USING 25FPS SCENES IN 24.00FPS
AVID MEDIA COMPOSER FILM PROJECTS

On 24.00fps film projects, sometimes, some scenes may be shot at 25fps. This can be scenes that have 25fps playback video on PAL monitors, or it can be archival footage that is delivered at 25fps, or they can be additional PAL video cameras running at 25fps.

In MC 4.x and later, you can mix and match frame rates, but that involves a speed change to the picture, whereas it is often preferred to just slow down the 25fps clips to 24fps, in order to preserve a 1:1 frame:frame relationship, at the highest possible picture quality.

1. PICTURE

Captured picture

In a 24p PAL project, any and all picture is captured at 50i, and the Avid will always merge the two fields and slow down the captured picture to 24fps in the system. If you have archival video footage, you may need to deinterlace prior to capturing.

In a 1080p24 HD project, this slowdown does not happen, as in 1080p24 HD, you will only be able to capture from 1080p24 HD sources. Most HD decks are able to play back 25p tapes at 24p (and vice versa), so that may help.

Imported picture

When importing a QuickTime file that is 25fps, into any 24p project, you need a trick to bring it in with a 1:1 frame:frame relationship. First, you need to make sure that the QuickTime file is picture-only, and has no audio tracks. In the console (CTRL-6 / CMD-6), type "IgnoreQTRate True", then import the file. It will now be imported frame-by-frame, and play back at project speed (24fps).
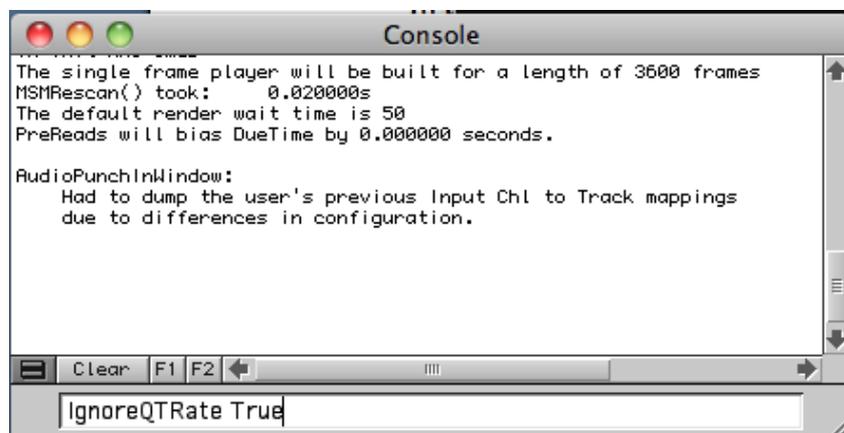
Again, this console command will NOT work if an audio track is present in the QT file.

Alternatively, you could use an application like QT Pro to export an Image Sequence, then import the image sequence into Avid.

And another option is to use Apple's Cinema Tools to convert a 25fps QT clip to 24fps, then import.

R3D

I haven't investigated all the various options to convert 25 to 24 with Red projects. Using AMA will not allow for an easy overall framerate. I have successfully used Avid MetaFuze (www.avid.com.metafuze) to transcode R3D files to Avid MXF media, and when doing that, setting the destination format to 1080p24 (for 25fps source clips) resulted in properly slowed down picture files.

2. SOUND

In order for any sync sound on those scenes, to match the slowed down picture, you will need to slow the sound down by the same amount as the picture.

Captured Sound

In PAL 24p projects, there are two methods for bringing in sound. They used to be referred to as Method 1 and Method 2. Currently, these are respectively referred to as "Video Rate (100%+)" and "Film Rate (100%)".
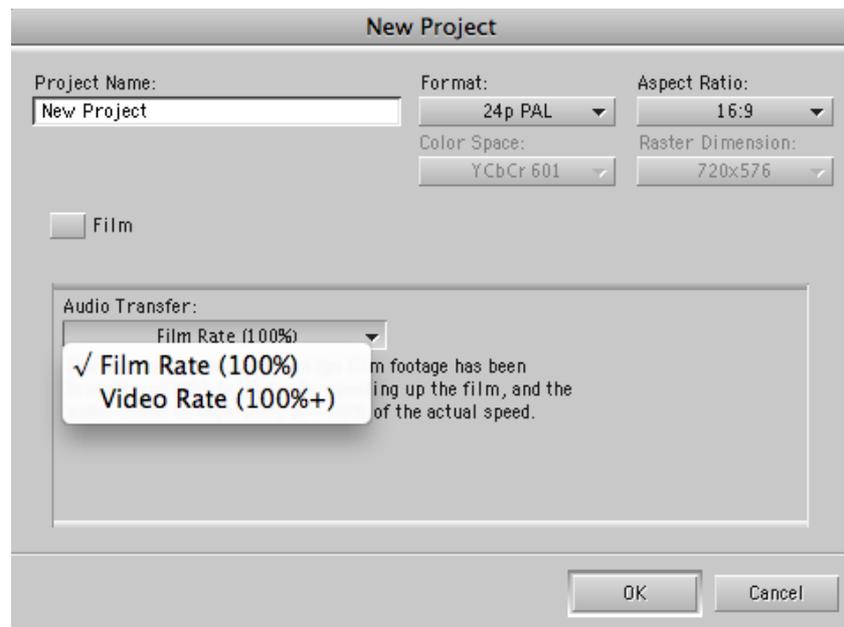
In Method 1 (now: Video Rate 100%+, not so common anymore), the Avid assumes that both picture and sound are coming in at 25fps, and both are being slowed down to 24fps (in effect by lowering the sample rate after capture). In Method 2 (now: Film Rate 100%), the Avid assumes that picture is coming in at 25fps, and will be slowed down, but sound is coming in at 100% of the actual recording speed.

So if you need to slow down audio, you can temporarily switch to Video Rate (100%+), capture, switch back and perform an SR conversion on the resulting clip. Switching methods is done in Film Settings. This setting only affects the capture tool, not imports.
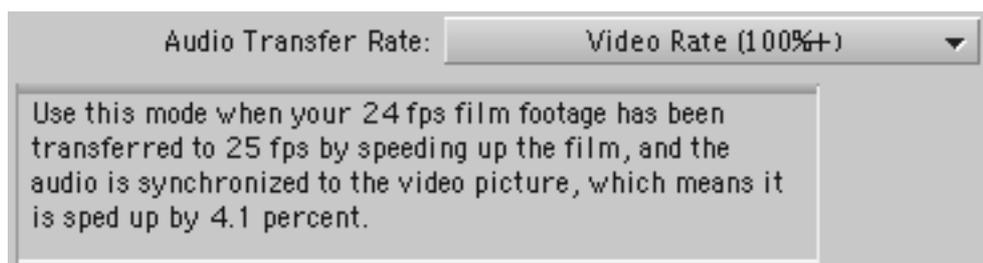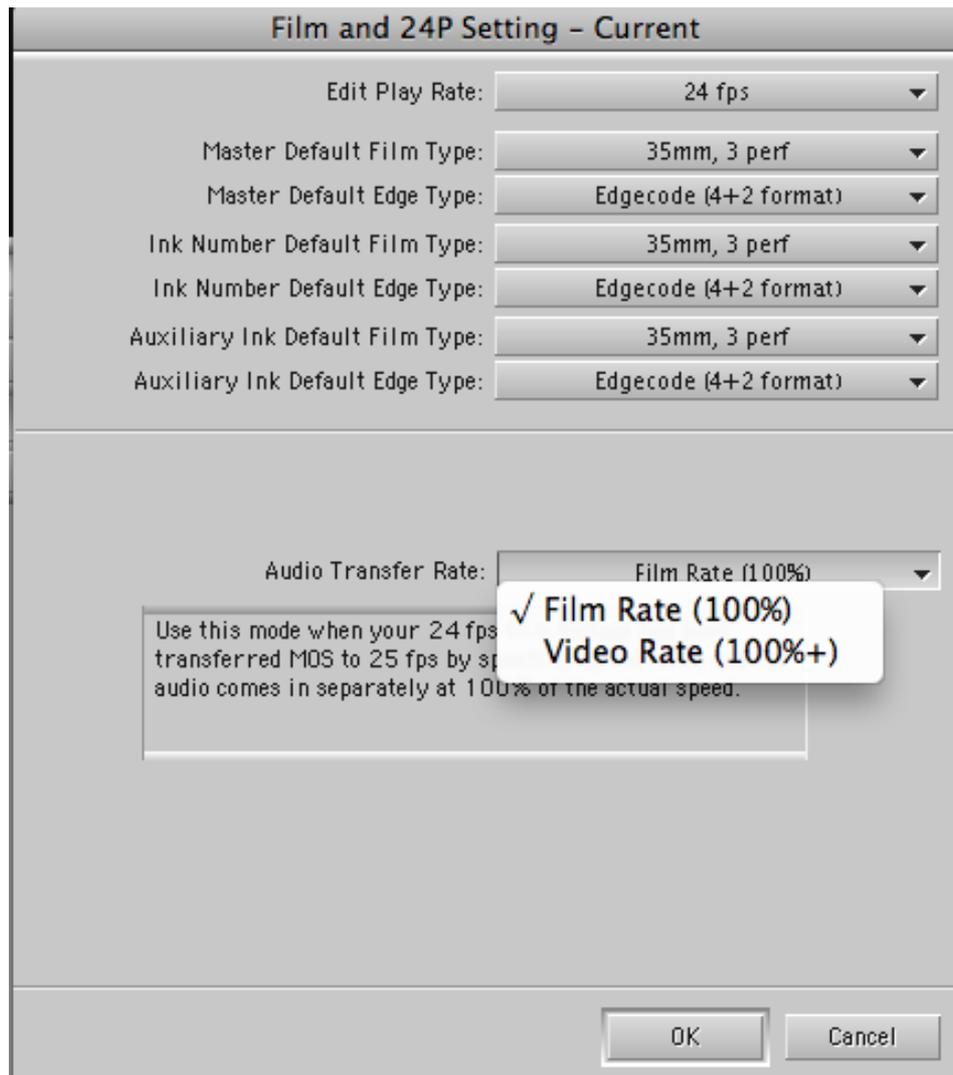
Note that in the Capture Tool, you will be warned that your current settings do not match your project settings.

Note that the resulting files will have a different sample rate than the project.

After capturing, changing the sample rate can be done by selecting the clip and right-clicking, or from the Clip menu.
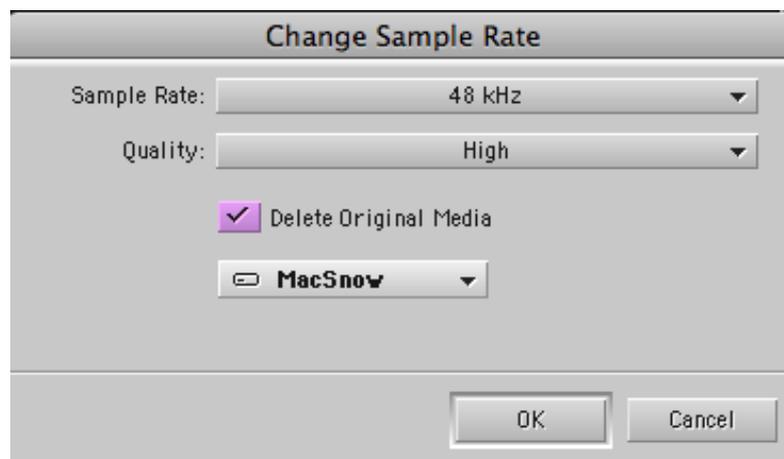
These methods only work for capturing, not importing.

Imported Sound

With file-based sound, you'll need a different modification. If your source file is a 48000Hz WAV file (or BWAV or BWF), you will first need to slow it down. This can be done by flagging the sample rate of the file to 46080Hz. You can use either the BWF Restamp Tool from 24p.com (http://www.24p.com/AvidInsider2.htm) or Wave Agent from Sound Devices (http://www.sounddevices.com/products/waveagent.htm), both available for Mac and PC.

In order to keep the original file untouched, copy the file prior to modifying it.

When you use Wave Agent, Import the file into Wave Agent.
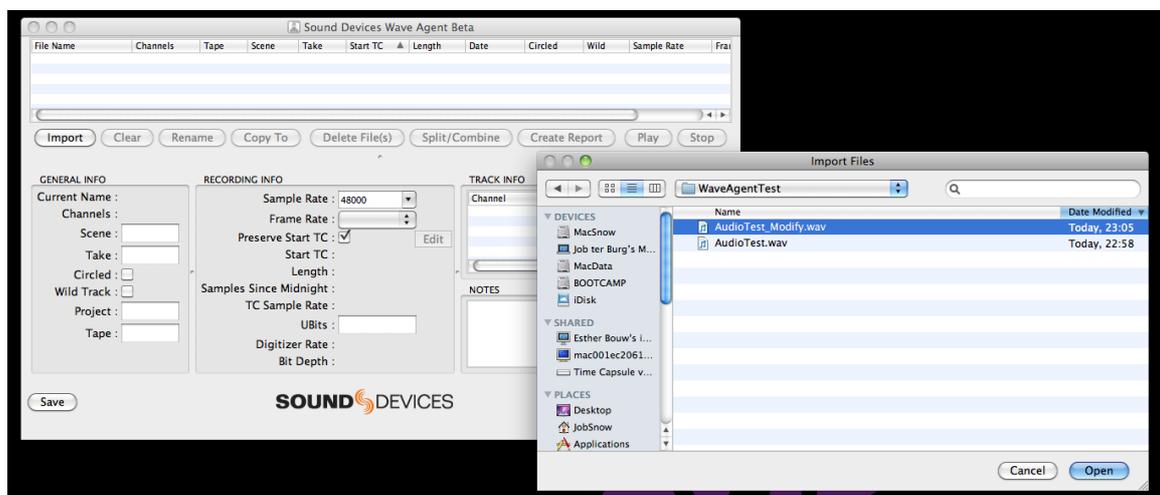
The clip will appear in the list.
Then change the sample rate flag for the clip in two steps: first type in "46080" in the sample rate field. Then click Save (bottom left of the window) to save the changes you have just made.
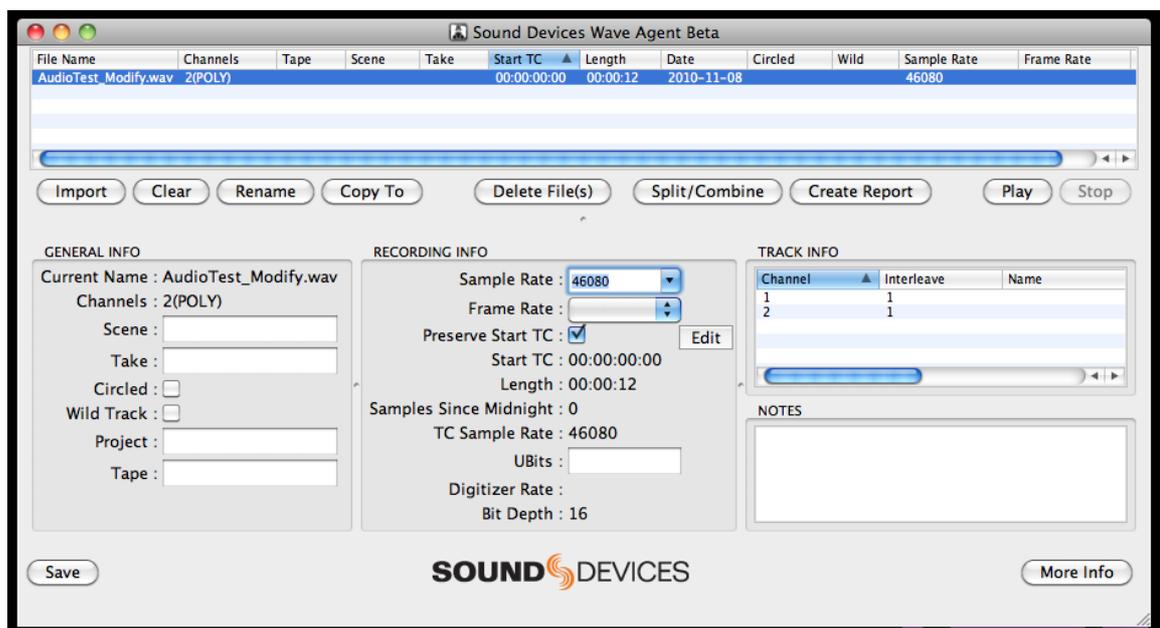
You can check the result by hitting CTRL-I / CMD-I in Quiktime Player.
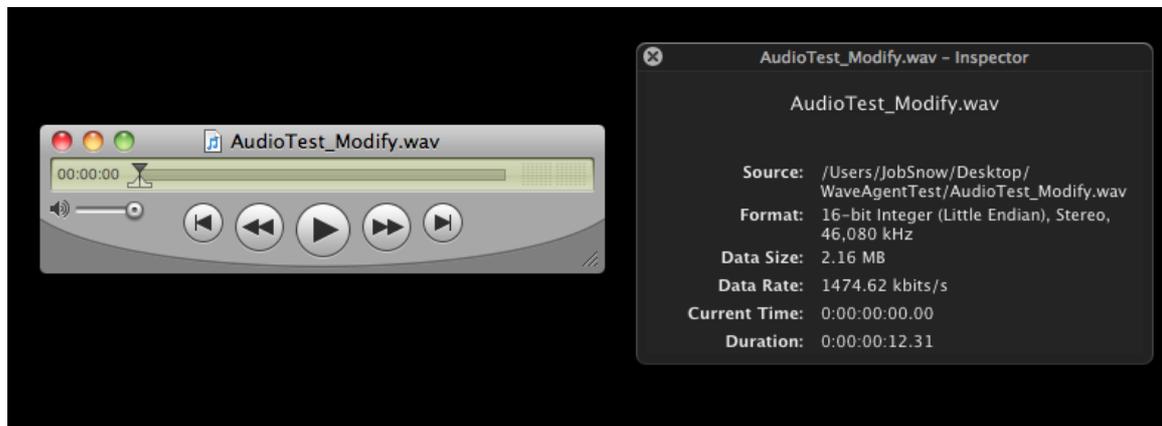
Now you are ready to import into Avid. If you want to double check that it works, import both the unmodified clip as well as the modified clip into Avid with only the first tick box of the Audio Import Settings checked. (Note that the "do not convert sources with pull-up and down rates…" only applies to files that were recorded with sample rate flags like 48048 and 47952).
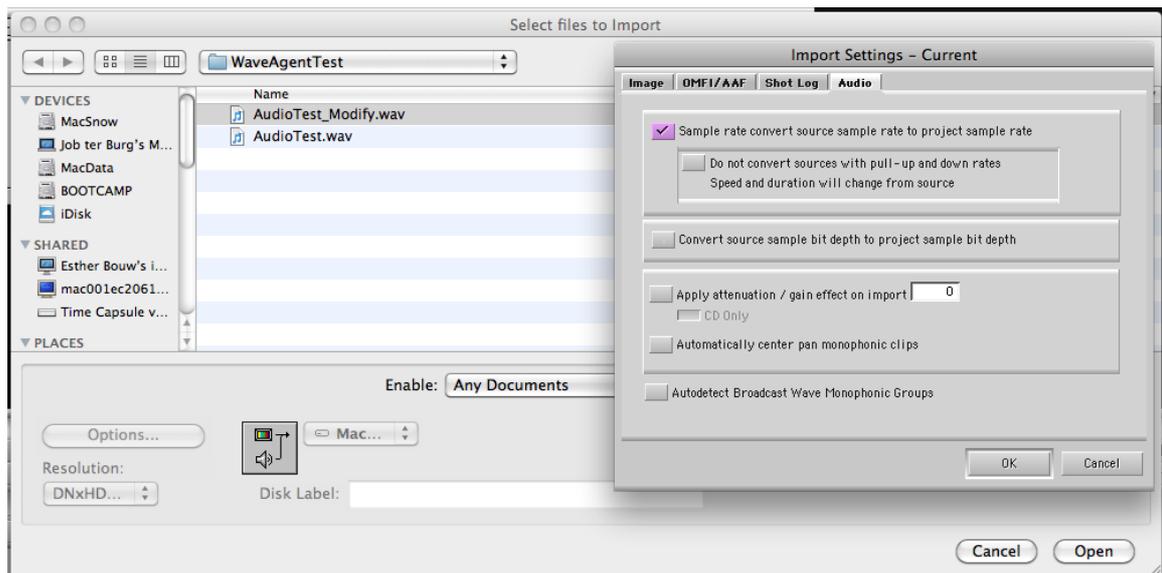
The resulting clips will show different durations in the bin, and the modified (longer) clip should match the slowed down (longer) picture.
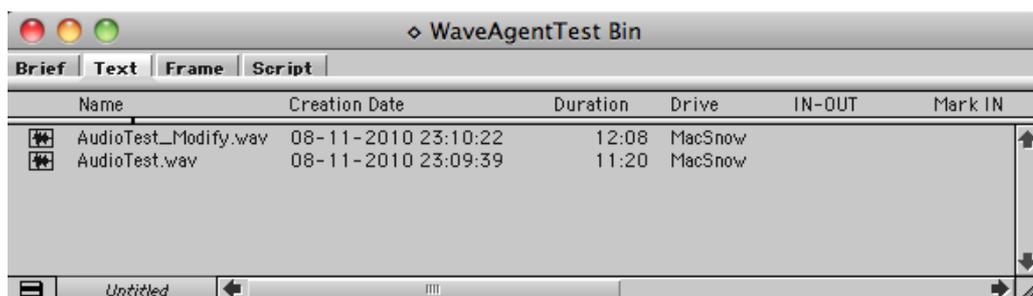
This conversion will lower the pitch of the clip, so you may want to compensate for that during audio post. In the Avid, you could apply an AudioSuite effect like Pitch Shift or TimeShift if you like. Usually, sound editors will use their own tools of preference.

Picture and *sound*
Suppose you need to bring in sources that contain both picture and sound at 25fps and you need to use both picture and sound at 24fps.

When capturing, just use the option to capture at 25fps with sync sound, then perform the sample rate conversion mentioned above,

When you need to import, try and change the frame rate of the source clip prior to importing in Avid. For example, you can change the frame rate of a QuickTime clip using Final Cut Studio's Cinema Tools. Open the clip, click "Conform" and change the frame rate.

There's also a way to do it manually, using Dumpster, and changing the header of the QT file. This was a tip I got from Mark Burton from London:
(Note that the example is about changing a QT clip from 24fps to 25fps, so it's the other way around; so sound values should change from 48000 to 46080 rather than from 48000 to 50000 when you're trying to go from 25fps to 24fps)

> *Essentially you open your Quicktime file in Apple's Dumpster tool:*
>
> *ftp://ftp.apple.com/developer/Quicktime/Tools/Programmers_Tools/Dumpster.dmg*
>
> *...and then you need to change a few values.*
>
> *The image below shows a 24fps file opened and changed to a 25fps file. The example file below had sound, but if there is no audio, then you can ignore part B and C. Just do parts A and D. Part a is the Quicktime movie header rate change and part D is the video track rate change.*
>
> *Depending on how Avid is treating Quicktime exports nowadays, you will see one of two values for part A and D; either 2400 or 600 for 24fps and 2500 or 625 for 25fps.*
>
> *It's important to manually save the changes before closing Dumpster.*
>
> *Also when you change a value, click on another field and then save. Dumpster is quite flakey. Also sometimes one value will be 600 and then in another part of the file they use the other timing format and you will see 2400. The 600 should be changed to 625 and the 2400 changed to 2500.*
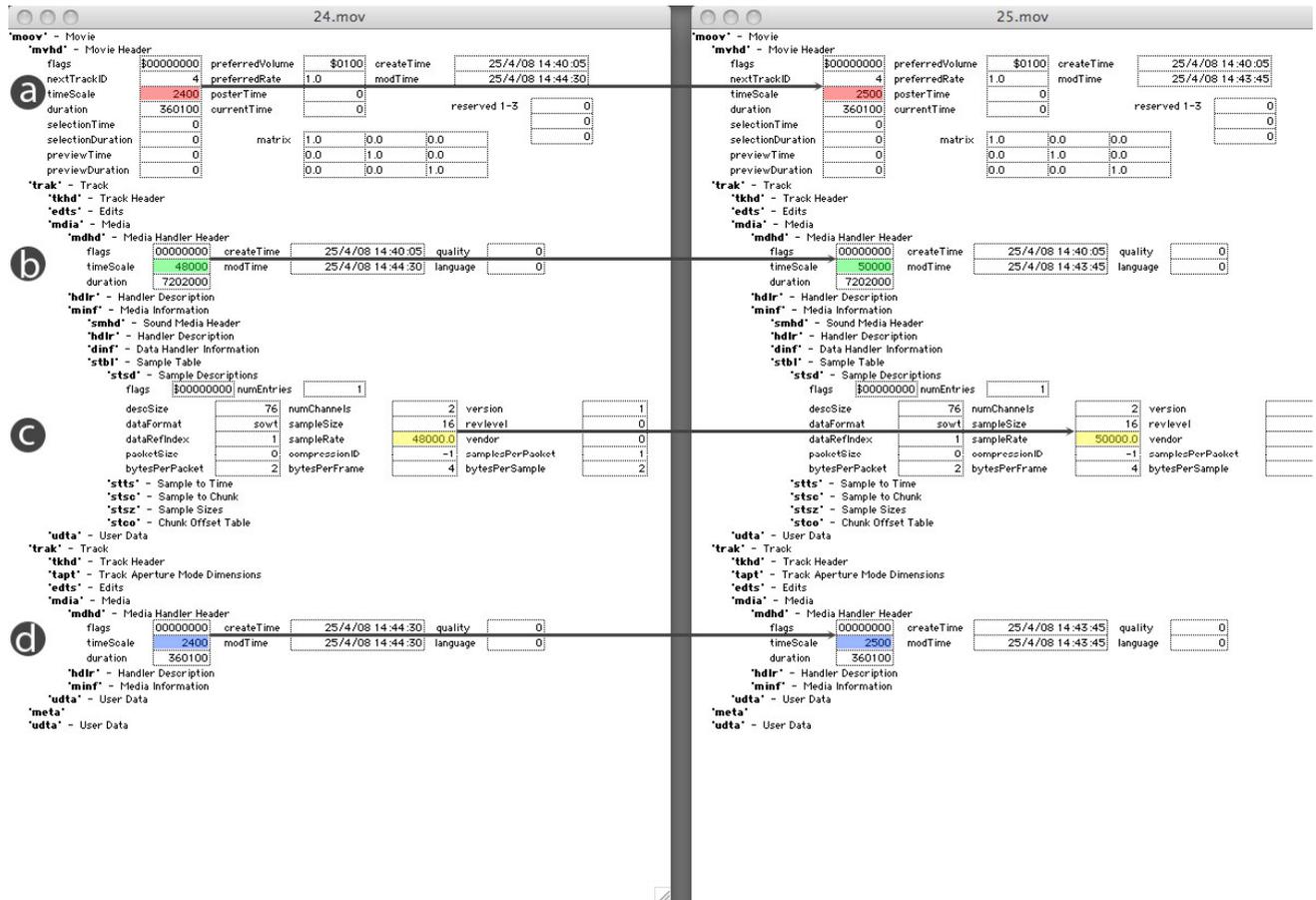
Note: since you are slowing down picture and/or sound, you may need to make sure that timecodes still match. Avid will let you track 24TC and 25TC in different columns (or bin headings).

Job ter Burg, November 2010.
Special thanks to Mark Burton.