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1 GENERAL INFORMATION

Section 1 General Information

Introduction

This manual provides instructions to set up VTRs, video switchers, audio mixers, and other peripheral equipment to work with GVG videotape editing systems. It also aids in evaluating equipment operation and enhances the performance of your editor by explaining edit timing.

The sections in this manual contain the following information:

Section 1 – Provides an overview of the manual and includes general information about editing system setup, NTSC color framing, VTR synchronization, and VTR cue error.

Editor General Setup Information

The Tables below list typical factory pre-configured communication parameters for GVG editing system serial I/O ports. Table 1-1 for the 31, 41, and 51 Editors; Table 1-2 for the VPE-131, 141, 141L, 241, 241L, and 251, and 300 series Editors; Table 1-3 for the VPE-151 Editor. In general, you should set your peripherals to match these settings, unless you are asked to do otherwise in the instructions for a particular peripheral.

This information is presented here because it is referred to repeatedly in later sections. For other editing system configuration and installation information, please refer to the appropriate Editing System Installation Planning Guide or Installation Instructions manual.

Communication parameters for the 31, 41, and 51 editing system I/O ports can be reconfigured by resetting switches and jumpers on the I/O boards of the 8493 Serial I/O Panel.

Communication parameters for the VPE series Editor I/O ports are set in software at the factory to match the peripherals specified when you placed your order. These settings cannot be changed in the field without a software revision from the factory. Contact GVG if you need to change the port parameters.

Table 1-1. 31, 41, and 51 Editors (8493) Typical I/O Port Parameters

Port	Baud	Comm	Stop	Parity	Bits
0 (Preview Switcher)	**9600**	**RS-232**	**1**	**odd**	**8**
1 (Audio/Direct Control)	**38.4K**	**RS-232**	**1**	**odd**	**8**
2-5, 7 (Direct Control)	**38.4K**	**RS-232**	**1**	**odd**	**8**
6 (Control)	**9600**	**RS-232**	**1**	**odd**	**8**

Table 1-2. 131, 141, 241, 251 IPS-100 and IPS-110/2 51 EDITORS TYPICAL I/O PORT PARAMETERS

Port	Baud	Comm	Stop	Parity	Bits
0 (Peripheral)*	**38.4K**	**RS-422**	**1**	**odd**	**8**
1 (R-VTR)	**38.4K**	**RS-422**	**1**	**odd**	**8**
2 (A-VTR)	**38.4K**	**RS-422**	**1**	**odd**	**8**
3 (B-VTR)	**38.4K**	**RS-422**	**1**	**odd**	**8**
4-5 (Open)	**38.4K**	**RS-422**	**1**	**odd**	**8**
6 (Open)	**38.4K**	**RS-422/232**	**1**	**odd**	**8**
7 (Open/8465)	**9.6K**	**RS-422/232**	**1**	**odd**	**8**
8-14* (Open)	**38.4K**	**RS-422**	**1**	**odd**	**8**
VIDEO CTL (SWR/8466)	**38.4K**	**RS-422**	**1**	**odd**	**8**
AUDIO CTL (Mixer)	**38.4K**	**RS-422**	**1**	**odd**	**8**
CHAR GEN	**38.4K**	**RS-422**	**1**	**odd**	**8**

* Some ports are either not present or not available on all systems

Table 1-3. 151 Editors Typical I/O Port Parameters

Port	Baud	Comm	Stop	Parity	Bits
1 (R-VTR)	**38.4K**	**RS-422**	**1**	**odd**	**8**
2 (A-VTR)	**38.4K**	**RS-422**	**1**	**odd**	**8**
3 (B-VTR)	**38.4K**	**RS-422**	**1**	**odd**	**8**
4-6 (Open)	**38.4K**	**RS-422/232**	**1**	**odd**	**8**
7 (Open/8465)	**9.6K**	**RS-422/232**	**1**	**odd**	**8**
8-10 (Open)	**38.4K**	**RS-422/232**	**1**	**odd**	**8**
11 (Peripheral)	**38.4K**	**RS-422/232**	**1**	**odd**	**8**
12 (Character Generator)	**38.4K**	**RS-422/232**	**1**	**odd**	**8**
VIDEO CTL (SWR/8466)	**38.4K**	**RS-422**	**1**	**odd**	**8**
AUDIO CTL (Mixer)	**38.4K**	**RS-422**	**1**	**odd**	**8**
ACCY 1 (8466)	**38.4K**	**RS-422**	**1**	**odd**	**8**
ACCY 2 (Preselector)	**38.4K**	**RS-422**	**1**	**odd**	**8**
PRINTER	**38.4K**	**RS-422**	**1**	**odd**	**8**
MODEM	**38.4K**	**RS-422**	**1**	**odd**	**8**

Preview Switcher Setup

If your system includes an 8465 Preview Switcher, its baud rate is fixed at 9600, but you may need to set the internal DIP switch for correct parity and parallel low true or high true. The typical setting is ODD parity and LOW true, except for use with GVG 1600/1680 switchers, which require EVEN parity and HIGH true. To set the switch, open the top cover of the 8465 frame and refer to Table 1-4 below. (Use the switch numbers that appear on the board silk-screen, not the numbers on the DIP switch).

Table 1-4. 8465 DIP Switch Settings

Switch	Setting
S1-1	**Closed (ON)**
S1-2	**Open (OFF)**
S1-3	**Open (OFF) = Odd Parity / Closed (ON) = Even Parity**
S1-4	**Open (OFF) = Parallel LOW True / Closed (ON) = Parallel HIGH True**

If you have an 8466 Preview Switcher, you should be sure its internal DIP switches and jumpers match the editor's communication parameters. The 8466 editor port and switcher port can be set independently. Refer to Table 1-5 for switch settings.

Table 1-5. 8466 DIP Switch and Jumper Settings

Switch	Setting	Result
1-7	**Open (OFF)**	**Inverted XPT (LOW = True)**
	Closed (ON) *	**Non-inverted XPT (HIGH = True)**
3-1	**Open (OFF) ***	**1 Stop Bit (Switcher)**
	Closed (ON)	**2 Stop Bits (Switcher)**
3-2	**Open (OFF) ***	**Use Parity (Switcher)**
	Closed (ON)	**Ignore Parity (Switcher)**
3-3	**Open (OFF) ***	**Odd Parity (Switcher)**
	Closed (ON)	**Even Parity (Switcher)**
3-4	**Open (OFF)**	**9600 Baud (Switcher)**
	Closed (ON) *	**38.4K Baud (Switcher)**
3-8	**Open (OFF)**	**9600 Baud (Editor)**
	Closed (ON) *	**38.4K Baud (Editor)**
J12-J19	**1-2**	**RS-232**
	2-3*	**RS-422**

* Factory Default Settings

NTSC Color Framing & SC/H Phase

The following provides information and tips about color framing.

NTSC video is a four-field sequence. Fields one and two comprise frame A, and fields three and four comprise frame B. There is only a subtle difference between color frames A and B. Specifically, at a given point in each frame, the subcarrier is inverted relative to the opposite frame.

It may be possible to make perfect video edits every other frame (four fields) and still maintain the correct subcarrier relationship. However, there is a time-accuracy advantage in editing frame by frame. Such a signal will record very nicely on any 1-inch VTR, and would pose no problem when observing the playback signal directly from the VTR without a timebase corrector (TBC).

The monitor will quickly re-lock to any changes in subcarrier phase due to bad color frame edits. Also, there is no problem when recording in a non-NTSC format such as Betacam or U-Matic, since the color information is not recorded in the same manner as direct color VTRs.

Timebase Correctors

When playing back directly-recorded NTSC color through a timebase corrector, problems can occur. The purpose of the TBC is to stabilize the off-tape signal and lock it to the house reference so that it can be used as a source for a video switcher, a keyer, or other effects device. When the TBC encounters a bad color frame, it will do one of the following:

1. Keep the horizontal picture position the same and give inverted color as a video output.

2. Shift the horizontal position slightly (140 nSec) so that chroma and burst phase remain locked to house reference.

NOTE: *TBC manufacturers have chosen the latter approach.*

The 140 nSec shift will not be noticeable to most viewers and poses no legal or technical problem for transmission. The shift is quite noticeable, however, if it occurs at a match point in the video, as would happen if the matching video were edited on the wrong frame, thereby forcing a color frame error.

This difficulty arises when duplicating the original recording conditions on a later tape generation. As the playback VTR encounters inverted color frame video, it may shift the output video 140 nSec in the opposite direction to accomplish lock.

Therefore the horizontal position of the picture may not match that of a previous edit by 280 nSec, since the difference shows up as the sum of +140 nSec and -140 nSec from the reference point. Thus, editing inverted color frame material can produce undesirable and unpredictable shifts in horizontal position at the edit point.

SC/H Phasing

Incorrect SC/H phasing can add to the unpredictable horizontal shift problems of bad color framing. It is possible to record an excellent master with perfect match frame edits while suffering from poor SC/H phasing. However, attempting to match to that master later, perhaps in another facility, will result in unpredictable horizontal shifts, as the playback TBC attempts to take out the SC/H phase errors in the off-tape signal.

Clearly it is necessary to record from a source that has been properly SC/H phased. This procedure is part of the plant set up, as changes in SC/H phase involve changes in the position of sync relative to subcarrier, and changing one source will cause it to be out-of-time, out-of-phase, or both with the rest of the plant.

H-Shift Summary

In summary, TBCs add H-shifts because of two causes: SC/H errors and color frame inversions. Color frame inversions are actually known SC/H errors of 180°, and manufacturers have taken steps to reduce the embarrassment of random lockups to such inverted color frames. When a tape is played back, there are three possible states for correct lockup to house reference video for a correct SC/H phased output signal:

1. Correct color frame, where the H position matches the original.

2. Lockup with a 140 nSec left shift.

3. Lockup with a 140 nSec right shift.

Since the TBC corrects poor SC/H phase by shifting the H position slightly, it generally does not differentiate between inverted color frame video (180°) and bad SC/H phased video (up to +180°). The video could be shifted left or right with equal probability. Therefore, uncertainty is created at 180° (i.e., is it +180° or -180°?)

Color Frame ID

To remove the ambiguity caused by color frame inversions and SC/H phase, a CFID pulse can be fed to the TBC to determine when the incoming video is out of color frame and to consistently shift it, for example, to the left. Consistent matches can then be made to inverted color-framed material, while the SC/H error correction range of the TBC is not compromised.

The color frame signal can usually be selected from several sources, but the most valuable is to use playback video as a reference. This assumes the VTR is comparing off-tape video to house reference by means of a color frame detector. Time code should have a fixed relationship to color frame: EVEN code for one color frame; ODD for the other. This is acceptable if the video has been recorded with no inversions of color frame and the time code is continuous on the tape.

Control Track, which has a CFID pulse, can also be used as a reference. Again, if inversions in video color frame have been recorded, the wrong reference pulse will be sent to the TBC. In such a case, the TBC may interpret the 180° phase inversion as an error rather than a wrong color frame. An ambiguous left or right shift may result.

Guidelines

For reliable, predictable editing, follow the guidelines listed below whenever possible:

1. Manually stripe new tape (record Black) with the VTR in 4-field mode, hard record, using time code from a generator that is locked to a color frame pulse. This provides a consistent color frame to time code relationship. Fields one and two are Color Frame-A and should have even time code numbers. Fields three and four are Color Frame-B and should have odd time code numbers. All source tapes should conform to this standard.

2. Prior to the editing session, play each source tape and the record master with their VTRs in 4-field mode. Select playback video as the color frame reference to the TBC (if your VTR has this capability). Adjust the TBC to center the indication for COLOR FRAMED for this mode of playback. (Refer to the VTR manufacturer's recommendations.) Run the Super Edit program. Assign the VTRs as described in the Assignments section of this manual. Now place all VTRs in remote and in 2-field mode; set-in time code for a sample edit having an even-even or an odd-odd relationship and make a test BVB preview on each playback VTR.

3. During the preview, verify that the color framer indicates proper color framing on the VTR. If color framing is wrong, toggle the record color frame and try again. For properly recorded tapes, the editor color frame will be set on 000. Note that this assumes that a proper color frame pulse from the house sync generator is fed to the editing system.

4. Verify that the record VTR makes consistent, matched edits from a source such as house Color Bars, whether IN-point is odd or even. The Editor will lock the machine properly to house reference in either case. You may toggle the color frame with Record Color Frame at this point and make another edit to the Color Bars recording to see how an out-of-frame edit appears when the tape is played back.

   Note that as the record VTR plays back over the edit, the TBC indicates a switch to inverted color frame. You should see H-shift in the picture, but the direction should consistently be in the same direction if the TBC color frame input is properly referenced to playback video.

5. Proceed with the editing session.

By making the effort to use hardware features and perform adjustments to improve color frame accuracy, you will be able to produce tapes recorded with greater consistency in color framing.

Summary of Definitions of Color-framed Video

Table 1-6 summarizes the preceding definitions of color framed video.

Table 1-6. Color-Framed Video Definitions Summary

Color Frame A	Field 1	Has even time code Has half line of video visible at bottom of screen. SC going positive when coincident with sync leading edge.
	Field 2	Has full line of video visible at bottom of screen.
Color Frame B	Field 3 or 4	Same as Field 1 and 2 above except has odd time code. Field 3 has SC going negative when coincident with sync leading edge.
Playback video at output of TBC. Proper Color Frame.		Horizontal picture position nominal (as recorded).
Inverted Color Frame		Horizontal picture position 140 nSec to the left or right, depending on VTR manufacturer.

NOTE: *A diagram of the RS-170A proposed video format is available from the Electronic Industries Association, 2001 Eye Street, N.W., Washington, D.C., 20006.*

H-Shift Checklist for 1-inch or Direct Color Recording VTRs

Table 1-7 is a checklist which will assist you in finding the cause of H-shifts in recorded material. Before proceeding, verify that each VTR and TBC is set up per manufacturer's specification regarding color framing. Make sure house reference signals and recorded material on source tapes have good, consistent SC/H phase, and that test material is recorded using the guidelines given in previous paragraphs.

Table 1-7. H-Shifts Checklist

Symptom	Suggestion
1. 140 nSec shift during playback of test signal recorded direct from generator and containing multiple edits.	Check for reverse color-frame edits in recording. If R-VTR was used without the Editor to record, then check to see that VTR is in 4-field mode. If the Editor was used for recording, then try playing the R-VTR without the Editor.
2. Test signal recorded direct from generator comes up in one of two positions, 140 nSec apart each time play is pushed.	Normal if VTR is in 2-field mode. For manual operation, correct by going to 4-field mode.
3. Same as 2 above except comes up in one of three positions (reference; +140 nSec; or -140 nSec) while in 2-field mode.	TBC not fed with color frame pulse from transport. Check source of CFID pulse for valid signal.
4. With repeated play cycles, test tape comes up in one of two positions 280 nSec apart. VTR is in 4-field mode.	If TBC as CF adjustment, then optimize. Inverted color-frame was recorded relative to source for color frame pulse (time code or control track). Use P/B video as CFID source for feed to TBC.
5. Match-frame edits have 140 nSec shift. Edits look the same if repeated.	Trim source machine (or record machine) by ±1 frame.

VTR Synchronization

The following provides information on VTR Synchronization. It is designed to supplement the information provided in other GVG Videotape Editing System documentation. For additional information relating to VTR synchronization refer to the Editing System Installation, Setup, and Operating manuals, the Super Edit Operator's Guide, and the VTR manufacturers' manuals.

Two methods are used to accomplish VTR synchronization. The method used depends on the VTR under control.

Synchronization Method 1

In the first method, the editing computer sends an edit point and pre-roll time to the VTR and then issues a **ROLL** command. The VTR is then responsible for getting to the edit point on time by properly synchronizing to its internal clock.

Synchronization Method 2

In the second method, the editing computer rolls the VTR and reads time code, comparing the VTR's position to a time computed internally in the Editor. Tape Speed Override (TSO) commands (Fast/Slow) are issued to get VTR position in sync with the Editors internal clock.

Synchronization Summary

With either method, the time code from each VTR is read and compared with an internal clock in the Editor. If the VTR is not in sync before the edit IN-point, the Editing System will abort the operation and report a **NOT SYNCHRONIZED** error. The method of synchronization used depends on the VTR and interface as follows:

- **AMPEX VTR (RS-422):** Method 1 is used with all Ampex VTRs and the VTR is responsible for synchronization.
- **SONY VTR (RS-422):** Method 2 is used with all Sony VTRs and the Editing Computer assumes the responsibility for synchronization.
- **RS-232 INTERFACE:** Method 1 is used with all RS-232 interfaces and the interface is responsible for synchronization function.

Common Synchronization Problems

The following discuss some common problems with synchronization of VTRs in general.

Problem 1

NOT SYNCHRONIZED error message is displayed.

Symptom 1: The VTR is stable (i.e., Capstan Servo not hunting) but it did not get to the correct point.

Possible Causes for Ampex VTRs: (Synchronization Method 1)

1. Preroll may be too short.

2. Color framer is ON at one of the connected VTRs. (All color framers should be OFF on all VTRs.)

3. VTR software (PRM Version) may be incorrect. (See Videotape Editing System Installation Guide for correct version number.)

4. VTR Servo controller is damaged or misadjusted.

5. The Editing Computer is sending the Roll command at the wrong time. (This may be caused by recent changes in the VTR control PROMs.)

6. The VTR SC/H and AST are not properly adjusted. The SC/H of the reference signal to the VTR is incorrect causing the VTR to wait before beginning the roll sequence.

7. On PAL systems, the VTR color frame number set in Super Edit may be incorrect. (Refer to Super Edit Operator's Guide, Initialization Section.)

Possible Cause for Sony VTRs: (Synchronization Method 2)

Preroll may be too short.

Symptom 2: The VTR capstan servo is unstable and hunting around for the correct point. Listen to the time code track on a monitor speaker. A wobble in the time code pitch indicates instability. With either method of synchronization the problem can be caused by any of the following:

Possible Causes:

1. VTR servo damaged or misadjusted.

2. Color framers on VTR(s) are ON. (They should be off).

3. Bad time code on tape or problem in VTR time code reader.

4. Time code is in the wrong field or wrong location on the tape relative to video/control Track.

5. VTR time code head is out of alignment or dirty. Clean or adjust as needed.

6. Reel of tape is either too large or too small, which can cause an inertia problem and affect the VTR's ability to achieve proper capstan lock.

Symptom 3: VTR is stable at the correct point but arrived too late.

Possible Causes:

1. Preroll time too short.

NOTE: *PAL VTRs require a longer preroll time because servo and time code sampling is slower than in NTSC VTRs.*

2. The reel of tape is too large.

3. VTR SYNC QC; reduce the QC number.

4. VTR transport or servo problems.

Symptom 4: The VTR is stable and arrives at the correct point early enough, but **NOT SYNCHRONIZED** error message is displayed anyway.

Possible Causes for Ampex VTRs: (Synchronization Method 1)

1. Wrong time code offset may be selected on the Editing System.

2. New PROMs installed in VTR have changed communications times.

3. Time code communication delay switch in VTR is set incorrectly.

4. Erratic time code is occurring late in the preroll period.

Possible Cause for Sony VTRs: (Synchronization Method 2)

Erratic time code is occurring late in the preroll period.

Common Synchronization Problems With Specific VTRs

The following discusses some common problems with synchronization of specific VTRs.

Sony BVU-800

Oscillations are normal in the stock (unmodified) VTR due to the tape tension arm. Tape tension must be set exactly to Sony specifications on all VTRs, especially the U-MATIC types.

Typically, synchronization should improve after a few tries if caused by this problem. The tension arm should not cause problems on a BVU-820 if it is set to **DT** mode. For additional information see GVG Tech Note 85-110.

The time code may be in the wrong field if the tape was made on an older U-MATIC or BVU-800 with the framing servo set to OFF, or on a "CMX Modified" unit. The time code may be non-synchronous, resulting in different characteristics in different areas of the tape.

Sony BVH-2000 and BVW Series

The VTR color frame switch may be set to ON (i.e. more than 2-fields). BVH-2000 VTRs exhibit severe synchronization problems when the preroll is not integral seconds. Refer to the GVG Videotape Editing System Installation Guide for further information.

Ampex VPR-3

The AST may not be set up correctly. AST affects lockup and may cause the VTR to park at the wrong position.

Verify that SC/H phase for the external reference vertical advance (from TBC) is correct and the same SC/H as the reference signal to the TBC. Refer to GVG Videotape Editing System Installation Guide for further information.

PAL VTRs

The color frame setting may be incorrect at the Record or Source VTR. Verify that settings are in accordance with the Operator's Guide.

Tests & Checks to Improve Synchronization

1. Try using a longer preroll time. If this helps, the VTR is capable of synchronization, but not with a standard preroll time.

2. Set QC to a lower value. This may allow the use of tapes with poor time codes.

NOTE: *If synchronization improves with lowered QC value, some type of VTR or tape problem may be overlooked by the computer. Edit accuracy may be reduced.*

3. Try the Tape Timer mode when testing for time code problems. If the problem appears to clear up, the time code track or reader in the VTR is probably at fault.

4. Check editing timing. Visually inspect edits with known good tapes on Record and Playback. See the Installation Guide, Edit Timing section, for further information.

5. Try to narrow the problem to one VTR. Move the tape in question to another VTR to see if the problem follows or if it stays with the original VTR even with another tape.

6. Change to another known good tape on the same VTR. A tape that will not synchronize may have time code, drag, or other problems preventing the VTR from moving it to the correct location. Poor time codes can cause confusing symptoms because the time code reader in the VTR may be switching from time code to control track update repeatedly, producing bad time code values.

7. Try re-recording the time code if the time code is suspected as the problem.

8. Reproduce a previously successful operation. Try to determine what is different, to isolate the cause.

9. Always keep a set of known good test tapes to use as a trouble-shooting aid when things go wrong.

10. Try edit using the VTR/s local edit controls (if it has them).

Other Items to Check

System

- Correct sync source to VTRs and interfaces.
- All VTRs and the Editing System are fed from the same sync generator.
- Proper CFID signal connected to the Editing System (Test with Sync Test diagnostic).
- Reference Black signal to VTRs and interfaces is correct level and SC/H phase, etc.

VTRs

- Check all switch settings.
- Check servo setup.
- Check Capstan for dust or dirt, and roller pressure, which can cause tape slippage or drag if not correct.
- Time code reader is in wrong position or time code head is dirty.

Tape

- Time code is in the wrong phase (i.e. Location on tape); not locked to video.
- Gaps in time code or control track.
- Distortion of time code due to dubbing without regeneration.
- Video glitches causing control track errors, servo instability, and lockup problems during preroll.

Other

- Zero inertia devices such as Kaleidoscope DPM-1, DPM-100 and Abekas A62 should not have synchronizing problems. Check SC/H phase, setup, etc.

GVG Auto-Sync Mode

Auto-Sync Mode is a unique feature of GVG Editing Systems equipped to control Sony RS-422 VTRs. The Super Edit program starts with a set of synchronizing parameters that are typical for various Sony VTRs. After going through the synchronization process, the Editor "learns" the optimum parameters for each individual VTR and takes into account wear, adjustments, etc. From that point on, synchronization should be very rapid, with a minimum of TSO action.

The optimizing parameters are automatically saved if you make a configuration file after running the synchronization Learn process. This is a recommended practice, since it both checks your configuration file, and archives the optimum VTR synchronizing performance.

Learned parameters will not be changed by VTR reassignment, but will be reset to the default values if you enter new values for the specific VTR setup of either Model or QC.

VTR Cue Error

The following paragraphs provide information on VTR Cue Error and are designed to supplement the information provided in other GVG Videotape Editing System documentation. For additional information relating to VTR Cue Error, please refer to the GVG editor Installation, Setup, and Operating manuals, the Super Edit Operators Guide, and the manufacturers Manuals for the VTR(s) you are using.

Cueing Problems

The cue problem is a function of how the GVG Editing System interacts with the VTR under control when you press the **[CUE]** key on the keyboard, start a Preview, or a Record function. The Editing System initiates commands using one of the two methods discussed below, depending on the type of VTR under control.

Method 1

In this method, the Editing System issues a CUE command to the VTR along with the cue point, in time code value. The VTR is responsible for finding the cue point and signaling the Editing System when it has done so.

Method 2

In the second method, the Editing System reads the time code and then issues a **SHUTTLE** command to ***servo*** the VTR to the proper point. A **STOP** command is sent to the VTR when the Editing System reads the proper time code for the cue point.

The method used depends on the type of VTR and interface as follows:

1. **Ampex VTR (RS-422):** Method 1 is used with all Ampex VTRs. The VTR is responsible for cueing.

2. **Sony BVH-2000 (RS-422):** Method 1 is used for Sony BVH series VTRs. The VTR is responsible for cueing.

3. **Sony Cassette:** Sony Cassette VTRs use a combination of methods to cue. If the cue point is less than 30 seconds away, the VTR is responsible for cueing (Method 1). If the cue point is more than 30 seconds away, the Editing System assumes the responsibility for cueing until the VTR gets within 30 seconds, then the VTR is responsible.

4. **RS-232 Interfaces:** Method 1 is used for all RS-232 interfaces. The interface is responsible for cueing.

Causes of Cueing Errors

The **CUE ERROR** message may be caused by either of the following:

- The VTR is reporting that it is incorrectly cued. For some reason, it was unable to find the point requested by the editor.

- The Editing Computer reads the VTRs time code and finds that the VTR is parked more than one second away from the target point. (The VTR will usually recover automatically).

Causes of VTR Runaway

VTR runaway, where the VTR fails to complete a search and then runs to the end of the tape, can be caused by any of the following:

1. The VTR is unable to read the time codes at wind (fast forward/reverse) speeds.

2. The time codes at the Editor and VTR do not match. Verify that the modes (DF or NDF) of the IN-edit and position match. Problems in this area are usually caused by a reel change. Play and mark-in the VTR prior to issuing a cue command.

3. Bad time code on tape resulting from multi-generation recording without reshaping, or a low level recording.

4. Worn or misadjusted time code read head or poor tape guiding at wind speed.

5. Out-of-Sequence time code on tape.

6. If using Vertical Interval time code (VITC), the reader in the VTR may be incorrectly set for operation using the combination of VITC and Longitudinal time code (LTC). See the Videotape Editing System Installation Guide.

7. VTR transport problem. Brakes may be old, worn, or misadjusted. If the cue point is too close to the end of the tape, the VTR may not be able to stop, allowing the tape to come off the reel.

8. On Sony BVH series VTRs, make sure that the machine is assigned correctly with VTR Model/QC.

9. Cassette VTRs may have read the wrong time code into the reader before the cue, causing the Editor to send the VTR in the wrong direction.

10. Time code cue point too close to the end of the tape. VTR operation may interact with end of tape functions.

Causes of System Hang-up

Hang-up, where the VTR stops and the Editing System appears to be waiting indefinitely without completing the edit, may be caused by any of the following:

- The VTR has stopped but is reporting to the Editing System that it has NOT completed the cueing process. The Editing Computer will wait indefinitely for the proper indication. Press **[ALLSTOP]** (Space bar) and try again.
- Tape tension or reel servos may be misadjusted on the VTR. This can cause the tape to stick to the drum or hang up in the cassette. This can prevent the VTR from finding the desired point. The VTR may keep trying, appearing to hang-up the system.
- On the Ampex VPR-6, control PROMs earlier then V2.0 will occasionally cause hang-up problems. Press **[ALLSTOP]** (Space bar) and try again.