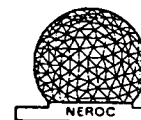


MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
 HAYSTACK OBSERVATORY  
 WESTFORD, MASSACHUSETTS 01886  
**VLBA Tape Drive Control**



John C. Webber  
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## 1 Introduction

Now that checkout of REC #1 is complete, a revision of the last documentation of *TDC* is needed.

This memo revises some details of the control language and explains some added features not previously described. It entirely supersedes the previous memo of 4 Sep 1987.

## 2 Command Format

Commands will be of the form

KEYWORD <arg1><arg2><arg3>

Keywords will be 2 to 9 characters, with up to 3 arguments each of 1 to 16 characters. Nine commonly used keywords mostly relating to tape motion control will be assigned to function keys 1-9. These are:

<u>Keyword</u>	<u>Key</u>	<u>Function</u>
STOP	F1	Stop tape
RELEASE	F2	Release brakes & servos
FOR	F3	Run forward
REV	F4	Run reverse
FF	F5	Fast forward to low tape, record disabled
RW	F6	Fast rewind to low tape, record disabled
UNLOAD	F7	Rewind & unload, record disabled
LOAD	F8	Load tape
ABORT	F9	Abort Inchworm motion
TIME	F10	Read time and aux data

Less commonly used functions and those with arguments must be typed by hand. Those relating to tape motion, with sample arguments, are:

Keyword	Function
VACUUM <i>xx.x</i>	Set vacuum to specified value
LTON	Low tape on (automatically set by LOAD command)
LTOFF	Low tape off (automatically set by UNLOAD command)
SPEED <i>xxx.xx</i>	Capstan speed (rate generator/100) ips
POSN <i>nnnn</i>	Position tape to footage given, record disabled
FC <i>nnnn</i>	Set footage counter to specified value
SIZE <i>nnnn</i>	Set capstan size parameter (default 43917)
THICKNESS <i>nnn</i>	Set tape thickness in kÅ (default 286)
OFFSET <i>xxx.xx</i>	Set offset speed (rate generator/100) ips
DELAY <i>nnnn</i>	Slew delay (interval to use offset), 0.01 sec units

Commands relating to headstack motion control are:

Keyword	Function
INIT filename	Send head block parameters and other initialization information as read from a file
HEAD <i>h</i>	Commands will apply to headstack <i>h</i> . This also applies to write/playback commands.
INDEX <i>i nnnn</i>	Define index <i>i</i> as a position of <i>nnnn</i> μm
MOVE <i>i &lt; nnnn &gt;</i>	Move current headstack to index <i>i</i> , offset <i>nnnn</i> μm (offset is optional)
MOVEF <i>i &lt; nnnn &gt;</i>	Same as MOVE but assumes forward tape motion
MOVER <i>i &lt; nnnn &gt;</i>	Same as MOVE but assumes reverse tape motion
MOVEREL <i>nnnn</i>	Move relative to current position, <i>nnnn</i> μm
MOVEA <i>nnnn</i>	Move to absolute offset <i>nnnn</i> μm
ABORT	Abort headstack motion (also key F9)
PEAK <i>nnn</i>	Peak up on track at current position within range $\pm$ <i>nnn</i> microns
PEAKINT <i>nnn</i>	Set auto-peaking interval
TAPDIR NNN	For NNN=FOR or REV, use offsets appropriate to forward/reverse tape motion, regardless of actual motion.
PARM <i>i nnnn</i>	Set current headstack motion parameter <i>i</i> to <i>nnnn</i>
OSCON	turns on LVDT oscillator so voltage can be read
INCH <i>dir speed sec</i>	move Inchworm IN/OUT, SLOW/FAST, # seconds

Commands relating to record and playback configuration are:

Keyword	Function
SELECT <i>nnnn</i>	Select formatter connections. Groups 0,1,2,3 choose formatter 1 or 2 as specified by <i>nnnn</i> . <i>E.g.</i> , SELECT 1212 selects the current headstack groups 0 and 2 from formatter 1 and groups 1 and 3 from formatter 2.
SYSTR <i>g nn</i>	Selects the system track associated with group <i>g</i> of the current headstack to be track <i>nn</i> , where <i>nn</i> =1 to 36
ENABLE <i>mmmm</i>	Enable up to 4 groups 0,1,2,3 for the current headstack: <i>e.g.</i> , ENABLE 02 enables groups 0 & 2; ENABLE with no argument disables all groups
RP <i>mm &lt; nn &gt;</i>	Select reproduce for the current headstack to be: channel A = head <i>mm</i> , optional channel B = <i>nn</i>
EQ <i>m &lt; n &gt;</i>	Select equalizers for the current headstack, channels A & B, to <i>m/n</i> =0/1/2 for std/alt1/alt2 ( <i>n</i> optional)
OS1 <i>m M X</i>	Output select for formatter 1: <i>m</i> =1/2 for M1/M2 output, <i>M</i> =A/B for channel, <i>x</i> =R/B for repro/byp
OS2 <i>m M X</i>	Same as OS1 but for formatter 2
WVOLT <i>xx.x</i>	Set write voltage to <i>xx.x</i> volts
MVOLT <i>n mmmmm</i>	Set D/A output channel <i>n</i> to <i>mmmmm</i> millivolts

Commands relating to data decoding and extraction:

Keyword	Function
BS <i>n</i>	Select bit sync <i>n</i> =0-3
BD <i>nnnn</i>	Bit delay after sync detect
GET	Initiate data extraction (32 raw bits shown)
TIME	Read time and aux field
STH <i>nn</i>	Sync threshold (number of bits to match)
SW <i>n - n</i> (64 bits)	Sync word (16 hex digits)
SM <i>n - n</i> (64 bits)	Sync mask (16 hex digits)

Commands relating to direct communications with the VME system are:

Keyword	Function
TERM	Begin Literal mode (talking directly to VME—like a terminal)
UNTERM	End literal mode

This mode will be used only by experts.

### 3 Display Format

The screen displaying the tape recorder status will be divided into two regions. In the upper 14 lines will be the status display as follows:

```

TAPE CONTROL  __RECORD STATUS__  ____MONITOR STATUS____  STACK 1  stop
                HD GR FRM ENA SYS  FRM HD CH TR  R/B  EQ  INDEX      13
MOTION      run   1  0  1  off   1  1  1  1  A 14 read  std  COMMAND -1210.2
DIRECT      for   1  1  1  off  15  1  2  1  B 14 read  alt1 ACTUAL  -1210.5
SPEED     120.00  1  2  1  off   2  2  1  2  A 15 read  std  POWER    2.37
FEET      19273  1  3  1  off  16  2  2  2  B 15 read  alt1 TEMP     26.2
LOWTAPE    on    2  0  2  off   1
CAPSTAN    run   2  1  2  off  15  __DECODER STATUS__  STACK 2  stop
VACUUM     10.2  2  2  2  off   2  BS 0  BD   32167  INDEX      13
SUPPLY     7850  2  3  2  off  16  DATA   FF7F BCF  COMMAND  500.3
TAKEUP    19400          7 273 14:52:12  ACTUAL    500.1
ERRORS:          0110 1111 1623 8037  POWER     2.47
                                          TEMP      25.3

```

The bottom portion of the screen will be used for communications. Updating of the display screen may be accomplished either by requesting a specific area to be updated or by continuous refreshment. Since most quantities relating to record/monitor/decode functions do not change frequently, two modes of continuous refreshment are provided. Commands relating to display are:

Keyword	Function
REDO	Re-do the screen from scratch
ST ALL	Update the entire display screen
ST TAPE	Update tape control area
ST HEAD	Update headstack control area
ST WRITE	Update write select/enable area
ST RP	Update reproduce area
ST DECODE	Update decoder area
ST VOLTS	Show A/D voltages (not in display area)
ST D/A	Show what D/A voltages were set (not in display area)
ST #	Show chassis #, software rev, etc. (not in display area)
STATUS <OFF>	Continuous update of all quantities on display screen
MONIT <OFF>	Continuous update of all tape control quantities only
MANUAL	Ends taking commands from a file
TR filename	Take commands from a file
WAIT nnn	Wait nnn seconds before going to next command (normally used when running from a file)
? <command>	Without argument: list all commands; with argument: brief description of specified command