



To: T10 Technical Committee

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Subject: Automation/Drive Interface - Commands (ADC) - Resolution of LB Comment IBM Butt 2.

IBM Butt 2: Add a method to force and retrieve a drive error log (dump).

Related Proposals: 04-229

## Background

Since there are numerous methods used by different vendors for forcing and retrieving drive error logs, and the strength of opposition to using one method over another, a generic method of forcing a drive error log and a generic method of retrieving a drive error log is desired.

## Proposal

Add two new recovery procedures and two new parameters to the Requested Recovery Log page in ADCr6c.

### [6.1.4 Requested Recovery log page](#)

#### [6.1.4.1 Requested Recovery log page overview](#)

[Table 18 describes the Requested Recovery log page. When the DT device is unable to complete an action \(e.g., a medium load or unload\) the DT device may set the RRQST bit to one in the very high frequency data log parameter \(see 6.1.2.2\) to request that the automation device perform a recovery action. The application client is able to obtain information related to requested recovery procedures by reading the Requested Recovery log page.](#)

**TABLE 18. Requested Recovery log page**

Byte	7	6	5	4	3	2	1	0
0	Reserved		PAGE CODE (13h)					
1	Reserved							
2	PAGE LENGTH (n-3)							
3								
<u><a href="#">4</a></u>	<u><a href="#">Requested Recovery Log Parameters</a></u>							
<u><a href="#">n</a></u>								

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

[Table 19 defines the Requested Recovery log page parameter codes.](#)

**TABLE 19 — Device CDB Description log page parameter codes**

<a href="#">Parameter code</a>	<a href="#">Description</a>	<a href="#">Reference</a>
<a href="#">0000h</a>	<a href="#">Recovery Procedures</a>	<a href="#">6.1.4.2</a>
<a href="#">0001h</a>	<a href="#">DT device Recovery procedure data out CDB</a>	<a href="#">6.1.4.3</a>
<a href="#">0002h</a>	<a href="#">DT device Recovery procedure data in CDB</a>	<a href="#">6.1.4.4</a>
<a href="#">0003h - 7FFFh</a>	<a href="#">Reserved</a>	
<a href="#">8000h - FFFFh</a>	<a href="#">8000h - FFFFh Vendor-specific</a>	

### **[6.1.4.2 Recovery Procedures parameter](#)**

The Recovery Procedures parameter contains a list of alternative requested recovery procedures.

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 are listed in decreasing order of preference. The automation device may select any recovery procedure, regardless of position in the list.

Recovery procedures do not persist across a power cycle.

Each recovery procedure consists of one or more actions to be performed. When the INXTN bit of the VHF DATA DESCRIPTOR field (see 6.1.2.2) 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.

**TABLE 20. Recovery procedures parameter format**

Byte	7	6	5	4	3	2	1	0
0	PARAMETER CODE (0000h)							
1	PARAMETER CODE (0000h)							
2	DU (0)	DS (1)	TSD (0)	ETC (0)	TMC (0)	LBIN (1)	LP (1)	
3	PARAMETER LENGTH (n-3)							
4	RECOVERY PROCEDURE (first)							
n	RECOVERY PROCEDURE (last)							

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

See SPC-3 for descriptions of the DU bit, DS bit, TSD bit, ETC bit, TMC field, LBIN bit, and LP bit. These bits and fields shall be set to the values shown in table 18.

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

The RECOVERY PROCEDURE fields specify a list of recovery procedures (see table 19) listed in order from the most preferred to the least preferred procedure.

**TABLE 21 — Recovery procedures**

Recovery Procedure	Description
00h	Recovery not requested
01h	Recovery requested, no recovery procedure defined
02h	Push medium
03h	Remove and re-insert medium
04h	Issue UNLOAD command, remove, and re-insert medium
05h	Cycle power to DT device
06h	Issue LOAD command
07h	Issue UNLOAD command
08h	Issue Logical Unit Reset request
09h	No recovery procedure defined. Contact service organization
0Ah	Issue UNLOAD command, remove, and quarantine medium
0Bh	Do not insert medium. Contact service organization
0Ch	Issue UNLOAD command, remove medium, and contact service organization
<a href="#">0Dh</a>	<a href="#">Issue the DT device Recovery procedure data out CDB (see 6.1.4.3).</a>
<a href="#">0Eh</a>	<a href="#">Issue the DT device Recovery procedure data in CDB (see 6.1.4.4).</a>
<a href="#">0Fh</a> – 07Fh	Reserved
80h – FFh	Vendor-specific procedures

If the Requested Recovery log page is requested when the RRQST bit (see 6.1.2.2) is set to zero, then a recovery procedure of 00h (i.e., Recovery not requested) shall be reported.

If the requested recovery procedure may cause the DT device to eject the medium, the automation device shall ensure there is not conflict between the motion of a medium transport element and the medium before initiating that recovery action.

If the requested recovery procedure is 09h (i.e., Contact service organization), then the automation device shall not issue a load or unload command or attempt to manipulate the medium physically.

If the requested recovery procedure is 0Ah (i.e., Issue UNLOAD command, remove, and quarantine medium), then the medium should not be loaded in a DT device.

If the requested recovery procedure is 0Bh (i.e., Do not insert medium), a non-recoverable error has occurred and insertion of a medium may cause damage. If the 0Bh recovery procedure is requested, then the RAA bit (see 6.1.2.2) 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, remove medium, and contact service organization), a non-recoverable error has occurred and insertion of a new

medium may cause damage. When recovery procedure 0Ch is requested and the medium has subsequently been removed, then the RAA bit (see 6.1.2.2) shall be set to zero, and no other recovery procedures shall be reported.

### **6.1.4.3 DT device Recovery procedure data out CDB parameter**

The DT device Recovery procedure data out CDB parameter format is shown in Table 22.

**TABLE 22. DT device Recovery procedure data out CDB parameter format**

<b>Byte</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>
<u>0</u>	<u>PARAMETER CODE (0001h)</u>							
<u>1</u>								
<u>2</u>	<u>DU (0)</u>	<u>DS (1)</u>	<u>TSD (0)</u>	<u>ETC (0)</u>	<u>TMC (0)</u>	<u>LBIN (1)</u>	<u>LP (1)</u>	
<u>3</u>	<u>PARAMETER LENGTH (n-3)</u>							
<u>4</u>	<u>Data out CDB descriptor</u>							
<u>n</u>								

The PARAMETER CODE field shall be set to 0001h to indicate the DT device Recovery procedure data out CDB log parameter.

See SPC-3 for descriptions of the DU bit, DS bit, TSD bit, ETC bit, TMC field, LBIN bit, and LP bit. These bits and fields shall be set to the values shown in table 10.

The PARAMETER LENGTH field shall be set to n-3 to allow transfer of the complete parameter.

The data out CDB descriptor is defined in Table 23.

**TABLE 23. Data Out CDB descriptor format**

<b>Byte</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>
<u>0</u>	<u>Reserved</u>							
<u>1</u>	<u>TASK DESCRIPTOR LENGTH (x-1)</u>							
<u>2</u>	<u>Task descriptor</u>							
<u>x</u>								
<u>x+1</u>	<u>Reserved</u>							
<u>x+2</u>	<u>DATA OUT CDB LENGTH (y - (x+2))</u>							
<u>x+3</u>	<u>DATA OUT CDB</u>							
<u>y</u>								
<u>y+1</u>	<u>Reserved</u>							
<u>y+2</u>	<u>PARAMETER DATA OUT LENGTH (n - (y+2))</u>							
<u>y+3</u>	<u>PARAMETER DATA OUT</u>							
<u>n</u>								

The TASK DESCRIPTOR LENGTH field shall contain the length of the task descriptor.

The task descriptor contains parameters that describe the task requested by the recovery procedure. The length of the task descriptor shall be a multiple of two bytes.

**TABLE 24. Task descriptor format**

<u>Byte</u>	<u>7</u>	<u>6</u>	<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>
<u>0</u>	<u>LOGICAL UNIT NUMBER</u>							
<u>1</u>								
<u>2</u>	<u>TASK ATTRIBUTE</u>							
<u>3</u>	<u>Reserved (pad as needed)</u>							
<u>n</u>								

The LOGICAL UNIT NUMBER field contains the first two bytes (i.e., bytes 0 and 1) of a single level logical unit number structure or the contents of a two byte extended logical unit address (see SAM-2).

The TASK ATTRIBUTE field shall contain a value specifying one of the task attributes defined in SAM-2.

The DATA OUT CDB LENGTH field shall contain the length of the DATA OUT CDB field.

The DATA OUT CDB field shall contain the CDB to be sent by the application client. The LINK bit (see SAM-2) shall be set to zero.

The PARAMETER DATA OUT LENGTH field shall contain the length of the PARAMETER DATA OUT field. The PARAMETER DATA OUT LENGTH field shall be set to zero if no parameter data is required by the CDB specified in the DATA OUT CDB field.

The PARAMETER DATA OUT field shall contain any parameter data required by the CDB specified in the DATA OUT CDB field.

#### **6.1.4.4 DT device Recovery procedure data in CDB parameter**

The DT device Recovery procedure data in CDB parameter format is shown in Table 25.

**TABLE 25. DT device Recovery procedure data in CDB parameter format**

<u>Byte</u>	<u>7</u>	<u>6</u>	<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>
<u>0</u>	<u>PARAMETER CODE (0002h)</u>							
<u>1</u>								
<u>2</u>	<u>DU (0)</u>	<u>DS (1)</u>	<u>ISD (0)</u>	<u>ETC (0)</u>	<u>TMC (0)</u>	<u>LBIN (1)</u>	<u>LP (1)</u>	
<u>3</u>	<u>PARAMETER LENGTH (n-3)</u>							
<u>4</u>	<u>Data in CDB descriptor</u>							
<u>n</u>								

The PARAMETER CODE field shall be set to 0002h to indicate the DT device Recovery procedure data in CDB log parameter.

See SPC-3 for descriptions of the DU bit, DS bit, TSD bit, ETC bit, TMC field, LBIN bit, and LP bit. These bits and fields shall be set to the values shown in table 10.

The PARAMETER LENGTH field shall be set to n-3 to allow transfer of the complete parameter. The data in CDB descriptor is defined in Table 23.

**TABLE 26. Data In CDB descriptor format**

<u>Byte</u>	<u>7</u>	<u>6</u>	<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>
<u>0</u>	<u>Reserved</u>							
<u>1</u>	<u>TASK DESCRIPTOR LENGTH (x-1)</u>							
<u>2</u>	<u>Task descriptor</u>							
<u>x</u>								
<u>x+1</u>	<u>Reserved</u>							
<u>x+2</u>	<u>DATA IN CDB LENGTH (n - (x+2))</u>							
<u>x+3</u>	<u>DATA IN CDB</u>							
<u>y</u>								
<u>n</u>	<u>PARAMETER DATA IN LENGTH</u>							

The TASK DESCRIPTOR LENGTH field and the task descriptor are defined in <<Add Cross-Reference>>

The DATA IN CDB LENGTH field shall contain the length of the DATA IN CDB field.

The DATA IN CDB field shall contain the CDB to be sent by the application client. The LINK bit (see SAM-2) shall be set to zero.

The PARAMETER DATA IN LENGTH field shall contain the length of the parameter data that is returned when the CDB specified by the DATA IN CDB field is processed by the device server associated with LOGICAL UNIT NUMBER field. The PARAMETER DATA IN LENGTH field shall be set to zero if no parameter data is returned when the CDB specified by the DATA IN CDB field is processed by the device server associated with LOGICAL UNIT NUMBER field.