To	From	Subject	Date
INCITS T10 Committee	Michael Banther, HP	SSC-3 Requested Recovery log page	5 September 2007

Revision History

Revision 0 – Initial document with Requested Recovery log page copied from ADC-2 plus limited edits.

Revision 1 – Additional minor edits.

Revision 2 – Added physical device. Incorporated other comments from July SSC-3 working group meeting.

Reference documents

Automation/Drive Interface Commands - 2 (ADC - 2), Project 1741-D, Revision 07c, 1 March 2007.

SCSI Stream Commands – 3 (SSC-3), Project 1611-D, Revision 03b, 30 October 2006.

Background

Presently SSC-3 includes the DTD Status log page by reference (SSC-3, 8.2.1 Log pages overview). Although the DTD Status log page includes the very high frequency data log parameter and this parameter contains the recovery requested (RRQST) bit, SSC-3 does not include the Requested Recovery log page. The omission of the Requested Recovery log page unnecessarily prohibits an application client operating with a tape drive in a stand-alone environment from making use of the requested recovery feature.

This proposal brings the Requested Recovery log page into SSC-3. In order to allow SSC-3 to specify requested recovery sequences that make sense for a sequential access device operating in both automation and stand-alone environments, this proposal specifies the page anew rather than including it by reference.

In this document, new proposed text appears in blue and proposed deleted text appears in red strikeout. Since most of the new text comes from ADC-2, I've indicated portions of new text that do not match the corresponding text in ADC-2 by using blue underline. Finally notes that do not form part of the proposed text appear in pink.

Changes to the SSC-3 draft standard

4.2.3 Physical device

These entities perform operations that change various attributes of the physical device. These attributes affect the operations on a volume. Figure 8 shows in UML notation an example of the entities in a SCSI target device, and shows the attributes which comprise the physical device.
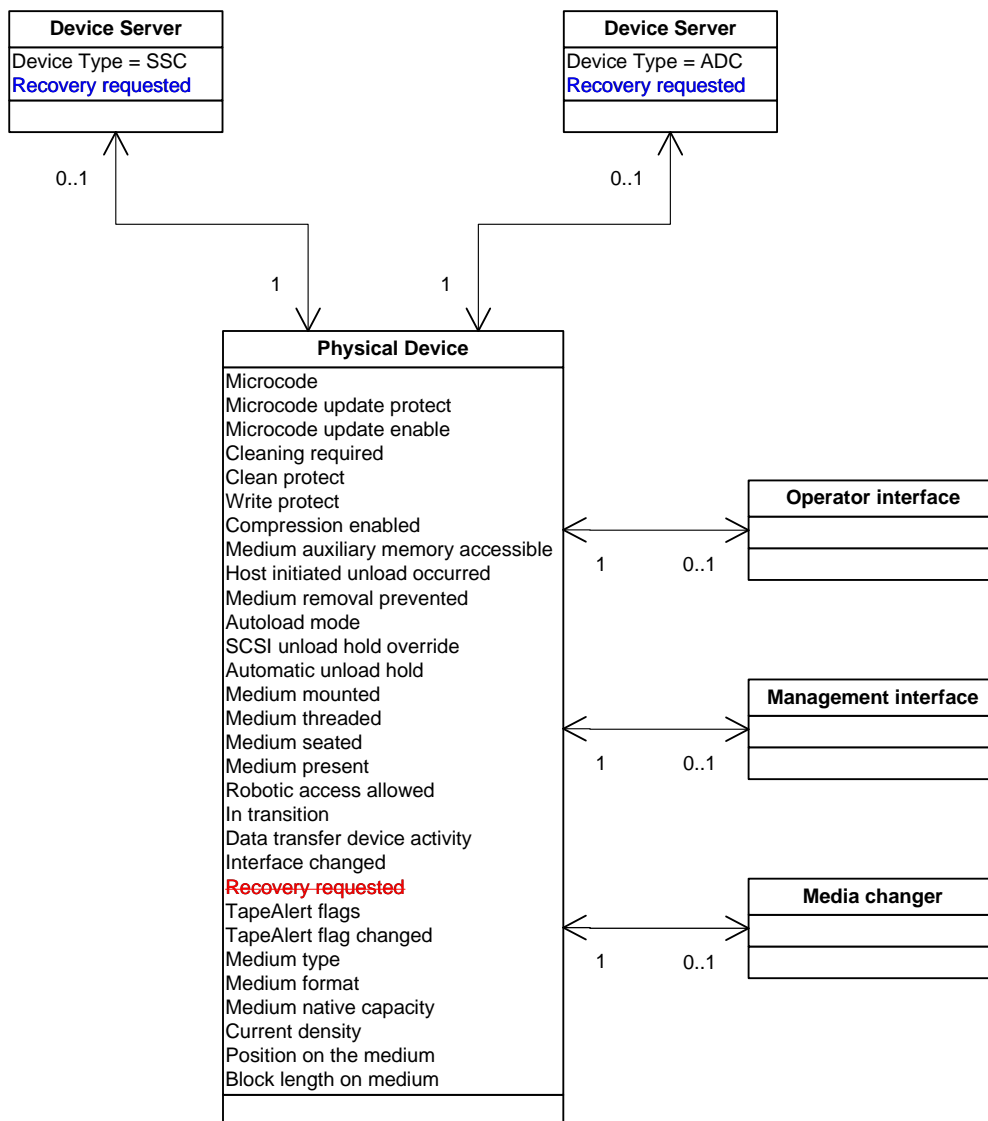

Figure 8 — UML example of SCSI target device and physical device

6 Table 2 specifies the standard that defines each attribute shown in figure 8.

Table 2 — Physical device attributes

Attribute	Reference
Interface changed	ADC-2
~~Recovery requested~~	~~ADC-2~~
TapeAlert flags	table 10

Editor's Note: Table 2 contains other rows of information not shown above.

8.2.1 Log parameters overview

Table 57 — Log page codes

Page Code	Description	Support	Reference
12h	TapeAlert Response log page	O	ADC-2
13h	~~Reserved~~ Requested Recovery log page	~~-~~O	8.2.X
14h	Device Statistics log page	O	8.2.4
a)	Mandatory only if READ REVERSE command is supported.		

Editor's Note: Table 57 contains other rows of information not shown above.

8.2.X Requested Recovery log page

8.2.X.1 Requested Recovery log page overview

Table Y describes the Requested Recovery log page. When the physical device is unable to complete an action (e.g., a volume load or unload) the device server may set the RRQST bit to one in the very high frequency data log parameter (see ADC-2) to request that the application client perform a recovery action. The application client is able to obtain a list of alternative requested recovery actions by reading the Requested Recovery log page.

Editor's Note: The definition of 'medium' in ADC-2 corresponds to the definition of 'volume' in SSC-3. Hence I have used 'volume' in most places where the ADC-2 text states 'medium'.

Table Y — Requested Recovery log page

Bit / Byte	7	6	5	4	3	2	1	0
0	Reserved			PAGE CODE (13h)				
1	Reserved							
2	(MSB)			PAGE LENGTH (n − 3)				
3								(LSB)
4				Requested recovery log parameters				
n								

See SPC-3 for a description of the PAGE CODE field and the PAGE LENGTH field.

Table Y+1 defines the Requested Recovery log page parameter codes.

Table Y+1 — Requested Recovery log page parameter codes

Parameter code	Description	Reference
0000h	Recovery procedures	8.2.X.2
0001h -7FFFh	Reserved	
8000h - FFFFh	Vendor-specific	

8.2.X.2 Recovery procedures log parameter

The recovery procedures log parameter format is shown in table Y+2.

Table Y+2 — Requested recovery log parameter format

Bit / Byte	7	6	5	4	3	2	1	0
0	(MSB)			PARAMETER CODE (0000h)				
1								(LSB)
2	DU (1b)	Obsolete	TSD (1b)	ETC (0b)	TMC (00b)		FORMAT AND LINKING (11b)	
3	PARAMETER LENGTH (n – 3)							
	Recovery procedures list							
4	First recovery procedure							
	. . .							
n	Last recovery procedure							

See SPC-3 for descriptions of the DU bit, TSD bit, ETC bit, TMC field, and FORMAT AND LINKING field. These bits and fields shall be set to the values shown in table Y+2.

The PARAMETER LENGTH field indicates the number of recovery procedure bytes that follow.

The PARAMETER CODE field shall be set to 0000h to indicate the recovery procedures log parameter.

The recovery procedures list contains recovery procedures (see table Y+3) listed in order from the most preferred to the least preferred procedure. When multiple recovery procedures are available, the most preferred procedure shall be the first in the list (i.e., in byte 4), and the other procedures listed in decreasing order of preference.

Each recovery procedure consists of one or more actions to be performed. When the INTXN bit of the VHF data descriptor (see ADC-2) is set to one, the parameter shall report only code 00h (i.e., Recovery not requested). If a failure occurs in performing one of the actions in a procedure, an appropriate list of requested recovery procedures may be reported.

Recovery procedures do not persist across a power cycle.

Table Y+3 — Recovery procedures

Recovery Procedure	Description
00h	Recovery not requested.
01h	Recovery requested, no recovery procedure defined.
02h	Instruct operator to push volume.
03h	Instruct operator to remove and re-insert volume.
04h	Issue UNLOAD command. Instruct operator to remove and re-insert volume.
05h	Instruct operator to cycle power target device.
06h	Issue LOAD command.
07h	Issue UNLOAD command.
08h	Issue LOGICAL UNIT RESET task management function.
09h	No recovery procedure defined. Contact service organization.
0Ah	Issue UNLOAD command. Instruct operator to remove and quarantine volume.
0Bh	Instruct operator to not insert a volume. Contact service organization.
0Ch	Issue UNLOAD command. Instruct operator to remove volume. Contact service organization.
0Dh	Request creation of a target device error log.
0Eh	Retrieve a target device error log.
0Fh	Modify configuration to allow microcode update and instruct operator to re-insert volume.
10h – 7Fh	Reserved
80h – FFh	Vendor-specific procedures

If the Requested Recovery log page is requested when the RRQST bit in the VHF data descriptor (see ADC-2) is set to zero, then a recovery procedure of 00h (i.e., Recovery not requested) shall be reported.

If the requested recovery procedure is 09h (i.e., No recovery procedure defined; Contact service organization), then the application client shall not issue a load or unload command and the operator should not attempt to manipulate the volume physically.

If the requested recovery procedure is 0Ah (i.e., Issue UNLOAD command; Instruct operator to remove and quarantine volume), then the volume should be removed from service.

If the requested recovery procedure is 0Bh (i.e., Instruct operator to not insert a volume; Contact service organization), then a non-recoverable error has occurred and insertion of a volume may cause damage. If the 0Bh recovery procedure is requested, then the RAA bit in the VHF data descriptor (see ADC-2) shall be set to zero, and no other recovery procedures shall be reported.

If the requested recovery procedure is 0Ch (i.e., Issue UNLOAD command; Instruct operator to remove volume; Contact service organization.), then a non-recoverable error has occurred and insertion of a new volume may cause damage. When recovery procedure 0Ch is requested and the volume has been removed, then the RAA bit in the VHF data descriptor (see ADC-2) shall be set to zero, and no other recovery procedures shall be reported.