T10/97-258 revision 0

Date: Sept 17, 1997

To: T10 Committee (SCSI)

From: George Penokie (IBM)

Subject: SCC-2 Letter Ballot Comment Resolutions

All Ancot Corp comments were editorial and have been included in Rev 4 of SCC-2.

Comments attached to YesC ballot from Gary Porter of Ancot Corp.:

In my judgement, all of the following comments are editorial in nature, not technical.

1. The draft standard has a clause 0, which is not mentioned in the foreword where the clauses are described.

2. On page 12, section 5.1.4b, the text says there are two devices but the figure shows 3.

3. Same area, the text is missing the word "bus" which should follow the words "single SCSI".

4. Page 12, section 5.1.4cb, the text says there is one device but the figure shows 2.

5. Page 20, section 5.2.1.2.2, in the first sentence, the word "using" should be removed.

6. Page 21, section 5.2.1.2.3, in the second paragraph after Table 7, in the last sentence, the word "to" should be removed after the word "command".

7. Same area, in the third and fourth paragraphs after Table 7, the acronym "SCAL" should be "SACL" (three places).

8. Same area, in the fourth paragraph after Table 7, in the first sentence, there is poor agreement of singular and plural forms in the text. Perhaps this could be reworded as "Bus Identifier Field values greater than zero represent..."

9. Page 22, section 5.2.1.2.4, in the first paragraph after Note 5, the wording is completely different from that used for the other addressing methods, although the concepts and intent seem the same. I would suggest using the same wording as in the other addressing methods.

10. Page 44, Table 12, the key has an entry "S Mandatory when the Simple...", but that character does not appear anywhere in the table.

I got only as far as the 67th page in my scan. I may have more comments later, but wanted to get my vote recorded.

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

1) Are the number of organizations submitting patent statements more than one? If so the statement "The known patent holder(s) has (have)," cpuld be pinned down. If it is just one the statement could also be less complicated.

Accepted

2) Is the last paragraph of the patent statement, the correct one? It sounds contrary to the prior paragraph.

Rejected: It reads OK to me and is the wording used in previous standards.

3) Referring to the table of contents should there be a Clause 0? Is this just a Frame artifact? 4) Also in the table of contents it appears that some clause titles are in small caps. Does this fir the Penokie originated small caps style guide?

Accepted

5) In the Foreword I think "This foreword is not part of ANSI X3. - 199x." should be <u>"This foreword is not part of this standard."</u> If not, it should be "This foreword is not part of ANSI NCITS.xxx - 199x." Another alternative would be "This foreword is not part of the SCSI Controller Commands standard." The guts of this comment is a global comment.

Accepted

6) Although working groups do not have members per se, those that were the significant contributors should be recognized, I suggest changing "The joint T10 SCSI Controller Commands working group/RAID Advisory Board Host Interface working group, which developed this standard, has the following members:" to "The joint T10 SCSI Controller Commands working group/RAID Advisory Board Host Interface working group, which developed this standard, had the following principal participants:"

Accepted

7) Why is "George O. Penokie, Chair" out in left field?

Accepted: Moved back into right field.

8) Does T10 approve standards? I thought they <u>developed and reviewed</u> standards. Perhaps in this case it was just reviewed.

Accepted

9) It seems odd to have normative requirements in the Introduction. Is this why it has been labeled Clause 0?

I don't know why, but in SCC the ANSI editor wanted it that way.

10) It is certainly valid that "multiple operating systems must properly coordinate their actions" but it is not clear if "must" is a normative requirement or an act of God.

Accepted; Heaven forbid God should get involved in standards. Changed must to should.

11) There are also musty requirements in 5.2.5.3 and B.1.9. In the case of B.1.9, if the must is a normative requirement, bring the normative requirement in a note of an example is not appropriate.

Accepted; musty requirements changed to shoulds.

12) The technical editor should be able to determine if the pertaining clauses are more than one and fix "The clause(s) of this standard pertaining to the SCSI storage array device class," in the Scope clause.

Accepted; The tech editor has, in his infinite wisdom, determined there is a single 'clause'.

13) "The objectives of the SCSI Controller Commands is to provide the following:" should be changed to "The objective of the SCSI Controller Commands is to provide the following:"

Accepted

14) Figure 1 does not "indicates the applicability of a standard to the implementation of a given transport."

Accepted; Offending sentence removed.

15) Many of the standards should have the T10 project number replaced with their NCITS number or the X3 number depending upon their vintage.

Accepted

16) Although the Scope notes that "The Small Computer System Interface - 2 (ANSI X3.131-1994), is referred to herein as SCSI-2." SCSI-2 is not referred to in any of the requirements or descriptions of SCC-2 and its only usage is in the tiltles of SSA and CAM. I suggest deleting the definition and the abbreviation to avoid the false impression that SCC-2 includes SCSI-2 related requirements.

Accepted

17) Exchange was used in SCC presumably largely according to the dictionary meaning and did not have a special glossary term. Does the definition in the glossary of SCC-2 agree with the usage in SCC?

Yes it does:

18) Since the acronym does not fit "3.1.37 SCSI storage array logical unit number (LUN_Z):" should be "3.1.37 SCSI storage array logical unit number zero (LUN_Z):". But since the Penokie proposal for LUN_Z was regrettably accepted for all device types, it seems to me the definition should be changed to "3.1.37 logical unit number zero (LUN_Z):".

Accepted

19) Does "3.1.51 zero: A false signal value or a false condition of a variable." fit the LUN-Z definition?

Yes

20) The addition of the abbreviation definition "ITTU I'm talking to you" does not seem to be wholey congruent with its only usage in SCC and SCC-2 in Table 46 as a component device state.

But it is. No Change

21) In the early days of SCSI-3 it was decided to not require that devices report errors when harmlessly exposed to reserved fields that they are willing to ignore. This decision was intended to facilitate evolutionary enhancements. The unsupported bit, byte, word, or field portion of the requirement "3.3.2 invalid: A keyword used to describe an illegal or unsupported bit, byte, word, field or code value. ~~Receipt of an invalid bit, byte, word, field or code value shall be reported as error~~." appears contrary to that decision. The definition of reserved in SCC-2 is in accordance with the decision.

Accepted; Delete offending sentence.

22) For should, I think "it is strongly recommended" should be "it is recommended".

Accepted

23) I do not think "NOTE 2 - There are types of layers other than generic and SACLs, however, they are not covered in this model." is in agreement with the definition for covered in the glossary.

Accepted; Changed 'covered' to 'described' in this instance.

24) What is the rightward pointing arrows in Figures 3 and 4? The question applies to both left and right in Figures 6-9.

Accepted; All figures fixed.

25) In Table 2 OLD and NEW seem incorrect. I suggest ORIGINAL and CONVERTED.

Accepted

26) Under Table 7 "(e.g, fans, cache, controllers, etc.)" does not need the "etc." since that is already the meaning of "e.g." which I think should have a period and rather than the comma.

Accepted

27) Does the requirement in 5.2.1.3.2 "The format of a LUN_P or LUN field within a command descriptor block or a parameter list when addressing a logical unit is defined in table 6." mean that it is always five bits?

The answer is no; Wording changed to, hopefully, make it clear. Similar wording changed in 5.2.1.3.2.

28) Under Figure 12, I believe the list should not be enumerated since these are not steps but are independent choices.

Rejected: The commenter must have been momently confused! 1-2-3 forces order, a-b-c does not.

29) The Scope indicated that SCC-2 defines the commands that a Storage Array may implement. Consequently I am surprised that Table 12 does not include any SBC commands.

No change; The device type, storage array device, does not do reads and writes. Any of those types of commands are done to a volume set that has been configured using the ACC commands or to a non-storage array device that is attached to the storage array.

30) Referring to Table 26, does the LUN_Z LUN Type Code imply that LUNs in addition to LUN zero may be a LUN_Z? Does it allow a LUN with an address of zero to report a type other than LUN_Z?

No Change; Yes it now does because of the Symbios proposal to allow LUN_Z to be both a storage array and another device type at the same time. This was approved at the September 97 plenary.

31) Is deferred error reporting mandatory for SCC-2 devices? If so is this fact made a requirement other than as buried in Note 21?

Accepted; All the notes related to deferred error have been changed to non-notes and a 'shall' has replaced the 'is'.

32) It would be preferable to replace continuously with the real requirement rather than having such a complex note as Note 27.

Rejected; Complex descriptions are sometimes necessary to describe complex things.

33) Referring to Table 126. The definition for EQSPRD should be made active by changing "A EQSPRD bit of one indicates the target shall spread user data in a uniform manner over all the peripheral devices associated with the volume set being created or modified." to If the EQSPRD bit is equal to one the target shall spread user data in a uniform manner over all the peripheral devices associated with the volume set being created or modified."

Rejected: This is the format used for describing every bit in the standard. No change.

34) In Table D.1 and D.3 what does "129 to 512 or 0" mean?

Small change: The row is selected if the number of blocks is equal to 0 or within the range 129 to 512.

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Comments attached to YesC ballot from Bob Snively of Sun Microsystems Computer Co:

1) This document is now the subject of further review as the basis for a profile. It is likely that technical comments and corrections will be required as a result of the review, but I feel that it is acceptable to bring those comments in during the public review period. Otherwise, I would have to vote no until the profile activity has reached a stable checkpoint.

Profiles should not effect the standard. Anyone can make public review comments and they will be addressed when received.

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Symbios Logic Technical Comments

#1 (T) Sundry places throughout the document
The following additional sense codes do not appear to have definitions in the ASC/ASCQ database:

ASSIGN FAILURE OCCURRED
MULTIPLY ASSIGNED LOGICAL UNIT
VOLUME SET ASSIGNED

The following additional sense codes do not list array devices as a possible source in the ASC/ASCQ database:

OPERATOR SELECTED WRITE PERMIT
OPERATOR SELECTED WRITE PROTECT

Accepted: The ASSIGN FAILURE OCCURRED, and MULTIPLY ASSIGNED LOGICAL UNIT ASCQs need to have value assigned. I suggest 67 08 and 67 09. The VOLUME SET ASSIGNED was renamed VOLUME SET REASSIGNED. The OPERATOR SELECTED WRITE PERMIT and OPERATOR SELECTED WRITE PROTECT need to have the array device types added to them. I propose these changes be made to SPC-2.

#2 (T) Clause 5.2.1.1 - para 1
The last sentence should be changed from:

"INQUIRY commands sent to LUN_Z shall return a device type of array controller device."

to

"INQUIRY commands sent to LUN_Z shall return a Standard Inquiry Data with the LUN_Z bit set to one (See SCSI Primary Commands - 2). If the LUN_Z supports only the array controller commands defined, INQUIRY commands sent to LUN_Z shall return a device type of array controller device. Otherwise, INQUIRY commands sent to LUN_Z shall return a device type indicating the model defining the additional commands supported. Support for LUN_Z with a device type other than array controller device is vendor specific."

This change is needed to give implementors the flexibility needed to address non-negotiable boot-time configuration requirements specified by various operating system developers.

Accepted

#3 (T) Clause 6.3.1.8 - Table 45
Change code 05h from 'Spare in use' to 'Obsolete'.

After a spare is exchanged with a failed component that it is covering, it no longer is a spare. Therefore, a spare cannot be in the 'Spare in use' state. When spare is in use, it is in use it is not a spare.

Rejected: The LUN_S still exists from a SACL point of view. So if the application client want to know the state of that exchanged spare it would get a state of 'space in use'.

#4 (T) Clause 6.4.1.1, 6.4.1.3, 6.4.1.4, 6.4.1.5, 6.4.1.7, 6.6.1.1, and 6.8.1.2

Several service actions that currently do not provide for unit attention conditions to indicate changes in array operating conditions should do so. These defining clauses and service actions are:

6.4.1.1ADD PERIPHERAL DEVICE/COMPONENT DEVICE
6.4.1.3BREAK PERIPHERAL DEVICE/COMPONENT DEVICE
6.4.1.4EXCHANGE P_EXTENT
6.4.1.5EXCHANGE PERIPHERAL DEVICE/COMPONENT DEVICE
6.4.1.7REMOVE PERIPHERAL DEVICE/COMPONENT DEVICE
6.6.1.1CONTROL GENERATION OF CHECK DATA {redundancy group}
6.8.1.2CONTROL GENERATION OF CHECK DATA {volume set}

It should be noted that one might construe the BREAK PERIPHERAL DEVICE/COMPONENT DEVICE service action to generate a unit attention condition based on requirements in clause 5.2.4. However, a less ambiguous requirement, stated in clause 6.4.1.3 would be preferable.

Rejected: All of the above actions cause a state change which would then cause an Unit Attention to be generated. Adding in an Unit Attention to the commands would cause two Unit Attentions to be generated.

#5 (T) Clause 6.7.1.2 - para 5 after table 108
Change:

"The CAPACITY field indicates the size of the addressed volume set in logical blocks."

to:

"The CAPACITY field indicates the size of the user data region in the addressed volume set in logical blocks."

Or, make other changes that clearly indicate whether or not CAPACITY is to include the check data region.

Accepted

#6 (T) Clause 6.7.1.2 - table 110 and table 111
      Clause 6.8.1.5 - table 136 and table 137
Does everybody realize that 0% is not expressible as the percentage of sequential read or write transfers, as these tables are currently written? Is it generally acceptable to use 1% as the virtual equivalent of 0%? Or, would it be better to use (code value)-1 as the percentage? Or, should code 101 be used to indicate 0%?

Rejected: If the field is used then for all practical purposes 0% and 1% are the same.

#7 (T) Clause 6.7.1.3 - para 2 after table 115
      Clause 6.8.1.1 - para 2 after table 123
The following description is sufficiently ambiguous to insure several totally incompatible implementations:

"The IDENTIFIER field is defined in the vital products data device identification page (83h) (see SCSI-3 Primary Commands Standard)."

Here are two possible less ambiguous replacements for the description that will produce more consistent,

but radically different, implementations.

"The IDENTIFIER field is the vital products data device identification page (83h) as defined in the SCSI-3 Primary Commands Standard."

"The IDENTIFIER field shall contain exactly one IDENTIFICATION DESCRIPTOR field having the format defined in the vital products data device identification page (83h) (see SCSI-3 Primary Commands Standard)."

Many other specific definitions (and implementations) are possible; however I suspect that one of the two shown above will be the committee's preference.

Accepted

#8 (T) Clause 6.8.1.3 - missing information
This clause should contain a description of the effect, if any, the CONTROL WRITE OPERATIONS service action has on the WP bit defined in the device-specific parameter filed in the mode parameter header by both disks and tapes.

I believe that software will function best if disabling write operations includes a requirement that the WP bit be set to one and enabling write operations includes a requirement that the WP bit be set to zero.

One also might simplify the description by saying that setting DISWR to one has the same effect as setting SWP to one in the control mode page. But, that could lead to questions about whether the CONTROL WRITE OPERATIONS service action is needed since the control mode page SWP bit is available for all devices that might be configured under an array controller device.

Accepted: A statement will be placed in SCC-2 that the WP shall be ignored if the CONTROL WRITE OPERATIONS service action is used.

#9 (T) Clause 6.8.1.4 - para 3 after table 126
Change:

"An IMMED bit of one indicates that the storage array shall return status as soon as the command descriptor block has been validated, and the entire CREATE/MODIFIY BASIC VOLUME SET parameters list has been transferred."

to:

"An IMMED bit of one indicates that the storage array shall return status as soon as the command descriptor block and parameter list have been validated."

If this change is not made, the error described in paragraph 4 after table 130 cannot be reported using a CHECK CONDITION when IMMED=1.

Accepted

#10 (T) Clause 6.8.1.4 - para 1 after table 129
The following statement doesn't make sense:

"If the CREATE/MODIFY field is 10b the new size of the volume set being modified shall be set to the value in the CAPACITY field."

Why should a CREATE/MODIFY field code of 10b be any different from codes of 00b and 11b? All three codes have the ability to modify the capacity of a volume set. Should the reference be to the CONFIGURE field instead of the CREATE/MODIFY field?

Accepted

#11 (T) Clause 6.8.1.5 - para 6 after table 131
                    (or para 2 before table 132)
Change:

"An IMMED bit of one indicates that the storage array shall return status as soon as the command descriptor block has been validated, and the entire CREATE/MODIFIY STORAGE ARRAY CONFIGURATION parameters list has been transferred."

to:
"An IMMED bit of one indicates that the storage array shall return status as soon as the command descriptor block and parameters list have been validated."

If this change is not made, the error described in paragraph 4 after table 138 cannot be reported using a CHECK CONDITION when IMMED=1.

Accepted

#12 (T) Clause 6.8.1.5 - para 1 after table 134
Change:

"The CAPACITY field contains the size to configure the volume set and the redundance group in logical blocks."

to:

"The CAPACITY field contains the size of the combined user data and check data to configure the volume set and the redundance group in logical blocks."

Alternatively, any statement that clearly defines the data regions to be accounted for by the CAPACITY field can be substituted.

Accepted

#13 (T) Clause 6.8.1.5 - para 1 after table 134
The following statement doesn't make sense:

"If the CREATE/MODIFY field is 10b the new size of the volume set being modified shall be set to the value in the CAPACITY field and the new size of the redundancy group shall be set to the value in the CAPACITY field."

Why should a CREATE/MODIFY field code of 10b be any different from codes of 00b and 11b? All three codes have the ability to modify the capacity of a volume set and redundancy group. Should the reference be to the CONFIGURE field instead of the CREATE/MODIFY field?

Accepted

#14 (T) Clause 6.8.1.5 - table 135 code FFh
Change:

"The sense key shall be set to ILLEGAL REQUEST, and the additional sense code set to LOGICAL UNIT NOT READY, REBUILD IN PROGRESS ..."

to:

"The sense key shall be set to NOT READY, and the additional sense code set to LOGICAL UNIT NOT

READY, REBUILD IN PROGRESS ..."

Accepted

#15 (T) Clause 6.8.1.6 - para 3 after table 139
Change:

"An IMMED bit value of one indicates that the target shall return status as soon as the command descriptor block has been validated, and the entire CREATE/MODIFIY VOLUME SET parameters list has been transferred."

to:

"An IMMED bit value of one indicates that the target shall return status as soon as the command descriptor block parameters list have been validated."

If this change is not made, the error described in paragraph 2 after table 141 cannot be reported using a CHECK CONDITION when IMMED=1.

Accepted

#16 (T) Clause 6.9.1.1 - para 3 after table 153
Regarding:

"When the COVERALL bit is set to one the target shall return a COVERED LIST LENGTH of zero."

Should there also be a requirement that the COVERED LUN_R LIST LENGTH be zero?

Accepted

#17 (T) Clause 6.10.1.2 - para 2 after table 164
Delete the following sentences:

"If the requested logical unit is not configurable the command shall be terminated with a CHECK CONDITION status. The sense key shall be set to ILLEGAL REQUEST, and the additional sense code set to LOGICAL UNIT NOT CONFIGURED."

These requirements are covered more completely and correctly in table 166.

Accepted

end Symbios Logic Technical Comments
Symbios Logic Editorial Comments

#18 (E) Clause 6.3.1.5 - para 1 after table 29
After the first sentence: "A report multiple buses (RPTMBUS) bit of zero indicates only one LUN_P shall be reported for each peripheral device indicated by the SELECT REPORT field." add the following sentence:

"This has the effect of reporting only one bus identifier and target/lun for each peripheral device regardless of the number of bus access paths available to the controller."

The words 'bus identifier' and 'target/lun' should be in small caps, since they are field names in table 7.

Unlike any of the information currently in the standard, the sentence proposed for addition ties the function of the bit back to its name, the report multiple busses bit.

Accepted: Added the sentence as a note after indicated paragraph. Small caps note used in this case because they refer to the contents of the field not the name of the field.

#19 (E) Clause 6.7.1.1 - Note 28
     Clause 6.7.1.2 - Note 29
Change:

c = capacity of the peripheral device selected in the LUN_P field assigned to the selected volume set,

to:

c = that portion of the capacity from the peripheral device identified by the LUN_P field that is assigned to the selected volume set,

The current text causes this reader to believe that c should be equal to the total capacity of the peripheral device, which I am told is not the case.

Accepted

#20 (E) Clause 6.7.1.2 - para 1 after table 108
Change "(table 71)" to "(see table 71)".

Accepted

#21 (E) Clause 6.7.1.2 - para 8 after table 108
Change:

"The REBUILD/RECALCULATE PRIORITY field indicates the length of time the target takes to do a rebuild operation or a recalculate operation."

to:

"The REBUILD/RECALCULATE PRIORITY field indicates the priority the target places on doing a rebuild operation or a recalculate operation."

As evidenced in tables 109, and D.2, the REBUILD/RECALCULATE PRIORITY field does not directly indicate a length of time. Certainly, not seconds, nor minutes, nor hours, nor any other units of time are attached to the value found in the REBUILD/RECALCULATE PRIORITY field. Rather, as the field name suggests, the REBUILD/RECALCULATE PRIORITY field indicates a priority placed on certain operations but the array controller device.

Accepted

#22 (E) Clause 6.7.1.2 - table 109 code 00h
Change:

"Shall indicate the target has received no direction on how long it will take to do rebuilds nor recalculates or that the associated redundancy group is configured as no redundancy."

to:

"Indicates the target has received no direction on the priority placed on doing rebuilds or recalculates or that the associated redundancy group is configured as no redundancy."

This follows through on the changes in the definition of the REBUILD/RECALCULATE PRIORITY field articulated in comment and makes the wording more consistent with the wording of the other code value

descriptions.

Accepted

#23 (E) Clause 6.7.1.2 - table 109 codes 02h - FEh
Change:

"An indication of the length of time the target takes to do a rebuild operation or a recalculate operation. Generally, larger values indicate shorter rebuild and recalculate times."

to:

"An indication of the priority the target places on doing a rebuild operation or a recalculate operation. Generally, larger values indicate a greater priority for the rebuild or recalculate operation over application client read/write requests and shorter rebuild and recalculate times."

Accepted

#24 (E) Clause 6.7.1.2 - Immediately after table 111
Insert a paragraph describing the VOLUME SET PERIPHERAL DEVICE DESCRIPTOR LIST LENGTH field. This field appears in table 108, but its description, which should appear at this point, is missing.

Accepted

#25 (E) Clause 6.7.1.2 - para 1 after table 111 (in r3)
Change:

"The VOLUME SET PERIPHERAL DEVICE DESCRIPTOR contains a list of peripheral devices associated with the addressed volume set."

to:

"The VOLUME SET PERIPHERAL DEVICE DESCRIPTOR(S) are a list of peripheral devices associated with the addressed volume set."

This change makes the nomenclature in the text match that found in table 108.

Accepted

#26 (E) Clause 6.7.1.3 - para 1
In the following sentence:

"The REPORT UNASSIGNED VOLUME SETS service action (see table 113) requests that an identifier for each configured volume set, that does not ALREADY have a lun_v assigned within the target be sent to the application client."

The capitalization of "ALREADY" does not conform to the convention described in the first paragraph of clause 3.3. Perhaps, "ALREADY" could be made lowercase and bold.

Accepted: Made lowercase.

#27(E) Clause 6.7.1.3 - para 1 after table 113
If the recommendation in comment is accepted, perhaps the words "do not" in the last sentence could be made bold too.

Rejected: #26 made lowercase.

#28 (E) Clause 6.7.1.4 - para 4 after table 119
Change:

"The LUN_R field specifies the address of the redundancy group that caused the formation of the ps_extent."

to:

"The LUN_R field specifies the address of the redundancy group whose formation created the ps_extent."

Commands from an application client can cause things to happen, as can sundry hardware events that happen from time to time. However, I am uncomfortable with the though that a conceptual entity such as a redundancy group can cause something.

Accepted

#29 (E) Clause 6.8.1.1 - para 1
Change "ASSIGN FAILURE OCCURED" to "ASSIGN FAILURE OCCURRED"

Accepted

#30 (E) Clause 6.8.1.1 - para 1 after table 121
Change; "... and the additional sense code set to MULTIPLLY ASSIGNED LOGICAL UNIT" to "... and the additional sense code set to MULTIPLY ASSIGNED LOGICAL UNIT."

Accepted

#31 (E) Clause 6.8.1.1 - table 122 (and throughout the draft)
The usage of lun_v (all lowercase) is very counter-intuitive. First, LUN is an acronym for Logical Unit Number and is capitalized throughout SCSI standards. Second, table 1 lists _V as a suffix, but not _v. Third, the base address LUN is denoted LUN_Z, not lun_z. In this table, LBA_V is used, which makes lun_v even more conspicuous. (In fact, other uses of lun_z can be found with a search command, but it was table 122 that precipitated this comment.)

I recognize that small caps lun_z is a field name. But, it would seem that the contents of that field would be a LUN_V (full caps) or a volume set logical unit number (the latter being my best attempt at transcribing the wording found in other similar tables, e.g., table 87). But, lun_v looks like a typographical mistake, regardless of the intent behind it.

Accepted: All non-field names for lun_x made into LUN_X.

#32 (E) Clause 6.8.1.2 - para 3 after table 124
In the following sentence:

"A disable check data bit (DISCHK) of zero indicates the generation of check data contained within all of the underlaying redundancy group(s) of the selected volume(s) shall be enabled."

Change "... selected volume(s) ..." to "... selected volume set(s) ..." Volumes are a SSC and SMC concept. The SCC entity is a volume set.

Accepted

#33 (E) Clause 6.8.1.3 - para 1 after table 125
Change:

"The LUN_V field specifies the address of the volume set that shall have write operations enabled or disabled."

to:

"If the ALLVLU bit is zero, the LUN_V field specifies the address of the volume set that shall have write operations enabled or disabled."

Accepted

#34 (E) Clause 6.8.1.4 - table 128 code 01b
The description of this code contains a missing clause cross reference.

Accepted

#35 (E) Clause 6.8.1.4 - para 1 after table 125
In the sentence:

"The CREATE/MODIFY BASIC VOLUME SET parameter list (see table 129) contains capacity and a list of BASIC VOLUME SET PERIPHERAL DEVICE DESCRIPTORS that are used to create or modify the addressed volume set."

Greater generality of the parameter list contents should be suggested by changing; "... contains capacity and a list ..." to "... contains capacity information and a list ..."

Accepted

#36 (E) Clause 6.8.1.4 - para 4 after table 129
                            - para 5 after table 130
Change "... length on bytes ..." to "... length in bytes ..."

Accepted

#37 (E) Clause 6.8.1.4 - para 6 after table 130
In the sentence:

"Distribution of the volume sets user data between multiple redundancy groups is vender specific."

Volume sets must be possessive. Change "... the volume sets user data ..." to "... the volume sets' user data ..."

Accepted

#38 (E) Clause 6.8.1.5 - para 1
Change:

"A storage array configuration shall only be created or expanded using unassigned p_extents (see 5.2.2.10)."

to:

"A storage array configuration volume set and redundancy group shall only be created or expanded using unassigned p_extents (see 5.2.2.10)."

A storage array configuration contains much more than just volume sets and redundancy groups, but those are the only entities that can be created or expanded by the CREATE/MODIFY STORAGE ARRAY CON-FIGURATION service action.

Accepted

#39 (E) Clause 6.8.1.5 - para 6 after table 134
Change:

"The REBUILD/RECALCULATE PRIORITY field contains the length of time the target should take to do a rebuild operation or a recalculate operation."

to:

"The REBUILD/RECALCULATE PRIORITY field contains the priority the target should place on doing a rebuild operation or a recalculate operation."

As evidenced in tables 135 and D.2, the REBUILD/RECALCULATE PRIORITY field does not directly indicate a length of time. Certainly, not seconds, nor minutes, nor hours, nor any other units of time are attached to the value found in the REBUILD/RECALCULATE PRIORITY field. Rather, as the field name suggests, the REBUILD/RECALCULATE PRIORITY field indicates a priority placed on certain operations but the array controller device.

Accepted

#40 (E) Clause 6.8.1.5 - table 135 code 00h
Change:

"The application client is providing no direction on the length of time for rebuilds or recalculates."

to:

"The application client is providing no direction regarding the priority of rebuilds or recalculates."

This follows through on the changes in the definition of the REBUILD/RECALCULATE PRIORITY field articulated in comment.

Accepted

#41 (E) Clause 6.8.1.5 - table 135 codes 02h - FEh
Change:

"An indication of the length of time the target takes to do a rebuild operation or a recalculate operation. Generally, larger values indicate shorter rebuild and recalculate times."

to:

"An indication of the priority the target should place on doing a rebuild operation or a recalculate operation. Generally, larger values indicate a greater priority for the rebuild or recalculate operation over application client read/write requests resulting in shorter rebuild and recalculate times."

Accepted

#42 (E) Clause 6.8.1.5 - table 135 note 35
Change:

"The effect of different rebuild/recalculate times is to increase and decrease the performance of a target."

to:

"The effect of different rebuild/recalculate priorities is to increase and decrease the performance of a target."

Accepted

#43 (E) Clause 6.8.1.6 - para 1
Change:

"If the modification operation fails to complete successfully the command shall be terminated with a CHECK CONDITION status."

to:

"If the modification operation fails to complete successfully and the IMMED bit is zero the command shall be terminated with a CHECK CONDITION status."

Accepted

#44 (E) Clause 6.8.1.6 - para 1
Change:

"On successful completion of this service action a unit attention shall be generated for all initiators except the one that issued the service action."

to:

"On successful completion of this create/modify volume set a unit attention shall be generated for all initiators except the one that issued the service action."

Accepted

#45 (E) Clause 6.8.1.7 - para 1
Change:

"The target shall maintain the deassigned volume set(s) configuration and identifier."

to:

"The target shall maintain the configuration and identifier belonging to the deassigned volume set(s)."

As originally worded, "deassigned volume set(s)" is possessive and would have to be punctuated "deassigned volume set(s)'" Changing the wording to eliminate the possessive usage seems like an easier read.

Accepted

#46 (E) Clause 6.6.1.9 - para 1 after table 146
Change:

"The START LBA_V field specifies the LBA_V(s) the target shall use to begin the recalculation."

to:

"The START LBA_V field specifies the LBA_V the target shall use to begin the recalculation."

LBA_V cannot be plural in this case.

Accepted

#47 (E) Clause 6.9.1.1 - table 153
     Clause 6.10.1.1 - table 163

Change: "COVERED LIST LENGTH (n-19)"
to: "COVERED LIST LENGTH (n-m)"

Rejected: The current length calculation is correct. The CONVERED LIST LENGTH is the length of all the descriptors.

#48 (E) Clause 6.10.1.1 - table 160
Add the SETLUN bit.

The paragraph immediately following table 160 and the paragraph following table 161 reference and describe a SETLUN bit. However, there is no SETLUN bit identified in table 160.

Accepted: The paragraph was removed as the original SETLUN bit was merged into the CREAT/MODIFY field.

#49 (E) Clause 6.11
Change: "Parameters for direct-access devices"
to: "Parameters for storage array devices"

Accepted

#50 (E) Clause 6.11.1.1 - para 1
Change "The LUN mapping page (see table 170) is only required for ..." to "The LUN mapping page (see table 170) is required only for ..."

Accepted

#51 (E) Clause 6.11.1.1 - para 5 after table 170
Append all the text in paragraph 5 after table 170 to the end of paragraph 3 after table 170, with the resulting paragraph reading:

"The LUN XX MAPPING fields specify the bus/target/LUN of a peripheral device or volume set. See table 3 for a definition of the LUN XXMAPPING field. A value of zeros in the LUN XX MAPPING field shall indicate an undefined bus/target/LUN. Any attempt by an application client to address an undefined bus/target/LUN shall be terminated with a CHECK CONDITION status. The sense key shall be set to ILLEGAL REQUEST and the additional sense code shall be set to LOGICAL UNIT NOT SUPPORTED."

Accepted

#52 (E) Clause D.0 - para 1 after table D.1
Change:

"The contents of the REBUILD/RECALCULATE PRIORITY field is used by the target to determine the how long the a rebuild or recalculate operation will take to complete."

to:

"The contents of the REBUILD/RECALCULATE PRIORITY field is used by the target to determine the relative priority of a rebuild or recalculate operation with respect to application client reads and writes."

Accepted

#53 (E) Clause D.0 - table D.2 code 00h
Change "(default)" to "(action when the application client provides no direction regarding rebuild priority)".

Accepted

#54 (E) Clause D.0.1 - para 2
Change:

"The SCSI storage array will create a volume set with a user data mapping as shown in figure D.1:"

to:

"Following the principles described in this annex, the SCSI storage array would create a volume set with a user data mapping as shown in figure D.1."

Accepted