Dell PowerVault 124T / Quantum SuperLoader3

Diagnostic Log Acquisition and Analysis

Rev 0.10
January 23, 2007

Quantum
BACKUP, RECOVERY, ARCHIVE... IT'S WHAT WE DO.

Revision History

Rev.	Date	Initiator	Description of Change
0.00	June 5, 2006	Dale Dvorak	Preliminary – no revision assigned
0.10	Jan 23, 2007	Dale Dvorak	Added Tape Alert Queue, Updated Error Code Table

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(See following List of Tables)

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Introduction

This document is intended as a technical reference for individuals who are required to perform analysis of SuperLoader3 failures using Remote Management Utility (RMU) logs. The intended audience includes Quantum employees and OEM partners. This document is not suited for the typical end user.

Conventions

- Following the Introduction Section, content of this document will follow the order of SuperLoader3 log files taken via RMU.
- Each log section will have its own unique footer for quick reference. This is especially convenient for hard-copy users.
- Sample log content will be presented in `***Courier New***` font.
- Large information blocks or tables that apply to multiple sections will be contained in Appendices. Example: Error information common to multiple sections can be found in Appendix A.
- The goal of this document is to eliminate reliance on additional reference material for SuperLoader3 log analysis. Material leveraged from industry standards and other Quantum source documents will be noted as such. Quantum part numbers or links to external source documents are provided as appropriate to locate the full source document if needed.
- If the data you are looking for seems like it should be in a table, it probably is. Use the List of Tables as needed.

Taking logs via the Remote Management Utility

SuperLoader3 logs are gathered through the Ethernet port located at the back of the unit. A cross-over Ethernet cable is required if logs are to be pulled via direct connection to a host system.

Steps to gather SuperLoader3 log files:

1. Connect to the Ethernet port at the back of the SuperLoader3 unit.
2. Browse to the SuperLoader IP address. The factory default is Static IP address: http://192.168.20.128.

   Notes: i. Loader IP address can also be obtained from the SuperLoader3 front panel via the "Configuration" menu.
   ii. When using static IP, the host system TCP/IP must be configured to a unique address on the same subnet as the loader (i.e. 192.169.20.---).

3. Select the "Error Logs and Diagnostics" menu item in the RMU.
4. You will be prompted for a username and password. Unless the password had been changed by the user, the defaults are as follows-

   a) For Dell configured systems:
   Username: admin
   Password: password

   b) For Quantum configured systems:
   Username: guest
   Password: guest

5. Select the "Save Logs" option, directing log output to a text (.txt) file.

Overview of Log Analysis

There is no exact method of log analysis that will prove efficient for every log being reviewed. The most important starting point of any failure analysis is: **What was the customer reported error, and what notes or observations were made by the customer prior to or during the error condition?**

A more detailed look at each section of the log (in order) follows this overview.

What to look for:

- The best starting point is a quick look at the **Log Header** to determine current firmware revisions. The product is continuously being improved. Users are encouraged to update to the most recently qualified firmware revision. See note in the Log Header section regarding how to interpret VS160 drive firmware revision.
- Look at the **Log Header**, the header of the **Ring Buffer**, or the last entry of the **Boot Queue** to determine the Date & Time or PC (Power Cycle) & POH (Power On Hours) of the last power up.
- Review the **Hard Queue**. The most recent entry is at the bottom. Determine if latest entries were recoreded during the last power cycle. If not, the Ring Buffer may be of limited use in determining events leading up to error. Pay most attention to current entries. It is possible that conditions leading to earlier Hard Queue entries may have been resolved through hardware or firmware changes. Use tables in Appendix A to decode Hard Queue Error entries.
- For tape movement or stuck tape errors, additional information on tape location or status can be found in the **Sensor Status** or **Element Status** sections.
- Look at the **Ring Buffer**. This will take time. There may be as many as 3,200 entries (~80 pages). Be practical – you likely won't have time to decode them all. Scroll through the Ring Buffer Looking for patterns. Search for Error codes posted prior to failure. Servo issues may show up as blocks of Errors, indicating an issue. Singe occurrences of servo errors such as CA are typically not an issue. For suspected drive related issues, search for TapeAlerts. Review events leading up to Errors or TapeAlerts.
- The **Boot Queue** provides information regarding how the unit has been reset or power cycled (i.e. by controlled front panel power down, unexpected power interruption, or as a result of events resulting in system reset)
- If you have questions about the update history of the unit, look at the **Update Queue** and the OEM Queue.
- The **OEM Queue** may also provide additional information about errors reported across the SCSI bus if this applies to the failure being reviewed.
- Review the **Soft Queue**. The Soft Queue is used to report error recovery, part of normal operation. Expect many entries. **Remember: Entries in the Soft Queue *alone* are NOT a reason for product return.** Determine if the most recent Soft Queue entries are consistent with the Hard Queue, indicating a trend leading up to a Hard Error being reported.
- Spend the least time looking at the **Shadow Queue** and **ID Queue**. These sections are not likely to contain data useful to error analysis.

Note regarding Appendix A:

Become familiar with the tables in Appendix A, starting with Table A1. These tables are the key to decoding Error entries, and are common to the following sections:

- Hard Queue
- Soft Queue
- Update Queue
- Boot Queue

Log Header

The quick check of the log header is a good place to start when reviewing logs.

Example log header:

```
MFG Data:
      Checksum 0x2469
      MDM Serial Number : TB5B000027
      MDM Revision 0002
      Drive Serial Number: JK00A8W
      Autoloader Drive Type: 0xa1 LTO-2
      Autoloader Serial Number CB5BC20011
      Autoloader CTLA Suffix
scan         : IDLE
decode       : DONE
Raw Count    : 216
System Boot at: POC: 4
Product: PV-124T          Serial Number CB5BC20011
Platform rev: 1
Vendor: DELL
Personality: 23.2
Loader: V26.0, Built: Dec 12 2005, 15:26:58
Drive: LTO-2 Firmware /1801
SCSI ID: 6
```

What to look for:

- The "scan" and "decode" lines indicate barcode reader status. "Idle" and "Done" are normal values. Other values may indicate issues with the cartridge labels (or lack of labels) being used, or less likely an issue with the barcode reader itself.
- POC (Power On Count) or timestamp indicates the current power cycle or timestamp. This value can be used to determine if Errors shown later in the log are 'current'.
- Review the loader revision. Make sure the unit in test is at the latest qualified revision.
- Review the drive revision. Again, make sure the unit is at the latest qualified revision. If the drive firmware revision does not look correct, or contains unexpected characters, this may confirm a communications issue between the loader and the drive. Further indication will likely be present in the Hard Queue or Ring Buffer.
- Make sure there are no devices with conflicting (same) SCSI IDs on the same bus.

Note regarding VS160 Firmware revision:

For loader code prior to V31, it is probably easiest to show how each VS160 FW revision is represented.

- V43 = Policy 50.66, Servo 0
- V45 = Policy 50.68, Servo 0
- V46 = Policy 50.69, Servo 0

Explanation:

The VS160 drive INQUIRY reports the firmware revision as an ASCII encoded hex value. Taking V46 for example, 46 decimal = 2Eh. The ASCII hex value for '2' is 32h, and the the ASCII hex value for 'E' is 45h. The first two bytes of the drive INQUIRY product revision returns 32h 45h. SuperLoader3 (prior to V31) converts the ASCII hex values to decimal, reporting 50.69.

To decode the VS160 firmware revision to 'normal' decimal format from the RMU logs (prior to V31 loader code only), you must perform a decimal to hex conversion, an ASCII code to text conversion & concetenation, and then a hex to decimal conversion.

Hard Queue

The Hard Queue should be reviewed early in the log analysis process. Entries in the Hard Queue represent errors that were not recovered during normal retry operations. The Hard Queue is non-volitile, meaning it will be retained across power cycle.

Example excerpt from Hard Queue:

```
**** Hard Queue ****
Block 0, 016/016 entries @  64 bytes each, wrap @ 004, erase @ 008
0000: PC: 00003 POH: 00000:00:00 Error: 1425a001, Context: 8000/00000002
      00000000:00000000:00000000:00000000
      00000000:00000000:00000000:00000000
      00000000:00000000:00000000:00000000
0001: PC: 00003 POH: 00000:00:10 Error: 0c300100, Context: 0000/00008000
      00000000:00000000:00000000:00000000
      00000000:00000000:00000000:00000000
      00000000:00000000:00000000:00000000
0002: PC: 00004 POH: 00000:00:37 Error: 076f0045, Context: 0000/00000000
      ffffff00:ffffffff:103600ff:21381f00
      083d9006:00006100:ffffff00:ffffffff
      ffffffff:ffffffff:ffffffff:ffffffff
0003: PC: 00004 POH: 00000:00:59 Error: 076f0045, Context: 0000/00000000
      ffffff00:ffffffff:103600ff:21381f00
      083d9006:00006100:ffffff00:ffffffff
      ffffffff:ffffffff:ffffffff:ffffffff
0004: 2005-Aug-07, 10:12:48.633, Error: 0243202f, Context: 0fa6/01000020
      03020043:83030003:020b01f4:8301fffb
      02170384:8301fff1:0211054f:82040525
      03010011:03020045:820b039d:8305ffa1
:
:
:
```

What to look for:

- The first line of the Hard Queue shows how many entries there are, the queue depth, and indicates the wrap and erase policy hard set in code. The Hard Queue has a maximum capacity of 16 entries. The "wrap @ 004" indicates that the first 4 entries of the Hard Queue will *always* be kept. The "erase @ 008" indicates that when the Queue is filled to the maximum depth, the oldest entries (between the 4th and 8th entry) will be erased, opening slots for four new entries. This is to keep from having to discard a queue entry with every new event once the Hard Queue is full. The example above shows that the user had set up an NTP (Network Time Protocol) server sometime after the 4th power cycle (entry 003) and that the Hard Queue had wrapped.
- Hard Queue entries are numbered. The highest numbered entry (at the bottom of the Hard Queue) is the most recent event. Pay most attention to current entries. It is possible that conditions leading to earlier Hard Queue entries may have been resolved through hardware or firmware changes.
- The first line of each Hard Queue event contains the information you are looking for. Ignore the 12 double-words after the first line as these cannot be interpreted without firmware source code.
- The first entry after the event number will be either PC (Power Cycle) + POH (Power On Hours) or an absolute time if the user is utilizing an NTP server. One advantage of NTP is easy correlation to absolute event time in either system or ISV logs, which can aid in troubleshooting.

One disadvantage is that you will only be able to relate events that happened within the last power cycle. You must use the first line of the Ring Buffer (or the last line of the Boot Queue) to determine the time of the last boot, then see which events happened within the last boot.

- The Power On Hour timer is reset with each Power Cycle.
- The error code contains Recovery Action, Task ID, Error Type, and Software location ID. **Refer to Appendix A**, starting with Table A1.
- Context information is primarily used by Quantum firmware development engineers to debug source code. However, in a limited number of instances, source and destination can be inferred from context information. For entry 0004 in the example above, we can tell error occurred after a move from Source 0100 (left magazine, slot 1) to Destination 0020 (the drive). Source and Destination codes (Loader Elements) are common to multiple sections and are also presented in Appendix A.

Soft Queue

The Soft Queue provides record of recoverable errors that occur during normal operation. Expect to see many entries in the Soft Queue. **Entries in the Soft Queue *alone* are NOT a reason for concern or product return.** The Soft Queue ranks low on the list of areas to look at during log anlysis and may be reviewed to get a 'feel' for what is going on with the unit. The Soft Queue is non-volitile, meaning it will be retained across power cycle.

Example excerpt from Soft Queue:

```
**** Soft Queue ****
Block 0, 301/350 entries @  16 bytes each, wrap @ 000, erase @ 070
0000: PC: 00032 POH: 00000:05:12 Error: 02b92501, Context: 0bb9/00000003
0001: PC: 00032 POH: 00000:05:44 Error: 02f62747, Context: 00f6/00000000
0002: PC: 00032 POH: 00000:20:30 Error: 07630052, Context: 0000/00063f10
0003: PC: 00032 POH: 00000:21:14 Error: 07630052, Context: 0000/00062800
:
:
```

What to look for:

- Soft Queue error code is in the same format as the Hard Queue error code. Refer to **Appendix A** for example and all tables needed to interpret the Error code.
- Since the Soft Queue is much deeper (more entries) than the Hard Queue, pay particular attention to the Date & Time or the PC & POH counts when comparing Soft Queue entries to either the Hard Queue or the Ring Buffer.
- Similar to the Hard Queue, the Soft Queue has a hard coded Wrap and Erase policy. In the case of the Soft Queue the "wrap @ 000" indicates the first entry will be overwritten when the queue becomes full. The "erase @ 070" indicates that when the Soft Queue is filled to the maximum depth, the oldest 70 entries will be erased, opening slots for new entries. This is to keep from having to discard a queue entry with every new event once the Hard Queue is full. In the example above, the Soft Queue has most likely wrapped since the first entry was at PC 32 and the Hard Queue indicated errors on previous power cycles.

Update Queue

The Update Queue is used to maintain record of all code updates performed across the Ethernet port, and Loader updates via SCSI. The example below is followed by what to look for.

Example Update Queue, and supporting OEM Queue:

```
**** Update Queue ****
Block 0, 012/024 entries @  16 bytes each, wrap @ 000, erase @ 001
0000: PC: 00003 POH: 00000:21:23 Error: 0d000313, Context: 0017/001a0000
0001: PC: 00031 POH: 00000:12:07 Error: 0d000313, Context: 0017/001b0000
0002: PC: 00033 POH: 00000:10:13 Error: 0d000313, Context: 0017/00080000
0003: PC: 00037 POH: 00000:50:28 Error: 0d000313, Context: 0017/00140000
0004: PC: 00039 POH: 00000:10:09 Error: 0d000313, Context: 0017/001f0400
0005: PC: 00041 POH: 00000:09:44 Error: 0d000313, Context: 0017/001b0000
0006: PC: 00042 POH: 00000:21:15 Error: 0d000313, Context: 0017/001b0000
0007: PC: 00043 POH: 00000:07:34 Error: 0d020311, Context: 0000/00000000
0008: PC: 00043 POH: 00000:46:21 Error: cd030300, Context: 0000/00000079
0009: PC: 00048 POH: 00000:08:09 Error: 0d000313, Context: 0017/00140000
0010: PC: 00050 POH: 00000:04:47 Error: 0d000313, Context: 0017/001b0000
:
:

**** OEM Queue ****
Block 0, 008/016 entries @  12 bytes each, wrap @ 000, erase @ 001
0000: POH: 00030007, SCSI Err: 09/08/00/17, Media Id: 00000000
0001: POH: 001f004d, SCSI Err: 09/1a/00/17, Media Id: 00000000
0002: POH: 00210061, SCSI Err: 09/1b/00/17, Media Id: 00000000
0003: POH: 00250062, SCSI Err: 09/08/00/17, Media Id: 00000000
0004: POH: 00270066, SCSI Err: 09/14/00/17, Media Id: 00000000
0005: POH: 00290066, SCSI Err: 09/1f/04/17, Media Id: 00000000
0006: POH: 002a0066, SCSI Err: 09/1b/00/17, Media Id: 00000000
0007: POH: 00320067, SCSI Err: 09/14/00/17, Media Id: 00000000
```

What to look for:

- The Update Queue reports drive or loader code updates via RMU, and loader updates via SCSI. Drive code updates via SCSI are NOT reflected in the Update Queue.
- For loader code updates, the Context field shows which revision the loader was updated to. The first word of Context information shows the firmware personality. (For Dell code, this will be 0017. For Quantum OEM coded this would be 0000.) The subsequent d-word in the Context information contains the major and minor firmware revisions. The minor revision will be 00h for V-code. End-user logs should always show 00h for minor revision. In line 0004 of the example above, T31-4, Dell personality is shown.
- If *loader* update is perfomed via RMU, there will be a corresponding entry in the OEM Queue. A SCSI Err field starting with Vendor Unique 09 Sense Code represents firmware update for SuperLoader3. The following bytes represent /Major revision/ Minor Revision/Personality. The SCSI Err entry in the OEM Queue represents the loader revision *prior* to update.
- The first word of the POH d-word in the OEM queue represent the power cycle in hex. This corresponds to the PC field in the Update Queue. The second word of the POH d-word in the OEM Queue represents the accumulated power on hours.
- Code revision is not shown in the Update Queue for *drive* code updates via RMU. See example above, lines 0007 and 0008.

- Use the common tables in Appendix A to decipher the Error code shown in the Update Queue, but use Table A5.2 - Function Dependent Location Codes to determine the meaning of the 0x0300 series location codes.
- The only code updates reflected in the OEM Queue are loader code updates via RMU. In the example above, we see a loader update to V20 in line 0009 of the Update Queue. Lack of corresponding entry in the OEM Queue indicates the loader was update via SCSI.

Table 1 – Update Queue: Code update records

	Loader Update		Drive Update	
	RMU	**SCSI**	**RMU**	**SCSI**
Update Queue	Shown	Shown	Shown	n/a
OEM Queue	Shown	n/a	n/a	n/a

What we see in this example:

- Power cycle 3: Loader code update from V8 to V26 via RMU
- Power cycle 31: Loader code update from V26 to V27 via RMU
- Power cycle 33: Loader code update from V27 to V8 via RMU
- Power cycle 37: Loader code update from V8 to V20 via RMU
- Power cycle 39: Loader code update from V20 to T31-4 via RMU
- Power cycle 41: Loader code update from T31-4 to V27 via RMU
- Power cycle 42: Loader code update from V27 to V27 via RMU
- Power cycle 43: Drive code update via RMU followed by CUP induced re-boot
- Power cycle 48: Loader code update to V20 via SCSI (note: no OEM Queue entry)
- Power cycle 50: Loader code update from V20 to V27 via RMU

Shadow Queue

The shadow Queue is a dump of 512 byte EEROM system setting values. This Queue is rarely used during log analysis.

Table 2 – Shadow Queue: MDM EEROM Memory Map

Section	Parameter	Byte Length	Offset	Initial Value
MFG	Virgin bit/Revision	1	0	0x81
	MFG Spare	1	1	
	Checksum	2	2	0xFF 0xFF
	MFG Spare	2	4	0xFF
	MDM Serial Number	10	6	Plant ID, year, week, serial number
	MDM Revision	4	16	revision
	Drive Serial #	12	20	0xFF
	Autoloader Serial #	14	32	0xFF
	MFG Spare	2	46	0xFF
CONFIG	IP Config Flag	2	48	0x00
	IP Spare	6	50	0xFF
	Static IP address	4	56	0xFF 0xFF 0xFF 0xFF
	Subnet Address	4	60	0x00 0xFF 0xFF 0xFF
	Gateway	4	64	0xFF 0xFF 0xFF 0xFF
	Time Server	4	72	0x29 0x29 0x50 0xC0
	Time Zone	1	76	0x00
	IP Spare	2	77	0xFF
	Filter Configuration	1	79	0xFF
	Filter Addresses	16	80	0xFF
SECURITY	User Name 1	8	96	0xFF
	User Password 1	8	104	0xFF
	User Name 2	8	112	0xFF
	User Password 2	8	120	0xFF
	User Name 3	8	128	0xFF
	User Password 3	8	136	0xFF
	User Name 4	8	144	0xFF
	User Password 4	8	152	0xFF
	Front Panel Password 1	4	160	0xFF 0xFF 0xFF 0xFF
	Front Panel Password 2	4	164	0xFF 0xFF 0xFF 0xFF
	Web Administration Lock	4	168	0xFF 0xFF 0xFF 0xFF
	Security Spare	4	172	
CONFIG.	Configuration Flags	4	176	0x04 0x00 0x00 0x00
	Sequential Slot	1	180	0x00
	SCSI ID	1	181	0xFF
	Configuration Spare	9	183	0x00

Table 2 – MDM EEROM Memory Map (Continued)

Section	Parameter	Byte Length	Offset	Initial Value
STATISTICS	Power on hours	4	192	0x00
	LCD on hours	4	196	0x00
	Power Cycles	2	200	0x00
	Shutdown Type	1	204	0x00
	Service Access	2	204	0x00
	Engineering Access	2	206	0x00
	Picker Operation	1	208	0x00
	Sequential Step	1	209	0x00
	Source/Destination	1	210	0x00
	Picker Loc/Rec	1	211	0x00
	Left Magazine Insertions	2	212	0x00
	Right Magazine Insertions	2	214	0x00
	Bar Code Scans	2	216	0x00
	Bar Code Errors	2	218	0x00
	Servo hard errors	2	220	0x00
	Stats Spare	2	222	0x00
MOVE STATISTICS	Drive Gets	4	224	0x00
	Drive Puts	4	228	0x00
	Drive Loads	4	232	0x00
	Drive Unloads	4	236	0x00
	Left Magazine Gets	4	240	0x00
	Left Magazine Puts	4	244	0x00
	Left Magazine Loads	4	248	0x00
	Left Magazine Unloads	4	252	0x00
	Right Magazine Gets	4	256	0x00
	Right Magazine Puts	4	260	0x00
	Right Magazine Loads	4	264	0x00
	Right Magazine Unloads	4	268	0x00
	Left Magazine Calibrations	2	272	0x00
	Left Magazine Cal Errors	2	274	0x00
	Right Magazine Calibrations	2	276	0x00
	Right Magazine Cal Errors	2	278	0x00
	Mail Slot Gets	2	280	0x00
	Mail Slot Puts	2	282	0x00
	Mail Slot Load	2	284	0x00
	Mail Slot Unloads	2	286	0x00
	Drive Get Errors	2	288	0x00
	Drive Put Errors	2	290	0x00
	Left Magazine Get Errors	2	292	0x00
	Left Magazine Put Errors	2	294	0x00
	Right Magazine Get Errors	2	296	0x00
	Right Magazine Put Errors	2	298	0x00
	Mail Slot Get Errors	2	300	0x00
	Mail Slot Put Errors	2	302	0x00
	Drive Unload Errors	2	304	0x00
	Drive Load Errors	2	306	0x00
	Left Magazine Interchanges	2	308	0x00
	Right Magazine Interchanges	2	310	0x00
	Magazine Interchanges	4	312	0x00
	Move Odometer	4	316	0x00

Table 2 – MDM EEROM Memory Map (Continued)

Section	Parameter	Byte Length	Offset	Initial Value
MOTOR STATISTICS Left Magazine	Moves	4	320	0x00
	Steps	4	324	0x00
	Tenths of Seconds	4	328	0x00
	Sense Position Errors	4	332	0x00
	Sense Count Errors	4	336	0x00
	Position Adjustments	4	340	0x00
	Position Errors	2	344	0x00
	Hard Errors	2	346	0x00
	Soft Errors	2	348	0x00
	Recovery Attempts	2	350	0x00
Right Magazine	Moves	4	352	0x00
	Steps	4	356	0x00
	Tenths of Seconds	4	360	0x00
	Sense Position Errors	4	374	0x00
	Sense Count Errors	4	368	0x00
	Position Adjustments	4	372	0x00
	Position Errors	2	376	0x00
	Hard Errors	2	378	0x00
	Soft Errors	2	380	0x00
	Recovery Attempts	2	382	0x00
Translation	Moves	4	384	0x00
	Steps	4	388	0x00
	Tenths of Seconds	4	392	0x00
	Sense Position Errors	4	396	0x00
	Sense Count Errors	4	400	0x00
	Position Adjustments	4	404	0x00
	Position Errors	2	408	0x00
	Hard Errors	2	410	0x00
	Soft Errors	2	412	0x00
	Recovery Attempts	2	414	0x00
Rotation	Moves	4	416	0x00
	Steps	4	420	0x00
	Tenths of Seconds	4	424	0x00
	Sense Position Errors	4	428	0x00
	Sense Count Errors	4	432	0x00
	Position Adjustments	4	436	0x00
	Position Errors	2	440	0x00
	Hard Errors	2	442	0x00
	Soft Errors	2	444	0x00
	Recovery Attempts	2	446	0x00
	Spare	32	448	0xFF
Calibration Data	Calibration	1	480	0x00
	Trans Home Offset	1	481	0x00
	Trans Sense Offset	1	482	0x00
	Trans Backlash	1	483	0x00
	Trans Flag Offset	10	484	0x00
	Rotation Home Offset	1	496	0x00
	Rotation Backlash	1	497	0x00
	Rotation Flag Offsets	12	498	0x00
	Left Magazine Sense Offset	1	510	0x00
	Right Magazine Sense Offset	1	511	0x00

Boot Queue

The Boot Queue contains the current boot count, information on the the type of boot or reset that occurred for a given power cycle, and total accumulated hours.

Example Boot Queue:

```
**** Boot Queue ****
Block 1, 008/008 entries @  16 bytes each, wrap @ 000, erase @ 001
0000: PC: 00046 POH: 00000:00:10 Error: 0c320103, Context: 602e/00000067
0001: PC: 00047 POH: 00000:00:10 Error: 0c320103, Context: 602f/00000067
0002: PC: 00048 POH: 00000:00:10 Error: 0c320103, Context: 1030/00000067
0003: PC: 00049 POH: 00000:00:10 Error: 0c320103, Context: 4031/00000067
0004: PC: 00050 POH: 00000:00:10 Error: 0c320103, Context: 1032/00000067
0005: PC: 00051 POH: 00000:00:10 Error: 0c320103, Context: 4033/00000067
0006: PC: 00052 POH: 00000:00:10 Error: 0c320103, Context: 4034/00000069
0007: PC: 00053 POH: 00000:00:10 Error: 0c320103, Context: 1035/0000006a
```

What to look for:

- Decimal representation of power cycle count is contained in the PC entry.
- The type of boot or reset that occurred is contained in the left-most digit of the first Context word. (See table below for definitions.)
- Following the boot or reset type in the first word of the Context field is the hex representation of the power cycle count.
- The last word of the Context information contains the total accumulated hours.
- Multiple entries containing the same value in the PC field may indicate POST failure.

Table 3 – Boot Queue: Boot / Reset Types

Value	Reset Type
1	Power up after a normal front panel powerdown.
2	Reboot because code or hardware asserted reset line during operation.
3	Reboot because code branched to reset vector (location 0)
4	Reboot due to code update
5	Reboot due to watchdog timer expiration
6	Powered up after unexpected power cycle occurred (power interrupted or shut down via hard switch at the back of the unit).
7	Reboot because user asked for restart from web/telnet (bottom of RMU Diagnostics page).

OEM Queue

SuperLoader 3 supports the SCSI Sense values in Table 4 and Table 5.

ONLY 04 and 09 Sense/ASC/ASCQ values highlited in ***bold italic*** text in Table 5 will be represented in the OEM Queue.

Example OEM Queue:

```
**** OEM Queue ****
Block 1, 002/016 entries @  12 bytes each, wrap @ 000, erase @ 001
0000: POH: 00020002, SCSI Err: 04/44/00/00, Media Id: 00000000
0001: POH: 00030007, SCSI Err: 09/08/00/17, Media Id: 00000000
```

Table 4 – OEM Queue: Supported Sense Key Values

Sense Key	Description
0h	**NO SENSE**. Indicates that there is no specific sense key information to be reported. This may occur for a successful command or for a command that receives CHECK CONDITION status because one of the FILEMARK, EOM, or ILI bits is set to one.
1h	**RECOVERED ERROR**. This can be caused by rounding of Mode Parameters on a MODE SELECT, or may report that recovery algorithms were required to complete a move operation. The device may still be able to continue to function without any unrecovered errors for a long period of time, however.
2h	**NOT READY**. The media changer is not ready for move operation commands. Initialization or calibration may be in-progress or may have failed.
3h	**MEDIUM ERROR.** Indicates that the command terminated with a non-recovered error condition that wa probably caused by a flaw in the medium or an error in the recorded data. This sense key may also be returned if the device server is unable to distinguish between a flaw in the medum and a specific hardware failure (i.e., sense key 4h).
4h	**HARDWARE ERROR**. The Additional Sense Code / Additional Sense Code Qualifier fields may present more specific information.
5h	**ILLEGAL REQUEST**. The CDB or supplied parameter data had an unsupported or illegal operation specified. Check bytes 15, 16, and 17.
6h	**UNIT ATTENTION**. Unit Attentions are created after a device reset, if the medium asynchronously becomes ready to the initiator, if another initiator changes **Mode Parameters**, and/or if the firmware is updated.
9h	**VENDOR UNIQUE.** SuperLoader3 uses Sense Key 09 to denote loader firmware update.
Bh	**COMMAND ABORTED**. This key is generated when a command has been aborted by the media changer for some reason. Check the Additional Sense Code / Additional Sense Code Qualifier bytes.

The following table provides the Additional Sense Codes (**ASC**s) and Additional Sense Code Qualifiers (**ASCQ**s) that may be reported. Additional information, explanations, or suggestions for action are included in some of the descriptions.

Table 5 – OEM Queue: Supported ASC / ASCQ (Hex) for Request Sense

Note: **ONLY** 04 and 09 Sense/ASC/ASCQ values highlited in ***bold italic*** text in Table 5 will be represented in the OEM Queue.

Sense Key	ASC	ASCQ	Description
00 NO SENSE	00	00	No Additional Sense Code
01 RECOVERED ERROR	47	00	SCSI Parity Error
	48	00	IDE Message Received
	5D	00	Failure Predictive Threshold Exceeded
	5D	FF	Failure Predictive Threshold Exceeded (False)
02h NOT READY	04	00	Logical Unit Not Ready, Cause Unreportable
	04	01	Unit Not Ready, Calibration/Initialization in Process
	04	02	Unit Not Ready, Initializing Command Required
	04	03	Unit Not Ready, Manual Intervention Needed (no magazine is present or a mechanical failure has occurred)
	04	07	Unit Not Ready, Operation in Progress
	30	03	Cleaning Cartridge Installed
	3B	11	Medium Magazine Not Accessible
	44	00	Internal Target Failure
03h MEDIUM ERROR	30	00	Incompatible Medium Installed
04h HARDWARE ERROR	08	00	LUN Communication Failure
	08	01	LUN Communication Timeout Failure
	0B	***01***	***Over Temperature Condition Error***
	15	***01***	***Mechanical Positioning Error***
	29	01	Power On Occurred
	29	04	Device Internal Reset
	3F	01	Microcode Has Been Changed
	40	***83***	***Diagnostic Failure***
	40	***84***	***POST Soft Error***
	44	***00***	***Internal Target Failure***
	53	***00***	***Media Load Failure***
	53	***01***	***Media Unload Failure***
05h ILLEGAL REQUEST	1A	00	Parameter List Length Error
	20	00	Illegal Opcode
	21	01	Invalid Element Address
	24	00	Invalid CDB Field
	24	86	Invalid Offset
	24	87	Invalid Size
	24	89	Image Data Over Limit
	24	8B	Image/Personality is Bad
	24	8C	Not Immediate Command during Code Update

	24	91	Bad Autoloader Image EDC
	25	00	Illegal LUN
	25	8C	Illegal LUN Download Not Imm
	26	00	Parameter List Error, Invalid Field
	26	01	Parameter List Error, Parameter Not Supported
	26	02	Parameter List Error, Parameter Value Invalid
	26	03	Threshold Parameters Not Supported
	26	04	Invalid Release of Persistent Reservation
	2C	0F	Command Sequence Error Echo Buffer Overwrite
	39	00	Saving Parameters Not Supported
	3B	0D	Media Destination Element Full
	3B	0E	Media Source Element Empty
	3B	11	Magazine Not Accessible
	3B	12	Magazine Removed
	43	00	Message Error
	53	02	Media Removal Prevented
	55	04	Insufficient Registration Resources
06h UNIT ATTENTION	28	00	Not Ready To Ready Transition
	28	01	Import/Export Element Accessed
	29	00	Reset Occurred
	29	01	Power On Occurred
	29	02	SCSI BUS Reset Occurred
	29	03	BUS Device Reset Function Occurred
	29	04	Device Internal Reset
	29	05	Transceiver Mode Changed to Single-Ended
	29	06	Transceiver Mode Changed to LVD
	2A	01	Mode Parameters Changed
	2A	02	Log Parameters Changed
	2A	03	Reservations Preempted
	2A	04	Reservations Released
	2A	05	Registrations Preempted
	3B	12	Magazine Removed
	3B	13	Magazine Inserted
	3F	01	Microcode has been Changed
	3F	05	Device Identifier Changed
09h VENDOR UNIQUE	*Major FW Revision*	*Minor FW Revision*	***The ASC will contain the Major FW revision, the ASCQ will contain the Minor FW revision. A non-zero Minor revision indicates a T-code (i.e. For T8-3, the Minor revision would contain a value of 03h). The additional field past the ASCQ indicates personality. For Quantum OEM code this will contain 00h. For Dell code, this will contain 17h***
0Bh COMMAND ABORTED	08	00	Command Aborted - LUN Communication Failure
	08	01	Command Aborted - LUN Communication Time-out
	3F	00	Operating Conditions have Changed
	3F	0F	Echo Buffer Overwritten
	3F	86	Invalid Offset
	3F	87	Invalit Size
	43	00	Message Error

	44	80	Unexpected Selection Interrupt
	44	82	Command Complete Sequence Failure
	44	83	SCSI Chip, Gross Error/ Illegal – Command Status
	44	84	Unexpected/Unexplained Residue Count in Transfer Register
	44	87	Disconnect/ SDP Sequence Failed
	45	00	Select/Reselect Failure
	47	00	SCSI Parity Error (check SCSI bus configuration and connections)
	48	00	IDE Message Error
	49	00	Invalid Message Error
	4A	00	Command Phase Error
	4B	00	Data Phase Error
	4E	00	Overlapped Commands Attempted

ID Queue

SCSI ID can be determined in either the Log Header (beginning of the log) or the Device Summary (end of the log). The ID Queue is not currently used and will always appear as shown in the following example.

Example ID Queue:

```
**** Id Queue ****
Block 0, 000/001 entries @  68 bytes each, wrap @ 000, erase @ 001
```

Tape Alert Queue

In order to display any combination of TapeAlerts that may be set for any one event, a binary representation is used. The 16 character hexadecimal TapeAlert representation is broken down into a total of 64 bits (16 x 4 = 64), one for each possible TapeAlert that may be reported. The illustration below demonstrates TapeAlert bit assignment, as well as practical examples. In the first example, the tape drive requested cleaning. In the second example, cleaning was attempted with an invalid cleaning cartridge.

```
TapeAlert Representation:     0000000000000000 hexadecimal
                              /\
                             /  \
    1st hexadecimal digit = 0000 binary (1's and 0's)


TapeAlert[1], 1st bit set = 1000 binary = 8 hexadecimal
TapeAlert[2], 2nd bit set = 0100 binary = 4 hexadecimal
TapeAlert[3], 3rd bit set = 0010 binary = 2 hexadecimal
TapeAlert[4], 4th bit set = 0001 binary = 1 hexadecimal
    :
    :

Examples:

1) 0000100000000000   TapeAlert[20] Clean now

2) 0020020000002000   TapeAlert[11] Cleaning media
                    + TapeAlert[23] Invalid cleaning tape
                    + TapeAlert[51] Tape directory invalid at unload
```

Example Tape Alert Queue:

```
**** Tape Alerts Queue ****
Block 0, 000/017 entries @  26 bytes each, wrap @ 000, erase @ 001
```

The following table is an edited excerpt from SCSI Stream Commands – 3 (SSC-3) Revision 1e, available at www.t10.org. There are multiple drive configurations supported by SuperLoader3. Since each drive may support a unique combination of TapeAlerts, ALL possible drive TapeAlerts are shown in the following table.

Table 6 – Tape Alert Queue: Drive TapeAlerts

TapeAlert Message / TapeAlert Log Entry:	Show On	Typical Application Client Message	Probable Cause Of Error Message	Recommended Action	Clear Error
Drive TAflag[01] Read Warning TapeAlert Log Entry: 8000000000000000	RMU	The tape drive is having problems reading data. No data has been lost, but there has been a reduction in the performance of the tape.	The drive is having severe trouble reading. This can be caused by bad media or the drive.	• Clean the drive. • Try another piece of media. • If no errors are encountered with the alternate piece of media, retry the original media.	Cleared on next load of media.
Drive TAflag[02] Write Warning TapeAlert Log Entry: 4000000000000000	RMU	The tape drive is having problems writing data. No data has been lost, but there has been a reduction in the capacity of the tape.	The drive is having severe trouble writing. This can be caused by bad media or the drive.	• Clean the drive. • Try another piece of media. • If no errors are encountered with the alternate piece of media, retry the original media.	Cleared on next load of media.
Drive TAflag[03] Hard Error TapeAlert Log Entry: 2000000000000000	RMU	The operation has stopped because an error has occurred while reading or writing data that the drive cannot correct.	The drive had a hard read or write error. This can be caused by bad media or the drive.	• Clean the drive. • Try another piece of media. • If no errors are encountered with the alternate piece of media, retry the original media.	Cleared on next load of media.
Drive TAflag[04] Media TapeAlert Log Entry: 1000000000000000	OCP RMU	Your data is at risk. Copy any data you require from this tape. Do not use this tape again.	Media can no longer be written/read, or performance is severely degraded.	• Clean the drive. • Try another piece of media. • If no errors are encountered with the alternate piece of media, retry the original media.	Cleared on next load of media.
Drive TAflag[05] Read Failure TapeAlert Log Entry: 0800000000000000	OCP RMU	The tape is damaged or the drive is faulty.	The drive can no longer read data from the tape.	• Clean the drive. • Try another piece of media. • If no errors are encountered with the alternate piece of media, retry the original media.	Cleared on next load of media.
Drive TAflag[06] Write Failure TapeAlert Log Entry: 0400000000000000	OCP RMU	The tape is from a faulty batch or the tape drive is faulty.	The drive can no longer write data to the tape.	• Clean the drive. • Try another piece of media. • If no errors are encountered with the alternate piece of media, retry the original media.	Cleared on next load of media.
Drive TAflag[07] Media Life TapeAlert Log Entry: 0200000000000000	RMU	The tape cartridge has reached the end of its calculated useful life.	The media has exceeded its specified life.	Copy any data you need to another tape. Discard the old tape.	Cleared on next load of media.

TapeAlert Message / TapeAlert Log Entry:	Show On	Typical Application Client Message	Probable Cause Of Error Message	Recommended Action	Clear Error
Drive TAflag[08] Not Data Grade TapeAlert Log Entry: 0100000000000000	RMU	The cartridge is not data-grade. Any data you write to the tape is at risk.	The drive has not been able to read the MRSa stripes.	Replace the cartridge with a data-grade tape.	Cleared on next load of media.
Drive TAflag[09] Write Protect TapeAlert Log Entry: 0080000000000000	OCP RMU	You are trying to write to a write protected cartridge.	Write command is attempted to a write protected tape.	Remove the write protection or use another tape.	Cleared on next load of media.
Drive TAflag[10] No Removal TapeAlert Log Entry: 0040000000000000	OCP RMU	You cannot eject the cartridge because the tape drive is in use. Wait until the operation is complete before ejecting the cartridge.	Manual or software unload attempted when prevent media removal is on.	• Check in the RMU if the Software Lock is set. • Perform an unlock using the Backup Application.	Cleared when the condition is cleared.
Drive TAflag[11] Cleaning Media TapeAlert Log Entry: 0020000000000000	RMU	The tape in the drive is a cleaning cartridge.	Cleaning tape loaded into drive.		Cleared on next load of media.
Drive TAflag[12] Unsupported Format TapeAlert Log Entry: 0010000000000000	OCP RMU	You have attempted to load a cartridge of a type that is not supported by this drive.	Attempted load of unsupported tape format. (e.g., Unformatted Type IV media in a VS160 drive.)	Use tape format correct for the drive type.	Cleared on Next Load of media
Drive TAflag[13] Recoverable Mechanical Cartridge Failure TapeAlert Log Entry: 0008000000000000	RMU	The operation has failed because the tape in the drive has experienced a mechanical failure.	Tape snapped/cut or other cartridge mechanical failure in the drive where medium can be de-mounted.	Discard the old tape. Restart the operation with a different tape.	Cleared on next load of media.
Drive TAflag[14] Unrecoverable Mechanical Cartridge Failure TapeAlert Log Entry: 0004000000000000	OCP RMU	The operation has failed because the tape in the drive has experienced a mechanical failure.	Tape snapped/cut or other cartridge mechanical failure in the drive where medium cannot be de-mounted.	Discard the old tape. Restart the operation with a different tape.	Cleared when the condition is cleared.
Drive TAflag[15] Memory Chip In Cartridge Failure TapeAlert Log Entry: 0002000000000000	OCP RMU	The memory in the tape cartridge has failed, which reduces performance. Do not use the cartridge for further write operations.	Memory chip failed in cartridge	Replace cartridge.	Cleared on next load of media.

TapeAlert Message / TapeAlert Log Entry:	Show On	Typical Application Client Message	Probable Cause Of Error Message	Recommended Action	Clear Error
Drive TAflag[16] Forced Eject TapeAlert Log Entry: 0001000000000000	OCP RMU	The operation has failed because the tape cartridge was manually de-mounted while the tape drive was actively writing or reading.	Manual forced eject while drive actively writing or reading.	Retry operation using the same media.	Cleared on next load of media.
Drive TAflag[17] Read Only Format TapeAlert Log Entry: 0000800000000000	OCP RMU	You have loaded a cartridge of a type that is read-only in this drive. The cartridge will appear as write protected.	Media loaded that is read-only format	Check write protect tab on cartridge.	Cleared on next load of media.
Drive TAflag[18] Tape Directory Corrupted On Load TapeAlert Log Entry: 0000400000000000	OCP RMU	The tape directory on the tape cartridge has been corrupted. File search performance will be degraded. The tape directory can be rebuilt by reading all the data on the cartridge.	The tape drive powered down with tape loaded, or permanent error prevented the tape directory from being updated.	• Retry operation with same tape. • If error persist, discard tape.	Cleared on Next Load of media.
Drive TAflag[19] Nearing Media Life TapeAlert Log Entry: 0000200000000000	RMU	The tape cartridge is nearing the end of its calculated Media may have life.	Media may have exceeded its specified number of passes.	• Use another tape cartridge for your next backup. • Store this tape cartridge in a safe place in case you need to restore data from it.	Cleared on next load of media.
Drive TAflag[20] Clean Now TapeAlert Log Entry: 0000100000000000	RMU	The tape drive needs cleaning.	The drive has responded as if it has a head clog or needs cleaning.	• If the operation has stopped, eject the tape and clean the drive. • If the operation has not stopped, wait for it to finish and then clean the drive. Check the tape drive user's manual for device specific cleaning instructions.	Clear On Cleaning.
Drive TAflag[21] Clean Periodic TapeAlert Log Entry: 0000080000000000	RMU	The tape drive is due for routine cleaning.	The drive is ready for a periodic cleaning.	• Wait for the current operation to finish. • Then use a cleaning cartridge. Check the tape drive user's manual for device specific cleaning instructions.	Clear on Cleaning.

TapeAlert Message / TapeAlert Log Entry:	Show On	Typical Application Client Message	Probable Cause Of Error Message	Recommended Action	Clear Error
Drive TAflag[22] Expired Cleaning Media TapeAlert Log Entry: 0000040000000000	OCP RMU	The last cleaning cartridge used in the tape drive has worn out.	The cleaning tape has expired.	• Discard the worn out cleaning cartridge. • Wait for the current operation to finish. • Then use a new cleaning cartridge.	Cleared on next load of media.
Drive TAflag[23] Invalid Cleaning Tape TapeAlert Log Entry: 0000020000000000	OCP RMU	The last cleaning cartridge used in the tape drive was an invalid type.	Invalid cleaning tape type used.	• Do not use this cleaning cartridge in this drive. • Wait for the current operation to finish. • Then use a valid cleaning cartridge.	Cleared on next load of media.
Drive TAflag[24] Retension Requested TapeAlert Log Entry: 0000010000000000	OCP RMU	The tape drive has requested a retension operation.	The drive is having severe trouble reading or writing, that will be resolved by a retension cycle.	• Perform a retension operation. • Retry operation.	Clear when the condition is cleared.
Drive TAflag[25] Dual port Interface Error TapeAlert Log Entry: 0000008000000000	OCP RMU	A redundant interface port on the tape drive has failed.	Failure of one interface port in a dual-port configuration (i.e., Fibre Channel)		Clear when the condition is cleared.
Drive TAflag[26] Cooling Fan Failure TapeAlert Log Entry: 0000004000000000	OCP RMU	A tape drive cooling fan has failed.	Fan failure inside tape drive mechanism or tape drive enclosure.		Clear when the condition is cleared.
Drive TAflag[27] Power Supply Failure TapeAlert Log Entry: 0000002000000000	OCP RMU	A redundant power supply has failed inside the tape drive enclosure.	Redundant PSU failure inside the tape drive enclosure or rack subsystem.	Check the enclosure user's manual for instructions on replacing the failed power supply.	Clear when the condition is cleared.
Drive TAflag[28] Power Consumption TapeAlert Log Entry: 0000001000000000	OCP RMU	The tape drive power consumption is outside the specified range.	Power consumption of the tape drive is outside specified range.		Clear when the condition is cleared.
Drive TAflag[29] Drive Maintenance TapeAlert Log Entry: 0000000800000000	OCP RMU	Preventive maintenance of the tape drive is required.	The drive requires preventative maintenance (not cleaning).	Check the tape drive user's manual for device specific preventive maintenance tasks.	Clear when the condition is cleared.
Drive TAflag[30] Hardware A TapeAlert Log Entry: 0000000400000000	OCP RMU	The tape drive has a hardware fault.	The drive has a hardware fault that requires reset to recover.	• Eject the tape • Reset the drive. • Restart the operation.	Clear when the condition is cleared.
Drive TAflag[31] Hardware B TapeAlert Log Entry: 0000000200000000	OCP RMU	The tape drive has a hardware fault. .	The drive has a hardware fault that is not read/write related or requires a power cycle to recover.	• Power cycle the tape drive. • Restart the operation.	Clear when the condition is cleared.

TapeAlert Message / TapeAlert Log Entry:	Show On	Typical Application Client Message	Probable Cause Of Error Message	Recommended Action	Clear Error
Drive TAflag[32] Interface TapeAlert Log Entry: 0000000100000000	OCP RMU	The tape drive has a problem with the application client interface.	The drive has identified an interface fault.	• Check the SCSI interface cables, terminator, and all connections. • Restart the operation	Clear when the condition is cleared.
Drive TAflag[33] Eject Media TapeAlert Log Entry: 0000000080000000	RMU	The operation has failed.	Error recovery action.	• Eject the tape or magazine. • Insert the tape or magazine again. • Restart the operation.	Cleared on next load of media.
Drive TAflag[34] Download Fail TapeAlert Log Entry: 0000000040000000	OCP RMU	The firmware download has failed because you have tried to use the incorrect firmware for this tape drive.	Firmware download failed.	Obtain the correct firmware and try again.	Clear when the condition is cleared.
Drive TAflag[35] Drive Humidity TapeAlert Log Entry: 0000000020000000	OCP RMU	Environmental conditions inside the tape drive are outside the specified humidity range.	Drive humidity limits exceeded.		Clear when the condition is cleared.
Drive TAflag[36] Drive Temperature TapeAlert Log Entry: 0000000010000000	OCP RMU	Environmental conditions inside the tape drive are outside the specified temperature range.	Cooling problem.		Clear when the condition is cleared.
Drive TAflag[37] Drive Voltage TapeAlert Log Entry: 0000000008000000	OCP RMU	The voltage supply to the tape drive is outside the specified range.	Drive voltage limits exceeded.		Clear when the condition is cleared.
Drive TAflag[38] Predictive Failure TapeAlert Log Entry: 0000000004000000	OCP RMU	A hardware failure of the tape drive is predicted.	Predictive failure of drive hardware.		Clear when the condition is cleared.
Drive TAflag[39] Diagnostics Required TapeAlert Log Entry: 0000000002000000	OCP RMU	The tape drive may have a hardware fault.	The drive may have a hardware fault that may be identified by extended diagnostics (i.e., SEND DIAGNOSTIC command).	• Run extended diagnostics to verify and diagnose the problem. • Check the tape drive users manual for device specific instructions on running extended diagnostic tests.	Clear when the condition is cleared.
Drive TAflag[50] Lost Statistics TapeAlert Log Entry: 0000000000004000	RMU	Media statistics have been lost at some time in the past.	Drive or library powered on with tape loaded.	• Clean drive • Retry operation	Cleared on next load of media.

TapeAlert Message / TapeAlert Log Entry:	Show On	Typical Application Client Message	Probable Cause Of Error Message	Recommended Action	Clear Error
Drive TAflag[51] Tape Directory Invalid at Unload TapeAlert Log Entry: 0000000000002000	OCP RMU	The tape directory on the tape cartridge just unloaded has been corrupted. File search performance will be degraded.	Error preventing the tape directory being updated on unload.	The tape directory can be rebuilt by reading all the data.	Cleared on next load of media.
Drive TAflag[52] Tape System Area Write Failure TapeAlert Log Entry: 0000000000001000	RMU	The tape just unloaded could not write its system area successfully.	Write errors while writing the system area on unload.	• Copy data to another tape cartridge. • Discard the old cartridge.	Cleared on next load of media.
Drive TAflag[53] Tape System Area Read Failure TapeAlert Log Entry: 0000000000000800	RMU	The tape system area could not be read successfully at load time.	Read errors while reading the system area on load.	Copy data to another tape cartridge.	Cleared on next load of media.
Drive TAflag[54] No Start Of Data TapeAlert Log Entry: 0000000000000400	RMU	The start of data could not be found on the tape.	Tape damaged, bulk erased, or incorrect format.	• Check that you are using the correct format tape. • Discard the tape or return the tape to your supplier.	Cleared on next load of media.
Drive TAflag[55] Loading Failure TapeAlert Log Entry: 0000000000000200	OCP RMU	The operation has failed because the media cannot be loaded and threaded.	The drive is unable to load the media and thread the tape.	Remove the cartridge, inspect it as specified in the product manual, and retry the operation.	Cleared on next load of media.
Drive TAflag[56] Unrecoverable Unload Failure TapeAlert Log Entry: 0000000000000100	OCP RMU	The operation has failed because the medium cannot be unloaded.	The drive is unable to unload the medium.	Remove the cartridge if possible, inspect it as specified in the product manual, and retry the operation.	Clear when the condition is cleared.
Drive TAflag[57] Automation Interface Failure TapeAlert Log Entry: 0000000000000080	OCP RMU	The tape drive has a problem with the automation interface.	The drive has identified an interface fault.	• Check the power to the automation system. • Check the cables and cable connections.	Clear when the condition is cleared.
Drive TAflag[58] Firmware Failure TapeAlert Log Entry: 0000000000000040	OCP RMU	The tape drive has reset itself due to a detected firmware fault.	Firmware issue encountered.		Clear when the condition is cleared.
Drive TAflag[59] WORM Medium - Integrity Check Failed TapeAlert Log Entry: 0000000000000020	OCP RMU	The tape drive has detected an inconsistency during the WORM medium integrity checks.	WORM cartridge may have been tampered with.	Replace WORM medium.	Cleared on next load of media.

TapeAlert Message / TapeAlert Log Entry:	Show On	Typical Application Client Message	Probable Cause Of Error Message	Recommended Action	Clear Error
Drive TAflag[60] WORM Medium - Overwrite Attempted TapeAlert Log Entry: 0000000000000010	OCP RMU	An attempt had been made to overwrite user data on WORM medium.	The application software does not recognize the medium as WORM.	• If a WORM medium was used inadvertently, replace it with a normal data medium. • If a WORM medium was used intentionally: - check that the software application is compatible with the WORM medium format you are using. - check that the medium is bar-coded correctly for WORM.	Cleared on next load of media.

Ring Buffer

Ring Buffer Entry Types

Table 7 – Ring Buffer: Entry Types

Task Type	Ring Buffer Entry	Meaning
Misc Entries (No 'TASK' Category)	ADT_PORT: evnt/xor/hdle	Drive communications
	Error log 1 wrap	
	errReadEEROMInfo:	Status or error from function *errReadEEROMInfo*
	SYS Wrt MDM addr/len	Write to EEROM data area: address/length
Drive Manager Task	DRVMGR send ld/unld:	Drive Manager msg
	DRVMGR_ADI:	Drive Manager msg
	DRVMGR_MAN:	Drive Manager msg
	DRVMGR_UTL:	Drive Manager msg
Loader Task	LDR MGR event/cln/seq/cup	Loader Manager – see prior email
	LDR MGR exit state	Loader Manager
	LDR_RESP:	Loader Manager response
Magazine Task	MAG entry:	Magazine task entry
	MAG reply:	Magazine task reply
	MAG Set Position:	Magazine set position to slot
	MAG SetPos(op retry):	Lower level set position entry
Motor Task	--> MTR start movement:	Motor task begin move
	Mtr CTL:	Low level motor stepping task
	Mtr OP:	Upper level motor operation request
Picker Task	<-- PKR pick entry:	Upper level 'get" function entry
	<== PKR get entry:	Lower level "get" function entry
	<=> PKR swap:	PKR swap indicates the completion of a SCSI sub-move. The inventory table is being updated to indicate that a cartridge has moved from one location to another. For example, a cartridge move from 0x100 to 0x20 (from slot 100 to the drive) would actually be made up of sub-moves from 0x100 to 0x00 (from slot 100 to the picker) and then from 0x00 to 0x20 (from the picker to the drive).
	==> PKR put entry:	Lower level "put" function entry
	--> PKR chk mtr err:	Just reporting that it is checking for errors – not necessarily reporting an error
	->> >>+ PKR Move Element:	Top level entry point for move
	-->PKR insert entry:	Upper level "put" function entry
	PKR mag motor actuate:	
	PKR MAG:	
	PKR Move:	
	PKR MoveSeq:	Picker Move Sequence
	PKR SetPos(op retry):	
	PKR Transform Position to Step:	
	PKR upd cart pres:	Picker update cartridge present
	PKR upd cart pres:	

	PKR upd pkr/drv cart pres:	
	PKR wait drvld cmplt:	Picker wait for drive load complete
	PKR: CAL Rotation	
SCSI Task	SS: ADI THR Alloc	Thread allocation
	SS: ADT sense size 0 resp _code/status/senKey/ascq	
	SS: CIB	Scsi command block, see Table 10
	SS: DI bytes	Scsi data in bytes
	SS: DI done	
	SS: MV src/dest	Move comand
	SS: RES type/start/#	Scsi read element status
	SS: SCSI Server Release	
	SS: status	

Motor Operations

Note that motor Operation Code 21 from Table 8 is most commonly seen in the Ring Buffer.

Table 8 – Ring Buffer: Motor Numbers

Value	Motor
0	Left Magazine
1	Right Magazine
2	Picker Translation
3	Picker Rotation
4	Picker Elevation

Table 9 – Ring Buffer: Loader Port Commands

Operation Code	Motor	Parameter
0 Initialize	0 left magazine 1 right magazine 2 picker translation 3 picker rotation	0
1 Set Home	0 left magazine 1 right magazine 2 picker translation 3 picker rotation	0
2 Reverse	0 left magazine 1 right magazine 2 picker translation 3 picker rotation	0
3 Release	0 left magazine 1 right magazine 2 picker translation 3 picker rotation	0

0x10 Set Delay	0 left magazine 1 right magazine 2 picker translation 3 picker rotation	0 normal 2 mixed 8 fast 0xA slow
0x11 Set Step Size	0 left magazine 1 right magazine 2 picker translation 3 picker rotation	4 full 8 1/2 0x10 1/4 0x20 1/8
0x12 Set Direction (a)	0 left magazine 1 right magazine 2 picker translation 3 picker rotation	0xFFFF reverse 0 stopped 1 forward
0x13 Set Minimum Speed	0 left magazine 1 right magazine 2 picker translation 3 picker rotation	Millirevolutions/second
0x14 Set Nominal Speed	0 left magazine 1 right magazine 2 picker translation 3 picker rotation	Millirevolutions/second
0x15 Set Maximu Speed	0 left magazine 1 right magazine 2 picker translation 3 picker rotation	Millirevolutions/second
0x16 Set Maximum Acceleration	0 left magazine 1 right magazine 2 picker translation 3 picker rotation	Millirevolutions/second
0x17 Set Acceleration Time	0 left magazine 1 right magazine 2 picker translation 3 picker rotation	Millirevolutions/second to accelerate/decelerate
0x18 Set Run Current	0 left magazine 1 right magazine 2 picker translation 3 picker rotation	0-7, where: 0 0% 4 70% 5 83% 6 92% 7 100%
0x19 Set Hold Current	0 left magazine 1 right magazine 2 picker translation 3 picker rotation	0-7, where: 0 0% 4 70% 5 83% 6 92% 7 100%
0x1A Set Acceleration Type	0 left magazine 1 right magazine 2 picker translation 3 picker rotation	0 constant speed (no acceleration) 1 constant linear acceleration/deceleration 2 constant jerk 3 constant step (linear with distance)
0x1B Set Magazine Positioning	0 left magazine 1 right magazine	0 shortest distance 0x11 logical forward only 0x12 logical backward only 0x13 physical forward only 0x14 physical backward only

0x1C	Step Motor	0 left magazine 1 right magazine 2 picker translation 3 picker rotation	Number of steps: >0 forward steps <0 backward steps
0x21	Set Position	0 left magazine 1 right magazine	Slot number 0-7 (all positions use feedback)
0x21	Set Position (Continued)	2 picker translation	0 home 1 drive reseat 2 drive get (a) 3 drive put (b) 4 drive pin remove 5 drive push start 6 drive push end 7 magazine reseat 8 magazine get (b) 9 magazine put (b) 10 magazine pin remove 11 magazine push start 12 magazine push end 13 mail slot reseat (b) 14 mail slot get (b) 15 mail slot put (b) 16 mail slot pin remove 17 mail slot push start 18 mail slot push end 19 mail slot get initial 20 mail slot get final 21 magazine get initial 22 magazine put final (b) 23 drive put error 24 reseat full 25 drive load full 26 put home
0x21	Set Position (Continued)	3 picker rotation	0 left magazine push 1 left magazine home (b) 2 left magazine pick (b) 3 drive push 4 drive home (b) 5 drive pick (b) 6 right magazine push 7 right magazine home (b) 8 right magazine pick (b) 9 mail slot push 10 mail slot home (b) 11 mail slot pick (b) 12 mail slot pick initial 13 mail slot pick at notch (b) 14 drive final push

a This command is obsolete. Instead, use negative step counts on 0x20 (Step Motor)
b Position uses feedback.

KF> mo [op] [motor] [parameter]

Table 10 – Ring Buffer: Example

Ring Buffer Log Entry	Analysis
0348: POH: 00006:01:07.735 PKR entry: rcvd msgid = a6(MoveElem), sndr = 10, s	Picker receives message from IP task (Telnet session)
0349: POH: 00006:01:07.735 ->> >>+ PKR Move Element: src = 100, dest = 103	Message is to move an element from source 100 to destination 103
0350: POH: 00006:01:07.738 PKR Move: elem = 100	Do the get first from element 100
0351: POH: 00006:01:07.742 Mtr OP: task = 2, op = 21, motor = 3, param = 1	Motor Operation: Operation 21 Set Position Motor 3 Picker Rotation Parameter 1 Left Magazine Home
0352: POH: 00006:01:07.742 Mtr CTL: move motor = 3, steps = -1396 0353: POH: 00006:01:07.742 MAG entry: rcvd msgid = a6, sndr = 2, magazine = 0	Magazine receives message from picker task for left magazine
0354: POH: 00006:01:07.743 MAG Set Position: mag = 0, position = 0	Move left magazine slot 0 to current position (load/unload)
0355: POH: 00006:01:07.743 Mtr OP: task = 3, op = 21, motor = 0, param = 0	Motor Operation: Operation 21 Set Position Motor 0 Left Magazine Parameter 0 Left Slot 0
0356: POH: 00006:01:07.743 MAG reply: msg = a6, receiver = 2, status = 0	Magazine replies with successful status
0357: POH: 00006:01:08.551 <== PKR get entry: src = 8 0358: POH: 00006:01:08.551 <-- PKR pick entry: src = 8 0359: POH: 00006:01:08.591 Mtr OP: task = 2, op = 21, motor = 3, param = 2 0360: POH: 00006:01:08.591 Mtr CTL: move motor = 3, steps = 60	Motor Operation: Operation 21 Set Position Motor 3 Picker Rotation Parameter 2 Left Magazine Picker Position
0361: POH: 00006:01:08.837 Mtr OP: task = 2, op = 21, motor = 2, param = 8 0362: POH: 00006:01:08.837 Mtr CTL: move motor = 2, steps = 2550	Motor Operation: Operation 21 Set Position Motor 2 Picker Translation Parameter 8 Magazine Get
0363: POH: 00006:01:10.440 Mtr OP: task = 2, op = 21, motor = 3, param = 1 0364: POH: 00006:01:10.440 Mtr CTL: move motor = 3, steps = -68	Motor Operation: Operation 21 Set Position Motor 3 Picker Rotation Parameter 1 Left Magazine Home
0365: POH: 00006:01:10.683 Mtr OP: task = 2, op = 21, motor = 2, param = 21 0366: POH: 00006:01:10.683 Mtr CTL: move motor = 2, steps = -281	Motor Operation: Operation 21 Set Position Motor 2 Picker Translation Parameter 21 Magazine Get Initial
0367: POH: 00006:01:12.339 Mtr OP: task = 2, op = 21, motor = 2, param = 0 0368: POH: 00006:01:12.339 Mtr CTL: move motor = 2, steps = -5808	Motor Operation: Operation 21 Set Position Motor 2 Picker Translation Parameter 0 Home
0369: POH: 00006:01:15.524 PKR upd mag cart: mag = 0, slot = 0, cart_pres = 0	Have successfully done a get, now update left magazine Slot cart_pres is false

0370: POH: 00006:01:15.524 PKR upd mag cart: mag = 0, slot = 0, cart_pres = 0 0371: POH: 00006:01:15.524 <=> PKR swap: src= 100, stat= 6 => dest= 0, stat=2	Cartridge has moved from slot 100 to the picker successfully
0372: POH: 00006:01:15.527 PKR Move: elem = 103	Now do the put to element 103
0373: POH: 00006:01:15.531 Mtr OP: task = 2, op = 21, motor = 3, param = 1	Motor Operation: Operation 21 Set Position Motor 3 Picker Rotation Parameter 1 Left Magazine Home
0374: POH: 00006:01:15.531 MAG entry: rcvd msgid = a6, sndr = 2, magazine = 0 0375: POH: 00006:01:15.531 MAG Set Position: mag = 0, position = 3	Move left magazine slot 3 to current position(load/unload)
0376: POH: 00006:01:15.531 Mtr OP: task = 3, op = 21, motor = 0, param = 3 0377: POH: 00006:01:15.531 Mtr CTL: move motor = 0, steps = 4800	Motor Operation: Operation 21 Set Position Motor 0 Left Magazine Parameter 3 Slot 3
0378: POH: 00006:01:18.918 MAG reply: msg = a6, receiver = 2, status = 0	Magazine replies with successful status
0379: POH: 00006:01:18.918 ==> PKR put entry: dest = 8 0380: POH: 00006:01:18.918 --> PKR insert entry: dest = 8 0381: POH: 00006:01:18.958 Mtr OP: task = 2, op = 21, motor = 3, param = 1	Motor Operation: Operation 21 Set Position Motor 3 Picker Rotation Parameter 1 Left Magazine Home
0382: POH: 00006:01:18.998 Mtr OP: task = 2, op = 21, motor = 2, param = 9 0383: POH: 00006:01:18.998 Mtr CTL: move motor = 2, steps = 6092	Motor Operation: Operation 21 Set Position Motor 2 Picker Translation Parameter 9 Magazine Put
0384: POH: 00006:01:22.334 Mtr OP: task = 2, op = 21, motor = 2, param = 22 0385: POH: 00006:01:22.334 Mtr CTL: move motor = 2, steps = 180	Motor Operation: Operation 21 Set Position Motor 2 Picker Translation Parameter 22 Magazine Put Final
0386: POH: 00006:01:23.445 Mtr OP: task = 2, op = 20, motor = 2, param = -26 0387: POH: 00006:01:23.445 Mtr CTL: move motor = 2, steps = -26	Motor Operation: Operation 21 Set Position Motor 2 Picker Translation Parameter -26
0388: POH: 00006:01:23.723 Mtr OP: task = 2, op = 21, motor = 3, param = 2	Motor Operation: Operation 21 Set Position Motor 3 Picker Rotation Parameter 2 Left Magazine Pick

Command Information Block

Table 11 – Ring Buffer: CIB Command Information Block

Op Code	Command
6 byte cmds	
0x00	Test Unit Ready
0x03	Request Sense
0x07	Initialize Element Status
0x12	Inquiry
0x15	Mode Select
0x16	Reserve
0x17	Release
0x1A	Mode Sense
0x1B	Load/Unload
0x1D	Send Diagnostic Data
0x1E	Media Removal Control
10 byte cmds	
0x2B	Position To Element
0x3B	Write Buffer
0x3C	Read Buffer
0x44	Report Density
0x4C	Log Select
0x4D	Log Sense
0x55	Mode Select (10 byte)
0x56	Reserve (10 byte)
0x57	Release (10 byte)
0x5A	Mode Sense (10 byte)
0x5E	Persistent Reserve In
0x5F	Persistent Reserve Out
0x8c	Read Attributes
12 byte cmds	
0xA0	Report Luns
0xA3	Report Device Identifier
0xA4	Set Device Identifier
0xA5	Move Medium
0xA6	Exchange Medium
0xB5	Request Volume Elm Addr
0xB6	Send Volume Tag
0xB8	Read Element Status
0xC0	Force (unconditional) Eject

VHF Data

ADI (Automation Drive Interface) is the communication path between the loader and drive. VHF (Very High Frequency) data contains drive status information passed across the ADI interface.

Example VHF entries:

```
1575: POH: 00000:10:31.632 DRVMGR_ADI: drv[0] vhf data 11/90/2/0
1576: POH: 00000:10:34.079 DRVMGR_ADI: drv[0] vhf data 11/94/0/0
1577: POH: 00000:10:38.579 DRVMGR_ADI: drv[0] vhf data 11/94/2/1
```

The following VHF information is an excerpt from Automation/Drive Interface Commands – 2 (ADC-2) available at www.t10.org. Tables 12 and 13 have been modified from the original document to make bit decoding easier by adding the appropriate "Reserved" columns. Also note you will see the ADC spec refer to the drive as a DT (Data Transfer) device.

Table 12 – Ring Buffer: VHF DATA DESCRIPTOR field

Byte \ Bit	7	6	5	4	3	2	1	0
0	PAMR	HIU	MACC	CMPR	WRTP	CRQST	CRQRD	DINIT
1	INXTN	Rsvd	RAA	MPRSNT	Rsvd	MSTD	MTHRD	MOUNTED
2	DT DEVICE ACTIVITY (See Table 12, then Table 13 or Table 14 if applicable)							
3	VS	Reserved				RRQST	INTFC	TAFC

VHF data descriptor field, byte 0 definitions (see Table 11):

DINIT: A DT device initialized (DINIT) bit set to one indicates that the DT device is able to return valid very high frequency data. A DINIT bit set to zero indicates DT device initialization is required or incomplete. The DINIT bit should be set to one before relying on any other bits in the very high frequency data log parameter.

CRQRD: A clean required (CRQRD) bit set to one indicates that a head cleaning operation is required before a data medium is able to reach load state, and that normal operation may not be possible if the head cleaning operation is not performed. A CRQRD bit set to zero indicates that urgent cleaning is not required. The CRQRD bit shall take priority over the CRQST bit. It shall not be considered an error for the CRQRD bit and the CRQST bit to both be set to one.

CRQST: A clean requested (CRQST) bit se to one indicates that the DT device has requested a head cleaning. A CRQST bit set to zero indicates that no cleaning is requested.

WRTP: A write protect (WRTP) bit set to one indicates that any currently present medium is physically write protected. A WRTP bit set to zero indicates that any currently present medium is not physically write protected. The WRTP bit is only valid if the MPRSNT bit is set to one. The WRTP bit should be set to zero if the MPRSNT bit is set to zero.

Physically write protected refers to any mechanism within the medium shell itself to write protect the medium (e.g., sliding windows or tabs) and not logical states of write protection caused by commands to the DT device.

CMPR: A compress (CMPR) bit set to one indicates that the DT device currently has data compression enabled. A CMPR bit set to zero indicates that compression is not enabled.

MACC: A medium auxiliary memory accessible (MACC) bit set to one indicates that the medium is located at a position where the Medium Auxiliary Memory (MAM) is accessible. A MACC bit set to zero indicates that the MAM is not accessible. If the MACC bit is set to one, the ADC device server shall also support commands to access the MAM. If the MACC bit is supported the MACC bit should only be set to one if the MPRSNT bit is set to one. The MACC bit is only applicable for drives and media that support MAM.

HIU: The host initiated unload (HIU) bit shall be set to one when the drive reaches any one of the unload states (e) – (h) due to the RMC device server receiving a LOAD UNLOAD command (see SSC-2) with the LOAD bit set to zero. The HIU bit shall be set to zero when the drive transitions to any state other than unload states (e) – (h). The HIU bit may be set to zero following a logical unit reset of the RMC or ADC device servers.

The HIU bit may facilitate sequential mode operation.

PAMR: The prevent/allow medium removal (PARM) bit shall be set to one when removal of the medium in the DT device is prevented as the result of the RMC device server processing a PREVENT/ALLOW MEDIUM REMOVAL command (see SPC-3 or the relevant command set standard). The PARM bit shall be set to zero when removal of the medium in the DT device is allowed as defined by the PREVENT/ALLOW MEDIUM REMOVAL command.

VHF data descriptor field, byte 1 definitions (see Table 11):

MOUNTED: A MOUNTED bit set to one indicates that the DT device is in load state (i). The MOUNTED bit set to one may correspond to the RMC device server being able to respond to a TEST UNIT READY command with a status of GOOD, however when a cleaning or microcode image medium is loaded the RMC device server may respond to a TEST UNIT READY command with a CHECK CONDITION with the sense key set to NOT READY. A MOUNTED bit set to zero indicates that the DT device is not in a load state (i).

MTHRD: A medium threaded (MTHRD) bit set to one indicates that the medium has been threaded by the DT device, such that tape motion operations are possible. A MTHRD bit set to zero indicates that the medium has not been threaded.

The value of the MTHRD bit may or may not correspond to the DT device responding with a status of GOOD to a TEST UNIT READY command (see SPC-3), as additional processing may be required by the DT device after threading before the logical unit becomes ready.

MSTD: A medium seated (MSTD) bit set to one indicates that the medium is mechanically seated within the loading mechanism (i.e., the physical loading process has completed). A MSTD bit set to zero indicates that the medium is not seated, and that further mechanical motion remains in order to complete the loading process, exclusive of tape threading.

MPRSNT: A medium present (MPRSNT) bit set to one indicates that the DT device detects the presence of a medium. A MPRSNT bit set to zero indicates that the DT device does not detect a medium present.

RAA: A robotic access allowed (RAA) bit set to one indicates that the automation device may move a medium to or from the DT device. A RAA bit set to zero indicates that the automation device should not move a medium to or from the DT device. The DT device should indicate that access is allowed by the robotics if a medium may be successfully inserted into or removed from the DT device.

The RAA bit is not intended to reflect the value of any PREVENT/ALLOW MEDIUM REMOVAL command settings (see SPC-3), nor the ability of the automation device to issue commands to the DT device.

INXTN: The in transition (INXTN) bit governs the remaining bits within byte 1 to indicate the stability of the values returned and whether state transitions are taking place. An INXTN bit set to one indicates that the state currently reflected by the remaining bits in byte 1 is in transition, because the DT device is transitioning to another state. An INXTN bit set to zero indicates that the DT device is in the state reflected by the remaining bits in byte 1 and is making no attempt to leave this state. When the recovery requested (RRQST) bit is set to one, the INXTN bit shall be set to zero.

VHF data descriptor field, byte 2 definitions (see Table 11):

Table 13 – Ring Buffer: DT DEVICE ACTIVITY field values

Value	Description
00h	No DT device activity
01h	Cleaning operation in progress
02h	Medium is being loaded
03h	Medium is being unloaded
04h	Other medium activity
05h	Reading from medium
06h	Writing to medium
07h	Locating medium
08h	Rewinding medium
09h	Erasing medium
0Ah	Formatting medium
0Bh	Calibrating medium
0Ch	Other DT device activity
0Dh	Microcode update in progress
0Eh-7Fh	Reserved
80h-FFh	Vendor-specific DT device activity

VHF data descriptor field, byte 3 definitions (see Table 11):

TAFC: A TapeAlert state flag changed (TAFC) bit set to one indicates that at least one TapeAlert state flag has changed from its previous value since the last retrieval of the TapeAlert Response log page by this I_T nexus. The ADC device server sets the TAFC bit to zero after retrieval of the TapeAlert Response log page by this I_T nexus. A TAFC bit set to zero indicates that no TapeAlert state flag has changed. There may not be any difference in the TapeAlert state flags upon retrieval if the state changed again between the time of reporting through the TAFC bit and retrieving the TapeAlert Response log page. This should not be considered an error. The TAFC bit should be processed following the DINIT bit. Pending TapeAlert state flags may affect the reliability of the values returned in other bits within the VHF DATA DESCRIPTOR.

INTFC: An interface changed (INTFC) bit set to one indicates that one or more fields in the DT device primary port status log parameters have changed since the last retrieval of any of the DT device primary port status log parameters from the DT Device Status log page by this I_T nexus. An INTFC bit set to zero indicates that one or more fields in the DT Device Primary Port Status log parameters have not changed since the last retrieval of any of the DT device primary port status log parameters by this I_T nexus. The INTFC bit is set to zero after retrieval of any of the DT device primary port status log parameters from the DT Device Status log page by this I_T nexus.

RRQST: The recovery requested (RRQST) bit shall be set to one to indicate that the DT device has detected an error and that one or more requested recovery procedures are available via the Requested Recovery log page. A RRQST bit set to zero indicates that no recovery procedure is seated. The RRQST bit shall remain set to one as long as a recovery procedure is available. When the RRQST bit is set to one, the INXTN bit shall be set to zero.

The Requested Recovery log page may indicate that a recovery procedure is not requested or not defined.

When the VS bit is set to one, vendor-specific log parameters may appear in a standard log page (e.g. the vendor-specific parameters in the Error Counter log pages, see SPC-3) or in a vendor-specific log page. If the device includes an ADT port (see ADT-2) the application client may be able to retrieve vendor-specific log parameters using the vendor-specific protocol of ADT-2.

Table 14 – Ring Buffer: VHF Load states

Load States (DEVICE ACTIVITY 02)		Very High Frequency (VHF) data log parameter field							
Description	**Hex**	**INXTN**	**Rsvd***	**RAA**	**MPRSNT**	**Rsvd***	**MSTD**	**MTHRD**	**MOUNTED**
a) DT initialized, no medium present	20h	0	0	1	0	0	0	0	0
b) Early detection of medium placement by DT device	30h	0	0	1	1	0	0	0	0
c) Acknowledgement of medium control by DT device	10h	0	0	0	1	0	0	0	0
d) Medium seating	90h	1	0	0	1	0	0	0	0
e) Medium seated	14h	0	0	0	1	0	1	0	0
f) Medium threading	94h	1	0	0	1	0	1	0	0
g) Medium threaded	16h	0	0	0	1	0	1	1	0
h) Completing load	96h	1	0	0	1	0	1	1	0
i) Load complete (e.g., DT device ready)	17h	0	0	0	1	0	1	1	1

Table 15 – Ring Buffer: VHF Unload states

Unload States (DEVICE ACTIVITY 03h)		Very High Frequency (VHF) data log parameter field							
Description	**Hex**	**INXTN**	**Rsvd***	**RAA**	**MPRSNT**	**Rsvd***	**MSTD**	**MTHRD**	**MOUNTED**
a) DT device ready	17h	0	0	0	1	0	1	1	1
b) DT device rewinding	96h	1	0	0	1	0	1	1	0
c) Medium unthreaded, still loading	94h	1	0	0	1	0	1	0	0
d) Medium unseated, unloading or ejecting	90h	1	0	0	1	0	0	0	0
e) DT device unloaded (hold point), seated	14h	0	0	0	1	0	1	0	0
f) DT device unloaded (hold point), unseated	10h	0	0	0	1	0	0	0	0
g) Medium ejected, presence detected	30h	0	0	1	1	0	0	0	0
h) Medium ejected, presence not detected	20h	0	0	1	0	0	0	0	0

Drive TapeAlerts

During Ring Buffer analysis, you may see instances of drive TapeAlert. Table 6 in the Tape Alerts Queue section of this document is an edited excerpt from SCSI Stream Commands – 3 (SSC-3) Revision 1e, available at www.t10.org. There are multiple drive configurations supported by SuperLoader3. Since each drive may support a unique combination of TapeAlerts, ALL possible drive TapeAlerts are shown in Table 6.

Loader TapeAlerts

During Ring Buffer analysis, you may see instances of loader TapeAlert. The following table is an excerpt from SCSI Medium Changer – 3 (SMC-3) Revision 1, available at www.t10.org. ONLY TapeAlerts supported by SuperLoader3 are presented below.

Table 16 – Ring Buffer: Medium Changer TapeAlerts

Flag	Dec	Hex	Recommended application client message	Probable cause
Library Hardware A	1	01h	The library mechanism is having difficulty communicating with the drive: 1. Turn the library off then on. 2. Restart the operation. 3. If the problem persists, call the library supplier help line.	Changer mechanism is having trouble communicating with the internal drive.
Library Hardware B	2	02h	There is a problem with the library mechanism. If problem persists, call the library supplier help line.	Changer mechanism has a hardware fault.
Library Hardware D	4	04h	The library has a hardware fault: 1. Turn the library off then on again. 2. Restart the operation. 3. If the problem persists, call the library supplier help line. Check the library users manual for device specific instructions on turning the device power on and off.	The changer mechanism has a hardware fault that is not mechanically related or requires a power cycle to recover.
Library Diagnostics Required	5	05h	The library mechanism may have a hardware fault. Run extended diagnostics to verify and diagnose the problem. Check the library users manual for device specific instructions on running extended diagnostic tests.	The changer mechanism may have a hardware fault which would be identified by extended diagnostics.
Library Interface	6	06h	The library has a problem with the host interface: 1. Check the cables and connections. 2. Restart the operation.	The library has identified an interface fault.
Predictive Failure	7	07h	A hardware failure of the library is predicted. Call the library supplier help line.	Predictive failure of library hardware.
Library Temperature Limits	10	0Ah	General environmental conditions inside the library are outside the specified temperature range.	Library temperature limits exceeded.
Library Stray Tape	12	0Ch	A cartridge has been left inside the library by a previous hardware fault: 1. Insert an empty magazine to clear the fault. 2. If the fault does not clear, turn the library off and then on again. 3. If the problem persists, call the library supplier help line.	Stray cartridge left in library after previous error recovery.

Table 16 – Ring Buffer: Medium Changer TapeAlerts (continued)

Flag	Dec	Hex	Recommended application client message	Probable cause
Library Pick Retry	13	0Dh	There is a potential problem with the drive ejecting cartridges or with the library mechanism picking a cartridge from a slot. 1. No action needs to be taken at this time. 2. If the problem persists, call the library supplier help line.	Operation to pick a cartridge from a slot had to perform an excessive number of retries before succeeding.
Library Place Retry	14	0Eh	There is a potential problem with the library mechanism placing a cartridge into a slot. 1. No action needs to be taken at this time. 2. If the problem persists, call the library supplier help line.	Operation to place a cartridge in a slot had to perform an excessive number of retries before succeeding.
Library Load Retry	15	0Fh	There is a potential problem with the drive or the library mechanism loading cartridges, or an incompatible cartridge.	Operation to load a cartridge in a drive had to perform an excessive number of retries before succeeding.
Library Door	16	10h	The library has failed because the door is open: 1. Clear any obstructions from the library door. 2. Close the library door. 3. If the problem persists, call the library supplier help line.	Changer door open prevents library functioning.
Library Mailslot	17	11h	There is a mechanical problem with the library media import/export mailslot.	Mechanical problem with import/export mailslot.
Library Magazine	18	12h	The library can not operate without the magazine. 1. Insert the magazine into the library. 2. Restart the operation.	Library magazine not present.
Library Security Mode	20	14h	The library security mode has been changed. The library has either been put into secure mode, or the library has exited the secure mode. This is for information purposes only. No action is required.	Library security mode changed.
Library Offline	21	15h	The library has been manually turned offline Library and is unavailable for use.	Library manually turned offline.
Library Scan Retry	23	17h	There is a potential problem with the bar code label or the scanner hardware in the library mechanism. 1. No action needs to be taken at this time. 2. If the problem persists, call the library supplier help line.	Operation to scan the bar code on a cartridge had to perform and excessive number of retries before succeeding.
Library Inventory	24	18h	The library has detected an inconsistency in its inventory. 1. Redo the library inventory to correct inconsistency. 2. Restart the operation. Check the applications users manual or the hardware users manual for specific instructions on redoing the library inventory.	Inconsistent media inventory.
Cooling Fan Failure	27	1Bh	A library cooling fan has failed.	One or more fans inside the library have failed. Internal flag state only cleared when all flags are working again.

Diagnostics Codes

The following diagnostic codes may be shown in the Ring Buffer as the Health Check is run.

Table 17 – Ring Buffer: Diagnostic Codes

Diag Test	Description
Diag 0	Self Test (Cal Pkr, Cal Mags)
Diag 1	Random Move
Diag 2	Picker Cal
Diag 3	Dual Mag Cal
Diag 4	Picker Life Test
Diag 5	Mailslot Load/Unload
Diag 6	Translation Calibrate
Diag 7	Rotation Calibrate
Diag 8	Right Magazine Calibrate
Diag 9	Left Magazine Calibrate
Diag 10	Right Mag Eject Test
Diag 11	Left Mag Eject Test
Diag 12	Right Mag Bi-Direction Move Test
Diag 13	Left Mag Bi-Direction Move
Diag 21	Elevator Calibrate

KF> diag [test #] [loop count]

Device Summary

The device summary at the end of the log contains much of the same information contained in the log header. Most fields are self explanatory, with the exception of the CF (Configuration Flags) and IF (Information Flag) fields which are defined in the following tables.

Device Summary Example:

```
V8.0, 2920F77, Jul 28 2005, 14:02:01 Pers: 23.2 DELL     PV-124T
POST:    1200 PEXT:  7F2000 CF1:F021243D CF2: 800FFEF IF1:50420EA0 IF2:       0
HW: 1 ME: 1   Drive Interface: NC
POC: 00002, POH: 00000:08:05 PC: 2 TPOH: 0 LCD Hours: 0
Drive Information
       Product: 0xa1 (Unknown)  SCSI ID/LUN: 0/0 Rev /
       Spec Ver:  Interface type: 0 Drive Temp: 0 POH: 0 PC: 0
Drive Device ID
       SN #: Drive Status Uninit'd, polled = n
       Cart Pres: 0  HW Err: 0  Prev Rem: 0
       WP: 0   Load Comp: 0  Ok to Load: 0 Ok to eject: 0 HIU: 0
       Clean Exp/Requested/Required: 0/0/0
       BugCheck: 0  Tape motion: 0x0 Tape motion hrs: 0
       Comp: 0 Reset: 0  Max Temp: 0  BRC: 0
       STM: 0   ATTD: 0 SCSI Eject: 0   Buckle Err: 0
Media Info
       Type: 0  Fmt: 1  Id: 0  Rem: 0
```

What to look for:

- Loader firmware version is the first entry
- Personality is 23.x for Dell, 0 for Quantum branded.
- Any non-zero POST value indicates a (rare) failure during POST
- Make sure the SCSI ID does not conflict with any other peripheral on the bus.

Table 18 – POST Flags

Bit	Definition
13	MDM EEROM (not a pass/fail test)
12	Temperature Sense
11	Not used
10	Not used
9	MDM
8	Bar Code Reader (not a pass/fail test)
7	LCD
6	Ethernet
5	PLL (Phase Lock Loop) Clock
4	Code Checksum
3	Clear SRAM
2	Address Lines
1	IRAM
0	Microprocessor test

Table 19 – Device Summary: Configuration Flags

Bit	CF1: 0xF02#243D	LTO	DLT	Bit	CF2: 0800FFEF	LTO	DLT
31	use right mag sensor 2	F	F	31	enable pkr pos err dbg info	0	0
30	use right mag sensor 1			30	enable mag pos err dbg info		
29	use left mag sensor 2			29	enable err log err dbg info		
28	use left mag sensor 1			28	enable err log err dbg info		
27	not used	0	0	27	enable pkr pos err dbg info	8	8
26	not used			26	not used		
25	not used			25	not used		
24	not used			24	not used		
23	not used	2	2	23	enable single-shot error	0	0
22	force magazine engagement			22	enable multiple errors		
21	bcr rot recovery enabled			21	not used		
20	allow dual magazine eject			20	not used		
19	ignore open front errors	5	1	19	not used	0	0
18	use drive command load			18	not used		
17	mag eject check enabled			17	not used		
16	bcr enabled			16	not used		
15	not used	6	6	15	servo init on pwr on	F	F
14	not used			14	magazine init on pwr on		
13	ldr HW present			13	recover magazine jam		
12	disable drv path sensor			12	recover drive hardware errs		
11	disable MS final push	4	4	11	recover stray tape	F	F
10	check drive load complete			10	recover last pkr cmd		
9	drive initialized/comm ok			9	do audits on pkr move		
8	when set check over temp			8	recover last pkr move		
7	not used	3	3	7	recover last get	E	E
6	use over temp condition			6	recover last put		
5	use right mag present			5	recover last mag move		
4	use left mag present			4	recover local mag position		
3	use mail slot sensor	D	D	3	recover last rot move	F	F
2	use drv pth1 crt present			2	recover local rot position		
1	use drive 1 cart present			1	recover last trans move		
0	use picker cart present			0	recover local trans position		

Table 20 – Device Summary: Information Flags

Bit	CF1: 0x5C#607A8	LTO	DLT	Bit	CF2: (0x2 or 0x0)	LTO	DLT
31	crtrdg unseated in destination	5	5	31	not used	0	0
30	using drive as SCSI interface			30	not used		
29	BCR has stopped working			29	not used		
28	threadX initialization complete			28	not used		
27	ldr HW present	C	C	27	not used	0	0
26	cartridge present at eject pos.			26	not used		
25	cartridge behind pin			25	not used		
24	mail slot cart unlatched			24	not used		
23	cup from tape in progress	4	4	23	not used	0	0
22	error task has started			22	not used		
21	drive load initiated			21	not used		
20	drive unload initiated			20	not used		
19	flag to poll pwr button	6	6	19	not used	0	0
18	drive is initialized			18	not used		
17	system inited (all threads)			17	not used		
16	(used for fan test)			16	not used		
15	over temp condition	0	0	15	not used	0	0
14	door locked by SCSI			14	not used		
13	drv offline via SCSI			13	not used		
12	unit offline via SCSI			12	not used		
11	mail slot cart present	7	7	11	not used	0	0
10	bar code reader pres.			10	not used		
9	LCD is present			9	not used		
8	MDM mtr ctl mod pres.			8	not used		
7	right mag present	6	6	7	not used	0	0
6	right mag cover present			6	not used		
5	left mag present			5	not used		
4	left mag cover present			4	not used		
3	mail slot sensor	8	8	3	not used	2	0
2	drv pth1 crt present			2	not used		
1	drive 1 cart present			1	(Certance) drive supports forced eject recovery		
0	picker cart present			0	left or right mag/cover missing		

Sensor Status

Sensor status of "1" indicates the sensor is "blocked". The example below shows typical sensor status for SuperLoader3 in the home position, default configuration (left magazine, right magazine blank).

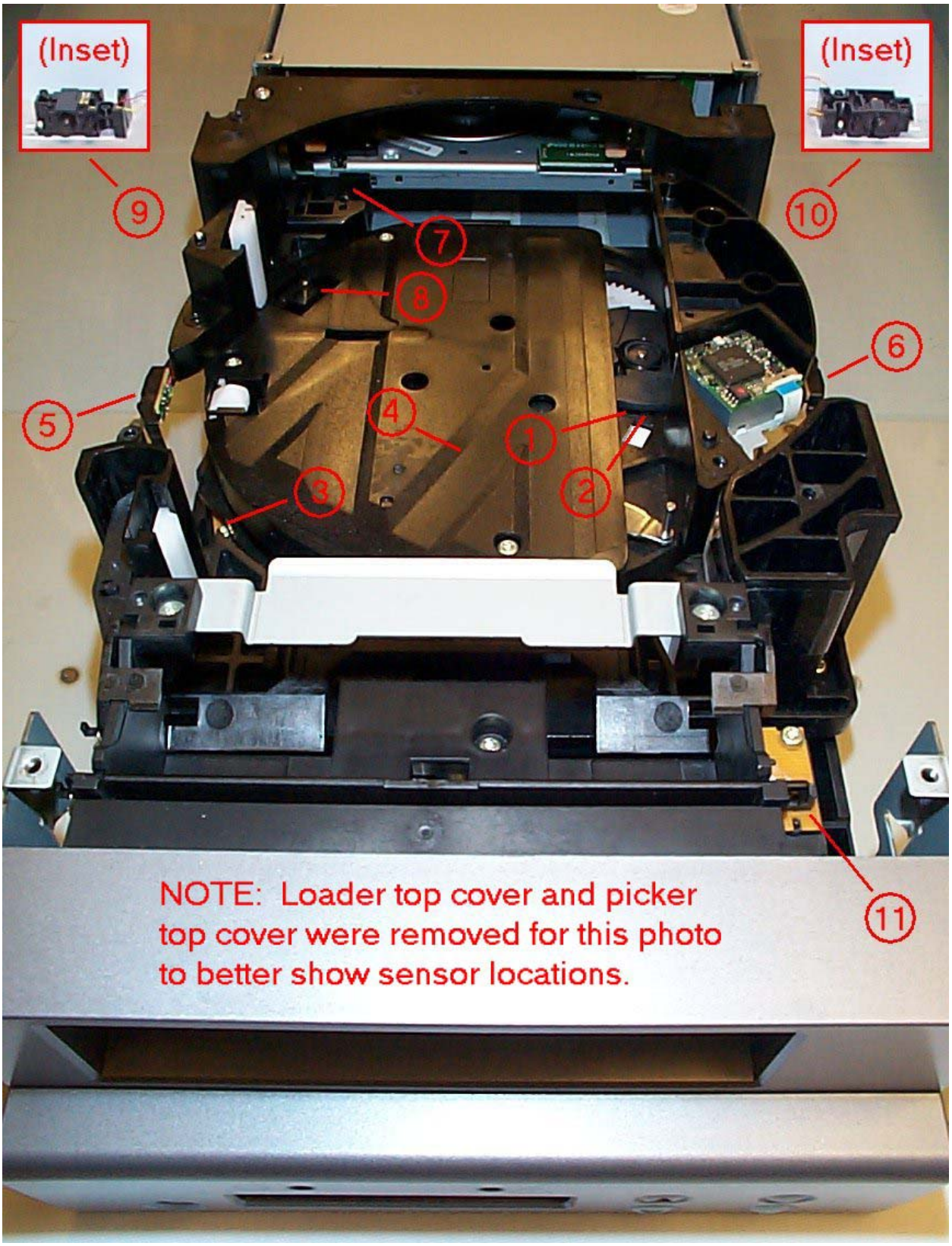
Example sensor status:

```
Sensor Status:
  Picker Home Sensor: 0
  Picker Pos Sensor: 0
  Angle Sensor     : 0
  Height Sensor    : 0
  Left Mag Sensor  : 0
  Right Mag Sensor : 1
  Clear Path     : 0
  Cart Present   : 0
  Left Mag Pres  : 1
  Right Mag Pres: 0
  Mail Slot : 1
```

Table 21 – Sensor Status: Sensor Description

Sensor	Table 23 Location	Description
Picker Home Sensor	1	Signals the home position of the picker translation arm.
Picker Position Sensor	2	Signals pre-determined positions of the picker translation arm.
Angle Sensor	3	Sensor located on the underside rim of the turntable, left side when facing front of unit. Detects turntable positions.
Height Sensor	4	Sensor located under the middle-front area of the turntable. Output is "0" at lowest postion (home position 0) and "1" when turntable is elevated to any other valid position (1-3).
Left Mag Sensor	5	Sensor located on the spring-loaded arm to the left of the turntable. Used to detect cartridge present and carrier flags 1-8 as the left magazine is rotated. Flag on carrier number 1 is unique as compared to carriers 2-8. Magazine home position is with the slot (open space) of the carrier 1 flag within the sensor, resulting in a "0" value.
Right Mag Sensor	6	Sensor located on the spring-loaded arm to right of the turntable. Used to detect cartridge present and carrier flags 9-16 if the optional right side magazine is installed. Flag on carrier 9 is unique as compared to carriers 10-16. Magazine home position is with the slot (open space) of the carrier 9 flag within the sensor, resulting in a "0" value. With the default configuration magazine blank in place, sensor value should be "1".
Clear Path	7	Sensor located just to the rear of the turntable on the left-hand side. The floor plate of this sensor must be adjusted at the factory to be at the same height as the tape drive receiver.
Cart Present	8	Sensor located on the turntable floor plate.
Left Mag Present	9	Sensor located at the back of the left magazine bay. With the default configuration left magazine in place, the value of this sensor should be "1".
Right Mag Present	10	Sensor located at the back of the right magazine bay. The value of this sensor will be "1" if the optional right side magazine is installed.
Mail Slot	11	Sensor used to detect mail slot door position. Value is "1" when the door is in the normal closed position.

Table 22 – Sensor Status: Sensor Locations (See Table 21 for description)



Element Status

The element status table is used to show cartridge details for each location.

Example Element Status:

```
Element     Stat         Tape  Fmt  ID        Src      S Q Lvl Label
Picker      2(EMPTY)      0    0    ffffffff  ffff  ->   0 (0)
Drive       2(EMPTY)      0    0    ffffffff  ffff  ->   0 (1)
Mailslot    2(EMPTY)      0    0    ffffffff  ffff  ->   0 (0)
Slot[0]     2(EMPTY)      0    0    ffffffff  ffff  ->   0 (0)
Slot[1]     2(EMPTY)      0    0    ffffffff  ffff  ->   0 (0)
Slot[2]    16(FULL )      0    0    ffffffff  ffff  -> U 55(0) FMM403L1
Slot[3]    16(FULL )      0    0    ffffffff  ffff  -> B 0 (0)
Slot[4]     2(EMPTY)      0    0    ffffffff  ffff  ->   0 (0)
Slot[5]    16(FULL )      0    0    ffffffff  10a   -> L 59(0) 001028L1
Slot[6]     2(EMPTY)      0    0    ffffffff  ffff  ->   0 (0)
Slot[7]     2(EMPTY)      0    0    ffffffff  ffff  ->   0 (0)
Slot[8]    16(FULL )      0    0    ffffffff  100   -> L 47(0) 000224L2
Slot[9]     2(EMPTY)      0    0    ffffffff  ffff  ->   0 (0)
Slot[a]    12(EMPTY)      0    0    ffffffff  ffff  ->   0 (0)
Slot[b]    16(FULL )      0    0    ffffffff  ffff  -> B 0 (0)
Slot[c]    16(FULL )      0    0    ffffffff  ffff  -> L 55(0) 000046L1
Slot[d]    16(FULL )      0    0    ffffffff  ffff  -> L 54(0) 000476L2
Slot[e]     2(EMPTY)      0    0    ffffffff  ffff  ->   0 (0)
Slot[f]    16(FULL )      0    0    ffffffff  ffff  -> L 59(0) CLN588L1
```

What to look for:

- `Element` field displays all potential cartridge locations. (Note: Slot count starts at zero, not one as listed in the RMU.)
- `Stat` field displays element status. See Table 23 for bit definition.
- `Tape` field displays tape type, known only if the tape has been loaded into the drive at some point during operation. See Table 24.
- `Fmt` field displays tape format, known only if the tape has been loaded into the drive at some point during operation. See Table 25.
- `ID` field displays barcode content. (Note: "ffffffff" denotes n/a.)
- `Src` field displays the slot location (100-10F) where the tape cartridge came from if move occurred since the last power up. Element locations are defined in Table A5 (Note: "ffffffff" denotes n/a.)
- `S` field defines the barcode location on the barcode label. See Table 26.
- `Q` field was reserved to display relative barcode quality. There is no "pass/fail" criteria for this field.
- `Lvl` field defines the turntable elevation position for that element.

Table 23 – Element Status: Stat field

Value	Definition
Element presence / accessibility:	
00000000	Inacessible
00000001	Unknown
00000010	Accessible
00000100	Present
Element label status:	
00010000	Scanned
00100000	No label
01000000	Bad label
Example Stat Values	
0x01	Unknown
0x02	Accessible
0x06	Accessible+Present
0x07	Unknown+Accessible+Present
0x12	Accessible+Scanned
0x16	Accessible+Present+Scanned

Table 24 – Element Status: Tape field

Value	Tape Type
0x00	None
0x01	Cleaning
0x05	DLT Type IV
0x06	SDLT
0x07	SDLT 2
0x08	LTO Gen1
0x09	LTO Gen2
0x0A	VS1
0x0B	LTO Gen3
0x0C	DLT V4
0x0D	DLS S4

Table 25 – Element Status: Fmt field

Value	Tape Format
0x00	None
0x01	Unknown
0x02	Cleaning
0x09	DLT 4000
0x0A	DLT 7000
0x0B	DLT 8000
0x0C	DLT1
0x10	SDLT 220
0x11	SDLT 320
0x12	SDLT 600
0x13	DLT S4
0x80	LTO Data
0x81	LTO Upgrade
0x85	VS160
0x86	DLT V4

Table 26 – Element Status: S field

Value	Label Style
(none)	Unknown
B	Blank
D	DLT (Centered)
L	Lower
S	Split
U	Upper

APPENDIX A – Error Code Interpretation

The same error code format is used for errors presented in the Hard Queue, Soft Queue, and Ring Buffer. Tables in Appendix A apply to all these sections.

Error code Example:

```
0003: PC: 00004 POH: 00000:00:59 Error: 076f0045, Context: 0000/00000000
```

Using Table A1 below, you can see:

Recovery Action:	0h	(See Table A2 – Continue)
Task ID:	07h	(See Table A3 – Loader)
Error Type:	6Fh	(See Table A4 – Loader Status Communications Error)
Location ID:	0045h	(See Table A5 – Drive Manager Login Failed2)

In this case, the loader could not communicate with the drive.

Table A1 – Error Code (High Level)

Bits 31-30	Bits 29-28	Bits 27-24	Bits 23-20	Bits 19-16	Bits 15-12	Bits 11-8	Bits 7-4	Bits 3-0
(2 bits) **Recovery Action**	(6 bits) **Task ID**		(8 bits) **Error Type**		(16 bits) **Software Location ID**			
See Appendix Table A2	See Appendix Table A3		See Appendix A Table A4-1 or Table A4-2 as applicable		See Appendix A Table A5-1 or Table A5-2 as applicable			

Recovery Action

Recovery action is contained in the two most significan bits (31-30) of the 32-bit Error field.

Error Example:

```
0003: PC: 00004 POH: 00000:00:59 Error: 076f0045, Context: 0000/00000000
```

In this example the Recovery Action is “Continue”.

Table A2 – Recovery Action

Error Code Bits 31-30		Recovery Action Taken by Loader
Binary	Hex	
00	0h	Continue (no Reset)
01	1h	Task Reset
10	2h	Sub-system Reset
11	3h	System Reset

Task ID

Task ID is contained within a shared byte, represented within bits 29-24 of the 32-bit Error field.
Note: The two most significant bits of the shared byte highlighted below belong signify Recovery Action defined in previous Table A2.

Error Example:

```
0003: PC: 00004 POH: 00000:00:59 Error: 076f0045, Context: 0000/00000000
```

In this example, error occurred during a Loader Task.

Table A3 – Task ID

Task ID	Description
00h	System Timer
01h	Servo Manager
02h	Picker
03h	Magazine, Left
04h	Magazine, Right
05h	Magazine, Up Left
06h	Magazine, Up Right
07h	Loader
08h	Barcode Reader
09h	Front Panel
0Ah	IP
0Bh	Diagnostic
0Ch	Error
*0Dh	Code Update
0Eh	PSP
0Fh	PSP Timer
11h	HTTP
12h	SNTP
20h	Idle
3Eh	Watch Dog timer
3Fh	Unhandle Interrupt

*NOTE: For Task ID value 0Dh, use Table A4.1 to determine the appropriate "Error Code". For all others Task IDs, use Table A4.2.

Error Type

Error Type is the heart of the Error field. It is contained in the second byte (bits 16-23) of the 32-bit Error field. For Error fields containing Task ID 0Dh (code update), use Table A4.1. For all other Task IDs, use Table A4.2.

Error Example:

```
0003: PC: 00004 POH: 00000:00:59 Error: 076f0045, Context: 0000/00000000
```

In this example, we see a Loader Communication Error.

Table A4.1 – Error Type Description (For Task ID value 0Dh only)

Error Type	Description	Recommended Action
Sytem Update Queue "Error" Types (Codes in this category are posted in the Error field, but do not necessarily represent error.)		
00	Loader Updated Attempted	
01	Servo Code Update Attempted via FTP	
02	Policy Code Update Attempted via FTP	
03	Code Update Failed	

Table A4.2 – Error Type Description

Error Type	Description	Recommended Action
AutoLoader Operating System Failure Types		
01	Resource Deleted	Errors 01-25 indicate that an unexpected event has occurred within the autoloader internal operating system. The autoloader internal operating system is called ThreadX, and some error messages may be preceded by a 'TX' notation. For any of these events: • Power cycle the autoloader. • Run the Random Move test from either the Remote Mangement Unit (RMU) or the Operator Control Panel (OCP). Note: The Random Move test requires a minimum of two cartridges present within the autoloader. • Check support.dell.com for PowerVault 124T firmware updates. • If all previous steps fail, contact customer support.
02	Pool Error	
03	Pointer Error	
04	Wait Error	
05	Size Error	
06	Group Error	
07	No Event Timeout	
08	Option Error	
09	Queue Error	
0A	Queue Empty	
0B	Queue Full	
0C	Semaphor Error	
0D	Semaphor Timeout	
0E	Thread Error	
0F	Priority Error	

Table A4.2 – Error Type Description (continued)

Error Type	Description	Recommended Action
10	Start Error	
11	Delete Error	
12	Resume Error	
13	Caller Error	
14	Suspend Error	
15	Timer Error	
16	Tick Error	
17	Activate Error	
18	Threshold Error	
19	Suspend Lifted	
1A	Block Pool Error	
1B	Queue Function Failed	
1C	Semaphore Function Failed	
1D	Timer Function Failed	
1F	Thread Function Failed	
20	Command Started	
21	System Failure	
22	System Busy	
23	System Timeout	
24	Software Error	
25	Hardware Error	
Message Error Types		
26	Message Sender (Task) ID error	• Verify the host backup application and device driver are at the latest supported revision at support.dell.com. • Check host adapter and SCSI cables and terminator. • Power cycle the autoloader and retry the operation. • If all previous steps fail, contact customer support.
27	Message Type Bad	
28	Message Parameter Bad	
Stack/Global Data Corruption Error Types		
29	Invalid Element	• Verify host backup software application and device driver are at the latest supported revision at support.dell.com. • Power cycle the autoloader. • Run the Random Move test from either the Remote Mangement Unit (RMU) or the Operator Control Panel (OCP). Note: The Random Move test requires a minimum of two cartridges present within the autoloader. • Check support.dell.com for PowerVault 124T firmware updates. • If all previous steps fail, contact customer support.
2A	Invalid Element Status	
2B	Element Table Bad	
2C	Global Data Bad	
2D	Stack Data Bad	
2E	Task Stack Low	
2F	Task Stack Overflow	
System Shutdown/Disruption Error Types		

Table A4.2 – Error Type Description (continued)

Error Type	Description	Recommended Action
30	Post Failure	• Verify that the magazines/magazine blank are fully seated. • Power cycle the autoloader. • If all previous steps fail, contact customer support.
31	Watchdog Timer	• Power cycle the autoloader. • Run the Random Move test from either the Remote Mangement Unit (RMU) or the Operator Control Panel (OCP). Note: The Random Move test requires a minimum of two cartridges present within the autoloader. • Check support.dell.com for PowerVault 124T firmware updates. • If all previous steps fail, contact customer support.
32	Power Event	
33	Power Down Failure	
34	System Overload	
35	System Performance	
36	Asynchronous Stop	
System Miscellaneous Error Types		
37	System Cleaning Error	Cleaning slot in use. • Verify that a valid cleaning cartridge is located in the dedicated cleaning slot indicated within the Remote Management Unit Configuration page settings. • Check support.dell.com for PowerVault 124T firmware updates. • If all previous steps fail, contact customer support.
38	System Internal I2C HW Error	Contact customer support.
39	ALD (AutoLoader Diagnostic) Limits Error	This error may occur as a result of a failed diagnostic test. • If the Magazine Test or Inventory Test failed, remove and inspect the magazines one at a time. Turn the white thumbwheels on each magazine and insure that the carriers move freely at least one full rotation in each direction. Re-insert each magazine after inspection. • If the Picker Test failed, verify there is no obstruction within the picker assembly and repeat the test. • If the Random Move test failed, see steps above for necessary actions. • Power cycle the autoloader and re-run the failed test. Contact customer support if failure recurs.
Tape Drive Error Types		
3A	Drive Reset Error	• Check the TapeAlert log for more specific drive error information. Refer to Table 6 for recommended actions.
3B	Drive HW Error	
3C	Drive Cleaning Required	• Perform cleaning by loading a valid cleaning cartridge into the drive. If a slot is available to be dedicated for a cleaning cartridge, this operation can be enabled to run automatically within the Remote Management Unit Configuration page. • Check the TapeAlert log for more specific drive error information. Refer to Table 6 for recommended actions. • If the drive continues to request cleaning, contact customer support.

Table A4.2 – Error Type Description (continued)

Error Type	Description	Recommended Action
3D	General Drive Error	• Check the TapeAlert log for more specific drive error information. Refer to Table 6 for recommended actions. • If the drive is logging Read/Write errors, repeat the operation with new media. • If the drive fails with two different pieces of media, contact customer support.
3E	Drive Load Error (retryable)	• Verify that the cartridge does not have labels or other matter placed anywhere on the cartridge except where labels are expected to be placed. • Try to load a different piece of media. • If the operation fails with two different pieces of media, contact customer support.
3F	Drive Unload Error (retryable)	
Drive/Media Error Types		
40	Media Threading Error	• Check the TapeAlert log for more specific drive error information. Refer to Table 6 for recommended actions. • Verify that a valid cartridge type is in use. • Repeat operation with a new piece of media. • If the operation fails with two different pieces of media, contact customer support.
41	Media Unthreading Error	
42	Media (MAM) Info Error	
43	Invalid Media Type	
44	Expired Cleaning Media	
45	Unknown Media Error	
46	Drive / Media Error	
Miscellaneous Error Types		
47	EEROM Chksum Error	Contact customer support.
48	Fan Sense Motion Error	• Verify that the main fan is moving freely when the unit is on. • If the previous step fails, contact customer support.
49	Offline	Diagnostics controlling system. No action required.
4A	Host Lock Prevents Eject	Host backup software has issued PREVENT/ALLOW MEDIUM REMOVAL command, often called a 'lock' by the host backup software. • Issue an unlock command via the host backup software, or power cycle the autoloader using the Operator Control Panel power button to clear the lock setting.
4B	Open Front	All motor movement including picker and magazine rotation have been disabled for safety reasons. • Verify the magazine or magazine blank is completely inserted on both the left and right sides of the autoloader. • Replace magazine or magazine blank (try a second one if possible). • If all previous steps fail, contact customer support.
4C	Over Temp	• Verify the temperature of the autoloader inlet air is within specification. • Clear debris from all openings of the autoloader, both in front and back. • Verify that the fan is working. • If all previous steps fail, contact customer support.
TCP/IP Stack and Task Error Types		
50	IP Stack Panic	• Verify that the autoloader is connected to the correct network.

Table A4.2 – Error Type Description (continued)

Error Type	Description	Recommended Action
51	IP Stack Memory Allocation Error	back condition exists). • Verify that the autoloader operates correctly when properly configured and attached directly to a host system using a cross-over cable. • If all previous steps fail, contact customer support.
52	IP Stack Can't Free Memory	
53	Stack DTrap Occurred	
Loader Task Error Types		
60	Drive Init Failed	• Check support.dell.com for PowerVault 124T firmware updates. • Check the TapeAlert log for more specific drive error information. Refer to Table 6 for recommended actions. • Power cycle the autoloader using the front panel power button and retry the operation. • If all previous steps fail, contact customer support
61	Drive Login Error	
62	Drive Logout / Unexpected Error	
63	Drive Command Failed	
64	Drive Response Timeout	
65	Command Flushed From Queue	
66	Drive Manager Not in Correct State	
67	Drive Reporting Not Ready	
68	Autoclean Move Failed	• Check the Remote Management Unit autoclean Configuration settings. Insure that a valid cleaning cartridge is located at the configured location. • Verify that the cleaning cartridge does not have labels or other matter placed anywhere on the cartridge except where labels are expected to be placed. • Try a different cleaning cartridge. • If the operation fails with two different cleaning cartridges, contact customer support.
69	Drive Unload Retry	• Check the TapeAlert log for more specific drive error information. Refer to Table 6 for recommended actions. • Verify that the cartridge does not have labels or other matter placed anywhere on the cartridge except where labels are expected to be placed. • Try to load a different piece of media. • Power cycle the autoloader using the front panel power button and retry the operation. • If all previous steps fail, contact customer support
6D	Drive Communications Error	• Check support.dell.com for PowerVault 124T firmware updates. • Check the TapeAlert log for more specific drive error information. Refer to Table 6 for recommended actions. • Power cycle the autoloader using the front panel power button and retry the operation. • If all previous steps fail, contact customer support
6E	Drive Communications Error	
6F	Loader Communication Error	
Code Update Error Types		
70	Failed to Send CUP Cmd to Drive / No Response From Drive	• Verify the firmware images for both the autoloader and drive are the most recent images located at support.dell.com • Review the firmware update readme file provided with the
71	CUP Send Failed	

Table A4.2 – Error Type Description (continued)

Error Type	Description	Recommended Action
72	Drive Update Failed, Media Present	firmware images. NOTE: The recommended method for drive firmware update is via the host SCSI interface using the DFU utility provided with the firmware images. The recommended method for loader firmware update is via the Remote Management Unit. • Verify all SCSI cable and terminator connections between the host and autoloader. • Verify no media in drive during update. • Power cycle the autoloader using the front panel power button and retry the operation. • If all previous steps fail, contact customer support.
73	Image Size in Header Too Big	
74	Block Erase Failed	
75	Flash Program Failed	
76	Header Corrupt	
77	Checksum Error	
78	Timeout During CUP	
79	Reset During Drive Update	
7A	Unexpected Reset From Drive	
7B	Unexpected Message From PSP	
7C	Personality or Version Check Failed	
7D	SCSI Error During Write Buffer Command	
7E	Uncompressed EDC Failure	
7F	Image Processing Ended Early	
SCSI Server Task Error Types		
80	Unexpected Response or Data Received	• Verify the host backup application and device driver are at the latest supported revision at support.dell.com. • Check host adapter and SCSI cables and terminator. • Power cycle the autoloader and retry the operation. • If all previous steps fail, contact customer support
81	Drive Send Failed	
Servo Elevator Hardware Error Types		
92	Elevator Flag Bad	• Power cycle the autoloader. • Run the Random Move test from either the Remote Mangement Unit (RMU) or the Operator Control Panel (OCP). Note: The Random Move test requires a minimum of two cartridges present within the autoloader • Check support.dell.com for PowerVault 124T firmware updates. • If all previous steps fail, contact customer support.
93	Elevator Sensor Bad	
97	Elevator Calibration Lost	
98	Elevator Calibration Jammed	
99	Elevator Lost	
9B	Elevator Position Error	
Picker/Magazine Servo Error Types		
A0	Servo Error	• Power cycle the autoloader, • Run the Random Move test from either the Remote Mangement Unit (RMU) or the Operator Control Panel (OCP).
A1	Reserved Error Code	
A2	Servo Timeout Error	
A3	Position Error	

Table A4.2 – Error Type Description (continued)

Error Type	Description	Recommended Action
A4	Servo Not Calibrated	• Also execute the Recommended Actions for "Open Front" (4B) error type. Note: The Random Move test requires a minimum of two cartridges present within the autoloader • Check support.dell.com for PowerVault 124T firmware updates. • If all previous steps fail, contact customer support.
A5	Source Element Empty	• Verify that the expected source really does not have a cartridge. • Power cycle the autoloader. • Run the Random Move test from either the Remote Mangement Unit (RMU) or the Operator Control Panel (OCP). Note: The Random Move test requires a minimum of two cartridges present within the autoloader • If the source is a slot within a magazine, check if the spring loaded cartridge present flag moves freely when the cartridge is manually inserted into the magazine. • If the error continues, contact customer support.
A6	Magazine Missing	• Verify the magazine or magazine blank is fully inserted into the autoloader. • Remove and re-insert the magazine. • Try a second magazine if possible. • Power cycle the autoloader. • If the error continues, contact customer support.
A7	Mail Slot Full	• Remove any previously ejected media from the mail slot. • Verify that there is no debris or foreign object in the mail slot opening. • Verify the mail slot door is fully closed. • If the error continues, contact customer support.
A8	Destination Element Full	• Verify that the expected destination element already has a cartridge. • Power cycle the autoloader. • Run the Random Move test from either the Remote Mangement Unit (RMU) or the Operator Control Panel (OCP). Note: The Random Move test requires a minimum of two cartridges present within the autoloader • If the destination is a slot within a magazine, check if the spring loaded cartridge present flag moves freely when the cartridge is manually inserted into the magazine. • If the error continues, contact customer support.
A9	Picker Full	• Look in the front of the autoloader and confirm the picker is

Table A4.2 – Error Type Description (continued)

Error Type	Description	Recommended Action
AA	Picker Cartridge Sensor Error	full. • Execute a Move command from the Operator Control Panel to move the cartridge from the picker to a location. • Power cycle the autoloader via the front panel. • Run the Random Move test from either the Remote Mangement Unit (RMU) or the Operator Control Panel (OCP). Note: The Random Move test requires a minimum of two cartridges present within the autoloader • If all previous steps fail, contact customer support.
AB	Drive Path Sensor Error	• Power cycle the autoloader via the front panel. • Run the Random Move test from either the Remote Mangement Unit (RMU) or the Operator Control Panel (OCP). Note: The Random Move test requires a minimum of two cartridges present within the autoloader • If all previous steps fail, contact customer support.
AC	Mail Slot Door Sensor Error	• Power cycle the autoloader. • Insert a cartridge into the autoloader via the mail slot. Verify the cartridge is sensed and the door closes fully. • If all previous steps fail, contact customer support..
AD	Mail Slot Solenoid Error	
AE	Servo Initialization Error	• Remove and inspect the magazines one at a time. Turn the white thumbwheels on each magazine and insure that the carriers move freely at least one full rotation in each direction. Re-insert each magazine after inspection. • Check the barcode reader setting via either the Remote Management Unit or the Operator Control Panel • If the barcode reader is enabled, verify that all cartridges have valid barcode labels. If cartridges do not have valid barcode labels, disable the barcode reader. • Check support.dell.com for PowerVault 124T firmware updates. • Power cycle the autoloader • Run the Random Move test from either the Remote Mangement Unit (RMU) or the Operator Control Panel (OCP). Note: The Random Move test requires a minimum of two cartridges present within the autoloader • If all previous steps fail, contact customer support.
AF	Error Log Information Event	Used to analyze start of servo/motor error sequence in the Soft Error Log. Error entries immediately following indicate nature of specific motor/position error. • No action required.
Servo Picker Hardware Error Types		

Table A4.2 – Error Type Description (continued)

Error Type	Description	Recommended Action
B0	Rotation Sensor Bad	• Power cycle the autoloader • Run the Random Move test from either the Remote Mangement Unit (RMU) or the Operator Control Panel (OCP). Note: The Random Move test requires a minimum of two cartridges present within the autoloader • If all previous steps fail, contact customer support.
B1	Rotation Flag Not Found	
B2	Rotation Flag Bad	
B3	Translation Sensor Bad	
B4	Translation Sensor 1 Bad	
B5	Translation Sensor 2 Bad	
B6	Translation Flag Bad	
B7	Rotational Calibration Lost	
B8	Translation Calibration Lost	
B9	Rotation Lost	
BA	Translation Lost	
BB	Rotation Position Lost	
BC	Translation Position Lost	
BD	Picker Dropped Cartridge Error	• Check for a jammed cartridge in the picker. Remove the cartridge if present. • Remove and inspect the magazines one at a time. Turn the white thumbwheels on each magazine and insure that the carriers move freely at least one full rotation in each direction. • Fully insert a cartridge into each magazine slot, then remove. Look for difficulty in extracting the cartridge from each slot. • Re-insert the magazine after inspection. • Power cycle the autoloader • Run the Random Move test from either the Remote Mangement Unit (RMU) or the Operator Control Panel (OCP). Note: The Random Move test requires a minimum of two cartridges present within the autoloader • If all previous steps fail, contact customer support.
BE	Picker Missed Cartridge Error	
BF	Picker Jammed Cartridge Error	
Servo Motor Error Types		
C0	Motor Error	• Insure that the autoloader is resting on a solid flat surface, or mounted level in a rack unit. • Power cycle the autoloader • Run the Random Move test from either the Remote Mangement Unit (RMU) or the Operator Control Panel (OCP). Note: The Random Move test requires a minimum of two cartridges present within the autoloader • Check support.dell.com for PowerVault 124T firmware updates. • If all previous steps fail, contact customer support.
C1	Motor SW Error	
C2	Motor HW Error	
C3	Motor Seg Error	
C4	Motor Position Error	
C5	Motor Direction Error	
C6	Motor Runaway Error	
C7	Motor Corrupt	
C8	Motor Acceleration Error	
C9	Motor Sense Noise	
CA	Motor Seek Error	

Table A4.2 – Error Type Description (continued)

Error Type	Description	Recommended Action
CB	Motor Skipped Step	
CC	Motor Stalled	
CD	Motor Jammed	
CE	Motor Translation Pin Jammed Error	
CF	Motor Asynchronous Stop	
Magazine Hardware Error Types		
D0	Magazine Eject Failed	• Insure that the autoloader is resting on a solid flat surface, or mounted level in a rack unit. • Remove and re-insert the magazine. Verify that the magazine slides freely in and out of the magazine bay. • Verify that the magazine clicks and locks in place when fully inserted. • Power cycle the autoloader and retry the operation. • If all previous steps fail, contact customer support.
D1	Magazine Present Sensor Bad	
D2	Magazine Cam Position Sensor Bad	• Insure that the autoloader is resting on a solid flat surface, or mounted level in a rack unit. • Remove and re-insert the magazine. Verify that the magazine slides freely in and out of the magazine bay. • Verify that the magazine clicks and locks in place when fully inserted. • Power cycle the autoloader and run the Magazine Test from the Operator Control Panel. • If all previous steps fail, contact customer support.
D3	Magazine Sensor 1 Bad	
D4	Magazine Sensor 2 Bad	
D5	Magazine Flag Missing	Magazine errors may occur if the magazine sensor cannot detect cartridge carrier flags during magazine rotation. This may be caused by an issue with a cartridge carrier flag, a sensor problem, a physically jammed magazine, or a sensor alignment issue caused by a mis-inserted magazine. • Insure that the autoloader is resting on a solid flat surface, or mounted level in a rack unit. • Remove and inspect the magazines one at a time. Turn the white thumbwheels on each magazine and insure that the carriers move freely at least one full rotation in each direction. • Verify that carrier flags are present on all slots and slot 1 has the unique (longer) carrier flag. • Insure that the sensors protruding from the picker into the magazine bays are free of debris, and 'float' in and out freely when pushed by hand. • Carefully re-insert the magazine straight into the magazine bay. Be careful to avoid twisting or biasing the magazine up or down. • Power cycle the autoloader. • Run the Magazine Test from the operator control panel. • If all previous steps fail, contact customer support.
D6	Magazine Flag Bad	
D7	Slot Zero Not Found	
D8	Multiple Slot Zero Detected	
D9	Magazine Step Tolerance Error	
DA	Magazine Calibration Lost	
DB	Magazine Lost	
DC	Magazine Position Error	
DD	Magazine Slot Type Invalid	
DE	Magazine Slot (Gross) Position Error	
DF	Magazine Jammed Error	
System Event Types		
E8	Time Zone Update Event	User updated the time zone setting. No action required.

Table A4.2 – Error Type Description (continued)

Error Type	Description	Recommended Action
E9	Time Update Event	The system time was changed. No action required.
Front Panel Error Types		
EA	LCD Busy Error	Possible LCD controller problem, software error, or communication error. • Power cycle the autoloader • Run the Random Move test. • If all previous steps fail, contact customer support.
EB	LCD Goto Error	
EC	Login/Password Error	Incorrect login from front panel. • Use correct login/password.
ED	Socket Error During SNTP	
Barcode Error Types		
F0	Bar Code Init Error	• Remove magazines and inspect cartridges. Verify that valid barcode labels are being used on all cartridges, and re-insert the magazines. • If barcode labels are not being used, disable the barcode reader via the Operator Control Panel or Remote Management Unit. • Run the Random Move test. Note: The Random Move test requires a minimum of two cartridges present within the • If all previous steps fail, contact customer support.
F1	Bar Code Hardware Error	
F2	Bar Code Baud Rate Error	
F3	Barcode Handshake Error	
F4	Bad/Noisy Response From Bar Code reader	
F5	Checksum failed	Incomplete barcode label or barcode checksum failed. • Repeat test with new cartridge or label. • If problems recur with the original cartridge or label, replace. • If all previous steps fail, contact customer support.
F6	Barcode No Read	Barcode label not present • Apply valid barcode label to cartridge, or disable the barcode reader via the Operator Control Panel or Remote Management Unit.
F7	Barcode Mismatch Error	• Power cycle the autoloader. • Run the Random Move test. Note: The Random Move test requires a minimum of two cartridges present within the • If all previous steps fail, contact customer support.
F8	Barcode Duplicate Label Error	Duplicate barcode
Diagnostic Error Types		
F9	Diagnostic Test Failure	• Power cycle the autoloader. • Re-run the failing diagnostic test. • If all previous steps fail, contact customer support.
FA	Diagnostic Error, Drive Reporting Write Protect	• Verify that valid, not data protected media is present for test.

Table A4.2 – Error Type Description (continued)

Error Type	Description	Recommended Action
FB	Diagnostic Error, Cleaning Tape Inserted	• Run the Random Move test from either the Remote Mangement Unit (RMU) or the Operator Control Panel (OCP). Note: The Random Move test requires a minimum of two cartridges present within the autoloader • If all previous steps fail, contact customer support.
FC	Diagnostic Load Tape Prompt	This is a prompt to manually load a cartridge as required for test.
FD	Diagnostic Unknown Tape Format	• Verify that valid, not data protected media is present for test. • Run the Random Move test from either the Remote Mangement Unit (RMU) or the Operator Control Panel (OCP). Note: The Random Move test requires a minimum of two cartridges present within the autoloader • If all previous steps fail, contact customer support.
FE	Diagnostic Invalid Configuration	This is an indication that a minimum of two pieces of media are required for test. • Insure at least two cartridges are present in the autoloader and re-run the failed test.

Software Location

Software Location is contained in the lower word (bits 15-0) of the Error field. This field is primarily used by firmware development engineers to debug code. However, Tables A5.1 and A5.2 have been included in this document as the Location Code may add further validation or detail to the Error Code. Table A5.1 contains unique location codes. Table A5.2 contains function dependent location codes. (i.e. Location codes in Table A5.2 are grouped by function, some values may be duplicated.)

Error Example:

```
0003: PC: 00004 POH: 00000:00:59 Error: 076f0045, Context: 0000/00000000
```

In this example, we see Drive Manager Login Failed. This is in alignment with the Loader Communication Error Code.

Table A5.1 – Location Codes

Location Code	Val.	Description	Context 1	Context 2	Comments
DRVMGR_COMMAND_PROTOCOL _DECODE_ERR	0002				
DRVMGR_RESPONSE_PROTOCOL _DECODE_ERR	0003				
DRVMGR_SEMA_ERR	0004				
DRVMGR_COULDNT_ACTIVATE _TMR_ERR	0021				
DRVMGR_COULDNT_ALLOCATE _BLOCK_ERR	0022				
DRVMGR_COULDNT_ACTIVATE _TMR_ERR1	0023				
DRVMGR_COULDNT_ACTIVATE _TMR_ERR2	0024				
PKR_MOVE_SNS_CNT_ERR1	0024				
DRVMGR_COULDNT_ACTIVATE _TMR_ERR3	0025				
DRVMGR_QUE_SEND_ERR	0026				
DRVMGR_NO_RESP_PTR	0027				
DRVMGR_BUSY_TOO_LONG	0028				
DRVMGR_BAD_RESP	0029				
DRVMGR_RESPONSE_UNKNOWN _EVENT_ERR	0041				
DRVMGR_COMMAND_UNKNOWN _MSG_ERR	0042				
DRVMGR_COULDNT_SEND_ADT _LOGIN_ERR	0043				
DRVMGR_LOGIN_FAILED	0044				
DRVMGR_LOGIN_FAILED2	0045				

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
DRVMGR_LOGIN_FAILED3	0046				
DRVMGR_COULDNT_SEND_ADT _LOGOUT_ERR	0047				
DRVMGR_COULDNT_SEND_ADT _TEST_UNIT_READY_ERR	0048				
DRVMGR_ABORT _OPEN_EXCHANGE	0049				
DRVMGR_COULDNT_SEND_ADT _LOAD_UNLOAD_ERR	004A				
DRVMGR_COULDNT_SEND _ADT_RAW_CDB_ERR	004B				
DRVMGR_COULDNT_SEND _ADT_INQUIRY_ERR	004C				
DRVMGR_COULDNT_SEND _ADT_MODE_SENSE_ERR	004D				
DRVMGR_COULDNT_SEND _ADT_REPORT_LUN_ERR	004E				
DRVMGR_COULDNT_SEND _ADT_MODE_SELECT_ERR	004F				
DRVMGR_COULDNT_RESPONSE _PTR_NULL_ERR	0050				
DRVMGR_BAD_REPLY	0051				
DRVMGR_BAD_SCSI_SENSE	0052				
DRVMGR_LOGIN_UNEXPECTED	0053				
PKR_MOVE_SNS_CNT_ERR2	0240				
MGR_ENTRY_ERR1	1000				
MGR_ENTRY_ERR2	1001				
MGR_ENTRY_ERR3	1002				
MGR_ENTRY_ERR4	1003				
MGR_ENTRY_ERR5	1004				
MGR_ENTRY_ERR6	1005				
MGR_CHK_SENDER_ERR1	1010				
MGR_REPLY_ERR1	1020				
MGR_GET_CMD_ERR1	1040				
MGR_GET_CMD_ERR2	1041				
MGR_GET_RSP_ERR1	1050				
MGR_DO_SHUTDOWN_ERR1	10F0				
MGR_SEND_CMD_ERR1	1100				
MGR_SEND_CMD_ERR2	1101				
MGR_SEND_CMD_ERR3	1102				
MGR_SEND_RSP_ERR1	1120				
MGR_SHUTDOWN_ERR1	11F0				
MGR_SHUTDOWN_ERR2	11F1				
SRVO_TAPE_ALRT_ERR1	1210				
SRVO_AUD_ELEM_ERR1	1740				

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
SRVO_AUD_ELEM_ERR2	1741				
SRVO_AUD_ELEM_ERR3	1742				
SRVO_AUD_ELEM_ERR4	1743				
SRVO_AUD_ELEM_ERR5	1744				
SRVO_AUD_ELEM_ERR6	1745				
SRVO_AUD_ELEM_ERR7	1746				
SRVO_AUD_ELEM_ERR8	1747				
SRVO_AUD_ELEM_ERR9	1748				
SRVO_AUD_MAG_ERR1	1750				
SRVO_AUD_MLBL_ERR1	1758				
SRVO_DO_SCAN_ERR1	1760				
SRVO_DO_SCAN_ERR2	1761				
SRVO_DO_SCAN_ERR3	1762				
SRVO_DO_SCAN_ERR4	1763				
SRVO_DO_SCAN_ERR5	1764				
SRVO_DO_SCAN_ERR6	1765				
SRVO_DO_SCAN_ERR7	1766				
SRVO_BCR_SCAN_ERR1	1770				
SRVO_BCR_SCAN_ERR2	1771				
SRVO_BCR_SCAN_ERR3	1772				
SRVO_BCR_SCAN_ERR4	1773				
SRVO_BCR_SCAN_ERR5	1774				
SRVO_STAT_UPD_ERR1	1C00				
SRVO_STAT_UPD_ERR2	1C01				
SRVO_STAT_UPD_ERR3	1C02				
SRVO_STAT_UPD_ERR4	1C03				
SRVO_STAT_UPD_ERR5	1C04				
SRVO_STAT_UPD_ERR6	1C05				
SRVO_STAT_UPD_ERR7	1C06				
SRVO_STAT_UPD_ERR8	1C07				
SRVO_STAT_UPD_ERR9	1C08				
PKR_ENTRY_ERR1	2000	pkr motor op condition failure	status		
PKR_ENTRY_ERR2	2001	pkr reserved, msg sender failure	sndr task id		
PKR_ENTRY_ERR3	2002	pkr (re)init attempt after hard error	status		
PKR_ENTRY_ERR4	2003	pkr entry (re)init after hard err fail	status		
PKR_ENTRY_ERR5	2004	pkr recv bad msg fail	msg		
PKR_ENTRY_ERR6	2005	pkr command recovery failure	status		
PKR_ENTRY_ERR7	2006	pkr motor response failure	status		
PKR_ENTRY_ERR8	2007	pkr motor response failure	status		
PKR_ENTRY_ERR9	2008	pkr entry get command system failure	status		
PKR_ENTRY_ERR10	2009	not used			
PKR_CHK_SENDER_ERR1	2010	msg sender failure	sender taskid		
PKR_REPLY_ERR1	2020	pkr send reply perform ending error drv reload	status		
PKR_REPLY_ERR2	2021	pkr send reply perform ending error drv reload context	Pkr op	Pkr Op info	

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_REPLY_ERR3	2022	pkr reply sender drv reload failure	ld status		
PKR_REPLY_ERR4	2023	msg sender failure	sender taskid		
PKR_LOGHARD_ERR7	202F	/* log the hard error */	cmd_data	op_data	
PKR_CHK_MTR_ERR1	2030	pkr get motor response failure	status	current/ expected pos	
PKR_CHK_MTR_ERR2	2031	pkr get motor response failure	motor err	current/ expected sns	
PKR_CHK_MTR_ERR3	2032				
PKR_CHK_MTR_ERR4	2033				
PKR_CHK_MTR_ERR5	2034				
PKR_GET_CMD_ERR1	2040	pkr get motor response failure	timeout msecs		
PKR_GET_CMD_ERR2	2041	pkr get motor response failure	status		
PKR_GET_CMD_ERR3	2042	pkr get pkr imm cmd msg signal failure	timeout msecs		
PKR_GET_CMD_ERR4	2043	pkr get pkr imm cmd msg failure	status		
PKR_GET_CMD_ERR5	2044	pkr get pkr imm cmd msg signal failure	timeout msecs		
PKR_GET_CMD_ERR6	2045	pkr get pkr imm cmd msg failure	status		
PKR_GET_CMD_ERR7	2046	pkr get command send imm pending cmd failure	status		
PKR_GET_CMD_ERR8	2047	pkr get command send pending cmd failure	status		
PKR_GET_RSP_ERR1	2050	pkr get motor response failure	timeout msecs		
PKR_GET_RSP_ERR2	2051	pkr get motor response failure	status		
PKR_GET_RSP_ERR3	2052	pkr get pkr mtr response failure	status		
PKR_GET_RSP_ERR4	2053	0	status		
PKR_GET_RSP_ERR5	2054	pkr get mag no response failure	timeout msecs		
PKR_GET_RSP_ERR6	2055	pkr get mag response failure	status		
PKR_GET_RSP_ERR7	2056	pkr get mag response failure	status		
PKR_GET_RSP_ERR8	2057	pkr get mag response result failure	status	mag	
PKR_GET_RSP_ERR9	2058	pkr get mtr response send pending cmd failure	status		
PKR_GET_RSP_ERR10	2059	pkr get mtr got no response failure	status	pkrMotionResp	
PKR_GET_RSP_ERR11	205A	pkr get mtr got wrong response failure	status	pkrMotionResp	
PKR_GET_RSP_ERR12	205B	pkr get mtr got wrong response failure	status	pkrEventSet	
PKR_GET_RSP_ERR13	205C	not used			
PKR_GET_RSP_ERR14	205D	pkr get mag ending response failure	status		
PKR_GET_RSP_ERR15	205E	pkr get mag ending semaphore failure	status		
PKR_GET_RSP_ERR16	205F	pkr get pkr ending semaphore failure	status		
PKR_INIT_ERR1	2080	pkr init mtr failure	status	motor	
PKR_INIT_ERR2	2081	pkr servo/drive init slow failure	status	init time	
PKR_INIT_ERR3	2082	pkr drive init PSP failure	status		
PKR_INIT_ERR4	2083	pkr servo/drive init timeout failure	status		
PKR_INIT_ERR5	2084	pkr init notify LDR failure	status		
PKR_INIT_ERR6	2085				
PKR_INIT_ERR7	2086				
PKR_INIT_CART_ERR1	2088	pkr init scan drv element fail	status		
PKR_INIT_CART_ERR2	2089	pkr init scan drv element fail	status		
PKR_INIT_CART_ERR3	208A				
PKR_INIT_CART_ERR4	208B				

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_SRVO_INIT_ERR1	208C	pkr srvo init recursion fail	status		
PKR_SRVO_INIT_ERR2	208D				
PKR_INIT_CAL_ERR1	2090	pkr init fail	status	state	
PKR_INIT_CAL_ERR2	2091	pkr init fail	status	state	
PKR_INIT_CAL_ERR3	2092	pkr init fail	status	state	
PKR_INIT_CAL_ERR4	2093	pkr init fail	status	state	
PKR_INIT_CAL_ERR5	2094	pkr put drv push fail	status		
PKR_INIT_CAL_ERR6	2095				
PKR_INIT_UNKNOWN_ERR1	2098	pkr init fail	state	info1	
PKR_INIT_CAL_MAG_ERR2	2099				
PKR_INIT_CAL_MAG_ERR3	209A				
PKR_INIT_CAL_MAG_ERR4	209B				
PKR_INIT_UNKNOWN_ERR1	209C				
PKR_INIT_CKENGAGE_ERR1	209E				
PKR_INIT_CKENGAGE_ERR2	209F				
PKR_INIT_CLRPATH_ERR1	20A0	pkr init fail	status	state	
PKR_INIT_CLRPATH_ERR2	20A1	pkr init fail	status	state	
PKR_INIT_CLRPATH_ERR3	20A2	pkr init fail	status	state	
PKR_INIT_CLRPATH_ERR4	20A3	pkr init fail	status	state	
PKR_INIT_CLRPATH_ERR5	20A4	pkr init fail	status	state	
PKR_INIT_MSPATH_ERR1	20A8	pkr init MS clear fail	status	state	
PKR_INIT_MSPATH_ERR2	20A9	pkr init MS clear fail	status	state	
PKR_INIT_MSPATH_ERR3	20AA	pkr init MS clear fail	status	state	
PKR_INIT_MSPATH_ERR4	20AB	pkr init MS clear fail	status	state	"something must be in the way"
PKR_INIT_ROTCCW_ERR1	20AC	pkr init fail	status	state	
PKR_INIT_ROTCCW_ERR2	20AD	pkr init fail	status	state	
PKR_INIT_ROTCCW_ERR3	20AE	pkr init fail	status	state	
PKR_INIT_ROTCW_ERR1	20B0	pkr init fail	status	state	
PKR_INIT_ROTCW_ERR2	20B1	not used			
PKR_INIT_ROTCW_ERR3	20B2	not used			
PKR_INIT_CNOTCH_ERR1	20B4	pkr init fail	status	not defined	
PKR_INIT_CNOTCH_ERR2	20B5	pkr init fail	status	not defined	
PKR_INIT_CNOTCH_ERR3	20B6	pkr init fail	status	not defined	
PKR_INIT_CNOTCH_ERR4	20B7				
PKR_INIT_VRFYROT_ERR1	20B8	pkr init fail	status	not defined	
PKR_INIT_VRFYROT_ERR2	20B9	pkr init fail	status	not defined	
PKR_INIT_VRFYROT_ERR3	20BA	pkr init fail	status	not defined	
PKR_INIT_PARK_ERR1	20C0	pkr park trans MS free-to-rotate pos fail	status		
PKR_INIT_PARK_ERR2	20C1	pkr rot MS park fail	status		
PKR_INIT_PARK_ERR3	20C2	pkr rot park fail	status		
PKR_INIT_PARK_ERR4	20C3	pkr trans park fail	status		
PKR_INIT_PARK_ERR5	20C4	pkr MS park home trans fail	status		
PKR_INIT_PARK_ERR6	20C5	pkr MS park ending rot fail	status		
PKR_INIT_PARK_ERR7	20C6				
PKR_INIT_UNPARK_ERR1	20C8	pkr init fail	status	not defined	

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_INIT_UNPARK_ERR2	20C9	pkr init fail	status	not defined	
PKR_INIT_UNPARK_ERR3	20CA	pkr init fail	status	not defined	
PKR_INIT_UNPARK_ERR4	20CB	pkr init fail	status	not defined	
PKR_INIT_REPARK_ERR1	20CC				
PKR_INIT_REPARK_ERR2	20CD				
PKR_INIT_REPARK_ERR3	20CE				
PKR_INIT_REPARK_ERR4	20CF				
PKR_INIT_MAGREPOS_ERR1	20D0				
PKR_INIT_MAGREPOS_ERR2	20D1				
PKR_INIT_MAGREPOS_ERR3	20D2				
PKR_INIT_MAGREPOS_ERR4	20D3				
PKR_CMD_RECOV_ERR1	20E0	servo command recovery invoked	status		
PKR_CMD_RECOV_ERR2	20E1	pkr cmd retry elem get swap fail	status	src elem	
PKR_CMD_RECOV_ERR3	20E2	pkr cmd retry src swap failure	status		
PKR_CMD_RECOV_ERR4	20E3	pkr command recovery re-init failure	status		
PKR_CMD_RECOV_ERR5	20E4	pkr cmd retry elem put swap fail	status	dest elem	
PKR_CMD_RECOV_ERR6	20E5	pkr cmd retry dest swap failure	status		
PKR_CMD_RECOV_ERR7	20E6	pkr cmd retry swap failure	status		
PKR_CMD_RECOV_ERR8	20E7	pkr command recovery failure	status		
PKR_CMD_RECOV_ERR9	20E8	pkr command recovery final scan failure	status		
PKR_CMD_RECOV_ERR10	20E9	pkr command recovery final move check failure	status		
PKR_CMD_RECOV_ERR11	20EA				
PKR_CMD_RECOV_ERR12	20EB				
PKR_CMD_RECOV_ERR13	20EC				
PKR_CMD_RECOV_ERR14	20ED				
PKR_CMD_RECOV_ERR15	20EE				
PKR_DO_SHUTDOWN_ERR1	20F0	pkr do shutdown mag failure	status		
PKR_DO_SHUTDOWN_ERR2	20F1	pkr do shutdown park failure	status		
PKR_DO_SHUTDOWN_ERR3	20F2	pkr do shutdown mag failure	status	magazine	
PKR_SEND_CMD_ERR1	2100	pkr send cmd during init failure	status		
PKR_SEND_CMD_ERR2	2101	pkr send cmd failure	status		
PKR_SEND_CMD_ERR3	2102	pkr send cmd signal failure	status		
PKR_ISSUE_CMD_ERR1	2110	pkr issue cmd fail	task & msg id		
PKR_ISSUE_CMD_ERR2	2111	pkr issue cmd send failure	status		
PKR_SEND_RSP_ERR1	2120	pkr send response failure	status		
PKR_MAG_SEND_RSP_ERR1	2130	pkr send response failure	status		
PKR_MAG_SEND_RSP_ERR2	2131	pkr send mag resp signal failure	status		
PKR_MTR_SEND_RSP_ERR1	2140	pkr send response failure	status		
PKR_TMRSND_CMD_ERR1	2150	pkr timer send cmd failure	status		
PKR_SAV_STATRQ_ERR1	2154	pkr request statistics save failure	status		
PKR_RECAL_RQ_ERR1	2158	pkr request recalibration failure	status		
PKR_DRVLD_RQ_ERR1	215C	pkr request drive load failure	status		
PKR_ELEM_UPDRQ_ERR1	2190	pkr request notify elem status chg failure	status		
PKR_GET_LDR_RSP_ERR1	21A0	pkr get LDR resp reply timeout fail	status		
PKR_GET_LDR_RSP_ERR2	21A1	pkr get LDR resp reply fail	status		

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_GET_LDR_RSP_ERR3	21A2	pkr get LDR resp reply ID fail	Sender		
PKR_GET_LDR_RSP_ERR4	21A3	pkr get LDR resp op fail	Sender & status		
PKR_NOTIFY_ELEM_ERR1	21B0	pkr notify LDR elem stat chg fail	status		
PKR_NOTIFY_ELEM_ERR2	21B1	pkr notify LDR elem stat chg reply fail	status		
PKR_SHUTDOWN_ERR1	21F0	pkr shutdown failure	status		
PKR_SHUTDOWN_ERR2	21F1	pkr shutdown delete resources failure	status		
PKR_OP_ERR1	2200	pkr op calibrate fail	status		
PKR_OP_ERR2	2201	pkr op calibrate fail	status		
PKR_OP_ERR3	2202	pkr op calibrate fail	status		
PKR_OP_ERR4	2203	pkr op get from src fail	status		
PKR_OP_ERR5	2204	pkr op put to dest fail	status		
PKR_OP_ERR6	2205	pkr op move from src fail	status		
PKR_OP_ERR7	2206	pkr op move to dest fail	status		
PKR_OP_ERR8	2207	pkr move subOp fail	subOp		
PKR_OP_ERR9	2208	pkr update element op fail	op		
PKR_OP_ERR10	2209	pkr update drive element op fail	status		
PKR_OP_ERR11	220A	pkr update mail slot element op fail	status		
PKR_OP_ERR12	220B	pkr op fail	op		
PKR_OP_ERR13	220C				
PKR_OP_ERR14	220D				
PKR_OP_ERR15	220E				
PKR_OP_ERR16	220F				
PKR_MOV_SEQ_ERR1	2210	pkr move seq loc fail	loc		
PKR_MOV_SEQ_ERR2	2211	pkr move seq fail	pkr op state		
PKR_MOV_SEQ_ERR3	2212	pkr move seq initial drive load fail	status	InfoFlags	
PKR_MOV_SEQ_ERR4	2213	pkr move seq extra drive push fail	status	InfoFlags	
PKR_MOV_SEQ_ERR5	2214	pkr move seq extra drive push fail	status	InfoFlags	
PKR_MOV_SEQ_ERR6	2215	pkr move seq auto scan fail	status	Drive Status	
PKR_MOV_SEQ_ERR7	2216	pkr move seq wait cart fail	status		
PKR_MOV_SEQ_ERR8	2217	pkr move seq mail slot door open fail	InfoFlags		
PKR_MOV_SEQ_ERR9	2218	pkr move seq mail slot door close fail	InfoFlags		
PKR_MOV_SEQ_ERR10	2219	pkr move seq mail slot door open fail	InfoFlags		
PKR_MOV_SEQ_ERR11	221A	pkr move seq auto scan fail	status	InfoFlags	
PKR_MOV_SEQ_ERR12	221B	pkr move seq final drive push dwell fail	drv ld err	dwell time	
PKR_MOV_SEQ_ERR13	221C	pkr move seq final drive reseat push fail	move delta		
PKR_MOV_SEQ_ERR14	221D	pkr move seq initial drive load fail	move delta		
PKR_MOV_SEQ_ERR15	221E	pkr move seq initial drive load fail	move delta		
PKR_MOV_SEQ_ERR16	221F	pkr move seq initial drive load fail	move delta		
PKR_WAIT_CART_ERR1	2220	pkr wait cart fail, user timeout	status		
PKR_WAIT_CART_ERR2	2221	pkr wait cart fail	status		
PKR_WAIT_CART_ERR3	2222	pkr wait cart fail, bad responder	status & sender		
PKR_WAIT_CART_ERR4	2223	pkr wait cart fail, timeout msg	status		
PKR_WAIT_CART_ERR5	2224	pkr wait cart fail, bad continue msg	status		
PKR_MOV_SEQ_ERR22	2225				
PKR_MOV_SEQ_ERR23	2226				

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_MOV_SEQ_ERR24	2227				
PKR_MOV_SEQ_ERR25	2228				
PKR_MOV_SEQ_ERR26	2229				
PKR_MOV_SEQ_ERR27	222A				
PKR_MOV_SEQ_ERR28	222B				
PKR_MOV_SEQ_ERR29	222C				
PKR_MOV_SEQ_ERR30	222D				
PKR_MOV_SEQ_ERR31	222E				
PKR_GET_ERR01	222F				
PKR_GET_ERR1	2230	pkr get err - drive status cmd failed	status	Drive Status	
PKR_GET_ERR2	2231	pkr get err - drive eject failed	Drive Status	cnt	
PKR_GET_ERR3	2232	pkr get fail - drive not ejected into picker path	status	info1	
PKR_GET_ERR4	2233	pkr get fail - drive eject failed	Drv Unload Err		
PKR_GET_ERR5	2234	pkr get pick fail	status & src		
PKR_GET_ERR6	2235	pkr get pick fail	status & src		
PKR_GET_ERR7	2236	pkr get recover drive unload fail	status		
PKR_GET_ERR8	2237	pkr get rehome fail	status		
PKR_GET_ERR9	2238	pkr get rehome fail	status		
PKR_GET_ERR10	2239	pkr get reseat source fail	status		
PKR_GET_ERR11	223A	pkr get reseat rehome fail	status		
PKR_GET_ERR12	223B	pkr get mag repos fail	status		
PKR_GET_ERR13	223C	pkr get mag repos fail	status		
PKR_GET_ERR14	223D	pkr get err - magazine mis-positioned	mag		
PKR_GET_ERR15	223E	not used			
PKR_GET_ERR16	223F	not used			
PKR_PICK_ERR1	2240	pkr pick from src pkr full err	status		
PKR_PICK_ERR2	2241	pkr pick from mail slot quick cal fail	status		
PKR_PICK_ERR3	2242	pkr pick from src fail	status		
PKR_PICK_ERR4	2243	pkr pick from mail slot fail - door still open	status	info1	
PKR_PICK_ERR5	2244	pkr pick from src fail - no cartridge	status	info1	
PKR_PICK_ERR6	2245	pkr pick err - magazine mis-positioned	mag		
PKR_PICK_ERR7	2246				
PKR_PICK_ERR8	2247				
PKR_PICK_ERR9	2248				
PKR_PICK_ERR10	2249				
PKR_PICK_ERR11	224A				
PKR_PICK_ERR12	224B				
PKR_PICK_ERR13	224C				
PKR_PUT_ERR_1	2250	pkr put put fail	status	dest	
PKR_PUT_ERR_2	2251	pkr put/export into mail slot - cartridge jammed/dropped	status	info1	
PKR_PUT_ERR_3	2252	pkr put mail slot recovery fail	status		
PKR_PUT_ERR_4	2253	pkr put mail slot recovery fail	status		
PKR_PUT_ERR_5	2254	pkr put home fail	status		
PKR_PUT_ERR_6	2255	pkr mail slot reseat source fail	status		

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_PUT_ERR_7	2256	pkr insert into dest fail - drive load fail	drive status/info1		
PKR_PUT_ERR_8	2257	pkr put drv recover drv load fail	status		
PKR_PUT_ERR_9	2258	pkr mag unjam reseat source fail	status		
PKR_PUT_ERR_10	2259	pkr put reseat home fail	status		
PKR_PUT_ERR_11	225A	pkr put err - magazine mis-positioned	mag dest		
PKR_PUT_ERR_12	225B	pkr put err - magazine mis-positioned	mag dest		
PKR_PUT_ERR_13	225C	pkr put err - magazine mis-positioned	mag dest		
PKR_PUT_ERR14	225D				
PKR_PUT_ERR15	225E				
PKR_PUT_ERR16	225F				
PKR_INSERT_ERR_1	2260	pkr insert into dest pkr empty err	status		
PKR_INSERT_ERR_2	2261	pkr insert into dest fail	status		
PKR_INSERT_ERR_3	2262	pkr insert into dest fail - cartridge still in picker	status	info1	
PKR_INSERT_ERR_4	2263	pkr insert into dest fail - drive load fail	Drv load err	info1	
PKR_INSERT_ERR_5	2264	pkr insert into dest fail - drive load completion fail	status		
PKR_INSERT_ERR_6	2265	pkr insert into mail slot - cartridge jammed/dropped	status	info1	
PKR_INSERT_ERR_7	2266	pkr insert into dest fail - drive load fail	status	info1	
PKR_INSERT_ERR_8	2267	not used			
PKR_INSERT_ERR_9	2268	not used			
PKR_INSERT_ERR_10	2269	not used			
PKR_INSERT_ERR_11	226A	pkr insert err - magazine mis-positioned	mag		
PKR_INSERT_ERR12	226B				
PKR_INSERT_ERR13	226C				
PKR_INSERT_ERR14	226D				
PKR_STEP_MAG_ERR1	2270	pkr mag move send failure	status		
PKR_STEP_MAG_ERR2	2271	pkr mag move response failure	status		
PKR_INSERT_DRV_ERR3	2272				
PKR_INSERT_DRV_ERR4	2273				
PKR_INSERT_DRV_ERR5	2274				
PKR_INSERT_DRV_ERR6	2275				
PKR_INSERT_DRV_ERR7	2276				
PKR_INSERT_DRV_ERR8	2277				
PKR_REPOS_MAG_ERR1	2280	pkr repos mag calibrate fail	status		
PKR_REPOS_MAG_ERR2	2281	pkr repos mag to adjacent fail	status		
PKR_REPOS_MAG_ERR3	2282	pkr repos mag to slot fail	status		
PKR_HOME_ERR1	2300	pkr home trans fail	status		
PKR_HOME_ERR2	2301	pkr home rot fail	status		
PKR_HOME_ERR3	2302	pkr (re)home (re)init fail	status		
PKR_HOME_ERR4	2303				
PKR_HOME_ERR5	2304				
PKR_REHOME_ERR1	2305				
PKR_REHOME_ERR2	2306				
PKR_REHOME_ERR3	2307				
PKR_CAL_ERR1	2308	pkr cal trans fail	status		
PKR_CAL_ERR2	2309	pkr cal rot fail	status		

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_TRANS_SEEK_HOME_ERR1	230C				
PKR_TRANS_SEEK_HOME_ERR2	230D				
PKR_TRANS_HOME_ERR1	2310	pkr trans home chk gap fail	status		
PKR_TRANS_HOME_ERR2	2311	pkr trans home chk gap fail	status		
PKR_TRANS_HOME_ERR3	2312	pkr trans home move from sensor 1 fail	status		
PKR_TRANS_HOME_ERR4	2313	pkr trans home move from sensor 2 fail	status		
PKR_TRANS_HOME_ERR5	2314	pkr trans home return HOME fail	status		
PKR_TRANS_HOME_ERR6	2315	pkr trans home attempt fail	status		
PKR_TRANS_HOME_ERR7	2316	pkr trans home move mag fail	status	mag	
PKR_TRANS_HOME_ERR8	2317	pkr trans home move mag fail	status	mag	
PKR_TRANS_HOME_ERR9	2318	pkr trans home retry move trans fail	status		
PKR_TRANS_HOME_ERR10	2319	pkr trans home move rot fail	status		
PKR_TRANS_HOME_ERR11	231A	pkr trans home recal mag fail	status	MAG	
PKR_TRANS_HOME_ERR12	231B	pkr trans home repos mag to original slot fail	status	MAG	
PKR_TRANS_DOHOME_ERR5	231C				
PKR_TRANS_DOHOME_ERR6	231D				
PKR_ROT_HOME_ERR1	2320	pkr rot home chk notch fail	status		
PKR_ROT_HOME_ERR2	2321	pkr rot home goto left of flag fail	status		
PKR_ROT_HOME_ERR3	2322	pkr rot home left hard stop reached fail	status		
PKR_ROT_HOME_ERR4	2323	pkr rot home left hard stop reached fail	status		
PKR_ROT_HOME_ERR5	2324	pkr rot home return to HOME fail	status		
PKR_ROT_HOME_ERR6	2325	pkr rot home return to HOME fail			
PKR_ROT_HOME_ERR7	2326				
PKR_ROT_HOME_ERR8	2327				
PKR_ROT_CKLHARD_ERR1	2328	pkr rot chk left hard stop reached fail	status		
PKR_ROT_CKLHARD_ERR2	2329	pkr rot chk left hard stop reached fail	status		
PKR_ROT_CKLHARD_ERR3	232A	pkr rot chk left hard sensor fail	status		
PKR_ROT_DOHOME_ERR4	232B				
PKR_ROT_FINDFLG_ERR1	232C	pkr rot find left flag fail	status		
PKR_ROT_DOHOME_ERR6	232D				
PKR_ROT_DOHOME_ERR7	232E				
PKR_TRANS_FINDHS_ERR1	232E				
PKR_CAL_TRANS_ERR1	2330	pkr trans cal recursion error	status		
PKR_CAL_TRANS_ERR2	2331	pkr trans cal failure	status		
PKR_TRANS_CAL_ERR1	2332	pkr trans cal picker/drive full fail	status		
PKR_TRANS_CAL_ERR2	2333	pkr trans cal HS fail	status		
PKR_TRANS_CAL_ERR3	2334	pkr trans cal sensor offsets fail	status		
PKR_TRANS_CAL_ERR4	2335	pkr trans cal backlash fail	status		
PKR_TRANS_CAL_ERR5	2336	pkr trans cal HOME fail	status		
PKR_TRANS_CAL_ERR6	2337	pkr trans data save/restore fail	status		
PKR_CAL_ROT_ERR1	2338	pkr rot cal recursion error	status		
PKR_CAL_ROT_ERR2	2339	pkr rot cal failure	status		
PKR_ROT_CAL_ERR1	233A	pkr rot cal HS fail	status		
PKR_ROT_CAL_ERR2	233B	pkr rot cal sensor offsets fail	status		
PKR_ROT_CAL_ERR3	233C	pkr rot cal backlash fail	status		

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_ROT_CAL_ERR4	233D	pkr rot cal HOME fail	status		
PKR_ROT_CAL_ERR5	233E	pkr rot cal center notch HOME fail	status		
PKR_ROT_CAL_ERR6	233F	pkr rot data save/restore fail	status		
PKR_TRANS_CALBL_ERR1	2340	pkr cal translation backlash fwd fail	status		
PKR_TRANS_CALBL_ERR2	2341	pkr cal translation backlash bwd fail	status		
PKR_ROT_CALBL_ERR1	2344				
PKR_ROT_CALBL_ERR2	2345				
PKR_ROT_CALBL_ERR3	2346				
PKR_ROT_CALBL_ERR1	2348	pkr rot cal backlash fwd fail	status		
PKR_ROT_CALBL_ERR2	2349	pkr calc rot backlash/sensor failure	sense cnt		
PKR_ROT_CALBL_ERR3	234A	pkr rot cal backlash bwd fail	status		
PKR_ELEV_CALBL_ERR4	234B				
PKR_ELEV_CALBL_ERR5	234C				
PKR_TRANS_CALSO_ERR1	2350	pkr trans cal offset fwd fail	status		
PKR_TRANS_CALSO_ERR2	2351	pkr trans sensor offset/fwd move sensor1 failure	status	sense cnt	
PKR_TRANS_CALSO_ERR3	2352	pkr trans sensor offset/fwd move sensor2 failure	status	sense cnt	
PKR_TRANS_CALSO_ERR4	2353	pkr trans sensor offset/fwd move sensors 1&2 failure	status	sense cnt	
PKR_TRANS_CALSO_ERR5	2354	pkr trans cal offset bwd fail	status	sense cnt	
PKR_TRANS_CALSO_ERR6	2355	pkr trans cal offset find drive HS fail	status	sense cnt	
PKR_TRANS_CALSO_ERR7	2356	pkr trans cal offset bwd fail	status		
PKR_TRANS_CALSO_ERR8	2357	pkr trans cal sns offset fail	status		
PKR_TRANS_CALSO_ERR9	2358	pkr trans cal sns offset fail	status		
PKR_TRANS_CALSO_ERR10	2359	pkr trans cal sns1 offset fail	status		
PKR_TRANS_CALSO_ERR11	235A	pkr trans cal sns2 offset fail	status		
PKR_ROT_CALSO_ERR1	2360	pkr rot cal offset fwd fail	status		
PKR_ROT_CALSO_ERR2	2361	pkr rot sensor offset/fwd move sensor failure	status	sense cnt	
PKR_ROT_CALSO_ERR3	2362	pkr rot cal offset fwd sns cnt fail	status	sense cnt	
PKR_ROT_CALSO_ERR4	2363	pkr rot cal offset find right HS fail	status		
PKR_ROT_CALSO_ERR5	2364	pkr rot cal offset bwd fail	status		
PKR_ROT_CALSO_ERR6	2365	pkr rot cal offset bwd fail	status		
PKR_ROT_CALSO_ERR7	2366	pkr rot cal offset bwd fail	status		
PKR_ELEV_CALSO_ERR1	2370				
PKR_ELEV_CALSO_ERR2	2371				
PKR_ELEV_CALSO_ERR3	2372				
PKR_ELEV_CALSO_ERR4	2373				
PKR_ELEV_CALSO_ERR5	2374				
PKR_ELEV_CALSO_ERR6	2375				
PKR_ELEV_CALSO_ERR7	2376				
PKR_TRANS_RECAL_ERR1	2380	pkr trans recal sensor fail	status		
PKR_TRANS_RECAL_ERR2	2381	pkr trans recal recal fail	status		
PKR_ROT_RECAL_ERR1	2388	pkr rot recal sensor fail	status		
PKR_ROT_RECAL_ERR2	2389	pkr rot recal sensor fail	status		
PKR_ROT_RECAL_ERR3	238A				
PKR_ELEV_RECAL_ERR1	238C				

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_ELEV_RECAL_ERR2	238D				
PKR_ELEV_RECAL_ERR3	238E				
PKR_CAL_ELEV_ERR1	2390				
PKR_CAL_ELEV_ERR2	2391				
PKR_HOME_ELEV_ERR1	2398				
PKR_HOME_ELEV_ERR2	2399				
PKR_HOME_ELEV_ERR3	239A				
PKR_DOHOME_ELEV_ERR1	23A0				
PKR_DOHOME_ELEV_ERR2	23A1				
PKR_DOHOME_ELEV_ERR3	23A2				
PKR_DOHOME_ELEV_ERR4	23A3				
PKR_DOHOME_ELEV_ERR5	23A4				
PKR_DOHOME_ELEV_ERR6	23A5				
PKR_ELEV_CAL_ERR1	23A8				
PKR_ELEV_CAL_ERR2	23A9				
PKR_ELEV_CAL_ERR3	23AA				
PKR_ELEV_CAL_ERR4	23AB				
PKR_ELEV_CAL_ERR5	23AC				
PKR_ELEV_CAL_ERR6	23AD				
PKR_TRANS_CKSTHM_ERR1	23C0	pkr trans check/set HOME translation sensor1 failure	sense cnt		
PKR_TRANS_CKSTHM_ERR2	23C1	pkr trans check/set HOME cnt fail	sense cnt		
PKR_TRANS_CKSTHM_ERR3	23C2	pkr trans check/set HOME pos fail	sensor pos		
PKR_ROT_CKSTHM_ERR1	23C8	pkr rot check/set HOME rotation sensor failure	sense cnt		
PKR_ROT_CKSTHM_ERR2	23C9	pkr rot check/set HOME cnt fail	sense cnt		
PKR_ROT_CKSTHM_ERR3	23CA	pkr rot check/set HOME pos fail	sensor pos		
PKR_ELEV_CKSTHM_ERR1	23CC				
PKR_ELEV_CKSTHM_ERR2	23CD				
PKR_DCA_CAL_ERR1	23D0				
PKR_DCA_CAL_ERR2	23D1				
PKR_DCA_CAL_ERR3	23D2				
PKR_DCA_CAL_ERR4	23D3				
PKR_DCA_CAL_ERR5	23D4				
PKR_DCA_CAL_ERR6	23D5				
PKR_DCA_CAL_ERR7	23D6				
PKR_DCA_CAL_ERR8	23D7				
PKR_DCA_CAL_ERR9	23D8				
PKR_DCA_CAL_ERR10	23D9				
PKR_DCA_CAL_ERR11	23DA				
PKR_SELF_CAL_ERR1	23F0	pkr Self cal init HOME fail	status		
PKR_SELF_CAL_ERR2	23F1	pkr Self cal calibrate fail	status		
PKR_SELF_CAL_ERR3	23F2	pkr Self cal re-HOME fail			
PKR_SET_RPOS_ERR1	2400	pkr set rpos pos cmd fail	status		/* log the failure */
PKR_SET_RPOS_ERR2	2401	pkr set rpos trans stall recov attempt	MOTOR_STALL_ ERROR		/* log unique error */

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_SET_RPOS_ERR3	2402	pkr set rpos trans stall recov cmd fail	status		/* move at high torque to overcome the detent force */
PKR_SET_RPOS_ERR4	2403	pkr set rpos dir err trans rehome cmd fail	status		/* must return successfully to home position */
PKR_SET_RPOS_ERR5	2404	pkr set rpos dir err rot repos cmd fail	status		/* must return successfully to rotation position */
PKR_SET_RPOS_ERR6	2405	pkr set rpos dir err trans recal cmd fail	status		/* must return successfully to translation cal state */
PKR_SET_RPOS_ERR7	2406	pkr set Translation Mag GET notch force out recov cmd fail	status		/* force the cartridge out of the notch, set up for jam recovery */
PKR_SET_RPOS_ERR8	2407	pkr set Translation Mag GET notch force out recov cmd fail	status		/* adjust the pin distance to avoid both corners of the notch */
PKR_SET_RPOS_ERR9	2408	pkr set rpos repos cmd fail	status		/* must return successfully to previous control position */
PKR_SET_RPOS_ERR10	2409	pkr set rpos recal repos cmd fail	status		/* try a more aggressive recovery by homing, calibrating and redo the move */
PKR_SET_RPOS_ERR11	240A	pkr set pos rpos cmd fail	status		
PKR_SET_RPOS_ERR12	240B	pkr set pos last recal/retry rpos cmd fail	status		/* recalibrate and retry to get to selected position */
PKR_SET_RPOS_ERR13	240C	pkr set rpos unbuckle recov fail	status		/* can't pull the cartridge home, drive did not unbuckle */
PKR_SET_RPOS_ERR14	240D	pkr set rpos rot unbuckle recov fail	status		/* can't rotate into the notch, drive did not unbuckle */
PKR_SET_RPOS_ERR15	240E	pkr set rpos rot reload recov fail	status		/* can't rotate into the notch, drive did not fully unload */
PKR_SET_RPOS_ERR16	240F				
PKR_SET_POS_ERR1	2410	pkr set pos mtr cmd fail	status		/* get any outstanding motor response */
PKR_SET_POS_ERR2	2411	pkr set pos mtr resp fail	status		/* get any outstanding motor response */
PKR_SET_POS_ERR3	2412	pkr set pos fail	status		
PKR_SET_POS_ERR4	2413	not used			
PKR_SET_POS_ERR5	2414	not used			
PKR_SET_POS_ERR6	2415	not used			
PKR_SET_POS_ERR7	2416				
PKR_SET_POS_ERR8	2417				
PKR_RESET_POS_ERR1	2418				
PKR_RESET_POS_ERR2	2419				
PKR_RESET_POS_ERR3	241A				
PKR_RESET_POS_ERR4	241B				
PKR_RESET_POS_ERR5	241C				
PKR_SET_RCPOS_ERR1	2420	pkr set pos rcpos rehome cmd fail	status		/* reposition to original target position if not home */
PKR_SET_RCPOS_ERR2	2421	pkr set pos rcpos retry cmd fail	status		
PKR_SET_RCPOS_ERR3	2422	pkr set pos rcpos rehome cmd fail	status		/* reposition to home */

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_SET_RCPOS_ERR4	2423	pkr set pos rcpos retry cmd fail	status		/* reposition to original target position if not home */
PKR_SET_RCPOS_ERR5	2424	pkr set pos rcpos MS rot retry cmd fail	status		
PKR_SET_RCPOS_ERR6	2425				
PKR_MOV_TO_POS_ERR1	2430	pkr move to pos fail	status		/* get any outstanding motor response */
PKR_MOV_TO_POS_ERR1	2438				
PKR_MOV_POS_ERR1	2440	pkr move fail	status		/* get any outstanding motor response */
PKR_ROT_RECENTER_ERR1	2444				
PKR_ROT_RECENTER_ERR2	2445				
PKR_CART_BACKOUT_ERR1	2448				
PKR_CART_BACKOUT_ERR2	2449				
PKR_CART_BACKOUT_ERR3	244A				
PKR_CART_BACKOUT_ERR4	244B				
PKR_CART_BACKOUT_ERR5	244C				
PKR_CART_BACKOUT_ERR6	244D				
PKR_CART_BACKOUT_ERR7	244E				
PKR_PIN_REMOVE_ERR1	2450	pkr set Translation Erro stall recov cmd fail	status		/* adjust the pin distance to avoid both corners of the notch */
PKR_PIN_REMOVE_ERR2	2451	pkr set Translation Erro stall recov cmd fail	status		/* adjust the pin distance to avoid both corners of the notch */
PKR_PIN_REMOVE_ERR3	2452	pkr set rpos rot stall recov invoked	status		/* can't rotate out of notch on mag put, rotation moved during translate? */
PKR_PIN_REMOVE_ERR4	2453	pkr set rpos rot stall recov cmd fail	status		/* use max torque to get it out of the notch blindly */
PKR_PIN_REMOVE_ERR5	2454				
PKR_PIN_REMOVE_ERR6	2455				
PKR_PIN_REMOVE_ERR7	2456				
PKR_PIN_REMOVE_ERR8	2457				
PKR_PIN_REMOVE_ERR9	2458				
PKR_PIN_REMOVE_ERR10	2459				
PKR_CART_FORCEOUT_ERR1	245C				
PKR_CART_FORCEOUT_ERR2	245D				
PKR_CART_FORCEOUT_ERR3	245E				
PKR_CART_FORCEOUT_ERR4	245F				
PKR_SEEK_NOTCH_ERR1	2460				
PKR_SEEK_NOTCH_ERR2	2461				
PKR_SEEK_NOTCH_ERR3	2462				
PKR_SEEK_NOTCH_ERR4	2463				
PKR_SEEK_NOTCH_ERR5	2464				
PKR_FIND_NOTCH_ERR1	2470				
PKR_FIND_NOTCH_ERR2	2471				
PKR_FIND_NOTCH_ERR3	2472				
PKR_FIND_NOTCH_ERR4	2473				

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_RECENTER_ROT_ERR1	2480				
PKR_RECENTER_ROT_ERR2	2481				
PKR_FIND_DRV_NOTCH_ERR1	24D0				
PKR_FIND_DRV_NOTCH_ERR2	24D1				
PKR_FIND_DRV_NOTCH_ERR3	24D2				
PKR_CTR_NOTCH_ERR1	2500	pkr center notch pos lost in notch err	status	motor	/* note any position errors over the limit */
PKR_CTR_NOTCH_ERR2	2501	pkr center notch pos lost near notch err	status	motor	/* note any position errors over the limit */
PKR_CTR_NOTCH_ERR3	2502	pkr center notch lost notch err	status	motor	
PKR_CTR_NOTCH_ERR4	2503	pkr center notch lost checking notch err	status	motor	
PKR_CTR_NOTCH_ERR5	2504	pkr center notch recenter lost pos err	status	motor	
PKR_CTR_NOTCH_ERR6	2505	pkr center notch recenter lost pos err	status	motor	
PKR_FIND_EDGE_ERR1	2510	pkr center notch lost notch err	status	mtr_id	/* failed to find edge */
PKR_FIND_EDGE_ERR2	2511	pkr find edge gross pos err	status	mtr_id	
PKR_FIND_EDGE_ERR3	2512	pkr center notch lost notch err	status	mtr_id	/* failed to find right side of edge */
PKR_FIND_EDGE_ERR4	2513	not used			
PKR_FIND_EDGE_ERR5	2514	not used			
PKR_CHK_POS_ERR1	2530	pkr chk mtr pos resp err	status	mtr_num	/* check the motor response */
PKR_CHK_POS_ERR2	2531	pkr chk mtr pos resp center notch err	status	mtr_num	/* keep track of statistics for failing micro-moves */
PKR_CHK_POS_ERR3	2532	pkr chk pos fail	SRVO_ERR_TRANS_POS_ERR	motor current/ expected pos	/* set up error location, even for translation, odd for rotation */
PKR_CHK_POS_ERR4	2533	pkr chk pos fail	SRVO_ERR_ROT_POS_ERR	motor current/ expected pos	/* set up error location, even for translation, odd for rotation */
PKR_CHK_POS_ERR5	2534	pkr chk pos fail	status	motor current/ expected sns	/* log sense count error */
PKR_CHK_POS_ERR6	2535	pkr chk pos fail	status	motor current/ expected sns	/* log sense count error */
PKR_CHK_POS_ERR7	2536	pkr chk mtr pos bad pos center notch err	status		/* keep track of statistics for failing micro-moves */
PKR_CHK_POS_ERR8	2537	pkr chk mtr pos bad trans sensor center notch err	status		/* keep track of statistics for failing micro-moves */
PKR_CHK_POS_ERR9	2538	pkr chk mtr pos bad rot sensor center notch err	status		/* keep track of statistics for failing micro-moves */
PKR_CHK_POS_ERR10	2539	pkr chk mtr pos bad rot sensor find edge err	status		/* keep track of statistics for failing micro-moves */
PKR_CHK_POS_ERR11	253A				
PKR_CHK_POS_ERR12	253B				
PKR_RECOV_POS_ERR1	2540	pkr chk mtr pos bad rot sensor center notch err	status		/* keep track of statistics for failing micro-moves */
PKR_RECOV_POS_ERR2	2541	pkr chk mtr pos bad rot sensor edge repos err	status		/* keep track of statistics for failing micro-moves */
PKR_RECOV_POS_ERR3	2542	pkr chk mtr pos bad trans sensor center notch err	status		/* keep track of statistics for failing micro-moves */
PKR_RECOV_POS_ERR4	2543	not used			

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_RECOV_POS_ERR5	2544	not used			
PKR_RECOV_POS_ERR6	2545	not used			
PKR_RECOV_POS_ERR7	2546	not used			
PKR_PERF_RESEAT_ERR1	2570				
PKR_PERF_RESEAT_ERR2	2571				
PKR_PERF_RESEAT_ERR3	2572				
PKR_PERF_MAG_RESEAT_ERR1	2580				
PKR_PERF_MAG_RESEAT_ERR2	2581				
PKR_PERF_MAG_RESEAT_ERR3	2582				
PKR_PERF_MAG_RESEAT_ERR4	2583				
PKR_PERF_MAG_RESEAT_ERR5	2584				
PKR_RESEAT_ERR1	2590	pkr reseat fail fail	status	cart	/* check the status of the reseat operation */
PKR_RESEAT_ERR2	2591	pkr reseat left mag fail	status		/* perform reseat and check status */
PKR_RESEAT_ERR3	2592	pkr reseat (re)HOME trans lmag fail	status		/* return picker arm to home position */
PKR_RESEAT_ERR4	2593	pkr reseat right mag fail	status		/* perform reseat and check status */
PKR_RESEAT_ERR5	2594	pkr reseat (re)HOME trans rmag fail	status		/* return picker arm to home position */
PKR_RESEAT_ERR6	2595	pkr reseat drive fail	status		/* perform reseat and check status */
PKR_RESEAT_ERR7	2596	pkr reseat (re)HOME trans drv fail	status		/* return picker arm to home position */
PKR_RESEAT_ERR8	2597	pkr reseat (re)HOME fail	status		/* restore picker to home position */
PKR_RESEAT_ERR9	2598				
PKR_RESEAT_ERR10	2599				
PKR_CHK_NOTCH_ERR1	25A0				
PKR_CHK_NOTCH_ERR2	25A1				
PKR_CHK_NOTCH_ERR3	25A2				
PKR_CHK_NOTCH_ERR4	25A3				
PKR_CHK_NOTCH_ERR5	25A4				
PKR_CHK_NOTCH_ERR6	25A5				
PKR_CHK_NOTCH_ERR7	25A6				
PKR_MTR_INFO_ERR1	25F0	pkr get mtr info err	operation	op param(s)	
PKR_CMP_CARTS_ERR1	2600	pkr cmp cartridge state failure	status	ald cartridge state 1	
PKR_CMP_CARTS_ERR2	2601	pkr cmp cartridge state failure	status	ald cartridge state 2	
PKR_SWAP_ELEM_ERR1	2610	pkr swap elem fail	status	src elem	/* get pointer to source element */
PKR_SWAP_ELEM_ERR2	2611	pkr swap elem fail	status	dest elem	/* get pointer to source element */
PKR_SWAP_ELEM_ERR3	2612	pkr swap elem src not full status fail	status	src elem	/* check if source is FULL and error if not FULL */
PKR_SWAP_ELEM_ERR4	2613	pkr swap elem dest not empty status fail	status	dest elem	/* check if destination is not empty and correct if not */
PKR_FINISH_SWAP_ERR1	2618				
PKR_FINISH_SWAP_ERR2	2619				
PKR_FINISH_SWAP_ERR3	261A				
PKR_FINISH_SWAP_ERR4	261B				
PKR_FINISH_SWAP_ERR5	261C				

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_CHK_EFULL_ERR1	2620	pkr check element full fail	invalid element address		/* validate source/destination */
PKR_CHK_EFULL_ERR2	2621	pkr check element full elem table corruption	invalid element address	elem status expected/actual	/* check if elem status is not correct and log error if not update only
PKR_CHK_ELEM_ERR1	2630	check elements failure	invalid src elem		/* check for valid source address */
PKR_CHK_ELEM_ERR2	2631	check elements src full chk failure	invalid src elem		/* update src element status based on sensors */
PKR_CHK_ELEM_ERR3	2632	check elements failure	inaccessible src elem		/* check that source is accessible */
PKR_CHK_ELEM_ERR4	2633	check elements failure	unknown src elem		/* check that source status is known */
PKR_CHK_ELEM_ERR5	2634	check elements failure	empty src elem		/* check that source is present (or for mail slot that it is not present) */
PKR_CHK_ELEM_ERR6	2635	check elements failure	invalid dest elem		/* check for valid destination address */
PKR_CHK_ELEM_ERR7	2636	check elements failure	invalid dest mailslot, door locked		/* check for SCSI/door locked and dis-allow mail slot ejects */
PKR_CHK_ELEM_ERR8	2637	check elements dest full chk failure	invalid dest elem		/* check for destination full */
PKR_CHK_ELEM_ERR9	2638	check elements failure	inaccessible dest elem		/* check that destination is accessible */
PKR_CHK_ELEM_ERR10	2639	check elements failure	unknown dest elem		/* check that destination status is known */
PKR_CHK_ELEM_ERR11	263A	check elements failure	full dest elem		/* check that destination is not full */
PKR_CHK_ELEM_ERR12	263B	check elements failure	bad picker elem status		/* update picker element status */
PKR_CHK_ELEM_ERR13	263C	check elements failure	full picker elem		/* check that picker is not full, otherwise can't move any element */
PKR_AUD_ELEMS_ERR1	2650	pkr audit elements elem count failure	status	actual/expected cartridges	/* generate an error if we have good status and cartridge count is off */
PKR_MOVE_MAG_ERR1	2660	pkr mag move send failure	status		/* send the magazine move command */
PKR_MOVE_MAG_ERR2	2661	pkr mag move response failure	status		/* get any outstanding motor response */
PKR_MOVE_MAG_ERR3	2662				
PKR_MOVE_MAG_TO_SLOT_ERR1	2668				
PKR_MOVE_MAG_TO_SLOT_ERR2	2669				
PKR_MOVE_MAG_TO_SLOT_ERR3	266A				
PKR_MOVE_MAG_TO_SLOT_ERR4	266B				
PKR_MOVEMENT_ERR1	2670	pkr move magazine check failure	status		/* destination of Move Picker not prsent/accessible so return error */
PKR_MOVEMENT_ERR2	2671	pkr movement elem audit failure	status		/* check for element table corruption at the start of every move */
PKR_MOVEMENT_ERR3	2672	pkr movement failure	status		/* basic get retry loop */
PKR_MOVEMENT_ERR4	2673	pkr movement (re)home translation failure	status		/* reHOME translation to get pin out of the way then treat as rot lost */
PKR_MOVEMENT_ERR5	2674	pkr movement (re)home rotation failure	status		/* bring rotation home if not home */

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_MOVEMENT_ERR6	2675	pkr movement reposition rot failure	status		/* try to specifically position rotation to the magazine */
PKR_MOVEMENT_ERR7	2676	pkr movement recal rot failure	status		/* recal rotation and return to selected rotation position */
PKR_MOVEMENT_ERR8	2677	pkr movement move mag recovery failure	status		/* if successful and magazine is positioned, break */
PKR_MOVEMENT_ERR9	2678	pkr movement unjam mag failure	status		/* attempt to recover the jam */
PKR_MOVEMENT_ERR10	2679	pkr movement final failure	status		/* log resultant error if any */
PKR_MOVEMENT_ERR11	267A	pkr movement final failure	status		
PKR_MOVEMENT_ERR12	267B				
PKR_DOMOVE_ELEM_ERR1	2680	movement failure	status		/* get any outstanding motor response */
PKR_DOMOVE_ELEM_ERR2	2681	not used			
PKR_DOMOVE_ELEM_ERR3	2682				
PKR_DOMOVE_ELEM_ERR4	2683				
PKR_DOMOVE_ELEM_ERR5	2684				
PKR_SET_ELEV_ERR1	2688				
PKR_SET_ELEV_ERR2	2689				
PKR_SET_ELEV_ERR3	268A				
PKR_SET_ELEV_ERR4	268B				
PKR_DOSET_ELEV_ERR1	268D				
PKR_MOVE_ELEM_ERR1	2690	pkr move element elem audit start failure	status		/* check for element table corruption at the start of every move element */
PKR_MOVE_ELEM_ERR2	2691	pkr move element elem audit start failure	status		/* validate source and destination */
PKR_MOVE_ELEM_ERR3	2692	move element mag not calibrated failure	uncalibrated mag left		/* check mag calibration if source or destination is a mag element */
PKR_MOVE_ELEM_ERR4	2693	move element mag not calibrated failure	uncalibrated mag right		/* check mag calibration if source or destination is a mag element */
PKR_MOVE_ELEM_ERR5	2694	pkr move element swap src failure	status		/* move element from source to picker */
PKR_MOVE_ELEM_ERR6	2695	pkr move element elem audit swap failure	status		
PKR_MOVE_ELEM_ERR7	2696	pkr move element dest swap failure	status		/* move element from picker to destination */
PKR_MOVE_ELEM_ERR8	2697	pkr move element elem audit dest swap failure	status		/* check for element table corruption at the end of every move element */
PKR_MOVE_ELEM_ERR9	2698				
PKR_MOVE_ELEM_ERR10	2699				
PKR_MOVE_ELEM_ERR11	269A				
PKR_MOVE_ELEM_ERR12	269B				
PKR_MOVE_ELEM_ERR13	269C				
PKR_MOVE_ELEM_ERR14	269D				
PKR_MOVE_ELEM_ERR15	269E				
PKR_MOVE_ELEM_ERR16	269F				
PKR_DO_SCAN_MAG_ERR1	2700	mag scan pkr face mag failure	status		

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_DO_SCAN_MAG_ERR2	2701	mag scan failure	status		/* get any outstanding motor response */
PKR_DO_SCAN_MAG_ERR3	2702	mag scan drv home failure	status		
PKR_DO_SCAN_MAG_ERR4	2703	mag scan mag calibrate failure	status		
PKR_DO_SCAN_MAG_ERR5	2704				
PKR_DO_SEQSCAN_MAG_ERR1	2708				
PKR_DO_SEQSCAN_MAG_ERR2	2709				
PKR_DO_SEQSCAN_MAG_ERR3	270A				
PKR_DO_SEQSCAN_MAG_ERR4	270B				
PKR_DO_SEQSCAN_MAG_ERR5	270C				
PKR_MAG_SCAN_ERR1	2710	pkr mag scan failure	status		/* scan mag if present */
PKR_MAG_SCAN_ERR2	2711	pkr mag scan unjam mag failure	status		/* attempt to recover the jam */
PKR_MAG_SCAN_ERR3	2712				
PKR_MAG_SCAN_ERR4	2713				
PKR_SCAN_MAG_SLOT_ERR1	2718				
PKR_SCAN_MAG_SLOT_ERR2	2719				
PKR_SCAN_MAG_SLOT_ERR3	271A				
PKR_SCAN_MAG_SLOT_ERR4	271B				
PKR_SCAN_MAG_SLOT_ERR5	271C				
PKR_DO_SCAN_ERR1	2720	pkr drive scan BCR setup failure	status		/* set up BarCode Reader timeouts */
PKR_DO_SCAN_ERR2	2721	pkr barcode reader scan failure	status		
PKR_DO_SCAN_ERR3	2722				
PKR_SCAN_ERR1	2730	pkr drive scan drive elem init failure	status		/* check status of cart based on picker and drive path cart present sensors */
PKR_SCAN_ERR2	2731	pkr drive scan BCR setup failure	status		/* face scan target */
PKR_SCAN_ERR3	2732	pkr drive scan BCR setup failure	status		/* attempt the scan */
PKR_SCAN_ERR4	2733				
PKR_SCAN_ERR5	2734				
PKR_SCAN_ERR6	2735				
PKR_SCAN_ERR7	2736				
PKR_SCAN_ERR8	2737				
PKR_SCAN_ERR9	2738				
PKR_SCAN_ERR10	2739				
PKR_SCAN_ERR11	273A				
PKR_SCAN_ERR12	273B				
PKR_SCAN_ELEM_ERR1	2740	pkr scan elem start audit failure	status		/* check for element table corruption at the start of every scan element */
PKR_SCAN_ELEM_ERR2	2741	pkr scan elem pkr elem init failure	status		/* check for proper initialization of picker element */
PKR_SCAN_ELEM_ERR3	2742	pkr scan pkr full failure	status		/* if we have a cartridge present in the picker, err, can't perform scan */
PKR_SCAN_ELEM_ERR4	2743	pkr scan pkr full HW failure	status		
PKR_SCAN_ELEM_ERR5	2744	pkr scan elem lmag failure	status		/* scan left magazine */
PKR_SCAN_ELEM_ERR6	2745	pkr scan elem rmag failure	status		/* scan right magazine */
PKR_SCAN_ELEM_ERR7	2746	pkr scan elem HOME failure	status		/* face drive when done */

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_SCAN_ELEM_ERR8	2747	pkr scan elem drive failure	status		/* scan drive */
PKR_SCAN_ELEM_ERR9	2748	pkr scan elem mail slot failure	status		/* "scan" mail slot */
PKR_SCAN_ELEM_ERR10	2749	pkr scan elem end audit cartridge cnt failure	status		/* check if we lost track of cartridge count along the way */
PKR_SCAN_ELEM_ERR11	274A	pkr scan elem end audit failure	status		/* check for element table corruption at the end of every scan element */
PKR_SCAN_ELEM_ERR12	274B				
PKR_SCAN_ELEM_ERR13	274C				
PKR_SCAN_ELEM_ERR14	274D				
PKR_AIM_BCR_ERR1	2750				
PKR_AIM_BCR_ERR2	2751				
PKR_AIM_BCR_ERR3	2752				
PKR_AIM_BCR_ERR4	2753				
PKR_AIM_BCR_ERR5	2754				
PKR_SET_BCR_ELEV_ERR1	2758				
PKR_SET_BCR_ELEV_ERR2	2759				
PKR_MAG_SEND_ERR1	2800	pkr mag send cmd failure	magazine	msg	/* first, check that magazine is valid */
PKR_MAG_INIT_ERR1	2810	pkr mag init send failure			
PKR_MAG_INIT_ERR2	2811	pkr mag init failure	status		/* get any outstanding motor response */
PKR_MAG_INIT_ERR3	2812	pkr mag init cal failure	status		/* if the magazine is present, calibrate it */
PKR_MAG_INIT_ERR4	2813				
PKR_MAG_INIT_ERR5	2814				
PKR_MAG_INIT_ERR6	2815				
PKR_DO_MAG_CAL_ERR1	2820	pkr mag cal send failure	status		
PKR_DO_MAG_CAL_ERR2	2821	pkr mag cal failure	status		
PKR_DO_MAG_CAL_ERR3	2822				
PKR_MAG_CAL_ERR1*	2830	pkr mag cal send failure	status		
PKR_MAG_CAL_ERR1*	2830	pkr mag cal send failure	status		/* retry for mag jams up to the limit */
PKR_MAG_CAL_ERR2*	2831	pkr mag cal failure	status		/* get any outstanding motor response */
PKR_MAG_CAL_ERR2*	2831	pkr mag cal recover mag jam failure	status		/* recover mag jam and get back to slot 0 */
PKR_MAG_CAL_ERR3	2832	pkr mag cal rehome failure	status		/* rehome for another attempt */
PKR_MAG_CAL_ERR4	2833	pkr mag cal rehome failure	status		/* re-face the magazine to be scanned */
PKR_MAG_CAL_ERR5	2834	not used			
PKR_MAG_CAL_ERR6	2835				
PKR_MAG_CHG_ERR1	2840	pkr mag change eject Home picker failure	status		/* check if need to scan magazine */
PKR_MAG_CHG_ERR2	2841	pkr mag change scan rotate failure	status		/* send the insert or remove request */
PKR_MAG_CHG_ERR3	2842	pkr mag change send failure	status		/* get any outstanding motor response */
PKR_MAG_CHG_ERR4	2843	pkr mag change failure	status		/* try to recovery from a jammed mag on insert or remove(final scan) */

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_MAG_CHG_ERR5	2844	pkr mag change notify failure	status		/* notify the drive of the change to element status */
PKR_MAG_CHG_ERR6	2845	pkr mag change notify failure	status		/* go back to home position if scan was performed */
PKR_MAG_CHG_ERR7	2846	pkr mag change home return failure	status		
PKR_MAG_CHG_ERR8	2847				
PKR_MAG_CHG_ERR9	2848				
PKR_MAG_CHG_ERR10	2849				
PKR_UPD_MAG_CART_ERR1	2850	pkr mag cart pres upd err - magazine mis-positioned	mag	expected/actual data (slot)	/* error, magazine mis-positioned */
PKR_SET_MAG_CART_ERR1	2858				
PKR_SET_MAG_CART_ERR2	2859				
PKR_DUAL_EJECT_ERR1	2860	pkr mag dual eject fail1 (left)	status	mag	/* eject the left magazine first */
PKR_DUAL_EJECT_ERR2	2861	pkr mag dual eject fail2 (right)	status	mag	/* now eject the other(right) magazine */
PKR_DUAL_EJECT_ERR3	2862	pkr dual mag eject audit failure	status		/* do an audit to correct any audit failures */
PKR_STEP_MAG_ERR1	2870	pkr mag move send failure	status		
PKR_STEP_MAG_ERR2	2871	pkr mag move response failure	status		
PKR_REPOS_MAG_ERR1	2880	pkr repos mag calibrate fail	status		
PKR_REPOS_MAG_ERR2	2881	pkr repos mag to adjacent fail	status		
PKR_REPOS_MAG_ERR3	2882	pkr repos mag to slot fail	status		
PKR_RECOV_MAGJ_ERR1	2890	pkr mag unjam step mag fail	status		
PKR_RECOV_MAGJ_ERR2	2891	pkr mag unjam step mag fail	status		
PKR_RECOV_MAGJ_ERR3	2892	pkr mag unjam reseat source fail	status		
PKR_RECOV_MAGJ_ERR4	2893	pkr mag unjam mag step/clear pin fail	status		
PKR_RECOV_MAGJ_ERR5	2894	pkr mag unjam reseat rehome fail	status		
PKR_RECOV_MAGJ_ERR6	2895	pkr mag unjam mag repos fail	status		
PKR_RECOV_MAGJ_ERR7	2896	pkr mag unjam mag repos fail			
PKR_RECOV_MAGJ_ERR8	2897				
PKR_MAG_SLOT_CAL_ERR1	2898				
PKR_MAG_SLOT_CAL_ERR2	2899				
PKR_MAG_SLOT_CAL_ERR3	289A				
PKR_MAG_SLOT_CAL_ERR4	289B				
PKR_MAG_ACTUATE_ERR1	28A0				
PKR_MAG_DISENG_ERR1	28B0				
PKR_MAG_DISENG_ERR2	28B1				
PKR_MAG_DISENG_ERR3	28B2				
PKR_MAG_FRCDENG_ERR1	28B8				
PKR_MAG_FRCDENG_ERR2	28B9				
PKR_MAG_FRCDENG_ERR3	28BA				
PKR_MAG_ENGAGE_ERR1	28C0				
PKR_MAG_FACE_ERR1	28D0				
PKR_MAG_FACE_ERR2	28D1				
PKR_MAG_FACE_ERR3	28D2				

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_GET_DRV_STAT_ERR1	2900	pkr get drv stat drv comm cmd fail	status		/* only get drive status from Loader if PSP is up */
PKR_GET_DRV_STAT_ERR2	2901	pkr get drv stat drv stat cmd fail	status		/* send the get drive status cmd to the loader task and drive */
PKR_GET_DRV_STAT_ERR3	2902	pkr get drv stat drv stat cmd reply fail	status		/* get the status response */
PKR_GET_DRV_STAT_ERR4	2903				
PKR_GET_DRV_STAT_ERR5	2904				
PKR_GET_DRV_STAT_ERR6	2905				
PKR_DRV_RESEAT_ERR1	2908				
PKR_DRV_CATCH_ERR1	290C				
PKR_DRV_CATCH_ERR2	290D				
PKR_UNLOAD_DRV_ERR1	2910	pkr unload drv LDR drv comm cmd fail	status		/* only request drive unload of Loader if PSP is up */
PKR_UNLOAD_DRV_ERR2	2911	pkr unload drv LDR drv unload cmd fail	status		/* send the get drive unload cmd to the loader task and drive */
PKR_UNLOAD_DRV_ERR3	2912	pkr unload drv LDR drv stat cmd reply fail	status		/* check for failure status */
PKR_UNLOAD_DRV_ERR4	2913	pkr unload drv LDR drv stat cmd reply fail	status		/* make sure we have updated drive status */
PKR_UNLOAD_DRV_ERR5	2914	not used			
PKR_DO_DRVUNLD_ERR6	2915				
PKR_DO_DRVUNLD_ERR7	2916				
PKR_DO_DRVUNLD_ERR8	2917				
PKR_DO_DRVUNLD_ERR9	2918				
PKR_RST_DRVLDR_ERR1	291A				
PKR_RST_DRVLDR_ERR2	291B				
PKR_UNLOAD_DRV_ERR1	291C				
PKR_UNLOAD_DRV_ERR2	291D				
PKR_DO_DRVLD_ERR1	2920	pkr do drv load drv push fail	status		/* retry final push */
PKR_DO_DRVLD_ERR2	2921	pkr do drv load full drv push fail	status		/* use drive push with pkr cartridge full sequence to reload the drive */
PKR_DO_DRVLD_ERR3	2922	pkr do drv load (re)home fail	status		/* return to home position */
PKR_DO_DRVLD_ERR4	2923				
PKR_DO_DRVLD_ERR5	2924				
PKR_DO_DRVLD_ERR6	2925				
PKR_DO_DRVLD_ERR7	2926				
PKR_DO_DRVLD_ERR8	2927				
PKR_DRV_AUTOLD_ERR1	2928				
PKR_DRV_AUTOLD_ERR2	2929				
PKR_DRV_AUTOLD_ERR3	292A				
PKR_DRV_AUTOLD_ERR4	292B				
PKR_DRV_AUTOLD_ERR5	292C				
PKR_DRV_AUTOLD_ERR6	292D				
PKR_DRV_AUTOLD_ERR7	292E				
PKR_DRV_AUTOLD_ERR8	292F				

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_WAIT_DRVLD_ERR1	2930	pkr wait drv load complete get drv stat fail	status		/* do polling to get updated status and be sure cartridge is inserted */
PKR_WAIT_DRVLD_ERR2	2931	pkr wait drv load complete fail	status		/* if still not present after waiting a reasonable amount of time, err */
PKR_WAIT_DRVLD_ERR3	2932				
PKR_WAIT_DRVUNLD_ERR1	2938				
PKR_WAIT_DRVUNLD_ERR2	2939				
PKR_WAIT_DRVUNLD_ERR3	293A				
PKR_PERFM_DRVLD_ERR1	2940	pkr perform drv ld attempt fail	status		/* try to (re)load the drive */
PKR_PERFM_DRVLD_ERR2	2941	pkr perform drv ld attempt completion fail	status		/* wait for drive load to complete */
PKR_PERFM_DRVLD_ERR3	2942	pkr perform drv ld reccovery fail	status		/* if load attempt did not succeed and/or complete, recover */
PKR_PERFM_DRVUNLD_ERR1	2948				
PKR_PERFM_DRVUNLD_ERR2	2949				
PKR_PERFM_DRVUNLD_ERR3	294A				
PKR_RECOV_DRVLD_ERR1	2950	pkr put drv push fail	status	drv status/info1	
PKR_RECOV_DRVLD_ERR2	2951	pkr recover drv load (re)home fail	status		/* rehome picker in-between retries */
PKR_RECOV_DRVLD_ERR3	2952	pkr recover drv load drv load fail	status		
PKR_RECOV_DRVLD_ERR4	2953	pkr wait drv load complete get drv stat fail	status		/* do polling to get updated status and be sure cartridge is inserted */
PKR_RECOV_DRVLD_ERR5	2954	pkr recover drv load drv reload fail	status		/* if still didn't get it into the drive */
PKR_RECOV_DRVLD_ERR6	2955	pkr recover drv load fail - drive load fail	status		
PKR_RECOV_DRVLD_ERR7	2956	pkr recover drv load final (re)home fail			
PKR_RECOV_DRVLD_ERR8	2957				
PKR_RECOV_DRVLD_ERR9	2958				
PKR_RECOV_DRVLD_ERR10	2959				
PKR_RECOV_DRVLD_ERR11	295A				
PKR_RECOV_DRVLD_ERR12	295B				
PKR_RECOV_DRVUNLD_ERR1	2960	pkr recover drv unload drv reload fail	status	drv status/info1	
PKR_RECOV_DRVUNLD_ERR2	2961	pkr recover drv unload perform drv reload fail	status		/* first, try to reload the drive */
PKR_RECOV_DRVUNLD_ERR3	2962	pkr recover drv unload drv unload fail	status		/* retry the drive unload */
PKR_RECOV_DRVUNLD_ERR4	2963	pkr recover drv unload reload fail	status		/* if still didn't get it out of the drive */
PKR_RECOV_DRVUNLD_ERR5	2964	pkr recover drv unload reload complete fail - drive load fail	status		/* if still didn't get it out of the drive */
PKR_RECOV_DRVUNLD_ERR6	2965	pkr recover drv unload (re)home fail	status		/* rehome picker in-between retries */
PKR_RECOV_DRVUNLD_ERR7	2966	pkr recover drv unload perform ending error drv reload attempt	ALD_SYS_DRV_UNLOAD_ERR (x3f)	drv status/info1	/* if drive state is inconsistent, reload the cartridge */
PKR_RECOV_DRVUNLD_ERR8	2967	pkr recover drv unload perform ending error drv reload	ALD_SYS_DRV_UNLOAD_ERR (x3f)		/* log an error indicating stray tape */
PKR_RECOV_DRVUNLD_ERR9	2968	pkr recover drv unload perform ending error drv reload fail	ld_status		/* log an error indicating stray tape */
PKR_RECOV_DRVUNLD_ERR10	2969				
PKR_RECOV_DRVUNLD_ERR11	296A				

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_RECOV_DRVUNLD_ERR12	296B				
PKR_RECOV_DRVUNBCKL_ERR1	2970	pkr recover drv unbuckle error	ALD_SYS_DRV_UNLOAD_ERR (0x3f)		
PKR_RECOV_DRVUNBCKL_ERR2	2971	pkr recover drv unbuckle rot fail	status		/* move the pin/notch back to the drive pick position */
PKR_RECOV_DRVUNBCKL_ERR3	2972	pkr recover drv unbuckle notch trans fail	status		/* move the pin back to the center of the cart notch for an pin extract */
PKR_RECOV_DRVUNBCKL_ERR4	2973	pkr recover drv unbuckle rot fail	status		/* use max torque to get pin out of the notch blindly */
PKR_RECOV_DRVUNBCKL_ERR5	2974	pkr recover drv unbuckle (re)home fail	status		/* rehome picker for unload recovery */
PKR_RECOV_DRVUNBCKL_ERR6	2975	pkr recover drv unbuckle perform drv reload fail	status		/* try to reload the drive */
PKR_RECOV_DRVUNBCKL_ERR7	2976	pkr recover drv unbuckle drv reunload attempt fail	status		/* try to re-unload the drive */
PKR_RECOV_DRVUNBCKL_ERR8	2977	pkr recover drv unbuckle drv reunload fail	status		/* try to re-unload the drive */
PKR_RECOV_DRVEJECT_ERR1	2978				
PKR_RECOV_DRVEJECT_ERR2	2979				
PKR_RECOV_DRVEJECT_ERR3	297A				
PKR_RECOV_STRAYTAPE_ERR1	2980	pkr recover stray tape entry	status	Pkr Op	
PKR_RECOV_STRAYTAPE_ERR2	2981	pkr reply sender drv reload rehome failure	recovery_status		
PKR_RECOV_STRAYTAPE_ERR3	2982	pkr reply sender drv reload failure	recovery_status		
PKR_RECOV_STRAYTAPE_ERR4	2983				
PKR_RECOV_STRAYTAPE_ERR5	2984				
PKR_GET_STRAYTAPE_ERR1	2990				
PKR_GET_STRAYTAPE_ERR2	2991				
PKR_GET_STRAYTAPE_ERR3	2992				
PKR_GET_STRAYTAPE_ERR4	2993				
PKR_GET_STRAYTAPE_ERR5	2994				
PKR_GET_STRAYTAPE_ERR6	2995				
PKR_CLR_STRAYTAPE_ERR1	29A0				
PKR_CLR_STRAYTAPE_ERR2	29A1				
PKR_CLR_STRAYTAPE_ERR3	29A2				
PKR_CLR_STRAYTAPE_ERR4	29A3				
PKR_CLR_STRAYTAPE_ERR5	29A4				
PKR_CLR_STRAYTAPE_ERR6	29A5				
PKR_CLR_STRAYTAPE_ERR7	29A6				
PKR_CLR_STRAYTAPE_ERR8	29A7				
PKR_CLR_STRAYTAPE_ERR9	29A8				
PKR_CLR_STRAYTAPE_ERR10	29A9				
PKR_CLR_STRAYTAPE_ERR11	29AA				
PKR_CLR_STRAYTAPE_ERR12	29AB				
PKR_CLR_STRAYTAPE_ERR13	29AC				
PKR_CHK_DRVLD_ERR1	29E0				
PKR_CHK_DRVLD_ERR2	29E1				
PKR_CHK_DRVLD_ERR3	29E2				
PKR_CHK_DRVLD_ERR4	29E3				

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_CHK_DRVLD_ERR5	29E4				
PKR_CHK_DRVLD_ERR6	29E5				
PKR_MS_PUSH_ERR1	2A00	pkr insert into mail, final push rotation free fail	status		
PKR_MS_PUSH_ERR2	2A01	pkr insert into mail, final push rotation left free fail			
PKR_MS_PUSH_ERR3	2A02	pkr insert into mail, final push rotation right free fail			
PKR_MS_PUSH_ERR4	2A03	pkr insert into mail, final push rotation right free fail			
PKR_MS_PUSH_ERR5	2A04	pkr insert into mail, final push rotation free (re)home fail			
PKR_MS_CHK_PUSH_ERR6	2A05				
PKR_MS_CHK_PUSH_ERR7	2A06				
PKR_MS_EXEND_ERR1	2A10	pkr insert into mail slot - cartridge jammed	status	INFO1	
PKR_MS_EXEND_ERR2	2A11	pkr insert into mail, final push rotation free fail	status		
PKR_MS_EXEND_ERR3	2A12	pkr insert into mail slot reseat fail	status	INFO1	
PKR_MS_EXEND_ERR4	2A13	pkr park after MS export failure	status		
PKR_MS_RECOV_GET_ERR1	2A20	pkr get Mail Slot recovery fail	status		
PKR_MS_RECOV_GET_ERR2	2A21	pkr rot park fail	status		
PKR_MS_RECOV_UPSH_ERR3	2A22				
PKR_MS_RECOV_UPSH_ERR4	2A23				
PKR_MS_RECOV_UPSH_ERR5	2A24				
PKR_MS_RECOV_UPSH_ERR6	2A25				
PKR_MS_RECOV_UPSH_ERR7	2A26				
PKR_MS_RECOV_UPSH_ERR8	2A27				
PKR_MS_RECOV_UPSH_ERR9	2A28				
PKR_MS_RECOV_UPSH_ERR10	2A29				
PKR_MS_RECOV_UPSH_ERR11	2A2A				
PKR_MS_RECOV_UPSH_ERR12	2A2B				
PKR_MS_RECOV_UPSH_ERR13	2A2C				
PKR_MS_RECOV_GET_ERR1	2A30				
PKR_MS_RECOV_GET_ERR2	2A31				
PKR_MS_RECOV_GET_ERR3	2A32				
PKR_MS_RECOV_GET_ERR4	2A33				
PKR_MS_RECOV_GET_ERR5	2A34				
PKR_MS_RECOV_GET_ERR6	2A35				
PKR_MS_RECOV_GET_ERR7	2A36				
PKR_MS_RECOV_GET_ERR8	2A37				
PKR_MS_RECOV_GET_ERR9	2A38				
PKR_MS_RECOV_GET_ERR10	2A39				
PKR_MS_RECOV_GET_ERR11	2A3A				
PKR_MS_GET_EJECT_ERR1	2A40				
PKR_MS_GET_EJECT_ERR2	2A41				
PKR_MS_GET_EJECT_ERR3	2A42				
PKR_MS_GET_EJECT_ERR4	2A43				
PKR_MS_GET_EJECT_ERR5	2A44				
PKR_MS_GET_EJECT_ERR6	2A45				
PKR_MS_GET_RETRACT_ERR1	2A48				

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_MS_GET_RETRACT_ERR2	2A49				
PKR_MS_GET_RETRACT_ERR3	2A4A				
PKR_MS_GET_RETRACT_ERR4	2A4B				
PKR_MS_GET_RETRACT_ERR5	2A4C				
PKR_MS_GET_RETRACT_ERR6	2A4D				
PKR_MS_GET_RETRACT_ERR7	2A4E				
PKR_MS_GET_RETRACT_ERR8	2A4F				
PKR_MS_GET_REPOS_ERR1	2A50				
PKR_MS_GET_REPOS_ERR2	2A51				
PKR_MS_WAIT_CART_ERR1	2A60				
PKR_MS_WAIT_CART_ERR2	2A61				
PKR_MS_WAIT_CART_ERR3	2A62				
PKR_MS_WAIT_CART_ERR4	2A63				
PKR_MS_WAIT_CART_ERR5	2A64				
PKR_MS_WAIT_CART_ERR6	2A65				
PKR_MS_WAIT_CART_ERR7	2A66				
PKR_MS_WAIT_CART_ERR8	2A67				
PKR_MS_WAIT_CART_ERR9	2A68				
PKR_MS_WAIT_CART_ERR10	2A69				
PKR_MS_OPEN_DOOR_ERR1	2AA0				
PKR_MS_OPEN_DOOR_ERR2	2AA1				
PKR_MS_OPEN_DOOR_ERR3	2AA2				
PKR_MS_OPEN_DOOR_ERR4	2AA3				
PKR_MS_CLOSE_DOOR_ERR1	2AB0				
PKR_MS_CLOSE_DOOR_ERR2	2AB1				
PKR_MS_CLOSE_DOOR_ERR3	2AB2				
PKR_DIAG_ERR1	2D00				
PKR_DIAG_ERR2	2D01				
PKR_DIAG_ERR3	2D02				
PKR_DIAG_ERR4	2D03				
PKR_DIAG_ERR5	2D04				
PKR_DIAG_ERR6	2D05				
PKR_DIAG_ERR7	2D06				
PKR_DIAG_ERR8	2D07				
PKR_DIAG_ERR9	2D08				
PKR_DIAG_ERR10	2D09				
PKR_DIAG_ERR11	2D0A				
PKR_DIAG_ERR12	2D0B				
PKR_DIAG_ERR13	2D0C				
PKR_DIAG_PKRLIFE_ERR1	2D10				
PKR_DIAG_PKRLIFE_ERR2	2D11				
PKR_DIAG_PKRLIFE_ERR3	2D12				
PKR_DIAG_PKRLIFE_ERR4	2D13				
PKR_DIAG_PUTGET_ERR1	2D20	picker putget drive unload failure	status		
PKR_DIAG_PUTGET_ERR2	2D21	picker putget initial get failure	status		

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
PKR_DIAG_PUTGET_ERR3	2D22	picker mailslot export bad msg failure	status		
PKR_DIAG_PUTGET_ERR4	2D23	picker putget initial put failure	status		
PKR_DIAG_PUTGET_ERR5	2D24	picker putget initial get failure	status		
PKR_DIAG_PUTGET_ERR6	2D25				
PKR_DIAG_PUTGET_ERR7	2D26				
PKR_DIAG_PUTGET_ERR8	2D27				
PKR_DIAG_PUTGET_ERR9	2D28				
PKR_DIAG_PKREGTLIFE_ERR2	2D29				
PKR_DIAG_PKREGTLIFE_ERR3	2D2A				
PKR_DIAG_POSRCV_ERR1	2D30	picker rot pos recovery failure			
PKR_DIAG_POSRCV_ERR2	2D31	picker rot pos recovery failure			
PKR_DIAG_POSRCV_ERR3	2D32	picker rot pos recovery failure			
PKR_DIAG_POSRCV_ERR4	2D33	picker rot pos recovery failure			
PKR_DIAG_POSRCV_ERR5	2D34	picker trans pos recovery failure			
PKR_DIAG_POSRCV_ERR6	2D35	picker trans pos recovery failure			
PKR_DIAG_POSRCV_ERR7	2D36	picker trans pos recovery failure			
PKR_DIAG_POSRCV_ERR8	2D37	picker trans pos recovery failure			
PKR_DIAG_PKPINLIFE_ERR9	2D38				
PKR_DIAG_PKPINLIFE_ERR10	2D39				
PKR_DIAG_PUTGET_ERR1	2D50				
PKR_DIAG_PUTGET_ERR2	2D51				
PKR_DIAG_PUTGET_ERR3	2D52				
PKR_DIAG_PUTGET_ERR4	2D53				
PKR_DIAG_PUTGET_ERR5	2D54				
PKR_DIAG_PUTGET_ERR6	2D55				
PKR_DIAG_PUTGET_ERR7	2D56				
PKR_DIAG_PUTGET_ERR8	2D57				
PKR_DIAG_PUTGET_ERR9	2D58				
PKR_DIAG_POSRCV_ERR1	2D80				
PKR_DIAG_POSRCV_ERR2	2D81				
PKR_DIAG_POSRCV_ERR3	2D82				
PKR_DIAG_POSRCV_ERR4	2D83				
PKR_DIAG_POSRCV_ERR5	2D84				
PKR_DIAG_POSRCV_ERR6	2D85				
PKR_DIAG_POSRCV_ERR7	2D86				
PKR_DIAG_POSRCV_ERR8	2D87				
MAG_ENTRY_ERR1	3000	mag op mag num error(use 0,1 for Left, Right)	op	magazine	
MAG_ENTRY_ERR2*	3001	mag op bad	op	magazine	
MAG_ENTRY_ERR2*	3001	mag entry get mtr response fail	status	magazine	
MAG_ENTRY_ERR3	3002	mag entry send reply fail	status	magazine	
MAG_ENTRY_ERR4	3003	mag entry get command system fail	status	magazine	
MAG_CHK_SENDER_ERR1	3010	mag sender failure	sender	magazine	
MAG_REPLY_ERR1	3020	mag sender failure	sender	magazine	
MAG_REPLY_ERR2	3021	not used			

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
MAG_REPLY_ERR16	302F	log the hard error	magHardErr[magazine].cmd.cmd_data	magHardErr[magazine].op.op_data	
MAG_CHK_MTR_ERR1	3030	mag check motor error failure	motor error	current/expected pos	
MAG_CHK_MTR_ERR2	3031	mag check motor error failure	motor error	current/expected sns	
MAG_CHK_MTR_ERR3	3032	mag check motor error failure	motor error	current/expected sns2	
MAG_GET_CMD_ERR1	3040	mag get command timeout failure	timeout msecs	mag	
MAG_GET_CMD_ERR2	3041	mag get command failure	status	mag	
MAG_GET_CMD_ERR3	3042	mag get imm command, none, failure	status	mag	
MAG_GET_CMD_ERR4	3043	mag get imm command, none, failure	status	mag	
MAG_GET_CMD_ERR5	3044	mag get command, none, failure	status	mag	
MAG_GET_CMD_ERR6	3045	mag get imm command msg failure	status	mag	
MAG_GET_RSP_ERR1	3050	mag get motor response timeout failure	timeout msecs	mag	
MAG_GET_RSP_ERR2	3051	mag get motor response failure	status	mag	
MAG_GET_RSP_ERR3	3052	Mag Too many response errors	status	mag	
MAG_GET_RSP_ERR4	3053	Mag get motor response handle event error	status	mag	
MAG_GET_RSP_ERR5	3054	mag get motor response motor error failure	motor error	mtr->mtr_id.mag	
MAG_GET_RSP_ERR6	3055	mag get motor response chk mtr pos failure	motor error	mtr->mtr_id.mag	
MAG_GET_RSP_ERR7	3056	Mag get motor response get cmd	status	mag	
MAG_GET_RSP_ERR8	3057	mag get mtr got no response failure	magEventSet	mtr->mtr_id.mag	
MAG_GET_RSP_ERR9	3058	mag get mtr got wrong response failure	magEventSet	mtr->mtr_id.mag	
MAG_GET_RSP_ERR10	3059	mag get mtr got bad response failure	mag expected response	mtr->mtr_id.mag	
MAG_GET_RSP_ERR11	305A	mag get mtr got bad response failure	mag expected event	mtr->mtr_id.mag	
MAG_GET_RSP_ERR12	305B				
MAG_HNDL_EVT_ERR1	3060	mag barcode reader scan failure	status	slot	
MAG_HNDL_EVT_ERR2	3061	not used			
MAG_HNDL_EVT_ERR3	3062	not used			
MAG_HNDL_EVT_ERR4	3063	not used			
MAG_HNDL_EVT_ERR5	3064	not used			
MAG_HNDL_EVT_ERR6	3065	not used			
MAG_CHANGE_ERR1	3070	mag change door locked failure	mag error	mag	
MAG_CHANGE_ERR2	3071	mag change eject mag elem corruption failure	mag error	mag	
MAG_CHANGE_ERR3	3072	mag change eject left mag failure	mag error	mag	
MAG_CHANGE_ERR4	3073	mag change eject right mag failure	mag error	mag	
MAG_REMOVE_ERR1	3074	async eject error	mag error	mag	
MAG_REMOVE_ERR2	3075	async eject error	mag error	mag	
MAG_REMOVE_ERR1	3078				
MAG_REMOVE_ERR2	3079				
MAG_EJECT_ERR1	307C				
MAG_EJECT_ERR2	307D				

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
MAG_EJECT_ERR3	307E				
MAG_INIT_ELEM_ERR1	3080	mag init element bad cal state failure	status	mag	
MAG_INIT_ELEM_ERR2	3081	mag init element pkr init failure	status	mag	
MAG_INIT_ERR1*	3090	mag init failure	status	mag	
MAG_INIT_ERR1*	3090	mag init send failure	status		
MAG_DO_SHUTDOWN_ERR1	30F1	mag do shutdown failure	status	mag	
MAG_SEND_CMD_ERR1	3100	mag send cmd mag num error	mag	msg_id	
MAG_SEND_CMD_ERR2	3101	mag send cmd failure	status	mag	
MAG_SEND_CMD_ERR3	3102	mag send cmd signal failure	status	mag	
MAG_ISSUE_CMD_ERR1	3110	mag issue cmd param fail	status	mag	
MAG_ISSUE_CMD_ERR2	3111	mag issue cmd send failure	status	mag	
MAG_SEND_RESP_ERR1	3120	mag send resp failure	status	mag	
MAG_SHUTDOWN_ERR1	3130	mag shutdown failure	status	mag	
MAG_SHUTDOWN_ERR2	3131	mag shutdown delete resources failure	status	mag	
MAG_OP_ERR1	3200	not used			
MAG_OP_ERR2	3201	not used			
MAG_OP_ERR3	3202	not used			
MAG_MTROP_ERR1	3210	mag do motor op fail	op	status	
MAG_MTROP_ERR2	3211	mag do motor op, get rsp fail	op	status	
MAG_MTROP_ERR3	3212				
MAG_CAL_ERR1	3300	mag cal, (re)try fail	status	mag	
MAG_CAL_ERR2*	3301	mag cal, (re)scan fail	ALD_HW_ERR (x25)	mag	
MAG_CAL_ERR2*	3301	pkr mag cal failure	status		
MAG_CAL_ERR2*	3301	pkr mag cal recover mag jam failure	status		
MAG_CAL_ERR3*	3302	mag cal, (re)scan fail	status	mag	
MAG_CAL_ERR3*	3302	pkr mag cal rehome failure	status		
MAG_CAL_ERR4	3303				
MAG_DO_CAL_ERR1	3310	(+/-)1600 Fail	status	mag	
MAG_DO_CAL_ERR2	3311	Can't Find the gap	status	mag	
MAG_DO_CAL_ERR3	3312	mag scan BCR setup fail	status	mag	
MAG_DO_CAL_ERR4	3313	mag cal fail forward	status	mag	
MAG_DO_CAL_ERR5	3314	mag cal gap width fail	status	gap width	
MAG_DO_CAL_ERR6	3315	mag cal cart width fail	status	cart width	
MAG_DO_CAL_ERR7	3316	mag cal state failure	status	error state	Mag Sensor Calibration Failed
MAG_DO_CAL_ERR8	3317	mag cal cart count failure	status	cart count	
MAG_DO_CAL_ERR9	3318	mag cal failure	status	error state	
MAG_DO_CAL_ERR10	3319	mag cal re-home fail	status	seek steps	
MAG_DO_CAL_ERR11	331A				
MAG_DO_CAL_ERR12	331B				
MAG_SET_POS_ERR1	3400	mag set position fail	status	mag	/* check success of movement response */
MAG_SET_RPOS_ERR1	3410	magazine set position mag bad (use 0-1)	slot	mag	
MAG_SET_RPOS_ERR2	3411	magazine set position pos bad (use 0-7)	slot	mag	
MAG_SET_RPOS_ERR3	3412	mag set position fail	status	mag	/* log the magazine move error */

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
MAG_SET_RPOS_ERR4	3413	mag set position nearest gap reposition fail	status	mag	/* step in the same direction 1/2 cart distance to set up for retry */
MAG_SET_RPOS_ERR5	3414	mag set position starting position reposition fail	status	mag	/* go back to old position for retry */
MAG_SET_RPOS_ERR6	3415	mag set position recal reposition fail	status	mag	/* magazine position has been lost so find slot 0 again for retry */
MAG_SET_RPOS_ERR7	3416				
MAG_MOV_TO_POS_ERR1	3420	mag move to position fail	status	mag	
MAG_MOV_TO_POS_ERR2	3421	not used			
MAG_MOV_POS_ERR1	3430				
MAG_CHK_POS_ERR1	3530	mag chk mtr pos ISR err	status	mag	
MAG_CHK_POS_ERR2	3531	mag chk mtr pos resp center notch err	status	mag	
MAG_CHK_POS_ERR3	3532	mag chk mtr pos resp center notch err	status	motor expected pos	
MAG_CHK_POS_ERR4	3533	mag chk pos sns fail	status	motor current/ expected sns	
MAG_CHK_POS_ERR5	3534	mag chk pos sns fail	status	motor current/ expected sns2	
MAG_CHK_POS_ERR6	3535	mag chk pos sns fail	status	motor gap cnt	
MAG_CHK_POS_ERR7	3536	mag chk pos sns fail	status	motor gap cnt	
MAG_CHK_POS_ERR8	3537	mag chk pos sns fail	status	motor current/ expected sns2	
MAG_CHK_POS_ERR9	3538				
MAG_CHK_POS_ERR10	3539				
MAG_CHK_POS_ERR11	353A				
MAG_MTR_INFO_ERR1	35F0	mag get mtr info err	op & op params		
MAG_SCAN_SETUP_ERR1	3700	mag scan setup BCR setup fail	status	mag	
MAG_SCAN_CHK_LBL_ERR2	3701				
MAG_SCAN_SETUP_ERR1	3708				
MAG_DO_SCAN_ERR1	3710	mag scan BCR setup fail	status	mag	
MAG_DO_SCAN_ERR2	3711	mag scan calibrate fail	status	mag	
MAG_DO_SCAN_ERR3	3712	mag scan fail	status	mag	
MAG_DO_SCAN_ERR4	3713	mag scan re-home fail	status	mag	
MAG_DO_SCAN_ERR5	3714				
MAG_DO_SEQSCAN_ERR1	3718				
MAG_DO_SEQSCAN_ERR2	3719				
MAG_DO_SEQSCAN_ERR3	371A				
MAG_DO_SEQSCAN_ERR4	371B				
MAG_DO_SEQSCAN_ERR5	371C				
MAG_SCAN_ERR1	3720	mag do scan calibrate fail	status	mag	
MAG_SCAN_ERR2	3721	mag do scan calibrate fail	status	mag	
MAG_SCAN_ERR3	3722	mag do scan, (re)try fail	status	mag	
MAG_SCAN_ERR4	3723	mag do scan, (re)calibrate fail	status	mag	
MAG_SCAN_ERR5	3724	mag do scan re-home fail	status	mag	
MAG_SCAN_ERR6	3725				
MAG_SCAN_ERR7	3726				

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
MAG_SCAN_ERR8	3727				
MAG_SCAN_ERR9	3728				
MAG_DIAG_ERR1	3D00	mag diag test bad	test	mag	
MAG_FWDBWD_ERR1	3D10	mag diag position test src start	status	mag	
MAG_FWDBWD_ERR2	3D11	mag diag mag fwd/bwd test fwd pos fail	status		
MAG_FWDBWD_ERR3	3D12	mag diag mag fwd/bad test bwd pos fail	status		
MAG_FWDBWD_ERR4	3D13				
MAG_FWDBWD_ERR5	3D14				
MAG_POSTST_ERR1	3D20	mag diag position test src start	status		
MAG_POSTST_ERR2	3D21	mag diag position test src start	status		
MAG_POSTST_ERR3	3D22	mag diag position test src start	status		
SPI_ENTRY_ERR1	A001	SCSI POST error, use the enum in spi_post to match SCSI POST error code			
SPI_STATEM_ERR1	A027	Invalid state			
SPI_STATEM_ERR2	A028	Reselection timer activate failed			
SPI_TASKE_ERR1	A030	Invalid Task Event			
SPI_RESEL_ERR1	A040	Data In/Out but no buffer			
SPI_PROSEL_ERR1	A060	Invalid Sequence Step from FAS466 chip			
SPI_BUSEXP_ERR1	A080	DMA error, impossible HW error?			
SPI_STARTRE_ERR1	A0A0	Software error, current SCB doesn't == Resel SCB			
SPI_STARTRE_ERR2	A0A1	Reselection timer activate failed			
SPI_MSG_ERR1	A200	Illegal first message			
SPI_466_ERR1	A316	Xfer Errors			
SPI_UTIL_ERR1	A400	NULL SCB From Resel Holding Q			
SPI_UTIL_ERR2	A401	NULL SCB From Task			
SPI_ISR_ERR1	A500	TX msg q failed			
SPI_ISR_ERR2	A501	TX event set failed			
DIAG_RANDOM_ERR1	BEEF	do unload failed	status	Random stats count	do unload failed
DIAG_RANDOM_ERR2	BEF0	unload failed	status		unload failed
DIAG_INVAL_TEST	BEF1	invalid Diag test number			
DIAG_GET_MSG	BEF2	invalid Diag test number			
DIAG_CAL_ERR1	BEF3	attempt to run left mag test w no mag			
DIAG_CAL_ERR2	BEF4	attempt to run right mag test w no mag			
DIAG_CAL_ERR3	BEF5	cal fail limits			
DIAG_CAL_ERR4	BEF6	mag stats failure			
DIAG_CMDS_ERR1	BEF7	open front failure			
DIAG_CMDS_ERR2	BEF8	attempt to eject right mag test w no mag			
DIAG_CMDS_ERR3	BEF9	attempt to eject left mag test w no mag			
DIAG_CMDS_ERR4	BEFA	clear path sensor fail			
DIAG_CMDS_ERR5	BEFB	mail slot sensor failure			
DIAG_CMDS_ERR6	BEFC	cart present sensor failure			
DIAG_CMDS_ERR7	BEFD	Ld Unload failure			
DIAG_CMDS_ERR8	BEFE	pkr full, can't move cart			
DIAG_CMDS_ERR9	BEFF	drv full, can't load cart			

Table A5.1 – Location Codes (continued)

Location Code	Val.	Description	Context 1	Context 2	Comments
DIAG_CMDS_ERRA	BF00	attempt to run right mag bi-direc test w no mag			
DIAG_CMDS_ERRB	BF01	attempt to run left mag bi-direc test w no mag			
DIAG_CMDS_ERRC	BF02	invalid Diag test number// diag_random.c			
DIAG_RALU_ERR1	BF03	ralu inventory init fail			
DIAG_RALU_ERR2	BF04	not enough carts to run ralu			
DIAG_RALU_ERR3	BF05	labels do not match			
DIAG_RALU_ERR4	BF06	zero generated as random number source			
DIAG_RALU_ERR5	BF07	test stats deficient			
DIAG_RALU_ERR6	BF08	where is the cart			
DIAG_RALU_ERR7	BF09	failed limits stat			
DIAG_RALU_ERR8	BF0A	overall rating deficient			
DIAG_RALU_ERR9	BF0B	u_src error			
DIAG_RALU_ERR10	BF0C	u_dest error			
DIAG_RALU_ERR11	BF0D	u_dest == ALD_START_ADDR_DRIVES, dest full			
DIAG_RALU_ERR12	BF0E	u_dest == ALD_START_ADDR_DRIVES, src empty			
DIAG_RALU_ERR13	BF0F	u_src == ALD_START_ADDR_DRIVES, dest full			
DIAG_RALU_ERR14	BF10	u_src == ALD_START_ADDR_DRIVES, src empty			
DIAG_RALU_ERR17	BF11	label mis-match			
DIAG_MAIN_ERR10	D1A5	test step failed - status,func addr			
DIAG_MAIN_ERR1	D1A6	mem overrun error			
DIAG_MAIN_ERR1	D1A7	Offline request failed			
DIAG_MAIN_ERR2	D1A8	Bad Test Number			
DIAG_MAIN_ERR3	D1A9	ERROR Get Msg diagQue			
DIAG_MAIN_ERR4	D1AA	DiagPrintBuff Overrun			
DIAG_MAIN_ERR5	D1AB	que receive failed			
DIAG_MAIN_ERR6	D1AC	byte alloc failed			
DIAG_MAIN_ERR7	D1AD				
DIAG_MAIN_ERR8	D1AE				
DIAG_MAIN_ERR9	D1AF				
DIAG_HLTH_ERR0	D200	byte alloc failed for health info			
DIAG_HLTH_ERR1	D201	byte alloc failed for health output			
DIAG_HLTH_ERR2	D202	byte release failed for health info			
DIAG_HLTH_ERR3	D203	byte release failed for health output			

Table A5.2 – Function Dependent Location Codes

Location Code	Value	Description
Bar Code Read Error Locations		
BCR_ERR1	0101	error Q receive
BCR_ERR2	0102	bad msg id
BCR_ERR3	0103	no sender response case
BCR_ERR16	0104	POST failed to detected barcode
BCR_ERR16_1	0105	fail to create semaphore
BCR_ERR17	0110	unknown baud rate
BCR_ERR4	0111	init failed
BCR_ERR5	0121	wake failed, hw failure
BCR_ERR6	0131	opcode out of sync
BCR_ERR7	0132	scan start failed
BCR_ERR8	0133	ERROR GET RESPONSE, thread timeout
BCR_ERR9	0141	Error bad response to scan op
BCR_ERR9_1	0142	Semaphore timeout
BCR_ERR9_2	0143	Semaphore get error
BCR_ERR10	0151	Error hardware handshake
BCR_ERR11	0152	No response
BCR_ERR11_1	0153	HW error during TX
BCR_ERR14_1	0161	Comm error
BCR_ERR14_2	0162	Timeout on receive halt failed
BCR_ERR14_3	0163	Timeout error on recieve
BCR_ERR12	0171	Halt command failed
BCR_ERR13	0172	Response for abort failed
BCR_ERR15	0181	Chksum failure
BCR_ERR18	0191	shutdown error
BCR_ERR19	01A1	set timeout failed
BCR_ERR20	01A2	set timeout retries failed
Code Update Error Locations		
CODEUPDATE_MAIN_ERR0	0100	hard - bad flash type
CODEUPDATE_MAIN_ERR1	0101	soft - cupMsgCtrlBlk Q recv
CODEUPDATE_MAIN_ERR2	0102	soft - cup timer activate
CODEUPDATE_MAIN_ERR3	0103	soft - psp sem put
CODEUPDATE_MAIN_ERR4	0104	soft - cup timer deactivate
CODEUPDATE_MAIN_ERR5	0105	soft - cup timer change
CODEUPDATE_MAIN_ERR6	0106	soft - cup timer activate
CODEUPDATE_MAIN_ERR7	0107	soft - cup timer deactivate
CODEUPDATE_MAIN_ERR8	0108	soft - sleep
CODEUPDATE_MAIN_ERR9	0109	soft - default case
CODEUPDATE_MAIN_ERRa	010a	soft - default case
CODEUPDATE_MAIN_ERR	010b	soft - cup timer change
CODEUPDATE_MSG_ERR0	0200	soft - cupMsgCtrlBlk Q send
CODEUPDATE_MSG_ERR10	0210	soft - cupMsgCtrlBlk Q send
CODEUPDATE_UTIL_ERR0	0300	update - cup failure
CODEUPDATE_UTIL_ERR10	0310	soft - timer deactivate
CODEUPDATE_UTIL_ERR11	0311	update - pol start CUP
CODEUPDATE_UTIL_ERR12	0312	update - srv start CUP
CODEUPDATE_UTIL_ERR13	0313	update - ldr start CUP
CODEUPDATE_UTIL_ERR14	0314	soft - timer change
CODEUPDATE_UTIL_ERR15	0315	soft - timer activate
CODEUPDATE_UTIL_ERR20	0320	soft - bad psp msg
CODEUPDATE_UTIL_ERR30	0330	soft - bad EEROM shadow
Drive Manager Error Locations		
LDR_DRIVE_RESP_ERR3	0112	notify loader of resp failed
LDR_DRIVE_RESP_ERR4	0113	send loader resp failed (que)
LDR_SND_RESP_ERR1	0130	notify loader of a response failed
LDR_SND_RSP_ERR3	0302	unknown sender
LDR_DRV_STAT_ERR1	0403	clean cart expired - not loaded
LDR_DRV_STAT_ERR2	0404	clean cart expired - after clean
LDR_DRV_STAT_ERR3	0405	drive bug check
LDR_MEDIA_INFO_ERR1	0406	clean slot not clean cart
LDR_DRV_STAT_ERR4	0407	clean tape not recognized

Table A5.2 – Function Dependent Location Codes (continued)

Location Code	Value	Description
Error Task Error Locations		
ERROR_MAIN_ERR0	0100	hard - post failures
ERROR_MAIN_ERR1	0101	soft - pwr event
ERROR_MAIN_ERR2	0102	soft - unknown request
ERROR_MAIN_ERR3	0103	boot - boot occurred
ERROR_MAIN_ERR4	0104	soft - task init error
ERROR_MAIN_ERR5	0105	soft - post fyi flags
ERROR_MAIN_ERR10	0110	soft - time change
ERROR_MAIN_ERR11	0111	soft - can't write to RTC
ERROR_MAIN_ERR12	0112	soft - can't read from RTC
ERROR_MAIN_ERR20	0120	soft - time zone change
ERROR_MAIN_ERR21	0121	soft - locn zone change
ERROR_MSG_ERR0	0200	soft - can't send msg to task
ERROR_NVLOG_ERR0	0300	soft - can't set evt flags
ERROR_RTC_ERR0	0400	soft - cal factor adjusted OK
ERROR_RTC_ERR1	0401	soft - cal factor out of range
Front Panel Error Locations		
FP_MAIN_ERR1	0101	
FP_MAIN_ERR2	0102	
FP_MAIN_ERR3	0103	
FP_MAIN_ERR4	0104	
FP_MSG_ERR1	0201	
FP_MSG_ERR2	0202	
FP_MSG_ERR3	0203	
FP_MSG_ERR4	0204	
FP_MSG_ERR5	0205	
FP_MSG_ERR6	0206	
FP_CMD_ERR1	0301	
FP_CMD_ERR2	0302	
FP_CMD_ERR3	0303	
FP_CMD_ERR4	0304	
FP_LCD_ERR1	0401	
FP_LCD_ERR2	0402	
FP_CONFIG_ERR1	0501	
SCSI Server Task Error Locations		
SCSI_ENTRY_ERR1	0000	get from queue failed
SCSI_SNDCMD_ERR1	0100	no SCBs available
SCSI_SNDCMD_ERR2	0101	semaphore put failed
SCSI_SNDCMD_ERR3	0102	queue insert failed
SCSI_SNDCMD_ERR4	0103	data size too big
SCSI_SNDCMD_ERR5	0104	block release failed
SCSI_SNDCMD_ERR6	0105	SCB null
SCSI_RECDATA_ERR1	0110	unexpected data received
SCSI_RECDATA_ERR2	0111	semaphore put failed
SCSI_RECDATA_ERR3	0112	queue insert failed
SCSI_RECDATA_ERR4	0113	SCB null
SCSI_RESP_ERR1	0120	unexpected response - no non-immed
SCSI_RESP_ERR2	0121	unexpected response - wrong state
SCSI_RESP_ERR3	0122	semaphore put failed
SCSI_RESP_ERR4	0123	queue insert failed
SCSI_RESP_ERR5	0124	semaphore put failed
SCSI_RESP_ERR6	0125	queue insert failed
SCSI_MSG_ERR1	0130	SCB null in Release SCB
SCSI_MSG_ERR2	0131	release failed in Release SCB
SCSI_SENTDATA_ERR1	0140	unexpected data received
SCSI_SENTDATA_ERR2	0141	semaphore put failed
SCSI_SENTDATA_ERR3	0142	queue insert failed
SCSI_SENTDATA_ERR4	0143	SCB null
Servo/Picker/Magazine Error Locations		
LDR_VAL_SLOT_ERR1	0330	clean slot empty
LDR_VAL_SLOT_ERR3	0331	clean slot invalid
System Error Locations		

Table A5.2 – Function Dependent Location Codes (continued)

Location Code	Value	Description
VALIDATE_ELEM_ERR1	0100	
GET_ELEM_PTR_ERR1	0110	
GET_ELEM_PTR_ERR2	0111	
GET_ELEM_ERR1	0120	
SYS_SET_STATUS_ERR1	0128	Set system status
SYS_PWR_DOWN_ERR1	0130	user requested a power down
SYS_PWR_DOWN_ERR2	0131	MDM eerom shadow checksum wrong
ALD_UTIL_ERR1	0140	i2c - no resp from temp writing temp byte 1
ALD_UTIL_ERR2	0141	i2c - no resp from temp writing temp byte 2
ALD_UTIL_ERR3	0142	i2c - no resp from temp writing mode
ALD_UTIL_ERR4	0143	i2c - no response to device addr
ALD_UTIL_ERR5	0144	i2c - bad chip addr
ALD_UTIL_ERR6	0145	i2c - no response to device addr
ALD_UTIL_ERR7	0146	i2c - no response to address byte 1
ALD_UTIL_ERR8	0147	i2c - no response to address byte 2
ALD_UTIL_ERR9	0148	i2c - sema get in start() failed
ALD_UTIL_ERR10	0149	i2c - sema get in stop() failed
ALD_UTIL_ERR11	014A	i2c - bad EEROM Address
ALD_UTIL_ERR12	014B	i2c - EEROM address + length too big (read)
ALD_UTIL_ERR13	014C	i2c - EEROM address + length too big (write)
ALD_UTIL_ERR14	014D	MDM EEROM address too big
ALD_WATCHDOG_1	0150	initial watchdog entry, store CPU context
ALD_WATCHDOG_2	0151	second watchdog entry, store ThreadX run cts
SYS_100MS_ERR1	0200	
SYS_100MS_ERR2	0201	
SYS_100MS_ERR3	0202	
SYS_100MS_ERR	0203	
SYS_100MS_ERR5	0204	
SYS_100MS_ERR6	0205	
SYS_100MS_ERR7	0206	
SYS_100MS_ERR8	0207	
SYS_30SEC_ERR1	0210	
SYS_CHK_STACK_ERR1	0220	
SYS_CHK_STACK_ERR2	0221	
SYS_CHK_STACK_ERR3	0222	
SYS_CHK_STACK_ERR4	0223	
SYS_CHK_SENSORS_ERR1	0300	
TCP/IP Error Locations		
IP_CREATE_ERR1	0101	createIpResources() can't create semaphore
IP_CREATE_ERR2	0102	createIpResources() can't create queue
IP_CREATE_ERR3	0103	createIpResources() heap space error
IP_CREATE_ERR4	0104	createIpResources() can't create byte pool
IP_CREATE_ERR5	0105	createIpResources() can't create queue
IP_ERR1	0201	panic() occurred
IP_ERR2	0202	npalloc() failed
IP_ERR3	0203	npfree() failed
IP_ERR4	0204	LOCK_NET_RESOURCE can't get semaphore
IP_ERR5	0205	LOCK_NET_RESOURCE hit default case
IP_ERR6	0206	UNLOCK_NET_RESOURCE can't put semaphore
IP_ERR7	0207	LOCK_NET_RESOURCE hit default case
IP_ERR8	0208	dtrap() occurred
SNTP_SOCK_ERR0	0100	sntp_init() couldn't create socket
SNTP_SOCK_ERR1	0101	sntp_init() couldn't bind socket
SNTP_SOCK_ERR2	0200	sntp_send() couldn't send to socket
SNTP_SOCK_ERR3	0300	sntp_recv() couldn't read from socket
SNTP_SOCK_ERR4	0301	sntp_recv() socket closed unexpectedly
SNTP_QUE_ERR0	0400	sntp_check() couldn't read queue
SNTP_QUE_ERR1	0500	sntp_getTime() couldn't send queue

Loader Elements

Loader Elements are displayed in Element Status at the end of the RMU log, may be seen within the Ring Buffer, and may also be inferred within the Context of some Hard Queue and SoftQueue entries.

Table A6 – Loader Elements

Element	Description
0x00	Picker
0x20	Drive
0x40	Mailslot
0x100	Left magazine slot 1
0x101	Left magazine slot 2
0x102	Left magazine slot 3
0x103	Left magazine slot 4
0x104	Left magazine slot 5
0x105	Left magazine slot 6
0x106	Left magazine slot 7
0x107	Left magazine slot 8
0x108	Right magazine slot 1
0x109	Right magazine slot 2
0x10A	Right magazine slot 3
0x10B	Right magazine slot 4
0x10C	Right magazine slot 5
0x10D	Right magazine slot 6
0x10E	Right magazine slot 7
0x10F	Right magazine slot 8