

T10/04-242r1

Voting Results on T10 Letter Ballot 04-241r0 on  
Forwarding SBC-2 to First Public Review  
Ballot closed: 2004/08/24 12:00 noon MDT

Organization	Name	S Vote	Add'l Info
Adaptec, Inc.	Tim Symons	P Yes	
Agilent Technologies	Pat Thaler	P No	Cmnts
Amphenol Interconnect	Michael Wingard	P Yes	
Brocade	Robert Snively	P No	Cmnts
Cisco Systems, Inc.	Claudio DeSanti	P Yes	
CNT	David Peterson	P Yes	
Crossroads Systems, Inc.	Dexter Anderson	P Yes	
Dallas Semiconductor	James A. Lott, Jr.	P Yes	
Dell, Inc.	Kevin Marks	P Yes	
EMC Corp.	Gary S. Robinson	P Yes	
Emulex	Robert H. Nixon	P Yes	Cmnts
ENDL	Ralph O. Weber	P No	Cmnts
FCI	Douglas Wagner	P Yes	
Foxconn Electronics	Elwood Parsons	P Abs	Cmnts
Fujitsu	Mike Fitzpatrick	P Yes	
General Dynamics		DNV	
Hewlett Packard Co.	Rob Elliott	P Yes	Cmnts
Hitachi Cable Manchester		DNV	
Hitachi Global Storage Tech.	Dan Colegrove	P Yes	
IBM Corp.	George O. Penokie	P No	Cmnts
Intel Corp.	Robert Sheffield	P Yes	
Iomega Corp.	David Hawks	P Abs	Cmnts
LSI Logic Corp.	John Lohmeyer	P Yes	Cmnts
Maxtor Corp.	Mark Evans	P No	Cmnts
Microsoft Corp.	Emily Hill	P Yes	Cmnts
Molex Inc.	Jay Neer	P Yes	
Panasonic Technologies, Inc	Terence J. Nelson	P Yes	
Philips Electronics		DNV	
Pivot3, Inc.	Bill Galloway	P Yes	
PMC-Sierra	Rachelle Trent	P Yes	
QLogic Corp.		DNV	
Quantum Corp.	Jim Jones	A Abs	Cmnts
Seagate Technology	Gerald Houlder	P No	Cmnts
Storage Technology Corp.	Erich Oetting	P Yes	
Sun Microsystems, Inc.	Vit Novak	P Yes	Cmnts
Texas Instruments	Paul D. Aloisi	P Yes	
Toshiba	Yutaka Arakawa	P Yes	
Tyco Electronics	Ashlie Fan	P Abs	Cmnts
UNISYS	Ron Mathews	P Yes	
Veritas Software	Roger Cummings	P Yes	

Ballot totals: (26:6:4:4=40)

26 Yes

6 No

4 Abstain

4 Organization(s) did not vote

40 Total voting organizations

15 Ballot(s) included comments

This 2/3rds majority ballot passed.

26 Yes are more than half the membership eligible to vote minus abstentions

[greater than 18] AND

26 Yes are at least 22 (2/3rds of those voting, excluding abstentions [32]) AND

26 Yes are equal to or exceed a quorum [13]

Key:

P Voter is principal member

A Voter is alternate member

Abs Abstain vote

DNV Organization did not vote

Cmnts Comments were included with ballot

NoCmnts No comments were included with a vote that requires comments

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Comments attached to No ballot from Pat Thaler of Agilent Technologies:

4.15.3.2 top of page 28: It is technically incorrect dictate the number of bits that the CRC generator processes at one time. I can get the same CRC result with a pure serial generator or processing any number of bits at a time. It is not clear whether this text is stating a requirement or merely giving an example.

I also object to the use of "word" here as equivalent to two bytes. I don't see any definition of "word" here or in SAM 2. Industry usage on the size of a "word" varies.

The Figure 3 diagram indicates that an on byte size user field is to be padded out, but that is not indicated in any requirements text and the Figure is an example. This will cause incompatibilities as some will pad for the calculation and some will not follow that example.

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Comments attached to No ballot from Robert Snively of Brocade:

1 (E) Page: xx Location: Introduction

Problem Description:  
"which" s/b "that"

Suggested Solution:  
Make requested correction

2 (E) Page: 6 Location: 3.1.20

Problem Description:  
"A target action in response to a reset event in which the target port performs the operations described in SAM-3." s/b "A target action in response to a reset event that causes the target port to perform the "hard reset" actions described in SAM-3"

Suggested Solution:  
Make the requested correction

Make a similar correction in 3.1.24

3 (E) Page: 10 Location: 4.2

Problem Description:  
"which" s/b "that"  
In addition, the text should clarify that it is the logical block address that is 4 or 8 bytes in length by adding the text "in length" at the end of the same sentence.

Suggested Solution:  
Make requested correction

5 (E) Page: 12 Location: 4.8

Problem Description:

"defects, which may be supplied by the original manufacturer of the device or medium, that" s/b "defects (supplied by the original manufacturer of the device or medium) that"

Suggested Solution:  
Make requested correction

6 (E) Page: 21 Location: 4.13.1.4

Problem Description:  
"which" s/b "that"

Suggested Solution:  
Make requested correction

7 (E) Page: 26 Location: 4.15.3.1

Problem Description:  
In table 7, for the R(X) row, the text "The remainder polynomial, which is of degree less than 16." s/b "The remainder polynomial. The polynomial shall be of degree less than 16."

Suggested Solution:  
Make the requested correction

Note that this restriction on the polynomial might better be stated in the text.

The same correction needs to be made for P(X).

8 (E) Page: 35 Location: 5.4.1

Problem Description:  
Rewrite the "which" clause to avoid it.

Suggested Solution:  
Make requested correction

9 (E) Page: 38 Location: 5.4.2.2

Problem Description:  
"header, which" s/b "header that"

Suggested Solution:  
Make the requested correction

A similar change needs to be made just above Table 17.

10 (E) Page: 46 Location: 5.7

Problem Description:  
"The GROUP NUMBER field specifies the group into which attributes associated with the command should be collected" s/b "The GROUP NUMBER field specifies the group that collects the attributes associated with the command."

Suggested Solution:  
Make requested correction

11 (E) Page: 48 Location: 5.9

Problem Description:  
"which may address" s/b "that is capable of addressing".

Suggested Solution:  
Make requested correction

12 (E) Page: 65 Location: 5.21

Problem Description:  
"It is not an error to specify that the logical unit transition to a

power condition in which it currently is." s/b "It is not an error to specify that the logical unit transition to its current power condition".

Suggested Solution:  
Make requested correction

13 (E) Page: 95 Location: 5.44

Problem Description:

"The LOGICAL BLOCK ADDRESS field specifies the starting LBA of the data on which an XOR operation shall be performed with the data from the medium." s/b "The LOGICAL BLOCK ADDRESS field specifies the starting LBA of the data that shall be XOR'd with the data from the medium."

Suggested Solution:  
Make the requested correction

A similar change needs to be made in the next paragraph for TRANSFER LENGTH.

14 (E) Page: 109 Location: 6.3.2.2

Problem Description:

"To determine the number of blocks at which the logical unit is currently formatted the application client shall use the READ CAPACITY command" s/b "The READ CAPACITY command shall be used to determine the number of blocks currently formatted on the logical unit."

Suggested Solution:  
Make the requested correction.

A similar change is required in the last sentence of the sub-clause.

A similar change is required in the last sentence of the first paragraph on page 111

A similar change is required in the last sentence of the last paragraph on page 111

15 (E) Page: 109 Location: 6.3.2.2

Problem Description:

"On a MODE SENSE command, the NUMBER OF BLOCKS field indicates the number of logical blocks on the medium to which the BLOCK LENGTH field applies." s/b "On a MODE SENSE command, the NUMBER OF BLOCKS field indicates the number of logical blocks on the medium having the length specified by the BLOCK LENGTH field."

Suggested Solution:  
Make the requested correction.

A similar change is required in the second paragraph on page 111.

16 (E) Page: 114 Location: 6.3.3

Problem Description:

"The NUMBER OF CACHE SEGMENTS field specifies the number of segments into which the device server shall divide the cache." s/b "The NUMBER OF CACHE SEGMENTS field specifies the number of segments that the device server shall divide the cache into."

Suggested Solution:  
Make requested correction

17 (E) Page: 5 Location: 3.1.4

Problem Description:

The definition of byte is inconsistent among the different standards. I have no particular objection to the present definition except that it does not consider the boundary alignment requirement for the eight

contiguous bits.

Suggested Solution:

I would suggest changing this (and SAM and SPC) to read:  
"A sequence of eight contiguous bits considered as a unit and aligned on character boundary".

18 (E) Page: 5 Location: 3.1.x

Problem Description:

Several references are missing.

Suggested Solution:

Add "See SAM-3" to:  
3.1.10, 3.1.11, 3.1.15,

Add "See SPC-3" to:

3.1.14,

19 (E) Page: 5 Location: 3.1.9

Problem Description:

Abbreviations are included in the definitions sections. Include DLIST, GLIST, CLIST, and PLIST in clause 3.2 only. Do not define them except in the body of the referenced text.

Suggested Solution:

Make requested correction

20 (T) Page: 5 Location: 3.1.16

Problem Description:

XOR is incorrectly defined. I would propose that the following definition be used:

"The exclusive-OR function defined for binary arithmetic and logic. The output value is 1 if one and only one of the input values is 1. In this document, the exclusive-OR function is used to describe the operation that creates an output string of bits of length "n" by setting the "i"th bit of the string equal to the logical XOR of the "i"th bit of each of two input strings of bits, also of length "n". By extension, the term is used as an adjective to describe commands that perform this exclusive-OR function. Such operations can be used to create data redundancy that allows recovery of damaged data under certain conditions."

Suggested Solution:

Make the requested correction.

Note that the wording about "does not define the specific polynomial" is false. It must and does define the behavior of the device during execution of the XOR commands.

21 (T) Page: 6 Location: 3.1.26

Problem Description:

To use this word, you must also define the word "medium". I believe the intent is allow 3.1.38 and others to implicitly define that. However, the wording used in 3.1.28 is precisely the wording used for "medium" in SPC-3. I would propose changing 3.1.28 using the definition from SPC-3 and realphabetizing the item. That wording is:

"medium: A physical entity that stores data in a nonvolatile manner (retained through a power cycle) in accordance with commands processed by the device server."

Suggested Solution:

Make the requested correction.

Note that the word "non-volatile medium" is used only one place in the whole document and its meaning is clear there.

Note that the word "volatile medium" is used only one place in the whole

document, and it refers to no device of which I am aware. I believe it should be deleted conceptually.

22 (T) Page: 6 Location: 3.1.29

Problem Description:  
Use the text from SPC-3 instead of this text.

Suggested Solution:  
Make requested correction

23 (T) Page: 6 Location: 3.1.30

Problem Description:  
Use the text from SPC-3 instead of this text.

Suggested Solution:  
Make requested correction

24 (T) Page: 6 Location: 3.1.33

Problem Description:  
Change the definition to: "Medium containing data that cannot be changed by a SCSI command. The data is applied to the medium by methods outside the scope of this standard"

Suggested Solution:  
Make requested correction

25 (T) Page: 6 Location: 3.1.35

Problem Description:  
Replace the definition of "reset event" with the definition from SAM-3

Suggested Solution:  
Make requested correction

26 (T) Page: 6 Location: 3.1.36

Problem Description:  
Replace the definition of "sense data" with the definition from SPC-3.

Suggested Solution:  
Make requested correction

27 (T) Page: 7 Location: 3.1.41

Problem Description:  
Remove this definition. It only applies to two usages, both considered only because they are rendered obsolete. All other usages of the term do not keep older generations of data, but refer to updates of less than a complete stripe of data and can be considered a normal English use of the term.

Suggested Solution:  
Make requested correction

28 (T) Page: 7 Location: 3.1.44

Problem Description:  
Remove this definition. It is inconsistent with the SPC definition of medium. What is being referred to as a medium is really a storage area for parameters outside the medium.

Suggested Solution:  
Make requested correction

29 (E) Page: 3 Location: 2.1, Table 1

Problem Description:  
Remove all those not referenced in this document. For all practical

purposes, the only ones referenced are ISO, IEC, INCITS, and maybe ANSI, since there is only one approved reference and 5 approved references under development

Suggested Solution:  
Make requested correction

30 (E) Page: 7 Location: 3.2

Problem Description:  
Remove unreferenced abbreviations kbit and Mbit (which are defined incorrectly anyway).

Suggested Solution:  
Make requested correction

31 (E) Page: 10 Location: 4.1

Problem Description:  
Delete "and may be a multiple of 512 bytes", since it adds no information.

Suggested Solution:  
Make requested correction

32 (T) Page: 10 Location: 4.1

Problem Description:  
Delete "and additional information". There is no other SCSI-visible source of additional information, so it should not be mentioned.

Suggested Solution:  
Make the requested correction.

The same correction must be made on page 11, clause 4.4, next to last paragraph, last sentence

33 (T) Page: 10 Location: 4.2

Problem Description:  
The text concerning volatility is not correct. There is no volatile media device defined. There are devices with non-volatile caches, but the medium by definition is non-volatile.

Suggested Solution:  
Delete second sentence of last paragraph.

34 (T) Page: 10 Location: 4.2

Problem Description:  
The last sentence should be changed to read: "The medium on a device may contain vendor specific information that is not addressable through the LBA. Such data may include defect management data and other device management information."

Suggested Solution:  
Make requested correction

35 (T) Page: 12 Location: 4.6

Problem Description:  
This is where the non-volatile problem needs to be handled correctly. Change the second and third paragraph to read as follows:  
"Block devices may save mode parameters and other management information on a non-removable media or in a non-volatile memory. Such devices only need to be initialized once.  
Those devices without access to a non-removable media or a non-volatile memory may need initialization (possibly including formatting and/or mode parameter initialization) after each logical unit reset or power cycle prior to the processing of read or write operations."

Suggested Solution:  
Make requested correction

36 (T) Page: 12 Location: 4.8

Problem Description:  
"Some block devices provide the application client control through use of the mode parameters." s/b "Some block devices allow the application client some control of this additional information using mode parameters."

Suggested Solution:  
Make requested correction

37 (E) Page: 13 Location: 4.9

Problem Description:  
On the 5th paragraph, "store data that is written to the medium at a later time." s/b "store data that is to be written to the medium at a later time."

Suggested Solution:  
Make requested correction

38 (E`) Page: 14 Location: 4.10

Problem Description:  
"table" should be attached to "3" with a non-breaking space

Suggested Solution:  
Make requested correction

39 (T) Page: 14 Location: 4.10

Problem Description:  
SAM does not define a "current task state". The task may become the "current task" by beginning to transfer data. It may enter the "enabled task state" by being allowed to begin. I believe what is desired here is "has become the current task for the first time" instead of "has entered the current task state for the first time". That is a measurable time, as opposed to the enabled state, which is outwardly invisible.

Suggested Solution:  
Make requested correction

40 (T) Page: 15 Location: 4.10

Problem Description:  
Note 4 uses the word operation, not previously defined. I believe the intent here is to warn of the danger of interrupting a sequence of commands with a reservation. The note should either be deleted or rewritten to:  
"When more than one application client has access to a device server, agreement is required among application clients as to when media is reserved and released. Application clients may interrupt or interfere with each other if such conventions are not followed."

Suggested Solution:  
Make requested correction

41 (E) Page: 16 Location: 4.10, Table 3

Problem Description:  
The format of the key is very unclear and it should be reformatted.

Suggested Solution:  
Make requested correction

42 (T) Page: 16 Location: 4.11

**Problem Description:**

SPC-3 makes it fairly clear that Sense Keys and Additional Sense Codes are only loosely related. The same ASC/ASCQ may be a HARDWARE ERROR, a RECOVERED ERROR, or a MEDIUM ERROR. As such, I would propose that Table 4 and the two sentences purporting to explain its purpose be deleted. The text of the first paragraph after Table 4 should probably be separated into 3 separate paragraphs describing these 3 error presentations commonly for all commands. Any others that are common to all commands should also be specified here, but most should only be specified in the explanation of the command.

**Suggested Solution:**

Make requested correction

43 (E) Page: 17 Location: 4.12.2

**Problem Description:**

First and second paragraphs need to be rewritten as:

"The typical application of a direct-access device is a magnetic disk device. The medium is a spinning disk coated with a magnetic material that allows flux changes to be induced and recorded. An actuator positions a read-write head radially across the spinning disk, allowing the device to randomly read or write the information at any radial position. Data is stored by using the write portion of the head to record flux changes and the read portion of the head to read the recorded data.

The circular path followed by the read-write head at a particular radius is called a track. The track is divided into sectors each containing blocks of stored data. If there is more than one disk spinning on a single axis and the actuator has a read-write head for each disk surface, the collection of tracks at a particular radius is called a cylinder. Some disks can access information on tracks on the same cylinder more rapidly than they can access information on adjacent tracks on the same disk surface."

**Suggested Solution:**

Make the requested change.

Note that a lot of this stuff is out of date the way disks are presently implemented.

44 (E) Page: 17 Location: 4.11, Table 5

**Problem Description:****Question:**

Is table 5 an exhaustive list? If so, is it short enough and simple enough so that it should be dropped and the information included only in the command descriptions?

**Suggested Solution:**

TBD

45 (E) Page: 17 Location: 4.12.2

**Problem Description:**

"A sector may be made up of a header, data, and a trailer" s/b "A sector may contain headers, trailers, data written in logical blocks, and radial servoing information."

**Suggested Solution:**

Make requested correction

46 (E) Page: 17 Location: 4.12.2

**Problem Description:**

"The data field begins with a synchronizing field and a data area that contains user data" s/b "The data field contains a synchronizing field and a data area that contains an encoding of user data."

**Suggested Solution:**

Make requested correction

47 (E) Page: 17 Location: 4.12.2

Problem Description:

Last sentence on page 17 should read: "Disk devices are non-volatile" or alternatively be deleted.

Suggested Solution:

Make either correction

48 (E) Page: 18 Location: 4.12.2

Problem Description:

"though some aspects can be evaluated" s/b "though some aspects may be visible to"

Suggested Solution:

Make requested correction

49 (T) Page: 18 Location: 4.12.2

Problem Description:

The discussion here of READ LONG and WRITE LONG, together with my knowledge of modern disk drives beg that I ask whether this usage of READ LONG and WRITE LONG should be made obsolete.

Suggested Solution:

Make READ LONG and WRITE LONG obsolete unless drive vendors indicate that their self-test program is inadequate to verify the error detection and correction mechanisms and host computer manufacturers and programmers guarantee that they will use the commands in a standard way to supplement the inadequate self-test programs.

50 (T) Page: 18 Location: 4.12.3

Problem Description:

The last sentence says "Memory block devices may store less data than disks or tapes, and may be volatile." There is no marker that describes the volatility behavior of a memory block device. I assume that means that this should be rewritten to read "Memory block devices may store less data than disks or tapes. For compliance with SBC-2, memory block devices shall be non-volatile."

Suggested Solution:

Make requested correction

51 (T) Page: 24 Location: 4.14.2.6.1

Problem Description:

The stopped state "may consume less power" than when Active, Idle, or Standby. Then again, it may consume more power. This seems pretty random to me. I would expect it would drop from "Stopped" to Active, Idle, or Standby using the Power Condition mode page timers if Active, Idle, and/or Standby were a lower power condition. I would then expect it to revert to Stopped when an action at the drive or a Start/Stop command with the proper bit set occurred. That way you won't be stuck in a "stopped" but high power state indefinitely just because someone forgot to emit the proper START/STOP command.

Alternatively, require the stopped state to consume no more power than the standby state.

Suggested Solution:

Make requested correction

52 (T) Page: 25 Location: 4.15.1

Problem Description:

Last paragraph should read:

"If the logical unit is formatted with protection information and the

EMDP bit is set to one in the Disconnect-Reconnect mode page (see SPC-3), then checking of the logical block reference tag within the service delivery subsystem without reference to the modified data pointers and logical block alignments causes false errors when logical blocks are transmitted out of order."

Suggested Solution:  
Make requested correction

53 (E) Page: 29 Location: 4.15.5

Problem Description:  
"fields are defined" s/b "fields is defined", since the subject is "description".

Suggested Solution:  
Make requested correction

54 (T) Page: 29 Location: 4.16

Problem Description:  
The grouping function should either be deleted or the following required functionality MUST be defined:  
a) The support of the grouping function MUST be defined either in a mode page or in the INQUIRY command.  
b) The maximum number of groups supported MUST be either fixed at 32 OR a parameter in a mode page MUST indicate the maximum number of groups supported.  
c) The capture setup commands and capture information presentation commands SHOULD be defined. This may not be ready for normative text yet, but an informative annex is important here so that it doesn't develop into series of non-interoperable vendor-pair specific solutions for this function.

Suggested Solution:  
Make the requested change or delete the function.

55 (E) Page: 33 Location: Table 9

Problem Description:  
Item e, "supported of and only if" s/b "supported if and only if", or in plain English, "supported only if".

Suggested Solution:  
Make the requested correction in Brocade 57.

56 (T) Page: 31 Location: Table 9

Problem Description:  
SYNCHRONIZE CACHE does not apparently deal directly with protection information. I believe the Protection Information column should have no for both the 10 and 16 byte versions

Suggested Solution:  
Make requested correction

57 (T) Page: 33 Location: Table 9

Problem Description:  
Items e and f make the referenced commands mandatory if a certain bit is set to one. In fact, the commands happen to be mandatory for SMC-2, but not for SCC-2. The terminology should be for note e:  
If the SCCS bit is set to one in the standard INQUIRY data, these commands shall be supported as required by SCC-2. If the SCCS bit is set to zero, these commands shall not be supported.  
and for note f should be:  
If the MCHGR bit is set to one in the standard INQUIRY DATA, these commands shall be supported as specified by SMC-2. If the MCHGR bit is set to zero, these commands shall not be supported.

Suggested Solution:

Make requested correction

58 (T) Page: 31 Location: Table 9

Problem Description:

REPORT LUNS should be mandatory for direct access devices.

Suggested Solution:

Make requested correction

59 (T) Page: 34 Location: Table 10/11/12

Problem Description:

The values for reserved operation code/service action codes are "reserved for direct-access devices". In fact, they are reserved in their respective documents for the future use of any type of device. Change the text to read simply "Reserved"

Suggested Solution:

Make requested correction

60 (T) Page: 34 Location: 5.3

Problem Description:

The SERVICE ACTION IN (16) operation code is supposedly defined in SPC-3 according to the reference. In fact, there is no normative definition of the 9E that I can find either there or in any of the other expected fundamental standards. Where is it defined?

Suggested Solution:

Reference the correct document for the definition of SERVICE ACTION IN (16). If there is not such document, now is the chance to fix SPC-3 so that it is defined.

61 (T) Page: 43 Location: 5.4.2.4.4

Problem Description:

Propose to obsolete Bytes from index format address descriptor. Modern disks do not use it.

Suggested Solution:

Make requested correction

62 (T) Page: 44 Location: 5.4.2.4.5

Problem Description:

Propose to obsolete Physical sector format address descriptor. Modern disks do not use it.

Suggested Solution:

Make the requested correction. As a side effect, the "Translate Address" diagnostic pages shall also be made obsolete.

63 (T) Page: 30 Location: Table 9

Problem Description:

Propose to create a new type of "Type" called "D" for READ (6) and WRITE (6). The D type should be called "depricated". The depricated type should be mandatory for a target to implement in compliance with SBC-2, but should be obsolete for an application client to implement in compliance with SBC-2. That will allow READ (6) and WRITE (6) to be made obsolete in the next generation of the standard.

Suggested Solution:

Make requested correction

64 (E) Page: 50 Location: Table 33

Problem Description:

The table needs to be restructured so that it is properly terminated on a page by page basis. That probably requires dividing it into one or

two "values" per page.

The title of the "value" column s/b "RDPROTECT Value".

The term "Shall not" for the Extended INQUIRY Data VPD page column is unclear. I assume the proper wording is something like "GRD\_CHK = X", "APP\_CHK = X", or "REF\_CHK = X", depending on the row.

Suggested Solution:

Make requested correction

65 (T) Page: 52 Location: note b

Problem Description:

Unsupported functions were previously reserved bits, and therefore should be ignored by the target receiving such a command. The READ should proceed normally. The text should be changed to read: "If the logical unit does not support protection informaton, the RDPROTECT field is ignored and the command executes normally."

Suggested Solution:

Make requested correction

66 (T) Page: 52 Location: note i

Problem Description:

The restrictions on the execution of the commands when RTO\_EN is set to one are overly restrictive. The text: "If the RTO\_EN bit is set to one, the .. CODE." s/b replaced with: "If the RTO\_EN bit is set to one, the device server shall assume for checking purposes that the LOGICAL BLOCK REFERENCE TAG for each block has been set to the value that it would have been set to if the RTO\_EN bit were zero and perform the desired checking, if any."

Suggested Solution:

Make the requested correction. Similar corrections are required for the write commands.

67 (T) Page: 55 Location: 5.13

Problem Description:

The restrictions on the execution of the READ (32) command are overly restrictive. The text: "If the RTO\_EN ... the command." s/b replaced with: "If the RTO\_EN bit is set to zero in the long read capacity data (see 5.15), the device server shall perform checking of the data protection fields as required by the RDPROTECT field. The device server shall terminate the command with CHECK CONDITION status with a sense key of ABORTED COMMAND and indications of the appropriate protection check if the protection information read by the device server conflicts with the information specified by the parameters in the READ (32) command."

Suggested Solution:

Make the requested correction. Similar corrections are required for the write commands.

Additional late comments may be developed by Brocade and will be numbered higher for convenience.

Late Brocade Comments:

68 (E) Page: 56 Location: 5.14, Table 39

Problem Description:

The concept of "short" and "long" is not reflected in the name of the command. Wherever "short read capacity data" is used, the term "READ CAPACITY (10) data" should be used. Wherever "long read capacity data" is used, the term "READ CAPACITY (16) data" should be used.

Suggested Solution:

Make requested corrections.

69 (T) Page: 12 Location: 4.7

Problem Description:

The definition of "implicit head of queue" seems to me to be overreaching. I believe that simple queueing should allow for implicit head of queue, but it concerns me that ORDERED also allows for it. I would prefer to see ORDERED not allowed for those commands if it has no meaning. Alternatively, ORDERED should over-ride the implicit head of queue.

Suggested Solution:

Select proper solution and implement it. Note that this effects SPC-3 also.

70 (T) Page: 36 Location: 5.4.1

Problem Description:

The FMTPINFO bit and RTO\_REQ bit are dependent. When processing them in the READ CAPACITY command, they are processed independently. In order to allow the READ CAPACITY command to operate correctly, the RTO\_REQ bit should not be ignored when the FMTPINFO bit is set to zero, but rather, if the INQUIRY command indicates the data protection is supported, and the FMTPINFO bit is set to zero, the RTO\_REQ bit shall be set to zero. If it is set to one, it should cause an INVALID PARAMETERS IN COMMAND check condition.

Suggested Solution:

Make requested corrections.

71 (T) Page: 60 Location: 5.16

Problem Description:

Brocade 61 and 62 suggest making obsolete two of the formats. It is claimed that those formats are the ones people need for defect management in clause 5.16. I propose making obsolete the READ DEFECT DATA commands.

Suggested Solution:

Make requested corrections.

72 (T) Page: 61 Location: 5.18

Problem Description:

The text: "The most recent data written, or to be written, in the addressed field shall be returned." implies that cached data may be returned, which makes the command useless. The text should be changed to read: "The most recent data written on the recording media at the addressed field shall be returned. If the data for the specified logical block has not yet been stored on the recording media, it shall be flushed from the cache and stored on the media before the information is returned from the media."

Suggested Solution:

Make requested corrections.

73 (E) Page: 63 Location: 5.20

Problem Description:

The term "default value of FFF..." really is not correct. This is a marker value that indicates an initialized value that has not been written. I would proposed that the term "initialized value of FFF..." be used instead for all cases describing the protection information.

Suggested Solution:

Make the requested corrections in all applicable locations.

74 (E) Page: 69 Location: Tables 58-60

Problem Description:

The problems previously mentioned, including formatting and the use of "shall not" must also be corrected here.

Suggested Solution:  
Make requested corrections.

75 (E) Page: 71 Location: Note a

Problem Description:  
Note a, while stated correctly, gives the impression that the indicated failure will always occur, though it only occurs on cases other than case 0. I propose the sentence be pre-fixed with "For these cases, "

Suggested Solution:  
Make the requested corrections in all applicable locations.

76 (T) Page: 71 Location: Note g

Problem Description:  
This case is interesting and requires careful thought. The logical block application tag field of FFFFh is symptomatic of a block that has not been changed since formatting, but not much else. It may be that there was a choice to set it to FFFFh by the application client. Why should checking be disabled unless all the fields are set to FFFFh?

Suggested Solution:  
Please verify that this was the intended action and indicate why? If it needs to be corrected here, there are a number of other tables to also be corrected.

77 (T) Page: 84 Location: 5.32

Problem Description:  
The restriction of the RTO\_EN to one while using the 32-byte command appears to be unnecessary. See Brocade 67.

Suggested Solution:  
Make the corresponding changes as in Brocade 67.

78 (T) Page: 85 Location: 5.33

Problem Description:  
The restrictions requiring the RTO\_EN bit to be 0 for the following commands are overly restrictive, as described in Brocade 66. Note that for the XDWRITE commands, performing the XDWRITE with no checking is the only way to obtain the necessary XOR function for the case where RTO\_EN is equal 1.  
WRITE AND VERIFY (10), WRITE AND VERIFY (12), WRITE AND VERIFY (16),  
WRITE SAME (10), WRITE SAME (16), XDWRITE (10), XDWRITE (32),  
XDWRITEREAD (10), XDWRITEREAD (32)

Note that for the XDWRITE and XDWRITEREAD commands, performing the XDWRITE with no checking is the only way to obtain the necessary XOR function for the case where RTO\_EN is equal 1

Suggested Solution:  
Make the corresponding changes as in Brocade 66.

79 (T) Page: 87 Location: 5.36

Problem Description:  
The restriction of the RTO\_EN to one while using the 32-byte command appears to be unnecessary. See Brocade 67.

Suggested Solution:  
Make the corresponding changes as in Brocade 67.

80 (T) Page: 92 Location: 5.41

Problem Description:  
The restriction of the RTO\_EN to one while using the 32-byte command appears to be unnecessary. See Brocade 67.

Suggested Solution:  
Make the corresponding changes as in Brocade 67.

81 (T) Page: 93 Location: 5.42

Problem Description:  
The statement: "If the XORPINFO bit is set to one and the device server does not support protection information..." violates the conventions for reserved fields. The device server is not required to check for this condition, since XORPINFO was previously a reserved bit. The command should, under these conditions, be performed exactly as if the XORPINFO was zero.

Note that this does not apply to XDWRITEREAD commands, since they were not defined in a previous standard.

Suggested Solution:  
Make requested corrections.

82 (T) Page: 94 Location: 5.43

Problem Description:  
See Brocade 81. The same is true for XDREAD (32) if it was contained in SBC.

Suggested Solution:  
Make requested corrections.

83 (T) Page: 99 Location: 5.4.8

Problem Description:  
See Brocade 81. The same is true for XPWRITE (32) if it was contained in SBC.

Suggested Solution:  
Make requested corrections.

84 (T) Page: 101 Location: 6.1.1

Problem Description:  
Are we ready to get rid of the "translate address output/input diagnostic pages? If so, they should be made obsolete at this time.

Suggested Solution:  
Make requested corrections.

85 (E) Page: 105 Location: 6.2.2

Problem Description:  
I assume this uses the format from table 186 from SPC-3, but this is not explicitly made clear. Could you please provide a reference indicating something like "See the log page structure and page codes for all device types specified in SPC-3." The structure does not specify a field size for each counter, which implies that it is vendor specific.

Suggested Solution:  
Make requested corrections.

86 (T) Page: 107 Location: Table 101

Problem Description:  
The WP bit is specified here, but it is indicated that it cannot be set with a MODE SELECT command. How then is it set through the SCSI interface? I did not find an SPC-2 mechanism for setting it and I don't believe a hardware-only mechanism is appropriate. That leaves only here to set it. I propose that the first sentence after Table 101 be corrected to indicate that WP is defined and controlled for disk drives by this parameter.

Suggested Solution:  
Make requested corrections.

\*\*\*\*\*

Comments attached to Yes ballot from Robert H. Nixon of  
Emulex:

Emulex #1  
PDF Page 1  
Page 1 Figure 1: In the leftmost box, 1477 s/b/ 14776

Emulex #2  
PDF Page 1  
page 1 clause 1: "provide the following" breaks grammatical flow to the  
items of the following list. Delete it.

Emulex #3  
PDF Page 1  
Unmarked set by bnixon

Emulex #4  
PDF Page 1  
Page 1 Clause 1: "It indicates the applicability of a standard to the  
implementation of a given transport" does not seem to be relevant to a  
command set standard. I'm not convinced that it is even true. Delete it.

Emulex #5  
PDF Page 3  
Page 3 subclause 2.2: For reliable location of documents at the ANSI and  
INCITS stores, change "ANSI NCITS.318:1998" to "ANSI INCITS 318-1998"

Emulex #6  
PDF Page 5  
Page 5 subclause 3.1.17: The definition of extent uses the ambiguous  
concept of "continuous logical blocks". Change "continuous logical  
blocks" to "logical blocks occupying contiguous logical block addresses"

Emulex #7  
PDF Page 6  
Page 6 subclause 3.1.39:  
SACL is referenced but is not in the abbreviations list. (Yes, I know it  
is within the next entry in the glossary, but only because I was reading  
serially through the spec 8-)

Emulex #8  
PDF Page 8  
Page 8 subclause 3.3.10: The equivalence to reserved in the definition of  
restricted would force conflict, as this standard would require setting  
to zero a value that another standard might require to be nonzero.  
Change "A restricted bit, byte, word, or field shall be treated as a  
reserved bit, byte, word or field for the purposes of the requirements  
defined in this standard" to "A restricted bit, byte, word or field  
shall be set to zero, or in accordance with another SCSI standard.  
Recipients are not required by this standard to check restricted bits,  
bytes, words or fields for zero values"

Emulex #9  
PDF Page 10  
Page 10 subclause 4.1: in the second paragraph, "In addition," doesn't  
add anything. Change "In addition, a logical block length..." to "A  
logical block length..."

Emulex #10  
PDF Page 11  
Page 11 subclause 4.4: in the third line of the fourth regular  
paragraph, an s/b and

Emulex #11  
PDF Page 14  
Page 14 subclause 4.9: The last sentence of the paragraph fragment at  
the top of page 14 has too many consecutive verbs and not enough

meaning. Change "The FUA\_NV bit specifies allows the device server" to "The FUA\_NV bit specifies whether the device server is allowed"

Emulex #12  
PDF Page 15

Page 15 table 3: Why are the READ DEFECT DATA and READ LONG commands conflicted by Write type reservations?

Emulex #13  
PDF Page 17

Page 17 subclause 4.12.2: In the second paragraph from the bottom of the page, "user" should be "application client". Users, in the common sense of the term, are people, and can't issue SCSI commands.

Emulex #14  
PDF Page 20

Page 20 subclause 4.13.1.2.3: In the fifth line, e.g s/b i.e

Emulex #15  
PDF Page 20

Page 20 subclause 4.13.1.2.3: The last three sentences appear to be repeating the rest of the subclause. Delete the last three sentences.

Emulex #16  
PDF Page 26

Page 26 subclause 4.16.2: In the last paragraph, the wording strongly suggests the LOGICAL BLOCK REFERENCE TAG appears in the application client data buffer. In the second sentence change "contain" to "have a LOGICAL BLOCK REFERENCE TAG value equal to", in the third sentence change "contain" to "have", and in the fourth sentence change "contains" to "has". For consistency. (part of prior comment) Change "contain" to "have"

Emulex #18  
PDF Page 26

(part of prior comment)  
change "contains" to "has"

Emulex #19  
PDF Page 60

Page 60 subclause 5.16: I can't make sense of the first sentence of the second paragraph on page 60: how can the number of address descriptors the SCSI device has assigned contain a value that is insufficient to transfer all of the address descriptors? Isn't the "number ... assigned" the same as "all"? Also, the third sentence seems to contradict note 16.

\*\*\*\*\*

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

ENDL 1  
PDF pg 5, pg v

SPI-4 was dedicated to Gene Milligan. But it appears that the practice ended with SPI-5. Is it appropriate to reinstate the practice now? Probably not.

ENDL 2  
PDF pg 5, pg v

<<Memorial gifts may be made to Habitat for Humanity.>> It seems unlikely the Habitat for Humanity has maintained a memorial account for Gene Milligan for all the years that have passed since his passing in 2001. If the dedication is kept, this sentence should be removed.

ENDL 3  
PDF pg 6, pg vi

Remove Revision Information before submitting dpANS to Public Review.

ENDL 4  
PDF pg 11, pg xi

Remove change bars before submitting dpANS to Public Review.

ENDL 5

PDF pg 11, pg xi, Contents

Per ISO style guide, the table of contents should use only two levels of indenting, Clauses and Sub-Clauses.

ENDL 6

PDF pg 21, pg xxi, Introduction

<<Clause 4 (Models)>> [s/b] <<Clause 4 (Direct-access block device type model)>> Unlike SBC, there is only one device-type model in SBC-2.

ENDL 7

PDF pg 22, pg 1, 1 Scope

<<The clauses of this standard pertaining to the SCSI block device class, implemented in conjunction with the applicable clauses of SPC-3, fully specify the standard command set for SCSI block devices.>> I cannot find any clauses in this standard that apply to devices other than SCSI block device. This needs rewording.

ENDL 8

PDF pg 22, pg 1, 1 Scope

<<SCSI block device>> [s/b] <<direct-access>

ENDL 9

PDF pg 22, pg 1, 1 Scope

<<Define commands to manage the operation of SCSI block devices;>> What is the difference between this list entry and the previous one <<Define commands unique to the type of SCSI block device;>>? The second, redundant entry should be deleted.

ENDL 10

PDF pg 22, pg 1, 1 Scope

<<Define the differences between types of SCSI block devices>> Since there is only one type of SCSI block device defined by this standard, this list entry should be deleted.

ENDL 11

PDF pg 24, pg 3, 2.1 Normative references overview

<<ITUT>> [s/b] <<ITU-T>>

ENDL 12

PDF pg 26, pg 5, 3.1 Definitions

Add <<See SAM-3.>> as the last sentence in the definitions of data-in buffer, data-out buffer, and domain.

ENDL 13

PDF pg 26, pg 5, 3.1 Definitions

Add a glossary entry for error correcting code (ECC)

ENDL 14 Technical

PDF pg 26, pg 5, 3.1.16 exclusive-or (XOR)

<<In this standard the term encompasses the entire algorithm but does not define the specific polynomial.>> ??? How does a polynomial relate to an XOR function? Delete <<but does not define the specific polynomial>>

ENDL 15

PDF pg 26, pg 5, 3.1.16 exclusive-or (XOR)

Several changes are proposed to use 'extent' as defined here. If the proposed changes are not made, then the glossary entry for 'extent' should be deleted because it is not referenced anywhere in this standard (as currently written).

ENDL 16

PDF pg 27, pg 6, 3.1 Definitions

Add glossary entry for I\_T nexus loss event.

ENDL 17

PDF pg 27, pg 6, 3.1 Definitions

<<3.1.26 media: Plural of medium.>> There is no glossary entry for

medium, meaning that medium is used in its normal English usage. It would seem that media is likewise used in its normal English usage. Remove this unnecessary glossary entry.

## ENDL 18

PDF pg 27, pg 6, 3.1.29 power cycle

<<Power being removed followed by power on.>> [s/b] <<Power being removed and reinstated.>>

## ENDL 19

PDF pg 27, pg 6, 3.1 Definitions

<<3.1.33 read-only medium: Medium that is not capable of being changed. The medium contains data prepared in a manner not defined by this standard.>> The term read-only medium is not used anywhere in this standard. This glossary entry should be removed.

## ENDL 20

PDF pg 27, pg 6, 3.1.35 reset event

The definition of reset event is not consistent with SAM-3. Update the definition to be consistent with SAM-3, probably by emulating the definition of logical unit reset event.

## ENDL 21

PDF pg 27, pg 6, 3.1.36 sense data

<<Data describing an error or exceptional condition that a device server delivers to an application client.>> [s/b] <<<<Data describing an error or exceptional condition that a device server delivers to an application client in association with a CHECK CONDITION status.>>

## ENDL 22

PDF pg 27, pg 6, 3.1 Definitions

<<3.1.40 storage array conversion layer (SACL): Converts input logical unit numbers to output logical unit numbers and may convert input LBAs to output LBAs. See SCC-2.>> Neither storage array conversion layer nor SACL are used anywhere in this standard. This glossary entry should be deleted.

## ENDL 23 Technical

PDF pg 28, pg 7, 3.1 Definitions

<<3.1.41 update: To write new data to a logical block without destroying the previous data. After a logical block has been updated, a normal read returns the most recent generation of the data. Earlier generations are still available after the update.>> This definition appears to be specific to optical memory devices which are obsolete in this standard. This definition should be deleted.

## ENDL 24 Technical

PDF pg 28, pg 7, 3.1 Definitions

Add either a glossary entry or keyword definition for 'vendor specific'.

## ENDL 25

PDF pg 28, pg 7, 3.2 Symbols and abbreviations

<<ECC error correcting code>> [s/b] <<ECC error correcting code (see 3.1.xx)>>

## ENDL 26

PDF pg 28, pg 7, 3.2 Symbols and abbreviations

<<ID identifier>> ID is not used anywhere in this standard. Delete this acronym.

## ENDL 27

PDF pg 28, pg 7, 3.2 Symbols and abbreviations

kbit is not used anywhere in this standard. Delete this acronym.

## ENDL 28

PDF pg 28, pg 7, 3.2 Symbols and abbreviations

Mbit is not used anywhere in this standard. Delete this acronym.

## ENDL 29

PDF pg 28, pg 7, 3.2 Symbols and abbreviations

<<SACL storage array conversion layer (see 3.1.40)>> SACL is not used

anywhere in this standard. This acronym should be deleted.

ENDL 30

PDF pg 30, pg 9, 3.4 Conventions

<<Underscores may be included in hexadecimal values to increase readability or delineate field boundaries (e.g., FD8C\_FA23h).>> All instances of 'increased readability found in this standard use spaces, not underscores. If maintenance of the underscore convention is desired, deviations from it have been marked in other comments. Otherwise, it might be easier to change the convention.

ENDL 31

PDF pg 31, pg 10, 4.1 General

<<SCSI block devices>> [s/b] <<SCSI direct-access block devices>>

ENDL 32

PDF pg 31, pg 10, 4.1 General

<<rigid disks and removable rigid disks>> [s/b] <<rigid disks, removable rigid disks, and removable flexible disks>>

ENDL 33

PDF pg 31, pg 10, 4.1 General

<<almost always greater>> [s/b] <<greater>>

ENDL 34

PDF pg 31, pg 10, 4.1 General

<<In addition, a>> [s/b] <<A>>

ENDL 35

PDF pg 31, pg 10, 4.1 General

<<Each logical block has a block length associated with it.>> This sentence repeats what was said in the previous paragraph. It should be deleted.

ENDL 36 Technical

PDF pg 31, pg 10, 4.1 General

<<This means that the block length for the medium can change from logical block to logical block. However, for simplicity the block length typically remains constant over the entire capacity of the medium.>> Is it really true that different logical blocks can have different block lengths (as opposed to different physical block lengths)? If so, is this under the control of the application client via a FORMAT UNIT command? 6.3.1 says that there is only one mode descriptor for the entire logical unit, so it seems unlikely that the cited statements are true. Probably, these two sentences should be deleted. If not, they should be changed to <<The block length for the medium may change from one logical block to next. For simplicity descriptions in this standard assume that the block length typically remains constant over the entire capacity of the medium.>>

ENDL 37

PDF pg 31, pg 10, 4.1 General

Start a new paragraph for <<The block length does not include the length of protection information and additional information, if any, that are associated with the logical block.>>

ENDL 38

PDF pg 31, pg 10, 4.2 Direct-access device type model overview

<<Other commands issued by the application client may also cause write and read operations to occur.>> This sentence is unnecessary because the use of e.g. in the previous sentence clearly indicates that the cited commands are just examples. This sentence should be deleted.

ENDL 39

PDF pg 31, pg 10, 4.2 Direct-access device type model overview

<<on the medium>> [s/b] <<to the medium>> for consistence with the description of read operations.

ENDL 40

PDF pg 31, pg 10, 4.2 Direct-access device type model overview

<<can be read>> [s/b] <<are capable of being read>>

ENDL 41

PDF pg 31, pg 10, 4.2 Direct-access device type model overview  
<<controller>> [s/b] <<device server>>

ENDL 42

PDF pg 31, pg 10, 4.3.1 Removable medium overview  
<<If the block device implements cache memory, either volatile or non-volatile, it ensures that all logical blocks of the medium contain the most recent user data and protection information, if any, prior to permitting unmounting of the removable medium.>> This sentence should be moved to a paragraph by itself, preferably immediately preceding this paragraph in which it currently appears.

ENDL 43

PDF pg 32, pg 11, 4.3.2 Removable medium with an attached medium changer  
<<may be done>> [s/b] <<may be accomplished>>

ENDL 44

PDF pg 32, pg 11, 4.3.2 Removable medium with an attached medium changer  
<<the logical unit>> [s/b] <<the block device logical unit>>

ENDL 45

PDF pg 32, pg 11, 4.3.2 Removable medium with an attached medium changer  
<<permitted (element 0)>> [s/b] <<permitted (i.e., element 0)>>

ENDL 46

PDF pg 32, pg 11, 4.4 Logical blocks  
<<medium controller>> [s/b] <<device server>>

ENDL 47

PDF pg 32, pg 11, 4.4 Logical blocks  
<<data and the>> [s/b] <<data, the>>

ENDL 48

PDF pg 32, pg 11, 4.4 Logical blocks  
<<be issued>> [s/b] <<be used>>

ENDL 49 Technical

PDF pg 32, pg 11, 4.4 Logical blocks  
<<Each logical block has a block length associated with it.>> [s/b] <<All logical blocks have the same logical block length associated with them.>>

ENDL 50

PDF pg 32, pg 11, 4.4 Logical blocks  
<<block lengths that are>> [s/b] <<block length that is>>

ENDL 51

PDF pg 32, pg 11, 4.4 Logical blocks  
<<variable block lengths>> [s/b] <<changeable block lengths>>

ENDL 52

PDF pg 32, pg 11, 4.5 Ready state  
<<can be processed>> [s/b] <<are able to transfer data to or from the medium>>

ENDL 53

PDF pg 32, pg 11, 4.5 Ready state  
<<mounted. Such a block device, with a volume not mounted,>> [s/b]  
<<mounted and other conditions are met (see 4.12). A block device that is not ready>>

ENDL 54

PDF pg 33, pg 12, 4.5 Ready state  
<<device ready>> [s/b] <<device to the ready state>>

ENDL 55 Technical

PDF pg 33, pg 12, 4.6 Initialization  
<<logical unit reset>> [s/b] <<logical unit reset event>>

ENDL 56

PDF pg 33, pg 12, 4.6 Initialization  
<<reissued>> [s/b] <<issued>>

ENDL 57

PDF pg 33, pg 12, 4.6 Initialization  
<<with MODE SELECT>> [s/b] <<with a MODE SELECT command>>

ENDL 58

PDF pg 33, pg 12, 4.7 Implicit HEAD OF QUEUE command processing  
<<this command set>> [s/b] <<this standard>>

ENDL 59

PDF pg 33, pg 12, 4.8 Medium defects  
<<can>> [s/b] <<may>>

ENDL 60 Technical

PDF pg 33, pg 12, 4.8 Medium defects  
<<Some block devices provide the application client control through use of the mode parameters.>> Control of what? Mode parameters in what mode pages? Add specific details and cross references.

ENDL 61

PDF pg 33, pg 12, 4.8 Medium defects  
<<they do not appear in a logical block>> [s/b] <<they do not affect any logical blocks>>

ENDL 62

PDF pg 33, pg 12, 4.8 Medium defects  
<<The algorithm may be controlled by the application client, using options in the FORMAT UNIT command.>> This sentence is redundant with the paragraph that precedes it and should be deleted.

ENDL 63

PDF pg 33, pg 12, 4.8 Medium defects  
<<which>> [s/b] <<that>>

ENDL 64

PDF pg 33, pg 12, 4.8 Medium defects  
<<device server (to reference while formatting)>> [s/b] <<device server for reference during formatting>>

ENDL 65

PDF pg 33, pg 12, 4.8 Medium defects  
<<be subject to change >> [s/b] <<be changed>>

ENDL 66

PDF pg 34, pg 13, 4.8 Medium defects  
<<If the DEFECT LIST LENGTH field in the parameter list header is set to zero, there is no DLIST>> this statement belongs in 5.4.2.2, not in the model.

ENDL 67

PDF pg 34, pg 13, 4.8 Medium defects  
<<theprevious>> [s/b] <<the previous>>

ENDL 68

PDF pg 34, pg 13, 4.8 Medium defects  
<<can>> [s/b] <<may>>

ENDL 69

PDF pg 34, pg 13, 4.8 Medium defects  
<<Some block devices>> [s/b] <<Block devices>>

ENDL 70

PDF pg 34, pg 13, 4.9 Cache memory  
<<Some block devices implement>> [s/b] <<Block devices may implement>>

ENDL 71

PDF pg 34, pg 13, 4.9 Cache memory  
Delete <<usually>>

ENDL 72

PDF pg 34, pg 13, 4.9 Cache memory  
<<can>> [s/b] <<may>>

ENDL 73

PDF pg 34, pg 13, 4.9 Cache memory  
The 3rd and 4th paragraphs in this subclause should be the 2nd and 3rd paragraphs.

ENDL 74

PDF pg 34, pg 13, 4.9 Cache memory  
<<at a later time. This is called write-back caching.>> [s/b] <<at a later time (i.e., write-back caching).>>

ENDL 75

PDF pg 34, pg 13, 4.9 Cache memory  
<<In order to detect these errors, the VERIFY and WRITE AND VERIFY commands are provided.>> [s/b] <<The VERIFY and WRITE AND VERIFY commands may be used to detect these errors.>>

ENDL 76

PDF pg 34, pg 13, 4.9 Cache memory  
<<this bit>> [s/b] <<the DPO bit>> [twice in this paragraph]

ENDL 77

PDF pg 34, pg 13, 4.9 Cache memory  
<<Sometimes the application client may want to have the>> [s/b]  
<<Application clients may request that>>

ENDL 78

PDF pg 35, pg 14, 4.9 Cache memory  
<<The FUA\_NV bit specifies allows the device server to access a non-volatile cache rather than the medium.>> This topic belongs in a separate paragraph and the description should be as complete as that given for the FUA bit.

ENDL 79

PDF pg 35, pg 14, 4.9 Cache memory  
What happens when the DPO and FUA\_NV bits are both set to one? What happens when the DPO, FUA, AND FUA\_NV bits are all set to one? The model is not complete.

ENDL 80

PDF pg 35, pg 14, 4.9 Cache memory  
<<WRITE AND VERIFY>> [s/b] <<WRITE AND VERIFY command>>

ENDL 81 Technical

PDF pg 35, pg 14, 4.9 Cache memory  
<<Furthermore, a synchronize cache operation is also implied to write unwritten logical blocks still in the cache memory.>> This sentence seems unrelated to the topic being discussed in this paragraph. Since the SYNCHRONIZE CACHE command is covered later in this subclause, this sentence should be deleted.

ENDL 82

PDF pg 35, pg 14, 4.9 Cache memory  
<<LOCK UNLOCK CACHE command (see 5.5) controls>> [s/b] <<LOCK UNLOCK CACHE(10) command (see 5.5) and LOCK UNLOCK CACHE(16) command (see 5.6) control>>

ENDL 83

PDF pg 35, pg 14, 4.9 Cache memory  
<<the data cache>> [s/b] <<cache memory>> to use the defined term [twice in the a,b,c list]

ENDL 84

PDF pg 35, pg 14, 4.9 Cache memory  
<<PRE-FETCH command (see 5.7) causes>> [s/b] <<PRE-FETCH(10) command (see 5.7) and PRE-FETCH(16) command (see 5.8) cause>>

ENDL 85

PDF pg 35, pg 14, 4.9 Cache memory  
<<SYNCHRONIZE CACHE command (see 5.22) forces>> [s/b] <<SYNCHRONIZE  
CACHE(10) command (see 5.22) SYNCHRONIZE CACHE(16) command (see 5.23)  
forces force>>

ENDL 86

PDF pg 35, pg 14, 4.9 Cache memory  
<<pending write data>> [s/b] <<write data in cache memory>>

ENDL 87

PDF pg 35, pg 14, 4.9 Cache memory  
<<stored in>> [s/b] <<written to>>

ENDL 88

PDF pg 35, pg 14, 4.9 Cache memory  
<<This command>> [s/b] <<These commands>>

ENDL 89

PDF pg 35, pg 14, 4.9 Cache memory  
<<was written>> [s/b] <<is written>>

ENDL 90

PDF pg 35, pg 14, 4.9 Cache memory  
<<(see 6.3.3) writeable by the MODE SELECT command>> [s/b] <<(see  
6.3.3), writeable by the MODE SELECT command,>> [i.e., add two commas]

ENDL 91

PDF pg 35, pg 14, 4.9 Cache memory  
<<basic elements of cache replacement algorithms>> [s/b] <<basic  
features of the cache replacement algorithms>>

ENDL 92

PDF pg 35, pg 14, 4.10 Reservations  
<<initiators>> [s/b] <<I\_T nexuses>> [2 times in this paragraph]

ENDL 93

PDF pg 35, pg 14, 4.10 Reservations  
<<Extent reservations and RESERVE/RELEASE reservations have been made  
obsolete in SPC-3 and in this standard.>> This statement belongs in  
clause 1, not here.

ENDL 94

PDF pg 36, pg 15, 4.10 Reservations  
<<NOTE 4 - When a system is integrated with more than one application  
client, agreement is required between the application clients as to how  
media is reserved and released during operations, otherwise, an  
application client may be locked out of access to a logical unit in the  
middle of an operation.>> The third paragraph from the bottom of the  
previous page explicitly says that this note is false. Delete the note.

ENDL 95

PDF pg 36, pg 15, 4.10 Reservations  
It the table 3 heading, <<initiator>> [s/b] <<I\_T nexus>> [4 times

ENDL 96

PDF pg 36, pg 15, 4.10 Reservations  
Since only persistent reservations are covered by this standard, the use  
of <<[B]>> should be removed from the table 3 heading and the key.

ENDL 97

PDF pg 36, pg 15, 4.10 Reservations  
The ERASE (10)/(12) commands are not defined by this standard. Remove  
the ERASE (10)/(12) commands from table 3.

ENDL 98

PDF pg 36, pg 15, 4.10 Reservations  
The MEDIUM SCAN command is not defined by this standard. Remove the  
MEDIUM SCAN command from table 3.

ENDL 99

PDF pg 36, pg 15, 4.10 Reservations  
The READ GENERATION command is not defined by this standard. Remove the READ GENERATION command from table 3.

ENDL 100  
PDF pg 36, pg 15, 4.10 Reservations  
The READ UPDATED BLOCK command is not defined by this standard. Remove the READ UPDATED BLOCK command from table 3.

ENDL 101  
PDF pg 36, pg 15, 4.10 Reservations  
The UPDATE BLOCK command is not defined by this standard. Remove the UPDATE BLOCK command from table 3.

ENDL 102  
PDF pg 36, pg 15, 4.10 Reservations  
There should be a double line at the bottom of the first page of table 3.

ENDL 103  
PDF pg 37, pg 16, 4.10 Reservations  
<<initiators>> [s/b] <<I\_T nexuses>> [4 times in the table 3 footnotes]

ENDL 104  
PDF pg 37, pg 16, 4.10 Reservations  
Per the ISO style guide, the table 3 key must appear every page on which the table appears (i.e., it needs to be a table footer row)

ENDL 105  
PDF pg 37, pg 16, 4.11 Error reporting  
<<conditions in>> [s/b] <<conditions listed in>>

ENDL 106  
PDF pg 37, pg 16, 4.11 Error reporting  
<<appropriate>> [s/b] <<specified>>

ENDL 107  
PDF pg 37, pg 16, 4.11 Error reporting  
<<When an invalid LBA is encountered,>> [s/b] <<When a command attempts to access an invalid LBA,>>

ENDL 108  
PDF pg 38, pg 17, 4.11 Error reporting  
<<but the sense data contains an INFORMATION field value or COMMAND-SPECIFIC INFORMATION field value too large for the fixed format sense data>> [s/b] <<but the values to be placed in the sense data include a value that is too large to fit in the fixed format INFORMATION field or COMMAND-SPECIFIC INFORMATION field >>

ENDL 109  
PDF pg 38, pg 17  
<<4.12 Examples>> [s/b] <<4.12 Direct-access device examples>>

ENDL 110  
PDF pg 38, pg 17  
<<4.12.1 Examples overview>> [s/b] <<4.12.1 Overview>>

ENDL 111  
PDF pg 38, pg 17, 4.12.2 Rotating media  
<<is done>> [s/b] <<is accomplished>>

ENDL 112  
PDF pg 38, pg 17, 4.12.2 Rotating media  
<<head, and a rotating disk.>> [s/b] <<head with respect to a rotating disk>>

ENDL 113  
PDF pg 38, pg 17, 4.12.2 Rotating media  
<<can be>> [s/b] <<is capable of being>>

ENDL 114

PDF pg 38, pg 17, 4.12.2 Rotating media  
<<load or start commands>> [s/b] <<a START STOP UNIT command>>

ENDL 115

PDF pg 38, pg 17, 4.12.2 Rotating media  
<<A disk device may have to be formatted prior to the initial access. Exceptions to this are devices that are formatted at the factory. A disk device format may create headers for each sector and initialize the data field. The MODE SELECT command is often used prior to formatting to establish the geometry (e.g., logical block length) and defect management scheme.>> This information is covered better in 4.6. Delete everything in this paragraph except the last sentence.

ENDL 116

PDF pg 39, pg 18, 4.12.2 Rotating media  
<<can>> [s/b] <<may>>

ENDL 117

PDF pg 39, pg 18, 4.12.2 Rotating media  
<<The device server may reserve some sectors and tracks for recording defect lists and for reassigning defective blocks.>> Is the discussion of sectors and tracks appropriate in SBC-2? This sentence can be deleted because its concepts are covered in 4.8.

ENDL 118

PDF pg 39, pg 18, 4.12.2 Rotating media  
<<user data and checksum>> [s/b] <<user data and ECC>>

ENDL 119

PDF pg 39, pg 18, 4.12.2 Rotating media  
<<the device server>> [s/b] <<the disk device>>

ENDL 120

PDF pg 39, pg 18, 4.12.2 Rotating media  
<<'mirror copies.'>> [s/b] <<block-for-block copies of disk devices.>>

ENDL 121 Technical

PDF pg 39, pg 18, 4.12.2 Rotating media  
Should the relationship between rotating media and cache memory be discussed?

ENDL 122

PDF pg 39, pg 18, 4.12.3 Memory media  
<<Memory media includes logical units that are traditionally used for primary storage within computer systems, such as solid state static or dynamic random access memories (e.g., SRAM, DRAM, or Flash).>> [s/b]  
<<Memory media is based on solid state static or dynamic random access memories (e.g., SRAM, DRAM, or Flash). Memory media logical units may be used for fast-access storage within complex computer systems.>>

ENDL 123 Technical

PDF pg 39, pg 18, 4.12.3 Memory media  
When is memory media ready? This is explained for rotating media, why not for memory media?

ENDL 124 Technical

PDF pg 39, pg 18, 4.12.3 Memory media  
Is memory media removable? This is discussed for rotating media, why not for memory media?

ENDL 125 Technical

PDF pg 39, pg 18, 4.12.3 Memory media  
How does memory media manage defects? This is summarized for rotating media, why not for memory media?

ENDL 126 Technical

PDF pg 39, pg 18, 4.12.3 Memory media  
Does memory media use cache memory?

ENDL 127

PDF pg 39, pg 18, 4.13.1 Model for XOR commands overview

<<storage array controller>> [s/b] <<storage array controller (see 3.1.39)>>

ENDL 128

PDF pg 39, pg 18, 4.13.1 Model for XOR commands overview, Global in this subclause

<<storage devices>> [s/b] <<block devices>> & <<storage device>> [s/b] <<block device>> [3 instances]

ENDL 129

PDF pg 39, pg 18, 4.13.1 Model for XOR commands overview

<<used by this model>> [s/b] <<of interest to the model in this standard>>

ENDL 130

PDF pg 39, pg 18, 4.13.1 Model for XOR commands overview

<<exclusive-or (XOR)>> [s/b] <<XOR (see3.1.16) >>

ENDL 131

PDF pg 39, pg 18, 4.13.1 Model for XOR commands overview

<<array known as protected data>> [s/b] <<array (i.e., the protected data)>>

ENDL 132

PDF pg 39, pg 18, 4.13.1 Model for XOR commands overview

<<interconnect>> [s/b] <<service delivery subsystem>> Post letter ballot SAM-3 will no longer define interconnect.

ENDL 133

PDF pg 39, pg 18, 4.13.1 Model for XOR commands overview

<<For example, when>> Should begin as a new paragraph and [s/b] <<When>>

ENDL 134

PDF pg 39, pg 18, 4.13.1 Model for XOR commands overview

<<A command sequence for each of these operations is defined for the following operating modes. The command sequences use the device server to perform the XOR functions needed for the major operations.>> [s/b] <<Command sequences defined for each of these operations use the device server to perform the XOR functions.>> Alternatively, specific details may be added describing 'the following operating modes'.

ENDL 135

PDF pg 39, pg 18

There is a 4.13.1 but no 4.13.2.

Change from:

4.13 Model for XOR commands  
 4.13.1 Model for XOR commands overview  
 4.13.1.1 Storage array controller supervised XOR operations  
 4.13.1.1.1 Storage array controller supervised XOR operations overview  
 4.13.1.1.2 Update write operation (storage array controller supervised)  
 4.13.1.1.3 Regenerate operation (storage array controller supervised)  
 4.13.1.1.4 Rebuild operation (storage array controller supervised)  
 4.13.1.2 Additional array subsystem considerations  
 4.13.1.2.1 Additional array subsystem considerations overview  
 4.13.1.2.2 Buffer full status handling  
 4.13.1.2.3 Access to an inconsistent stripe  
 4.13.1.3 Error handling considerations  
 4.13.1.3.1 Error handling considerations overview  
 4.13.1.3.2 Primary errors - errors resulting directly from the primary command  
 4.13.1.4 XOR data retention requirements

to:

4.13 Model for XOR commands  
 4.13.1 Model for XOR commands overview  
 4.13.2 Storage array controller supervised XOR operations  
 4.13.2.1 Storage array controller supervised XOR operations overview  
 4.13.2.2 Update write operation  
 4.13.2.3 Regenerate operation  
 4.13.2.4 Rebuild operation

4.13.3 Additional array subsystem considerations  
 4.13.3.1 Additional array subsystem considerations overview  
 4.13.3.2 Buffer full status handling  
 4.13.3.3 Access to an inconsistent stripe  
 4.13.4 Error handling considerations  
 4.13.4.1 Error handling considerations overview  
 4.13.4.2 Primary errors - errors resulting directly from the primary command  
 4.13.5 XOR data retention requirements

ENDL 136

PDF pg 39, pg 18, 4.13.1.1.1 Storage array controller supervised XOR operations overview  
 <<READ and WRITE commands>> [s/b] <<READ commands and WRITE commands>>

ENDL 137

PDF pg 39, pg 18, 4.13.1.1.1 Storage array controller supervised XOR operations overview  
 <<for certain operations>> explains nothing and should be deleted.

ENDL 138

PDF pg 39, pg 18, 4.13.1.1.1 Storage array controller supervised XOR operations overview  
 <<domain>> [s/b] <<domain (see 3.1.15)>>

ENDL 139

PDF pg 39, pg 18, 4.13.1.1.1 Storage array controller supervised XOR operations overview  
 <<by the>> [s/b] <<to the>>

ENDL 140

PDF pg 40, pg 19, 4.13.1.1.2 Update write operation  
 <<(storage array controller supervised)>> adds no value to this (and two other subclause headings and be deleted [3 times].

ENDL 141

PDF pg 40, pg 19, 4.13.1.1.2 Update write operation  
 <<user data>> [s/b] <<user data and protection information (see 3.1.32)>>

ENDL 142

PDF pg 40, pg 19, 4.13.1.1.2 Update write operation  
 <<parity information>> [s/b] <<XOR data>>

ENDL 143

PDF pg 40, pg 19, 4.13.1.1.3 Regenerate operation  
 <<a logical block,>> [s/b] <<one or more logical blocks>>

ENDL 144

PDF pg 40, pg 19, 4.13.1.1.3 Regenerate operation  
 <<protection information>> [s/b] <<protection information (see 3.1.32)>>

ENDL 145

PDF pg 40, pg 19, 4.13.1.1.3 Regenerate operation  
 <<is done>> [s/b] <<is accomplished>>

ENDL 146

PDF pg 40, pg 19, 4.13.1.1.3 Regenerate operation  
 <<bit set>> [s/b] <<bit set to one>>

ENDL 147

PDF pg 40, pg 19, 4.13.1.1.3 Regenerate operation  
 <<step 2>> [s/b] <<step 2)>> for consistency with the sentence that follows the 1,2,3 list.

ENDL 148

PDF pg 40, pg 19, 4.13.1.1.3 Regenerate operation  
 <<devices (except the failed device) in the redundancy group>> [s/b]  
 <<devices in the redundancy group except the failed device>>

ENDL 149

PDF pg 40, pg 19, 4.13.1.1.3 Regenerate operation

Start a new paragraph not in the 1,2,3 list for <<The intermediate XOR data returned by the last XDREAD command is the regenerated user data for the failed device.>> This information is not part of step 4. It is not part of the step-wise algorithm.

ENDL 150

PDF pg 40, pg 19, 4.13.1.1.3 Regenerate operation

<<XDWRITEREAD command may be sent to the device.>> [s/b] <<XDWRITEREAD command with the DISABLE WRITE bit set to one may be used.>>

ENDL 151

PDF pg 40, pg 19, 4.13.1.1.4 Rebuild operation

<<The sequence is as follows:>> [s/b] <<The number of steps is dependent on the number of devices in the redundancy group, but the sequence is as follows:>>

ENDL 152

PDF pg 40, pg 19, 4.13.1.1.4 Rebuild operation

<<step 2>> [s/b] <<step 2>> for consistency with the sentence that follows the 1,2,3 list.

ENDL 153

PDF pg 40, pg 19, 4.13.1.1.4 Rebuild operation

<<devices (except the failed device) in the redundancy group>> [s/b] <<devices in the redundancy group except the failed device>>

ENDL 154

PDF pg 40, pg 19, 4.13.1.1.4 Rebuild operation

<<step 4>> [s/b] <<step 4>> for consistency with the sentence that follows the 1,2,3 list.

ENDL 155

PDF pg 40, pg 19, 4.13.1.1.4 Rebuild operation

<<XDWRITEREAD command may be sent to the device.>> [s/b] <<XDWRITEREAD command with the DISABLE WRITE bit set to one may be used.>>

ENDL 156

PDF pg 41, pg 20, 4.13.1.2.1 Additional array subsystem considerations overview

<<subsystem, but describes>> [s/b] <<subsystem and describes>>

ENDL 157 Technical

PDF pg 41, pg 20, 4.13.1.2.2 Buffer full status handling

<<has an obligation to retain>> [s/b] <<should retain>>

ENDL 158

PDF pg 41, pg 20, 4.13.1.2.2 Buffer full status handling

<<This locks up part or all (depending on the size of the device's buffer and the size of the XOR data) of the device's buffer space.>> [s/b] <<Depending on the size of the device's buffer and the size of the XOR data, this allocates all or part of the device's buffer space in a manner that the device is unable to control until receipt of the XDREAD command.>>

ENDL 159

PDF pg 41, pg 20, 4.13.1.2.2 Buffer full status handling

<<that command>> [s/b] <<those commands>>

ENDL 160

PDF pg 41, pg 20, 4.13.1.2.2 Buffer full status handling

<<freed for other commands>> [s/b] <<freed for allocation by other commands>>

ENDL 161

PDF pg 41, pg 20, 4.13.1.2.2 Buffer full status handling

<<is a>> [s/b] <<is in a>>

ENDL 162

PDF pg 41, pg 20, 4.13.1.2.2 Buffer full status handling

<<initiator>> [s/b] <<initiator device>>

ENDL 163

PDF pg 41, pg 20, 4.13.1.2.2 Buffer full status handling  
<<may retry the command in the same manner that a command ending with TASK SET FULL status would be retried including>> [s/b] <<may retry the command in the same manner that it would a command that returns a TASK SET FULL status, including>>

ENDL 164

PDF pg 41, pg 20, 4.13.1.2.2 Buffer full status handling  
<<buffer full condition. The storage array controller may issue multiple XDWITEREAD commands, since the device controls when it accepts more write data and provides read data.>> [s/b] <<buffer full condition, since the device controls when it accepts more write data and provides read data.>> The storage array controller may issue multiple XDWRITE commands too. There is nothing special about XDWITEREAD in that regard.

ENDL 165

PDF pg 41, pg 20, 4.13.1.2.3 Access to an inconsistent stripe  
<<strips of consecutively addressed storage from>> [s/b] <<extents (see 3.1.7) on>>

ENDL 166

PDF pg 41, pg 20, 4.13.1.2.3 Access to an inconsistent stripe  
<<A strip is an equal division of the storage capacity in a set of consecutively addressed LBAs on a single block device.>> If the change in the previous sentence is accepted, then there is no need for a definition of strip and this sentence/definition can be deleted.

ENDL 167

PDF pg 41, pg 20, 4.13.1.2.3 Access to an inconsistent stripe  
Insert a paragraph break before <<When the storage array controller issues ...>> to separate the definitions from the model.

ENDL 168

PDF pg 41, pg 20, 4.13.1.2.3 Access to an inconsistent stripe  
<<make sure>> [s/b] <<ensure>>

ENDL 169

PDF pg 41, pg 20, 4.13.1.2.3 Access to an inconsistent stripe  
Insert a paragraph break before <<The storage controller shall...>> to separate the model from the requirements.

ENDL 170

PDF pg 41, pg 20, 4.13.1.2.3 Access to an inconsistent stripe  
<<in one case>> [s/b] <<in one case that is specific to the commands described by this model>>

ENDL 171

PDF pg 41, pg 20, 4.13.1.2.3 Access to an inconsistent stripe  
<<XDWRITE>> [s/b] <<XDWRITE command>>

ENDL 172

PDF pg 41, pg 20, 4.13.1.2.3 Access to an inconsistent stripe  
Insert a paragraph break before <<A storage array controller...>> because I think one is needed.

ENDL 173

PDF pg 41, pg 20, 4.13.1.2.3 Access to an inconsistent stripe  
<<has been updated>> [s/b] <<may have been updated>> This change is suggested in an attempt to clarify what is different between WRITE and XDWRITE.

ENDL 174

PDF pg 41, pg 20, 4.13.1.3 Error handling considerations  
<<failing device and the extent of the failure, then limit access>> [s/b] <<failing device, the scope of the failure, and limit access>>  
Note 'extent' a glossary defined term in this standard.

ENDL 175

PDF pg 41, pg 20, 4.13.1.3 Error handling considerations

<<not addressed by this standard>> [s/b] <<beyond the scope of this standard>>

ENDL 176 Technical

PDF pg 42, pg 21, 4.13.1.3 Error handling considerations

<<Subclause 4.13.1.3.2 Primary errors - errors resulting directly from the primary command>> This entire subclause belongs in SCC-2 not in SBC-2. If the subclause is not remove then something must be done about <The first class of errors ...> because there is no second class of errors. Next, 'primary target' and 'secondary command' must be defined. Then, 'parity error' should be changed to 'service delivery subsystem error'. Finally, it must be explained how the result of a service delivery subsystem error during the transfer of a status byte can effectively be changed to a CHECK CONDITIONS status. If the subclause is deleted (as recommended), then the heading for <<4.13.1.3.1 Error handling considerations overview>> should also be removed.

ENDL 177

PDF pg 42, pg 21, 4.13.1.4 XOR data retention requirements

<<while awaiting>> [s/b] <<awaiting>>

ENDL 178

PDF pg 42, pg 21, 4.13.1.4 XOR data retention requirements

<<logical unit reset>> [s/b] <<a logical unit reset event or hard reset event>>

ENDL 179

PDF pg 42, pg 21, 4.13.1.4 XOR data retention requirements

<<I\_T nexus loss involving the initiator which sent>> [s/b] <<an I\_T nexus loss event associated with the I\_T nexus that sent>>

ENDL 180

PDF pg 42, pg 21, 4.13.1.4 XOR data retention requirements

<<d) CLEAR TASK SET;

e) ABORT TASK if the task matches the pending XDREAD; or

f) ABORT TASK SET.>>

[s/b]

<<d) processing of any of the following task management functions (see SAM-3):

A) LOGICAL UNIT RESET;

B) CLEAR TASK SET;

C) ABORT TASK SET; or

D) ABORT TASK for a pending XDREAD.>>

ENDL 181

PDF pg 42, pg 21, 4.14.1 START STOP UNIT and power conditions overview

<<any START STOP UNIT command's power condition specification>> [s/b]

<<the power condition specified by any START STOP UNIT>>

ENDL 182

PDF pg 42, pg 21, 4.14.1 START STOP UNIT and power conditions overview

<<initiator>> [s/b] <<application client>>

ENDL 183

PDF pg 44, pg 23, 4.14.2.3.3 Transition SSU\_PC1:Active to

SSU\_PC3:Standby

<<STANDBY);>> [s/b] <<STANDBY);>>

ENDL 184

PDF pg 45, pg 24, 4.14.2.4.3 Transition SSU\_PC2:Idle to SSU\_PC3:Standby

<<and expired>> [s/b] <<and zero>> for consistency with 4.14.2.3.3

ENDL 185

PDF pg 45, pg 24, 4.14.2.6.1 SSU\_PC4:Stopped state description

<<sense key of>> [s/b] <<sense key set to>>

ENDL 186

PDF pg 45, pg 24, 4.14.2.6.1 SSU\_PC4:Stopped state description

<<additional sense code of>> [s/b] <<additional sense code set to>>

ENDL 187

PDF pg 46, pg 25, 4.15.1 Protection information overview  
<<any object along the I\_T\_L nexus>> [s/b] <<any object associated with the I\_T\_L nexus>>

ENDL 188

PDF pg 46, pg 25, 4.15.1 Protection information overview  
<<(e.g., write to medium, store in non-volatile memory, recalculate on read back)>> [s/b] <<(e.g., written to medium, stored in non-volatile memory, recalculated on read back)>> to maintain consistency with the modified verb 'retained'

ENDL 189

PDF pg 46, pg 25, 4.15.1 Protection information overview  
<<overwritten (e.g., power loss, hard reset, logical unit reset, and I\_T nexus loss have no effect on the retention of protection information)>>  
This is not an example. Change to <<overwritten. Power loss, hard reset, logical unit reset, and I\_T nexus loss shall have no effect on the retention of protection information.>>

ENDL 190

PDF pg 46, pg 25, 4.15.1 Protection information overview  
<<application client buffer>> [2 instances in this paragraph] is not a glossary defined term, either in this standard or in SAM-3. Either A) change to <<data-in buffer and data-out buffer>>, B) change the first occurrence to <<application client buffer (i.e., the data-in buffer or data-out buffer), or C) add a glossary entry for application client buffer reading approximately as follows <<3.1.x application client buffer: Either a data-in buffer or a data-out buffer.>>

ENDL 191

PDF pg 47, pg 26, 4.15.2 Protection information format  
<<CRC>> add CRC to the abbreviations list in 3.2

ENDL 192

PDF pg 47, pg 26, 4.15.2 Protection information format  
<<application client data buffer>> [2 instances in this paragraph] is not a glossary defined term, either in this standard or in SAM-3. Either A) change to <<data-in buffer and data-out buffer>>, B) change the first occurrence to <<application client data buffer (i.e., the data-in buffer or data-out buffer), or C) add a glossary entry for application client buffer reading approximately as follows <<3.1.x application client buffer: Either a data-in buffer or a data-out buffer.>> and change the two occurrences of <<application client data buffer>> to <<application client buffer>

ENDL 193

PDF pg 48, pg 27, 4.15.2 Protection information format  
<<polynomials.>> [s/b] <<polynomials used to generate the logical block guard from the contents of the USER DATA field.>>

ENDL 194

PDF pg 50, pg 29, 4.15.3.4 CRC test cases  
<<Several test cases>> [s/b] <<Several CRC test cases>>

ENDL 195

PDF pg 50, pg 29, 4.15.4 Application of protected data  
<<supported then>> [s/b] <<supported, then>>

ENDL 196

PDF pg 50, pg 29, 4.15.4 Application of protected data  
<<information then>> [s/b] <<information, then>> [2 times in this 1,2,3 list

ENDL 197

PDF pg 50, pg 29, 4.15.4 Application of protected data  
The first letters of entries in this 1,2,3 list should be lower case for consistency with previous lists in this standard.

ENDL 198

PDF pg 50, pg 29, 4.15.5 Protected data commands

<<that result in the return of the length>> [s/b] <<that return of the length>>

ENDL 199

PDF pg 50, pg 29, 4.15.5 Protected data commands  
<<user data>> [s/b] <<USER DATA field>>

ENDL 200 Technical

PDF pg 50, pg 29, 4.16 Grouping function  
<<outside the scope of this standard (i.e., the)>> [s/b] <<outside the scope of this standard (e.g., the)>> ... assuming that the transmission of collected information is not the only thing that is outside the scope of this standard

ENDL 201

PDF pg 50, pg 29, 4.16 Grouping function  
<<An example of how grouping could be used would be if two applications use a subsystem;>> [s/b] <<As an example of how grouping functions could be used consider a subsystem composed of two applications;>> Note: any change the removes the 'if' is acceptable. This example not close to an if/then situation.

ENDL 202

PDF pg 51, pg 30, 5.1 Commands for direct-access devices overview  
<<protection information>> [s/b] <<protection information (see 4.15)>>

ENDL 203 Technical

PDF pg 54, pg 33, 5.1 Commands for direct-access devices overview  
<<If either PERSISTENT RESERVE IN or PERSISTENT RESERVE OUT is implemented, both shall be implemented.>> This requirement belongs in SPC-3, not in SBC-2.

ENDL 204

PDF pg 54, pg 33, 5.1 Commands for direct-access devices overview  
Per the ISO style guide, the table footnotes and notes must appear at the bottom of every page containing table 9. The table notes must appear first and must be separated from the table footnotes by the same separator (i.e., a double line) that separates the header from the body of the table. Also the double line must be present on the bottom of each continuation page of the table.

ENDL 205

PDF pg 54, pg 33, 5.1 Commands for direct-access devices overview  
<<remaining operation codes for direct-access devices>> [s/b]  
<<operation codes for direct-access devices not specified in this table>>

ENDL 206 Technical

PDF pg 55, pg 34  
<<5.2 Variable length CDBs>> This subclause belongs in an informative annex.

ENDL 207 Technical

PDF pg 55, pg 34  
<<5.3 Service action CDBs>> This subclause belongs in an informative annex.

ENDL 208

PDF pg 56, pg 35, 5.4.1 FORMAT UNIT command overview  
<<received in the last mode parameter block descriptor (see 6.3.2) in a MODE SELECT command (see SPC-3)>> [s/b] <<processed by the most recent MODE SELECT command (see SPC-3) that included a parameter block descriptor (see 6.3.2)>>

ENDL 209

PDF pg 56, pg 35, 5.4.1 FORMAT UNIT command overview  
<<new commands>> [s/b] <<commands entered into the task set after the FORMAT UNIT command>>

ENDL 210

PDF pg 56, pg 35, 5.4.1 FORMAT UNIT command overview

<<sense key of>> [s/b] <<sense key set to>>

ENDL 211

PDF pg 56, pg 35, 5.4.1 FORMAT UNIT command overview  
<<READY and>> [s/b] <<READY, and>>

ENDL 212

PDF pg 57, pg 36, 5.4.1 FORMAT UNIT command overview  
<<additional sense code of>> [s/b] <<additional sense code set to>> [2 times on this page]

ENDL 213

PDF pg 57, pg 36, 5.4.1 FORMAT UNIT command overview  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 214

PDF pg 57, pg 36, 5.4.1 FORMAT UNIT command overview  
<<A FMTPINFO bit set to one specifies that the device server shall>> [s/b] <<A FMTPINFO bit set to one specifies that the device server shall enable the use of protection information (see 4.15) and>>

ENDL 215

PDF pg 57, pg 36, 5.4.1 FORMAT UNIT command overview  
<<LOGICAL BLOCK REFERENCE TAG field in protection information (see 4.15).>> [s/b] <<LOGICAL BLOCK REFERENCE TAG field in protection information (see 4.15.2).>> i.e., application client ownership of the logical block reference tag is discussed only in 4.15.2 and a more direct reference will be more valuable to the reader

ENDL 216

PDF pg 57, pg 36, 5.4.1 FORMAT UNIT command overview  
<<FFFFFFFF FFFFFFFFh>> [s/b] <<FFFFFFFF\_FFFFFFFFh>> as per the conventions stated in 3.4.

ENDL 217 Technical

PDF pg 57, pg 36, 5.4.1 FORMAT UNIT command overview  
[add at the end of the LONGLIST paragraph] If the FMTPDATA bit is set to zero, the contents of the LONGLIST bit shall be ignored.

ENDL 218 Technical

PDF pg 57, pg 36, 5.4.1 FORMAT UNIT command overview  
<<buffer. The source of defect information is not specified.>> [s/b] <<buffer and the source of defect information, if any, is outside the scope of this standard.>>

ENDL 219 Technical

PDF pg 57, pg 36, 5.4.1 FORMAT UNIT command overview  
[add a new paragraph after the second a,b list]] If the FMTPDATA bit is set to zero, the contents of the CMPLST bit shall be ignored.

ENDL 220

PDF pg 58, pg 37, 5.4.1 FORMAT UNIT command overview  
<<N/A>> add N/A to the abbreviations in 3.2

ENDL 221

PDF pg 58, pg 37, 5.4.1 FORMAT UNIT command overview  
<< >> add > to the list of symbols in 3.2

ENDL 222

PDF pg 58, pg 37, 5.4.1 FORMAT UNIT command overview  
In table 14 <<All remaining codes are reserved.>> [s/b] <<Reserved>> The 'All others' in the same row takes care of everything else. See table 21 for an example.

ENDL 223

PDF pg 58, pg 37, 5.4.1 FORMAT UNIT command overview  
Per the ISO style guide, in table 14 the table notes must appear first and must be separated from the table footnotes by a double line. The word Notes: must not appear above the table footnotes (per the ISO style guide) because that might cause the reader to believe that the table footnotes are not normative.

ENDL 224

PDF pg 59, pg 38, 5.4.2.1 FORMAT UNIT parameter list overview  
<<map out of>> [s/b] <<exclude from>>

ENDL 225

PDF pg 59, pg 38, 5.4.2.2 Parameter list header  
<<control bits>> [s/b] <<control information>> There is at least one field in each parameter list header format.

ENDL 226

PDF pg 59, pg 38, 5.4.2.2 Parameter list header  
<<these bits>> [s/b] <<these headers>>

ENDL 227

PDF pg 59, pg 38, 5.4.2.2 Parameter list header  
<<which>> [s/b] <<that>>

ENDL 228

PDF pg 60, pg 39, 5.4.2.2 Parameter list header  
<<which>> [s/b] <<that>>

ENDL 229

PDF pg 60, pg 39, 5.4.2.2 Parameter list header  
<<bits in this paragraph>> [s/b] <<bits listed in this paragraph>>

ENDL 230

PDF pg 60, pg 39, 5.4.2.2 Parameter list header  
<<the setting of>> [s/b] <<the values of>>

ENDL 231

PDF pg 60, pg 39, 5.4.2.2 Parameter list header  
<<perform the action>> [s/b] <<take the action>>

ENDL 232 Technical

PDF pg 60, pg 39, 5.4.2.2 Parameter list header  
<<The PLIST is not deleted.>> [s/b] <<The PLIST shall not be altered based on the value of the DPRY bit.>>

ENDL 233

PDF pg 60, pg 39, 5.4.2.2 Parameter list header  
<<while processing the FORMAT UNIT command>> If this phrase is necessary here, then it is necessary in every sentence defining every behavior of the FORMAT UNIT command. Better to delete it once than to add it everywhere.

ENDL 234

PDF pg 60, pg 39, 5.4.2.2 Parameter list header  
<<nor>> [s/b] <<or>> for consistency with the DPRY bit definition

ENDL 235

PDF pg 60, pg 39, 5.4.2.2 Parameter list header  
<<the first condition>> [s/b] <<the condition described in item a)>> [2 times, in this paragraph and the next]

ENDL 236

PDF pg 60, pg 39, 5.4.2.2 Parameter list header  
<<the second condition>> [s/b] <<the condition described in item b)>> [2 times, in this paragraph and the next]

ENDL 237

PDF pg 61, pg 40, 5.4.2.2 Parameter list header  
<<in the parameter list header>> All the fields described in this subclause are in the parameter list header. Delete this redundant information.

ENDL 238 Technical

PDF pg 61, pg 40, 5.4.2.2 Parameter list header  
<<The length of the defect list varies with the format of the address descriptors.>> This statement is not appropriate in a T10 standard and should be deleted.

ENDL 239

PDF pg 61, pg 40, 5.4.2.2 Parameter list header  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 240

PDF pg 61, pg 40, 5.4.2.2 Parameter list header  
<<additional sense code of>> [s/b] <<additional sense code set to>>

ENDL 241

PDF pg 62, pg 41, 5.4.2.3 Initialization pattern descriptor  
<<(i.e.)>> [s/b] <<(i.e.)>>

ENDL 242

PDF pg 63, pg 42, 5.4.2.3 Initialization pattern descriptor  
<<table 20>> [s/b] <<table 19>> The IP modifier field is described in table 19, not table 20.

ENDL 243

PDF pg 63, pg 42, 5.4.2.3 Initialization pattern descriptor  
<<Notes:>> This line should be deleted since (per the ISO style guide) in indicates that the paragraphs below it are not normative, as opposed to the normative paragraphs that appear as table footnoted in table 20.

ENDL 244

PDF pg 64, pg 43, 5.4.2.4.2 Short block format address descriptor  
<<value above the capacity>> [s/b] <<value that is greater than the capacity>> [2 times, once here and once in 5.4.2.4.3]

ENDL 245

PDF pg 64, pg 43, 5.4.2.4.4 Bytes from index format address descriptor  
<<by this descriptor>> should be deleted for consistency with the description of the SECTOR NUMBER field in 5.4.2.4.5.

ENDL 246

PDF pg 65, pg 44, 5.4.2.4.5 Physical sector format address descriptor  
<<a sector>> [s/b] <<one sector>> for consistency with the 'one track' phrase earlier in this sentence.

ENDL 247

PDF pg 65, pg 44, 5.5 LOCK UNLOCK CACHE (10) command  
<<range>> [s/b] <<extent (see 3.1.17)>>

ENDL 248

PDF pg 66, pg 45, 5.5 LOCK UNLOCK CACHE (10) command  
<<range>> [s/b] <<extent>> [4 times in this subclause on this page]

ENDL 249

PDF pg 66, pg 45, 5.5 LOCK UNLOCK CACHE (10) command  
<<contiguous logical blocks within the range>> [s/b] <<logical blocks in the extent>>

ENDL 250

PDF pg 66, pg 45, 5.5 LOCK UNLOCK CACHE (10) command  
<<range contains all remaining logical blocks>> [s/b] <<extent contains all logical blocks from the one specified in the LOGICAL BLOCK ADDRESS field to the largest valued LBA>>

ENDL 251 Technical

PDF pg 66, pg 45, 5.5 LOCK UNLOCK CACHE (10) command  
<<initiator port>> [s/b] <<I\_T nexus>> and <<initiator ports>> [s/b] <<I\_T nexuses> [3 instances total in this paragraph]

ENDL 252

PDF pg 66, pg 45, 5.6 LOCK UNLOCK CACHE (16) command  
<<range>> [s/b] <<extent (see 3.1.17)>>

ENDL 253

PDF pg 66, pg 45, 5.6 LOCK UNLOCK CACHE (16) command  
<<for a description>> [s/b] <<for the definition>> Standards describe things, but more importantly they define things.

ENDL 254

PDF pg 67, pg 46, 5.7 PRE-FETCH (10) command  
 <<a> [s/b] <<the>> Unless there is more than one definition of the LOGICAL BLOCK ADDRESS field

ENDL 255

PDF pg 67, pg 46, 5.7 PRE-FETCH (10) command  
 <<block device's>> What other cache memory would it be? Delete this unnecessary phrase.

ENDL 256

PDF pg 67, pg 46, 5.7 PRE-FETCH (10) command  
 <<all remaining logical blocks>> [s/b] <<all logical blocks from the one specified in the LOGICAL BLOCK ADDRESS field to the largest valued LBA>>

ENDL 257

PDF pg 67, pg 46, 5.7 PRE-FETCH (10) command  
 <<ine>> [s/b] <<one>>

ENDL 258

PDF pg 68, pg 47, 5.8 PRE-FETCH (16) command  
 <<for a description>> [s/b] <<for the definition>>

ENDL 259

PDF pg 68, pg 47, 5.9 READ (6) command  
 <<addressed logical block>> [s/b] <<addressed logical blocks>>

ENDL 260

PDF pg 69, pg 48, 5.9 READ (6) command  
 <<The LOGICAL BLOCK ADDRESS field specifies the logical block where the read operation shall begin.>> [s/b] <<See the LOCK UNLOCK CACHE (10) command (see 5.5) for a definition of the LOGICAL BLOCK ADDRESS field.>>

ENDL 261

PDF pg 69, pg 48, 5.9 READ (6) command  
 It seem like note 10 should precede note 9 so that it is closer to the definition of the TRANSFER LENGTH field.

ENDL 262

PDF pg 70, pg 49, 5.9 READ (6) command  
 <<the sense key shall>> [s/b] <<the status shall be CHECK CONDITION and the sense key shall>>

ENDL 263

PDF pg 70, pg 49, 5.9 READ (6) command  
 <<for a description>> [s/b] <<for the definition>>

ENDL 264

PDF pg 71, pg 50, 5.10 READ (10) command  
 <<a> [s/b] <<the>>

ENDL 265

PDF pg 71, pg 50, 5.10 READ (10) command  
 <<for a description>> [s/b] <<for the definition>>

ENDL 266

PDF pg 71, pg 50, 5.10 READ (10) command  
 Per the ISO style guide, there should be a double line at the bottom of each page in table 33.

ENDL 267 Technical

PDF pg 72, pg 51, 5.10 READ (10) command  
 <<Shall not>> Does 'Shall not' in the Extended INQUIRY VPD page column of table 33 mean that the page shall not be supported?

ENDL 268

PDF pg 73, pg 52, 5.10 READ (10) command  
 <<fail>> [s/b] <<terminate>> [2 times on this page]

ENDL 269

PDF pg 73, pg 52, 5.10 READ (10) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 270

PDF pg 73, pg 52, 5.10 READ (10) command  
<<additional sense code of>> [s/b] <<additional sense code set to>> [2  
times on this page]

ENDL 271

PDF pg 73, pg 52, 5.10 READ (10) command  
<<the sense key shall>> [s/b] <<the status shall be CHECK CONDITION and  
the sense key shall>>

ENDL 272

PDF pg 73, pg 52, 5.10 READ (10) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 273

PDF pg 73, pg 52, 5.10 READ (10) command  
<<cache>> [s/b] <<cache memory>>

ENDL 274

PDF pg 74, pg 53, 5.10 READ (10) command  
<<cache>> [s/b] <<cache memory>> [9 times in this table]

ENDL 275

PDF pg 74, pg 53, 5.10 READ (10) command  
<<first>> is redundant with <<before>> Delete one or the other. [2 times  
in table 34]

ENDL 276

PDF pg 75, pg 54, 5.11 READ (12) command  
<<Restricted for MMC-4>> [s/b] <<Restricted (see MMC-4)>> for  
consistency with table 93.

ENDL 277

PDF pg 75, pg 54, 5.11 READ (12) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 278

PDF pg 75, pg 54, 5.12 READ (16) command  
<<Restricted for MMC-4>> [s/b] <<Restricted (see MMC-4)>> for  
consistency with table 93.

ENDL 279

PDF pg 75, pg 54, 5.12 READ (16) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 280

PDF pg 76, pg 55, 5.13 READ (32) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 281

PDF pg 76, pg 55, 5.13 READ (32) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 282

PDF pg 76, pg 55, 5.13 READ (32) command  
<<checking enables and requirements>> [s/b] <<checking requirements>> [2  
times in this paragraph]

ENDL 283

PDF pg 76, pg 55, 5.13 READ (32) command  
<<are controlled by>> [s/b] <<are specified by>>

ENDL 284

PDF pg 76, pg 55, 5.13 READ (32) command  
<<a definition description>> [s/b] <<the definition>>

ENDL 285

PDF pg 76, pg 55, 5.13 READ (32) command

<<for this command>> What other command would it be? Delete this. [2 times on this page]

ENDL 286

PDF pg 76, pg 55, 5.13 READ (32) command  
<<of the range of logical blocks>> [s/b] <<in the extent (3.1.17)>>

ENDL 287

PDF pg 77, pg 56, 5.14 READ CAPACITY (10) command  
<<a>> [s/b] <<the>>

ENDL 288

PDF pg 78, pg 57, 5.14 READ CAPACITY (10) command  
<<initiator>> [s/b] <<application client>>

ENDL 289

PDF pg 78, pg 57, 5.15 READ CAPACITY (16) command  
<<a>> [s/b] <<the>>

ENDL 290

PDF pg 78, pg 57, 5.15 READ CAPACITY (16) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 291

PDF pg 79, pg 58, 5.15 READ CAPACITY (16) command  
<<FFFFFFFF FFFFFFFEh>> [s/b] <<FFFFFFFF\_FFFFFFFEh>> per the conventions in 3.4.

ENDL 292

PDF pg 80, pg 59, 5.16 READ DEFECT DATA (10) command  
<<default format (see the DEFECT LIST FORMAT field in the defect list header)>> [s/b] <<default format and indicate that format in the DEFECT LIST FORMAT field (see table 43)>>

ENDL 293

PDF pg 80, pg 59, 5.16 READ DEFECT DATA (10) command  
<<Short block format address descriptors and long block format address descriptors returned with this command are vendor-specific.>> The intent of this sentence is unclear. Maybe <<The use of short block format address descriptors and long block format address descriptors by this command is vendor-specific.>> is correct, maybe not.

ENDL 294

PDF pg 81, pg 60, 5.16 READ DEFECT DATA (10) command  
<<but contains>> [s/b] <<but the ALLOCATION LENGTH field contains>>

ENDL 295

PDF pg 81, pg 60, 5.16 READ DEFECT DATA (10) command  
<<create a CHECK CONDITION status>> [s/b] <<return a CHECK CONDITION status>>

ENDL 296 Technical

PDF pg 81, pg 60, 5.16 READ DEFECT DATA (10) command  
Is note 16 really useful? If the size of the defect list exceeds the allocation length of a READ DEFECT DATA(12) command, there is no way at all to determine the number of defects.

ENDL 297

PDF pg 81, pg 60, 5.16 READ DEFECT DATA (10) command  
<<READ DEFECT DATA (10) command with an ALLOCATION LENGTH of four>> [s/b] <<READ DEFECT DATA (12) command with an ALLOCATION LENGTH of eight>> since READ DEFECT DATA(12) has a greater probability of being able to represent the defect list in the capacity of the ALLOCATION LENGTH field.

ENDL 298

PDF pg 81, pg 60, 5.16 READ DEFECT DATA (10) command  
<<The address descriptors>> [s/b] <<The address descriptors (see 5.4.2.4)>>

ENDL 299

PDF pg 81, pg 60, 5.16 READ DEFECT DATA (10) command  
 <<The application client may determine the exact number of the defects by dividing the DEFECT LIST LENGTH by the length of a single address descriptor for the returned format.>> Delete this. The second sentence on this page says the same thing better.

ENDL 300

PDF pg 81, pg 60, 5.17 READ DEFECT DATA (12) command  
 <<for a description>> [s/b] <<for the definition>>

ENDL 301

PDF pg 82, pg 61, 5.17 READ DEFECT DATA (12) command  
 <<See the description of the READ DEFECT DATA (10) list header (see 5.16) for a description of the fields in this header.>> [s/b] <<See the READ DEFECT DATA (10) command for the definition the fields in this defect list.>>

ENDL 302

PDF pg 82, pg 61, 5.18 READ LONG (10) command  
 <<The data passed>> [s/b] <<The data transferred>>

ENDL 303

PDF pg 82, pg 61, 5.18 READ LONG (10) command  
 <<See the LOCK UNLOCK CACHE (10) command (see 5.5) for a definition of the LOGICAL BLOCK ADDRESS field.>> The LOCK UNLOCK CACHE(10) defines the LOGICAL BLOCK ADDRESS field as specifying the first logical block in an extent. That definition is correct for READ LONG only if the length of the extent is one. It is not clear that a reference to 5.5 is appropriate here.

ENDL 304

PDF pg 83, pg 62, 5.19 READ LONG (16) command  
 <<See the READ LONG (10) command (see 5.18) for a description of the fields in this command.>> [s/b] <<See the READ LONG (10) command (see 5.18) for the definition of the fields in this command and the data transferred by this command.>>

ENDL 305

PDF pg 83, pg 62, 5.20 REASSIGN BLOCKS command  
 [Global in REASSIGN BLOCKS] Since the address descriptors used by REASSIGN BLOCKS are not the same as the address descriptors used by FORMAT UNIT, READ DEFECT DATA, and elsewhere, consideration should be given to changing the name. 'Logical block address descriptor' is one possibility.

ENDL 306

PDF pg 83, pg 62, 5.20 REASSIGN BLOCKS command  
 <<the defective logical blocks>> [s/b] <<defective logical blocks>>

ENDL 307

PDF pg 83, pg 62, 5.20 REASSIGN BLOCKS command  
 <<GLIST if such a list is supported>> [s/b] <<GLIST, if the list is supported>> or <<GLIST, if supported>>

ENDL 308

PDF pg 83, pg 62, 5.20 REASSIGN BLOCKS command  
 <<More than one physical or logical block may be relocated by each address descriptor sent by the application client.>> This sentence is not strictly correct. Since 'each address descriptor' can specify exactly one logical block, it seems unlikely that more than one logical block can be relocated in response to one (aka 'each') address descriptor.

ENDL 309

PDF pg 83, pg 62, 5.20 REASSIGN BLOCKS command  
 <<list that contains the LBAs>> [s/b] <<list that contains address descriptors [or whatever] identifying the LBAs>>

ENDL 310

PDF pg 84, pg 63, 5.20 REASSIGN BLOCKS command  
 <<FFFFFFFF FFFFFFFFh>> [s/b] <<FFFFFFFF\_FFFFFFFFh>> for consistency with

## 3.4

## ENDL 311

PDF pg 85, pg 64, 5.20 REASSIGN BLOCKS command  
<<ascending order>> [s/b] <<ascending order by LBA value>>

## ENDL 312

PDF pg 85, pg 64, 5.20 REASSIGN BLOCKS command  
<<FFFFFFFF FFFFFFFFh>> [s/b] <<FFFFFFFF\_FFFFFFFFh>> for consistency with  
3.4

## ENDL 313

PDF pg 85, pg 64, 5.20 REASSIGN BLOCKS command  
<<unexpected unrecoverable read error>> [s/b] <<unrecoverable read  
error>> Surely, errors are never expected.

## ENDL 314

PDF pg 85, pg 64, 5.20 REASSIGN BLOCKS command  
It seems like note 18 should not be a note.

## ENDL 315

PDF pg 85, pg 64, 5.21 START STOP UNIT command  
<<The START STOP UNIT command provides>> [s/b] <<The START STOP UNIT  
command (see table 52) provides>> Also delete the paragraph immediately  
before table 52 ... for consistency with the other command descriptions  
in this standard

## ENDL 316

PDF pg 85, pg 64, 5.21 START STOP UNIT command  
<<certain>> [s/b] <<specified>>

## ENDL 317

PDF pg 85, pg 64, 5.21 START STOP UNIT command  
<<unit, the same as they would do in response to a SYNCHRONIZE CACHE  
command with the SYNC\_NV bit set to zero (see 5.22), prior>> [s/b]  
<<unit (e.g., as they would do in response to a SYNCHRONIZE CACHE  
command with the SYNC\_NV bit set to zero (see 5.22)) prior>>

## ENDL 318

PDF pg 85, pg 64, 5.21 START STOP UNIT command  
<<a hard drive stops its spindle motor>> [s/b] <<the rotating media  
spindle motor is stopped>> for consistency with 4.12

## ENDL 319

PDF pg 86, pg 65, 5.21 START STOP UNIT command  
<<POWER CONDITION>> [s/b] <<POWER CONDITIONS>> as per table 52 and other  
text in this subclause

## ENDL 320

PDF pg 86, pg 65, 5.21 START STOP UNIT command  
Delete <<optional>> Since I can find no way to omit the POWER CONDITIONS  
field from the CDB, it seems unlikely that the field is optional.

## ENDL 321

PDF pg 86, pg 65, 5.21 START STOP UNIT command  
<<has>> [s/b] <<contains>>

## ENDL 322

PDF pg 86, pg 65, 5.21 START STOP UNIT command  
<<Oh then>> [s/b] <<Oh, then>> i.e., add a comma between the if clause  
and the then clause

## ENDL 323

PDF pg 86, pg 65, 5.21 START STOP UNIT command  
The device server may ignore the contents of the POWER CONDITIONS field.

## ENDL 324

PDF pg 86, pg 65, 5.21 START STOP UNIT command  
<<are valid>> [s/b] <<shall be processed>>

## ENDL 325

PDF pg 86, pg 65, 5.21 START STOP UNIT command  
 <<is issued>> [s/b] <<is received>> or <<is processed>> [3 times on this page]

ENDL 326

PDF pg 86, pg 65, 5.21 START STOP UNIT command  
 <<command or a logical unit reset>> [s/b] <<command, a logical unit reset event, or receipt of a LOGICAL UNIT RESET task management function>>

ENDL 327

PDF pg 86, pg 65, 5.21 START STOP UNIT command  
 <<idle condition and standby condition timers>> [s/b] <<idle condition timer and standby condition timer>>

ENDL 328

PDF pg 86, pg 65, 5.21 START STOP UNIT command  
 <<or a logical unit reset occurs>> [s/b] <<a LOGICAL UNIT RESET task management function is received, or a logical unit reset event occurs>>

ENDL 329

PDF pg 86, pg 65, 5.21 START STOP UNIT command  
 <<START STOP UNIT command's most recent power condition setting>> [s/b] <<specified power condition>> for consistency with item a) in the same list

ENDL 330

PDF pg 86, pg 65, 5.21 START STOP UNIT command  
 <<selected>> [s/b] <<specified>> [2 times in list entry a)]

ENDL 331

PDF pg 86, pg 65, 5.21 START STOP UNIT command  
 <<a power condition in which it currently is>> [s/b] <<the same power condition that is currently in effect>>

ENDL 332

PDF pg 87, pg 66, 5.21 START STOP UNIT command  
 Either add <<(see SPC-3)>> here Or delete (see SPC-3) from the paragraph defining LU\_CONTROL on the previous page.

ENDL 333

PDF pg 87, pg 66, 5.21 START STOP UNIT command  
 <<activated>> [s/b] <<active>> for consistency with terminology used everywhere else in this subclause

ENDL 334

PDF pg 87, pg 66, 5.22 SYNCHRONIZE CACHE (10) command  
 <<range>> [s/b] <<extent (see 3.1.17)>>

ENDL 335

PDF pg 87, pg 66, 5.22 SYNCHRONIZE CACHE (10) command  
 <<cache>> [s/b] <<cache memory>>

ENDL 336

PDF pg 87, pg 66, 5.22 SYNCHRONIZE CACHE (10) command  
 <<implicitly by>> [s/b] <<to be performed as part of >>

ENDL 337

PDF pg 87, pg 66, 5.22 SYNCHRONIZE CACHE (10) command  
 <<SCSI functions>> [s/b] <<functions>>

ENDL 338

PDF pg 87, pg 66, 5.22 SYNCHRONIZE CACHE (10) command  
 <<in other clauses of>> [s/b] <<elsewhere in>> strictly speaking the current wording prohibits requirements for SYNCHRONIZE CACHE usage from appearing anywhere in this clause, i.e., clause 5, and invalidates statements made in the START STOP UNIT command definition.

ENDL 339

PDF pg 87, pg 66, 5.22 SYNCHRONIZE CACHE (10) command  
 <<a>> [s/b] <<the>>

ENDL 340

PDF pg 87, pg 66, 5.22 SYNCHRONIZE CACHE (10) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 341

PDF pg 87, pg 66, 5.22 SYNCHRONIZE CACHE (10) command  
<<The SYNC\_NV bit specifies>> [s/b] <<The SYNC\_NV bit (see table 55)  
specifies>> and Delete <<and is described in table 55>> at the end of  
the sentence.

ENDL 342

PDF pg 87, pg 66, 5.22 SYNCHRONIZE CACHE (10) command  
<<No requirement.>> Remove period from the end of this non-sentence.

ENDL 343

PDF pg 88, pg 67, 5.22 SYNCHRONIZE CACHE (10) command  
<<contiguous logical blocks within the range>> [s/b] <<logical blocks in  
the extent>>

ENDL 344

PDF pg 88, pg 67, 5.22 SYNCHRONIZE CACHE (10) command  
<<range>> [s/b] <<extent>> [3 times on this page]

ENDL 345

PDF pg 88, pg 67, 5.22 SYNCHRONIZE CACHE (10) command  
Why is the LOCK UNLOCK CACHE (10) command (see 5.5) definition for the  
NUMBER OF BLOCKS field incorrect for SYNCHRONIZE CACHE(10)?

ENDL 346

PDF pg 88, pg 67, 5.23 SYNCHRONIZE CACHE (16) command  
<<cache>> [s/b] <<cache memory>>

ENDL 347

PDF pg 88, pg 67, 5.23 SYNCHRONIZE CACHE (16) command  
<<implicitly by>> [s/b] <<to be performed as part of >>

ENDL 348

PDF pg 88, pg 67, 5.23 SYNCHRONIZE CACHE (16) command  
<<SCSI functions>> [s/b] <<functions>>

ENDL 349

PDF pg 88, pg 67, 5.23 SYNCHRONIZE CACHE (16) command  
<<in other clauses of>> [s/b] <<elsewhere in>>

ENDL 350

PDF pg 88, pg 67, 5.23 SYNCHRONIZE CACHE (16) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 351

PDF pg 88, pg 67, 5.24 VERIFY (10) command  
<<log read capacity data>> [s/b] <<long read capacity data>>

ENDL 352

PDF pg 89, pg 68, 5.24 VERIFY (10) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 353

PDF pg 89, pg 68, 5.24 VERIFY (10) command  
<<additional sense code of>> [s/b] <<additional sense code set to>>

ENDL 354

PDF pg 89, pg 68, 5.24 VERIFY (10) command  
<<Restricted for MMC-4>> [s/b] <<Restricted (see MMC-4)>> for  
consistency with table 93.

ENDL 355

PDF pg 89, pg 68, 5.24 VERIFY (10) command  
<<for a description>> [s/b] <<for the definition>> [2 times in this  
paragraph]

ENDL 356

PDF pg 89, pg 68, 5.24 VERIFY (10) command  
<<a>> [s/b] <<the>>

ENDL 357

PDF pg 89, pg 68, 5.24 VERIFY (10) command  
<<If the MODE SELECT command is implemented, and the Verify Error Recovery mode page (see 6.3.5) is also implemented,>> [s/b] <<If the Verify Error Recovery mode page (see 6.3.5) is implemented,>> for consistency with the rest of the standard

ENDL 358

PDF pg 89, pg 68, 5.24 VERIFY (10) command  
<<specifies>> [s/b] <<specify>> to match the number of the sentence subject (i.e., settings)

ENDL 359 Technical

PDF pg 90, pg 69, 5.24 VERIFY (10) command  
<<Shall not>> Does 'Shall not' in the Extended INQUIRY VPD page column of table 58 and table 59 mean that the page shall not be supported?

ENDL 360

PDF pg 90, pg 69, 5.24 VERIFY (10) command  
There should be a double line at the bottom of each page of table 58, table 60, and table 61.

ENDL 361

PDF pg 92, pg 71, 5.24 VERIFY (10) command  
<<fail>> [s/b] <<terminate>> [2 times on this page]

ENDL 362

PDF pg 92, pg 71, 5.24 VERIFY (10) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 363

PDF pg 92, pg 71, 5.24 VERIFY (10) command  
<<additional sense code of>> [s/b] <<additional sense code set to>>

ENDL 364

PDF pg 92, pg 71, 5.24 VERIFY (10) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 365

PDF pg 93, pg 72, 5.24 VERIFY (10) command  
<<fail>> [s/b] <<terminate>> [2 times on this page]

ENDL 366

PDF pg 93, pg 72, 5.24 VERIFY (10) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 367

PDF pg 93, pg 72, 5.24 VERIFY (10) command  
<<additional sense code of>> [s/b] <<additional sense code set to>>

ENDL 368

PDF pg 93, pg 72, 5.24 VERIFY (10) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 369

PDF pg 95, pg 74, 5.24 VERIFY (10) command  
<<fail>> [s/b] <<terminate>> [2 times on this page]

ENDL 370

PDF pg 95, pg 74, 5.24 VERIFY (10) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 371

PDF pg 95, pg 74, 5.24 VERIFY (10) command  
<<additional sense code of>> [s/b] <<additional sense code set to>>

ENDL 372

PDF pg 97, pg 76, 5.24 VERIFY (10) command  
<<fail>> [s/b] <<terminate>> [2 times on this page]

ENDL 373  
PDF pg 97, pg 76, 5.24 VERIFY (10) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 374  
PDF pg 97, pg 76, 5.24 VERIFY (10) command  
<<additional sense code of>> [s/b] <<additional sense code set to>>

ENDL 375  
PDF pg 97, pg 76, 5.25 VERIFY (12) command  
<<log read capacity data>> [s/b] <<long read capacity data>>

ENDL 376  
PDF pg 98, pg 77, 5.25 VERIFY (12) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 377  
PDF pg 98, pg 77, 5.25 VERIFY (12) command  
<<additional sense code of>> [s/b] <<additional sense code set to>>

ENDL 378  
PDF pg 98, pg 77, 5.25 VERIFY (12) command  
<<Restricted for MMC-4>> [s/b] <<Restricted (see MMC-4)>> for consistency with table 93.

ENDL 379  
PDF pg 98, pg 77, 5.25 VERIFY (12) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 380  
PDF pg 98, pg 77, 5.26 VERIFY (16) command  
<<log read capacity data>> [s/b] <<long read capacity data>>

ENDL 381  
PDF pg 98, pg 77, 5.26 VERIFY (16) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 382  
PDF pg 98, pg 77, 5.26 VERIFY (16) command  
<<additional sense code of>> [s/b] <<additional sense code set to>>

ENDL 383  
PDF pg 98, pg 77, 5.26 VERIFY (16) command  
<<Restricted for MMC-4>> [s/b] <<Restricted (see MMC-4)>> for consistency with table 93.

ENDL 384  
PDF pg 98, pg 77, 5.26 VERIFY (16) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 385  
PDF pg 99, pg 78, 5.27 VERIFY (32) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 386  
PDF pg 99, pg 78, 5.27 VERIFY (32) command  
The text describing the RTO\_EN bit appears between the subclause heading and the CDB format table for all the other VERIFY(n) commands. Be consistent.

ENDL 387  
PDF pg 99, pg 78, 5.27 VERIFY (32) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 388  
PDF pg 99, pg 78, 5.27 VERIFY (32) command  
<<checking enables and requirements>> [s/b] <<checking requirements>> [2 times in this paragraph]

ENDL 389

PDF pg 99, pg 78, 5.27 VERIFY (32) command  
 <<are controlled by>> [s/b] <<are specified by>>

ENDL 390

PDF pg 99, pg 78, 5.27 VERIFY (32) command  
 <<a definition description>> [s/b] <<the definition>>

ENDL 391

PDF pg 99, pg 78, 5.27 VERIFY (32) command  
 <<of the range of logical blocks>> [s/b] <<in the extent (3.1.17)>> [on  
 this page and the next]

ENDL 392

PDF pg 100, pg 79, 5.27 VERIFY (32) command  
 Delete <<for this command>>

ENDL 393

PDF pg 100, pg 79, 5.28 WRITE (6) command  
 <<The LOGICAL BLOCK ADDRESS field specifies the logical block where the  
 write operation shall begin.>> [s/b] <<See the LOCK UNLOCK CACHE (10)  
 command (see 5.5) for a definition of the LOGICAL BLOCK ADDRESS field.>>

ENDL 394

PDF pg 100, pg 79, 5.28 WRITE (6) command  
 <<the logical block>> [s/b] <<each logical block>>

ENDL 395

PDF pg 100, pg 79, 5.28 WRITE (6) command  
 <<LBA if>> [s/b] <<LBA, if>>

ENDL 396

PDF pg 100, pg 79, 5.28 WRITE (6) command  
 <<FFFFFFFFh if>> [s/b] <<FFFFFFFFh, if>>

ENDL 397

PDF pg 100, pg 79, 5.28 WRITE (6) command  
 <<FFFFh if>> [s/b] <<FFFFh, if>>

ENDL 398

PDF pg 100, pg 79, 5.28 WRITE (6) command  
 <<any value if>> [s/b] <<any value, if>> This text was what surfaced the  
 need for commas, as I read it.

ENDL 399

PDF pg 101, pg 80, 5.29 WRITE (10) command  
 <<as required by the WRPROTECT field>> [s/b] <<as specified by the  
 WRPROTECT field>>

ENDL 400

PDF pg 101, pg 80, 5.29 WRITE (10) command  
 <<a>> [s/b] <<the>> [2 times in this paragraph]

ENDL 401

PDF pg 101, pg 80, 5.29 WRITE (10) command  
 <<for a description>> [s/b] <<for the definition>>

ENDL 402

PDF pg 101, pg 80, 5.29 WRITE (10) command  
 <<The force unit access (FUA and FUA\_NV) bits are defined in table 67.>>  
 [s/b] <<The force unit access (FUA) and force unit access nonvolatile  
 cache (FUA\_NV) bits are defined in table 67.>> Note: the suggested  
 replacement text is a cut and paste from the READ(10) command, with only  
 the table number changed.

ENDL 403

PDF pg 101, pg 80, 5.29 WRITE (10) command  
 <<cache>> [s/b] <<cache memory>> [4 times in this table]

ENDL 404

PDF pg 102, pg 81, 5.29 WRITE (10) command  
In READ(10), the RDPROTECT field is described before the FUA bits. Here  
the reverse is true. Be consistent.

ENDL 405

PDF pg 102, pg 81, 5.29 WRITE (10) command  
There should be a double line at the bottom of each page of table 68.

ENDL 406

PDF pg 103, pg 82, 5.29 WRITE (10) command  
<<fail>> [s/b] <<terminate>> [2 times on this page]

ENDL 407

PDF pg 103, pg 82, 5.29 WRITE (10) command  
<<sense key of>> [s/b] <<sense key set to>> [2 times on this page]

ENDL 408

PDF pg 103, pg 82, 5.29 WRITE (10) command  
<<additional sense code of>> [s/b] <<additional sense code set to>> [2  
times on this page]

ENDL 409

PDF pg 104, pg 83, 5.30 WRITE (12) command  
<<as required by the WRPROTECT field>> [s/b] <<as specified by the  
WRPROTECT field>> [2 times on this page]

ENDL 410

PDF pg 104, pg 83, 5.30 WRITE (12) command  
<<Restricted for MMC-4>> [s/b] <<Restricted (see MMC-4)>> for  
consistency with table 93.

ENDL 411

PDF pg 104, pg 83, 5.30 WRITE (12) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 412

PDF pg 104, pg 83, 5.31 WRITE (16) command  
<<Restricted for MMC-4>> [s/b] <<Restricted (see MMC-4)>> for  
consistency with table 93.

ENDL 413

PDF pg 104, pg 83, 5.31 WRITE (16) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 414

PDF pg 105, pg 84, 5.32 WRITE (32) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 415

PDF pg 105, pg 84, 5.32 WRITE (32) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 416

PDF pg 105, pg 84, 5.32 WRITE (32) command  
<<checking enables and requirements>> [s/b] <<checking requirements>> [2  
times in this paragraph]

ENDL 417

PDF pg 105, pg 84, 5.32 WRITE (32) command  
<<are controlled by>> [s/b] <<are specified by>>

ENDL 418

PDF pg 105, pg 84, 5.32 WRITE (32) command  
<<a definition description>> [s/b] <<the definition>>

ENDL 419

PDF pg 105, pg 84, 5.32 WRITE (32) command  
<<for this command>> What other command would it be? Delete this. [2  
times on this page]

ENDL 420

PDF pg 105, pg 84, 5.32 WRITE (32) command  
<<of the range of logical blocks>> [s/b] <<in the extent (3.1.17)>>

ENDL 421

PDF pg 106, pg 85, 5.33 WRITE AND VERIFY (10) command  
<<as required by the WRPROTECT field>> [s/b] <<as specified by the WRPROTECT field>> [2 times on this page]

ENDL 422

PDF pg 106, pg 85, 5.33 WRITE AND VERIFY (10) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 423

PDF pg 106, pg 85, 5.33 WRITE AND VERIFY (10) command  
<<a>> [s/b] <<the>> [2 times in this paragraph]

ENDL 424

PDF pg 106, pg 85, 5.33 WRITE AND VERIFY (10) command  
<<for a description>> [s/b] <<for the definition>> [2 times in this paragraph]

ENDL 425

PDF pg 106, pg 85, 5.33 WRITE AND VERIFY (10) command  
<<If the MODE SELECT command is implemented, and the Verify Error Recovery mode page (see 6.3.5) is also implemented,>> [s/b] <<If the Verify Error Recovery mode page (see 6.3.5) is implemented,>>

ENDL 426

PDF pg 107, pg 86, 5.34 WRITE AND VERIFY (12) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 427

PDF pg 107, pg 86, 5.34 WRITE AND VERIFY (12) command  
<<Restricted for MMC-4>> [s/b] <<Restricted (see MMC-4)>> for consistency with table 93.

ENDL 428

PDF pg 107, pg 86, 5.34 WRITE AND VERIFY (12) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 429

PDF pg 107, pg 86, 5.35 WRITE AND VERIFY (16) command  
<<as required by the WRPROTECT field>> [s/b] <<as specified by the WRPROTECT field>>

ENDL 430

PDF pg 107, pg 86, 5.35 WRITE AND VERIFY (16) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 431

PDF pg 107, pg 86, 5.35 WRITE AND VERIFY (16) command  
<<Restricted for MMC-4>> [s/b] <<Restricted (see MMC-4)>> for consistency with table 93.

ENDL 432

PDF pg 107, pg 86, 5.35 WRITE AND VERIFY (16) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 433

PDF pg 108, pg 87, 5.36 WRITE AND VERIFY (32) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 434

PDF pg 108, pg 87, 5.36 WRITE AND VERIFY (32) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 435

PDF pg 108, pg 87, 5.36 WRITE AND VERIFY (32) command  
<<checking enables and requirements>> [s/b] <<checking requirements>> [2 times in this paragraph]

ENDL 436

PDF pg 108, pg 87, 5.36 WRITE AND VERIFY (32) command  
<<are controlled by>> [s/b] <<are specified by>>

ENDL 437

PDF pg 108, pg 87, 5.36 WRITE AND VERIFY (32) command  
<<a definition description>> [s/b] <<the definition>>

ENDL 438

PDF pg 108, pg 87, 5.36 WRITE AND VERIFY (32) command  
<<for this command>> What other command would it be? Delete this. [2  
times on this page]

ENDL 439

PDF pg 108, pg 87, 5.36 WRITE AND VERIFY (32) command  
<<of the range of logical blocks>> [s/b] <<in the extent (3.1.17)>>

ENDL 440

PDF pg 109, pg 88, 5.37 WRITE LONG (10) command  
<<See the LOCK UNLOCK CACHE (10) command (see 5.5) for a definition of  
the LOGICAL BLOCK ADDRESS field.>> The LOCK UNLOCK CACHE(10) defines the  
LOGICAL BLOCK ADDRESS field as specifying the first logical block in an  
extent. That definition is correct for WRITE LONG only if the length of  
the extent is one. It is not clear that a reference to 5.5 is  
appropriate here.

ENDL 441

PDF pg 109, pg 88, 5.37 WRITE LONG (10) command  
<<can>> [s/b] <<may>>

ENDL 442

PDF pg 110, pg 89, 5.38 WRITE LONG (16) command  
<<See the WRITE LONG (10) command (see 5.18) for a description of the  
fields in this command.>> [s/b] <<See the WRITE LONG (10) command (see  
5.18) for the definition of the fields in this command and the data  
transferred by this command.>>

ENDL 443

PDF pg 110, pg 89, 5.39 WRITE SAME (10) command  
<<as required by the WRPROTECT field>> [s/b] <<as specified by the  
WRPROTECT field>>

ENDL 444

PDF pg 110, pg 89, 5.39 WRITE SAME (10) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 445

PDF pg 110, pg 89, 5.39 WRITE SAME (10) command  
<<a>> [s/b] <<the>>

ENDL 446

PDF pg 110, pg 89, 5.39 WRITE SAME (10) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 447

PDF pg 111, pg 90, 5.39 WRITE SAME (10) command  
<<Into each of the following logical blocks>> [s/b] <<For each  
subsequent logical block>> Otherwise the use of 'into' is redundant in  
the sentence.

ENDL 448 Technical

PDF pg 111, pg 90, 5.39 WRITE SAME (10) command  
<<The device server shall replace the first four bytes of the block  
received from the application client data-out buffer with the least  
significant four bytes of the LBA of the block being written. The most  
significant byte of the four bytes shall be written first.>> If the  
least significant four bytes are written, how can the most significant  
<<four bytes>> be written first?

ENDL 449

PDF pg 111, pg 90, 5.39 WRITE SAME (10) command

<<FFFFFFFF FFFFFFFFh>> [s/b] <<FFFFFFFF\_FFFFFFFFh>> for consistency with 3.4

ENDL 450

PDF pg 111, pg 90, 5.39 WRITE SAME (10) command  
 <<all the remaining logical blocks on the medium>> [s/b] <<all the logical blocks from the one specified in the LOGICAL BLOCK ADDRESS field to the largest valued LBA>>

ENDL 451

PDF pg 111, pg 90, 5.40 WRITE SAME (16) command  
 <<as required by the WRPROTECT field>> [s/b] <<as specified by the WRPROTECT field>>

ENDL 452

PDF pg 112, pg 91, 5.40 WRITE SAME (16) command  
 <<sense key of>> [s/b] <<sense key set to>>

ENDL 453

PDF pg 112, pg 91, 5.40 WRITE SAME (16) command  
 <<for a description>> [s/b] <<for the definition>>

ENDL 454

PDF pg 113, pg 92, 5.41 WRITE SAME (32) command  
 <<for a description>> [s/b] <<for the definition>>

ENDL 455

PDF pg 113, pg 92, 5.41 WRITE SAME (32) command  
 <<sense key of>> [s/b] <<sense key set to>>

ENDL 456

PDF pg 113, pg 92, 5.41 WRITE SAME (32) command  
 <<checking enables and requirements>> [s/b] <<checking requirements>> [2 times in this paragraph]

ENDL 457

PDF pg 113, pg 92, 5.41 WRITE SAME (32) command  
 <<are controlled by>> [s/b] <<are specified by>>

ENDL 458

PDF pg 113, pg 92, 5.41 WRITE SAME (32) command  
 <<a>> [s/b] <<the>>

ENDL 459

PDF pg 113, pg 92, 5.41 WRITE SAME (32) command  
 <<for this command>> What other command would it be? Delete this. [2 times on this page]

ENDL 460

PDF pg 113, pg 92, 5.41 WRITE SAME (32) command  
 <<of the range of logical blocks>> [s/b] <<in the extent (3.1.17)>>

ENDL 461

PDF pg 114, pg 93, 5.42 XDREAD (10) command  
 <<target transfer to the initiator>> [s/b] <<device server transfer to the application client>>

ENDL 462

PDF pg 114, pg 93, 5.42 XDREAD (10) command  
 <<as required by the XORPINFO bit>> [s/b] <<as specified by the XORPINFO bit>>

ENDL 463

PDF pg 114, pg 93, 5.42 XDREAD (10) command  
 <<for a description>> [s/b] <<for the definition>>

ENDL 464

PDF pg 114, pg 93, 5.42 XDREAD (10) command  
 <<fields>> [s/b] <<protection information fields>>

ENDL 465

PDF pg 114, pg 93, 5.42 XDREAD (10) command  
Insert new paragraph for consistency with XPWRITE command definition. [2  
times on this page]

ENDL 466

PDF pg 114, pg 93, 5.42 XDREAD (10) command  
<<sense key of>> [s/b] <<sense key set to>> [2 times in this paragraph]

ENDL 467

PDF pg 114, pg 93, 5.42 XDREAD (10) command  
<<additional sense code of>> [s/b] <<additional sense code set to>> [2  
times in this paragraph]

ENDL 468

PDF pg 114, pg 93, 5.42 XDREAD (10) command  
<<is terminated>> [s/b] <<shall be terminated>>

ENDL 469

PDF pg 115, pg 94, 5.43 XDREAD (32) command  
<<target transfer to the initiator>> [s/b] <<device server transfer to  
the application client>>

ENDL 470

PDF pg 115, pg 94, 5.43 XDREAD (32) command  
<<as required by the XORPINFO bit>> [s/b] <<as specified by the XORPINFO  
bit>>

ENDL 471

PDF pg 115, pg 94, 5.43 XDREAD (32) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 472

PDF pg 115, pg 94, 5.44 XDWRITE (10) command  
<<target>> [s/b] <<device server>> [2 times in this paragraph]

ENDL 473

PDF pg 115, pg 94, 5.44 XDWRITE (10) command  
<<as required by the WRPROTECT field>> [s/b] <<as specified by the  
WRPROTECT field>>

ENDL 474

PDF pg 116, pg 95, 5.44 XDWRITE (10) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 475

PDF pg 116, pg 95, 5.44 XDWRITE (10) command  
<<a>> [s/b] <<the>> [1 time each in this paragraph and the next]

ENDL 476

PDF pg 116, pg 95, 5.44 XDWRITE (10) command  
The first three paragraphs after table 84 should be agglomerated into  
one paragraph, for consistency with the rest of the standard.

ENDL 477

PDF pg 116, pg 95, 5.44 XDWRITE (10) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 478

PDF pg 116, pg 95, 5.45 XDWRITE (32) command  
<<target>> [s/b] <<device server>> [2 times in this paragraph]

ENDL 479

PDF pg 116, pg 95, 5.45 XDWRITE (32) command  
<<as required by the WRPROTECT field>> [s/b] <<as specified by the  
WRPROTECT field>>

ENDL 480

PDF pg 117, pg 96, 5.45 XDWRITE (32) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 481

PDF pg 117, pg 96, 5.45 XDWRITE (32) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 482  
PDF pg 117, pg 96, 5.46 XDWRITEREAD (10) command  
<<target>> [s/b] <<device server>>

ENDL 483  
PDF pg 117, pg 96, 5.46 XDWRITEREAD (10) command  
<<as required by the WRPROTECT field>> [s/b] <<as specified by the  
WRPROTECT field>>

ENDL 484  
PDF pg 118, pg 97, 5.46 XDWRITEREAD (10) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 485  
PDF pg 118, pg 97, 5.46 XDWRITEREAD (10) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 486  
PDF pg 118, pg 97, 5.47 XDWRITEREAD (32) command  
<<target>> [s/b] <<device server>>

ENDL 487  
PDF pg 118, pg 97, 5.47 XDWRITEREAD (32) command  
<<as required by the WRPROTECT field>> [s/b] <<as specified by the  
WRPROTECT field>>

ENDL 488  
PDF pg 119, pg 98, 5.47 XDWRITEREAD (32) command  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 489  
PDF pg 119, pg 98, 5.47 XDWRITEREAD (32) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 490  
PDF pg 119, pg 98, 5.48 XPWRITE (10) command  
<<target>> [s/b] <<device server>>

ENDL 491  
PDF pg 119, pg 98, 5.48 XPWRITE (10) command  
<<as required by the XORPINFO bit>> [s/b] <<as specified by the XORPINFO  
bit>>

ENDL 492  
PDF pg 120, pg 99, 5.48 XPWRITE (10) command  
<<a>> [s/b] <<the>> [2 times in this paragraph]

ENDL 493  
PDF pg 120, pg 99, 5.48 XPWRITE (10) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 494  
PDF pg 120, pg 99, 5.48 XPWRITE (10) command  
<<sense key of>> [s/b] <<sense key set to>> [3 times on this page]

ENDL 495  
PDF pg 120, pg 99, 5.48 XPWRITE (10) command  
<<additional sense code of>> [s/b] <<additional sense code set to>> [3  
times on this page]

ENDL 496  
PDF pg 120, pg 99, 5.48 XPWRITE (10) command  
<<fields>> [s/b] <<protection information fields>>

ENDL 497  
PDF pg 120, pg 99, 5.48 XPWRITE (10) command  
<<target>> [s/b] <<device server>> [2 times on this page]

ENDL 498

PDF pg 121, pg 100, 5.49 XPWRITE (32) command  
<<as required by the XORPINFO bit>> [s/b] <<as specified by the XORPINFO bit>>

ENDL 499

PDF pg 121, pg 100, 5.49 XPWRITE (32) command  
<<for a description>> [s/b] <<for the definition>>

ENDL 500

PDF pg 122, pg 101, 6.1.2 Translate Address Output diagnostic page  
<<passed>> [s/b] <<sent>> I would have said <<transferred>> but <<sent>> is more consistent with the usage of <<returned>> later in this paragraph.

ENDL 501

PDF pg 122, pg 101, 6.1.2 Translate Address Output diagnostic page  
<<page sent>> [s/b] <<page (see table 19) is sent>> for consistency with the next sentence.

ENDL 502

PDF pg 123, pg 102, 6.1.2 Translate Address Output diagnostic page  
<<address>> [s/b] <<address descriptor>>

ENDL 503

PDF pg 124, pg 103, 6.1.2 Translate Address Output diagnostic page  
Delete <<different>> because it adds no value.

ENDL 504

PDF pg 126, pg 105, 6.2.2 Format Status log page  
<<Vendor-specific parameters>> [s/b] <<Vendor-specific>>

ENDL 505

PDF pg 126, pg 105, 6.2.2 Format Status log page  
<<FORMAT DATA OUT field>> [s/b] <<Format DATA OUT parameter>>

ENDL 506

PDF pg 126, pg 105, 6.2.2 Format Status log page  
<<of the most recently successful>> [s/b] <<from the most recent successful>>

ENDL 507

PDF pg 126, pg 105, 6.2.2 Format Status log page  
<<GROWN DEFECTS DURING CERTIFICATION field>> [s/b] <<grown defects during certification parameter>>

ENDL 508 Technical

PDF pg 126, pg 105, 6.2.2 Format Status log page  
<<a FORMAT UNIT command>> [s/b] <<the most recent successful FORMAT UNIT command>>

ENDL 509

PDF pg 126, pg 105, 6.2.2 Format Status log page  
<<TOTAL BLOCKS REALLOCATED DURING FORMAT field>> [s/b] <<total blocks reallocated during format parameter>>

ENDL 510

PDF pg 126, pg 105, 6.2.2 Format Status log page  
<<last>> [s/b] <<most recent>>

ENDL 511 Technical

PDF pg 126, pg 105, 6.2.2 Format Status log page  
Some text appears to be missing. 1) There is no description for the total new blocks reallocated parameter. 2) The existing definition of the total blocks reallocated during format parameter would fit better as the definition of the total new blocks reallocated parameter.

ENDL 512

PDF pg 126, pg 105, 6.2.2 Format Status log page  
<<minutes (i.e., power applied regardless of power state)>> [s/b]  
<<minutes with power applied regardless of power state>>

ENDL 513

PDF pg 126, pg 105, 6.2.2 Format Status log page  
 <<reflect no such information being available>> [s/b] <<indicate that no such information is available>>

ENDL 514

PDF pg 126, pg 105, 6.2.2 Format Status log page  
 <<manner and location>> [s/b] <<manner>>

ENDL 515

PDF pg 127, pg 106, 6.2.3 Non-volatile Cache log page  
 <<defined in table 95>> [s/b] <<(see table 95)>>

ENDL 516

PDF pg 127, pg 106, 6.2.3 Non-volatile Cache log page  
 <<(either permanently or temporarily, e.g.,)>> [s/b] <<(either permanently or temporarily (e.g.,)>>

ENDL 517

PDF pg 132, pg 111, 6.3.2.3 Long LBA mode parameter block descriptor  
 <<FFFFFFFF FFFFFFFFh>> [s/b] <<FFFFFFFF\_FFFFFFFFh>> for consistency with 3.4 [2 times on this page]

ENDL 518

PDF pg 133, pg 112, 6.3.3 Caching mode page  
 <<use the>> [s/b] <<use either the>> to help the 'dependent on' phrase make more sense

ENDL 519

PDF pg 134, pg 113, 6.3.3 Caching mode page  
 <<WRITE RETENTION PRIORITY field>> [s/b] <<WRITE RETENTION PRIORITY field (see table 106)>>

ENDL 520

PDF pg 134, pg 113, 6.3.3 Caching mode page  
 <<cache>> [s/b] <<cache memory>> [2 times in this paragraph]

ENDL 521 Technical

PDF pg 134, pg 113, 6.3.3 Caching mode page  
 <<All the following parameters give an indication to the device server how it should manage the cache based on the last READ command.>> Is this statement true for any of the following fields: FSW, LBCSS, DRA, NUMBER OF CACHE SEGMENTS, CACHE SEGMENT SIZE, NV\_DIS, or NON CACHE SEGMENT SIZE? It appears that fields have been appended to the page contents since the time that this statement was written.

ENDL 522

PDF pg 134, pg 113, 6.3.3 Caching mode page  
 <<last>> [s/b] <<most recent>>

ENDL 523

PDF pg 134, pg 113, 6.3.3 Caching mode page  
 <<remaining>> [s/b] <<following>>

ENDL 524 Technical

PDF pg 134, pg 113, 6.3.3 Caching mode page  
 <<All the remaining caching parameters are only recommendations to the device server ...>> Is this statement true for any of the following fields: FSW, LBCSS, DRA, NUMBER OF CACHE SEGMENTS, CACHE SEGMENT SIZE, NV\_DIS, or NON CACHE SEGMENT SIZE? It appears that fields have been appended to the page contents since the time that this statement was written.

ENDL 525

PDF pg 134, pg 113, 6.3.3 Caching mode page  
 <<the current>> [s/b] <<a>>

ENDL 526

PDF pg 135, pg 114, 6.3.3 Caching mode page  
 Delete <<previous>> I do not think any replacement wording is needed,

but if some is it would be <<most recent>>

ENDL 527

PDF pg 135, pg 114, 6.3.3 Caching mode page  
<<before exceeding the end of>> [s/b] <<largest LBA on>>

ENDL 528

PDF pg 135, pg 114, 6.3.3 Caching mode page  
Delete <<current>>

ENDL 529

PDF pg 135, pg 114, 6.3.3 Caching mode page  
<<rules for reporting deferred errors>> [s/b] <<rules for reporting deferred errors (see SPC-3)>>

ENDL 530

PDF pg 135, pg 114, 6.3.3 Caching mode page  
<<ready to be processed>> [s/b] <<in the task set>>

ENDL 531

PDF pg 135, pg 114, 6.3.3 Caching mode page  
Delete <<into the cache>> Pre-fetch is defined to use cache memory (see previous page) and besides 'cache' s/b 'cache memory'

ENDL 532

PDF pg 135, pg 114, 6.3.3 Caching mode page  
Perhaps note 24 should not be a note.

ENDL 533 Technical

PDF pg 135, pg 114, 6.3.3 Caching mode page  
<<bytes>> [s/b] <<bytes, if the LBCSS bit is set to zero, or in logical blocks if the LBCSS bit is set to one>>

ENDL 534

PDF pg 135, pg 114, 6.3.3 Caching mode page  
<<buffer function>> [s/b] <<buffer function (e.g., [insert an example of a buffer function here]>>

ENDL 535

PDF pg 135, pg 114, 6.3.3 Caching mode page  
<<caching functions in the other segments need not be>> [s/b] <<other uses of cache memory are not>>

ENDL 536

PDF pg 135, pg 114, 6.3.3 Caching mode page  
<<SCSI buffer function>> [s/b] <<buffer function>>

ENDL 537

PDF pg 136, pg 115, 6.3.4 Read-Write Error Recovery mode page  
<<Restricted for MMC-4>> [s/b] <<Restricted (see MMC-4)>> for consistency with table 93.

ENDL 538

PDF pg 136, pg 115, 6.3.4 Read-Write Error Recovery mode page  
<<to be performed during write operations>> [s/b] <<of defective logical blocks during write operations>> to be consistent with the previous sentence

ENDL 539

PDF pg 137, pg 116, 6.3.4 Read-Write Error Recovery mode page  
<<of mis-detection>> [s/b] <<of error mis-detection>>

ENDL 540

PDF pg 137, pg 116, 6.3.4 Read-Write Error Recovery mode page  
In keeping with the usage elsewhere in this standard, note 26 should be a table footnote in table 108.

ENDL 541

PDF pg 138, pg 117, 6.3.4 Read-Write Error Recovery mode page  
<<sense key of>> [s/b] <<sense key set to>> [2 times on this page]

ENDL 542  
PDF pg 139, pg 118, 6.3.4 Read-Write Error Recovery mode page  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 543  
PDF pg 140, pg 119, 6.3.4 Read-Write Error Recovery mode page  
<<READ and WRITE RETRY COUNT fields>> [s/b] <<READ RETRY COUNT field and  
WRITE RETRY COUNT field>>

ENDL 544  
PDF pg 140, pg 119, 6.3.4 Read-Write Error Recovery mode page  
Delete <<If the RETRY COUNT field and the RECOVERY TIME LIMIT field are  
both specified in a MODE SELECT command, the field that requires the  
least time for data error recovery actions shall have priority.>> The  
last sentence in the paragraph says the same thing.

ENDL 545  
PDF pg 140, pg 119, 6.3.4 Read-Write Error Recovery mode page  
<<If both RETRY COUNT and RECOVERY TIME LIMIT are specified, the field>>  
[s/b] <<When choosing between retry counts and recovery time limits, the  
condition>>

ENDL 546  
PDF pg 140, pg 119, 6.3.5 Verify Error Recovery mode page  
Delete <<If the verify retry count and the VERIFY RECOVERY TIME LIMIT  
are both specified, the one that requires the least time for data error  
recovery actions shall have priority.>> The last sentence of the next  
paragraph says the same thing.

ENDL 547  
PDF pg 140, pg 119, 6.3.5 Verify Error Recovery mode page  
Insert a paragraph break for consistency with the Read-Write Error  
Recovery mode page definition.

ENDL 548  
PDF pg 140, pg 119, 6.3.5 Verify Error Recovery mode page  
Is note 27 necessary? If it is, does it belong 6.3.4 too?

ENDL 549  
PDF pg 141, pg 120, 6.3.6 XOR Control mode page  
<<initiator>> [s/b] <<application client>>

ENDL 550  
PDF pg 141, pg 120, 6.3.6 XOR Control mode page  
<<target>> [s/b] <<device server>> [2 times on this page]

ENDL 551  
PDF pg 141, pg 120, 6.3.6 XOR Control mode page  
<<is sent to the logical unit,>> [s/b] <<is received,>>

ENDL 552  
PDF pg 142, pg 121, 6.4.2 Block Limits VPD page  
<<sense key of>> [s/b] <<sense key set to>>

ENDL 553  
PDF pg 142, pg 121, 6.4.2 Block Limits VPD page  
<<additional sense code of>> [s/b] <<additional sense code set to>>

\*\*\*\*\*

Comments attached to Abs ballot from Elwood Parsons of  
Foxconn Electronics:

Abstain due to lack of expertise.

\*\*\*\*\*

Comments attached to Yes ballot from Rob Elliott of  
Hewlett Packard Co.:

HPQ #1  
 PDF Page iv  
 ANSI page  
 Change 2003 to 2004

HPQ #2  
 PDF Page 10  
 4 Models  
 Need to mention format corrupted and the  
 additional sense code that results  
 from media access commands when the medium  
 is in  
 that state.

HPQ #3  
 PDF Page 11  
 4.4 Logical blocks  
 Add a unit  
 attention and a new additional sense code CAPACITY DATA HAS  
 CHANGED whenever  
 any of the READ CAPACITY  
 data changes (number of blocks, block size, or  
 various protection  
 information settings).

HPQ #4  
 PDF Page 18  
 4.13 Model for  
 XOR commands  
 Move 4.13.1.nn to 4.13.2, 4.13.3, etc. to eliminate hanging  
 paragraph and  
 unnecessary nesting

HPQ #5  
 PDF Page 30  
 5.1 Commands overview

To require that SBC-2 devices support long LBAs and deprecate usage of  
 short  
 LBAs...

- a) change READ (6) and READ (10) from mandatory to optional in table  
 9 and  
 in note 9
- b) change READ CAPACITY (10) from mandatory to optional in  
 table 9
- c) mark each of these commands as mandatory in table 9 if any of  
 their  
 smaller counterparts are implemented (the same rule that  
 currently

exists for WRITE (16)):  
 LOCK UNLOCK CACHE (16)  
 PRE-FETCH (16)  
 READ DEFECT  
 DATA (12)  
 READ LONG (16)  
 SYNCHRONIZE CACHE (16)  
 VERIFY (16)  
 WRITE AND  
 VERIFY (16)  
 WRITE LONG (16)  
 WRITE SAME (16)  
 XDREAD (32)  
 XDWRITE (32)

XDWRITEREAD (32)  
 XPWRITE (32)

HPQ #6  
 PDF Page 30

5.1 Commands overview

To not require that SBC-2 devices support long LBAs...

- a) change READ (16) from mandatory to optional in table 9
- b) change WRITE (16) from mandatory (if any WRITE is supported) to optional in table 9 and remove footnote d

HPQ #7

PDF

Page 88

5.37 WRITE LONG (10) command

Delete "NOTE 21 - Any other bytes that can be corrected by ECC should be included (e.g., a data synchronization mark within the area covered by ECC). A READ LONG command may be issued before issuing a WRITE LONG command."  
 Let READ LONG define the complete contents of the data.

HPQ #8

PDF Page 108

6.3.1 Mode parameters overview

Table 102

after "Management" add "mode page"

HPQ #9

PDF Page 109

6.3.2.1 Mode

parameter block descriptors overview

After:

A unit attention condition

add:

with an additional sense code set to MODE PARAMETERS CHANGED

\*\*\*\*\*

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

IBM #1

PDF Page vi

Revision Information

This section needs to be removed before going to public review.

IBM #2

PDF Page 1

1 Scope

This information is not necessary << (this bit was formerly reserved for direct-access device types, so is just marked reserved in this standard); >>

IBM #3

PDF Page 3

2.1 Normative references overview

This should be << (e.g., including BSI, JIS, and DIN).

IBM #4

PDF Page 3

2.1 Normative references overview

This should be << (i.e., ISO, IEC, CEN/CENELEC, ITUT); >>

IBM #5

PDF Page 5

3.1.8 command descriptor block (CDB):

This should be << server. See SPC-3. >>. The space is missing.

IBM #6

PDF Page 6

3.1.25 logical unit reset event:

This << logical unit as described in SAM-3. >> should be << logical unit.

See SAM-3. >>

IBM #7

PDF Page 6

3.1.28 non-volatile medium:

This << cycles. An example of this is a disk within a device that stores data as magnetic field changes that do not require device power to exist. >> should be << cycles (e.g., a disk within a device that stores data as magnetic field changes that do not require device power to exist). >>

IBM #8

PDF Page 7

3.1.44 volatile medium:

This << power cycles. An example of this is a silicon memory device that loses data written to it if device power is lost.

>> should be << power cycles (e.g., a silicon memory device that loses data written to it if device power is lost). >>

IBM #9

PDF Page 10

4.2 Direct-access device type model overview

This << and can be read without >> should be << and are able to be read without >>

IBM #10

PDF Page 10

4.3.1 Removable medium overview

This << cartridge (or jacket) to prevent >> should be << cartridge or jacket to prevent >>

4.3.2 Removable medium with an attached medium changer

This << Only one medium transport element is permitted (element 0) and only one data transfer element is permitted.

>> should be deleted as it not relevant to this standard and should instead be in SMC-2.

IBM #12

PDF Page 11

4.4 Logical blocks

This << A READ CAPACITY command may be issued to determine the value of [n-1]. >> should be changed to << A

READ CAPACITY command should be issued to determine the value of [n-1]. >>.

The reason is that we are trying to encourage the use of READ CAPACITY.

IBM #13

PDF Page 11

4.4 Logical blocks

This << The READ CAPACITY data (see 5.14) describes the block lengths that are

used on the medium. >> should be << The parameter data returned by the READ CAPACITY command (see 5.14)

describes the block lengths that are used on the medium. >>

IBM #14

PDF Page 11

4.5 Ready state

This << commands can be processed. >> should be << commands are able to be processed. >>

IBM #15

PDF Page 12

#### 4.6 Initialization

This << Parameters related to the geometry and performance characteristics may be set with the MODE SELECT command prior to the format operation. >> is not really true now that we have eliminated the geometry and the format device mode pages, therefore it should be deleted.

IBM #16

PDF Page 12

#### 4.6 Initialization

This << After changing the mode parameter block descriptor with MODE SELECT, the new values do not become effective until FORMAT UNIT command completes. >> is a gross oversimplification that is not accurate in all cases. The best thing to do is delete it as everything is correctly defined in the mode page header descriptions.

IBM #17

PDF Page 12

#### 4.8 Medium defects

This << defects that can cause user data >> should be << defects that may cause user data >>

IBM #18

PDF Page 12

#### 4.8 Medium defects

This << (to reference while formatting) >> states no useful information and should be deleted or at least made into an (e.g., ...) to indicate an example of what it could be used for.

IBM #19

PDF Page 13

#### 4.8 Medium defects

This << this manner can be specified in the >> should be << this manner may be specified in the >>

IBM #20

PDF Page 13

#### 4.9 Cache memory

This << block and can increase the overall data >> should be << block and may increase the overall data >>

IBM #21

PDF Page 13

#### 4.9 Cache memory

This << VERIFY and WRITE AND VERIFY commands >> should be << VERIFY command or WRITE AND VERIFY command >>

IBM #22

PDF Page 14

#### 4.9 Cache memory

This << VERIFY command or WRITE AND VERIFY >> should be << VERIFY command or WRITE AND VERIFY command >>

IBM #23

PDF Page 14

#### 4.10 Reservations

This << enters the current task state for the first time. >> should be << enters the current task state (see SAM-3) for the first time. >>

IBM #24

PDF Page 15

#### Table 3

Global

Having tables with footnotes were the footnote do no occur at every page break makes it difficult to the reader to find the footnote or even know if there are any footnote. The footnotes should be changed to appear on every page. Also,

not have a line at the end of each page break is confusing. It looks like something is missing from the table.

IBM #25

PDF Page 16

4.11 Error reporting

This << a READ LONG or WRITE LONG command did >> should be << a READ LONG command or WRITE LONG command did >>

IBM #26

PDF Page 17

4.11 Error reporting

Table 5

All the command names should have << command >> after them.

IBM #27

PDF Page 17

4.12.1 Examples overview

The statement << The following examples show some typical variations >> should be << This clause describes examples of some typical variations >>

IBM #28

PDF Page 17

4.12.2 Rotating media

This << tracks that can be accessed without >> should be << tracks that are accessed without >>

IBM #29

PDF Page 17

4.12.2 Rotating media

This <<formatted at the factory. >> should be << formatted by the manufacture. >>

IBM #30

PDF Page 18

4.12.2 Rotating media

This <<some aspects can be evaluated and controlled >> should be << some aspects may be evaluated and controlled >>

IBM #31

PDF Page 18

4.12.2 Rotating media

This << The READ LONG and WRITE LONG commands >> should be << The READ LONG command and WRITE LONG command >>

IBM #32

PDF Page 18

4.12.2 Rotating media

This << when generating mirror copies.o >> should be << when generating mirror copies. >> as there is no reason to quote that phrase.

IBM #33

PDF Page 18

4.13.1.1.1 Storage array controller supervised XOR operations overview

This << XDWRITE, XPWRITE, and XDREAD.>> should be an a,b,c list or at least << XDWRITE command, XPWRITE command, and XDREAD command.>>

IBM #34

PDF Page 18

4.13.1.1.1 Storage array controller supervised XOR operations overview

This << XDWRITE followed by XDREAD.>> should be << XDWRITE command followed by XDREAD command.>>

IBM #35

PDF Page 18

4.13.1.1.1 Storage array controller supervised XOR operations overview  
This << uses READ and WRITE commands for >> should be << uses READ commands  
and WRITE commands for  
>>

IBM #36

PDF Page 19

4.13.1.1.2 Update write operation (storage array controller supervised)  
This << XOR data (received in the previous XDREAD command) to the >> should  
be << XOR data (i.e., XOR data  
received in the previous XDREAD command) to the >>

4.13.1.1.3 Regenerate operation (storage array controller supervised)  
This << all devices (except the failed device) in the redundancy >> should  
be << all devices, except the failed device,  
in the redundancy

IBM #38

PDF Page 19

4.13.1.1.4 Rebuild operation (storage array controller supervised)  
This << all devices (except the failed device) in the redundancy >> should  
be << all devices, except the failed device,  
in the redundancy

IBM #39

PDF Page 20

4.13.1.2.1 Additional array subsystem considerations overview  
This << to any array subsystem, but describes how use of the XOR >> does not  
read very well. I think it should be <<  
to any array subsystem, and describes how use of the XOR >>

IBM #40

PDF Page 20

4.13.1.2.2 Buffer full status handling  
This << This locks up part or all (depending on the size of the devices  
buffer and the size of the XOR data) of the  
deviceAs buffer space. >> should be << Depending on the size of the deviceAs  
buffer and the size of the XOR data,  
this locks up part or all of the deviceAs buffer space. >>

IBM #41

PDF Page 20

4.13.1.2.3 Access to an inconsistent stripe  
This << updated (making the stripe consistent again). >> should be <<  
updated (i.e., making the stripe consistent  
again). >>

IBM #42

PDF Page 21

4.13.1.3.2 Primary errors - errors resulting directly from the primary  
command  
This << primary command (primary target) and are not due >> should be <<  
primary command (i.e., primary target)  
and are not due >>

IBM #43

PDF Page 22

4.14.2.1 START STOP UNIT and power conditions state machine overview  
Figure 2  
This << but may have additional characteristics unique to this standard. >>  
sounds like we don't know what our own  
standards have in them. Either SPC-3 have additional characteristics or not.  
I think the <<may>> should be deleted.

IBM #44

PDF Page 22

4.14.2.2.1 SSU\_PCO:Powered\_on state description  
This << This logical unit shall enter this >> should be << The logical unit  
shall enter this >>

IBM #45

PDF Page 30

## 5.1 Commands for direct-access devices overview

This << indicated by the oProtection informationo column. >> should be << indicated by the protection information column. >>

## IBM #46

PDF Page 33

## 5.1 Commands for direct-access devices overview

Table 9

This << If either PERSISTENT RESERVE IN or PERSISTENT RESERVE OUT is implemented, >> should be << If either PERSISTENT RESERVE IN command or PERSISTENT RESERVE OUT command is implemented, >>

## IBM #47

PDF Page 33

## 5.1 Commands for direct-access devices overview

Table 9

This << If any of WRITE (6)/(10)/(12) is implemented, WRITE (16) shall also be >> should be << If any of WRITE (6)/(10)/(12) command is implemented, the WRITE (16) command shall also be >>

## IBM #48

PDF Page 35

## 5.4.1 FORMAT UNIT command overview

This << new commands except INQUIRY, REPORT LUNS, and REQUEST SENSE with a CHECK >> should be << new commands except INQUIRY command, REPORT LUNS command, and REQUEST SENSE command with a CHECK >>

## IBM #49

PDF Page 42

## 5.4.2.4.1 Address descriptor formats overview

This << SEND DIAGNOSTIC and RECEIVE DIAGNOSTIC RESULTS commands. >> should be << SEND DIAGNOSTIC command and RECEIVE DIAGNOSTIC RESULTS command. >>

## IBM #50

PDF Page 42

## 5.4.2.4.1 Address descriptor formats overview

This << the FORMAT UNIT and READ DEFECT DATA commands; >> should be << the FORMAT UNIT command and READ DEFECT DATA command; >>

## IBM #51

PDF Page 45

## 5.5 LOCK UNLOCK CACHE (10) command

This << memory are actually locked. >> should be << memory are locked. >>

## IBM #52

PDF Page 48

## 5.9 READ (6) command

This << READ (6) command; however, no default values are >> should be << READ (6) command. However, no default values are >>

## IBM #53

PDF Page 52

## 5.10 READ (10) command

Table 33

This << READ (10), READ (12), and READ (16) commands with >> should be << a READ (10) command, READ (12) command, or READ (16) command with >>

## IBM #54

PDF Page 52

## 5.10 READ (10) command

Table 33

This << READ (10), READ (12), and READ (16) commands >> should be << the READ (10) command, READ (12) command, or READ (16) command >>

## IBM #55

PDF Page 55

## 5.13 READ (32) command

For the LOGICAL BLOCK APPLICATION TAG and the LOGICAL BLOCK REFERENCE TAG there is no indication as to whether the same value that is received is checked against all the LBAs that are read or if it is incremented in some fashion for each LBA. The current definition seems to imply there is only one value for all the LBAs that are read. This needs to be made clear.

## IBM #56

PDF Page 59

## 5.16 READ DEFECT DATA (10) command

This is a bad reference as I have no idea where to look for this << (see the DEFECT LIST FORMAT field in the defect list header). >> it should be << (see table x.x.x for the DEFECT LIST FORMAT field). >>

## IBM #57

PDF Page 60

## 5.16 READ DEFECT DATA (10) command

This << SCSI device >> should be << logical unit >>.

## IBM #58

PDF Page 60

## 5.16 READ DEFECT DATA (10) command

This << SCSI device >> should be << logical unit >>.

## IBM #59

PDF Page 62

## 5.18 READ LONG (10) command

This << the data bytes; however, they should be in the same >> should be << the data bytes. However, they should be in the same >>

## IBM #60

PDF Page 62

## 5.20 REASSIGN BLOCKS command

This << protection information, if present, >> should be << protection information, if any, >> as it is everywhere else.

## IBM #61

PDF Page 63

## 5.20 REASSIGN BLOCKS command

This << protection information, if present, >> should be << protection information, if any, >> as it is everywhere else.

## IBM #62

PDF Page 64

## 5.20 REASSIGN BLOCKS command

## NOTE 18

This note looks like it should be part of the main text instead of a note.

## IBM #63

PDF Page 72

## 5.24 VERIFY (10) command

## Table 59; 000b value

The REF\_CHK = 1 should have footnote reference to the following footnote:  
If the RTO\_EN bit is set to zero in the long read capacity data (see 5.15), the device server checks the logical block reference tag by comparing it to the lower 4 bytes of the LBA associated with the logical block. If the RTO\_EN bit is set to one, the device server checks the logical block reference tag only if it has knowledge of the contents of the LOGICAL BLOCK REFERENCE TAG field. The method for acquiring this knowledge is not defined by this standard.

## IBM #64

PDF Page 78

## 5.27 VERIFY (32) command

For the LOGICAL BLOCK APPLICATION TAG and the LOGICAL BLOCK REFERENCE TAG there is no indication as to whether the same value that is received is checked against all the LBAs that are verified or if it is incremented in some fashion for each LBA. The current definition seems to imply there is only one value for all the LBAs that are verified. This needs to be made clear.

## IBM #65

PDF Page 82

## 5.29 WRITE (10) command

This <<one, WRITE (10), WRITE (12), and WRITE (16) commands with the WRPROTECT field >> should be <<one, a WRITE (10) command, WRITE (12) command, or WRITE (16) command with the WRPROTECT field >>

## IBM #66

PDF Page 82

## 5.29 WRITE (10) command

This << terminate WRITE (10), WRITE (12), and WRITE (16) commands >> should be << terminate the WRITE (10) command, WRITE (12) command, or WRITE (16) command >>

## IBM #67

PDF Page 84

## 5.32 WRITE (32) command

For the LOGICAL BLOCK APPLICATION TAG and the LOGICAL BLOCK REFERENCE TAG there is no indication as to whether the same value that is received is checked against all the LBAs that are read or if it is incremented in some fashion for each LBA. The current definition seems to imply there is only one value for all the LBAs that are read. This needs to be made clear.

## IBM #68

PDF Page 85

## 5.33 WRITE AND VERIFY (10) command

This << data and includes protection information as >> should be << data and protection information, if any, as >>

## 5.34 WRITE AND VERIFY (12) command

This << data and includes protection information as >> should be << data and protection information, if any, as >>

## IBM #70

PDF Page 86

## 5.35 WRITE AND VERIFY (16) command

This << data and includes protection information as >> should be << data and protection information, if any, as >>

## IBM #71

PDF Page 87

## 5.36 WRITE AND VERIFY (32) command

This << protection information, if any. >> should be << protection information, if any, as required by the WRPROTECT field and the medium format. The data is only transferred once from the application client to the device server. >>

## IBM #72

PDF Page 87

## 5.36 WRITE AND VERIFY (32) command

This paragraph << If the RTO\_EN bit is set to zero in the long read capacity data (see 5.15), the device server shall terminate the command with CHECK CONDITION status with a sense key of ILLEGAL REQUEST and an additional sense code set to INVALID COMMAND OPERATION CODE. If the RTO\_EN bit is set to one, the device server may process the command. >> should be move to above table 75. That would make the WRITE AND VERIFY (32) the same format as the other WRITE AND VERIFY commands.

## IBM #73

PDF Page 87

## 5.36 WRITE AND VERIFY (32) command

For the LOGICAL BLOCK APPLICATION TAG and the LOGICAL BLOCK REFERENCE TAG there is no indication as to whether the same value that is received is checked against all the LBAs that are verified or if it is incremented in some fashion for each LBA. The current definition seems to imply there is only one value for all the LBAs that are verified. This needs to be made clear.

## IBM #74

PDF Page 88

## 5.37 WRITE LONG (10) command

Note 21

This << Any other bytes that can be corrected by ECC >> should be << Any other bytes that are able to be corrected by ECC >>

## IBM #75

PDF Page 88

## 5.37 WRITE LONG (10) command

The term << exactly >> should be deleted as it adds nothing.

## IBM #76

PDF Page 89

## 5.39 WRITE SAME (10) command

This << data and includes protection information as >> should be << data and protection information, if any, as >>

## IBM #77

PDF Page 90

## 5.39 WRITE SAME (10) command

table 79, row 0 0

There is nothing said about what value should be placed in the Data Block Guard field. This should be fixed. A statement like this should be added <<The data block guard received in the single block of data shall be placed in the DATA BLOCK GUARD field of each logical block. >>

## IBM #78

PDF Page 90

## 5.40 WRITE SAME (16) command

This << data and includes protection information as >> should be << data and protection information, if any, as >>

## IBM #79

PDF Page 92

## 5.41 WRITE SAME (32) command

This << protection information, if any. >> should be << protection information, if any, as required by the WRPROTECT field and the medium format. >>

## IBM #80

PDF Page 92

## 5.41 WRITE SAME (32) command

This paragraph << If the RTO\_EN bit is set to zero in the long read capacity data (see 5.15), the device server shall terminate the command with CHECK CONDITION status with a sense key of ILLEGAL REQUEST and an additional sense code set to INVALID COMMAND OPERATION CODE. If the RTO\_EN bit is set to one, the device server may process the command. >> should be moved to above table 81. That would make the WRITE AND VERIFY (32) the same format as the other WRITE AND VERIFY commands.

## IBM #81

PDF Page 92

## 5.41 WRITE SAME(32) command

For the LOGICAL BLOCK APPLICATION TAG and the LOGICAL BLOCK REFERENCE TAG

there is no indication  
as to whether the same value that is received is written to all the LBAs to  
be written or if it is incremented in some  
fashion for each LBA. The current definition seems to imply there is only  
one value for all the LBAs that are written.  
This needs to be made clear.

IBM #82

PDF Page 93

5.42 XDREAD (10) command

This << data and includes protection information as >> should be << data and  
protection information, if any, as >>

IBM #83

PDF Page 94

5.4.3 XDREAD (32) command

This << data and includes protection information as >> should be << data and  
protection information, if any, as >>

IBM #84

PDF Page 94

5.44 XDWRITE (10) command

This << data and includes protection information as >> should be << data and  
protection information, if any, as >>

IBM #85

PDF Page 95

5.45 XDWRITE (32) command

This << data and includes protection information as >> should be << data and  
protection information, if any, as >>

IBM #86

PDF Page 96

5.46 XDWRITEREAD (10) command

This << data and includes protection information as >> should be << data and  
protection information, if any, as >>

IBM #87

PDF Page 97

5.47 XDWRITEREAD (32) command

This << data and includes protection information as >> should be << data and  
protection information, if any, as >>

IBM #88

PDF Page 98

5.48 XPWRITE (10) command

This << data and includes protection information as >> should be << data and  
protection information, if any, as >>

IBM #89

PDF Page 100

5.49 XPWRITE (32) command

This << data and includes protection information as >> should be << data and  
protection information, if any, as >>

IBM #90

PDF Page 101

6.1.2 Translate Address Output diagnostic page

This << command (see 5.4.2.4) - a short block format address, a long block  
format address, a physical sector format  
address, or a bytes from index format address - into any >> should be <<  
command (see 5.4.2.4) (i.e., a short block  
format address, a long block format address, a physical sector format  
address, or a bytes from index format address)  
into any >>

IBM #91

PDF Page 102

6.1.3 Translate Address Input diagnostic page

This << vendor reserved area, etc.). >> should be << vendor reserved area).  
>>

IBM #92

PDF Page 104

6.2.2 Format Status log page

This << the most recent successful FORMAT UNIT command >> should be << the last successful FORMAT UNIT command >>

IBM #93

PDF Page 105

6.2.2 Format Status log page

This << the most recent FORMAT UNIT command >> should be << the last FORMAT UNIT command >>

IBM #94

PDF Page 105

6.2.2 Format Status log page

This << the most recently successful FORMAT UNIT command >> should be << the last successful FORMAT UNIT command >>

IBM #95

PDF Page 105

6.2.2 Format Status log page

This << the most recently successful FORMAT UNIT command >> should be << the last successful FORMAT UNIT command >>

6.2.3 Non-volatile Cache log page

Table 98

This << Non-volatile cache is volatile (either permanently or temporarily, e.g., if batteries need to be recharged). >> should be << Non-volatile cache is either permanently or temporarily volatile (e.g., if batteries need to be recharged). >>

IBM #97

PDF Page 109

6.3.2.1 Mode parameter block descriptors overview

This << If it returns a mode >> should be << If the device server returns a mode >>

IBM #98

PDF Page 109

6.3.2.1 Mode parameter block descriptors overview

This << If it returns a mode >> should be << If the device server returns a mode >>

IBM #99

PDF Page 109

6.3.2.1 Mode parameter block descriptors overview

This << If it returns a mode >> should be << If the device server returns a mode >>

IBM #100

PDF Page 109

6.3.2.1 Mode parameter block descriptors overview

This << If it returns a mode >> should be << If the device server returns a mode >>

IBM #101

PDF Page 110

6.3.2.3 Long LBA mode parameter block descriptor

This << the MODE SELECT (10) and MODE SENSE (10) commands when >> should be << the MODE SELECT (10) command and MODE SENSE (10) command when >>

IBM #102

PDF Page 112

6.3.3 Caching mode page

This << use the NUMBER OF CACHE SEGMENTS field or the CACHE SEGMENT SIZE field, dependent upon the

SIZE bit, to control the caching algorithm >> should be << use the NUMBER OF CACHE SEGMENTS field if SIZE is set to zero or the CACHE SEGMENT SIZE field if SIZE is set to one to control the caching algorithm >>

IBM #103

PDF Page 112

6.3.3 Caching mode page

This << upon Caching mode page bytes 4 through 11 and is operation and/or vendor-specific. >> makes no sense.

Change to << upon Caching mode page bytes 4 through 11. >>

IBM #104

PDF Page 112

6.3.3 Caching mode page

This << A CAP bit set to zero specifies that caching analysis be disabled to reduce overhead time or to prevent

nonpertinent operations from impacting tuning values. >> should be << A CAP bit set to zero specifies that caching analysis be disabled. >>

IBM #105

PDF Page 113

6.3.3 Caching mode page

Table 106 u Demand read retention priority and write retention priority

This table combines the description of the DEMAND RETENTION PRIORITY field and the WRTIE RETENTION

PRIORITY field into one table. This is very confusing. Make two tables, one for each field.

IBM #106

PDF Page 113

6.3.3 Caching mode page

table 106

This << WRITE or WRITE AND VERIFY command >> should be << WRITE command or WRITE AND VERIFY command >>

IBM #107

PDF Page 113

6.3.3 Caching mode page

table 106

This << WRITE or WRITE AND VERIFY command >> should be << WRITE command or WRITE AND VERIFY command >>

6.3.3 Caching mode page

This << The MINIMUM PRE-FETCH field specifies either a number of blocks or a scalar multiplier of the TRANSFER

LENGTH, depending upon the setting of the MF bit. >> should be << The MINIMUM PRE-FETCH field specifies a

number of blocks if the MF bit set set to zero or a scalar multiplier of the TRANSFER LENGTH if the MF bit is set to one.>>

IBM #109

PDF Page 114

6.3.3 Caching mode page

This << according to the rules for reporting deferred errors. >> needs a reference as to were the rules are defined.

IBM #110

PDF Page 114

6.3.3 Caching mode page

This << The MAXIMUM PRE-FETCH field specifies either a number of blocks or a scalar multiplier of the TRANSFER

LENGTH, depending upon the setting of the MF bit. >> should be << The MINIMUM PRE-FETCH field specifies a

number of blocks if the MF bit set set to zero or a scalar multiplier of the TRANSFER LENGTH if the MF bit is set to one.>>

IBM #111  
 PDF Page 114  
 6.3.3 Caching mode page  
 This << reorder the sequence of writing addressed logical blocks in order to achieve a faster command completion.  
 >> should be << reorder the sequence of writing addressed logical blocks. >>

IBM #112  
 PDF Page 114  
 6.3.3 Caching mode page  
 This << perform the SCSI buffer function. >> needs a reference as to were the SCSI buffer function is defined.

IBM #113  
 PDF Page 115  
 6.3.4 Read-Write Error Recovery mode page  
 This << medium (e.g., READ, WRITE, WRITE AND VERIFY, etc.). >> should be << medium (e.g., READ commands, WRITE commands , WRITE AND VERIFY commands). >>

IBM #114  
 PDF Page 115  
 6.3.4 Read-Write Error Recovery mode page  
 This << bits (EER, PER, DTE, and DCR) >> should be << bits (i.e., EER, PER, DTE, and DCR) >>

IBM #115  
 PDF Page 115  
 6.3.4 Read-Write Error Recovery mode page  
 This << bits (TB, EER, PER, DTE, and DCR) >> should be << bits (i.e., TB, EER, PER, DTE, and DCR) >>

IBM #116  
 PDF Page 116  
 6.3.4 Read-Write Error Recovery mode page  
 note 25  
 This << This bit may be used in image processing, audio, or video applications. >> should be << The TB (?) bit may be used in image processing, audio, or video applications. >>

IBM #117  
 PDF Page 116  
 6.3.4 Read-Write Error Recovery mode page  
 This << bits (EER, DCR, DTE, and PER) within >> should be << bits (i.e., EER, DCR, DTE, and PER) within >>

IBM #118  
 PDF Page 116  
 6.3.4 Read-Write Error Recovery mode page  
 This << definitions for EER, PER, DTE and DCR are contained >> should be << definitions for the EER bit, PER bit, DTE bit and DCR bit are contained >>

IBM #119  
 PDF Page 117  
 6.3.4 Read-Write Error Recovery mode page  
 Table 109 the 0 0 0 0 row  
 This description needs to be rewritten. I suggest it be changed to:  
 << Error correction and the full number of retries as specified in the READ RETRY COUNT field, WRITE RETRY COUNT field or VERIFY RETRY COUNT field (see 6.3.5) shall be attempted to recover the data. A CHECK CONDITION is not reported at the completion of the command for recovered errors. The command terminates with CHECK CONDITION status before the transfer count is exhausted only if an unrecoverable error is detected. If an unrecoverable data error occurred on a read operation, the data in the block with the unrecoverable error shall only be transferred if the TB bit is set to one. >>

IBM #120

PDF Page 117

6.3.4 Read-Write Error Recovery mode page

Table 109 the 0 0 0 1 row

This description needs to be rewritten. I suggest it be changed to:

<<No error correction shall be attempted however the full number of retries as specified in the READ RETRY COUNT field, WRITE RETRY COUNT field or VERIFY RETRY COUNT field (see 6.3.5) shall be attempted to recover the data. A CHECK CONDITION is not reported at the completion of the command for recovered errors. The command terminates with CHECK CONDITION status before the transfer count is exhausted only if an unrecoverable error is detected. If an unrecoverable data error occurred on a read operation, the data in the block with the unrecoverable error shall only be transferred if the TB bit is set to one. >>

IBM #121

PDF Page 117

6.3.4 Read-Write Error Recovery mode page

Table 109 the 0 1 0 0 row

This description needs to be rewritten. I suggest it be changed to:

<< Error correction and the full number of retries as specified in the READ RETRY COUNT field, WRITE RETRY COUNT field or VERIFY RETRY COUNT field (see 6.3.5) shall be attempted to recover the data. The command terminates with CHECK CONDITION status before the transfer count is exhausted only if an unrecoverable error is detected. If an unrecoverable data error occurred on a read operation, the data in the block with the unrecoverable error shall only be transferred if the TB bit is set to one. A CHECK CONDITION with a sense key of RECOVERED ERROR is reported at the completion of the command for any recoverable error that occurs. The INFORMATION field in the sense data shall contain the LBA of the last recovered error that occurred during the transfer.>>

IBM #122

PDF Page 117

6.3.4 Read-Write Error Recovery mode page

Table 109 the 0 1 0 1 row

This description needs to be rewritten. I suggest it be changed to:

<<No error correction shall be attempted however the full number of retries as specified in the READ RETRY COUNT field, WRITE RETRY COUNT field or VERIFY RETRY COUNT field (see 6.3.5) shall be attempted to recover the data. The command terminates with CHECK CONDITION status before the transfer count is exhausted only if an unrecoverable error is detected. If an unrecoverable data error occurred on a read operation, the data in the block with the unrecoverable error shall only be transferred if the TB bit is set to one. A CHECK CONDITION with a sense key of RECOVERED ERROR is reported at the completion of the command for any recoverable error that occurs. The INFORMATION field in the sense data shall contain the LBA of the last recovered error that occurred during the transfer>>

IBM #123

PDF Page 118

6.3.4 Read-Write Error Recovery mode page

Table 109 the 0 1 1 0 row

This description needs to be rewritten. I suggest it be changed to:

<< Error correction and the full number of retries as specified in the READ RETRY COUNT field, WRITE RETRY COUNT field or VERIFY RETRY COUNT field (see 6.3.5) shall be attempted to recover the data. The command terminates with CHECK CONDITION status before the transfer count is exhausted if any recoverable or unrecoverable error is detected. The INFORMATION field in the sense data shall contain the LBA of the block in error. If an unrecoverable data error occurred on a read operation, the data

in the block with the unrecoverable error shall only be transferred if the TB bit is set to one.>>

IBM #124

PDF Page 118

6.3.4 Read-Write Error Recovery mode page

Table 109 the 0 1 1 1 row

This description needs to be rewritten. I suggest it be changed to:  
<<No error correction shall be attempted however the full number of retries as specified in the READ RETRY COUNT field, WRITE RETRY COUNT field or VERIFY RETRY COUNT field (see 6.3.5) shall be attempted to recover the data. The command terminates with CHECK CONDITION status before the transfer count is exhausted if any recoverable or unrecoverable error is detected. The INFORMATION field in the sense data shall contain the LBA of the block in error. If an unrecoverable data error occurred on a read operation, the data in the block with the unrecoverable error shall only be transferred if the TB bit is set to one.>>

IBM #125

PDF Page 118

6.3.4 Read-Write Error Recovery mode page

Table 109 the 1 0 0 0 row

This description needs to be rewritten. I suggest it be changed to:  
<< Error correction and the fewest possible number of retries shall be attempted to recover the data. A CHECK CONDITION is not reported at the completion of the command for recovered errors. The command terminates with CHECK CONDITION status before the transfer count is exhausted only if an unrecoverable error is detected. If an unrecoverable data error occurred on a read operation, the data in the block with the unrecoverable error shall only be transferred if the TB bit is set to one. >>

IBM #126

PDF Page 118

6.3.4 Read-Write Error Recovery mode page

Table 109 the 1 1 0 0 row

This description needs to be rewritten. I suggest it be changed to:  
<< Error correction and the fewest possible number of retries shall be attempted to recover the data. The command terminates with CHECK CONDITION status before the transfer count is exhausted only if an unrecoverable error is detected. If an unrecoverable data error occurred on a read operation, the data in the block with the unrecoverable error shall only be transferred if the TB bit is set to one. A CHECK CONDITION with a sense key of RECOVERED ERROR is reported at the completion of the command for any recoverable error that occurs. The INFORMATION field in the sense data shall contain the LBA of the last recovered error that occurred during the transfer. >>

IBM #127

PDF Page 118

6.3.4 Read-Write Error Recovery mode page

Table 109 the 1 1 1 0 row

This description needs to be rewritten. I suggest it be changed to:  
<< Error correction and the fewest possible number of retries shall be attempted to recover the data. The command terminates with CHECK CONDITION status before the transfer count is exhausted if any recoverable or unrecoverable error is detected. The INFORMATION field in the sense data shall contain the LBA of the block in error. If an unrecoverable data error occurred on a read operation, the data in the block with the unrecoverable error shall only be transferred if the TB bit is set to one. >>

IBM #128

PDF Page 119

6.3.4 Read-Write Error Recovery mode page

This paragraph combines two fields into one description which makes it unclear as to what the field or fields are that are being defined. It needs to be made into two paragraphs such as:  
 << The READ RETRY COUNT field specifies the number of times that the device server shall attempt its recovery algorithm during a read operation. If the READ RETRY COUNT field and the RECOVERY TIME LIMIT field are both specified in a MODE SELECT command, the field that requires the least time for data error recovery actions shall have priority.  
 The WRITE RETRY COUNT fields specifies the number of times that the device server shall attempt its recovery algorithm during a write operation. If the WRITE RETRY COUNT field and the RECOVERY TIME LIMIT field are both specified in a MODE SELECT command, the field that requires the least time for data error recovery actions shall have priority. >>

IBM #129

PDF Page 119

6.3.5 Verify Error Recovery mode page

This << The EER, PER, DTE, and DCR bits are defined in 6.3.4. >> should be

<< The EER bit, PER bit, DTE bit, and DCR bit are defined in 6.3.4. >>

IBM #130

PDF Page 119

6.3.5 Verify Error Recovery mode page

Note 27

This << set the EER bit to zero, the PER, DTE, and DCR bits to one and the number of retries and recovery time limit to zero. >> should be << set the EER bit to zero, the PER bit to one, the DTE bit to one, and DCR bit to one and the number of retries to zero and recovery time limit to zero. >>

IBM #131

PDF Page 120

6.3.6 XOR Control mode page

This << within a device. >> should be << within the logical unit. >>

IBM #132

PDF Page 120

6.3.6 XOR Control mode page

This << parameters of the target. >> should be << parameters of the logical unit. >>

IBM #133

PDF Page 120

6.3.6 XOR Control mode page

This << within a device. >> should be << within the logical unit. >>

IBM #134

PDF Page 120

6.3.6 XOR Control mode page

This << the target accepts >> should be << the device server accepts >>

IBM #135

PDF Page 121

6.4.2 Block Limits VPD page

This << a single PRE-FETCH, READ, VERIFY, WRITE, WRITE AND VERIFY, XDREAD, XDWRITE, XDWRITEREAD, or XPWRITE command. >> should be << a single PRE-FETCH command, READ command, VERIFY command, WRITE command, WRITE AND VERIFY command, XDREAD command, XDWRITE command, XDWRITEREAD command, or XPWRITE command. >>

IBM #136

PDF Page 121

6.4.2 Block Limits VPD page

This << a single PRE-FETCH, READ, VERIFY, WRITE, WRITE AND VERIFY, XDREAD, XDWRITE,

XDWRITEREAD, or XPWRITE command. >> should be << a single PRE-FETCH command, READ command, VERIFY command, WRITE command, WRITE AND VERIFY command, XDREAD command, XDWRITE command, XDWRITEREAD command, or XPWRITE command. >>

IBM #137

PDF Page 121

6.4.2 Block Limits VPD page

This << a single PRE-FETCH, READ, VERIFY, WRITE, WRITE AND VERIFY, XDREAD, XDWRITE, XDWRITEREAD, or XPWRITE command. >> should be << a single PRE-FETCH command, READ command, VERIFY command, WRITE command, WRITE AND VERIFY command, XDREAD command, XDWRITE command, XDWRITEREAD command, or XPWRITE command. >>

IBM #138

PDF Page 122

A.2 Update write operation

This << Figure A.1 illustrates a read-modify-write >> should be << Figure A.1 shows a read-modify-write >>

IBM #139

PDF Page 122

A.2 Update write operation

This << a data disk device (holding protected user data), and a parity disk device (holding check data) >> should be << a data disk device that holds protected user data, and a parity disk device that holds check data >>

IBM #140

PDF Page 122

A.2 Update write operation

This << XDWRITE, XDREAD, and XPWRITE. XDWRITEREAD may be used in place of any sequence of XDWRITE followed by XDREAD. >> should be << XDWRITE command, XDREAD command, and XPWRITE command. XDWRITEREAD command may be used in place of any sequence of an XDWRITE command followed by an XDREAD command. >>

IBM #141

PDF Page 122

A.2 Update write operation

This << disk device (the supervising storage array controller does not yet have the intermediate XOR data for this command; the purpose of issuing the XPWRITE command at this time is to cause the parity disk device to begin reading XOR data from its medium to its buffer memory). >> should be << disk device (i.e., the supervising storage array controller does not yet have the intermediate XOR data for this command. The purpose of issuing the XPWRITE command at this time is to cause the parity disk device to begin reading XOR data from its medium to its buffer memory). >>

IBM #142

PDF Page 122

A.2 Update write operation

This << XOR data (read with the XDREAD command) available >> should be << XOR data (i.e., read with the XDREAD command) available >>

IBM #143

PDF Page 123

A.3 Regenerate operation

This << Figure A.2 illustrates a regenerate >> should be << Figure A.2 shows a regenerate >>

IBM #144  
PDF Page 123  
A.3 Regenerate operation  
This << used: READ, XDWRITE, and XDREAD. XDWRITEREAD may be used in place of any sequence of XDWRITE followed by XDREAD. >> should be << used: READ command, XDWRITE command, and XDREAD command. XDWRITEREAD command may be used in place of any sequence of an XDWRITE command followed by an XDREAD command. >>

IBM #145  
PDF Page 123  
A.2 Update write operation  
Figure A.1  
This << XDWRITE >> should be << XDWRITE command >>

IBM #146  
PDF Page 123  
A.2 Update write operation  
Figure A.1  
This << XDREAD >> should be << XDREAD command>>

IBM #147  
PDF Page 123  
A.2 Update write operation  
Figure A.1  
This << XPWRITE >> should be << XPWRITE command>>

IBM #148  
PDF Page 124  
A.3 Regenerate operation  
Figure A.2  
This << READ >> should be << READ command >>.

IBM #149  
PDF Page 124  
A.3 Regenerate operation  
Figure A.2  
This << XDWRITE or XDWRITEREAD >> should be << XDWRITE command or XDWRITEREAD command>>

IBM #150  
PDF Page 124  
A.3 Regenerate operation  
Figure A.2  
This << XDREAD or XDWRITEREAD >> should be << XDREAD command or XDWRITEREAD command>>

IBM #151  
PDF Page 124  
A.3 Regenerate operation  
Figure A.2  
This << XDWRITE or XDWRITEREAD >> should be << XDWRITE command or XDWRITEREAD command>>

IBM #152  
PDF Page 124  
A.3 Regenerate operation  
Figure A.2  
This << XDREAD or XDWRITEREAD >> should be << XDREAD command or XDWRITEREAD command>>

IBM #153  
PDF Page 124  
A.4 Rebuild operation  
This << Figure A.3 illustrates a rebuild >> should be << Figure A.3 shows a rebuild >>

IBM #154  
PDF Page 124

A.4 Rebuild operation

This << used: READ, XDWRITE, XDREAD, and WRITE. XDWRITEREAD may be used in place of any sequence of XDWRITE followed by XDREAD. >> should be << used: READ command, XDWRITE command, XDREAD command, and WRITE command. XDWRITEREAD command may be used in place of any sequence of an XDWRITE command followed by an XDREAD command. >>

IBM #155  
PDF Page 125

A.4 Rebuild operation

This << is the "rebuilt" data and is sent >> should be << is the rebuilt data and is sent >>

IBM #156  
PDF Page 125

A.4 Rebuild operation

Figure A.3

This << READ >> should be << READ command >>.

IBM #157  
PDF Page 125

A.4 Rebuild operation

Figure A.3

This << XDWRITE or XDWRITEREAD >> should be << XDWRITE command or XDWRITEREAD command>>

IBM #158  
PDF Page 125

A.4 Rebuild operation

Figure A.3

This << XDREAD or XDWRITEREAD >> should be << XDREAD command or XDWRITEREAD command>>

IBM #159  
PDF Page 125

A.4 Rebuild operation

Figure A.3

This << WRITE >> should be << WRITE command >>.

\*\*\*\*\*

Comments attached to Abs ballot from David Hawks of Iomega Corp.:

Iomega has not chosen to carefully review SBC-2. Instead, Iomega believes SBC-3 should obsolete the Removable Media portion of SBC.

Actual massively distributed boot BIOS and operating systems have never fully supported Removable SBC as specified by t10.org. Consequently, designs for broad compatibility in read, boot, and write are moving to removable MMC UDF for more than 32 GiB/disc, as in the example of the Iomega REV drive, else to detachable but not removable SBC, as in the example of USB adapters for small Compact Flash.

\*\*\*\*\*

Comments attached to Yes ballot from John Lohmeyer of LSI Logic Corp.:

LSI #1  
PDF Page vi  
Pages vi -- x  
Remove revision information from copy that goes to public review.

LSI #2  
PDF Page 2  
1 Scope  
In item 1) of the last list in this subclause, "this" s/b "the".

LSI #3  
PDF Page 5  
3.1.6 check data  
"allows" s/b "may allow"

LSI #4  
PDF Page 6  
3.1.26 media:  
Either remove this definition or add a definition of medium.

LSI #5  
PDF Page 6  
3.1.27 non-volatile cache memory:  
It is probably better to define non-volatile separately from cache memory (and medium). We would then have separate definitions for non-volatile, volatile, cache memory, and medum.

LSI #6  
PDF Page 7  
3.2 Symbols and abbreviations  
Please add:  
CRC cyclic redundancy check

LSI #7  
PDF Page 12  
4.5 Ready state  
In the last paragraph, replace "set to" with "set to one to".

LSI #8  
PDF Page 12  
4.8 Medium defects  
First paragraph: Some block devices provide the application client control (of what?) through use of the mode parameters.

LSI #9  
PDF Page 13  
4.8 Medium defects  
In list item d), replace "theprevious" with "the previous".

LSI #10  
PDF Page 13  
4.9 Cache memory  
In the fourth paragraph, last sentence, consider adding "without power" to the end of the sentence, "There may be a limit on the amount of time a non-volatile cache is able to retain data."

LSI #11  
PDF Page 13  
4.9 Cache memory  
Fifth paragraph, first sentence. Change "is written" to "is to be written".

LSI #12  
PDF Page 14  
4.9 Cache memory  
Seventh paragraph, last sentence. Delete "specifies". Alternatively, re-word this sentence as follows: "An FUA\_NV bit of one permits the device server to access a non-volatile cache memory rather than the medium."

LSI #13  
PDF Page 14  
4.9 Cache memory  
Ninth paragraph, first sentence should read, "When a VERIFY command or a WRITE AND VERIFY command is processed,..."

LSI #14  
PDF Page 33  
5.1 Commands for direct-access block devices  
Table 9, Note e  
Change 'of' to 'if'.

LSI #15  
 PDF Page 36  
 5.4.1 FORMAT UNIT command overview  
 Note 7 should be deleted. The information is already covered in the paragraph above table 13.

LSI #16  
 PDF Page 65  
 5.21 START STOP UNIT command  
 third paragraph from the end of this subclause  
 Replace this paragraph with "It is not an error to specify that the logical unit transition to its current power condition."

\*\*\*\*\*

Comments attached to No ballot from Mark Evans of Maxtor Corp.:

<Mark had a PC problem and is working on recovering his comments. They will be attached to a subsequent revision of this document.>

\*\*\*\*\*

Late Comments from Jeff Mastro of Microsoft Corp.:

MSFT #1  
 4.4 Logical blocks

Add notification of a change to block size / number of blocks  
 Modification of READ CAPACITY data (block size or number) shall result in a unit attention condition with a sense code indicating such change.

\*\*\*\*\*

Comments attached to Abs ballot from Jim Jones of Quantum Corp.:

Not materially affected by this proposal.

\*\*\*\*\*

Comments attached to No ballot from Gerald Houlder of Seagate Technology:

Seagate #1  
 PDF Page 10  
 SPC-3, under table 237, has this statement:  
 "For a list of commands affected by the SWP bit and details of the WP bit see the command standard (see 3.1.18) for the specific device type."  
 I would expect SBC-2 to have such a list in the model section, but it doesn't even mention a write protected mode. We have SPC-3 making a promise that SBC-2 is not keeping. A write protect section listing affected commands should be added to the model.

Seagate #2  
 PDF Page 52  
 Change to:  
 This knowledge may be obtained by use of the READ (32) command (see 5.13) or by a method not defined by this standard.

Seagate #3  
 PDF Page 52  
 Change to:  
 This knowledge may be obtained by use of the READ (32) command (see 5.13) or by a method not defined by this standard.

Seagate #4  
 PDF Page 71  
 Change to:  
 This knowledge may be obtained by use of the VERIFY (32) command (see 5.27) or by a method not defined by this standard.

Seagate #5  
 PDF Page 71  
 Change to:  
 This knowledge may be obtained by use of the VERIFY (32) command (see 5.27) or by a method not defined by this standard.

Seagate #6  
 PDF Page 81  
 A note is needed:  
 If the RTO\_EN bit is set to zero in the long read capacity data (see 5.15) and the device server checks the logical block reference tag, the device server checks it with the lower 4 bytes of the LBA associated with the logical block. If the RTO\_EN bit is set to one and the device server checks the logical block reference tag, the device server checks the logical block reference tag only if it has knowledge of the contents of the LOGICAL BLOCK REFERENCE TAG field. This knowledge may be obtained by use of the Write (32) command (see 5.32) or by a method not defined by this standard.

Seagate #7  
 PDF Page 81  
 A note is needed:  
 If the RTO\_EN bit is set to zero in the long read capacity data (see 5.15), the device server checks the logical block reference tag with the lower 4 bytes of the LBA associated with the logical block. If the RTO\_EN bit is set to one, the device server checks the logical block reference tag only if it has knowledge of the contents of the LOGICAL BLOCK REFERENCE TAG field. This knowledge may be obtained by use of the Write (32) command (see 5.32) or by a method not defined by this standard.

Seagate #8  
 PDF Page 81  
 A note is needed:  
 If the RTO\_EN bit is set to zero in the long read capacity data (see 5.15) and the device server checks the logical block reference tag, the device server checks it with the lower 4 bytes of the LBA associated with the logical block. If the RTO\_EN bit is set to one and the device server checks the logical block reference tag, the device server checks the logical block reference tag only if it has knowledge of the contents of the LOGICAL BLOCK REFERENCE TAG field. This knowledge may be obtained by use of the Write (32) command (see 5.32) or by a method not defined by this standard.

Seagate #9  
 PDF Page 81  
 A note is needed:  
 If the RTO\_EN bit is set to zero in the long read capacity data (see 5.15), the device server checks the logical block reference tag with the lower 4 bytes of the LBA associated with the logical block. If the RTO\_EN bit is set to one, the device server checks the logical block reference tag only if it has knowledge of the contents of the LOGICAL BLOCK REFERENCE TAG field. This knowledge may be obtained by use of the Write (32) command (see 5.32) or by a method not defined by this standard.

\*\*\*\*\*

Comments attached to Yes ballot from Vit Novak of Sun Microsystems, Inc.:

Sun 1  
 page 10, 4.1, 3rd paragraph

The first 3 sentences of this paragraph are misleading. There is no provision in SBC or SPC for each block to have a unique block length. This should simply say something like, "The block length is constant for the entire LU."

Sun 2  
page 12, 4.6, 1st paragraph, 3rd sentence.

Do any of the mode page parameters still allow setting of "geometry" since we obsoleted the format and geometry pages?

Sun 3  
page 30, table 9, Inquiry row.

Protection information column should say 'yes'.

Sun 4  
page 30, table 9, Read (6) row.

Protection information column needs a note. The Read (6) command has no protection information in the CDB nor the data, yet protection information may be a factor in the processing of the command by the device.

Sun 5  
page 31, table 9, Read Capacity (16) row.

Protection information column should say 'yes'.

Sun 6  
page 31, table 9, Synchronize Cache (10 & 16) rows.

Protection information columns should say 'no'.

Sun 7  
page 32, table 9, Write (6) row.

Protection information column needs a note. The Write (6) command has no protection information in the CDB nor the data, yet protection information may be a factor in the processing of the command by the device.

Sun 8  
p 45, 5.5, last paragraph.

Suggested rewording to deal with the "initiator port" vs. I\_T nexus issue (see 04-088)

"Multiple locks may be in effect from initiator ports associated with more than one I\_T nexus. Locks associated with different I\_T nexus may overlap. An unlock of an overlapped area does not release the lock associated with another I\_T nexus."

Sun 9  
page 55, 5.13, 5th and 6th paragraphs.

"When checking of the LOGICAL BLOCK APPLICATION TAG is enabled" should also include "and the ATO bit is 1". If the App tag is owned by the device server these two fields in Read(32) should be ignored.

Sun 10  
page 67, 5.24, first paragraph

"log read" s/b "long read"

Sun 11  
page 81, table 68, row 1 (000b/Yes) notes g and h.

Is a Write(32) with wrprotect=000b allowed? If so, then notes g and h should be modified to allow the values from the Write(32) CDB to be

used. If not, then we need to address this in the Write(32) text.

Sun 12  
page 81, table 81, 001b/yes/app-tag

Why "Shall not" check? Seems to me it should be "May" with note c. But, it should also be qualified with whether or not ATO is set. If ATO, and Write(32) then the device should be checking....

If not ATO, then the device is generating or ignoring, but not checking.

Sun 13  
Page 84, 5.32, paragraphs 5 & 6.

"When checking of the LOGICAL BLOCK APPLICATION TAG is enabled" needs to be qualified with the setting of ATO. If ATO is zero, these fields are ignored.

Sun 14  
page 89, 5.39, 1st paragraph.

"WRPROTECT" should be followed with a reference back to table 68

Sun 15  
page 109, 6.3.2.2, paragraphs 3 & 4.

The two paragraphs starting with "On a MODE SENSE command,..." confuse me. The previous paragraph states that the Number of Blocks field on a Mode Sense returns a certain value, yet these two paragraphs seem to contradict that. It would make more sense if these rules were on a Mode Select, but I'm still not sure I see the subtle difference - the last phrase of each paragraph is exactly the same. Same comment applies below to the Long LBA format also.

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Comments attached to Abs ballot from Ashlie Fan of Tyco Electronics:

lack of expertise to comment

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