The term `login_descriptors` should be reserved for login operations, and the term `stream_descriptor` for create streams.

107. (E) Section 8.3, first paragraph, last sentence, change to read "Both the stream command block and stream control requests fetched prior the the bus reset shall continue to be executed by the target but the return of status shall be deferred until a successful reconnection. New stream command block and stream control requests shall not be fetched until a successful reconnect to the underlying logical unit is complete."

108. (N) Section 8.3, second paragraph introduces the "one second" reconnect time. This value needs a minimum and a maximum number. No one can guarantee exactly one second for many reasons such as the reference clocks are typically +/- 100 ppm, and the timeout is likely to be implemented in software. The target detection should be 1.0 second minimum, 1.25 (?) seconds maximum, and the initiator should reconnect within 1.0 seconds.

109. (M) Section 8.3, second paragraph, first sentence contains "reconnect login ID and associated stream ID's." This seems to imply that there are separate reconnects for each stream where it is stated in item "c)" and "d)" below that when an initiator reconnects to a logical unit, any streams associate with that logical unit are also re-established.

110. (M) Section 8.3, in the list of items "a)" to "d)", combine items a) and b) as item a) is not a validation, but what must be done before the validation in step b) is performed. Items c) and d) are also not validation steps.

111. (M) Section 8.3, insert the following sentence after items a) through d): "The fetch agent for the logical unit to which the reconnect was accomplish shall be in the reset state upon completion of a successful reconnect."

112. (M) Section 8.3, last paragraph. Is the status_FIFO in the login_description the value in the original login request or the value in the reconnect request, or is it required that the value in the reconnect be the same value as was in the original login request?

113. (N) Section 8.4, add an additional paragraph to the end of this section: "Upon a successful logout specifying a login_ID obtained during a login, any streams associated with that logical unit connection are also logged out."

114. (E) Section 9.1, first paragraph, second sentence, change "and refuses subsequent Serial Bus transactions" to "and indicates a resource conflict via either a ack_conflict or resp_conflict_error to another writes to the address of the management ORB"

115. (E) Section 9.1, second paragraph, first sentence, change "The other target agents, command block and stream control," to "The other target agents, normal command block, stream command block and stream control".

116. (E) Section 9.1, paragraph 3, first sentence, change "either be null or point to" to "either be a null pointer or point to".

117. (E) Section 9.1.1, add one a note at the end of the section: "NOTE - Initialization does not require that the first command block signaled to the fetch agent be a dummy ORB, nor does it require that the list containing only a single command. A linked list contain one or more commands can be used to both execute the commands and to initialize the fetch engine."

118. (E) Section 9.1.2, paragraph after item "c)", last sentence, change "all or part of an ORB" to all or part of the ORB pointed to by the ORB_pointer register".

119. (M) Section 9.1.2, add the following to the NOTE: "Write requests to the agent registers by nodes other than the logged in initiator have no effect upon the fetch agent state machine."

120. (E) Section 9.1.3, change first paragraph to read: "Any initiator application that executes in a single-threaded environment, such as DIOS, has little need of the target fetch agent's capabilities to manage multiple outstanding requests. Such applications may use a simpler procedure than that described in 9.1.2 to signal requests to the target. Subsequent to initialization of the target fetch agent by means of a write to the AGENT_RESET register, the BIOS may signal one request at a time to the target as follows:"

121. (N) Section 9.1.4, Figure 58: add the following changes:

- a) For F0:F1, change the the transition condition from "TR_DATA.indication(WRITE,ORB_POINTER)" to "Logged In and TR_DATA.indication(WRITE,ORB_POINTER)".
- b) Add an F0:F0 transition condition labeled: "Not logged in"
- c) Add a transition Any:F0c with transition condition labeled "Logout"
- d) Change F1:F1 transition to F1:Fnew.
- e) Add new state Fnew, call it "Wait for next ORB to be returned", set "AGENT_STATE.st = ACTIVE"
- f) Change F1:F2 transition to Fnew:F2
- g) Change F3:F2 transition to F3:Fnew (The ORB_pointer register is defined such that it does not have the ability to have a null pointer. The null pointer flag is reserved and writing to it is ignored.)
- h) On F3:F4 transition change "doorbell variable equal to one" to "target resources available and doorbell variable equal to one"

Make changes to the text describing the state machine (some of which are in following comments).

122. (M) Section 9.1.4, Text describing transition Any:F0b: Add the following sentence at the end: "If a read request for an ORB is outstanding, the subsequent response (if any) should be accepted but the content of the response should be discarded."

123. (E) Section 9.1.4, Text describing transition F0:F1, change in last sentence "with a response of COMPLETE" to "with an ack_complete or an ack_pending followed by a response containing resp_complete."

124. (M) Section 9.1.4, Text describing transition "F1:F1" to "F1:Fnew".

125. (M) Section 9.1.4, Text describing transition "F1:F2" to "Fnew:F2".

126. (M) Section 9.1.4, Text describing transition "F3:F2" to "F3:F1". Delete the phrase ", set the next_ORB variable to the value of the ORB_POINTER register", change "F2" to "F1" and delete the phrase ", from which state an immediate F2:F1 transition follows."

127. (M) Section 9.1.4, Text describing transition F4:F2, delete the last sentence.

128. (M) Section 9.1.4, Text describing transition Any:F5, the list of errors gives an indication that only errors associated with the fetching process cause this transition. Add two new bullets "- any device level error" and "- any transport error encountered during the transfer of data or status related to a command being processed that was fetched via this fetch agent."

129. (M) Section 9.1.4, Text describing transition F5:Dead, change "AGENT_STATE" to "DOORBELL". The AGENT_STATE register is read only.

130. (M) Section 9.2, change the title of the section from "Data transfer"

to "Data transfer (normal commands only)".

131. (M) Section 9.2, second paragraph, add a new sentence to the end of the paragraph "The target is also responsible for generating the proper system memory address appropriate for the transfer being performed."

132. (N) Section 9.3, related to the last paragraph before the note. We have never included any text to define how to reclaim an ORB that returns a status with the src field equal to one. After this last block is updated with a new ORB pointer value and the doorbell is rung, when can the old ORB be discarded? One way is to monitor the ORB pointer and see if it has changed. This would require polling. Another is to wait until the ORB whose address was placed in the old ORB completes. This could be a long time if a linked list is appended and the device does out of order transactions. I don't have a fixed solution, but we need one.

133. (M) Section 10.1, third paragraph, change the fourth sentence from "There is a one-to-one relationship between a stream identifier and a stream task set; there may be multiple stream task sets associated with a logical unit." to "There is a one-to-one relationship between a stream identifier and a stream task set. There may be zero or more stream task sets and one normal command task associated with a logical unit. If there is a stream task set associated with a logical unit, there will be a normal command task set as well." In the last sentence of the paragraph, change "there are no interactions between tasks that belong to different stream task sets." to "there are no interactions between tasks that belong to different task sets."

134. (M) Section 10.2, fourth bullet, change "All tasks within a task set", to "All active tasks".

135. (N) Section 10.3, item "a)" change "of the fetch agent" to "of all fetch agents".

136. (N) Section 10.3, between item "b)" and "c)" add an additional item to read "If more than one initiator is logged in to the logical unit, a unit attention condition is declared for each of the other initiators. For each such initiator, if the `unsolicited_status_enable` variable is set an unsolicited status is sent, else the attention condition is retained until it can be signaled to the associated initiator."

137. (E) Section 10.4, add to the end of the sentence "and the `rq_fmt` field of the command ORB to perform task management."

138. (E) Section 10.4.1, first paragraph, second sentence, change "targets may also recognize task management ORB's to abort tasks." to "targets may also recognize ABORT TASK ORB's."

139. (E) Section 10.4.1, item "a)" of first set, contains a NOTE. Make it a NOTE.

140. (E) Section 10.4.1, change paragraph after item "c)" of first set to "Mandatory support for abort task requires the target to recognize..."

141. (E) Section 10.4.1, in item "d)" in second set, change "REQUEST" to "REQUEST COMPLETE".

142. (M) Section 10.4.1, add the following paragraph to the end of this section: "The fetch agent associated with the login ID shall not be transitioned to the dead state due to the processing of an abort task or a Dummy ORB."

143. (M) Section 10.4.2, in item "a)", change "task set" to "login ID".

144. (E) Section 10.4.5, first sentence, chang "all initiators" to "all logged in initiators".
145. (M) Section 10.5, the table does not include a write to the AGENT RESET register.
146. (M) Section 10.5, the table: for Faulted command, CLEAR TASK SET and LOGICAL UNIT RESET, should transition all tasks in the task set for all logged in intiators and transition all associated fetch engines to dead.
147. (M) Section 10.5, the table: for ABORT TASK SET, should transition only the initiators fetch engine to dead and abort the only those commands in the task set which belong to the initiator.
148. (M) Section 10.5, the table: for TARGET RESET, transition all fetch agents to dead.
149. (M) Section 10.5, in third paragraph below the table, add to the end of the first sentence "and any pending status are discarded."
150. (M) Section 10.5, in fourth paragraph below the table, fourth sentence: change to read "For normal command block requests, the task set is empty and the fetch agent is in the dead state. The initiator must initialize the fetch agent before signaling new ORB's to the target."
151. (E) Section 11 should be reorganized as follows:
 11. Intro to recorded information and relationship of Data Format Records and cycle mark index entried. explanation that, in the case of CIP format, the internal format of isochronus data packets must be understood in order to process the stream.
 11.1 Data Format Records
 11.1.1 Cycle Marks
 11.1.2 Isochronous data packets
 11.1.3 Null packets
 11.2 Cycle mark index
 11.3 Common isochronous packets
152. (M) Section 11, the last paragraph should be moved to the section 11.2 on Isochronous data packets.
153. (M) Section 11.1, the first sentence of the first paragraph and the last paragraph in this section both contain information on operational characteristic, not formats. This information should be moved to section 12.
154. (M) Section 11.2, in paragraph below figure 60, add "A data length of zero is valid in which case the packet shall consist of only the header and shall be one quadlet in length."
155. (E) Section 11.2, in the table entry for the value of 1, P1394A says "specified by IEC 61883/FDIS", should we add this information to this table?
156. (M) Section 11.2, in the first paragraph below the table, change "may have been transformed" to "shall be transformed". It is transformed even if the transformation causes no change in values.
157. (E) Section 11.4, the first paragraph, add the following to the end of the paragraph: "Whether a cycle mark is recorded is determined by the idf field of the create stream ORB used to establish the stream."
158. (E) Section 11.4, the first paragraph seems to operational information and should be moved to section 12.
159. (M) Section 11.5 repeats a definition contained in a normative

reference which is still in the development stage. This provides an opportunity to have inconsistency between these two standards. Also see section 12.2.3 which says "The common isochronous packet (CIP) format, as standardized by IEC 61883/FDIS, ...".

160. (E) Section 11.5, figure 64: change the field "fmt-dependent" and any textual references to "fmt_dependent".

161. (M) Section 11.5, paragraph below figure 64 says the sid field "shall specify the Serial Bus physical ID of the source (talker) for the isochronous data." and then continues on to say that, when talking, we substitute in a value for this field from a table and not that we should use our bus ID. This is inconsistent.

162. (M) Section 11.5, second paragraph below figure 64, add an additional sentence: "The application data field shall not contain partial data blocks."

163. (M) Section 11.5, fourth paragraph below figure 64, add to last sentence "and recorded when the target is a listener."

164. (E) Section 11.5, figure 66, names a field the same name as used in figure 64. This is confusing and could easily be changed to another name.

165. (M) Section 12, first paragraph, last sentence, change the sentence to read "This section describes how an initiator may control isochronous data transfers when a target is either the talker or a listener on Serial Bus." The sentence had implied that there might be some form of cooperation going on.

166. (E) Section 12, in third bullet item, change "stream command block requests" to "stream command ORB's".

167. (M) Section 12, the last paragraph, second sentence says we don't define connection management and provides no reference to where such a definition might be found, but the section states it is involve (required).

168. (M) Section 12.2, add (Optional) to the title line. Change "is" in first line to "may be".

169. (M) Section 12.2.1, what does the first sentence mean?

170. (M) Section 12.2.1, second paragraph states that the channel mask can only be changed if the stream is stopped, but I can visualize some cases where this it may be desirable to change it on the fly. Did we impose this restriction? If not, who/what/where did this restriction come from?

171. (M) Section 12.2.2, second paragraph, delete the last 2 sentences. This operation in the case of STOP is in conflict with section 5.1.3. In the case of pause, the information stated is very much implementation dependent.

172. (E) Section 12.2.3, first paragraph, first sentence, delete "both".

173. (E) Section 12.2.3, second bullet in second set of bullets, add after "isochronous source packet header" ", if present."

174. (E) Section 12.2.3, in paragraph before the first formula and in the formula itself: why not just do the calculation using `syt.cycle_time`? Change in the text: "For the `syt` field" to "For the `cycle_time` portion of the `syt` field", and change the formula to: "`syt.cycle_time(stored) = (16 +syt.cycle_time(observed) - CYCLE_TIME) % 16`". This uses only the field in question and fixes the wrap around error that isn't covered explicitly in the formula (although any implementation, in the process of making the

results fit into 4 bits would have to do the modulo limitation). In the text in the paragraph after this formula, we use text where a formula is better suited. Again, we see an interesting masking sequence that could be simplified if `syt.cycle_time` is used, plus it looks like the mask value in the current text is incorrect.

175. (M) Section 12.3, in the second set of bullets, for all three bullets, delete that portion of the items that refers to "the current stream control ORB". The paragraph above talks about the ORB used to set the mode, so the term "the current stream control ORB" must be referring to the ORB setting the mode. This is not what was intended.

176. (M) Section 12.3, in the second set of bullets, the first bullet, does "and stop execution" mean the same thing as a STOP command?

177. (E) Section 12.3, combine the paragraph after the second set of bullets with the paragraph before the second set of bullets. The way it is we say that the SET ERROR MODE sets the modes, here are the modes and, by the way, here is the field name that does it. Why not state the field name in the SET ERROR MODE command initially?

178. (E) Section 12.3, figure 67: the `stream_error` field is actually the `sbp_status` field. Why change the name?

179. (E) Section 12.3, the status format and value information contained in this section belongs in section 5.3 on the status block. Also, some of the values are inconsistent with the status scheme set up in section 5.3.

180. (M) Section 12.3, in the table after Figure 67, add a note to the descriptions for error values 2 and 3 "the isochronous packet is not recorded on the media."

181. (M) Section 12.3, add to the table after Figure 67 an error meaning "found a data record which exceeded the maximum record size allowed for the speed allowed for transmission."

182. (E) Section A.1, last paragraph, after "shall report" "a value equal to or greater than".

183. (E) Section A.2, in the paragraph starting "Once a target", change "target" to "node". A target is equivalent to a unit, not a node.

184. (E) Section B.2, in the first paragraph after the second table, change "shall specify the content" to "shall specify the validity of the content".

185. (E) Section D.1.1, third paragraph has "See C.2.2" should be "See D.2.2".

186. (M) Section F.8, a serial bus reset may cause the normal command block agent set to be initialized, but does not affect the isochronous streams. The definition of hard reset, I believe, is to make the unit go to the same state as a power on reset. This isn't true for an SBP-2 device.

187. (E) Section G, second paragraph, change "April 22, 1977" to April 22, 1997". Also, this standard has just been updated, so the date and revision is outdated.

Comments attached to YesC ballot from Jeffrey L Williams of Western Digital Corporation:

1) In section 3.1.2.5 initial register space is defined as 2KB starting at FFFF F000 0000 hex. In section 3.1.2.6 initial units space is defined as

being

adjacent to and above initial register space and at an address of FFFF F000 0400

hex. This is only 1KB above initial register space. Shouldn't initial units space start at FFFF F000 0800 hex?

2) Table 1 in section 5.1.2.1 indicates data transfer speed codes above 3 are as defined by P1394a. P1394a defines about three different code values to represent the same speed. This reference needs to be more specific.

3) Section 5.1.4.2, text states "The node_ID field of an entry shall specify the node ID of a logged-in initiator. If a Serial bus reset has occurred since

the login was established and the initiator has not reconnected the login, the

node_ID field shall have a value of FFFF hex." The text should also indicate that the FFFF hex return value is qualified by the fact that the reconnect timeout has not expired.

4) Section 5.2.2, it is not clear what src value should be used for management

ORBs. Section 9.3 appears to imply that management ORBs return status with a src of zero.

5) Section 5.3, states that targets shall store a minimum of eight bytes of status information, however, no minimum value is stated for the len field. In order to meet the minimum eight byte status block requirement len has a minimum required value of 1 as currently defined. This could be clarified.

6) Section 5.3, text in the table for the resp field indicates that sbp_status

may contain additional information when the resp field contains two (ILLEGAL REQUEST), however, later in the same section a note indicates that when resp equals two then sbp_status shall be set to FF hex. Which is correct?

7) Section 8.2.1, the note in this section indicates that the speed at which the block write request to the MANAGEMENT_AGENT register is received shall be saved and used by the target for all subsequent requests to read the initiator's configuration ROM, fetch ORBS, and store status. When a serial bus reset occurs followed by a reconnect the new speed associated with the reconnect should replace that stored during the login. The serial bus reset may be due to a topology change which may affect the speed at which the initiator can be accessed by the target. Adding the same note in section 8.2.1 to section 8.3 resolves this.

8) Section 7.2, Does max_rec affect response packets received by the node? This should be clarified by the text for the max_rec field in this section.

9) Section 8.1, the third bullet implies that the reconnect timeout is two seconds when it is actually one second.

10) Section 8.2.1, items b, c, d define situations where the login request is rejected. No specific return status is indicated for login rejections. Which status return code is appropriate for each of the conditions outlined?

11) Section 8.2.1, item d ends with the text "reject the login request; and". Is there something missing here or is it just a typo?

12) Section 8.2.1, item e indicates that the target checks for free login_descriptors but makes no mention of what should occur if none are free. I assume this results in another login rejected?

13) Section 10.4.2, item d uses the terminology "recently completed tasks". This is not completely clear. Better definition would help here. Are these tasks that have completed all data transfer but not status? Tasks in some other state?

14) Section 10.4.1, paragraph beginning "A Second method to abort tasks...", The wording implies that this is a second method of aborting tasks when it is just a clarification of the relationship between Abort Task and stream task sets. Also it mandates Abort Task be supported by targets that support streams. This means hard disks supporting streams must support Abort Task. Why is this necessary? I would rather not have the requirement to support Abort Task in association with Streams.

15) Section E.2, The first sentence currently reads "A write to the ORB_POINTER register is valid only when the target fetch agent is into be in the RESET or SUSPENDED state. The text "into be" should be deleted.

16) Section 5.1, In the paragraph below Figure 14 the text "...if not specified in the ORB. at the address supplied..." should contain a comma after ORB rather than a period.

17) In various places throughout the document the status FUNCTION_COMPLETE is indicated. There is no such status returned defined these shall all be replaced with REQUEST_COMPLETE.

***** End of Ballot Report *****