

Voting Results on T10 Letter Ballot 00-004r0 on
Forwarding FCP-2 to first public review

Organization	Name	S Vote	Add'l Info
Adaptec, Inc.	L Lamers	P Yes	
Advansys	Robert Frey	P Yes	
AMP, Inc.	Charles Brill	P Yes	
Amphenol Interconnect	Michael Wingard	A Yes	
Ancot Corp.	Bart Raudebaugh	P Yes	
Andataco	Gregg Neely	P Yes	
Berg Electronics	Doug Wagner	P Yes	
BREA Technologies, Inc.	Bill Galloway	P Yes	
Circuit Assembly Corp.	ian morrell	P Yes	
CMD Technology	Edward Haske	P Yes	
Compaq Computer Corp.		DNV	
Crossroads Systems, Inc.	Neil T. Wanamaker	P No	Cmnts
Dallas Semiconductor	Charles Tashbook	P Yes	
Dell Computer		DNV	
ENDL	Ralph O. Weber	A No	IV Cmnts
Fujitsu	Eugene Lew	P Yes	
General Dynamics	Nathan Hastad	P Yes	
Hewlett Packard Co.	Stewart Wyatt	P YesC	Cmnts
Hitachi Cable Manchester, Inc	Jacqueline Sylvia	A Yes	
Hitachi Storage Products	Anthony Yang	P Yes	
Honda Connectors	Thomas J. Kulesza	P Yes	
IBM Corp.	George Penokie	P No	Cmnts
KnowledgeTek, Inc.	Dennis P. Moore	P Yes	
Linfinity Micro	Louis Grantham	P Yes	
LSI Logic Corp.	Charles Binford	A YesC	Cmnts
Madison Cable Corp.	Jie Fan	P Yes	
Maxtor Corp.	Pete McLean	P Yes	
Molex Inc.	Joe Dambach	P Yes	
Ophidian Designs	Edward A. Gardner	P Yes	IV
Panasonic Technologies, Inc	Han Zou	P Yes	
Philips Electronics	Bill McFerrin	P Yes	
QLogic Corp.		DNV	
Quantum Corp.	Mark S. Evans	P Yes	
Seagate Technology	Gene Milligan	P No	IV Cmnts
Storage Technology Corp.	Erich Oetting	P YesC	Cmnts
Sun Microsystems Computer Co	Robert N. Snively	P No	Cmnts
Texas Instruments	Paul D. Aloisi	P YesC	Cmnts
Toshiba America Elec. Comp.		DNV	
UNISYS Corporation	Ken Hallam	P Yes	
Western Digital Corporation	Jeffrey L. Williams	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:

31 Yes
5 No
0 Abstain
4 Organization(s) did not vote
40 Total voting organizations
9 Ballot(s) included comments

This 2/3rds majority ballot passed.

Comments attached to No ballot from Neil T. Wanamaker of Crossroads Systems, Inc.:

Comments submitted with Letter Ballot Vote by Crossroads Systems on FCP-2 Revision 04:

1 (E): Global

There are hanging paragraphs at the beginning of many chapters (4,5,6,7,8...).

These will require changes for ISO.

2 (E): Foreword

The committee lists are void (or nearly so).

3 (E): 2.2

FC-PH-3 is an approved standard. The next four are under development by T11. This section also needs an X3-ectomy.

4 (E): 2.3

The first sentence refers to a singular reference; there are two. SFF-8045 also appears twice (strike the first).

5 (T): 3.1.7

This doesn't match the definition in SAM-2.

6 (E): 3.2, FCP-2

X3.

7 (E): 4.2 Par 6

I would suggest inclusion of a note about residual data handling.

8 (E): 4.2 Par 7

After "proper status" in first sentence, add parenthetical note (i.e., INTERMEDIATE or INTERMEDIATE CONDITION MET).

9 (E): 4.2 Par 7

After "an IU that allows command linking" add parenthetical note (i.e., not last sequence of exchange).

10 (T): 4.2 Par 7

This paragraph does not appear to allow breaking linking by presentation of an error or busy status.

11 (E): 4.2 last par

Add mention of 3d party/extended copy operations.

12 (T): 4.4 par 1

Last sentence should read "confirmed completion is allowed by an initiator". The PRLI contains no information about the target's ability to deal with FCP_CONF.

13 (E): 4.5 Par 3

In first sentence, after "both the initiator and target", add parenthetical note (i.e., by setting RETRY in PRLI).

14 (E/T): 4.5 Par 3 and many subsequent places

Reference to FCP-2 ELS, rather than FC-4 Link Data Request.

15 (E/T): 4.7 Par 2

Third sentence should read: Task management functions that use the FCP_CMND IU end with an FCP_RSP IU that indicates whether it was correctly completed.

16 (E): Table 4 (second page)

Column headings not required on second page.

17 (E): Table 4 Note 2

The reference to "the SCSI initiator" actually refers to the initiator issuing the task management function. An alternate initiator has no knowledge of the clearing action until a subsequent command has been issued (and receives a Unit Attention), and so cannot be expected to perform ABTS for the associated exchanges.

18 (E): 4.9

The header is in all lower case.

19 (E): 5.3 Par 1

The last half of the paragraph seems to imply that targets will discover reconfiguration events and this will drive his discovery of a changed initiator address.

In real life, targets do not typically register for events like RSCN, and do not probe for initiators. Normally, the change in initiator address is discovered by a new PLOGI from an entity having the same WWN but a new S_ID.

Suggest that the paragraph simply refer to the effect of receipt of a PLOGI from an entity having the same WWN as an object holding a persistent reservation.

20 (E): 5.4, Table 9

The third line of the note should read "I3 allows..."

21 (T): 6.2 Par 3

6.2.7.1 suggests that an ACC with Image Pair Established = 0 may also indicate that the PRLI request is not accepted (this behavior has been observed in the wild).

22 (T): 6.2.5 Par 1

The behavior if the change in parameters does not affect any outstanding exchanges is not specified (see (24) below).

23 (T): 6.2.5 Par 2

The description of Unit Attention does not match SPC/SAM (Inquiry, Request Sense) behavior.

24 (T): 6.2.5 Par 2 last sentence

This statement conflicts with 4.7 table 4, which indicates that all open FCP sequences and all open tasks are terminated on receipt of a PRLI, and that device reservations are cleared (CRN also cleared).

25 (E): 6.2.5 last par

Non-acknowledged class responders are not to terminate an exchange with ABTS (some later section). Normal practice (see 12.7) is to return a LOGO in this case.

26 (E): 6.2.6.7 Par 3 (p.26)

LS_RJT should be FCP_RJT (see 8).

27 (?): 6.2.6.8 (p.26)

There are existing implementations that require targets to set CONFIRMED COMPLETION ALLOWED. Do we want to legitimize this behavior?

28 (E): 8. (p. 31 et. seq.)

Either put 8.1 after 8.2, 8.3 (as an instantiation of the general case), adding a generic 8.1 on FC_4 Link Data Frames, or make 8.2, 8.3 specific to SRR responses.

29 (E): 8 First sentence (p. 31)

The type field should be shown as 08h as everywhere else. Should R_CTL be binary or hex?

30 (E): 8. Table 15 (p.31)

Column header refers to bits 31-24. Should indicate of what.

31 (E): 8.1 Par 1 (p.31)

Should read "or request retransmission of information".

32 (E): 8.1 Pars 2, 3 (p.31)

Par 2 refers to reason code hex '09', par 3 to reason code 00092A00h. These should be made consistent (and be either reason code & explanation or reason code).

33 (E): 8.1 top of page 33

Should have heading Reject Payload:

Table 18 header should indicate reason code & explanation.

34 (T): 8.1 top of page 33

Should have reason code for request not supported.

35 (E) 8.2, 8.3 (p33)

No indication of remaining payload (or note that it isn't to be returned on SRR ACC/RJT).

36 (T) 8.3 (Reason Code Descriptions) (p34)

It appears from the description that 01h and 0Bh mean the same; Table 20 suggests otherwise.

37 (T) 9.1.1.2 (p 37)

In out-of-order fabric cases, this means that an initiator must wait R_A_TOV after issuing the last FCP_CMND affected by the task management function before issuing a task management function, else the command might arrive after

the task management function. This requirement could be made unnecessarily if CRNs applied to TM functions.

38 (T) 9.1.1.3 (Ordered) (p 37)

The third sentence of the ORDERED_Q description indicates that sequential delivery must (shall??) be used to ensure correct ordering. Precise delivery would also meet the requirements of ORDERED_Q operation.

39 (T) 9.1.1.3 (Untagged) (p 37)

5.6.9 indicates that targets aren't required to detect this. These sections should be made consistent (and probably in the direction of SAM).

40 (E) 9.1.1.4 (pp 38 - 40)

In the definition of each of the function bits the phrase "the xxx bit is mandatory" should be replaced by "Support of the xxxx bit is mandatory".

41 (T) 9.2 par 3 (p 42)

Change "...precisely that amount of data." to "...precisely that amount of data in a single sequence" (or FCP_DATA IU).

42 (T) 9.3 par 4 last sentence (p 43)

9.2 indicates that all but the first data IU are preceded by FCP_XFER_RDYs.

43 (T) 9.4 par 2 second sentence (p 44)

Many devices return RSP_LEN_VALID (and equal to 8) on all completions. Are these to be made non-compliant?

44 (T) 9.4.7 par 3 (p 46)

The value should be FCP_DL - highest offset of any byte transmitted -1.

45 (T) 9.4.11 par 1 (p. 48)

COMMAND TERMINATED status is no longer in SAM-2.

46 (E) 12.5.2, 12.6.1, 12.7, F.2 (pp. 68-69, 109-110)

There are numerous references to NL_Port; this material also applies to N_Ports.

47 (T) 12.6.1. last par (p 69)

The implication of the penultimate sentence is that if the target is not on a remote loop that it is connected on a local loop. This is not a valid inference; switches don't deal real well with Selective Reset LIPs.

48 (T) 12.7 last sentence (p 69)

The last sentence should read something like: "If any other FCP-level frame is received before PLOGI or PRLI, the sequence receives a P_RJT, with reason not logged in if F_CTL indicated first sequence, else reason invalid F_CTL."

49 (E) B.2.1 (p 77)

Is there any action that will cause this to be included in FC-FS?

50 (E) C.1.6, Table C.6 (p 83)

The first response might have a parenthetical note (INTERMEDIATE or INTERMEDIATE CONDITION MET).

51 (E) I.1 bullet c (p 117)

..should read "return FCP_RSP for the task management function..."

52 (E) after J.1.5 (p 120)

There should be a J.1.6 "ABTS changes" with reference to B.2.1.

53 (E) after page 120

There is a curious page after page 120 that could be omitted.

Comments attached to No ballot from Ralph O. Weber of
ENDL:

In my opinion, all comments are editorial.

ENDL-1 In the Introduction list of clauses, some clauses are said to discuss or define information for FCP while others are said to cover FCP-2. Is it realistic to have some clauses describing FCP features and other clauses describing FCP-2 features? It seems to me that all clauses should discuss one or the other, either the protocol being described is FCP or FCP-2. FCP-2 ought to be one document describing one protocol, not one document describing two protocols. Note also, that if FCP-2 chosen for use throughout, the second paragraph of the Introduction needs to be changed too.

ENDL-2 Clause 2.2 first sentence. Change from: "At the time of publication, the following referenced standards were still under development by X3T10." to: "At the time of publication, the following referenced standards were still under development by T10 and T11." Note that several of the standards listed below this sentence are T11 projects.

ENDL-3 Clause 2.2 last paragraph first sentence. Change from: "Copies of these X3T10 draft documents are available for purchase from Global Engineering Documents." to: "Copies of these T10 and T11 draft documents are available for purchase from Global Engineering Documents." Same comment as ENDL-2.

ENDL-4 Clause 2.2 last paragraph first sentence: "Copies of these X3T10 draft documents are available for purchase from Global Engineering Documents." Would it not be better to provide pointers to the T10 and T11 web sites? Even if Global Engineering is still maintaining copies of T10 and T11 committee drafts documents, the web sites must be more up to date.

ENDL-5 Clause 3 only paragraph. It seems appropriate and helpful to add a sentence to this paragraph that describes the references in square brackets that appear in some definitions.

ENDL-6 Clause 3.1.13. It looks like the definition of data overlay is a proposal to change to SAM-2, yet I know of no pending or approved proposals to make a change of this nature. SAM-2 r11 does not contain the word 'overlay' and there are not pending proposals to add the word 'overlay' that I know of.

It may also be that no SAM-2 changes are necessary. Clause 5.3.1 in both SAM and SAM-2 contains the following statement: "If an SCSI protocol supports random buffer access, as described below, the offset and byte count specified for each data segment to be transferred may overlap." This statement appears to cover the needs of the FCP-2 3.1.13 definition of data overlay. Perhaps all that is required to tie the knot here are editorial changes to the data overlay definition, with the following replacement definition seeming adequate to me: "Data overlay occurs when random buffer access capability is used to transfer data to or from the same the same area of application client buffer more than once during the same command. [ANSI X3.270]"

ENDL-7 Clauses 3.1.25 and 3.1.26. It is difficult to see the difference

between 3.1.25 (logical unit identifier) and 3.1.26 (logical unit number). SAM and SAM-2 differentiate these two objects by stating that a logical unit

identifier is a combination of a target identifier and a logical unit number, i.e., a logical unit number is a constituent of a logical unit identifier. Following the SAM lead, 3.1.25 should read: "Identifier used by an initiator to reference the logical unit and the target that contains that logical unit. [ANSI X3.270]"

ENDL-8 Clause 3.1.27. Regarding the following definition: "A mode of operation on a Loop where MCM circuits are established between one or more MCM L_Port pairs without arbitration." What's a 'Loop'? There is no definition for a 'Loop'. Either add a definition for 'Loop' or change 'Loop' to 'arbitrated loop' which would reasonably be a definition from FC-AL, incorporated here by reference.

ENDL-9 Clause 3.1.41. The definition of tag is incomplete as written: "The initiator-specified component of the task identifier." The task attribute is equally well an initiator-specified component of a task identifier. A more correct definition would be: "The initiator-specified component of a task identifier that uniquely identifies one task among the several tasks coming from that initiator."

Also, it might be helpful to add FCP-2 specific information to the definition. The following sentence is proposed for addition at the end of the definition text: "In FCP-2, tag is the contents of the OX_ID field in the FCP-2 frame header."

ENDL-10 Clause 3.2. The usage of CRN as an abbreviation for Command Reference Number is pervasive enough to justify addition of an abbreviation definition, suggest: "CRN Command Reference Number (see 4.3)"

ENDL-11 Clause 3.4 second sentence. Change from: "These words and terms are defined either in or in the text where they first appear." to: "These words and terms are defined either in 3.1 or in the text where they first appear."

ENDL-12 Clause 3.4 second paragraph. In so far as I can tell the following editorial convention is not observed in 90% or more FCP-2: "The names of fields are in small uppercase (e.g., ALLOCATION LENGTH). When a field name is a concatenation of acronyms, uppercase letter may be used for readability (e.g., NORMACA). Normal case is used when the contents of a field are being discussed. Fields containing only one bit are usually referred to as the NAME bit instead of the NAME field."

For example, all the fields in the FCP Frame Header (Table 10 and subsequent text) are normal height all caps. The fields in the FCP service parameter page, PRLI request (Table 11) are in small caps, but the first letter of each field name is in full height cap even though I can see no readability reason to do this. Bit (field) names such as EPDC and PS are in full height caps, and spelled out acronyms such as enable precise delivery checking (following Table 31) are in small caps with occasional full height caps.

These problems are most egregious in the Disconnect-Reconnect mode page definition, where the use of full height caps is in direct conflict with the notation used in SPC-2.

FCP-2 should be carefully reviewed and modified to make the use of small caps match the description in the paragraph shown above. Also, the notation for field names in the Disconnect-Reconnect mode page should be made consistent

with the notation found in SPC-2.

ENDL-13 Clause 3.4 second paragraph second sentence. Change from: "NORMACA" to "NormACA" with the letters appearing in lower case appearing as small capitals.

(Small caps can't be represented in plain text.)

ENDL-14 Clause 4.1 paragraph just before Table 1. Regarding the following wording: "The FCP-2 device and task management protocols define the mapping of the SCSI functions defined in SAM and SAM-2 to the FC-PH. ... The I/O Operation defined by ANSI X3.270 is mapped into an exchange."

SAM is identically the same thing as ANSI X3.270 and referring to the one document by two different names in the same paragraph can only serve to obfuscate the meaning of FCP-2. Pick one identifier and use it with religious consistency. I prefer SAM, or better still SAM-2.

I believe there is a similar problem with using FC-PH and ANSI X3.230 as synonyms.

ENDL-15 Clause 4.1 paragraph just before Table 1. The following wording: "The FCP-2 device and task management protocols define the mapping of the SCSI functions defined in SAM and SAM-2 to the FC-PH." leads the reader to believe that a mapping for the SAM-2 task management functions will appear soon (probably in Table 1). This is not the case and the task management mapping does not appear until clause 4.7 (some five pages hence). I believe that the most natural way to guide the reader to the right clause would be the addition of the following sentence between the current second and third sentences of the paragraph: "4.7 defines the mapping for task management functions." After this addition and other corrections discussed above, the paragraph would read:

"The FCP-2 device and task management protocols define the mapping of the SCSI functions defined in SAM-2 to the FC-PH. The FCP-2 is based on a two-level paradigm. 4.7 defines the mapping for task management functions. The I/O Operation defined by SAM-2 is mapped into an exchange. The request and response primitives of an I/O Operation are mapped into information units. Link control is performed by standard FC-PH protocols. This is shown in table 1."

ENDL-16 Clause 4.2 first and second sentences. The following seems to be wanting to reference SAM-2: "An application client begins a FCP I/O Operation when it provides to the FCP a request for an Execute command service." However, the wording fails to match SAM-2 (or SAM) and there is no specific reference to SAM-2. Better wording would be: "An application client begins a FCP I/O Operation when it invokes an Execute Command remote procedure call (described in SAM-2)."

Similarly, the second sentence ("A single request or a list of linked requests may be presented to the software interface of the FCP.") needs work to correlate with SAM-2. Better wording would be: "The Execute Command call conveys a single request or a list of linked requests from the application client to the FCP service delivery subsystem."

ENDL-17 Clause 4.2 second paragraph second sentence. Here's another almost correct reference to SAM-2: "The FCP_CMND payload is the Send SCSI Command service request and starts the FCP I/O Operation." Better wording would be:

"The FCP_CMND payload is the Send SCSI Command protocol service request (described in SAM-2) and starts the FCP I/O Operation."

ENDL-18 Clause 4.2 third paragraph. Since every paragraph thus far in this clause has tied the FCP actions to SAM-2 defined protocol services, why not do the same in this paragraph. Suggest adding the following sentence before the sentence that begins: "Exactly one FCP_DATA IU ...": "The FCP_XFER_RDY and FCP_DATA payloads constitute the Receive Data-Out protocol service request and Data-Out Received service confirmation described in SAM-2."

ENDL-19 Clause 4.2 fourth paragraph. As with ENDL-18, why not tie the FCP operations to the SAM-2 defined protocol services in this paragraph? Suggest adding the following sentence at the end of the paragraph: "The FCP_DATA payload constitutes the Send Data-In protocol service request described in

SAM-2."

ENDL-20 Clause 4.2 first sentence after note. Here's another almost correct reference to SAM-2: "After all the data has been transferred, the device server transmits the Send Command Complete service response by requesting the transmission of an IU containing the FCP_RSP payload." Better wording would be: "After all the data has been transferred, the device server transmits the Send Command Complete protocol service response (described in SAM-2) by requesting the transmission of an IU containing the FCP_RSP payload."

ENDL-21 Clause 4.2 second sentence after note. The following sentence offers a plethora of opportunities to deepen the coordination between FCP-2, SAM-2, and SPC-2: "That payload contains the SCSI status and, if an unusual condition has been detected, the SCSI REQUEST SENSE information describing the condition." Suggest the following rewrite: "That payload contains the SCSI status and, if the SCSI status is CHECK CONDITION, the autosense data describing the condition."

The change from "unusual condition" to "CHECK CONDITION" status is justified because the only time sense data can appear in the FCP_RSP payload is when the SCSI status is CHECK CONDITION (with autosense). If the sense data is returned in response to a REQUEST SENSE command or as the result of Asynchronous Event Reporting, it will appear in an FCP_DATA payload.

To augment the change from "REQUEST SENSE information" to "autosense data", the following definitions should be added:

"3.1.x autosense data: Sense data (see 3.1.y) that is returned in the FCP_RSP IU payload."

"3.1.y sense data: Data returned to an application client as a result of an autosense operation, asynchronous event report, or REQUEST SENSE command (see SPC-2)."

Also throughout FCP-2, all uses of "SCSI REQUEST SENSE information" should be replaced with "autosense data". The only uses I found were the two occurrences in clause 4.2 first paragraph after note (one noted here and the other noted in comment ENDL-21).

Note: acceptance of this comment also obligates SPC-2 to make its definition of "sense data" consistent with the definition shown above.

ENDL-22 Clause 4.2 fifth sentence after note. The following sentence needs changes for clarity and to coordinate with SAM-2: "The SCSI logical unit deter-

mines whether additional commands will be performed in the FCP I/O Operation." Better wording would be: "The device server determines whether additional linked commands will be performed in the FCP I/O Operation."

In my mind, the device server is the entity that processes the command(s) within a task (thus the first change). Additionally, this sentence is referring to the relationship between several linked commands in a single task, not to the relationship between several different unlinked commands (each in their own task). That needs to be clarified.

I am aware that you have received another comment on this sentence requesting that "logical unit" be changed to "task manager". That comment would be correct if the sentence were referring to several unlinked commands. Since the sentence is referring to linked commands, the change requested here is correct.

ENDL-23 Clause 4.2 last sentence in first paragraph after note. The verb number in these following sentence is wrong: "If an FCP protocol error occurred

during execution of the command, the FCP_RSP payload carry the FCP Response information instead of the SCSI status and SCSI REQUEST SENSE information." There is but one FCP_RSP payload, so it "carries" the information. If there were several payloads, they would "carry" the information. Also, this is the only other occurrence of "SCSI REQUEST SENSE information" that I could find. My preferred wording is: "If an FCP protocol error occurred during execution of the command, the FCP_RSP payload carries the FCP Response information instead of the SCSI status and autosense data."

ENDL-24 Clause 4.2 first sentence in second paragraph after note (in r4 this is the paragraph at the top of PDF page 70). The following sentence needs changes

to coordinate with SAM-2: "When the command is completed, returned information is used to prepare and return the Execute Command service confirmation information to the software that requested the operation." Better wording would be:

"When the command is completed, returned information is used to prepare and return the Command Complete Received protocol service confirmation to the application client that requested the operation."

ENDL-25 Clause 4.2 last sentence in second paragraph after note. If one is to follow the nomenclature in SAM-2 clause 4.12, then the following sentence needs

changes: "The SCSI target can optionally request confirmation of the status delivery, as described in 4.4." In SAM-2 "confirmation" is a protocol service action between the initiator LLP and ULP layers. The protocol service being described here is an "indication" and that "indication" occurs between the target LLP and ULP layers. Thus, I think the better wording would be: "The device server can optionally request a protocol service indication that confirms delivery of the FCP_RSP payload, as described in 4.4."

ENDL-26 Clause 4.2 last sentence in the clause. A substantial FCP-2/SPC-2 cleanup is needed in and around the following sentence (and now seems like as good a time as any to do the work): "For Asynchronous Event Notification, the peripheral device takes on the SCSI initiator role to inform the host, in its target role, that an asynchronous event has occurred."

The SAM-2 (and for that matter SAM) name for this feature is AER (Asynchronous Event Reporting) and FCP-2 should be using that name. The intention (as I remember it) has always been that SPC (now SPC-2) should define AEN (Asynchronous Event Notification) as a specific implementation of AER. If this

comment is accepted, SPC-2 will be obliged to hold up its end of the bargain and define AEN (I have material ready for a proposal to make the change SPC-2).

In FCP-2, the sentence shown above should be deleted and the following new paragraph should be added at the end of clause 4.2.

"FCP-2 implements Asynchronous Event Reporting (see SAM-2) using the Asynchronous Event Notification (AEN) model in SPC-2. The AEN model reports asynchronous events by requiring that the peripheral device take on the SCSI initiator role to deliver the asynchronous event sense data to the host, which is required to act as a SCSI target using the processor device model for the duration of the AEN reporting process."

ENDL-27 Clause 4.3 second paragraph last sentence. The following is not the way cross references are handled in SCSI documents: "See "10.1.2" on page 53." The accepted wording is: "See 10.1.2." Note the removal of both the page reference and the quotation marks.

ENDL-28 Clause 4.3 third paragraph first sentence. Regarding the following: "Precise delivery of SCSI commands uses the COMMAND REFERENCE NUMBER (CRN) in the FCP_CMND IU." The SCSI editorial convention is that the use of small caps

for 'COMMAND REFERENCE NUMBER' requires that it be followed by the word 'field'. Also, if ENDL-10 has been accepted then the definition of the CRN abbreviation need not appear in this sentence. Thus the preferred wording would be: "Precise delivery of SCSI commands uses the COMMAND REFERENCE NUMBER field in the FCP_CMND IU." with the usage of small caps being as currently exists in the document, not as shown here (small caps cant be represented in plain text).

ENDL-29 Clause 4.3 third paragraph second sentence. There are a couple of problems in the following: "For each device server having the EPDC bit set to one, the application client places a monotonically increasing one byte unsigned integer in the COMMAND REFERENCE NUMBER field for each command requiring precise delivery that is transmitted." Remember, COMMAND REFERENCE NUMBER is in small caps. The use of small caps for the EPDC bit is covered by comment ENDL-12.

ENDL-30 Clause 4.4 third, fourth and fifth paragraphs. I have several problems with the following paragraphs:

"The confirmed completion function may be used to confirm that a SCSI initiator has received an FCP_RSP reporting a SCSI CHECK CONDITION status, together with accompanying sense information. The SCSI target requests in an FCP_RSP IU containing CHECK CONDITION status and sense information that an FCP_CONF be returned by the Initiator. Upon receiving the FCP_CONF, the SCSI target can be assured that the initiator has the information necessary to perform stateful(sic) recovery and can then discard its own copy of the information. If the FCP_CONF is not returned, the SCSI target may be requested by the initiator to retransmit the FCP_RSP, assuring eventual receipt of the critical information by the initiator.

"The confirmed completion function may be used to confirm that a queued SCSI command has been completed and that the completion information has been successfully transferred to the initiator. The SCSI target requests in an FCP_RSP IU that an FCP_CONF be returned by the initiator. That allows subsequent queued stateful(sic) operations to be performed, since the FCP_CONF confirms that the FCP_RSP has been received by the initiator. If the FCP_CONF is not returned, the SCSI target may be requested by the initiator to retransmit the status information, assuring proper synchronization of the state of operations on the initiator and target.

"The confirmed completion function may be used to confirm that a SCSI initiator has received an FCP_RSP if a target process requires confirmation that the initiator has accepted the FCP_RSP completion information."

First, the fact that "The confirmed completion function may be used to confirm that a SCSI initiator has received an FCP_RSP" is repeated three times, once at the beginning of each paragraph. Surely, this is rhetorical overkill.

Second, 9.4.1 has no requirement that FCP_CONF_REQ be set to 1 only when the status is CHECK CONDITION (as implied by the first paragraph). As far as I can tell from 9.4.1, it is perfectly valid for a device server to set FCP_CONF_REQ to 1 when the status is GOOD. So, all the bluster about CHECK CONDITION status and sense data is misleading and could result in incompatible implementations.

Third, I can find no mechanism to support the last sentence of the first

paragraph: "If the FCP_CONF is not returned, the SCSI target may be requested by the initiator to retransmit the FCP_RSP, assuring eventual receipt of the critical information by the initiator." It looks to me like the target may voluntarily elect to retransmit the FCP_RSP IU, but I can find no mechanism for an initiator to use to request the retransmission.

Forth, the second paragraph appears to be missing a step. Read literally as it currently is written, the mere act of setting the FCP_CONF_REQ bit to 1 in an FCP_RSP IU is sufficient to verify to the target that the FCP_RSP IU was received by the initiator. Read the second and third sentences in the second paragraph carefully.

Fifth, 'stateful' is not in the Random House Unabridged Dictionary second edition, neither is it in the FCP-2 glossary. It appears to be a word with no meaning.

Sixth, we find here yet another name for autosense data, to wit "sense information", that needs to be replaced with term "autosense data" defined in comment ENDL-21.

With all of this in mind, the following wording seems better for the three paragraphs:

"The confirmed completion function may be used by a SCSI target to confirm that a SCSI initiator has received an FCP_RSP IU. If the confirmed completion function is supported by the initiator, a target may it whenever verification is required that the initiator has accepted the FCP_RSP IU and the information contained therein. Requirements on a target to maintain queued commands state information or autosense data after transmitting the FCP_RSP IU are examples of instances where use of the confirmed completion function may be useful, since successful completion of the confirmed completion function may allow the target to discard such state information and data.

"The target requests in an FCP_RSP IU that an FCP_CONF be returned by the initiator. Upon detecting the confirmed completion request in an FCP_RSP IU, the initiator shall transmit an FCP_CONF IU. Receipt of the FCP_CONF IU verifies to the target that the FCP_RSP has been received by the initiator."

ENDL-31 Clause 4.5 last sentence in the clause. I donut understand the following: "Those targets that have agreed to support the data retransmission capability shall support REC." With whom did the targets agree? What specifically is the 'data retransmission capability'? If it is correct, the following would be better wording: "Targets that support SRR shall also support REC."

ENDL-32 Clause 4.7 first sentence. While it is true that the preponderance of task management functions abort or terminate tasks, the following statement is not really true: "An application client requests a task management function when a task or some group of tasks must be aborted or terminated." Borrowing from the wording in SAM-2 (and SAM), the following wording is better: "An application client requests a task management function to control explicitly the execution of one or more tasks." In the context of FCP-2, the following might be even better: "An application client requests a task management function to control explicitly the execution of one or more FCP I/O Operations."

ENDL-33 Clause 4.7 second paragraph third sentence. The following statement is not true for task management functions that are initiated as FC-PH link services: "A task management function ends with an FCP_RSP IU that indicates whether it was correctly accepted." Better wording would be: "A task management function that begins with an FCP_CMND IU ends with an FCP_RSP IU that indicates whether it was correctly accepted."

ENDL-34 Clause 4.7 Table 3. Would it be possible to add a references column

to
Table 3?

ENDL-35 Clause 9.4 second sentence. If comment ENDL-21 is accepted, then change "... REQUEST SENSE information" to "... autosense data".

ENDL-36 Clause 9.4.11 first sentence. If comment ENDL-21 is accepted, change this sentence from: "The FCP_SNS_INFO field contains the information specified by ANSI X3.301 for presentation by the REQUEST SENSE command." to: "The

FCP_SNS_INFO field contains the autosense data (see SAM-2 and SPC-2)."

ENDL-37 Clause 9.4.11 second sentence. The COMMAND TERMINATED status became obsolete when the TERMINATE TASK task management function was made obsolete. FCP-2 has removed TERMINATE TASK from the Task management flags in the FCP_CMND

IU, but the removal of the COMMAND TERMINATED status was overlooked in the following: "The proper FCP_SNS_INFO shall be presented when the SCSI status byte of CHECK CONDITION or COMMAND TERMINATED is presented as specified by ANSI X3.270." Better wording would be: "The proper FCP_SNS_INFO shall be presented when the SCSI status byte of CHECK CONDITION is presented as specified by SAM-2."

ENDL-38 Clause A.1 third paragraph. The sentence describing Table A.1 indicates that the table contains much more information than the table actually contains. Better wording would be: "See table A.1 for the mapping of objects and identifiers used in this standard to the equivalent remote procedure call terms and definitions used in the SCSI Architecture Model-2 standard."

ENDL-39 Clause A.1 Table A.1, equivalence to task identifier. SAM-2 (and SAM) require that a task identifier include an initiator identifier. Since it appears that a fully qualified exchange identifier may not include an address identifier of initiator port, it is possible that a task identifier is equivalent to a fully qualified exchange identifier plus an address identifier of initiator port. Note: I had a similar concern about the SAM-2 requirement that a task identifier include a logical unit identifier (whose main component of interest here is a logical unit number). However, it appears that all logical units share the set of fully qualified exchange identifiers associated with one initiator/target pair. Therefore, the fully qualified exchange identifier implicitly includes the logical unit identifier (and LUN).

Note: I believe that SAM-2 (and SAM) contain a bug in the definition of task identifier and will bring a proposal on the subject to the next Protocol WG meeting.

ENDL-40 Clause A.1 Table A.1, equivalence to task address. Using the argument found in comment ENDL-39, there is no need for a task address to contain a logical unit number, as is currently shown in Table A.1. However, SAM-2 (and SAM) contains a trick in the definition of task address. The logical unit identifier is a key component of the task address. The logical unit identifier contains two parts; a target identifier and a logical unit number. Thus, task address must contain a target identifier. Since it appears that a fully qualified exchange identifier may not include an address identifier of target port, it is possible that a task address is equivalent to a fully qualified exchange identifier plus an address identifier of target port.

ENDL-41 Clause A.1 Table A.1, usage of object identifier. SAM-2 is so tied up in object definitions that I'd prefer not to have FCP-2 referencing an 'object identifier'. My first response is 'object', what 'object'. Please consider changing "object identifier" to "task management function object identifier".

Also, a SAM-2 object identifier can be any one of the following: target identifier, logical unit identifier, or task address. The equivalence list in FCP-2 covers the target identifier (first entry) and task address (second

entry) with the possible exception of problems noted in ENDL-39. The third entry fits none of the SAM-2 objects covered by the object identifier. To fully fit the SAM-2 list of objects covered by the object identifier, the third entry should be deleted and a new second entry should be added reading as follows: "or address identifier of target port + logical unit number".

I believe that a fully acceptable alternative would be to delete the object identifier row entirely and add a new row giving "address identifier of target port + logical unit number" as the FCP-2 equivalent of SAM-2 "logical unit identifier". This would have the effect of defining all the objects covered by the object identifier, and would leave the definition of what objects can be an object identifier to SAM-2. Note: SAM-2 might need to be a little clearer about the definition of an object identifier.

ENDL-42 Clause A.1 Table A.1, usage of object address. SAM-2 is so tied up in object definitions that I'd prefer not to have FCP-2 referencing an 'object address'. My first response is 'object', what 'object'. Please consider changing "object address" to "task management protocol service object address".

Also, a SAM-2 object address can be any one of the following: target identifier, logical unit identifier, or task address. The equivalence list in FCP-2 covers the target identifier (first entry) and task address (second entry) with the possible exception of problems noted in ENDL-39. The third entry fits none of the SAM-2 objects covered by the object identifier. To fully fit the SAM-2 list of objects covered by the object identifier, the third entry should be deleted and a new second entry should be added reading as follows: "or address identifier of target port + logical unit number".

As with ENDL-41, I believe an equally acceptable alternative is to add a table row showing the equivalence for SAM-2 'logical unit identifier' (see ENDL-41 for details of the new row) and delete the row for 'object address'.

ENDL-43 Clause A.1 Table A.1. In notes 1 and 2, change "SCSI-3 Primary Commands" to "SCSI Primary Commands-2".

ENDL-44 Several A.x clauses Tables A.3, A.4 and A.5. The heading for the third column looks like a cut and paste error: "SCSI Interlocked Protocol Service Interface procedure call". Better wording would be "FCP-2 Service Interface procedure call".

ENDL-45 Clause A.3 Table A.3. There are nomenclature problems in the names listed in the second column: "send SCSI command request, send SCSI command indication, send SCSI command response, and send SCSI command confirmation". To coordinate properly with SAM-2, the entries in the second column should read: "Send SCSI Command request, SCSI Command Received indication, Send Command Complete response, and Command Complete Received confirmation".

ENDL-46 Clause A.3 Table A.3. The "[sense data]" parameter should be added to the response and confirmation procedure calls.

ENDL-47 Clause A.3 Table A.3. The following note should be added to Table A.3:
"Since FCP-2 requires the use of autosense for all SCSI command operations, the Autosense Request parameter has been omitted from the request and indication procedure calls."

ENDL-48 Clause A.4. To better coordinate with SAM-2, the title of this clause should be "Data Transfer Protocol Services".

ENDL-49 Clause A.4.1. I don't understand the need for the two sentences and two paragraphs that appear before Table A.4, to wit:

"The data-in delivery service is a two step confirmed service that provides the means to transfer a parameter list or data from a device server to an initiator."

"Processing the execute command procedure call for a data-in delivery service shall be composed of the 2 step confirmed service shown in table A.4."

It seems to me that the following would be sufficient:

"The data-in delivery service is a two step confirmed service (see table A.4) that provides the means to transfer a parameter list or data from a device server to an initiator."

ENDL-50 Clause A.4.1 Table A.4. There are nomenclature problems in the names listed in the second column: "data-in delivery request and data-in delivery confirmation". To coordinate properly with SAM-2, the entries in the second column should read: "Send Data-In request and Data-In Delivered confirmation".

ENDL-51 Clause A.4.2. I don't understand the need for the two sentences and two paragraphs that appear before Table A.5, to wit:

"The data-out delivery service is a two step confirmed service that provides the means to transfer a parameter list or data from an initiator to a device server."

"Processing the execute command procedure call for a data-out delivery service shall be composed of the 2 step confirmed service shown in table A.5."

It seems to me that the following would be sufficient:

"The data-out delivery service is a two step confirmed service (see table A.5) that provides the means to transfer a parameter list or data from an initiator to a device server."

ENDL-52 Clause A.4.2 Table A.5. There are nomenclature problems in the names listed in the second column: "data-out delivery request and data-out delivery confirmation". To coordinate properly with SAM-2, the entries in the second column should read: "Receive Data-Out request and Data-Out Received confirmation".

ENDL-53 Clause A.5. The || symbol has two meanings in the prototype procedure call. The first usage is intended to mean "or" and the second usage is intended to delineate the beginning of the output parameters. The second usage

is consistent with the usage of || elsewhere in FCP-2 and throughout SAM-2. The first usage is inappropriate and a different nomenclature must be found.

A

nomenclature that is consistent with SAM-2 would be to make the first procedure

call parameter 'object identifier' and add the following sentence after the procedure call text: "Depending on the task management function being call, the

object identifier is one of the following: a fully qualified exchange identifier, an address identifier of target port, or an address identifier of target port + logical unit number."

ENDL-54 Clause A.5.1 first sentence. Curiously enough, a statement such as the following usually precedes a table showing the multi-step process: "This standard handles task management functions as a four step confirmed service that provides the means to transfer task management functions to a task manager." Recommend addition of a table showing the four step confirmed service process used by task management functions.

ENDL-55 Clauses A.5.1.1 through A.5.1.7. All of these clauses are obvious cut and paste text from SPI-x. They must be modified to describe FCP-2 aspects of the task management functions. Note: particular care must be taken in modifying clause A.5.1.1, since the ABORT TASK task management function relies on an FC-PH primitive, not on a flag bit in the FCP_CMND IU.

ENDL-56 Clause A.5.1.8. This clause can be removed. SAM-2 does not define a WAKEUP task management function, that function is unique to SPI-x. Therefore, FCP-2 need not contain any discussion of the WAKEUP task management function.

Comments attached to YesC ballot from Stewart Wyatt of Hewlett Packard Co.:

Hewlett Packard Letter Ballot comments on FCP-2 Revision 04
Dated December 21, 1999

Technical Comments:

Comments from Geoff Fisher

HP/GF 1. [t] SPC2r13a Table 168 - Protocol specific LUN page (Page Code 18h) defines byte 2 as bits 7 - 4 reserved and bits 3 - 0 as the PROTOCOL IDENTIFIER. Table 169 then defines the PROTOCOL IDENTIFIER as 0 for Fibre Channel (FCPn). In FCP2r4, Table 31 Fibre Channel Logical Unit Control page (18h) defines byte 2 as all bits Reserved (Originally noted this in FCP2r3 Table 25). FCP2r4 therefore conflicts with SPC2r13a.

HP/GF 2. [t] Similarly SPC2r13a Table 170 - Protocol specific port page (Page Code 19h) defines byte 2 as bits 7 - 4 reserved and bits 3 - 0 as the PROTOCOL IDENTIFIER. Table 169 defines the PROTOCOL IDENTIFIER as 0 for Fibre Channel (FCPn). In FCP2r4, Table 32 Fibre Channel Logical Port Control page (19h) defines byte 2 as all bits Reserved (Originally noted this in FCP2r3 Table 26). FCP2r4 therefore conflicts again with SPC2r13a.

HP/GF 3. [t] Also in FCP2r4 Table 32 Byte 1 the Page Length is specified as (06h) whereas it should be (0Eh) for the conventional (n-1) length, also wrong in FCP2r3.

Technical Comments from Stewart Wyatt

HP/SW 4. [t] Page 24, 6.2.5 New or repeated PRLI, last sentence of first paragraph: "A recovery qualifier may be established after the recovery abort, temporarily restricting the choice of OX_ID values." Should this statement also include RX_ID values, if they are valid?

HP/SW 5. [t] Page 46, 9.4.7 FCP_RESID: The effect of sequence error recovery defined in this document on FCP_RESID is not explicitly defined in this clause. I believe that if an error occurs which is successfully recovered using the procedures described in clause 12, that no residuals should be reported. A case in point would be when a target transferred a read data sequence, which the initiator detected an error in. As part of the error recovery the target resends the same sequence, which is successfully received by the initiator. The target reports successful status and no residuals even though the target sent the sequence twice.

HP/SW 6. [t]a Page 52, clause 10.1.1.6 Maximum Burst Size Field: My understanding of the relationship between SCSI and Fibre Channel (see Table 1, SCSI and FCP-2 functions, on page 7 of the FCP-2) is that a SCSI burst is equal to one FCP_DATA IU. If that is true, then the Maximum Burst Size Field specifies the maximum length of an FCP_Data IU. This definition states what it isn't (an interconnect tenancy), notes that it is required, but fails to define what it is. A precise definition is needed. I believe the definition is, "The maximum length of an FCP_DATA read sequence or the maximum amount of data a target can request in an FCP_XFER_RDY". If I am in error we do need to define a mode page parameter that does specify the maximum FCP_DATA IU length.

HP/SW 7. [t] Page 111, annex G.2 Table G.1 Clarification - The SEQ_CNT content, "SEQ_CNT if last Frame transmitted in an Open Sequence + 1. If no Sequence is open then SEQ_CNT = zero" If no sequence is open and the PLOGI Common Service Parameter SEQ_CNT = 1, should Frame Header SEQ_CNT still be

equal to zero? This violates the common usage model of this parameter. If this is intended, it needs to be explicitly stated.

Comments from Matt Wakeley

HP/MW 8. [t] 3.1.21 - the definition of Information Unit seems to imply that all the data in a "phase" must be transmitted in a single sequence. Isn't it possible to send FCP_DATA in multiple sequences instead of just one? For example, if a long transfer is to be performed, a device or initiator may choose to break the transfer up into multiple smaller sequences instead of just on long sequence. Is this allowed by this definition? This is implied by the sequence streaming notes in tables 8 and 9.

HP/MW 9. [t] 4.8, table 4 - should a normal LIP (non resetting) be included?

HP/MW 10. [t] 5.1, table 6 - why is "R" required in the RX_ID field for target identification? Isn't it optional? See 5.10.

HP/MW 11. [t] 5.6.9 defines the value of the OX_ID as the tag defined in ANSI X3.270. X3.270 defines the tag as 64 bits, but the OX_ID is only 32 bits.

HP/MW 12. [t] 5.6.11 defines RLTV_OFF as "not required". However, 9.3 (3rd paragraph) states "If more than one FCP_DATA IU is used to transfer the data, the RLTV_OFF is used to ensure that the SCSI data is reassembled in the proper order." It seems to me that 5.6.11 should define RLTV_OFF as required.

HP/MW 13. [t] 6.2.5, last paragraph "Acknowledged class responders will close the exchange with P_RJT and an indication that process login is required." This is defining ACK and P_RJT to report FC-4 errors. ACK, P_RJT and P_BSY are only defined as FC-2 acknowledgements to signify the deliverability of a sequence or not. This requirement would require a FC-2 to deliver a sequence to an FC-4, that would then indicate to the FC-2 that it is ok to send an ACK or P_RJT. Acknowledged classes of service should work the same as unacknowledged classes - send an ABTS. This also requires a change to J.1.4.

HP/MW 14. [t] 8.2 indicates that the Accept FC-4 Link Service is sent to indicate that the request "has been completed". So, in the case of the SRR, is the accept sent before the retransmitted data, or after? The error recovery procedures indicate the accept is sent before the retransmitted data, but the definition implies after.

HP/MW 15. [t] 10.1.3.2 (DTIPE) - the definition says that the port shall wait in a non-participating state with the bypass set, but shall respond to LPE addressed to it's hard address. This conflicts with FC-AL-2, which indicates that a node has to be in the participating (butaa bypassed) state to respond to an LPE. That is, since the node will respond to an alpha, it's participate flag must be set. Suggest removing the word "nonparticipating".

HP/MW 16. [t] 11 table 35 & 11.3, RR_TOV. Since a recipient of an REC as R_A_TOV (ELS) time to reply to an REC, it seems like RR_TOV should be $3 * (\text{REC_TOV} + \text{R_A_TOV (ELS)})$ when $\text{retry} = 1$.

HP/MW 17. [t] 11.4, table 36, 2nd row, "(optional timer restart)". Why is this optional?

25. [t] 12.3.3, at the end of "(by indicating that the Initiator...", should add "and all bytes not transferred" to differentiate between a lost FCP_XFER_RDY and a lost FCP_RSP requesting an FCP_CONF.

HP/MW 18. [t] 12.6.1, 12.6.2, 12.6.3. The text indicates that if an ABTS fails, the initiator may explicitly logout the target. If the response to REC and SRR fails three times, is a logout also performed? Maybe not, since the aborting of the REC/SRR would be done by ABTS, and if that fails, the target is logged out.

HP/MW 19. [t] 12.7 "If a SCSI Target receives an FCP_CMND from an NL_Port with which it has not successfully completed Process Login (PRLI), it shall discard the FCP_CMND and send PRLO to the SCSI Initiator." This conflicts

with 6.2.5: "Devices may have default PRLI information provided at the time the device is installed in the configuration. Such devices do not require the execution of a PRLI to perform normal FCP operations."

HP/MW 20. [t] 12.7, end of section, there is a "TBD". Need to specify the TBD.

HP/MW 21. [t] B.3.1, page 79, last sentence of section, what does the "Data Transfer Count" mean to a target that sends REC in response to a lost FCP_CONF? Since REC can be used by other FC-4s, perhaps this section should be defined in more generic terms?

HP/MW 22. [t] Figure D.7 and D.8 - "(or a Relative Offset smaller than the Relative Offset specified in the SRR in order to be aligned on an appropriate boundary in the Target)." conflicts with 12.3.5: "the Target transmits an FCP_XFER_RDY with the Relative Offset parameter specified by the SRR" and conflicts with 12.3.3: "retransmit the FCP_XFER_RDY in a new Sequence containing the same Relative Offset as the originally transmitted FCP_XFER_RDY."

HP/MW 23. [t] Figure D.14. In this example, the ACC to the SRR was lost. But what if the target resent the data requested by the SRR? Can the initiator imply that the ACC was sent, or must it abort the SRR and reperform it, causing the target to resend the data again?

Editorial Comments from Stewart Wyatt

HP/SW 24. [e] Introduction page xiv and xv: The introduction has not been updated since the previous revision. It does not reflect the new clause 7 and the 4 additions to the annex.

HP/SW 25. [e] Page 6, Clause 3.4 Editorial conventions: First paragraph, second sentence, "These words and terms are defined either in or in the text where they first appear." This sentence doesn't make sense: "in or in" where?

HP/SW 26. [e] Page 8, clause 4.2 Device Management, last paragraph on the page: The term "SCSI REQUEST SENSE information" should be "SENSE data" (two occurrences). See SAM-2 clause 3.1.84.

HP/SW 27. [e] Page 12, clause 4.7 Task management, last sentence of first paragraph: Other references in this document have been to clause numbers. This reference lists the page without the clause. Reformatting could make this reference become erroneous. Suggest that the reference be to clause 9.1.1.4.

HP/SW 28. [e] Page 18, clause 5.4 information units, first paragraph last sentence references annex B. This appears to be in error. Should it reference annex C?

HP/SW 29. [e] Page 19, notes to Table 9. The first note states that I2 is obsolete. The third note states that, "I2 and I3 allow optional sequence streaming ..." Since I2 is obsolete the third note should not reference I2, only I3.

HP/SW 30. [e] Page 30, 7.1 Query - Get port Identifiers (GID_FT): The first sentence has an extraneous "a" at the beginning of the second line.

HP/SW 31. [e] Page 30, Table 13; page 34, Table 20; page 35, Table 21: There is a formatting problem that is visible both on the screen and when printed. The table cell lines obscure the top of the text.

HP/SW 32. [e] Page 34, clause 8.2, under the bold text "FCP_RJT Reason explanation": There is an extra carriage return separating the two lines in this paragraph.

HP/SW 33. [e] Page 43, clause 9.3 FCP_DATA IU, seventh paragraph: This paragraph states, "If the PRLI service parameter DATA OVERLAY ALLOWED for the initiator is 1, the target may request that data be overlaid. If the PRLI service parameter DATA OVERLAY ALLOWED is 0, the target shall not

request that data be overlaid." This sentence appears to be inconsistent with clause 6.2.6.9 Word 3, Bit 6: DATA OVERLAY ALLOWED, where any exception is made to allow error recovery when RETRY = 1. I would suggest modifying the second sentence to read: "If the PRLI service parameter DATA OVERLAY ALLOWED is 0, the target shall not request that data be overlaid except as is described elsewhere in this document when the PRLI RETRY but is set to 1 and the device is performing FCP-2 error recovery."

HP/SW 34. [e] Page 48, clause 9.4.11, FCP_SNS_INFO: The first sentence states, " The FCP_SNS_INFO field contains the information specified by ANSI X3.301 for presentation by the REQUEST SENSE command." To be technically consistent with SAM-2 the term "data" should be used instead of "information". Also the data is provided by an autosense operation not by a REQUEST SENSE command. I think the sentence should be more accurately written as, "THE FCP_SNS_INFO field contains the sense data specified by ANSI X3.301 delivered by an autosense operation." See SAM-2 3.1.84. My understanding is that the request sense command is not used in FCP.

HP/SW 35. [e] Page 51, clause 10.1.1 Disconnect-Reconnect mode page, immediately after Table 30, the term "interconnect tenancy" is defined. Rather than consistently using this term, an undefined but assumably synonymous term "link tenancy" is used in several places. A search and replace should be performed to make the document consistent. Three occurrences of the "link tenancy" term are on page 52 in the final sentences of clauses 10.1.1.3 Bus Inactivity Limit, 10.1.1.4 Disconnect Time Limit and 10.1.1.5 Connect Time Limit. Another occurrence is on page 53, clause 10.1.1.8 Access fairness management bits, second to last sentence.

HP/SW 36. [e] Page 62, clause 12.1.2 Sequence level error recovery: There is an extra line between the title and the text.

HP/SW 37. [e] Page 63, clause 12.2.2 Error mechanisms for acknowledged class of Service: The term "class" in the title should be "classes". Also the first sentence in the text should end in a colon instead of a period. The second sentence, "The Exchange originator (SCSI Initiator) shall initiate error detection and recovery described in 12.3 for the following:" should state, "The Exchange originator (usually the SCSI Initiator) shall detect an error and initiate recovery described..." The original sentence implies some circular activity where an error initiates error detection. Finally a comment that may not be particularly relevant, there is at least one case where a SCSI target is an exchange originator, that is for a LOGO.

HP/SW 38. [e] Page 67, 12.5.1 SCSI Initiator Abort of Exchange behavior and 12.5.2 SCSI Target Abort of Exchange behavior: These titles are ambiguous - is it Initiator/Target or exchange behavior that is to be addressed? I think better titles would be SCSI Initiator/Target procedure for aborting Exchanges.

HP/SW 39. [e] Page 82, annex C.1.4, Table C.4 - FCP read operation with FCP_XFER_RDY disabled, example. The title of the table does not reflect the FCP-2 requirement to disable FCP_XFER_RDY. The title could be changed by dropping the reference to the FCP_XFER_RDY. The new title would be, a "FCP read operation, example. Alternately some explanatory text could be provided.

HP/SW 40. [e] Page 84, annex C.1.7, Table C.7, second to bottom entry in left column. Redundant bracket at end of statement, " [indicate command completion]]".

HP/SW 41. [e] Page 111, annex G.2 Table G.1 ABTS Frame. Formatting error - the table outlines are missing.

HP/SW 42. [e] Page 112,113, annex G, Table G.2, G.3 and G.4. The text is too high in the table cells.

HP/AT 43. [e] Page 8, clause 4.2 Device management, last paragraph on page 8, last sentence: "...the FCP_RSP payload carry the FCP response..." carry should be carries.

HP/AT 44. [e] Page 68, clause 12.5.2 Target Abort of Exchange behavior,

middle paragraph of clause: "Reinstate Recover Qualifier (RRQ)", Recover should be Recovery.

Editorial comments from Matt Wakeley, Agilent

HP/MW 45. [e] 3.1.127 needs to reference NCITS 1304-D.

HP/MW 46. [e] 3.3.5 "indicated" should be "indicates".

HP/MW 47. [e] 3.3.6 "indicated" should be "indicates".

HP/MW 48. [e] 3.3.6 "standards" should be "standard".

HP/MW 49. [e] 3.2 CMR - suggest removing "project".

HP/MW 50. [e] 4.5, 2nd paragraph "Request Exchange Concise" should be "Read Exchange Concise".

HP/MW 51. [e] 5.4, table 9, 3rd note, I2 is obsolete and should be removed from the note.

HP/MW 52. [e] 5.6.2 and 5.6.3.a The D_ID and S_ID are defined in terms that the exchange originator is always the initiator.a However, the target is allowed to originate exchanges, for example when it sends an REC. Suggest simply using the FC-PH definitions.

HP/MW 53. [?] 6.2.5, 2nd paragraph.a Says: "Immediately after the execution of the first PRLI, both members of all image pairs shall have the same state as they would have after a hard reset or a power on with respect to each other." I think the sentence should say "Immediately before..." (not after).

HP/MW 54. [e] 9.1, table 22 - FCP-1 defined bytes 8-11 as the "Control Field". Do we want to do away with this?

HP/MW 55. [e] 9.1.2.2 - should indicate that bit 0 in the PARM field is set to 0 for this ABTS. (other areas of the document specify when to set the bit to 1)

HP/MW 56. [e] 9.4, table 26 - FCP-1 defined bytes 8-11 as the "FCP Status". Do we want to do away with this?

HP/MW 57. [e] 11.3.a I do not understand what "... and always appropriate to ADISC address discovery time." means.

HP/MW 58. [e] 12.3.2 typo "interal".

HP/MW 59. [e] 12.3.4, "A command that was terminated before execution by a CHECK CONDITION with FCP_CONF requested may have the same REC values as a command for which an FCP_RSP...". This FCP_RSP should be FCP_XFER_RDY.

HP/MW 60. [e] B.1 "FC-PH" should be "FC-FS".

HP/MW 61. [e] B.3.1, page 79, accept payload, should say "The Responder Address Identifier is set to..." (add the word "to").

HP/MW 62. [e] Annex E:a E.2 should reference figure E.2, and the figure renamed figure E.2 (there are two figure E.1s).a The same thing applies to E.3.

HP/MW 63. Annex G, all references to figures should be references to tables.

HP/MW 64. [e] list of figures duplicated on last page of document.

Comments attached to No ballot from George Penokie of IBM Corp.:

Comments are in T10/00-138r0

Comments attached to YesC ballot from Charles Binford of
LSI Logic Corp.:

LSI Logic comments for FCP-2 rev 4
Charles Binford
316 636 8566
Wichita , KS

Overall I was very pleased at how clean of a document this was. A lot has
been fixed since the last revision. My congratulations go to the editor for
a job well done.

01: Page 13 / PDF 29 Section 4.8, Table 4

Cmt Name: Column Order

(This is a very minor comment and may be ignored at the editor's discretion.)

I believe the readability of the table will be enhanced if the columns were
reordered such that actions that had very similar effects were grouped
together. Specifically, I suggest moving:

- SCSI Logical Unit Reset column to the right of SCSI Target Reset
- ABTS w/Last Seq. to the far right hand side

02: Page 13 / PDF 29 Section 4.8, Table 4

Cmt Name: Row alignment

(This is a very minor comment and may be ignored at the editor's discretion.)

The 'Y's and 'N's of the 'Open FCP Sequences Terminated' rows don't line up
well with the descriptions.

(my other comments have a bit more meat to them, really!)

03: Page 13 / PDF 29 Section 4.8, Table 4

Cmt Name: Placement of note 12 label

The 'N' and 'Y' of the SCSI Target mode page/PRLI-PRLO box reference note
12. I believe that note 12 is applicable to the entire row (not just this
specific box) and would be better placed in the row description.

04: Page 13 / PDF 29 Section 4.8, Table 4

Cmt Name: Wrong value for table entry

The value at:

row: Prevent Allow Medium Removal / Only for SCSI Initiator port initiating
action

column: LOGI,PLOGI

is currently 'N', it should be 'Y'

05: Page 18 / PDF 34 Section 5.4

Cmt Name: Bad reference

The reference to annex B in the first paragraph should be to annex C.

06: Page 18 / PDF 34 Section 5.4, Table 8

Cmt Name: Obsolete IU T7

The T7 IU is never used and should be marked obsolete. Even if the *initial*
xfer-rdy is suppressed with the PRLI bit, each Data-Out is *followed* by an
xfer-rdy or status, thus T6 which transfers SI is all that is needed.

(Note, a global search for T7 needs to be made, e.g. section 9.3)

07: Page 24 / PDF 40 Section 6.2.5, 2nd paragraph

Cmt Name: Misleading PRLI requirement

At the end of the second paragraph of this section the statement is made
that 'Subsequent PRLI operations shall have no effect on FCP operation
between two devices except where new requirements are negotiated between the

devices.' I hope this is trying to say there is no effect if an image pair is not established by the PRLI. It sounds like the initiator and target are supposed to compare previous setting to current settings and only apply Table 4 if there are any differences. This would be a mistake. Any PRLI (whether the 1st or the 10th) that has the establish image pair bit should cause the target to 'reset' that initiator's FCP operation as detailed in Table 4 under the PRLI column.

08: Page 24 / PDF 40 Section 6.2.5, 4th paragraph

Cmt Name: Incorrect ABTS requirement.

The middle of the 4th paragraph of this section states that 'Non-acknowledged class responders will close the exchange with an ABTS or ABTX ELS.' This is inconsistent with 12.7 of this document and with several years worth of shipping product under PLDA (I don't think our intent for FCP-2 is to invalidate any PLDA behavior). What will really happen is the responder will discard the received frame/sequence, send a PRLO, and let the initiator send the ABTS for cleanup if it chooses.

09: Page 29 / PDF 45 Section 6.3

Cmt Name: Multiple Image Pair behavior

The last sentence of the first paragraph states 'If any image pairs between the initiator and the host remain after the PRLO, then there is no clearing effect on any task, reservation, mode page parameter or status.' This would make sense to me if the phrase 'for those remaining image pairs' was added to the end of this sentence. The current wording sounds like nothing is cleared until all image pairs are PRLO'd, I don't think that is the intent.

10: Page 30 / PDF 46 Section 7.2, 2nd paragraph

Cmt Name: Need to specify which LUN

The second paragraph specifies the Inquiry data should be the object supplied. Words should be added to indicate it should be the Inquiry data for LUN 0.

11: Page 31 / PDF 47 Section 8.1

Cmt Name: Missing period

The last sentence on the page is missing a period.

12: Page 37 / PDF 53 Section 9.1.1.3

Cmt Name: Ordered Q rules

The paragraph explaining Ordered_Q describes in detail the issues of delivering commands in a certain order on a class 2 fabric. If CRN is being used all of this extra work is unnecessary. Therefore I suggest words be added to indicate this is applicable if using CRN==0.

13: Page 43 / PDF 59 Section 9.3, 4th paragraph

Cmt Name: XFER_RDY disable clarification

The last sentence of the 4th paragraph implies that that *each* FCP_DATA IU is sent without a preceding XFER_RDY if XFER_RDY disable is on in PRLI. Only the *1st* FCP_DATA IU is sent without an XFER_RDY.

14: Page 43 / PDF 59 Section 9.3, 5th paragraph

Cmt Name: _UNDER should be _OVER

The second to last sentence in the 5th paragraph incorrectly states the FCP_RESID_UNDER bit should be on. It should say FCP_RESID_OVER.

15: Page 63 / PDF 79 Section 12.2.2 4)

Cmt Name: Redundant item

The 4th item under SCSI Initiator '4) a Sequence error is detected in a Sequence transmitted from a Target to an Initiator.' is redundant with item 3) in the previous classless section. There is no reason to repeat it here. It should be deleted.

FCP_CMND. Either 'or PRLI' could be inserted after both occurrences of FCP_CMND in the present paragraph, or another paragraph could be added to the section.

24: Page 69 / PDF 85 Section 12.7, last paragraph
Cmt Name: Can't have 'TBD'.
Obviously a standard can not be forwarded with a 'TBD'.

25: Page 92-102 / PDF 108- Section Annex D
Cmt Name: Misuse of Timeout symbol
In many of the diagrams (e.g. D.4, D.7, D.8, etc.) the Timer symbol is used to indicate a cause and effect. For example in figure D.9, the Timer symbol shows that the REC is sent as a result of detecting a missing frame. While this information is useful, it is very confusing to use the same symbol as the Timer symbol. I'd suggest adding a new symbol the drawing conventions (Table D.1) and separate timeout from cause and effect. (The same symbol, only dotted would work nicely.)

26: Page 95-96 / PDF 111-112 Figures D.7, D.8
Cmt Name: Target shall not adjust RO from SRR
The text in both figures D.7 and D.8 incorrectly state that the target may adjust the RO to be smaller than what is requested in SRR. These sentences should be removed.

27: Page 109-110 / PDF 125-126 Section Annex F
Cmt Name: Device Identification Page references
Three places in this annex (F.1.1 8., F.1.2 4., and F.3) the "logical unit WWN" value returned in the Inquiry VPD page 83h is referred to as having a WW Port Name component. For the purpose of tracking a Logical Unit, one should only use Identifiers that have an Association field value of 00b. By definition, that identifier will not have a WWPN component. Also, while it is true that some devices may use their FC WWNN (node name) for the LU Identifier, it is not required. Thus any reference to "node name", "port name", (including WWNN and WWPN) should not be used. I'd suggest a generic 'Logical Unit WWN'. (Note: some devices use the Registered, Extended format which is 16 bytes long.)

Comments attached to No ballot from Gene Milligan of Seagate Technology:

Comments are in T10/00-141r0

Comments attached to YesC ballot from Erich Oetting of Storage Technology Corp.:

CP-2 Letter Ballot Comments from Storage Technology Corp.

Paper Page # i
Section # Title page
Paragraph # 1
Problem: Through out the document the term "X3T10" is being used.

Solution: Replace all current "X3T10" references with "NCITS T10" as necessary.

Comment # 2
PDF Page # 2
Paper Page # ii
Section # Points Of Contact
Paragraph # X3T10 Chair
Problem: John Lohmeyers Email address is not correct.

Solution: Change it to lohmeier@t10.org

Comment # 3
PDF Page # 2
Paper Page # ii
Section # Points Of Contact
Paragraph # T10 Reflector
Problem: The two references to "symbios.com" are not correct.

Solution: Replace with "t10.org".

Comment # 4
PDF Page # 2
Paper Page # ii
Section # Points Of Contact
Paragraph #
Problem: Should the T10 Web Site be listed in this section?

Solution: Add the T10 Web Page as <http://www.t10.org>.

Comment # 5
PDF Page # 2
Paper Page # ii
Section # Abstract
Paragraph #
Problem: Last sentence in Abstract talks about the second revision instead of this revision.

Solution: Remove the second sentence.

Comment # 6
PDF Page # 5
Paper Page # v
Section # Contents
Paragraph #
Problem: Extra text after "Forward".

Solution: Remove text in parentheses following Foreword entry..

Comment # 7
PDF Page # 10
Paper Page # x
Section # List Of Tables
Table # F.1
Problem: There is no Table F.1 on page 110.

Solution: Remove F.1 from the List of Tables.

Comment # 8

PDF Page # 14
Paper Page # xiv
Section # Introduction
Paragraph # 3
Problem: The number of clauses and annexes is incorrect and their descriptions are incorrect.

Solution: Update as necessary.

Comment # 9
PDF Page # 15
Paper Page # xv
Section # Introduction
Paragraph # ?
Problem: Missing period.

Solution: Add a period at the end of sentence starting "Annex E".

Comment # 10
PDF Page # 15
Paper Page # xv
Section # Introduction
Paragraph # Last paragraph on page.
Problem: SAM-2 should be referred to by name.

Solution: Change "and subsequent documents" to "and SCSI-3 Architecture Model-2 (SAM-2)".

Comment # 11
PDF Page # 17
Paper Page # 1
Section # Scope
Paragraph # 1
Problem: Wording.

Solution: Three sentences that start "The FCP-2" should start "FCP-2".

Comment # 12
PDF Page # 17
Paper Page # 1
Section # Scope
Paragraph # 1
Problem: Update reference.

Solution: Replace SAM ref. in third sentence with SAM-2.

Comment # 13
PDF Page # 17
Paper Page # 1
Section # Scope
Paragraph # 1
Problem: Sentence not needed.

Solution: Remove last sentence of paragraph.

Comment # 14
PDF Page # 17
Paper Page # 1
Section # 2.2
Paragraph # 2
Problem: Verify the status of these documents.

Solution: Move documents to 2.1 as necessary.

Comment # 15
PDF Page # 17

Paper Page # 1
Section # 2.2
Paragraph #
Problem: Typos in FC-AL-2 ref.

Solution: Add a comma after "revision 7.0", remove period after "FC-AL-2".

Comment # 16
PDF Page # 17
Paper Page # 1
Section # 2.2
Paragraph #
Problem: Typos in FC-AL-3 ref.

Solution: Add a comma and space after "revision 1.0", remove period after "FC-AL-3".

Comment # 17
PDF Page # 18
Paper Page # 2

Section # 2.2
Paragraph # Last
Problem: The documents described in this clause are both T10 and T11.

Solution: Remove the "X3T10" from the first sentence.

Comment # 18
PDF Page # 18
Paper Page # 2
Section # 2.2
Paragraph # Last
Problem: Missing period.

Solution: Add period after zip code in last sentence.

Comment # 19
PDF Page # 18
Paper Page # 2
Section # 3
Paragraph #
Problem: Through out this document terms have been created as FCP_... and are not defined in Clause 3.

Solution: Define all FCP_... terms used in this document in Clause 3.

Comment # 20
PDF Page # 19
Paper Page # 3
Section # 3.1.22
Paragraph #
Problem: Inconsistent wording.

Solution: Change "An SCSI" to "A SCSI".

Comment # 21
PDF Page # 19
Paper Page # 4
Section # 3.1.42
Paragraph #
Problem: Inconsistent wording.

Solution: Change "An SCSI" to "A SCSI".

Comment # 22
PDF Page # 22
Paper Page # 6
Section # 3.2
Paragraph #
Problem: Abbreviations used in the document are not defined.

Solution: Add definitions for WWNN and WWPN to clause 3.2.

Comment # 23
PDF Page # 23
Paper Page # 7
Section # 4.1
Paragraph # 1
Problem: Wording.

Solution: First sentence, change "The Fibre Channel" to "Fibre Channel".

Comment # 24
PDF Page # 23
Paper Page # 7
Section # 4.1
Paragraph # 3
Problem: Wording.

Solution: First sentence, change "The Fibre Channel Arbitrated Loop" to "Fibre Channel Arbitrated Loop".

Comment # 25
PDF Page # 24
Paper Page # 8
Section # 4.2
Paragraph # 5
Problem: Wording.

Solution: Last sentence, change "FCP_RSP payload carry" to "FCP_RSP payload shall carry".

Comment # 26
PDF Page # 26
Paper Page # 10
Section # 4.3
Paragraph # Last
Problem: Incomplete list.

Solution: Add REPORT LUNS to the list of initialization commands.

Comment # 27
PDF Page # 26
Paper Page # 10
Section # 4.4
Paragraph # 4
Problem: The first sentence uses "may" be used in describing queued command completions.

Solution: Either change "may" to "shall" or add text saying link level recovery may not be possible on a queued device.

Comment # 28
PDF Page # 27
Paper Page # 11
Section # 4.6
Paragraph #
Problem: Blank entry in Table 2.

Solution: Remove the blank line in Table 2.

Comment # 29
PDF Page # 28
Paper Page # 12
Section # 4.7
Paragraph # 1
Problem: First sentence, task management function also applies to Clear ACA.

Solution: Change "must be aborted or terminated" to "must be aborted or terminated, or an ACA condition must be cleared."

Comment # 30
PDF Page # 28
Paper Page # 12
Section # 4.7
Paragraph # 2
Problem: Typo.

Solution: Capitalize "Table" in last sentence.

Comment # 31
PDF Page # 32
Paper Page # 16
Section # 5.1
Paragraph # 2
Problem: The first sentence uses "NL_Port", this should also apply to N_Ports as well.

Solution: The term "FCP_Port" has already been defined in this document. Replace all remaining "L_Port" and "N_Port" with "FCP_Port" as necessary.

Comment # 32
PDF Page # 33
Paper Page # 17
Section # 5.3
Paragraph # 1
Problem: Specify use of initiator WWPN when keeping track of reservations.

Solution: In second sentence, replace "world-wide unique name of each initiator" with "world-wide unique port name of each initiator".

Comment # 33
PDF Page # 33
Paper Page # 17
Section # 5.3
Paragraph # 2
Problem: Requirements for World Wide Names are not clear.

Solution: Replace the last two sentences with. "FCP-2 devices with a single LUN and a single port should not use the same world wide name for the LUN and the port. Devices with more than one LUN or more than one port shall use a unique world wide name for each port and each LUN.

Comment # 34
PDF Page # 34
Paper Page # 18
Section # 5.4
Paragraph # 1
Problem: The last sentence refers to Annex "B" incorrectly.

Solution: Replace "B" with "C".

Comment # 35
PDF Page # 34
Paper Page # 18
Section # 5.4
Paragraph # 8 & 9
Problem: For any IU that is L (last sequence of exchange) why is SI (sequence initiative) marked as T (transferred) when the exchange is now over?

Solution: Create an SI code of X (don't care) and update these tables as necessary.

Comment # 36
PDF Page # 34
Paper Page # 18
Section # 5.4
Table # 8

Problem: Unfortunate to see that IU's T8, T9, T10, and T11 have been declared obsolete. I (DAP) believe these IU's can aid in performance and resource management and don't see any harm in leaving them in at this time.

Solution: Leave IU's in FCP-2.

Comment # 37
PDF Page # 35
Paper Page # 19
Section # 5.4
Table # 9

Problem: Unfortunate to see that IU's I6 and I7 have been declared obsolete. I (DAP) believe these IU's can aid in performance and resource management and don't see any harm in leaving them in at this time.

Solution: Leave IU's in FCP-2.

Comment # 38
PDF Page # 36
Paper Page # 20
Section # 5.6
Table # 10

Problem: Word 1 bits 31-24 are shown as "reserved" when FC-PH-2 Figure 46 has defined them as "CS_CTL".

Solution: Replace "reserved" with "CS_CTL" and add a sub clause describing this field.

Comment # 39
PDF Page # 37
Paper Page # 21
Section # 5.6.11

Paragraph # Sun clause name

Problem: The term "RLTV_OFF" is not defined in this document or any other FC documents.

Solution: Either define this term in Clause 3 or replace every occurrence with the FC-PH definition in Clause 18.11.

Comment # 40
PDF Page # 37
Paper Page # 21
Section # 5.6.11
Paragraph #

Problem: Missing restriction for Relative Offset.

Solution: Specify the Relative Offset shall be 0 modulo 4.

Comment # 41
PDF Page # 38
Paper Page # 22
Section # 6
Paragraph #

Problem: This clause does not indicate the required order of logins prior to PRLI.

Solution: Add a paragraph that indicates the proper order of logging in. i.e. Flogi, Name Server, Plogi, Prli.

Comment # 42
PDF Page # 38

Paper Page # 22

Section # 6.1

Paragraph # 5

Problem: In the description of the process login modes, what controls these modes are not stated.

Solution: Add "(Establish Image Pair = 0)" and "(Establish Image Pair = 1)".

Comment # 43

PDF Page # 38, 39

Paper Page # 22, 23

Section #

Paragraph #

Problem: Inconsistent usage.

Solution: Add (or remove) period after all "(See FC-FS)" references.

Comment # 44

PDF Page # 41

Paper Page # 25

Section #

Table # 11

Problem: Command/Data Mixed Allowed and Data/Response Mixed Allowed should not be obsoleted at this time.

Solution: Reactivate these features.

Comment # 45

PDF Page # 43

Paper Page # 27

Section # 6.2.6.12

Paragraph # Sun clause name

Problem: The term "XFER_RDY" is not defined in this document.

Solution: Define this term in Clause 3.

Comment # 46

PDF Page # 43

Paper Page # 27

Section # 6.2.6.12

Paragraph # 1

Problem: The "XFER_RDY" is not correct.

Solution: Replace "XFER_RDY" with "FCP_XFER_RDY IU".

Comment # 47

PDF Page # 43

Paper Page # 27

Section # 6.2.6.13

Paragraph # 1

Problem: Wording.

Solution: Second sentence, replace "may be not used" with "may not be used".

Comment # 48

PDF Page # 44

Paper Page # 28

Section #

Table # 12

Problem: Command/Data Mixed Allowed and Data/Response Mixed Allowed should not be obsoleted at this time.

Solution: Reactivate these features.

Comment # 49
PDF Page # 44
Paper Page # 28
Section # 6.2.7.1
Paragraph #
Problem: Font.

Solution: "ACCEPT RESPONSE CODE" should not be bold.

Comment # 50
PDF Page # 46
Paper Page # 30
Section # 7.1
Paragraph # 1
Problem: Wording.

Solution: Change "registered for a the requested" to "registered for the requested"

Comment # 51
PDF Page # 46
Paper Page # 30
Section # 7.2
Paragraph # 1
Problem: FC-GS-3 specifies the objects as:
- Register FC-4 Descriptors (RFD_ID)
- Get FC-4 Descriptors (GFD_ID)

Solution: Use same objects as FC-GS-3.

Comment # 52
PDF Page # 46
Paper Page # 30
Section # 7.2
Paragraph # 1
Problem: FC-GS-3 specifies the objects by port identifier (i.e. not port name).

Solution: Use port identifier.

Comment # 53
PDF Page # 46
Paper Page # 30
Section # 7.2
Paragraph # 2
Problem: Currently the FCP object would only apply to an FCP Target device. It's not clear who is supposed to issue the Register request either. I can see a benefit if each Target device would Register it's Inquiry data, could this be expanded to the lun level also?

Solution: Clarify who issues the register request.

Comment # 54
PDF Page # 47
Paper Page # 31
Section # 8
Paragraph # 1
Problem: The last sentence makes reference to "ELS" incorrectly when talking about SRR.

Solution: Replace "ELS" with "FC-4 Link Service" here and through out the document as necessary.

Comment # 55
PDF Page # 47
Paper Page # 31
Section # 8
Table # 15
Problem: The Table and the text do not specify what the "Encoded Value

(bits 31-24)" are.

Solution: Add text that indicates they are the first word of the payload of the request or the reply.

Comment # 56

PDF Page # 47

Paper Page # 31

Section # 8.1

Paragraph # last

Problem: Missing period.

Solution: Add a period to the end of the last sentence.

Comment # 57

PDF Page # 48

Paper Page # 32

Section # 8.1 Payload:

Paragraph # 3

Problem: The last sentence indicates recovery shall be on a four-byte boundary. However, no where else can I find the approved restriction on fixed block record length of 0 modulo 4.

Solution: Add text detailing the fixed block length restriction into sub clause 5.6.11 and/or create a new sub clause somewhere that defines this.

Comment # 58

PDF Page # 49

Paper Page # 33

Section # 8.3

Paragraph # 6

Problem: The last sentence on the page is incomplete and it also appears to be the same as the Table 19 title.

Solution: Complete this sentence and make a reference to table 19.

Comment # 59

PDF Page # 50

Paper Page # 34

Section # 8.3

Table # 19

Problem: The title of Table 19 needs to be clarified.

Solution: Add "of Payload" to the end of the Table title.

Comment # 60

PDF Page # 50

Paper Page # 34

Section # 8.3

Paragraph:

Problem: Missing Colon.

Solution: Add a colon after "Protocol Error" in Reason Code Descriptions.

Comment # 61

PDF Page # 50

Paper Page # 34

Section # 8.3

Paragraph: Reason explanation

Problem: Wording.

Solution: Change "Table 21 shows expanded explanations" to "Table 21 lists the reason code explanations".

Comment # 62

PDF Page # 50

Paper Page # 34

Section # 8.3
Table # 19
Problem: The byte 1 column has the bits incorrectly labeled.

Solution: Change the bits to "23-16".

Comment # 63
PDF Page # 50
Paper Page # 34
Section # 8.3
Table # 20
Problem: This table is not referenced by any text.

Solution: Add a reference to this table under FCP_RJT Reason Code Descriptions.

Comment # 64
PDF Page # 51
Paper Page # 35
Section # 8.3
Table # 21
Problem: The table title is inconsistent with the text that references it.

Solution: Remove "code" from the title.

Comment # 65
PDF Page # 51
Paper Page # 35
Section # 8.3
Table # 21
Problem: Blank rows in table.

Solution: Remove two blank rows.

Comment # 66
PDF Page # 52
Paper Page # 36
Section # 9.1
Paragraph # 1
Problem: The last sentence is missing a period.

Solution: Add a period.

Comment # 67
PDF Page # 52
Paper Page # 36
Section # 9.1.1.1
Paragraph # 2
Problem: Second sentence text implies that all LUNs must be the same device type.

Solution: Remove the second sentence.

Comment # 68
PDF Page # 54
Paper Page # 38
Section # 9.1.1.4
Paragraph # Clear ACA section.
Problem: NORMACA should be in small caps.

Solution: Change font for NORMACA in two places.

Comment # 69
PDF Page # 55
Paper Page # 39
Section # 9.1.1.4
Paragraph # Logical Unit Reset

Problem: In item 6) there is a reference to "(see 4.11)". Clause 4.11 does not exist.

Solution: Correct the reference as necessary.

Comment # 70

PDF Page # 55

Paper Page # 39

Section # 9.1.1.4

Paragraph # Logical Unit Reset section, just before note.

Problem: TARGET RESET should be LOGICAL UNIT RESET.

Solution: Replace TARGET RESET with LOGICAL UNIT RESET.

Comment # 71

PDF Page # 56

Paper Page # 40

Section # 9.1.1.4

Paragraph # Abort Task Set section, third paragraph.

Problem: Description used in previous task management function should also apply here.

Solution: Change to "For a target FCP_Port, an exchange is also in an ambiguous state if the exchange exists between the target FCP_Port and an initiator other than the initiator FCP_Port that performed the ABORT TASK SET".

Comment # 72

PDF Page # 56

Paper Page # 40

Section # 9.1.1.6

Paragraph # 1

Problem: This sub clause describes the "Read Data" field, but Table 22 has this bit labeled differently.

Solution: Change the sub clause title and text with "RDDATA".

Comment # 73

PDF Page # 56

Paper Page # 40

Section # 9.1.1.7

Paragraph # 1

Problem: This sub clause describes the "Write Data" field but table 22 has this bit labeled differently.

Solution: Change the sub clause title and text with "WRDATA".

Comment # 74

PDF Page # 57

Paper Page # 41

Section # 9.1.2.2

Paragraph # 3 & 4

Problem: There are two references to "FFFF h".

Solution: Remove the space character before the h in these and any other binary or hex numbers used through out the document.

Comment # 75

PDF Page # 58

Paper Page # 42

Section # 9.2.1

Paragraph # Sun clause name

Problem: The term "DATA_RO" is not defined in this document.

Solution: Define this term in Clause 3.

Comment # 76
PDF Page # 58
Paper Page # 42
Section # 9.2.1
Paragraph #
Problem: Missing restriction on Relative Offset.

Solution: Specify the Relative Offset shall be 0 modulo 4.

Comment # 77
PDF Page # 58
Paper Page # 42
Section # 9.2.2
Paragraph # Sun clause name
Problem: The term "BURST_LEN" is not defined in this document.

Solution: Define this term in Clause 3.

Comment # 78
PDF Page # 58
Paper Page # 42
Section # 9.2.2
Paragraph # 2
Problem: There is a reference to "(see 9.3)" that is incorrect.

Solution: Replace the "9.3" with "10.1.1.6".

Comment # 79
PDF Page # 59
Paper Page # 43
Section # 9.3
Paragraph # 4
Problem: The last sentence of paragraph conflicts with 9.2 paragraph 2 second sentence. Only true for the first burst, subsequent bursts must use the FCP_XFER_RDY

Solution: Specify the restriction.

Comment # 80
PDF Page # 59
Paper Page # 43
Section # 9.3
Paragraph # 5
Problem: There is a reference to 9.4.1 that is incorrect.

Solution: Replace "9.4.1" with "9.4.2".

Comment # 81
PDF Page # 71
Paper Page # 55
Section # 10.1.3.2
Paragraph # Heading
Problem: Spelling error.

Solution: Change "INITIATIED" to "INITIATED"..

Comment # 82
PDF Page # 71
Paper Page # 55
Section # 10.1.3.2
Paragraph # 1
Problem: Typo.

Solution: Change "A LPE primitive sequences addressed..." to "A LPE primitive sequence addressed...".

Comment # 83
PDF Page # 72
Paper Page # 56
Section # 10.1.3.6
Paragraph # 1

Problem: The second to the last sentence needs a reference to FC-TAPE added with FC-PLDA and FC-FLA.

Solution: Add the reference.

Comment # 84
PDF Page # 73
Paper Page # 57
Section # 10.1.3.8
Paragraph # 1
Problem: Style.

Solution: First sentence, change "a fabric loop port, FL_Port, on the loop." to "a fabric loop port (FL_Port), on the loop..

Comment # 85
PDF Page # 73
Paper Page # 57
Section # 10.1.3.8
Paragraph # 1

Problem: The second sentence needs a reference to FC-TAPE added with FC-PLDA.

Solution: Add the reference.

Comment # 86
PDF Page # 73
Paper Page # 57
Section # 10.1.3.10
Paragraph # 2
Problem: Missing reason for ref.

Solution: change "See NCITS 1304-D." to "See NCITS 1304-D for a description of MCM operations."

Comment # 87
PDF Page # 76
Paper Page # 60
Section # 11.4
Paragraph # 1
Problem: Wording.

Solution: First sentence, change "provide minimum" to provide a minimum".

Comment # 88
PDF Page # 78
Paper Page # 62
Section # 12.1.2
Paragraph # 1
Problem: Format.

Solution: Remove extra blank line between heading and first paragraph.

Comment # 89
PDF Page # 78
Paper Page # 62
Section # 12.1.1 & 12.1.2
Paragraph # 1

Problem: The word "chapter" is used in these paragraphs.

Solution: Replace "chapter" with "clause".

Comment # 90
PDF Page # 78
Paper Page # 63
Section # 12.1.2
Paragraph # 3
Problem: Formatting.

Solution: Third paragraph, appears to be a larger font size. Change it to match others.

Comment # 91
PDF Page # 78
Paper Page # 62
Section # 12.1.2
Paragraph # 4
Problem: A reference to Annex E needs to be added with Annex D.

Solution: Add "" and Annex E" to the end of the sentence.

Comment # 92
PDF Page # 78
Paper Page # 62
Section # 12.2.1
Paragraph # Step 2
Problem: Wording.

Solution: Change "in an Sequence" to "in a Sequence".

Comment # 93
PDF Page # 78
Paper Page # 62
Section # 12.2.1
Paragraph # Step 4
Problem: Typo.

Solution: Remove space between "0 b".

Comment # 94
PDF Page # 79
Paper Page # 63
Section # 12.2.2
Paragraph # Third paragraph, Step 4
Problem: Wording.

Solution: Change "in an Sequence" to "in a Sequence".

Comment # 95
PDF Page # 79
Paper Page # 63
Section # 12.2.2
Paragraph # 4, Step 4
Problem: Missing requirement.

Solution: Indicate the RRQ should be sent after expiration of R_A_TOV.

Comment # 96
PDF Page # 80
Paper Page # 64
Section # 12.3.2
Paragraph # 3
Problem: Spelling error.

Solution: Change "minimum interal" to "minimum interval".

Comment # 97

PDF Page # 80
Paper Page # 64
Section # 12.3.3
Paragraph # 2

Problem: The SRR is being described as an "Extended Link Service".

Solution: Through out the document replace "Extended Link Service" with "FC-4 Link Service".

Comment # 98
PDF Page # 83
Paper Page # 67
Section # 12.4
Paragraph # step b.
Problem: Typo.

Solution: Change "FCP_CONF:" to "FCP_CONF;".

Comment # 99
PDF Page # 84
Paper Page # 68
Section # 12.5.2
Paragraph #
Problem: Typo.

Solution: Change two instances of "FFFF h" to "FFFFh".

Comment # 100
PDF Page # 85
Paper Page # 69
Section # 12.7
Paragraph # 4
Problem: There is a "see TBD" in the text.

Solution: Replace the TBD with the correct reference.

Comment # 101
PDF Page #
Paper Page # 71
Section # A.1
Paragraph # 2
Problem: Editors notes should not be in released standards.

Solution: Remove the note.

Comment # 102
PDF Page # 87
Paper Page # 71
Section # A.1
Paragraph # Table A.1
Problem: The object identifier and object address entries contain the same procedure terms.

Solution: Change one of them?

Comment # 103
PDF Page # 89
Paper Page # 73
Section # A.3
Paragraph # Table A.3
Problem: What does || in table indicate?

Solution: Each entry in the third column contains a "||". Is there something missing? Also, does a CRN/value and FCP_CONF request belong in this table?

Comment # 104
PDF Page # 89
Paper Page # 73
Section # A.4

Paragraph #
Problem: What does || indicate?

Solution: A "||" appears inside the procedure call without explanation.
Explain or remove.

Comment # 105
PDF Page # 89
Paper Page # 74
Section # A.4
Table # A.4
Problem: What does || indicate?

Solution: A "||" appears without explanation. Explain or remove.

Comment # 106
PDF Page # 89
Paper Page # 74
Section # A.5
Paragraph #
Problem: What does || indicate?

Solution: A "||" appears inside the procedure call without explanation.
Explain or remove.

Comment # 107
PDF Page # 90
Paper Page # 74
Section # A.5.1
Paragraph # 2
Problem: The second sentence makes reference to SCSI "parallel" interface.

Solution: Remove the "parallel" reference.

Comment # 108
PDF Page # 91
Paper Page # 75
Section # A.5.1.1 - A.5.1.7
Paragraph # 1
Problem: The first sentence of each of these sub clauses makes reference to SCSI "parallel" interface.

Solution: Remove the "parallel" reference.

Comment # 109
PDF Page # 98
Paper Page # 82
Section # C.1.4
Table # C.4
Problem: Missing note.

Solution: Add note contained in clause C.1.1.

Comment # 110
PDF Page # 99
Paper Page # 79
Section # B.3.1
Paragraph # ?
Problem: Typo after "Accept payload:" header.

Solution: Remove the "-" before the sentence.

Comment # 111
PDF Page # 105
Paper Page # 89
Section # D
Paragraph # Heading

Problem: Improve wording.

Solution: Change heading to "Examples of error detection and recovery actions".

Comment # 112
PDF Page # 111
Paper Page # 95
Section # Annex D
Figure # D.7

Problem: The last sentence of the error recovery text in the figure body "(or a Relative...)" is incorrect.

Solution: Remove "(or a Relative Offset smaller than the Relative Offset specified in the SRR in order to be aligned on an appropriate boundary in the Target)". This issue was debated and the group determined the Target shall use the specified Relative Offset in the SRR only (and use 0 modulo 4).

Comment # 113
PDF Page # 112
Paper Page # 96
Section # Annex D
Figure # D.8

Problem: The last sentence of the Error Recovery text in the figure body "(or a Relative...)" is incorrect.

Solution: Remove "(or a Relative Offset smaller than the Relative Offset specified in the SRR in order to be aligned on an appropriate boundary in the Target)". This issue was debated and the group determined the Target shall use the specified Relative Offset in the SRR only (and use 0 modulo 4)..

Comment # 114
PDF Page # 122
Paper Page # 106
Section # E.3.2
Paragraph # 2

Problem: The 3rd sentence states through the "tenth" block, which is incorrect.

Solution: Replace "tenth" with "twelfth".

Comment # 115
PDF Page # 122
Paper Page # 106
Section # E.3.2
Paragraph # 2

Problem: The 4th sentence states the FCP_RSP "will also be retransmitted" is incorrect.

Solution: Replace "will also be retransmitted" with "will be transmitted".

Comment # 116
PDF Page # 125
Paper Page # 109
Section # F
Paragraph #

Problem: Update to match later document.

Solution: Update the text to match document T11/99-340v3 on the web site (it's actually v4 as indicated in the document text). I (DAP) will be updating this document as a result of recent FC-GS-3 work. The new document number will be 00-039v0.

Comment # 117
PDF Page # 126
Paper Page # 110
Section # F.2
Paragraph # 5

Problem: In item 4 there is reference to ADISC, should PDISC also be included?

Solution: Add PDISC to the text as necessary.

Comment # 118
PDF Page # 133
Paper Page # 117
Section # I.1
Paragraph #

Problem: Should multi-initiator Reserve/Release be mentioned here?

Solution: This looks like a good spot for some text regarding Reserve/Release in a multi-initiator environment and I (DAP) am willing to do the work.

Comment # 119
PDF Page # 135
Paper Page # 119
Section # J
Paragraph #

Problem: Requirements for other standards should be in the other standards.

Solution: Remove Annex J after submitting proposals against future versions of the affected standards. If this is not done, at least edit Annex J to remove phrases like "I believe".

Comment # 120
PDF Page # 137
Paper Page # cxxix
Section # ?
Paragraph # ?

Problem: This list of figures has been duplicated.

Solution: Remove the list of figures and verify the document ending page number.

*** End of StorageTek comments on FCP-2 LB ***

Comments attached to No ballot from Robert N. Snively of Sun Microsystems Computer Co:

Comments are in T10/00-139r0.

Comments attached to YesC ballot from Paul D. Aloisi of Texas Instruments:

Texas Instruments - FCP-2 comments Editorial

Paul Aloisi - Principal

Comment 1
2.2 Last Paragraph - NCITS documents should be reference not just X3T10

Comment 2

General - The references to SCSI-3, I thought we had changed to just SCSI without the -3

Comment 4
X3T10 should be just T10 - several places in the document. 2.2 example

Comment 5
Web site and reflectors are www.t10.org & T10.org

Comment 6
John Lohmeyer mail is lohmeyre@t10.org

Comment 7
We don't use the SCSI Bulletin board any more.

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