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Ariel Dynamics, Inc.

# CAPTURE MODULE

Revision 1.0



# Contents

<b>ARIEL CAPTURE PROGRAM</b>	<b>1</b>
INTRODUCTION.....	1
WHAT'S NEW IN CAPTURE 1.0.....	1
SYSTEM REQUIREMENTS .....	2
TO START THE CAPTURE PROGRAM .....	3
SCREEN LAYOUT .....	3
THE APAS TOOL BAR.....	3
THE TOOL BAR.....	5
THE STATUS BAR .....	5
OPERATING THE VCR .....	6
VCR DELAYS .....	11
FAST SPEED CONTROL.....	11
SLOW SPEED CONTROL .....	13
CREATING A NEW IMAGE FILE .....	13
STEP CAPTURE (COMPUTER CONTROLLED).....	13
STREAMING CAPTURE .....	17
CREATING A NEW CONTROL FRAME .....	20
CAPTURING CONTROL INFORMATION TO SEPARATE AVI FILE .....	20
RESTORING PREVIOUSLY CAPTURED IMAGE FILE .....	21
EXTENDED FEATURES .....	21
AUTOMATIC DIGITIZING .....	21
FILE COMPRESSION .....	21
TIME CODES.....	22
RESETTING THE COUNTER .....	24
ZOOMING .....	25
CAPTURE QUICK REFERENCE .....	25
CAPTURE MENUS .....	28
FILE COMMAND MENU .....	28
VIEW COMMAND MENU .....	29
VCR COMMAND MENU .....	30
CAPTURE COMMAND MENU .....	31
TIME CODE COMMAND MENU.....	32
RUN COMMAND MENU .....	32
HELP COMMAND MENU .....	33

# ARIEL CAPTURE PROGRAM

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## INTRODUCTION

The first analytic step after recording is transferring the video image into the computer hard disk for digitizing. The **ARIEL CAPTURE** software is a Windows based program for capturing and storing these images for analysis using the **Ariel Performance Analysis System (APAS)**.

Although a few of **CAPTURE's** features may appear complex, they are relatively easy to master once you understand the underlying concepts. This manual is arranged to teach you these concepts in a logical order by showing you, in step-by-step fashion, how to use **CAPTURE**.

**NOTE: The CAPTURE program is designed for capturing Analog video and requires the analog frame grabbing hardware. This module does not support using the Digital Video (DV) capture hardware.**

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## WHAT'S NEW IN CAPTURE 1.0

A few of the new features you will see in CAPTURE version 1.0

1. **Multimedia Compatible** Image files can be saved in \*.AVI format utilizing MJPEG technology.
2. **Real Time Capture** Images can be captured directly from computer controlled VCR or streamed directly from the video source to the hard disk drive.
3. **APAS Tool Bar.** A toolbar has been added to allow the user to activate individual APAS modules from within the main programs.

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# SYSTEM REQUIREMENTS

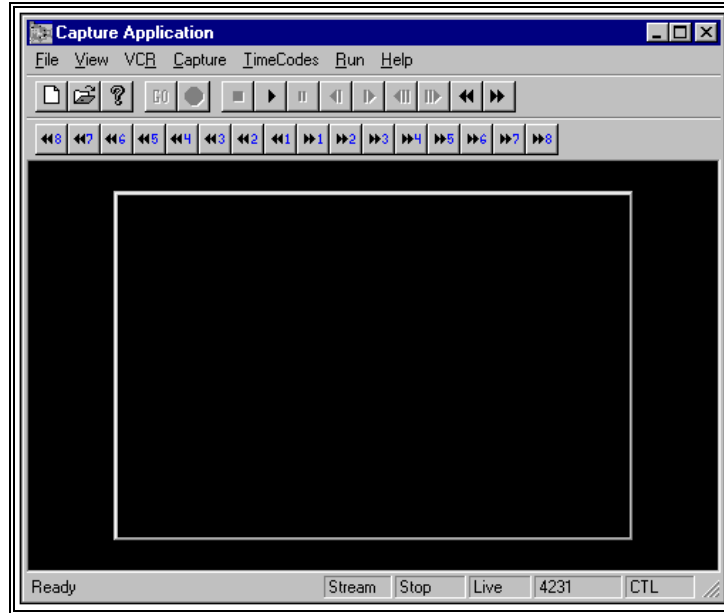
The following table provides the basic guidelines for minimum and recommended hardware to provide the best possible performance. The software requires a minimum of Microsoft Windows 95/98 and APAS-2000 Revision 1.0 or later.

Component	Minimum	Recommended
Processor	Pentium 233	Pentium II 333 MHz or higher
Graphics Card	800 x 600 @ 16 Bit	High Color Display (65,000 colors or more)
RAM	32 MB	64 MB or more
Free Hard Disk Space	500 MB	2000 MB or more
Multi-Media Components	CD-ROM Drive	Windows 95 compatible multimedia sound card
VCR	Not Required	Panasonic AG-7350 or AG-5700 w/RS-232 Interface

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## TO START THE CAPTURE PROGRAM

1. Double-click the **CAPTURE** icon located in the **APAS System** window group. The main Capture window will appear.



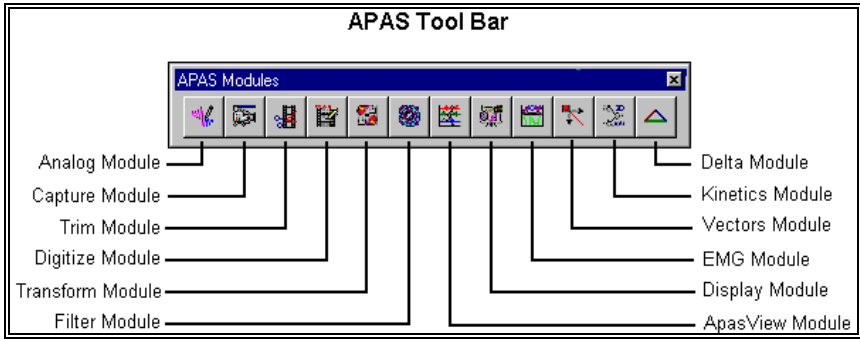
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## SCREEN LAYOUT

Prior to performing the **CAPTURE** process, you should take the time to familiarize yourself with the format and contents of the various screens listed below:

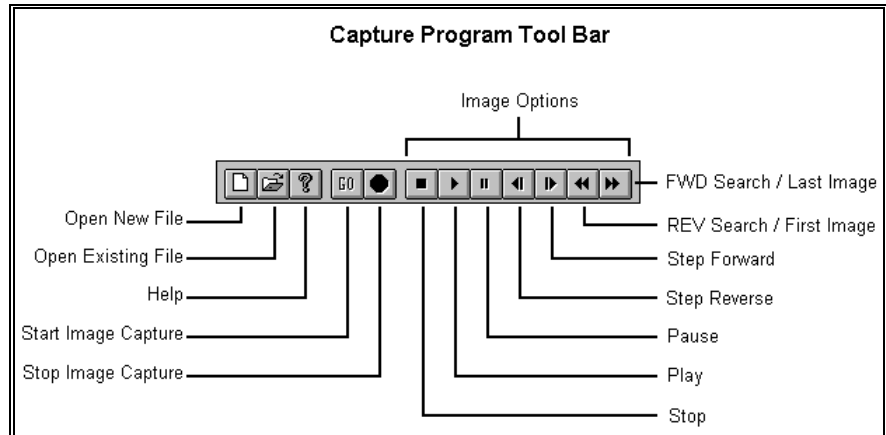
### THE APAS TOOL BAR

You can activate any of the APAS software modules from within the current program by selecting the icons located on the APAS tool bar. The tool bar is toggled on/off using the APAS Toolbar command in the VIEW menu. A check mark in the left column of the menu indicates that the toolbar is currently active. The toolbar can be re-located anywhere in the main program window by dragging it with the mouse. Clicking the appropriate icon can activate the following program modules. Icons are pictorial representations of programs, commands or functions.



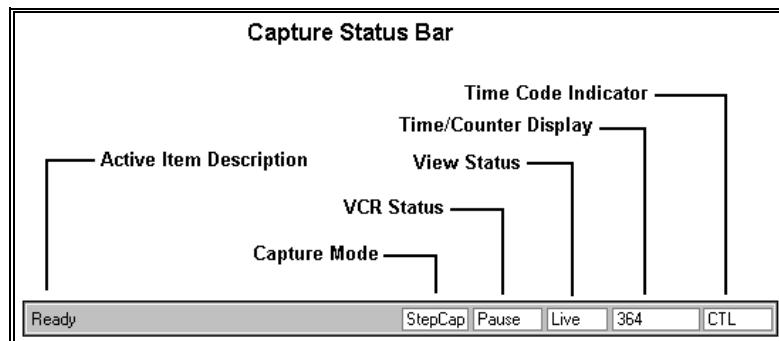
## THE TOOL BAR

You can activate many functions by selecting the icons located on the **CAPTURE** program tool bar. The tool bar is located near the top of the window. Icons are pictorial representations of commands or functions. You can access the following commands by clicking the appropriate icon.



## THE STATUS BAR

The status bar provides useful information about the current status of the image file. The status bar is located at the bottom of the Capture window. The far left side of the status bar is divided into five separate fields; **Capture Mode Field**, **VCR Status Field**, **View Status Field** and the **Time/Counter Display** and **Time Code Indicator Field**.



**Capture Mode** indicates the currently set capture mode. **StepCap** will be displayed if using the Step Capture method. **Stream** will be displayed when using the Streaming method of video capture. The capture mode is changed in the Capture Parameters menu.

**VCR Status** indicates the current state of the VCR. **NR** will be displayed if the computer detects no recorder.

**View Status** indicates whether the current image is **LIVE** or a previously captured image for **REVIEW**.

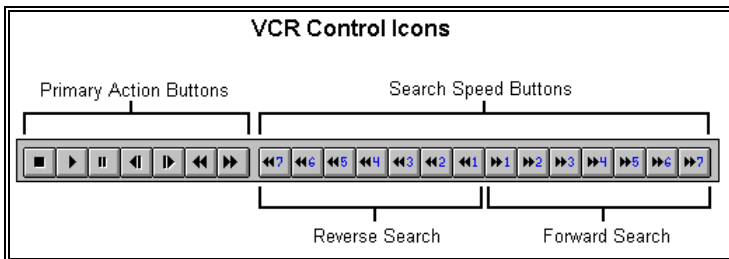
**Time/Counter Display** is a counter that displays the currently selected Time Format. The counter may display the image number (Count) or the time (hh:mm:ss:ff) as specified in the **VCR, OPTIONS** menu.

**Time Code Indicator** indicates whether the computer control is using **SMPTE** or Control Pulse (**CTL**) for advancing/reversing the video tape.

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## OPERATING THE VCR

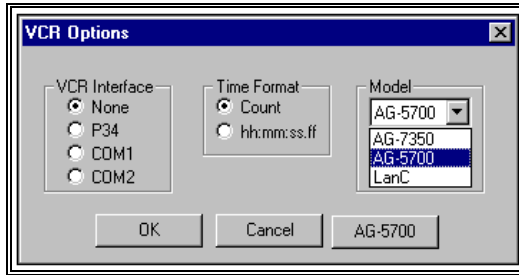
Controlling the VCR with the ARIEL **CAPTURE** software is intended to electronically mimic the actions required for manual operation of the VCR. Comparison of the front of the VCR with the various Menu items and/or Icons presented in the **CAPTURE** screen will facilitate learning the subsequent functions and options available.



The primary action buttons on the front of the VCR look similar to the icons located in the **CAPTURE** program Tool Bar. Proceeding from left to right, these buttons are: **STOP, PLAY, PAUSE, STEP REVERSE, STEP FORWARD, REVERSE SEARCH** and **FORWARD SEARCH**. Search Speed buttons have also been added to mimic the control of the Jog/Shuttle dial used to control the forward/reverse search speed. These functions can also be found on the pull-down menu presented by choosing the **VCR** option from the menu bar. Eight speeds are present for the AG-7350 VCR and six for the AG-5700. In addition, the **CAPTURE** program presents two control buttons which do not appear on the VCR panel. These choices, **STEP FORWARD** and **STEP REVERSE** allow the video to be moved one image at a time.

1. From the **VCR** menu, choose the **OPTIONS** command, and the following screen will be displayed.

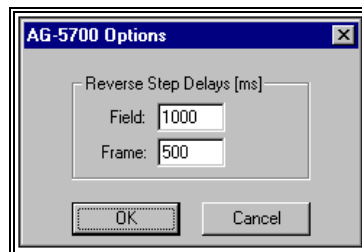




The **VCR Interface** is used to specify the type of VCR controller. The system is usually set to **None** when using the Streaming Capture method. The **P34 Interface** requires a 34 pin remote cable to connect the computer to the expansion board located on the rear panel of the computer. The **COM1, COM2** Interface requires the RS-232 Serial Interface module for the Panasonic VCR. The factory settings usually configure the VCR for COM1 and the optional modem for COM2. If this cable is not connected, the VCR Status Field in the status bar will indicate NR for No Recorder.

**Time Format** is used to specify the image counter format. **Count** is selected to keep a numerical count of the image numbers. The counter can also be set to a **Time** mode by selecting hh:mm:ss:ff. The counter value for the current setting is located in the Time/Counter field of the Status Bar.

**Model** is used to specify the Panasonic VCR model. Options include **AG-7350, AG-5700** and **LanC**. When the Panasonic model AG-5700 VCR is selected, the AG-5700 button will become active and can be selected to specify Reverse Step Delay parameters for this VCR. The LanC option is used for several 8mm camcorders and requires a specialized cable interface.



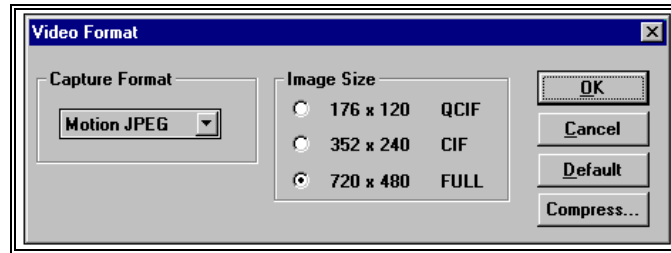
Due to the mechanical nature of the 5700 VCR, it is difficult to reverse one field at a time. The VCR must receive a Frame Reverse command, wait for the counter to change, delay while the VCR settles down and then issue a single Field Advance command.

**Field** is used to specify the delay time (ms) for the VCR to settle before reversing one field. A value of 1000 ms is the default value.

**Frame** is used to specify the delay time (ms) for the VCR to settle before reversing one frame. A value of 500 ms is the default value.

Examination of the format, compression method and size of the image to be grabbed can be regulated only while previewing the video. Selecting **VIDEO FORMAT** will present these choices

2. Choose the **VIDEO FORMAT** command from the **CAPTURE** menu.



**Capture Format** is used to select between three capture formats: Motion JPEG, RGB24 or RGB15.

- a. **Motion JPEG** - is the recommended format for video capture. This standard algorithm allows digital compression, storage and transmission of moving image information such as motion video, CD-quality audio and control data at CD-ROM bandwidth. The MJPEG algorithm provides inter-frame compression of video images and can have an effective compression rate of 100:1 to 200:1. Since MJPEG provides excellent video quality and the best capture performance, you will probably use it most of the time.
- b. **RGB24** - is a high quality input format, and so it can be useful for the most demanding video quality situations. However, capturing with RGB24 demands a high performance PC with a Pentium processor; some PC's may drop frames when capturing with RGB24. Uncompressed RGB24 files will also be very large compared to MJPEG. Use RGB24 only when you must have its higher video quality, and only on a PC that can support uncompressed capture.
- c. **RGB15** - is similar to RGB24 with slightly less picture quality and corresponding smaller file size.

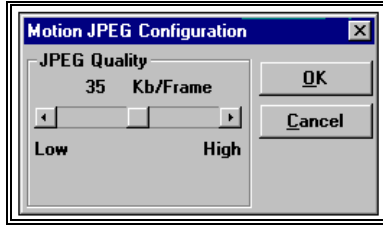
**Image Size** allows adjustment of the size of the captured image. It is recommended to use the Full size for maximum resolution. Larger numbers produce a larger window size.

**OK** is selected to proceed and save the current video format changes.

**Cancel** is selected to abort the current menu without saving any changes.

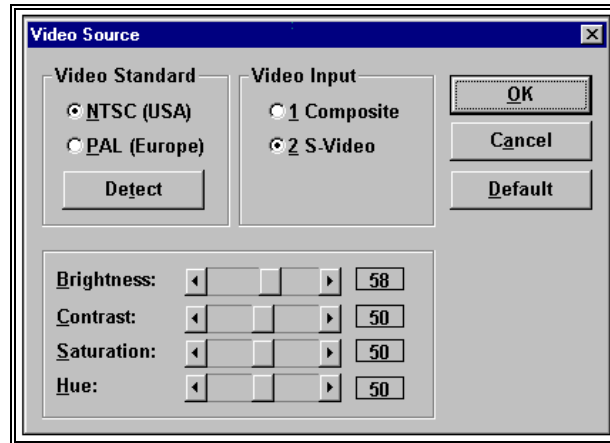
**Default** is selected to return the Video Format values to the Default settings.

**Compress** allows adjustment of the compression value. High compression will result in lower quality and smaller files. Minimum compression provides high quality files that are larger in size. Users are encouraged to experiment with this value to determine the desired compression value for their specific application. The compression value can be changed by left-clicking on the desired arrow or sliding the adjustment button. Select **OK** to proceed and save your changes or **Cancel** to abort.



Alterations of the image qualities of the video such as brightness or color can be made prior to grabbing. The **VIDEO SOURCE** option is used for this process.

3. Choose the **VIDEO SOURCE** command from the **CAPTURE** menu



**Video Standard** is used to set the standard for the video format. Available options are:

**NTSC (National Television Standards Committee)** A 60 Hz Video standard used extensively in North America.

**PAL (Phase Alternate Line)** A 50 Hz Video standard used extensively in Australia and most of Western Europe.

**DETECT** is selected to automatically detect the video format. Several frame grabbing boards are capable of detecting the video standard supplied on the video input. Clicking the detect button adjusts the video standard to the appropriate setting. This option is not functional if the Video Input is not set correctly.

**Video Input** should be set to the appropriate setting. If the video input to the computer utilizes the RCA jack, then the Input Source should be set to Composite. If the S-Video jack is used, the Input Source should be set to S-Video. **The S-Video input is preferred because S-Video has twice the resolution of composite, so the video image will be clearer.**

The **Color** options are used to enhance the image quality of the video. Adjusting the sliders or clicking the left/right arrows with the mouse can modify brightness, Contrast, Saturation and Hue. Selecting the **DEFAULT** button will return the settings to the factory default.

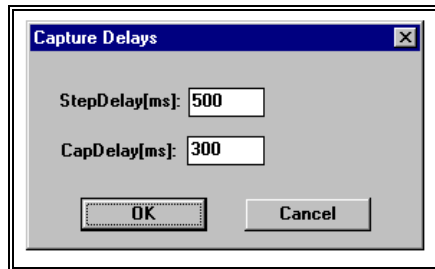
The ARIEL CAPTURE program automatically saves the current settings for future sessions when **OK** is selected. Select **Cancel** to exit the current menu without saving any changes.

You are now ready to capture a new image or restore a previously captured image.

## VCR DELAYS

As the speed of computers increase, an additional option has been added to include necessary delays required for correct image capture.

1. Select the **CAPTURE**, **CAPTURE PARAMETERS** and then the **STEP** tab to access the **DELAYS** button. The Capture Delays menu will be presented.



**StepDelay (ms)** - is the time delayed between successive commands to step the VCR when capturing while skipping images. It has no effect if every image is being captured. The system defaults to 500 ms.

**CapDelay (ms)** - is the time between Freezing and capturing the current image. With slower computers, there was no need for any delay. However, with the faster computers, a small delay is sometimes necessary. If there is insufficient delay, the same image gets captured twice. The total number of frames is correct, however, a file might have images 1, 2, 3, 3, 5, 6, 7... The system defaults to 300 ms. Changes should be made in 100 ms increments with a maximum of 500 ms.

When either delay is changed, the program will prompt the user to make sure the change is desired.

## FAST SPEED CONTROL

A useful option employed while previewing the film sequence to be digitized is the ability to control the speed of the fast forward and rewind choices. The VCR search speed can be adjusted according to your individual preference in a manner similar to the manual speed dial control on the front panel of the VCR unit. With this option, rapid speed can be utilized when trying to locate a particular section of the film and then the speed can be regulated to a slightly slower speed to locate the activity more precisely. It is extremely important to remember that when using the Intel frame grabber, the image on the monitor cannot be refreshed as quickly as the VCR can function. Therefore, at rapid speeds the film may go well beyond the specific point desired. For this reason, controlling the search speed will vary among individual users and may also differ for each person as the search goals change. **(NOTE: It is recommended to connect an additional color video monitor to view the film at the same speed as the VCR. The second**

**monitor would be connected directly to the Video Out connector of the VCR eliminating the refreshing limitation previously noted.)**

## SLOW SPEED CONTROL

Once the section of the filmed activity is located, the **CAPTURE** program provides the ability to move forward or reverse in single image steps. This option can be performed by using (1) the STEP FORWARD or STEP REVERSE buttons located on the **CAPTURE** program tool bar or (2) select **VCR** on the menu bar and then choose either Step\_Fwd or Step\_Rev. A third option is available by selecting VCR from the Menu and then choosing the Step\_To... option. You must type a number in the box labeled #images to indicate the number of images which you wish to move and then type Enter or click on the OK button. You must remember to type a minus sign (hyphen) before the number if the film is to be reversed. While the film is being moved, the cursor will appear as an hourglass until the specified number of images has been reached. At the completion of the task, the Image: box located in the lower right hand section of the screen will reflect the current image value. The value in this box can be set to zero by selecting the TimeCodes option and then choosing Reset. This indicator can be particularly useful when finalizing the starting point of the film section to be captured as well as knowing the number of images to be grabbed.

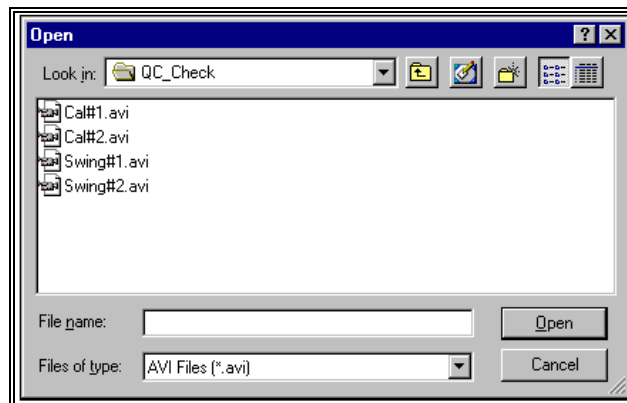
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## CREATING A NEW IMAGE FILE

The Ariel Capture module provides two options for capturing images to the computer hard drive, Step Capture and Streaming. Step-Capture utilizes the optional computer controlled VCR to precisely control the capture starting point, set a skip factor, and set the number of images to be captured. The Streaming option captures video directly to the computer in real-time and does not require the computer controlled VCR.

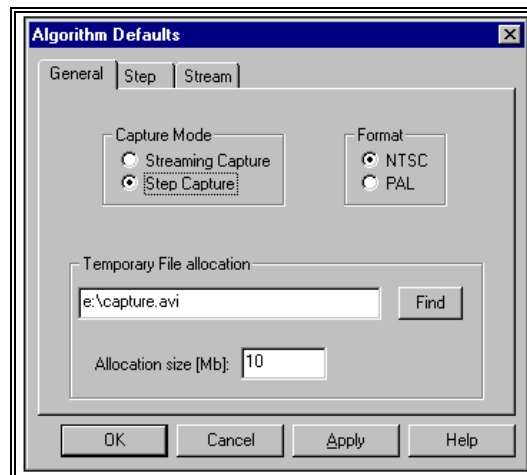
### STEP CAPTURE (COMPUTER CONTROLLED)

1. Choose the **NEW** command from the **FILE** menu (or the NEW icon in the toolbar). The **OPEN** File Dialog box will appear.



The OPEN File Dialog box is used to create a new image file that can be one of two types (files that have the extension of **\*.AVI** or **\*.PCL**). The AVI format is recommended for most applications since this is compatible with Microsoft Video For Windows format. The current file type is listed in the lower portion of the dialog box. The New File Dialog box can be used to specify the Drive, Directory, Type and Name of the image file to be saved. Type the Name of the New image file in the File Name box and select **OPEN** to proceed. Select **CANCEL** to abort this menu.

2. Use the VCR commands from the **VCR** menu to determine the number of images in the sequence to be analyzed. This is usually accomplished by adjusting the video to the desired starting point and manually selecting the **IMAGE ADVANCE** icon while keeping a count of the number of mouse clicks. The **VCR** and **STEP\_TO** commands can also be used to advance the video in specified increments.
3. Select the **PAUSE** command from the **VCR** menu and adjust the video to the beginning image of the sequence using the **IMAGE ADVANCE / IMAGE REVERSE** commands from the **VCR** menu.  
**NOTE: The VCR must be in the PAUSE mode for the Capture process.**
4. Choose the **CAPTURE PARAMS** command from the **CAPTURE** menu. The Algorithm Default Dialog box will appear.



5. Select **Step Capture**, specify the video **Format**, set the **Temporary File Allocation** and **Allocation Size** for the AVI file.

**Capture Mode** specifies the method that will be used to capture the video images to the hard drive of the computer.

**Format** specifies the video standard. NTSC is used throughout North America, while PAL format is more common in Europe and Australia.

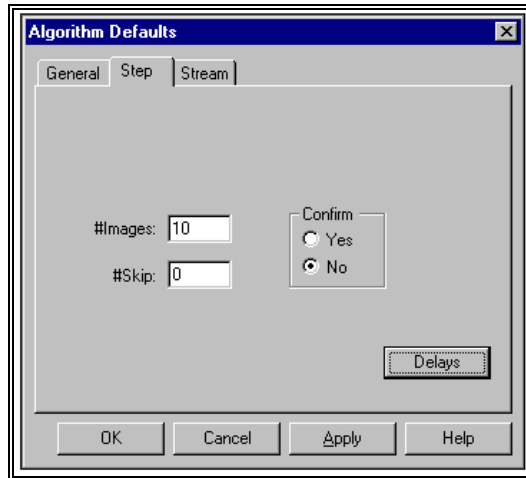
**Temporary File Allocation** determines the drive, directory and name of a temporary file for saving the captured AVI file. When using the Step Capture mode, this item is normally not used



since the user will be prompted for a file name when the AVI images are saved.

**Allocation Size (MB)** determines the maximum size of the temporary file in megabytes of memory. This setting is not important for the Step Capture. It is used more often in the Streaming Capture mode.

6. Select the **STEP** tab to specify the parameters for the Capture process. The following menu will be displayed.

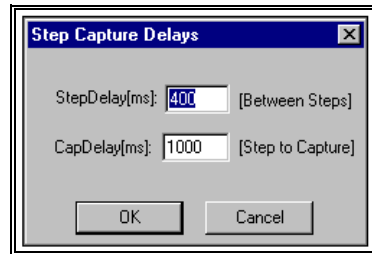


**#Images** is used to specify the number of images that you wish to store on the hard disk. This number should be used in combination with the **#Skip** field in the following manner. The calculation for **#Images** is the number of frames grabbed, from beginning to end, divided by the **#Skip + 1**. This number also affects the **Film Speed** that will be entered in the **Digitizing module**. For example, let's assume that there is a sequence of 300 frames recorded at 60 Hz (refer to the table below). If the activity to be analyzed was performed rapidly, you may not want to skip any images (**#Skip = 0**). However, if the event to be analyzed was executed at a slow speed, then every frame may be unnecessary and perhaps every other frame or even every 3rd frame would be sufficient for analysis.

# Images	#Skip	#Images	Film Speed
300	0	$300 / (0+1) = 300$	$60 / (0+1) = 60 \text{ Hz}$
300	1	$300 / (1+1) = 150$	$60 / (1+1) = 30 \text{ Hz}$
300	2	$300 / (2+1) = 100$	$60 / (2+1) = 20 \text{ Hz}$
300	3	$300 / (3+1) = 75$	$60 / (3+1) = 15 \text{ Hz}$

**Confirm** can be set to Yes or No. A setting of Yes will cause the system to pause after capturing every image and allow the user to Confirm that the frame was grabbed correctly. The Enter key must be pressed to capture each successive frame. A setting of No will result in the system capturing the number of images specified in the **#Images** field without any pauses.

7. Select the **DELAYS** button to set the **Step** and **Capture** delays. The following menu will be displayed.



**Step Delay** is a time value in milliseconds (ms) that allows you to specify a delay between the image advance and the freezing of the image. A value of 0 to 900 ms may be selected. The default speed is 400 ms and will normally provide sufficient time for the computer to store each image. A shorter time delay may interfere with this process while a longer delay may be unnecessary.

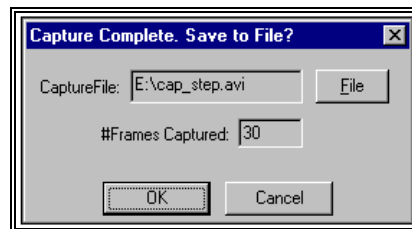
**Cap Delay** is a time value in milliseconds (ms) between Freezing and capturing the current image. With slower computers, there was no need for any delay. However, with the faster computers, a small delay is sometimes necessary. If there is insufficient delay, the same image gets captured twice. The total number of frames is correct, however, a file might have images 1, 2, 3, 3, 5, 6, 7... The system defaults to 300 ms. Changes should be made in 100 ms increments with a maximum of 1000 ms.

8. Choose the **START CAPTURE** command from the **CAPTURE** menu (or the **Start** icon).

The **Start Capture** command will begin the capturing process at the currently displayed image using the values specified in the Capture Parameter menu. A confirmation screen will appear when all the images have been captured.

The **STOP** icon can be selected to abort the capturing process.

9. When the Capture program has completed the capture process, the following menu will be displayed.



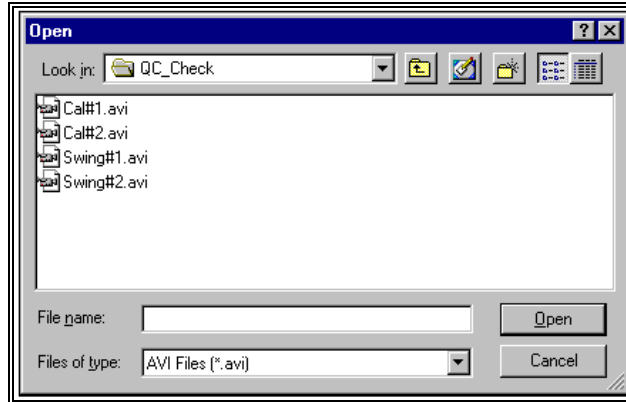
The **Capture File** and **# Frame Captured** fields specify the current name and number of images for the AVI file. Select the **OK** button to accept this information and save the file to the computer. The **FILE** button can be selected to specify a different name and/or location to save the AVI file. Select the

**CANCEL** button to abort the capture process without saving the AVI file.

## STREAMING CAPTURE

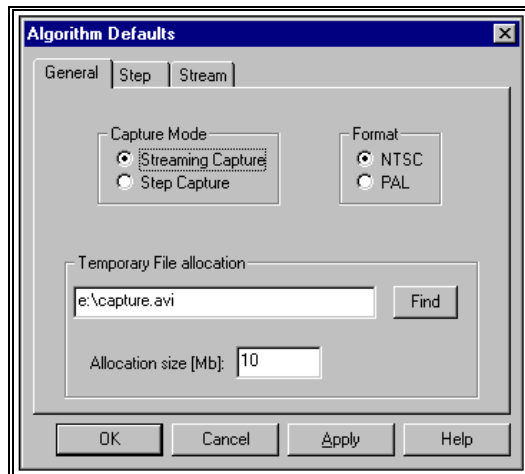
The Streaming Capture mode is used to capture video from any video source directly to the computer. NOTE: The frame grabber must be capable of streaming capabilities.

1. Choose the **NEW** command from the **FILE** menu (or the NEW icon in the toolbar). The **OPEN File** Dialog box will appear.



The OPEN File Dialog box is used to create a new image file that can be one of two types (files that have the extension of **\*.AVI** or **\*.PCL**). The AVI format is recommended for most applications since this is compatible with Microsoft Video For Windows format. The current file type is listed in the lower portion of the dialog box. The New File Dialog box can be used to specify the Drive, Directory, Type and Name of the image file to be saved. Type the Name of the New image file in the File Name box and select **OPEN** to proceed. Select **CANCEL** to abort this menu.

2. Determine the approximate time period of the sequence to be analyzed. This is usually accomplished by adjusting the video to a location prior to the desired starting point and then "playing" the video while keeping track of the elapsed time of the sequence to be analyzed. Make a note of the elapsed time.
3. Rewind the video to the location prior to the desired starting point.
4. Choose the **CAPTURE PARAMS** command from the **CAPTURE** menu. The Algorithm Default Dialog box will appear.



5. Select **Streaming Capture**, specify the video **Format**, set the **Temporary File Allocation** and **Allocation Size** for the AVI file.

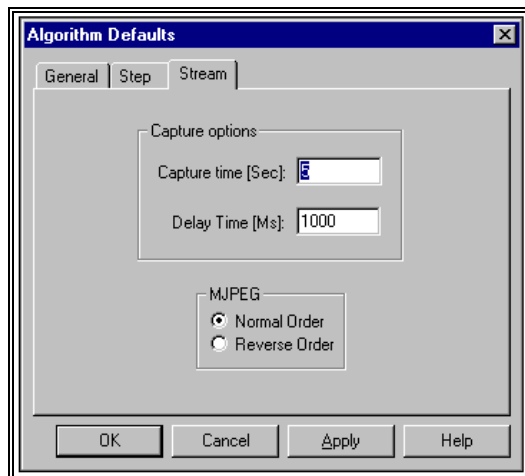
**Capture Mode** specifies the method that will be used to capture the video images to the hard drive of the computer.

**Format** specifies the video standard. NTSC is used throughout North America, while PAL format is more common in Europe and Australia.

**Temporary File Allocation** determines the drive, directory and name of a temporary file for saving the captured AVI file.

**Allocation Size (MB)** determines the maximum size of the temporary file in megabytes of memory. The default is 10 MB which, when using moderate compression, is enough space for 4 or 5 seconds of data. This is approximately equal to 300 images. If additional space is required, simply increase this value to the desired value.

6. Select the **STREAM** tab to specify the parameters for the Streaming Capture process. The following menu will be displayed.



7. Specify the streaming **Capture Options** and **MJPEG** Order.

**Capture Time** is used to specify the time period for video capture. When using the Streaming option, it is recommended to capture at least 1 or 2 seconds prior to the sequence of interest and continue at least 1 or 2 seconds past the desired end point. This “extra” time should be added to the elapsed time required for the sequence to be analyzed. Excess images can be removed at a later stage using the Ariel TRIM module.

**Delay Time** is used to insert a delay time (in milliseconds) prior to the start of the actual capture process. This is an important factor to be considered when using any video player. Since the VCR is a mechanical device, a short time period, usually 500 ms, is required for the VCR to reach the proper speed. This delay should be added to the time period that you wish to capture.

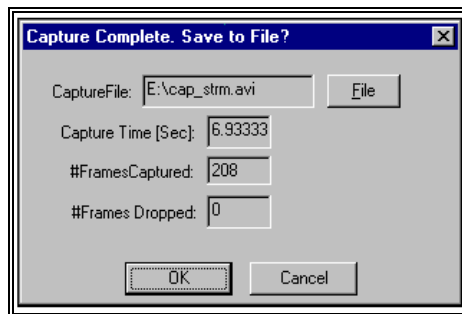
**MJPEG** is used to specify the display order for the odd and even video fields. Depending on the hardware and software combinations used for recording and displaying the AVI files, it is possible for the order of the displayed fields to be reversed. For this reason, the Ariel TRIM program provides the option to specify the order for displaying the AVI files. If it appears that the images are “jerky” or are being displayed in a “zigzag” manner, the field order probably needs to be reversed.

Select the **OK** button to proceed with the capture process. Select the **CANCEL** button to abort the current menu.

8. Press the PLAY button on the video source and select the **START CAPTURE** command from the **CAPTURE** menu or the **GO** icon from the Tool Bar to begin the Streaming Capture. This command will begin the capturing process using the values specified in the Parameter menu. A confirmation screen will appear when all the images have been captured.

The **STOP CAPTURE** command or the STOP icon can be selected to abort the capturing process.

9. When the Capture program has completed the capture process, the following menu will be displayed.



The **Capture File** field lists the current name and location for the captured file.

**Capture Time** field lists the elapsed time (in seconds) for the captured images.

**# Frame Captured** fields lists the number of images for the AVI file.

**# Frames Dropped** indicates how many images were “missed” from being captured correctly. **NOTE: If any images are dropped, the file must be recaptured!** Dropped images will alter the sequence timing and affect all results where time is used.

Select the **OK** button to accept this information and save the file to the computer. The **FILE** button can be selected to specify a different name and/or location to save the AVI file. Select the **CANCEL** button to abort the capture process without saving the AVI file.

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## CREATING A NEW CONTROL FRAME

The ARIEL CAPTURE program allows the Control Frame to be captured and stored in the same file as the Sequence data. However, due to the format of the \*.AVI file, **IT IS RECOMMENDED TO CAPTURE THE CONTROL FRAME AND SEQUENCE INFORMATION TO SEPARATE FILES.** This is required for files that will be compressed off-line and AVI files that will be played in other Windows applications.

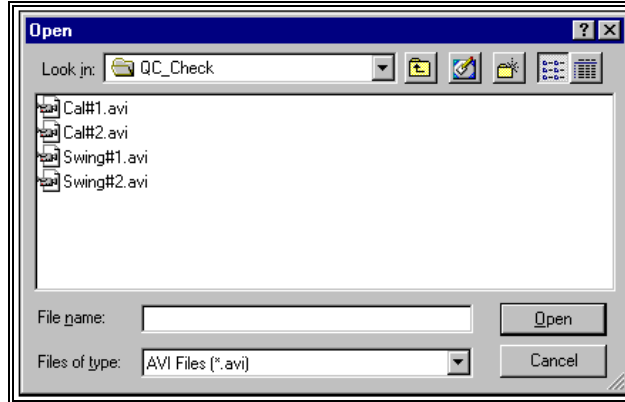
### CAPTURING CONTROL INFORMATION TO SEPARATE AVI FILE

1. Choose the **NEW** command from the **FILE** menu. The **NEW File** Dialog box will appear. Name the Control file. Be certain that the AVI extension is included.
2. Select the desired image file using the VCR commands from the **VCR** menu.
3. Adjust the video to the desired control image using the options listed in the **VCR** menu.
4. Select the **PAUSE** option when the desired image has been reached.
5. Choose **CAPTURE CONTROL** from the **CAPTURE** menu. A confirmation screen will appear to verify that the frame has been grabbed.

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## RESTORING PREVIOUSLY CAPTURED IMAGE FILE

1. Choose the **OPEN** command from the **File** menu. The **OPEN File** Dialog box will appear.



2. Select the desired file and click the **OPEN** button.
3. Choose **REVIEW** from the **VIEW** menu.
4. Use the VCR commands located in the **VCR** menu to advance/review the captured image.

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## EXTENDED FEATURES

### AUTOMATIC DIGITIZING

Images can be captured in either the \*.PCL or the \*.AVI format for use with the automatic Digitizing feature of the APAS. AVI files are compatible with Video For Windows programs and can be played as “real-time” movies using the Media Player. Please refer to the DIGI4 help screens for additional information.

### FILE COMPRESSION

#### *IOMEGA BUZ*

Video files can be compressed by selecting the **VIDEO FORMAT** command from the **CAPTURE** menu. Then select the **Compress** button to display the Motion JPEG Configuration menu. The amount of compression can be adjusted by clicking on the arrow buttons are adjusting the slider.

The amount of compression is inversely proportional to the image quality. This means that the higher the compression (less space for each image), the more information about the image will have to be thrown away. It is also important to remember that higher quality images require higher throughput of the PC bus and hard drive. For most applications, it is recommended to use a value between 50 and 75 Kb/Frame.

### ***INTEL SMART VIDEO PRO***

Video files can be compressed using several methods. RAW video can be compressed by selecting the **VIDEO FORMAT** command from the **CAPTURE** menu. **Video Compression Method** is used to set the compression to one of two options:

- a. **Compressed (Intel Indeo R3.2 Video)** - Video is captured and compressed in one step, in real time (compressed while you capture). Compressed files create smaller files sizes that are faster to capture at a slight expense on image quality.
- b. **Raw (Intel Indeo RAW Video)** - More of the original video information is stored. Raw files provide the best possible quality at the expense of larger files.

### ***OFF-LINE COMPRESSION***

Once video files are captured, you can later compress it using "off-line" compression by opening the Digital Video Producer (DVP) ver 4.0 program.

1. Open the video file from the main DVP program by selecting the **IMPORT MEDIA** command in the **FILE** menu.
2. Place the media on the timeline.
3. Select the **COMPRESSION** command from the **VIDEO** menu.
4. Select **BUILD** from the **VIDEO** menu.
5. In the **BUILD** dialog, choose **COMPRESS ALL**, then click on the **BUILD** button to compress the file.

### **TIME CODES**

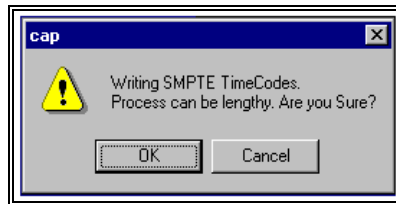
The **Time Code** commands are not necessary for operation of the **APAS**, however, it provides a valuable tool for searching to a specific sequence or image on the video tape. In order to use the Time Code feature you must have the Panasonic AG-7350 VCR with the Serial Interface connected to the **APAS** computer. These items can be selected as additional options to the **APAS**.



## Writing SMPTE Time Code

The **Time Code** option can be used for accurately searching and finding a specific sequence. Several steps must be followed for the **APAS** to utilize the time code feature.

1. Insert the desired videotape into the VCR.
2. Choose the **WRITE** command from the **TIME CODE** menu. A confirmation message will be displayed indicating that writing the Time Code is a lengthy process. Select **OK** to proceed with writing the Time Code. Select **CANCEL** to abort this process.



3. This will record the Time Code signal onto the videotape. When the **WRITE** option is selected you will see the Writing SMPTE Time Codes menu to verify time code recording is in progress. (NOTE: Time Code recording occurs at the standard tape speed, so if you have a two hour tape that you wish to time code, the writing process will take two hours.)

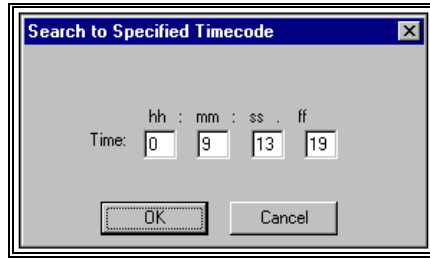


4. **Cancel** can be selected to abort the SMPTE Time Code writing operation. Time codes will be recorded on the tape up to the point where the **Cancel** option is selected.

## Utilizing The SMPTE Time Code

Once a tape has SMPTE time code recorded, the **SEARCH** function can be selected from the **Time Code** menu to Search to a specific time code. The format used is Hours:Minutes:Seconds:Frame

1. Select the **SMPTE** option in the **TimeCodes** menu. The current selection is indicated with an arrow to the left of the item. **NOTE:** The time codes are not functional when set to the None or CtlPulse options.
2. Choose the **SEARCH** command from the **TimeCodes** menu. The Search menu will appear.



3. Enter the desired Time Code in the following format:  
hh:mm:ss:ff where:

**hh = Hours**

**mm = Minutes**

**ss = Seconds**

**ff = Frame Number**

4. Select **OK** to advance to the desired time code or **CANCEL** to abort the process.

## RESETTING THE COUNTER

1. Choose the **Reset** command from the **Time Code** menu to reset the image counter located on the right side of the Status Bar. This option is only active if the VCR Interface is set to P34. When the Time Format is set to Count, the counter will reset to 000. When the Time Format is hh:mm:ss:ff, the value will be reset to 00:00:00:00. If time codes are being used, this option only resets the counter on the front panel of the VCR.

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## ZOOMING

1. Select the **ZOOM** command from the **VIEW** menu. The displayed image can be set to one of two zooming factors. The current Zoom status is indicated by the checkmark.

Zoom 0.5x - Zooms the displayed image to approximately one-half of the screen size.

Zoom 1.0x - Zooms the displayed image to full screen size

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## CAPTURE QUICK REFERENCE

### FIRST TIME SETTINGS

#### 1. CHOOSE VIDEO INTERFACE

- a. Select **VCR, OPTIONS** to make certain the VCR Interface is set correctly for your system.
- b. Set the VCR Interface to the appropriate hardware connection and click OK.

#### 2. CHOOSE THE VIDEO FORMAT

- a. Select **CAPTURE** and **VIDEO FORMAT**.
- b. Set the Image Format to Motion JPEG, the Size to 720 x 480, and click OK.
- c. Select the COMPRESS button and set between 50 and 75 Kb/Frame.

#### 3. CHOOSE VIDEO SOURCE

- a. Select **CAPTURE** and **VIDEO SOURCE**.
- b. Set the STANDARD to either NTSC or PAL (depending on the Video Format type).
- c. Set the VIDEO CONNECTOR to Composite or S-Video (depending on the Video cable).
- d. Adjust the Brightness, Contrast, Saturation and Hue.

NOTE: These settings will automatically be retained for future sessions.

### CREATING NEW IMAGE FILES

#### 1. STEP CAPTURE MODE

- a. Insert videotape with desired image sequence into VCR
- b. Select **FILE, NEW** to create a new image file.
- c. Select AVI Image Type, Drive, Folder and specify a Name for the image file. NOTE: Make certain the file name has the AVI extension.

- d. Use the **VCR** search commands and/or icons to find the desired image and determine the number of images in the sequence. Rewind the tape to the desired starting point and select the **PAUSE** command to freeze the current image.
- e. Select **CAPTURE** and **VIDEO SOURCE** and adjust the **COLOR** parameters to obtain optimal image quality for digitizing. Click OK to proceed.
- f. Select **CAPTURE** and **CAPTURE PARAMETERS**. Set the Capture Mode to Step Capture and make certain the correct video Format is selected.
- g. Select the **STEP** tab and set the number of captured images and the skip factor to pre-determined values. Set the Confirm option to No. Select OK to proceed.
- h. Select **CAPTURE** and **START CAPTURE** (or the **GO** icon) to begin the Capturing process.
- i. Select **OK** when the Sequence Capture Complete menu is displayed.
- j. Select **FILE** and **CLOSE** to ready the system to capture the data file.
- k. Repeat the steps above for each camera view. **NOTE:** Each camera view should have two AVI files: one data (or sequence) file and one calibration file.

## 2. STREAMING CAPTURE MODE

- a. Insert videotape with data image into video player.
- b. Select **FILE, NEW** to create a new image file.
- c. Select AVI Image Type, Drive, Folder and specify a Name for the Data File. **NOTE:** Make certain the file name has the AVI extension.
- d. Use the video player to determine the amount of time required to cover the desired sequence.
- e. Use the video player to rewind to a location prior to the first desired image of the sequence.
- f. Select **CAPTURE** and **VIDEO SOURCE** and adjust the **COLOR** to obtain optimal image quality for digitizing. Click OK to proceed.
- g. Select **CAPTURE** and **CAPTURE PARAMETERS**. Set the Capture Mode to Streaming Capture and make certain the correct video Format is selected. Also set the Temporary File size location and size.
- h. Select the **STREAM** tab and set the Capture Time and MJPEG Image Order. Select OK to proceed.
- i. Start the video player and select **CAPTURE** and **START CAPTURE** (or the **GO** icon) to begin the Capturing process.
- j. Select **OK** when the Sequence Capture Complete menu is displayed.

- k. Select **FILE** and **CLOSE** to complete the capture process for the data file.
- l. Repeat these steps for each camera view. **NOTE:** Each camera view should have two AVI files: one data (or sequence) file and one calibration file.

3. EXIT THE CAPTURE PROGRAM

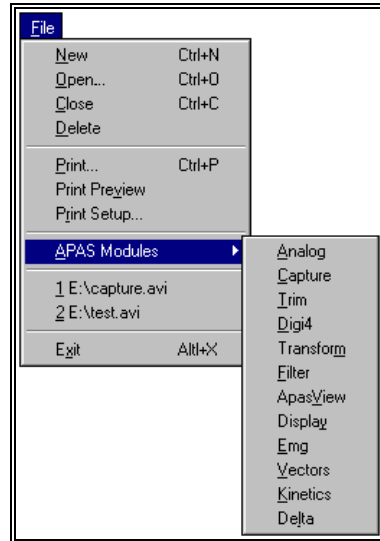
- a. Select **FILE** and **EXIT** to exit the CAPTURE program.

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# CAPTURE MENUS

Listed below are the various menus for the CAPTURE program. Select the desired menu to see a description of the available commands for each menu.

## FILE COMMAND MENU



### New

Selected to create a new file for capturing the video image to the hard disk drive of the computer.

### Open

Selected to open a “captured” file that has previously been grabbed.

### Close

Selected to CLOSE the currently open file.

### Delete

Selected to DELETE a previously “captured” image file.

### Print

Print the current file on the selected printer.

### Print Preview

Selected to check or examine the positioning on one or more pages. When you give the Print Preview command, a new window will be open showing the document position, as it would appear on paper. To close the Print Preview window, select the Cancel button to go to the previous mode.

### Print Setup

Selected to adjust the printer settings prior to issuing the PRINT command.

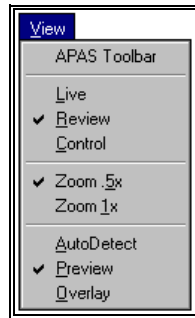
### APAS Modules

Selected to open additional APAS modules while keeping the current program open. When this command is selected, the user will be presented with a list of APAS modules.

## Exit

Selected to EXIT the CAPTURE program and return to the Microsoft Windows program manager.

## VIEW COMMAND MENU



## APAS Toolbar

Selected to toggle on/off the APAS toolbar. When this option is active, the APAS toolbar will be displayed and allow the user to select additional APAS modules while keeping the current program open. The toolbar can be positioned to the desired position by dragging it with the mouse.

## Live

Selected to view LIVE images directly from the VCR.

## Review

Selected to REVIEW an image file that has previously been captured to the computer hard disk.

## Control

Selected to access the CONTROL frame options.

## Zoom .5x

Selected to scale the video images to approximately 1/2 the screen size.

## Zoom 1x

Selected to scale the video image to the full screen size.

## Autodetect

Selected to automatically detect the display capabilities of the graphics adapter. The system will use the Overlay mode if it is supported by the hardware. Otherwise, the Preview mode will be used.

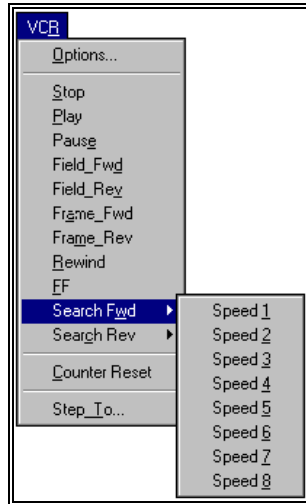
## Preview

Selected to display the video by extracting a video image from the video stream each 0.5 seconds. This process utilizes the computer processor and is supported by most frame grabbers. However, images displayed at 2 images per second can make it difficult to determine the exact starting point for capturing video.

## Overlay

Selected to display the video by streaming the video directly to the display card memory. This process does not use the computer processor however, the graphics adapter must have sufficient memory (usually 8 MB or more), support a high refresh rate and support DirectX technology from Microsoft.

## VCR COMMAND MENU



### Options

Selected to adjust OPTIONS pertaining to the video image obtained from the VCR. This includes selecting VCR Interface, Selecting the Time Format, and setting the VCR Model.

### Stop

Selected to STOP the VCR when viewing LIVE video images from the VCR. When this command is selected, the VCR will STOP and the LIVE video image will disappear from the screen.

### Play

Selected to PLAY the videotape that is currently in the VCR. When this option is selected, you will see the video image displayed on the color monitor.

### Pause

Selected to PAUSE the LIVE video image. When this option is selected, the current image will be retained on the color monitor. The PAUSE feature automatically switches to the STOP function after approximately five minutes of VCR inactivity.

### Step Forward

Selected to advance the video image by a single step. For most cases, this step is usually one field (1/2 frame).

### Step Reverse

Selected to reverse the video image by a single step. For most cases, this step is usually one field (1/2 frame).

### Rewind

Selected to REWIND the videotape that is currently in the VCR. When this option is selected, the video image will disappear from the color monitor and the VCR will REWIND the tape until the beginning of the tape is reached or the STOP command is issued.

### Fast Forward



Selected to FAST FORWARD the videotape that is currently in the VCR. When this option is selected, the video image will disappear from the color monitor and the VCR will FAST FORWARD the tape until the end of the tape is reached or the STOP command is issued.

### **Search Fwd**

Selected to SEARCH the videotape in the FORWARD direction. When this option is selected, an additional menu will be presented to adjust the search speed for forward playback. The smaller numbers represent slower search speeds while larger numbers represent faster search speeds. Speed level 4 is the normal playback speed.

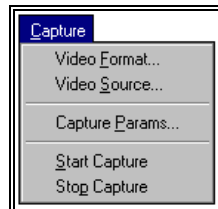
### **Search Rev**

Selected to SEARCH the videotape in the REVERSE direction. When this option is selected, an additional menu will be presented to adjust the search speed for reverse playback. The smaller numbers represent slower search speeds while larger numbers represent faster search speeds. Speed level 4 is the normal playback speed.

### **Step To**

Selected to STEP TO a specified image (or TIME CODE).

## **CAPTURE COMMAND MENU**



### **Video Format**

Selected to set parameters for grabbing the video image.

### **Video Source**

Selected to adjust specific parameters that deal with capturing the video image. This includes setting the Picture Effects (brightness, tint, saturation and brightness), Input Source and Input Type.

### **Capture Parameters**

Selected to specify the CAPTURE PARAMETERS for capturing the video image to the hard disk. This includes the number of frames to capture, the skip factor (if any), and the capture confirmation.

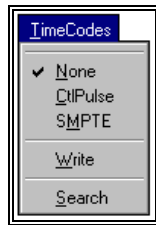
### **Start Capture**

Selected to START the CAPTURE process.

### **Stop Capture**

Selected to STOP the CAPTURE process.

## TIME CODE COMMAND MENU



### None

Selected to disable the Time Code option.

### CtlPulse

Selected to activate the Control Pulse option for advancing and reversing the video tape. This option reads the vertical synch pulse that is written to the tape during the recording process.

### SMPTE

Selected to activate the SMPTE time code option. This option is helpful when searching for a specific sequence on a videotape. **Note:** The SMPTE time code must first be written to the video tape using the Write command.

### Write

Selected to WRITE SMPTE Time Codes to the second audio channel of the video tape. This function requires the RS-232 module for the Panasonic VCR.

### Search

Selected to SEARCH to a user specified Time Code.

## RUN COMMAND MENU



### DVP

Selected to run the Asymetrix Digital Video Producer (DVP) software. The DVP program can be used to capture your video from a camera or VCR to a video File (.AVI file) on the hard disk. DVP can also be utilized to edit the video file and add special effects. This software is provided with the Intel Smart Video Pro frame grabber.

### Trim

Selected to exit the Ariel Capture module and automatically launch the Ariel Trim module. The Trim module is used to edit the captured AVI files.

## HELP COMMAND MENU



### **Index**

Selected to provide an INDEX of Help related topics.

### **Using Help**

Selected to provide instructions on using the Help Windows.

### **About Capture**

Provides information about the CAPTURE program



