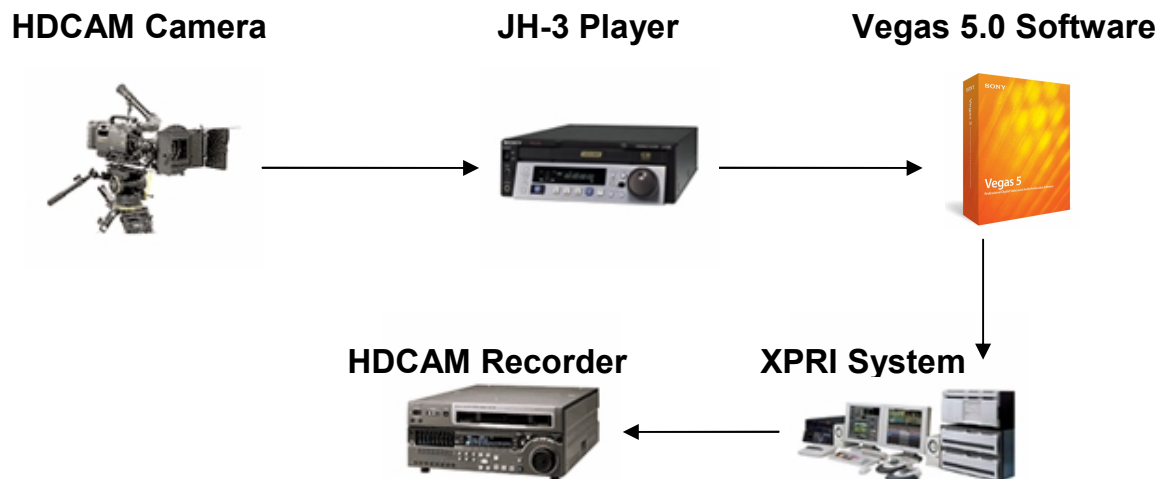


# SONY®

## Sony Vegas 5.0: 24p HDCAM/DVCAM Workflow for the Independent Filmmaker



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## Overview

Sony Vegas® 5.0 software delivers many exciting new features, including cost-effective tools for use in the 24p HDCAM® production process.

With Vegas 5.0 software you can do the following:

1. Connect Vegas 5.0 directly to a Sony JH-3 HDCAM deck and capture frame-accurate DVCAM downconverts over i.LINK®. You can also have DV/DVCAM dubs made from your HDCAM masters and capture using your DV deck or camcorder.
2. Remove 2-3 pulldown from the downconverted 60i DV clips.
3. Retain original 24p HDCAM timecode in the DVCAM downconverted video files.
4. Cut your project in a 24p Vegas project with perfect frame accuracy.
5. Create finished audio tracks in a 24p Vegas project.
6. Create finished HD composites and video effects and export as 24p uncompressed .avi.
7. Export a frame-accurate 24p EDL for final finishing in Sony XPR™ or other 24p HD editing systems. Finished audio and HD composites can be used natively in the finishing system, and HDCAM source clips will be recaptured as needed by the finishing system.
8. Even if you are not immediately delivering a 24p HDCAM master or doing a film-out, you can use this process to create extremely high-quality 24p DVDs, DVCAM or other SD masters, as well as 24 fps video for the Web.

**Note:** All information contained in this document refers to Sony Vegas 5.0 or later and does not apply to earlier versions.

## 24p HDCAM acquisition

Sony offers an extensive line of HDCAM cameras and decks, many of which are also available for rental.

HDCAM information can be found here:

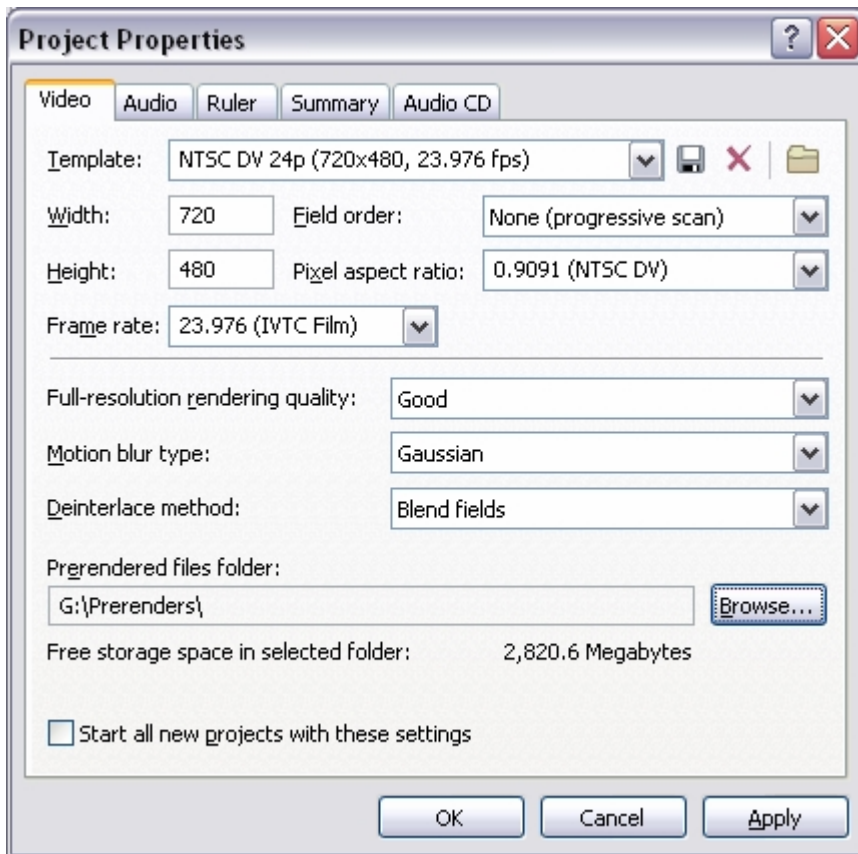
<http://bssc.sel.sony.com/Professional/webapp/SubCategory?m=0&p=2&sp=19&sm=0&s=&cpos=>

## Setting up a 24p Vegas project

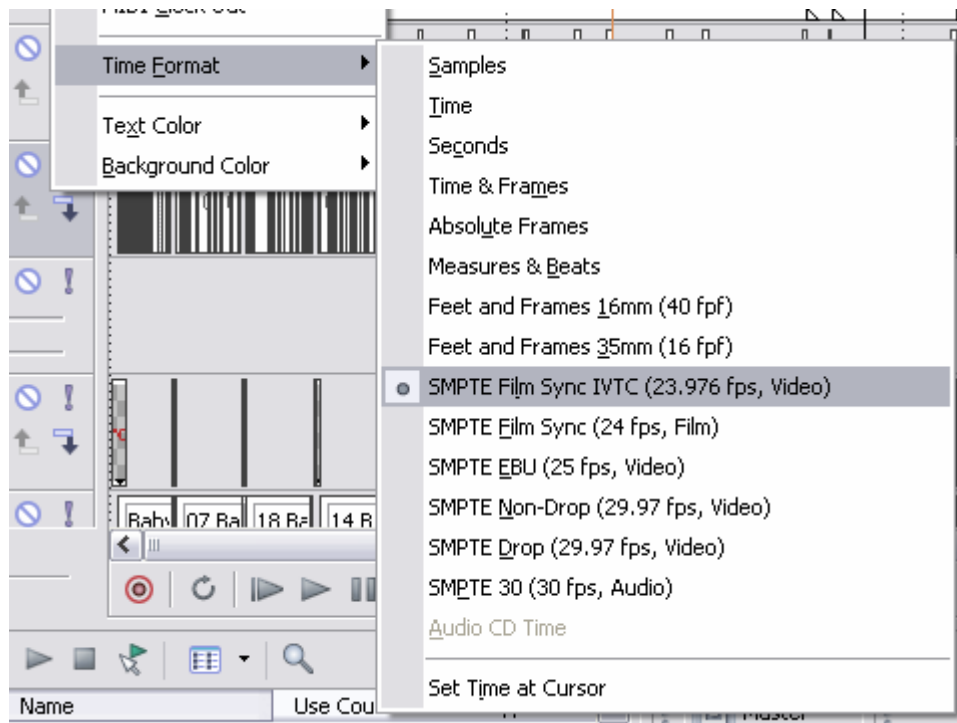
To ensure frame-accurate edits and a time-accurate soundtrack, you need to set your Vegas project properties correctly before you start editing.

Choose the **NTSC DV 24p** project template (or choose **NTSC DV 24p Widescreen** if the project is 16:9):

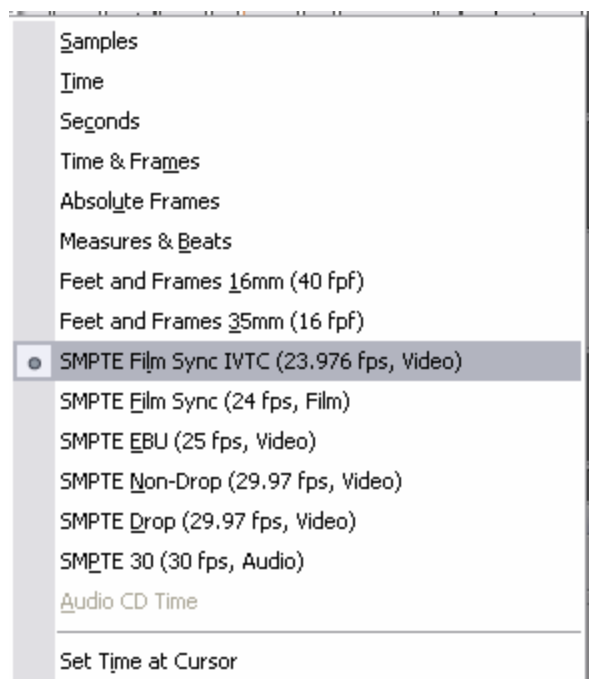
**Note:** You should choose **NTSC DV 24p** if you want to letterbox your DV downconvert, or choose **NTSC DV 24p Widescreen** if you used anamorphic widescreen in the downconvert (please refer to your JH-3 manual for letterboxing and anamorphic downconvert options).



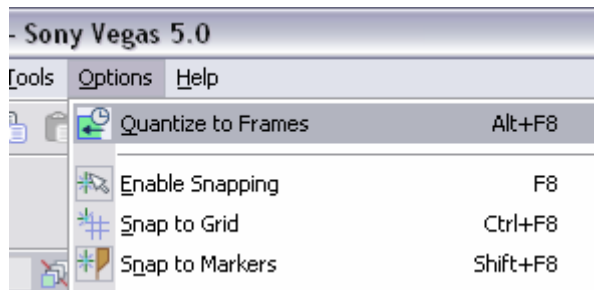
Set the project time format to **SMPTE Film Sync IVTC (23.976 fps, Video)**:



Set the Trimmer time format to **SMPTE Film Sync IVTC (23.976 fps, Video)**. This allows you to set in/out marks in the Trimmer window using the original 24p source timecode. Timecode will still be properly tracked even if you do not set the Trimmer time format to **SMPTE Film Sync IVTC (23.976 fps, Video)**.



Confirm **Quantize to Frames** is on. Keep this on for all video editing. You can turn **Quantize to Frames** off for fine-tuning the audio, but remember to turn it back on when editing video.



## Capturing 24p HDCAM footage as 24p DV using the Sony JH-3 deck

Sony JH-3 HDCAM players equipped with the HKJ-101 i.LINK interface board support downconversion to DVCAM over i.LINK (IEEE 1394DV). Vegas treats the JH-3 deck like any other DV deck, allowing you to log and capture with no special hardware beyond what is needed for DV capture and editing. Other HDCAM decks equipped with the HKJ-101 i.LINK interface board can also be used.

Important: To ensure proper handling of the downconverted 24p HDCAM footage throughout the editing process, it is essential to have the JH-3 downconvert options configured correctly.

When downconverting 24p HDCAM footage to 29.97 interlaced DV, use the following settings on your JH-3 deck's Advanced menu:

1. **System frequency select** should be set to: **23.98Psf with PD**. On the JH-3 this is advanced menu item 020.
2. **24F A-Frame** should be set to **Off (0)**. On the JH-3 this is advanced menu item 623.
3. **30F A-Frame** should be set to **Off (0)**. On the JH-3 this is advanced menu item 624.
4. **Drop-frame** should be set to **df**. On the JH-3 this is advanced menu item 022.
5. There are numerous additional downconvert options available on the JH-3 deck, and these can be modified based on your personal preference.

For instance, if the original HDCAM footage was shot using 16:9 aspect ratio, you would likely want to set **Letter (dc)** to **16:9** (menu item 931) and edit the footage in a 16:9 Vegas project using the **NTSC DV 24p Widescreen** project template.

**Note:** If you are using anamorphic DV downconverts, you will need to mark the clips as widescreen. Right-click the captured clips in the Vegas Media Pool window and choose **Properties** from the shortcut menu. In the Media Properties dialog, choose the appropriate widescreen setting from the **Pixel Aspect Ratio** drop-down list.

6. Although not required, you can set the JH-3 to embed timecode on the video frames during DVCAM downconversion. This offers an additional level of user confidence – you can be 100% positive the original 24p timecode is properly tracked all the way through

the editing process if it is burned onto the video frames. In the snapshot below, the PDT timecode is the drop-frame timecode used in the downconverted DV file, ORG is the original HDCAM 24p timecode. To create a window dub as shown, set **i.LINK char** to **on** (menu item 030) and **Display Sel** to **T&T** (menu item 005).



**If you wish to have a dubbing facility create DVCAM dubs from your HDCAM masters, please note the following:** Many dubbing facilities make HDCAM/DVCAM downconverts with non-drop timecode. Vegas assumes NTSC DV footage is using drop-frame timecode, so please request drop-frame timecode if you have HDCAM/DVCAM dubs made for editing in Vegas. Just tell the dub house to confirm 1 through 4 (above) and then you can capture the DV/DVCAM dubs into Vegas as NTSC DV using any NTSC DV playback device.

### **Additional capture notes**

You are now ready to capture your downconverted footage. It is recommended that you use the Sony Vegas capture tool for capturing your downconverted DV footage directly from the JH-3 deck or from DV/DVCAM dubs. Other capture tools have not been tested and may or may not work correctly.

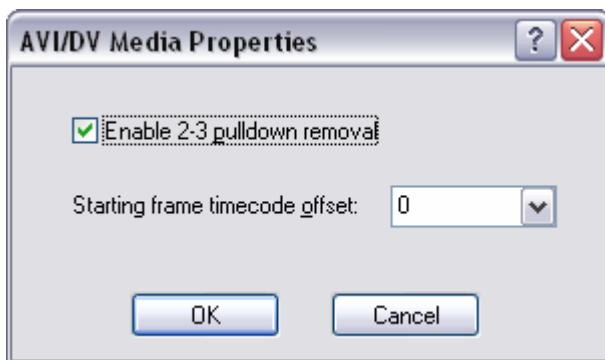
As always, proper tape and clip naming is essential during the logging/capturing stage— you will need a reference to the original master tapes, and failure to name the tape correctly at capture time can result in time-consuming/expensive searching at the online facility.

It is not recommended that you capture across scene breaks in the original HDCAM tape. This may result in improper timecode or pulldown removal inside Vegas. For best results, log each scene in the Vegas capture tool, and then batch capture.

## Remove 2-3 pulldown from the downconverted 60i DV clips

Once you have captured your downconverted DV clips in Vegas, you will need to remove the pulldown that is inserted by the HDCAM deck when creating 60i (29.97 interlaced) DV from 24p HDCAM original footage.

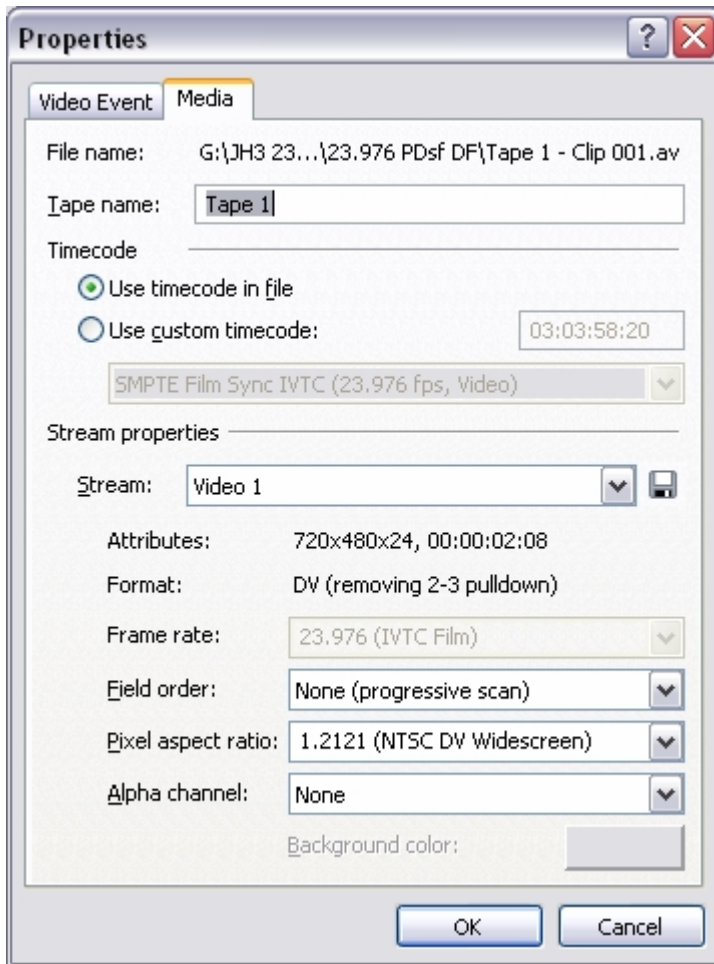
Load the captured clips into the Vegas Media Pool window (this happens automatically when you launch the capture application from Vegas). In the Vegas Media Pool window, select all of the downconverted clips, then right-click a selected clip and choose **File format properties**. The dialog box below will appear. Select the **Enable 2-3 pulldown removal** check box, and then click **OK**.



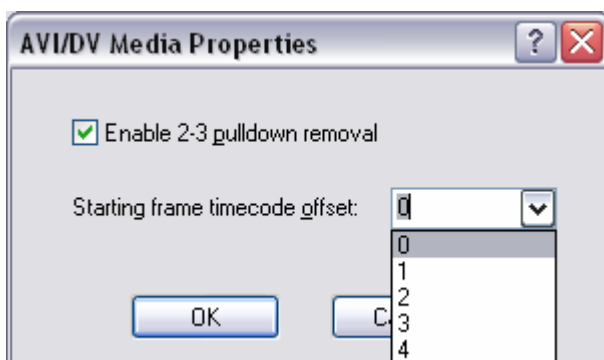
If the JH-3 downconvert options were set properly (see “Capturing 24p HDCAM footage as 24p DV using the Sony JH-3 deck” in this document) the starting frame offset for all clips will be zero, pulldown will correctly removed, and timecode will be tracked correctly.

The pulldown flag will be stamped into the DV file, so you can open these files in any Vegas 5.0 or later project and it will be interpreted as a 24p DV clip. There is no need to close/reopen Vegas after selecting the **Enable 2-3 pulldown removal check box** (above).

You can confirm that the footage has been flagged as 24p by checking the media properties for the DV clip. The format should be **DV (removing 2-3 pulldown)** as shown below:



If you are working from a film transfer or multigeneration dub, you can still convert the DV clip to 24p DV, but you may have to manually set the starting frame value using the **Starting frame timecode offset** value (0-4). This may require some trial and error to find the correct starting frame.



## Editing with 24p DV video files

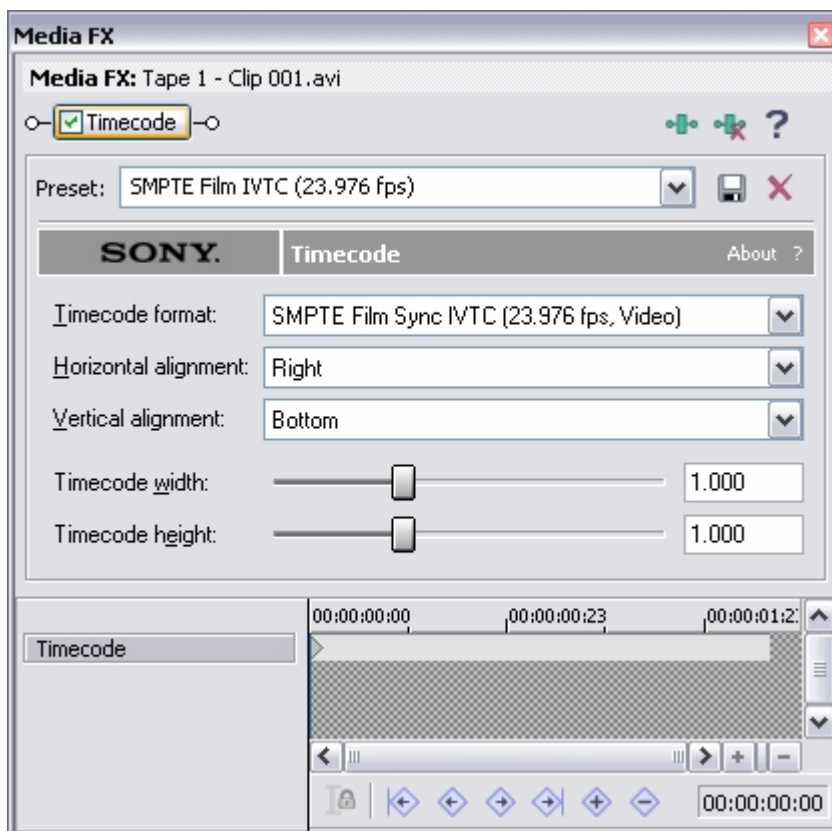
Vegas 4 shipped with many 24p DV editing features, and they are described here: <http://mediasoftware.sonypictures.com/download/step2.asp?DID=511>. If you followed all the steps above and are not planning on an HDCAM online session, you can edit your project and make a great-looking 24p DVD and create SD masters or Web video with no additional steps beyond the normal editing process.

### 24p Timecode

If you are planning on an HDCAM online session at some point (or need an EDL or XML project data export for any subsequent process), it is a good idea to confirm proper timecode handling before proceeding. The easiest way to this is to add the “Sony Timecode” filter to one or more of your 24p DV files.

In the Vegas Media Pool window, select a 24p DV file, click the Media FX button, select Sony Timecode, and choose the **SMPTE Film Sync IVTC (23.976 fps, Video)** preset.

**NOTE:** This must be done at the media level (from the Media Pool window) and nowhere else.



If you chose to burn in timecode during the downconversion process, your video will look like this:



After applying the Sony Timecode filter with the **SMPTE Film Sync IVTC (23.976 fps, Video)** preset, your video should look like the following frame. Importantly, note that the ORG timecode burned onto the frame matches the timecode displayed by the Sony Timecode filter.



A script could be used to apply (or remove) this filter, with the **SMPTE Film Sync IVTC (23.976 fps, Video)** preset, to all items in the Media Pool window. Using Notepad, you can modify the "Add Timecode To All Media.js" and "Remove Timecode To All Media.js" scripts (scripts can be found in ..\Program Files\Sony\Vegas 5.0\Script Menu).

In either script, change the following tag:

```
var presetName = "SMPTE Drop (29.97 fps)";
```

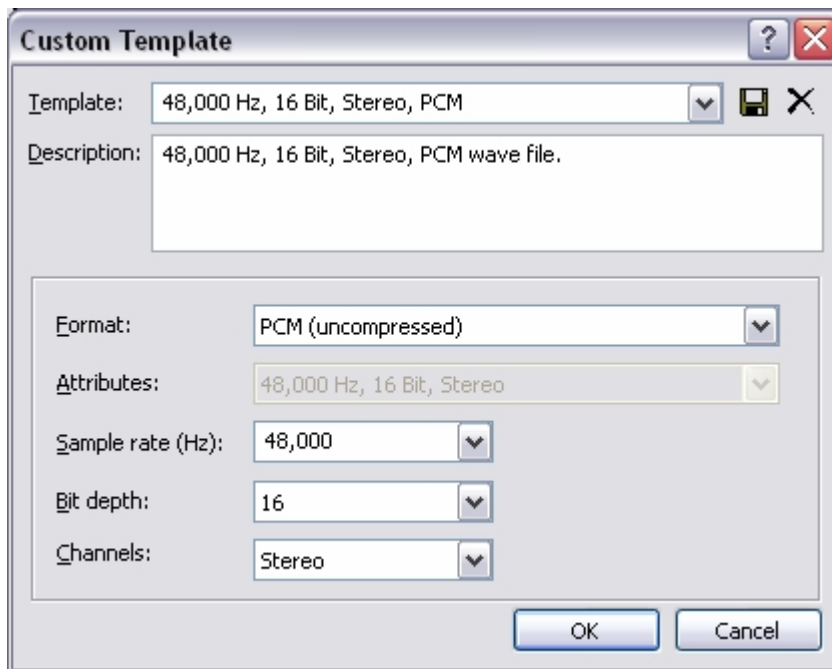
to

```
var presetName = "SMPTE Film IVTC (23.976 fps)";
```

Save script with a new name using the .js extension.

## Create finished audio tracks in a 24p Vegas project

If you are creating finished audio tracks for use in your final HD online session, you are strongly encouraged to check with the post-production facility for exact format requirements. Most facilities can accept 16-bit, 48 kHz PCM .wav files for use in HDCAM sessions. Use the following settings to render these audio files from Vegas 5.0:

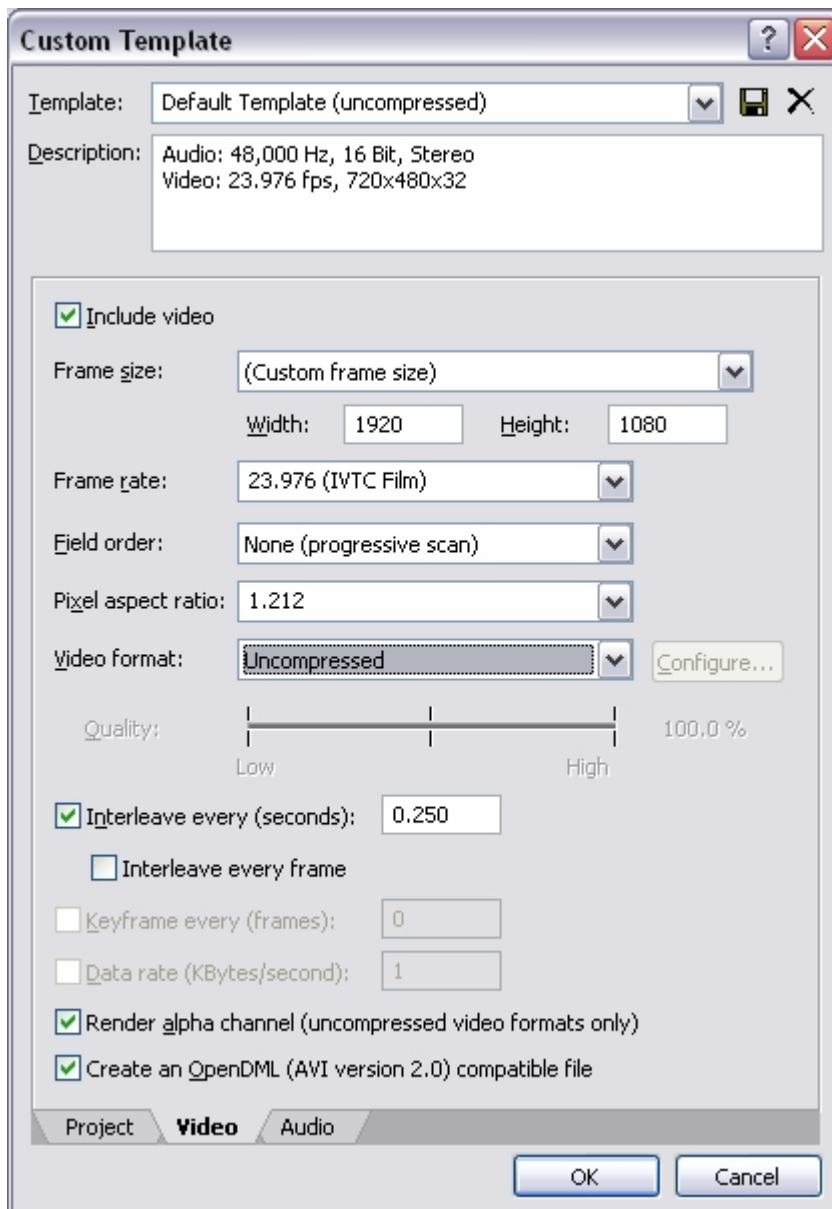


If you are cutting in a 24p Vegas project and doing a 24p HDCAM online, you will not need to worry about time-stretching your audio during the online session if you render .wav files as described previously from a 24p Vegas project.

If you need to convert Vegas audio tracks to OMF, EDL Convert Pro is recommended:  
<http://www.cuibono-soft.com/>

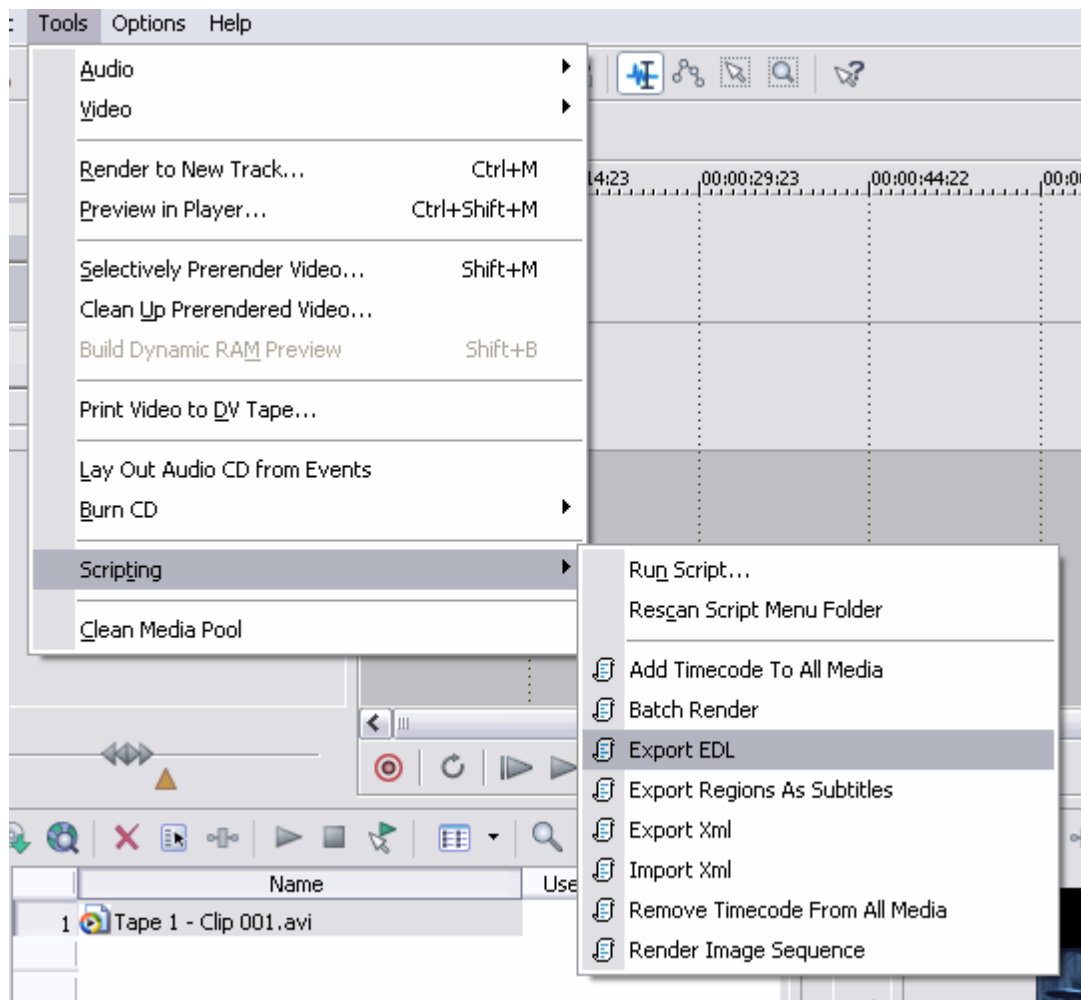
## Create finished composites and video effects and export as 24p HD uncompressed .avi

If you are creating finished composites, graphics, etc for use in your final HD online session, you are strongly encouraged to check with the post-production facility for exact format requirements. Most facilities can accept uncompressed 24p HD .avi files for use in HDCAM sessions. Use the following settings to render these files from Vegas 5.0:



## Exporting a 24p EDL

You have picture lock, the soundtrack is complete, and you are now ready to export your EDL. From the Tools menu, choose **Scripting**, and then choose **Export EDL**. Save the file with the .edl extension.



You are strongly advised to send the EDL to your post-production house prior to arriving at the online session. They can verify the EDL and note any errors so adjustments can be made prior to the actual online session.

24p EDLs created in Vegas 5.0 have been tested with Sony XPRI. Cuts and dissolves work correctly with 1 video track and 2 audio tracks in all tests. Speed changes, wipes, and other project data will not be exported with the EDL. The recommended practice for HDCAM online using Sony XPRI is as follows:

1. Render mixed audio tracks from your Vegas project for import into finishing system (Sony XPRI).
2. Render HD uncompressed graphics and video effects from your Vegas project for import into finishing system (Sony XPRI).
3. Export one EDL per video track for import into finishing system (Sony XPRI).

## **24p DVDs**

You can make 24p DVDs from a 24p Vegas 5.0 project. See the Vegas 5.0 documentation for more information.

## **Exporting the project to DV**

You can render your 24p project as NTSC or PAL DV. See the Vegas 5.0 documentation for more information.