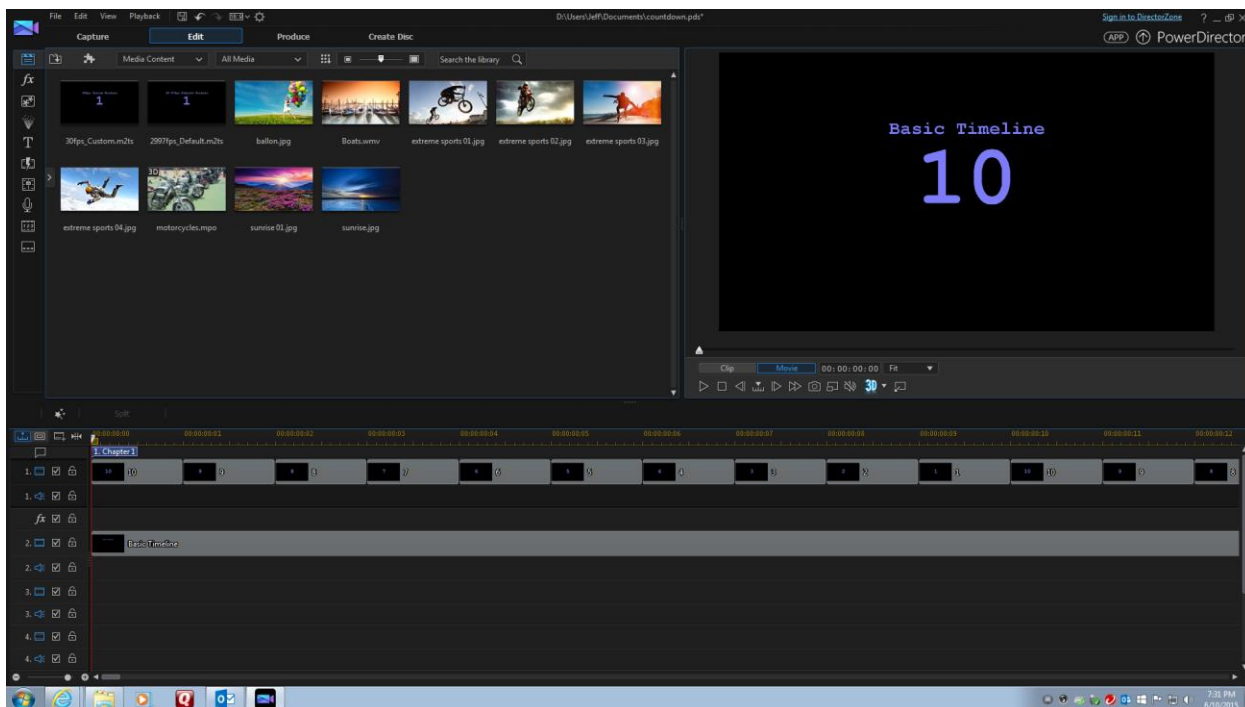
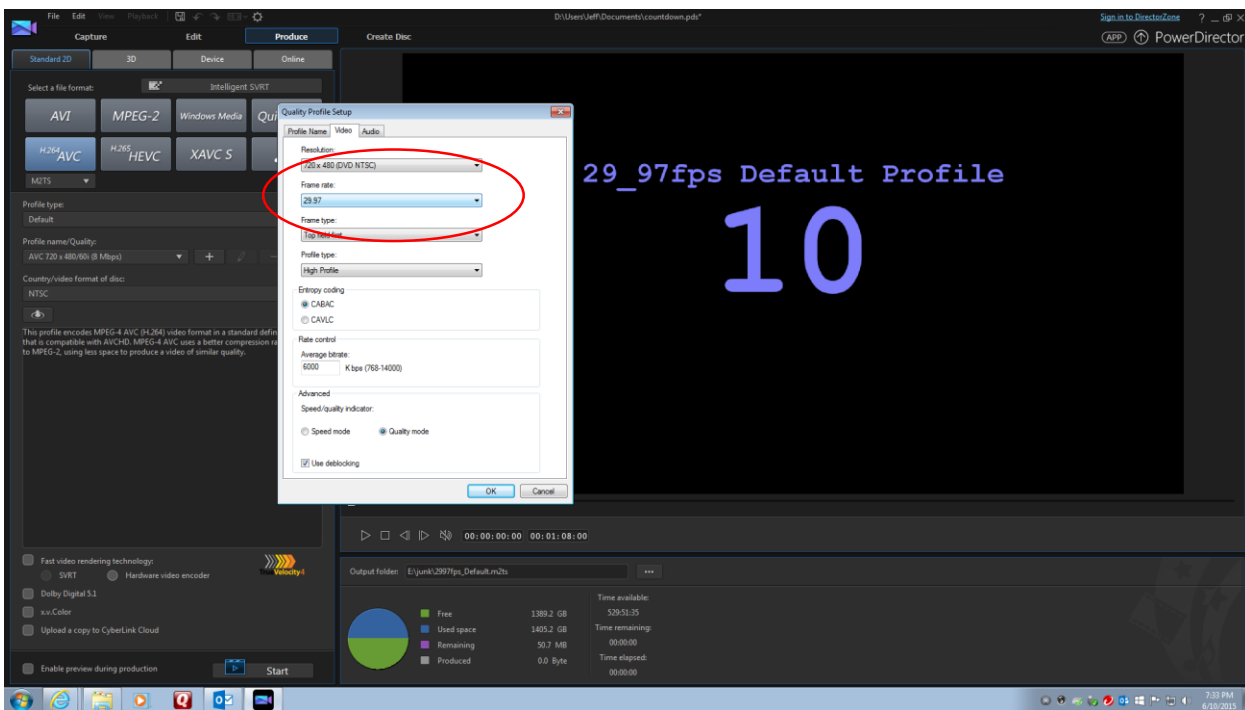


I know this is an old issue and been discussed several times, myself included, but 29.97fps is not 30fps and that is why PD rightfully warns if one enters true 30fps video into a timeline configured as 30 NTSC. What PD will do if source fps does not match produce fps is simply duplicate and delete frames to keep the overall time consistent and timing roughly consistent. For example, take the following timeline with a basic countdown from 10. Each title number has a duration of 1 frame. The timeline is set to 30fps (NTSC) so a playback speed of 29.97fps. For my timeline I've set "Use drop frame timecode" to no so it's easier to understand the timeline values since they will be quoted. This is easily observed in the timecode area as a colon (:) is used as a separator vs the semicolon (;). NO, that does not change the playback fps in PD, it's just a timeline timecode book keeping effect.

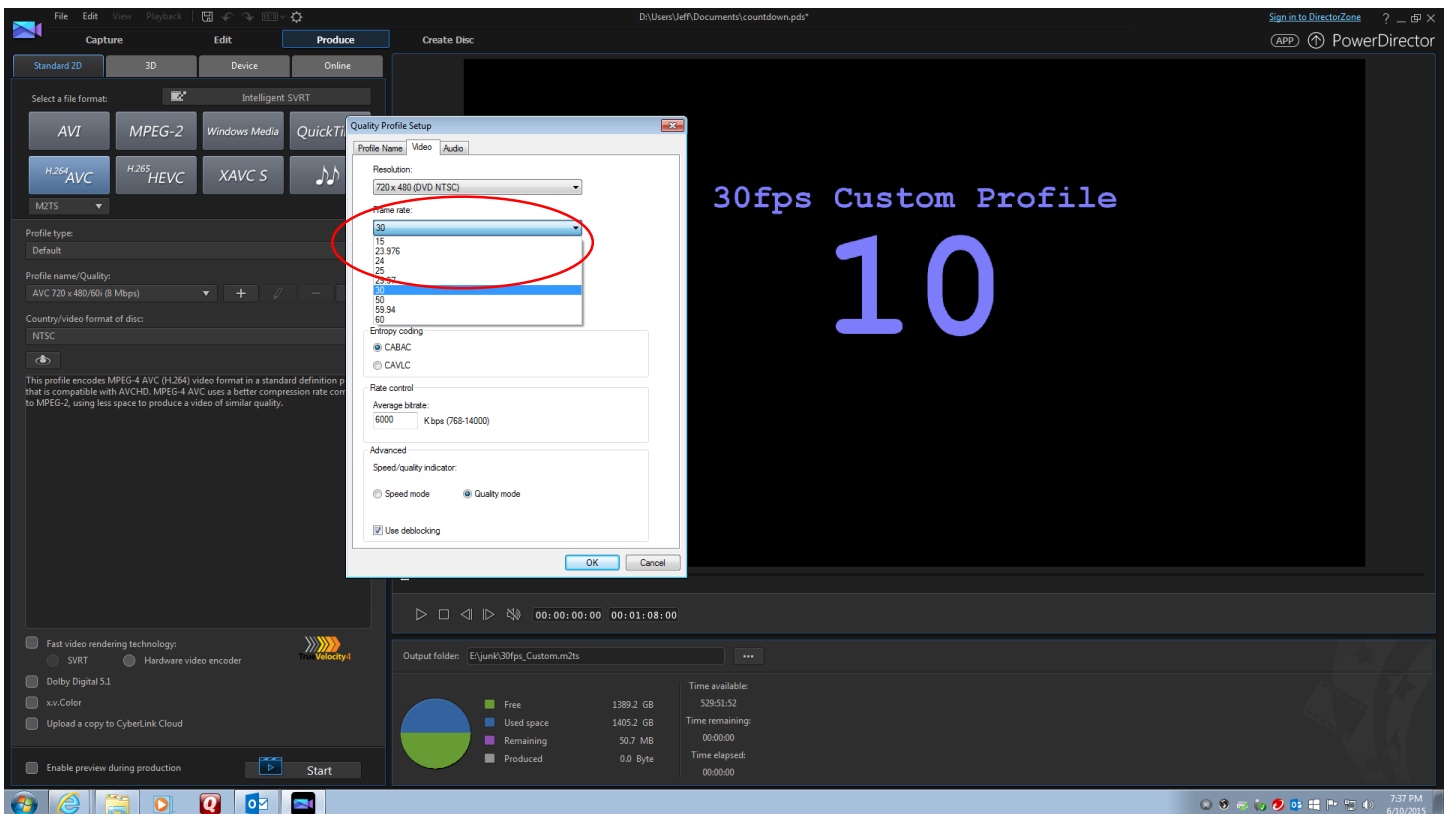
For my timeline shown below I have a countdown from 10 with each number lasting 1 frame. This is done with the basic "Title" feature. I then simply replicated this countdown a bunch of times in the timeline to get a total timeline duration of 00:01:08:00. Why 68 seconds, I need to get to a point in the timeline that the effect of 30fps playback to 29.97fps playback is different by at least a frame to easily show what happens.



I then produced this timeline with two profiles. The basic default profile of 29.97fps NTSC and I annotated this in the produced file and the filename as shown below for easy reference:

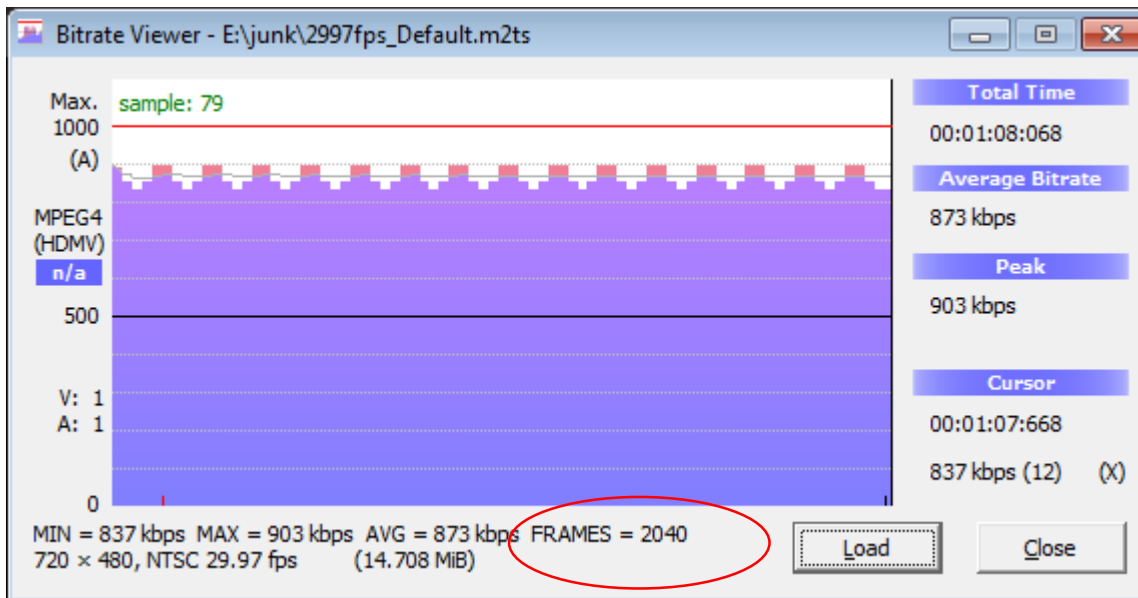


The second profile used a Custom profile of the same format and specified a true 30fps. This is shown below:

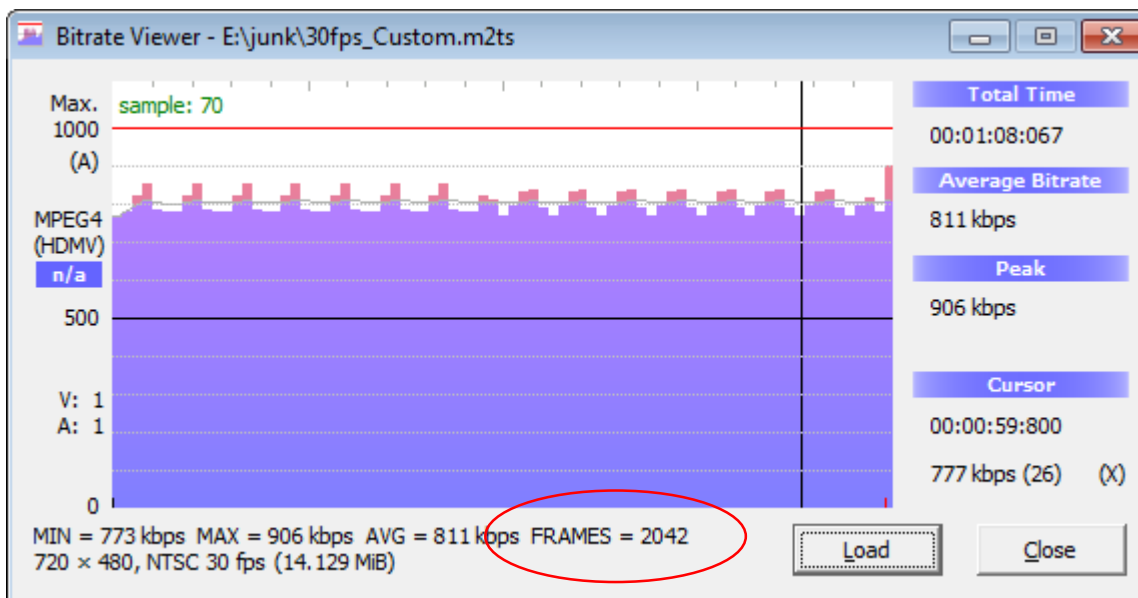


After both files were produced, I brought both back into the timeline as VT 3 and 4 as well as my basic timeline that I had. Yes, when I drop the 30fps produced file into the timeline I get the PD warning, which I should, I didn't turn it off in the preference area. It's simply cautioning me that depending on what framerate I produce my final product to, some adjustments may need to be done.

The NTSC 29.97fps file consists of 2040 frames, which is correct. My 1 frame title count down from 10 was duplicated 204 times in the timeline.

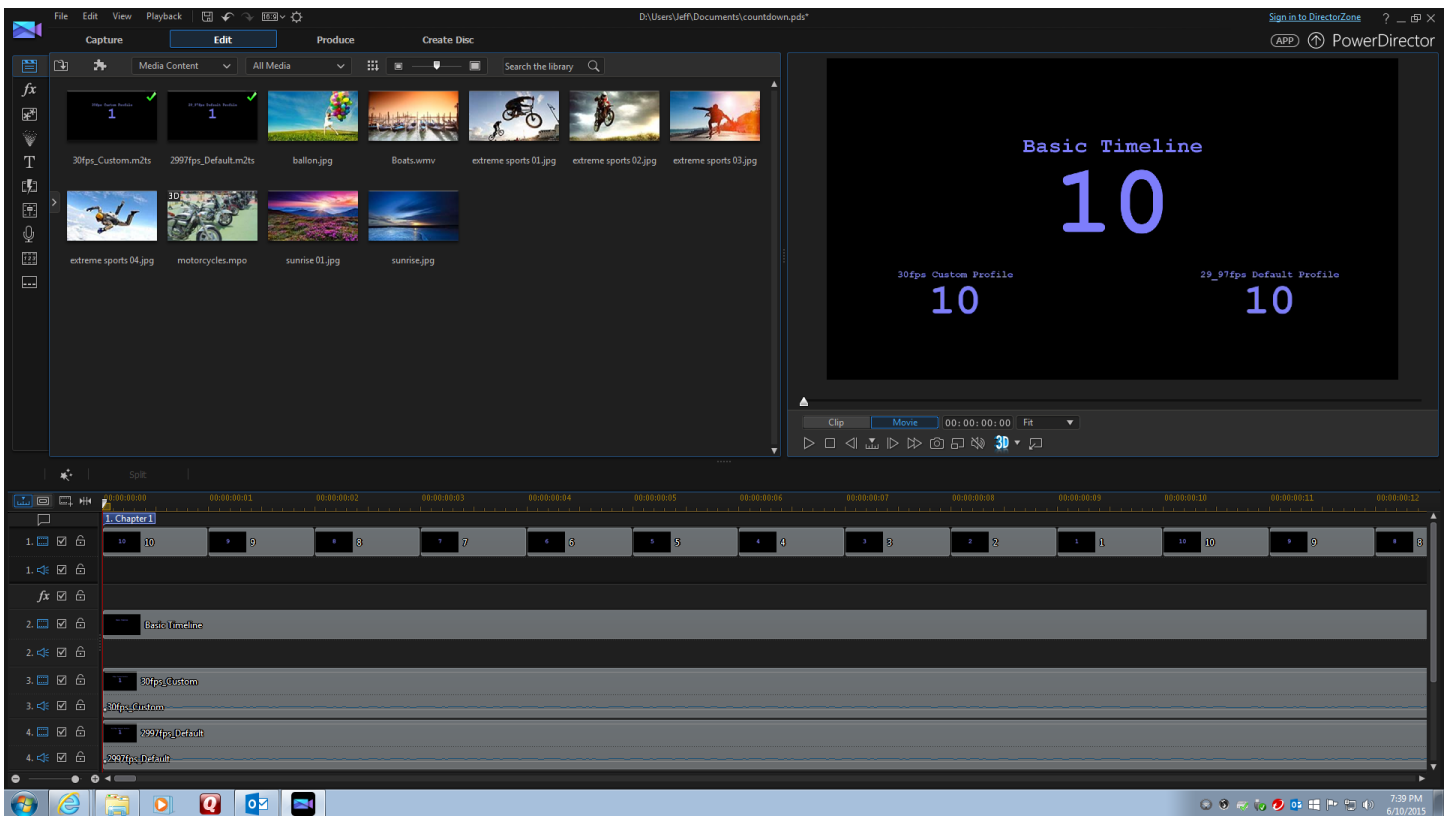


The 30.00fps file features are shown below and as you can see it has 2042 frames. Not because my timeline was different, it was not. To maintain the overall same time of 68 seconds with a playback of 30fps PD needs to add ~2 frames to slow it down, $2040 \times 30 / 29.97 = 2042$ frames. If I don't add these frames, the playback will be too fast. So, what frames were added and where?

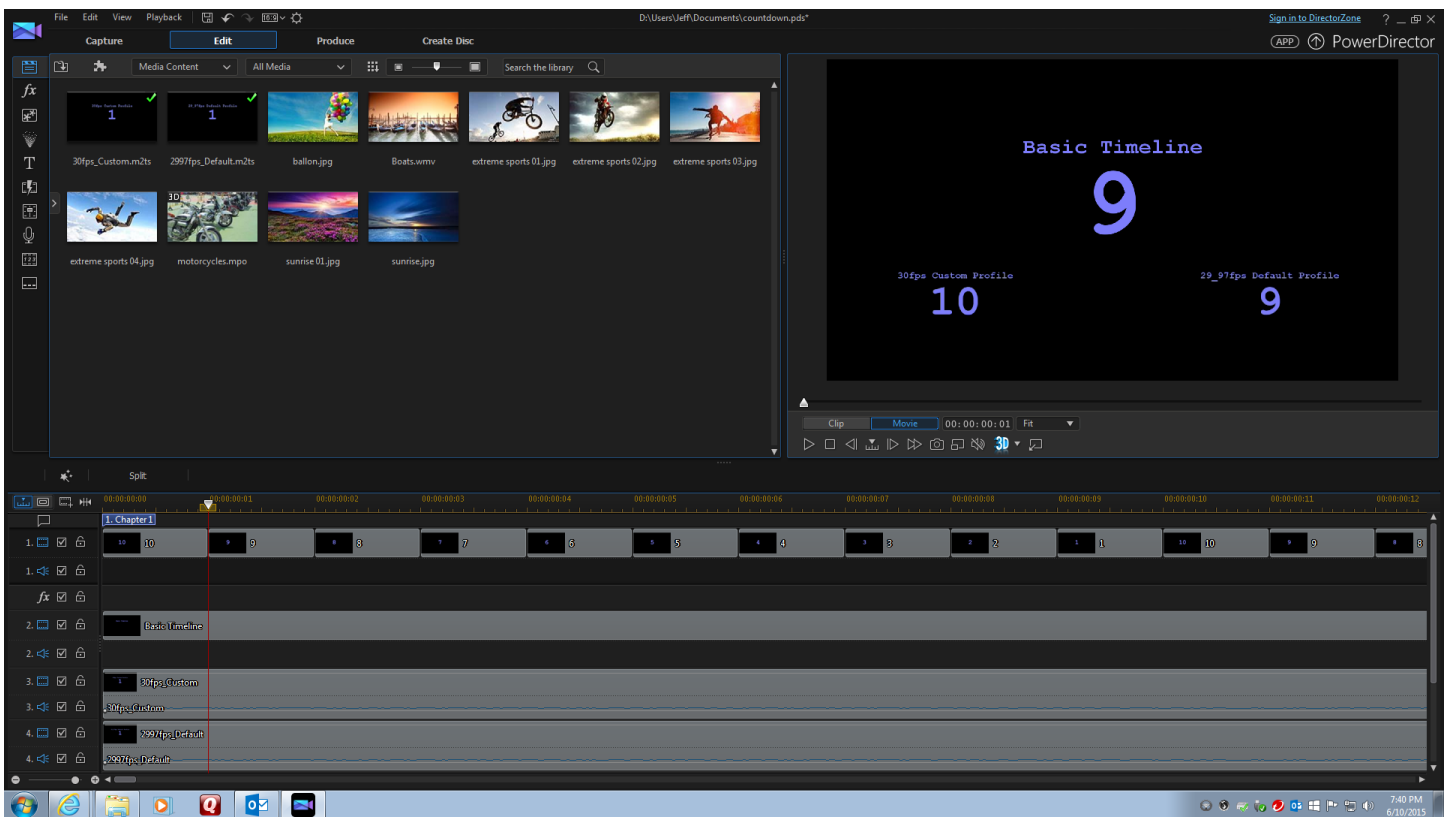


With the original timeline and the two produced files back in the timeline one can see what is done. The two produced files were shrunk to the corners for clarity while the original timeline still exists in the background. The 3 windows are properly annotated and moved to various regions of the playback display so effects are easily seen as we progress forward through the timeline.

At the beginning, everything looks fine, at time 00:00:00:00 all 3 displays are at 10 and will begin to countdown, which was my original timeline intent. This is shown below:

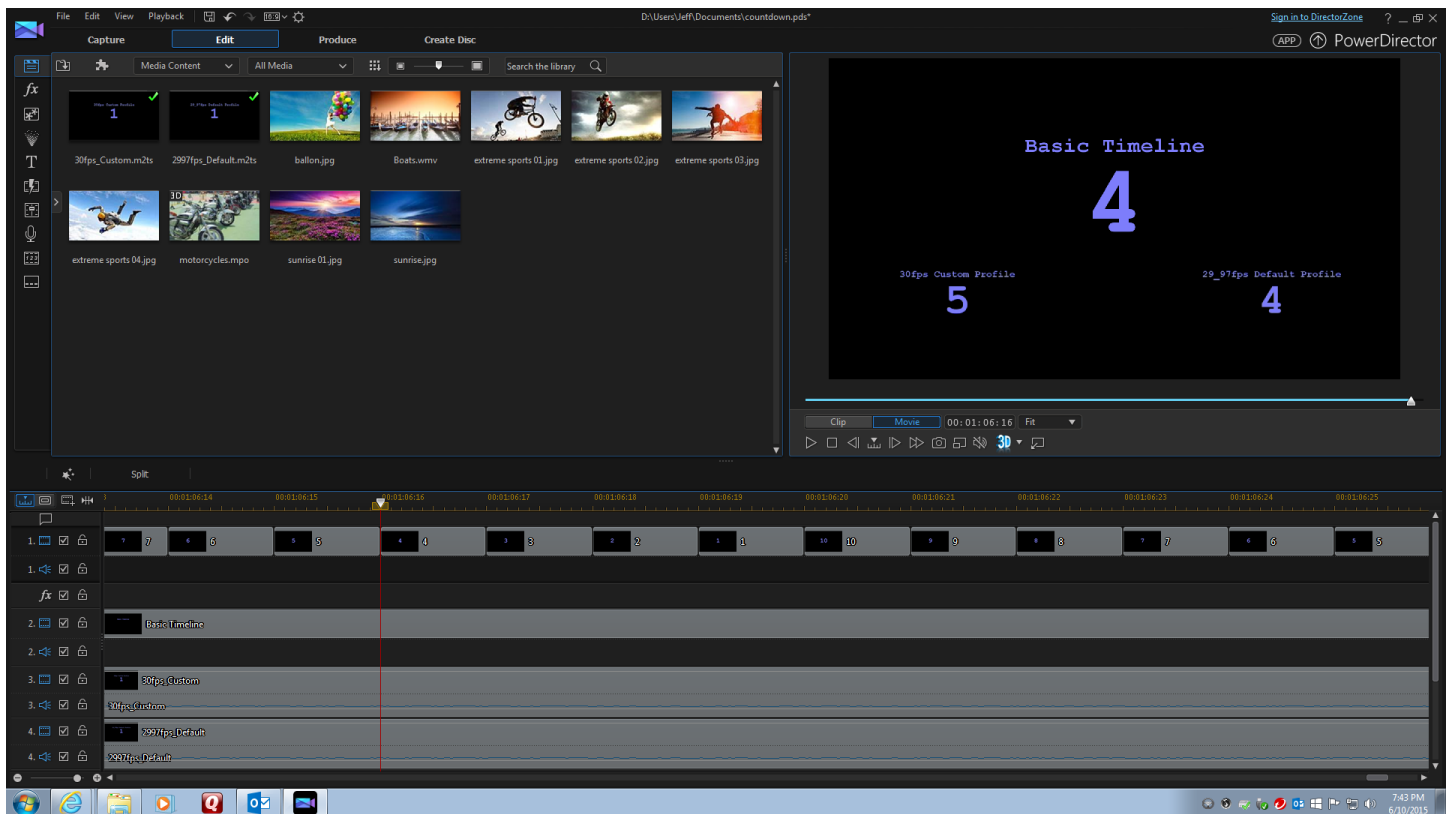


What one notices though, is that at the end of the first frame, so the start of the second frame, look what happens as shown below:



My 30fps custom profile ALREADY added a frame. My countdown actually went 10, 10, 9 for the 30fps custom profile so now it is out of sync with what existed on my 29.97fps timeline which also matches the 29.97fps produced file. My timeline and the 29.97 produced file did as was intended, countdown 10, 9, 8,... Why did the 30fps produced file not do

this? Since the playback speed that it was produced at is 30fps but my original timeline is 29.97fps, I really need to add some frames to keep timing about correct or it will playback too fast. PD duplicated a frame right at the start. What ended up occurring is this added frame causes a shift between what I intended for countdown at a given time and what I actually achieved. This offset of 1 frame and hence my countdown being off by one continues until 00:01:06:16, the snapshot shown below.



At the next frame, PD adjusts for the frame rate difference. Looking at my countdown numbers above one sees it is 5, 4, 4 left to right. (30fps produced file, basic timeline, and default 29.97fps produced file). What it does is this:

Stepping through one frame at a time, one notices this:

Timecode, left to right numbers of my countdown

00:01:06:16 5, 4, 4

00:01:06:17 3, 3, 3 (look at that, timing is now correct, the 30fps file DELETED my title with the number 4)

00:01:06:18 2, 2, 2

00:01:06:19 2, 1, 1 (look at that, the 30fps file now duplicated my title with the number 2)

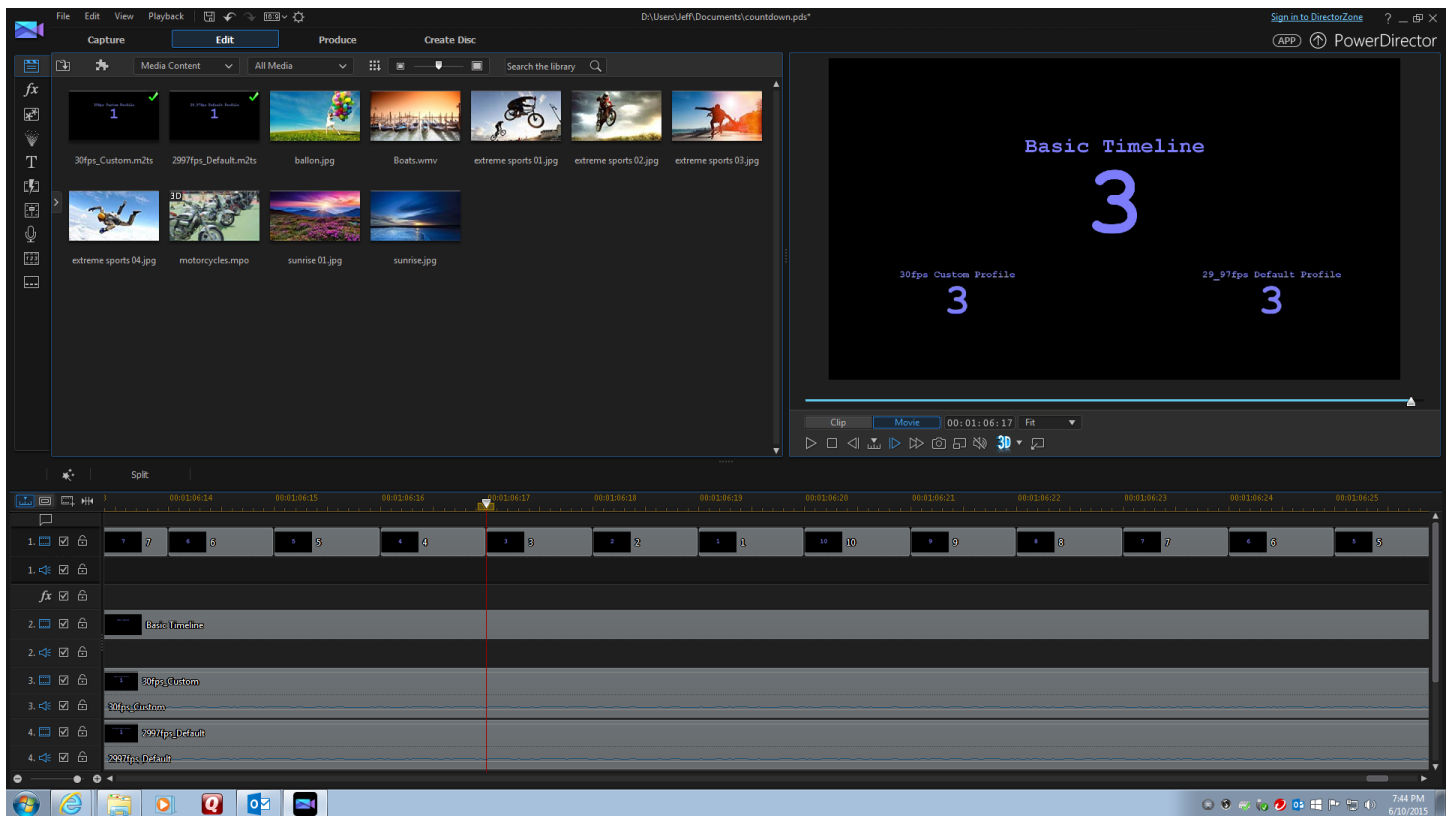
00:01:06:20 1, 10, 10

00:01:06:21 10, 9, 9

I should mention, at no time did my countdown in the timeline or the produced file at the default 29.97fps ever misstep. Every frame counted down my number sequence from 10 exactly as the intent.

The 00:01:06:16 snapshot was shown above highlighting the 5, 4, 4 countdown pattern left to right.

Additionally, the next frame, 00:01:06:17 is shown below, things are in sync and the 30fps produced file deleted my 1 frame title that had the number 4, and jumped from titles numbered 5 to 3 from frame 16 to 17. The timeline and the 29.97fps file did not skip a beat in the countdown, exactly as intended.



So is this significant, to some no, to others yes. If at this frame adjustment point in the timeline I had really tried to a countdown sequence, I'd have 10, 9, 8, 7, 6, 5, 3, 2, 2, 1 for the 30fps produced file. An error, not really, the adjustment has to occur somewhere and will occur again later in the timeline as well, and over and over again for longer footage. So I guess some interpret that as okay and say skip the warning it means nothing, while others see it as something to properly adjust by watching framerate. In the grand scheme, you often won't catch the deleted or added frames and your just happy things produced and didn't crap out on you. For other things, it can be important, hence the PD warning!

So in the end, the 30fps produced file needed to adjust about 2 frames over this 68 second timeline. It duplicated one frame right at the beginning to cause my timing to differ between intent to produce by 1 in the countdown from 10 sequence. Latter it deleted my title that had the number 4 and duplicated my title that had the number 2. Again, it can't just continue to add a couple frames every 60 seconds or the totally timing in a large project would be off, especially for longer projects.

So if I have true 30fps source that I drop on the timeline, PD will caution as the timeline is 29.97fps (NTSC) and by default the NTSC produce profiles are 29.97fps as well as "Create Disc" options. What that means is a true 30fps source will need to be adjusted if I maintain an output of 29.97fps. PD will do this by simple deleting and duplicating some frames.

Others have other views, there always are, simply share and document thoroughly so your observations could be replicated.