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SUBJECT: ADI State Transition Table (document T10/02-257r0)

## Introduction

This document is a follow-up to T10/02-097r1 that describes various proposed drive polling frames. One action item that resulted from discussions of that document was a request for a state diagram example showing the values of the fields in the Very High Frequency polling frame. The purpose of this document is to present such an example.

The example shown in this document is not intended to reflect any particular tape drive type, but be generic enough to demonstrate the use of all the fields that any drive may use. As a result, discussion and debate on the listed sequence and associated states is anticipated.

## Ordered Sequence View

This section presents a complete Load and Unload sequence, starting from a powered up state.

Load Event/State Sequence List	Motion Status	Access Allowed	Unload Complete	Load Complete	Media Present	Media Ejected	MAM Accessible	Media Seated	Media Threaded
01) Drive initialized, no media present, no activity.	00h	1	0	0	0	0	0	0	0
02) Initial media placement into drive	00h	1	0	0	1*	0	0	0	0
03) After media “push” by automation	00h	0	0	0	1	0	0	0	0
04) Initial mechanical load by drive	03h	0	0	0	1	0	0	0	0
05) After initial mechanical drive load	00h	0	0	0	1	0	1*	0	0
06) Final mechanical load by drive (seating)	03h	0	0	0	1	0	1*	0	0
07) After final mechanical drive load	00h	0	0	0	1	0	1*	1	0
08) Media threading	03h	0	0	0	1	0	1*	1	0
09) Media threaded	00h	0	0	0	1	0	1*	1	1
10) Load complete (drive ready)	00h	0	0	1	1	0	1*	1	1
11) <Various drive usage activity (reads, writes)>	05h-09h	0	0	1	1	0	1*	1	1
12) Drive receives unload command and begins unthreading	04h	0	0	0	1	0	1*	1	1
13) Media unthreaded	00h	0	0	0	1	0	1*	1	0
14) Initial mechanical unload by drive (unseating)	04h	0	0	0	1	0	1*	1	0
15) After initial mechanical drive unload	00h	0	0	0	1	0	1*	0	0
16) Secondary mechanical unload by drive (to hold point)	04h	0	0	0	1	0	1*	0	0
17) Drive unloaded to hold point	00h	0	1	0	1	0	1*	0	0
18) Request to eject from automation, final mechanical drive unload	04h	0	1	0	1	0	0	0	0
19) Media in ejected position	00h	1	1	0	1*	1	0	0	0
20) Media retrieved from drive by automation, drive empty	00h	1	1	0	0	0*	0	0	0
21) Initial media placement into drive	00h	1	0*	0	1*	0*	0	0	0
22) After media “push” by automation	00h	0	0	0	1	0	0	0	0
23) Initial mechanical load by drive (sequence cycle repeats)	03h	0	0	0	1	0	0	0	0

\* - Could be 0 or 1 depending on drive capability. Value shown is preferred value.

**Motion Status** – This field describes the current activity of the media itself as follows:

- 00h No tape motion in progress
- 01h Cleaning operation in progress
- 02h Firmware upgrade in progress
- 03h Media is being loaded
- 04h Media is being unloaded
- 05h Tape in motion
- 06h Reading
- 07h Writing
- 08h Locating
- 09h Rewinding
- 0Ah-7Fh Reserved
- 80h-FFh Vendor Unique status

## Unique States View

This section presents the same states from the sequence in the previous section, but lists them according to the state values to compare or uniqueness.

Load Event/State Sequence List	Motion Status	Access Allowed	Unload Complete	Load Complete	Media Present	Media Ejected	MAM Accessible	Media Seated	Media Threaded
03) After media “push” by automation	00h	0	0	0	1	0	0	0	0
05) After initial mechanical drive load	00h	0	0	0	1	0	1*	0	0
15) After initial mechanical drive unload	00h	0	0	0	1	0	1*	0	0
07) After final mechanical drive load	00h	0	0	0	1	0	1*	1	0
13) Media unthreaded	00h	0	0	0	1	0	1*	1	0
09) Media threaded	00h	0	0	0	1	0	1*	1	1
10) Load complete (drive ready)	00h	0	0	1	1	0	1*	1	1
11) <Various drive usage activity (reads, writes)>	05h-09h	0	0	1	1	0	1*	1	1
17) Drive unloaded to hold point	00h	0	1	0	1	0	1*	0	0
01) Drive initialized, no media present, no activity.	00h	1	0	0	0	0	0	0	0
02) Initial media placement into drive	00h	1	0	0	1*	0	0	0	0
20) Media retrieved from drive by automation, drive empty	00h	1	1	0	0	0*	0	0	0
19) Media in ejected position	00h	1	1	0	1*	1	0	0	0
04) Initial mechanical load by drive	03h	0	0	0	1	0	0	0	0
06) Final mechanical load by drive (seating)	03h	0	0	0	1	0	1*	0	0
08) Media threading	03h	0	0	0	1	0	1*	1	0
16) Secondary mechanical unload by drive (to hold point)	04h	0	0	0	1	0	1*	0	0
14) Initial mechanical unload by drive (unseating)	04h	0	0	0	1	0	1*	1	0
12) Drive receives unload command and begins unthreading	04h	0	0	0	1	0	1*	1	1
18) Request to eject from automation, final mechanical drive unload	04h	0	1	0	1	0	0	0	0

As can be seen in this view of the various states, sequence items 5 and 15, as well as 7 and 13 have the same state “signature”. This is a result of representing the same achieved state on both a Load and an Unload. Depending on whether or not the drive supports the same discrete states as shown in this example, this may or may not occur. Other states may also have the same signature depending on the drive’s capabilities to detect certain conditions such as Media Present. Again, in these cases all the states shown may not occur, which would effectively condense the sequence for that particular drive.