.: GOUT, Automated Theatrical Colouring, and a Reference Guide: Star Wars

Here you will find a variety of screencaptures from Star Wars. The first screenshot you see will be the raw, uncorrected GOUT (1993 Laserdisc telecine, released on DVD in 2006), followed by the corrected GOUT, with resaturated colour levels. These have been coloured using automatic settings explained in the main page of this website feature, to severely increase the saturation, cyan-shift out the red, and increase the brightness and contrast a bit. Occassionally, I will further supplement these shots by companion caps from other sources, such as 16mm or 35mm bootleg tapes. The supplemental sources have been left untouched as they appear in their digital source.

On the supplementary sources, a few words. The 35mm bootleg I use is the widescreen 1977 telecine captured by Moth3r, as well as another bootleg telecine called Catnap, which looks to me like a 16mm telecine from the 1980s. Both of these have colouring issues, such as Catnaps being red- and green-shifted. R2D2's dome panels look totally black in many shots. The 1977 35mm telecine is washed out but has fairly accurate colour reproduction, even if it overly bright and lacks saturation--almost none of the supplementary sources are reliable for saturation levels, except the 2010 Technicolor screening photos, which have their own flaws. The 16mm Puggo Edition is severely washed out in terms of colour. The 8mm Puggo Edition fares better, but suffers from a severe lack of contrast, some colour shifting (strongly towards red) and significant fading, and sometimes is inferior to its 16mm counterpart. Additional 8mm caps from two fade-free Derann 8mm prints are provided, but as these are photos of the screen, they are subject to their own white balance and exposure fluxuations, and print anomalies, as is the 2010 Technicolor screening photos and both bootleg tapes. In the future, I may also add some of the collectible 70mm frames that were once sold.

In all cases except a few in which I have stated, I would consider the corrected/enhanced GOUT the most reliable and accurate reference; in the handful of cases where I have deemed the enhanced GOUT to be not generally accurate it is because a viewing of the enhanced GOUT has been tempered with a cautious consideration of the other sources taken as a whole, accounting for their own individual flaws, such as fading, lack of contrast, colour shifting due to reel fluxuation, and camera white balance. I should also note: the enhanced GOUT is not a 100% accurate representation of the shots. This is because of the flaws inherant in the GOUT such as lack of colour information and bleeding primary colour levels, as well as the general dimness and lack of contrast. Skin tones in faces tend to look flat and "tanned" because the highlights have been crushed. However, the enhanced shots give you a basic understanding of the "look" of the shot, probably within a 10% range of accuracy to the real thing. The real thing, of course, would have had better contrast (and detail), no bleeding, and better colour saturation and balance.

Some of these caps are smaller in size due to my own fault when capturing them, and they also show compression artifacts which aren't on

Main menu

HOME

SITE NEWS

EDITORIALS

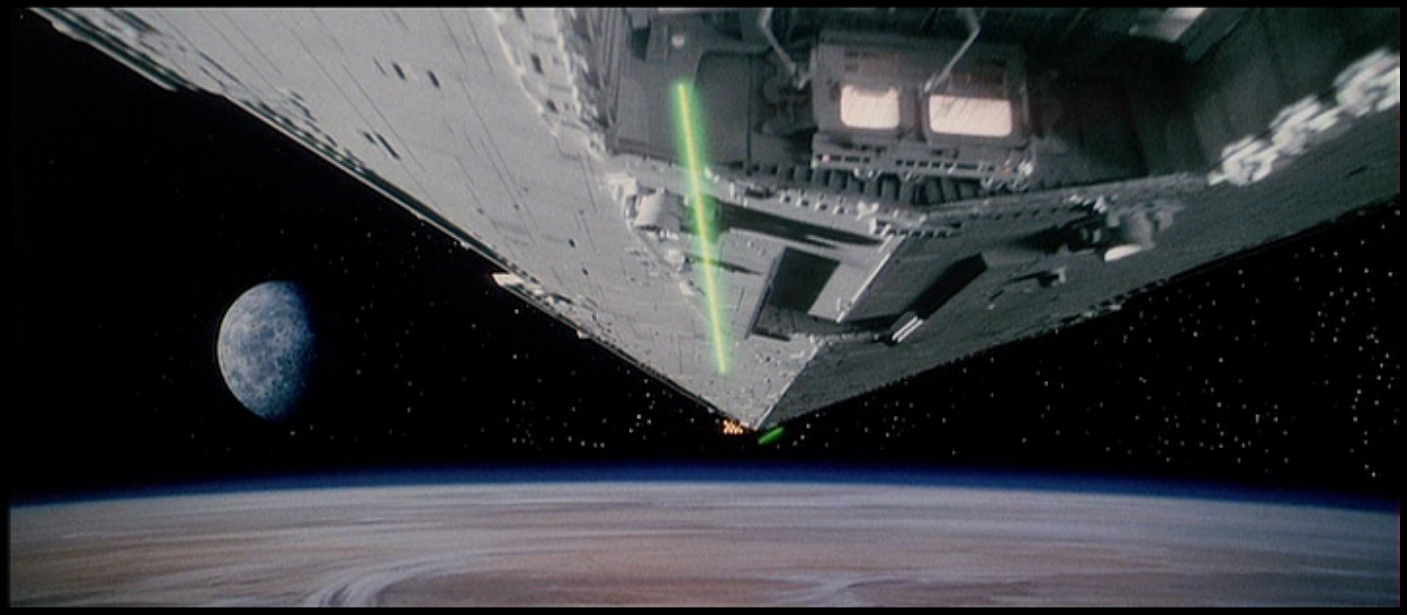
RESOURCES

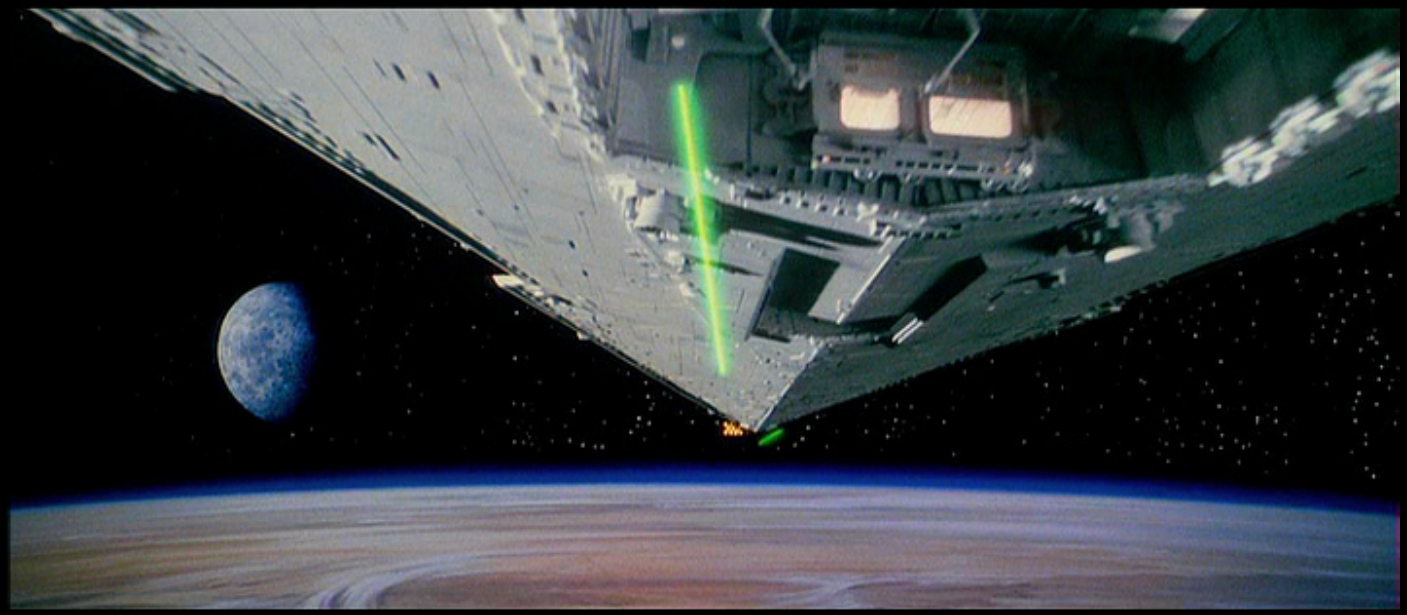
ABOUT US

LINKS

the original master. These smaller caps better represent the results of the recommended settings on the main page, and are slightly brighter and warmer compared to the larger ones, and look a lot nicer in my opinion because they come from my second attempt at setting the colours (the original largers ones have been corrected to better match, but aren't quite perfect). There are about 350 pictures on this page, so please be patient while it loads. The page is about 50mb in size.

Star Wars Caps



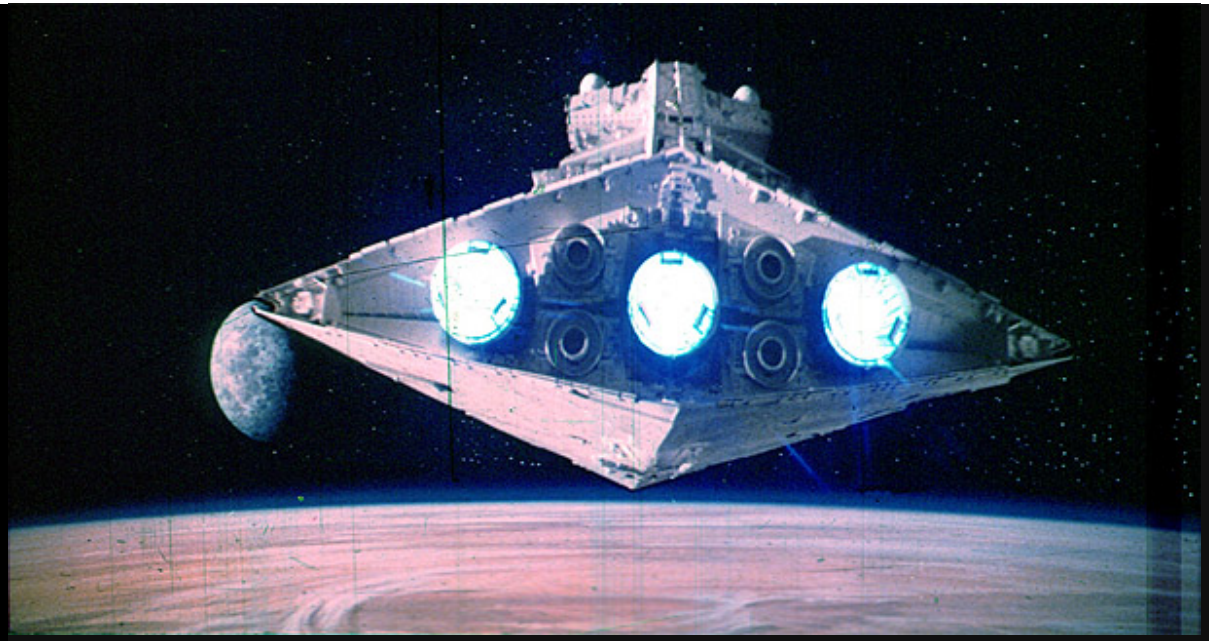


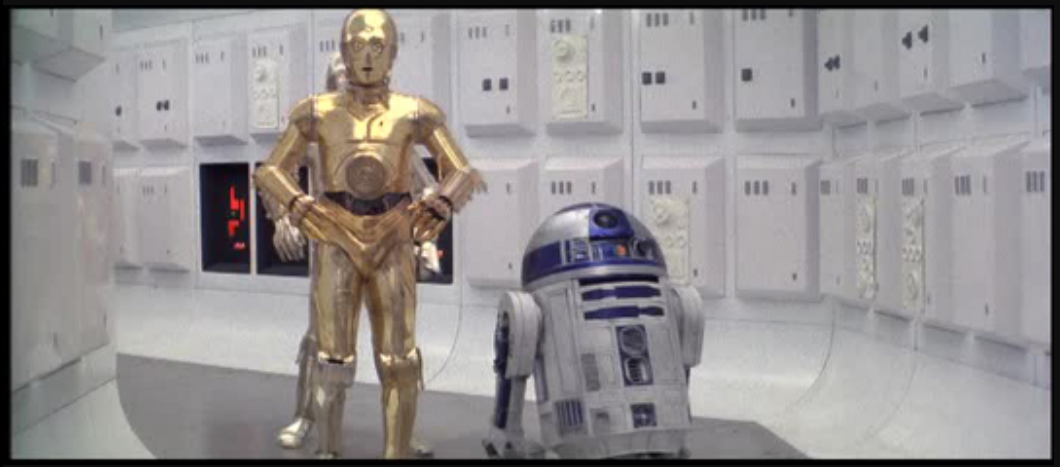
If you look, you can see that the shadow side of the star destroyer is printing green. This will be a common occurrance. As chronicled in the

new Making of ESB book by Rinzler, it was a challenge for ILM to make composites that did not have red, blue or green shifts when printed. Many of the composites in all the films suffered this problem, which has never been obvious since theatres because of the washed-out nature of home video. Matte lines and garbage mattes also become more noticeable because of the increased contrast with the extra saturation. This shot is much higher quality because it is not from the original 1993 telecine, so it does not suffer as much. Below is the same shot from the Derann 8mm print:

And here it is in Moth3r's capture of the 1977 widescreen telecine:

A raw scan of a very damaged 16mm print can be seen here:

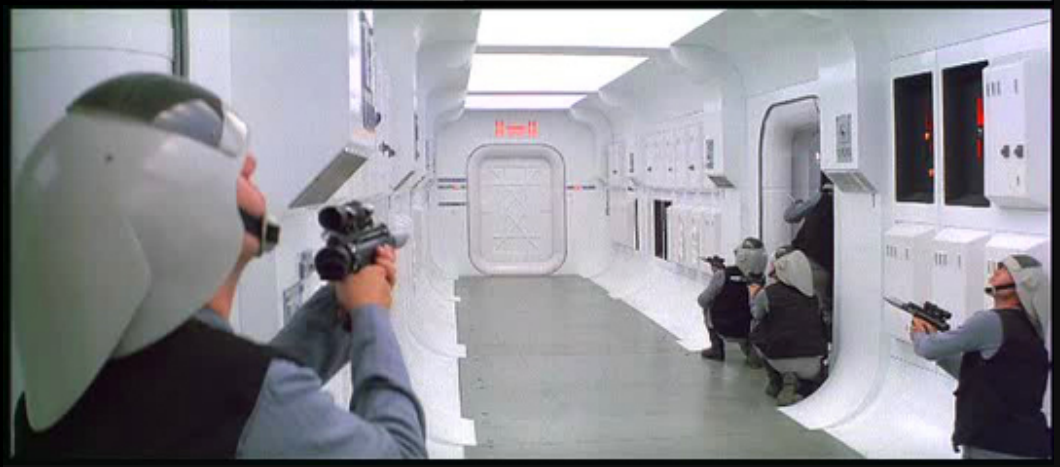




Because the GOUT is so red-shifted, C3P0 often looks a rather coppery sort of colour, instead of the golden hue he ought to look. Below is the shot as seen in a screen photo of a fade-free Derann 8mm. The scene has colour balances more like the GOUT on this Derann print, however:

It should be noted that the above is from the very first shot of them in the sequence, while the GOUT is from the second shot. On the first shot, the GOUT is slightly redder so it will match the Derann better, though there will still be a difference.

The scene on the 35mm bootleg and Catnap bootleg:



Although hard to tell in the original GOUT, the uniforms of the rebel troopers here are in fact a shade of blue, rather than the grey tone they appear as in the top picture.

Because I am using automatic settings, this leaves some shots in need of custom correction; the above may be one example. Accounting for

their exaggerations, the theatrical bootlegs nonetheless indicate that the fleshtone of the officer in this shot was closer to the uncorrected GOUT colours in terms of being slightly red rather than yellow. Below are the 35mm and Catnap bootlegs, followed by Puggo's 8mm and then 16mm. Puggo's 8mm is red-shifted even though it may look yellow-coloured (pump up the saturation yourself and see), but when saturating it and cyan-shifting out the red on the print, the officer's face still has the subtle pink tones suggested by the 35mm telecine and Puggo's 16mm. The 2004 master may be accurate in this regard.

For comparison's sake, there is a Technicolor cap of this shot available as well:

Below are screens from the 16mm Puggo Edition.

Below are screens from the 35mm telecine and Catnap. While Catnap has pretty good white levels in the early Tantive sequence, here the shot is distinctively green-tinted, which you can see hinted at very mildly in the edges of the enhanced GOUT (the 35mm telecine, on the other hand, looks blue). It's hard to say if the Technicolor pic had the green hue white-balanced out (my own suspicion), though if you look on the right you can see a hint in the shadows. Catnap is generally green-tinted through the rest of the Tantive sequence from here out, so it is possible it is a video fluxuation (the Catnap video tends to randomly colour-shift), while the 35mm telecine is mildly blue-shifted for the rest of the sequence. However, even when one colour-corrects Puggo's 16mm so that the officer looks normal, you will find there is still a fair amount of green in the image. For now, I would cautiously say that the enhanced GOUT is generally correct, with its subtle blue and green tonalities, but that these should be slightly more pronounced than the enhanced cap displays.

One unfortunate thing about the GOUT is that it cannot handle strong reds very well. If you look, they are popping even on the raw, uncorrected master. Fortunately, there are only a handful of shots in Star Wars with lighting this strong.

There is also a shot of the beautiful fade-free Derann 8mm prints available for this angle. The GOUT looks like the white levels are a bit red-shifted still, while the Derann has them more towards green:

You will notice that there is the faintest of green hue in the white here. This appears on Catnap and Puggo 16mm, while in the 35mm telecine it manifests more towards blue. In all cases, however, it is clear that there is a very faint tint to the white levels in this part of the scene.

For comparison, below are two screens from original film source bootlegs: one from a 1977 35mm telecine, the other from Catnap. Both indicate that the desert sequence here may be slightly more shifted to the red than I have it; again, I am not doing custom scene correction. Puggo's 16mm has the more coppery tones too, and it is the third cap you see below. The 2004 master is reddish here as well.

This scene was filmed during the day but tinted to look like sunset. In some of the earlier home video telecines it was shown without the colour corrected, but it had the red hue in theatres. Below is a photograph off of the screen from a contacts personal collection dating all the way back to 1977:

INSERT

And here it is on the 35mm and Catnap telecines. The Catnap telecine auto-adjusts the brightness mid-shot, which washes out the saturation level as it does, but I have chosen the darker section from the head.

Here it is on Puggo's 16mm:

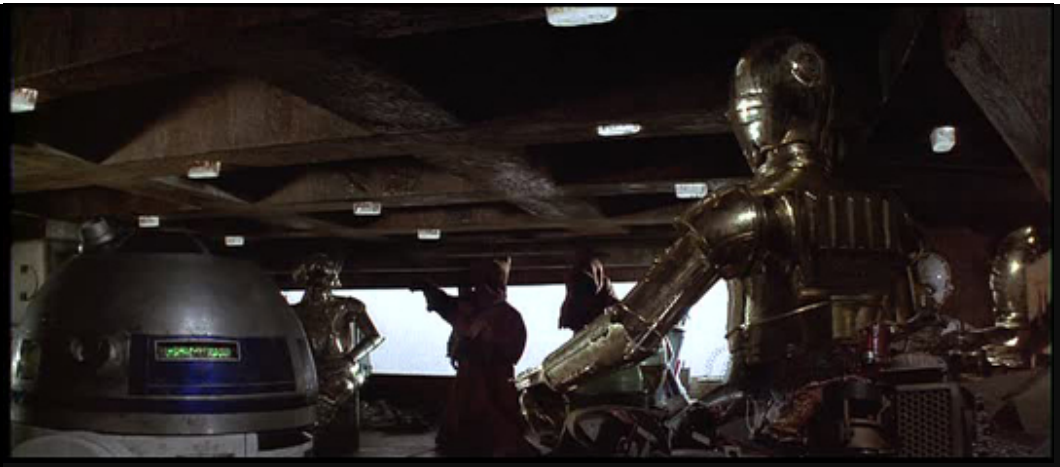
This shot is also available in the Derann 8mm print. It looks brighter/washed-out there, but as this is a photograph of the screen during

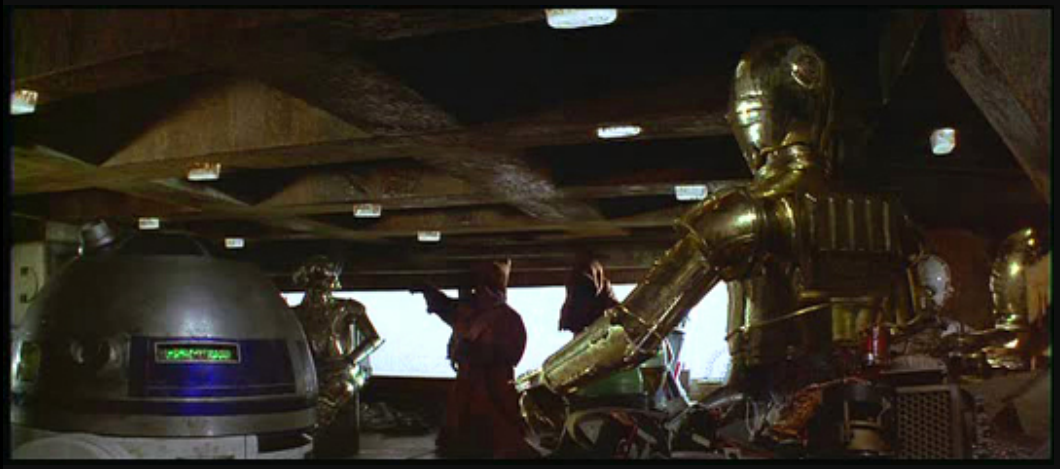
projection, the exposure difference might be exaggerating this.

However the same shot in the 35mm and Catnap telecines demonstrates noticeably less sunset-tinting compared to the ones before and after it (which are more consistent with the GOUT), suggesting that the GOUT--which I believe had this scene custom re-coloured for its telecine--may have added more tinting at least in this shot than the original release did. The rest of the sequence on the bootlegs is more consistent with the GOUT. Below is the 35mm telecine and Catnap.

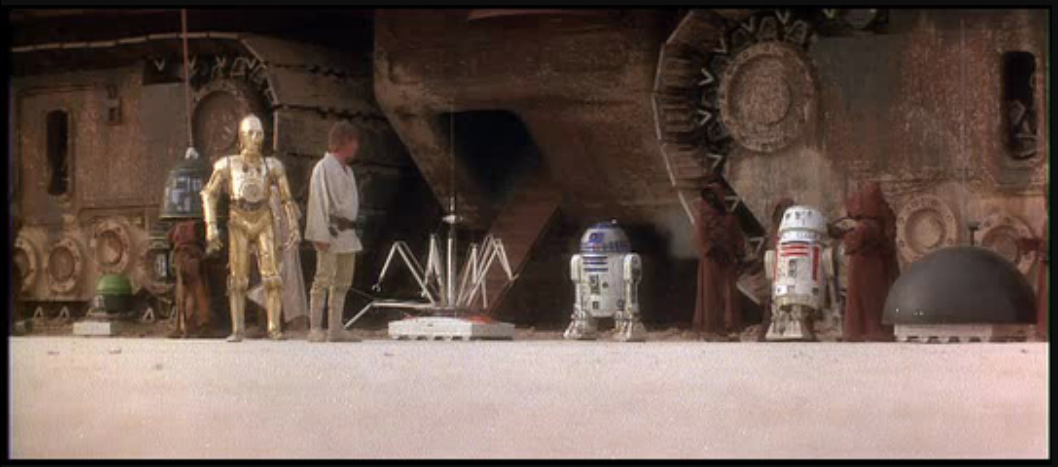
Perhaps unsurprisingly, Puggo's 16mm is not far off, although it shows colouring more towards the greater levels present in the 35mm telecine. This might be bolstered by the fact that it has exposed darker in the telecine (this correlation may also explain why the 35mm telecine is more colourful in this section and Catnap, which brightens up just after the scene begins, is more washed out).

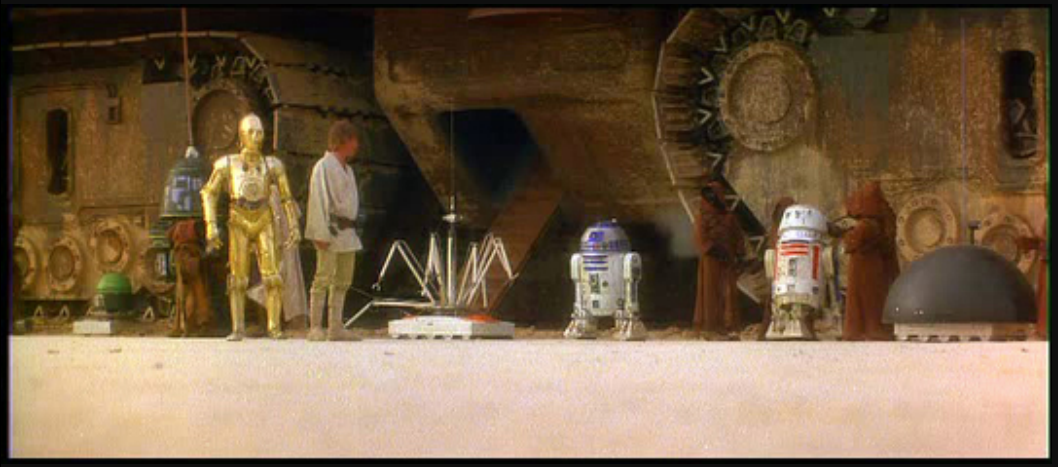
One drawback of saturating the GOUT is that it sometimes brings out the flaws in the master. Although difficult to see from a still, this shot has a lot of video noise and artifacting in the sky, because the original negative is very grainy and also because the video master has a hard time with strong primary colours. This noise is on the uncorrected GOUT but it becomes more noticeable when saturated. The 2004 master had the same problem with this shot as well, and you can see it in the Puggo 16mm too.

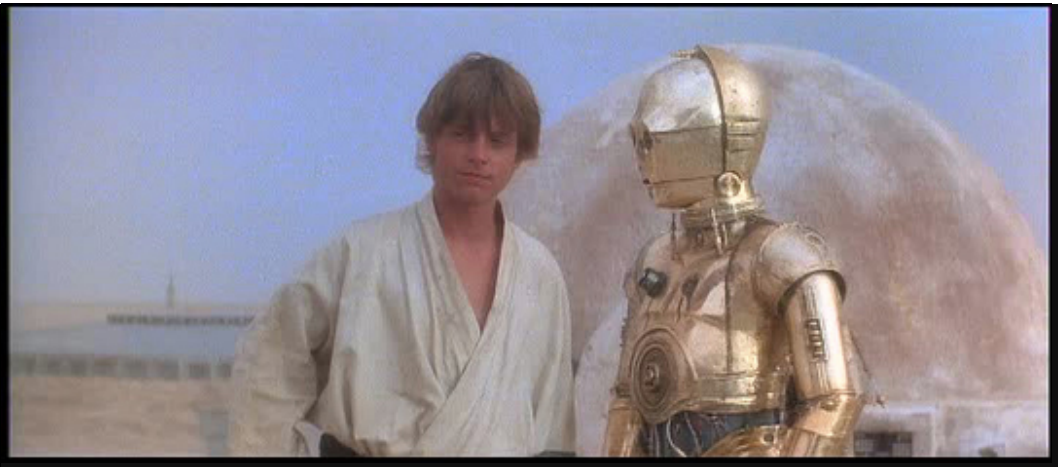


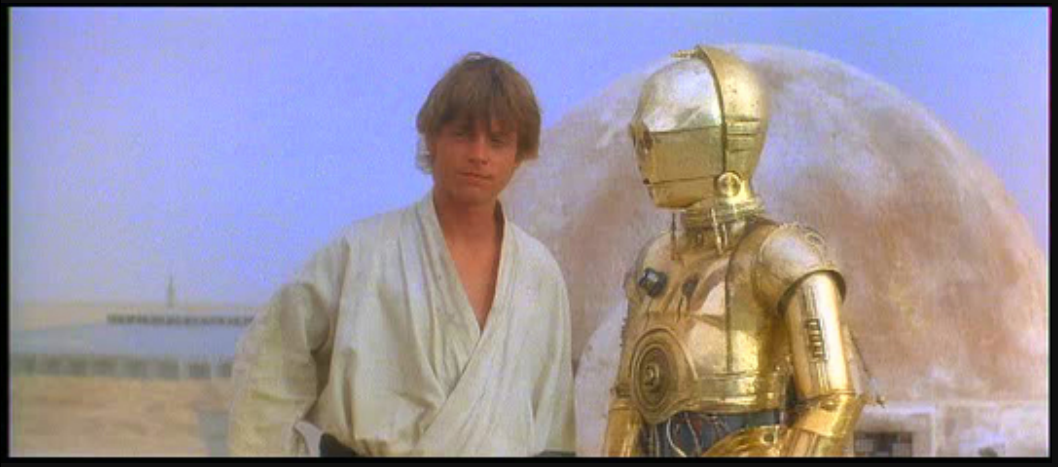


Shots such as the above pair at first look reasonable on the raw GOUT, until you see it with restored colours and realise just how washed out it in fact is.

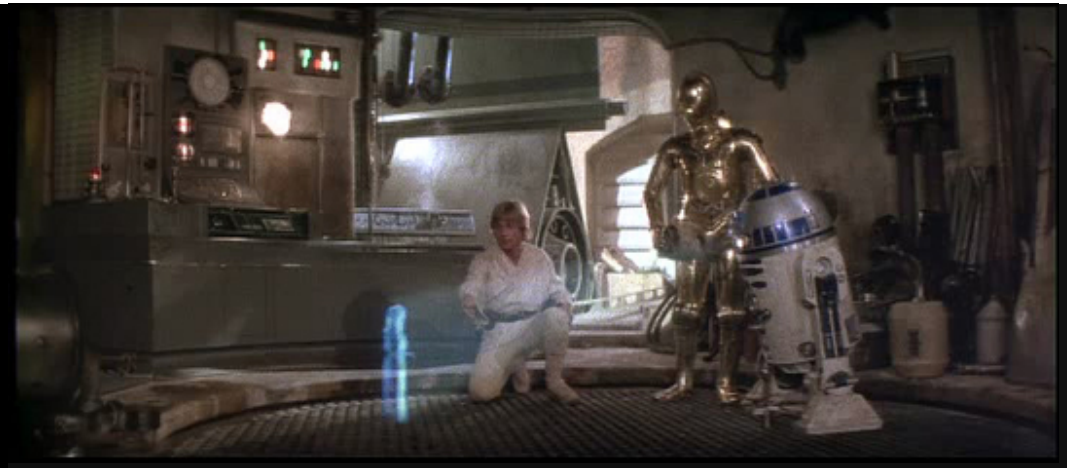


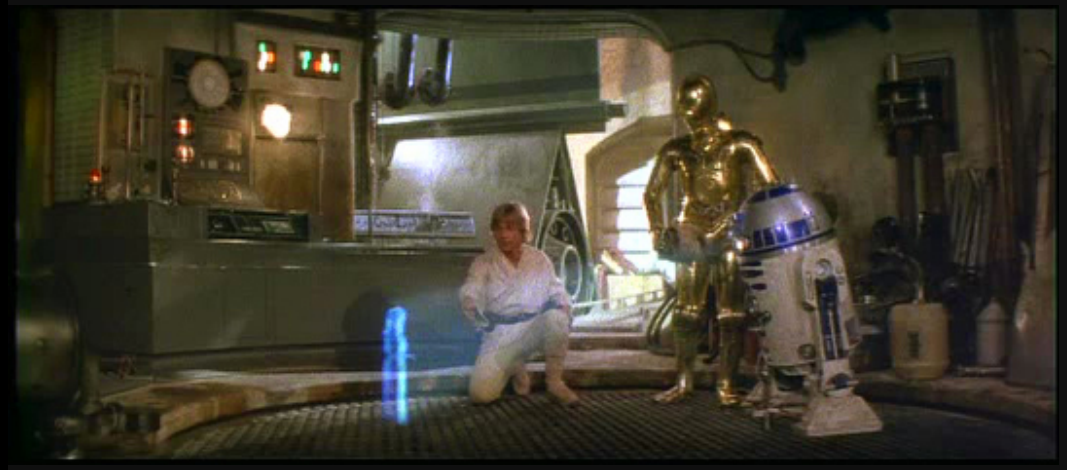


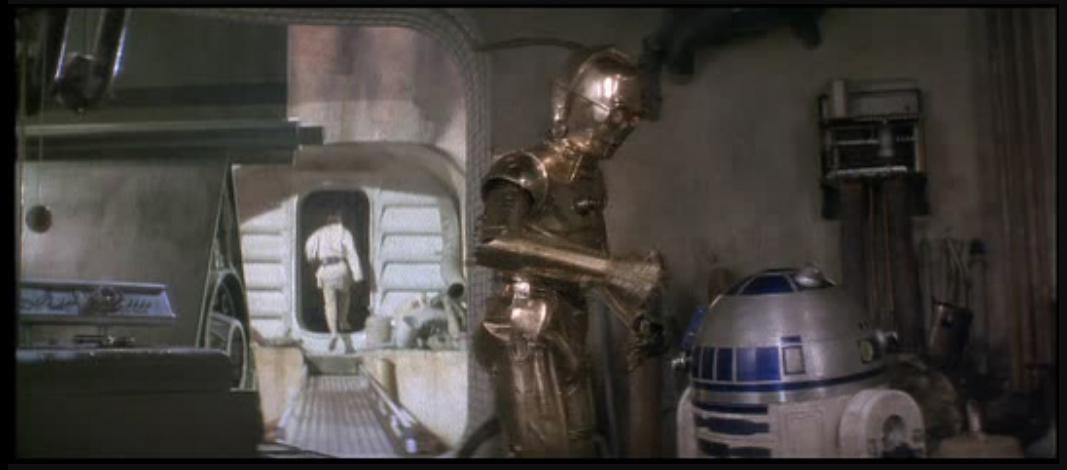


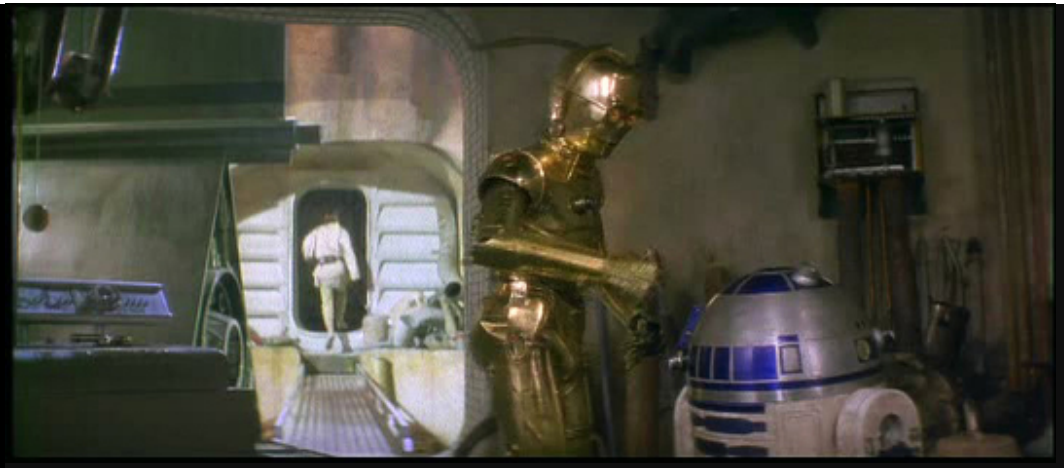


Colours tend to get strange towards the end of the sequence because of the time and weather conditions under which it was filmed. While the earlier half of it looks to have been filmed in mid-late day sun and looks fine, it appears as though the sun began to go down during the droid-malfunction section, which creates popping reflections on the bright-coloured droid panels and gives everything a slightly oversaturated look (this part is a problem on the 2004 master as well). Possibly this is because Gil Taylor was lighting it with real light fixtures to compensate for the dropping sun levels. The last section with Luke and the droids going into the hovel is clearly desaturated, with darker overcast skys as the day ended (probably the last shot of the day). The two bootleg sources show less blue in the sky so that it looks greyer (and, of course, less saturation overall), but this is probably just because of their poor colour reproduction.









A few shots of this scene are available in Technicolor photos. The one below is not from this precise angle but is similar:

The highlights on the left are popping a bit here, because of the older video source. It looks like it might have been dialed darker so that the video could handle the highlights, which creates that sort of "tanned" look on skintones throughout the GOUT. If I was doing shot-by-shot correction, I would dial down the highlights, lighten up the skin and brighten the whole image. The two bootlegs, of course, are washed out like the GOUT, but the colour is closer to the enhanced GOUT, although the left-hand highlights are not so pronounced. The 35mm bootleg is brighter, while Catnap is darker. Catnap below, although Capnap is slightly red:

Below is the shot from the Technicolor screening. The background has probably become washed out due to the exposure in the photograph, which may indicate the levels should be closer to the dimmer GOUT. I like to think that in between this and my enhanced GOUT lies the truth.

The green cast you see here is not due to me shifting the hue, I would like to point out. It's on the print itself, apparently. You can see it hinted at in the two-shot Technicolor photo. 35mm telecine and Catnap screens look similar, accounting for their flaws that is:

I should take this moment to now address the famous binary sunset scene. None of the video releases of Star Wars got this scene totally correct. This is because every release since the 1980s has recoloured it. Here is what it looks like on the GOUT:

The original scene does not look quite like this. Compared to previous releases this GOUT version is much darker (though previous releases were much brighter, as most 1980s releases were), and has a significant blue element added to the colouring, which would be taken much further in the 2004 release. There are a number of 1977 references available, however, each with its own brightness and saturation issues.

There is a Technicolor photo, for example, but because of the exposure of the camera it appears too bright, such that parts of the colour in the sky are not even captured, and must be tempered against the levels of the other sources. There is also a Derann 8mm that is unusually murky (at least in the screen photo) considering how nice most of its shots are. In terms of the general telecines at this part of their tapes, Catnap's is darker and has sharper reds, while the 35mm telecine is brighter, with more of pink wash through it, so keep this in mind when evaluating their respective caps. Puggo's 16mm is of course extremely washed out, and slightly pink-shifted due to fading, and in overexposing the first shot loses some of the colour. I might like to include caps from a 1980s video release for completism in the future. Going through it shot by shot:

Shot 1

35mm telecine:

Catnap:

Puggo 16mm:

Shot 2

35mm telecine:

Catnap:

Derann 8mm:

Puggo 16mm:

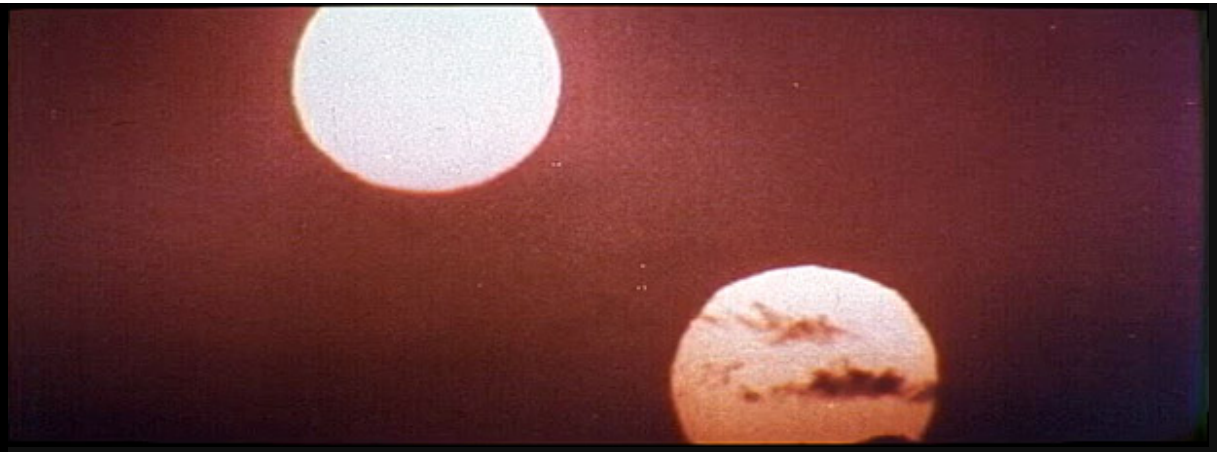
Technicolor:

Shot 3

35mm telecine:

Catnap:

Puggo 16mm:



Shot 4

35mm telcine:

Catnap:

Puggo 16mm:

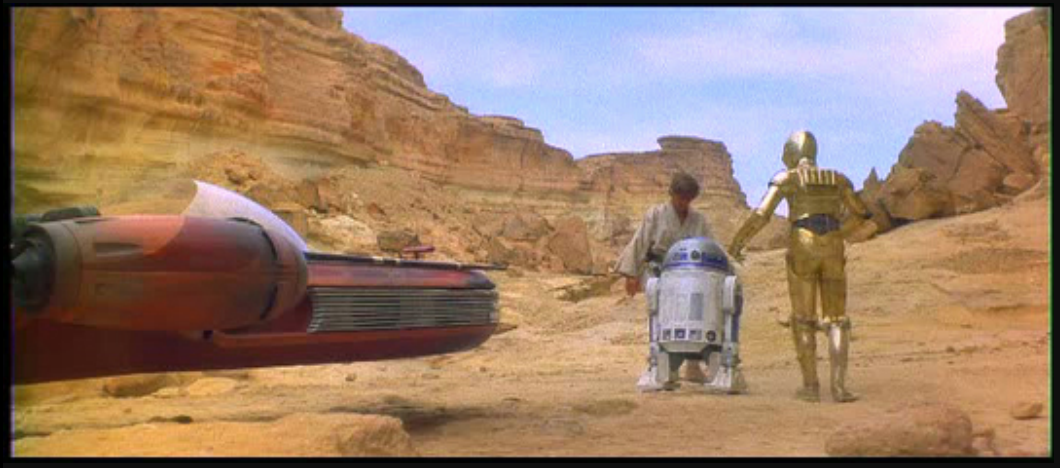
For a chart comparing the three complete sources (35mm telecine, Catnap, Puggo 16mm), click here.

You will notice that consistent across the board, when we cut back to Luke for shot 4 the image is slightly brighter and more colourful (mainly with blues) than shot 2, the first use of this angle. The Derann shot matches shot two rather than four so I have put it there, which may also explain why it is so subdued. The Technicolor shot also seems to match shot two, as Luke's mouth looks like it is consistent with that angle like in the Derann print.

My own opinion is that the extra blue in Catnap is partly due to the stronger green shift and sharper reds, though Moth3r's 35mm telecine is too uniformly pink-orange and washed out. However, if you look at Catnap's first shot, it has the bottom-right blue and upper-left pink of the GOUT in milder form (so does Puggo, though it is very hard to tell with the overexposure). In all shots, Luke's face is the most colourful element. The contrast on Catnap approaches the Technicolor cap, for example the brightness level on Luke's tunic and face. It is, of course, too intense. The Derann cap is very milky but has similar qualities if you look at it. Both Derann and Technicolor have purple in them if you look closely as well, but are still closer to a pink/red hue than Catnap. This tells me the truth is probably in between Catnap and the 35mm telecine. This logic seems to apply to the next shot as well: not as dark as Catnap, not as bright as 35mm telecine, not as red as Catnap, but

not quite so orange as 35mm telecine. Shot four should be the same as shot two but with slightly stronger saturation, especially in the blue elements, and brightness levels. Puggo's 16mm seems to generally match this reconstruction in terms of colour (though not in terms of brightness or exposure). Below is my own attempt at a reconstruction starting from the raw GOUT.

Sometimes, people might say, "but wait, the scene has a funny colour cast now." This is true, but often the way the film was photographed is not necessarily what we would consider "ideal" or "correct". The above shot, for example, has a bit of a green cast, and the left side a yellowish one. This is probably due to lighting and colour timing. Luke's skin, for example, looks fairly natural. This happens throughout the film. If you look at old publicity stills and the 1977 bootlegs, you often notice the same thing. If you look at the Technicolour print, it is very apparent too.



Some of the desert scenes make the earth look as if there is a bit too much colour to them, perhaps due to the dimness of the image when re-brightened and coloured, although this could be simply my own bias. This phenomena sometimes affects skintones as well. Technicolor caps, even though too washed out because of the exposure, tend to look a bit more balanced.

It looks like the film has a green-coloured fog near 3P0's head in this shot.

The skin tones here are still a little on the red side and have that "tanned" phenomena; certain shots need a little more custom work. It's pretty good looking nonetheless. Here is the same shot from the Technicolor screening:

Technicolor pic of this available below. Looks very similar, except the saber on the GOUT is blown out from the video and the Technicolor photo seems a little underexposed. The colour balances on the GOUT are more towards a yellow-brown in this scene, as evident by Kenobi's tunic (which has brown in it in the Technicolor print as well, just less pronounced).

This location is one of the few on the Death Star where the interiors often print as grey, rather than blue. More on this in a bit. Puggo's 16mm

has this quite blue, actually, but it seems to be the exception.

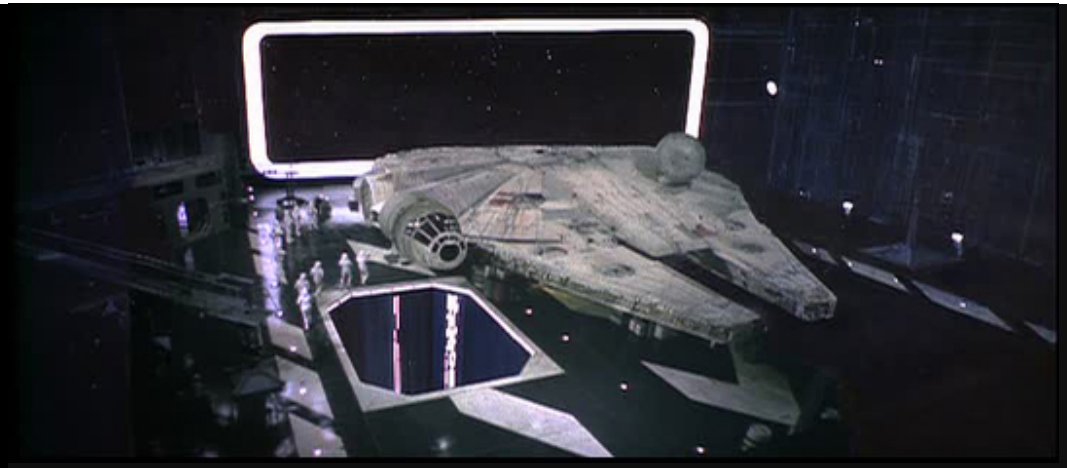
This scene retains most of the monochromatic greys of the raw GOUT.

It is difficult to tell in the GOUT, but this shot is part visual effect, which is why it is unusually grainy and the sky slightly miscoloured. There is a matte painting of a building composited behind the ronto, which gives itself away because it has printed slightly red.

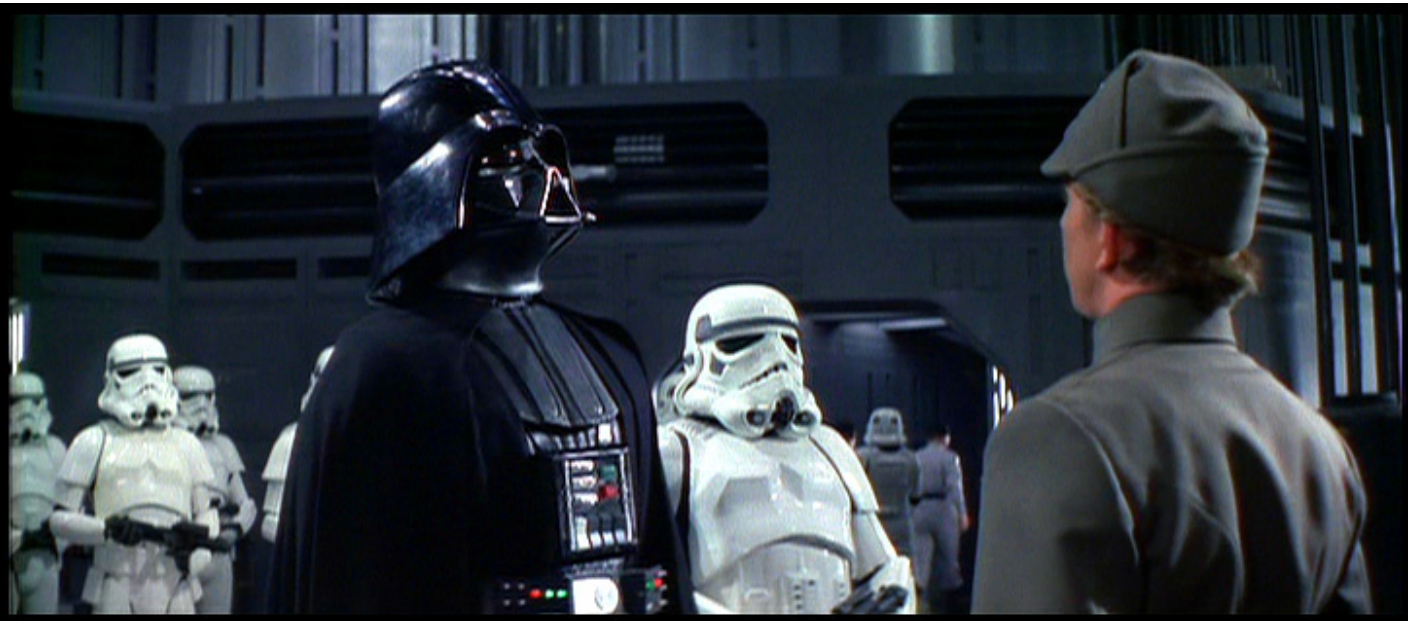
In this second scene on the Death Star, we see a more typical colour scheme in the subtle blue tint in the walls.

This shot, of course, is a big controversy on the 2004 set because the whole shot has been green tinted and Luke's saber full-out recoloured. There is a bit of green in the shot here, and the saber is in fact not a perfect blue but has some green colouration to it. Nonetheless, you see here what the scene ought to look like. Below is the same shot from the 35mm bootleg for comparison, although it isn't very useful (Catnap was too dark to be useful at all), followed by Puggo's 16mm.

In this scene in the conference room, the lighting is very blue. Typically, this location is more restrained, with the colour balance waivering from scene to scene. Catnap has this very blue as well, although on the more subdued 35mm telecine it seems much more neutral (though not entirely) like on the raw GOUT. Ironically, Puggo's 16mm, which had the first conference room scene very blue, displays this scene in rather neutral tones (even though the particular reel it is on is very faded and blue).



More blue Death Star shots. In this composite, it looks like the live action has printed pink, while the Falcon looks a bit green. This can be seen on the Technicolor pic below, although the colour has not survived as well as the above. This Technicolor shot looks quite green, although it is hard to say if this is a shift on the print itself, as many other shots from this reel (i.e. Kenobi and Luke at the doorway, coming up) look very normal. Possibly the truth is in between.



Here is an example of how a "grey" Death Star on the GOUT is not actually grey at all. The amount of blue will waiver from scene to scene and shot to shot; it depends on photographic conditions and, I suppose, the way the film was timed.

And again. Puggo's 16mm resembles the enhanced GOUT pics for this section, sans the saturation. There is a Technicolor photo of this shot. It has more of a green and yellow shift. This could reflect white balance on the camera, the mixture of the dyes on the print, or that the GOUT does not have the totally full range of colour. Possibly it is a mixture of all three.

Here is the same shot on the 35mm and Catnap bootlegs:

It should be noted that the Catnap bootleg is entirely green shifted for this reel on the Death Star, and so is not that reliable.

Here is an example showing that sometimes the Death did photograph more or less grey. There is a Technicolor shot of this posted below, and it is grey as well. It looks like there is a mild green tint to the print here if you look very closely, however, I must conclude this is on the reel and not in the actual timing of the film.

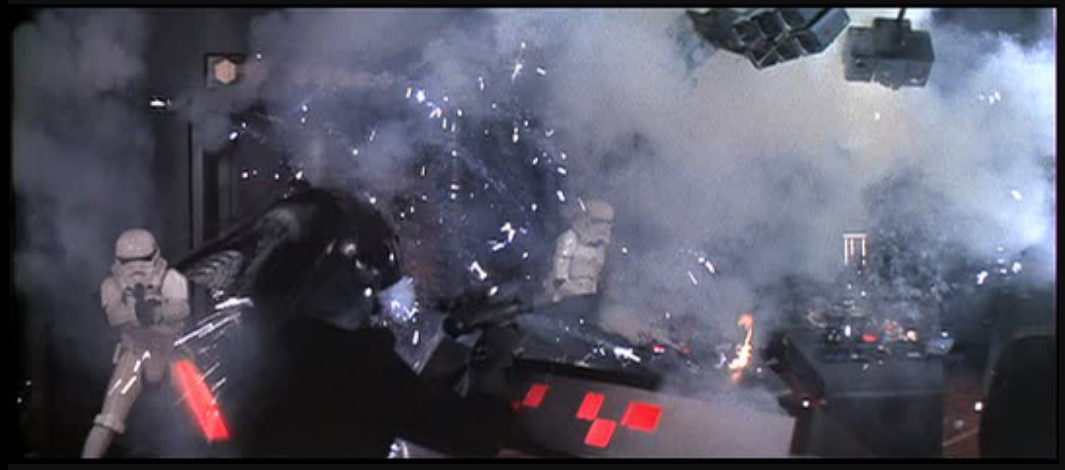
The theatrical bootleg is consistent too.

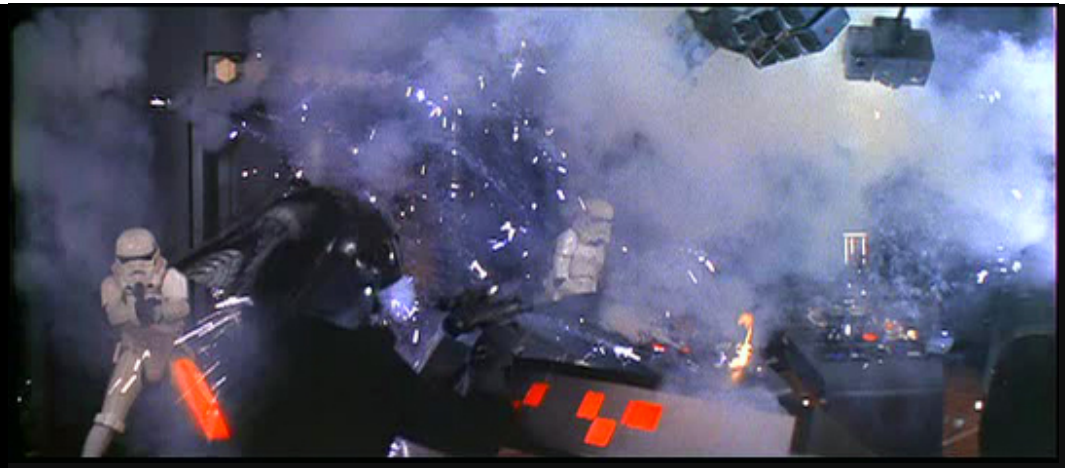
Below is Catnap's, which clearly is too green shifted to be of further use. I will stop using it for this section of the film.

There is a Technicolor cap of this shot, posted below. Again, there are exposure problems in it. The skin tones there are not as pronounced as the above (they look more natural to me), and it is contrastier too. Probably the reality is in between that and the above shot. Below is the Technicolor cap:

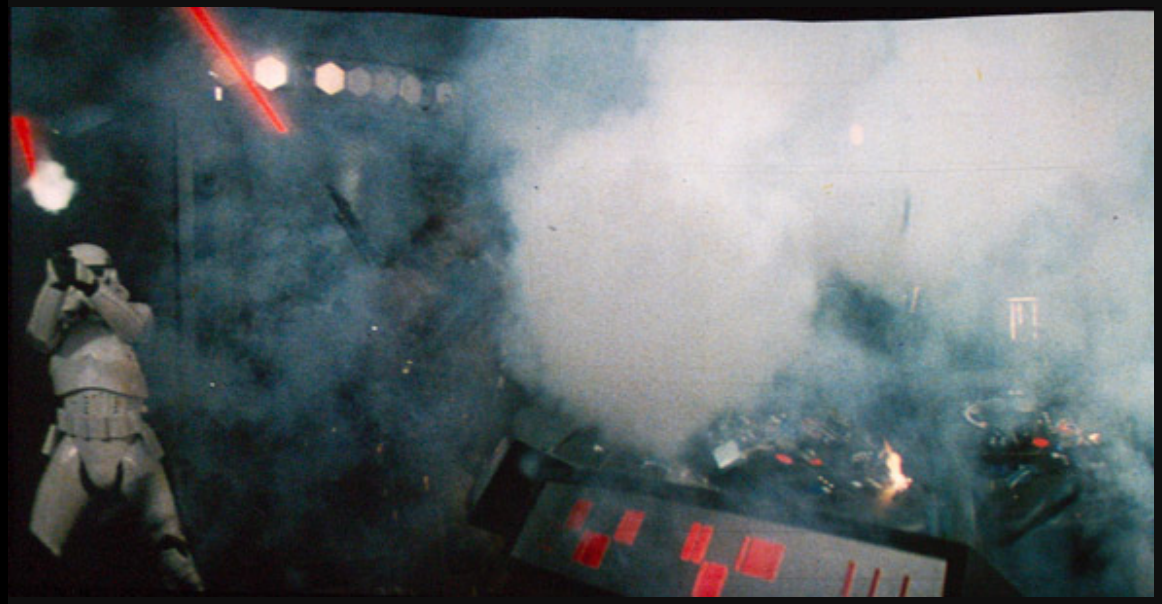
Again we see, in Luke's hair, that the print has a mild green shift. This is probably why the former shot of Han looked so green. Here is the above shot on the 35mm telecine bootleg:

The only problem with this sequence is that the red squares on the pannels are popping even on the raw GOUT.

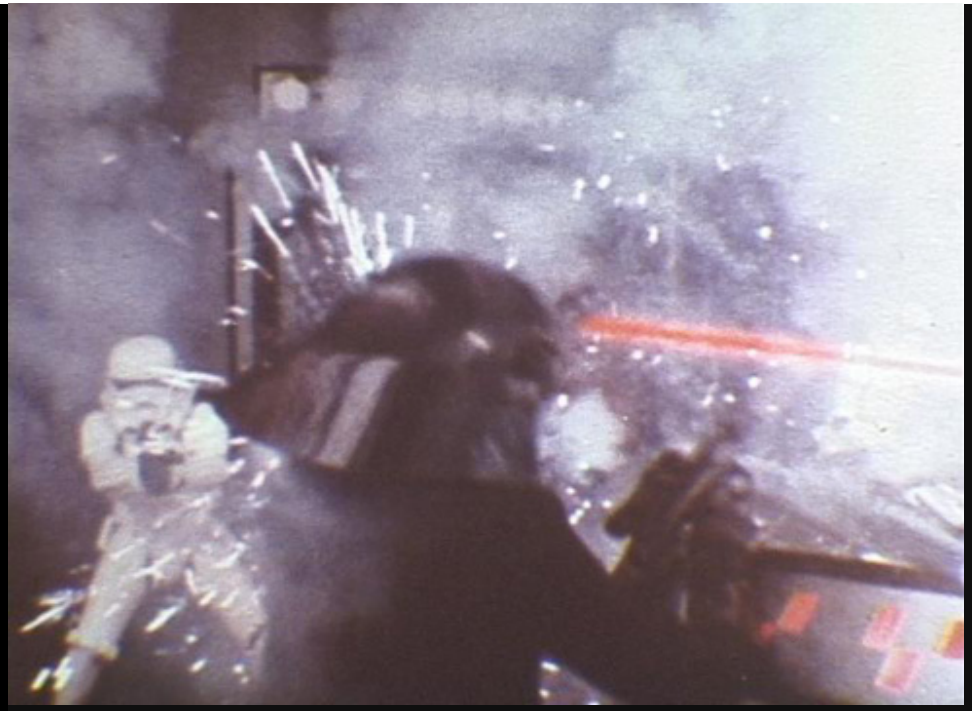




This shot was photographed during the Technicolor screening as well:

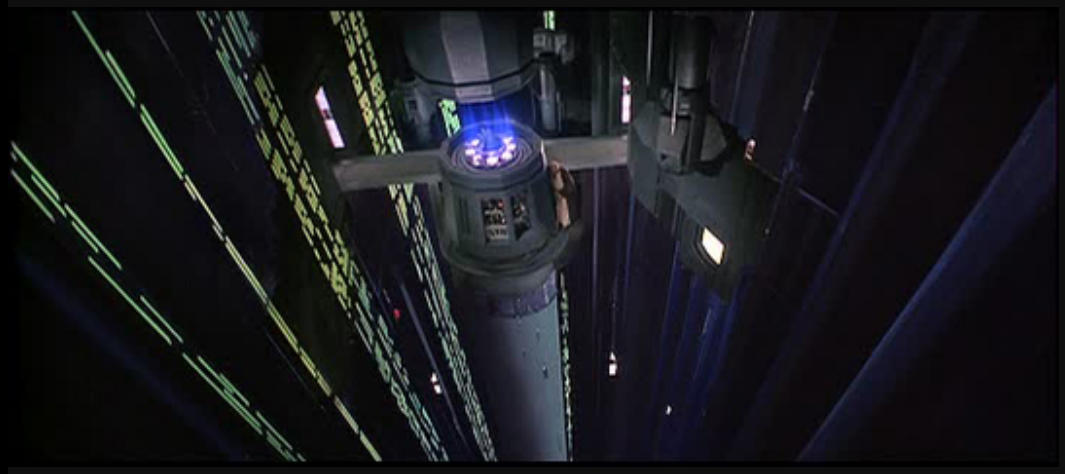


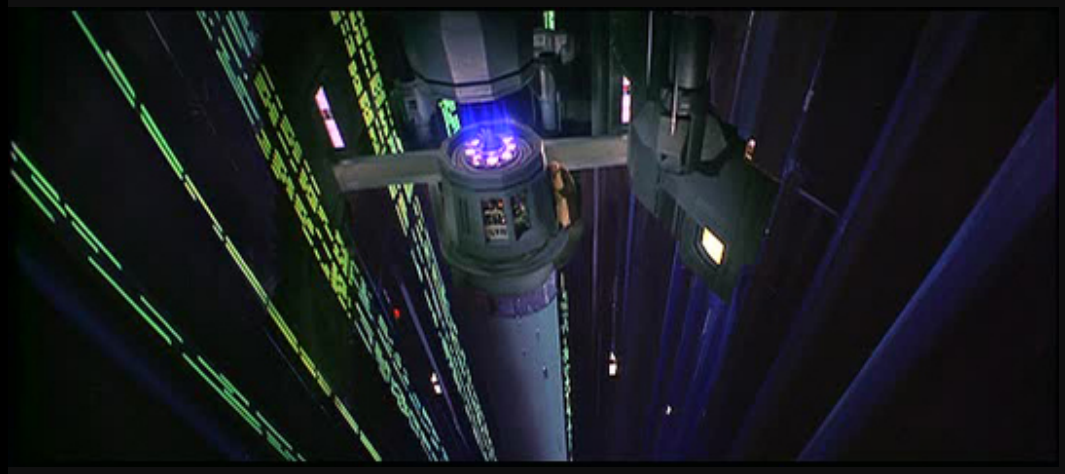
And here it is on Puggo's 8mm:



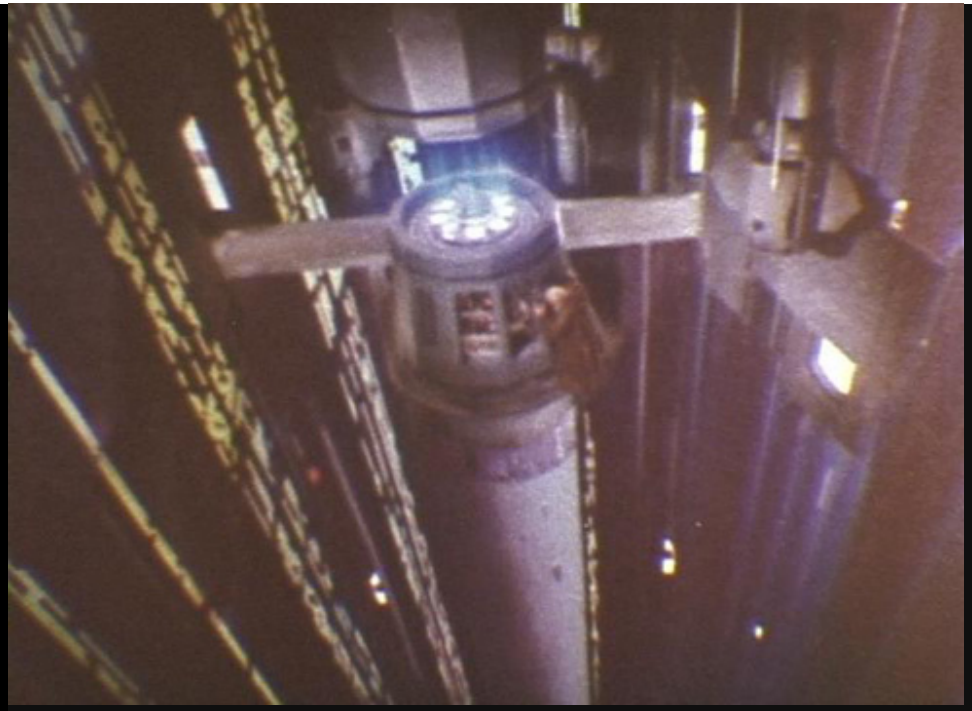
This scene has a green-brown tone to it with a hot red backlight, which doesn't come across very well in the raw, uncorrected GOUT.

The green light panels in this scene are practically black and white in the original GOUT.





The matte painting colour-difference in the live action composite is more noticeable with the extra colour. Here is the scene on Puggo's 8mm:



Here is a scan of the original matte painting:

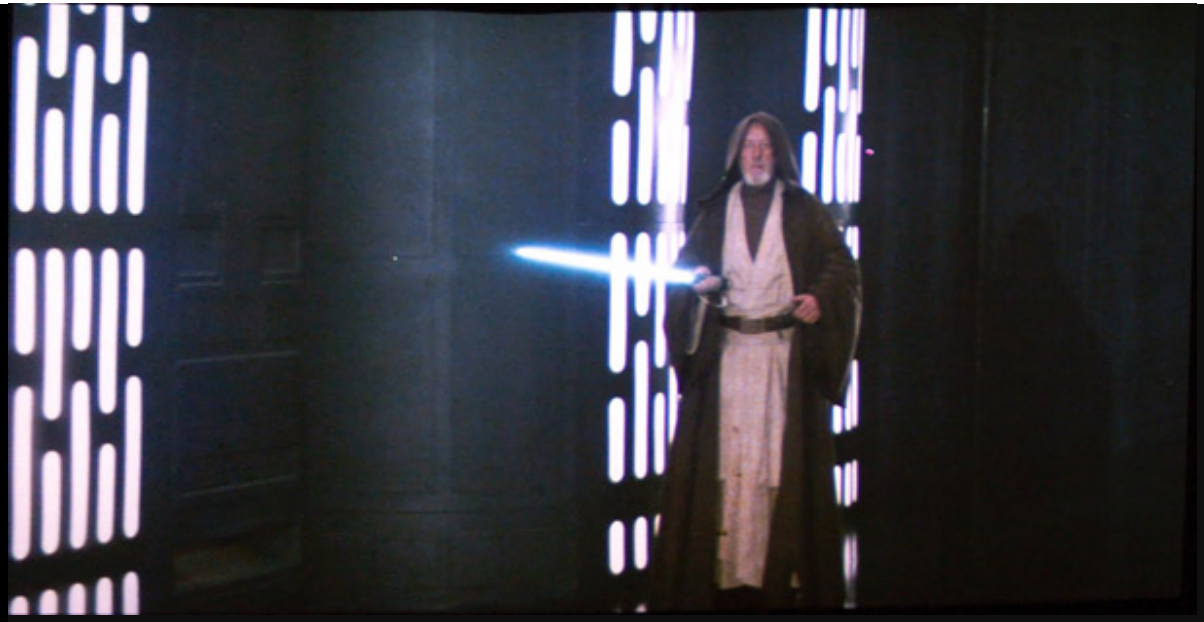
INSERT

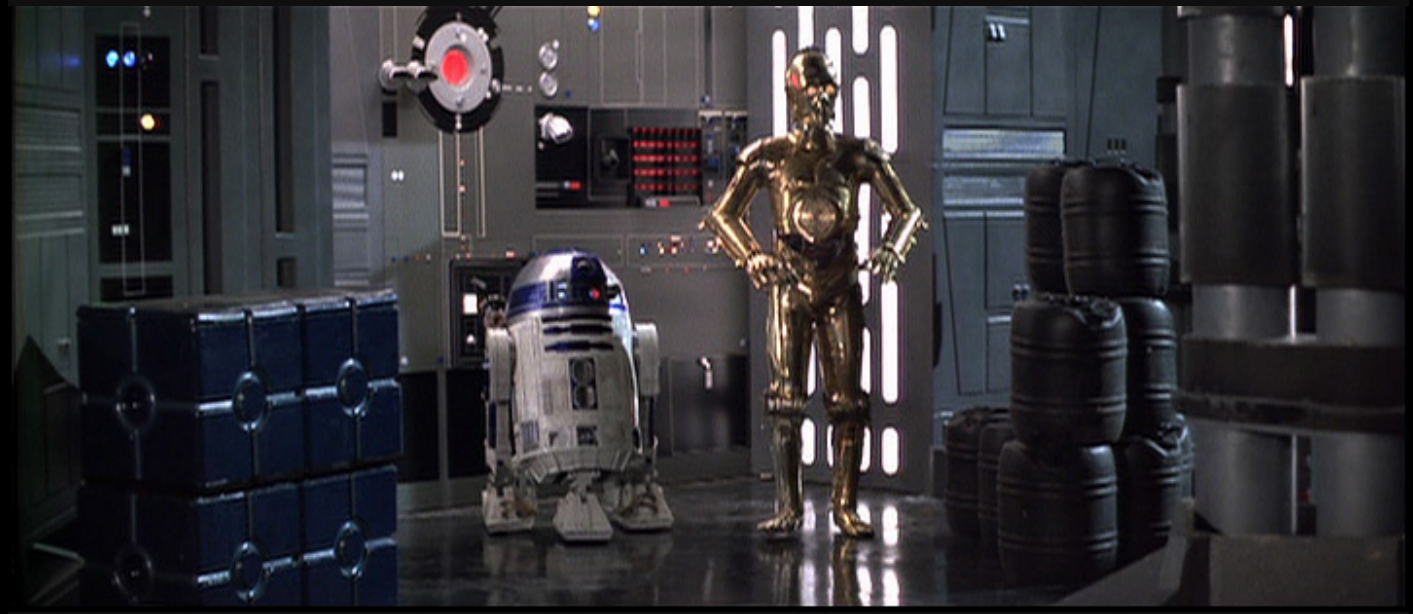
And here is the scene on Moth3r's 35mm telecine:

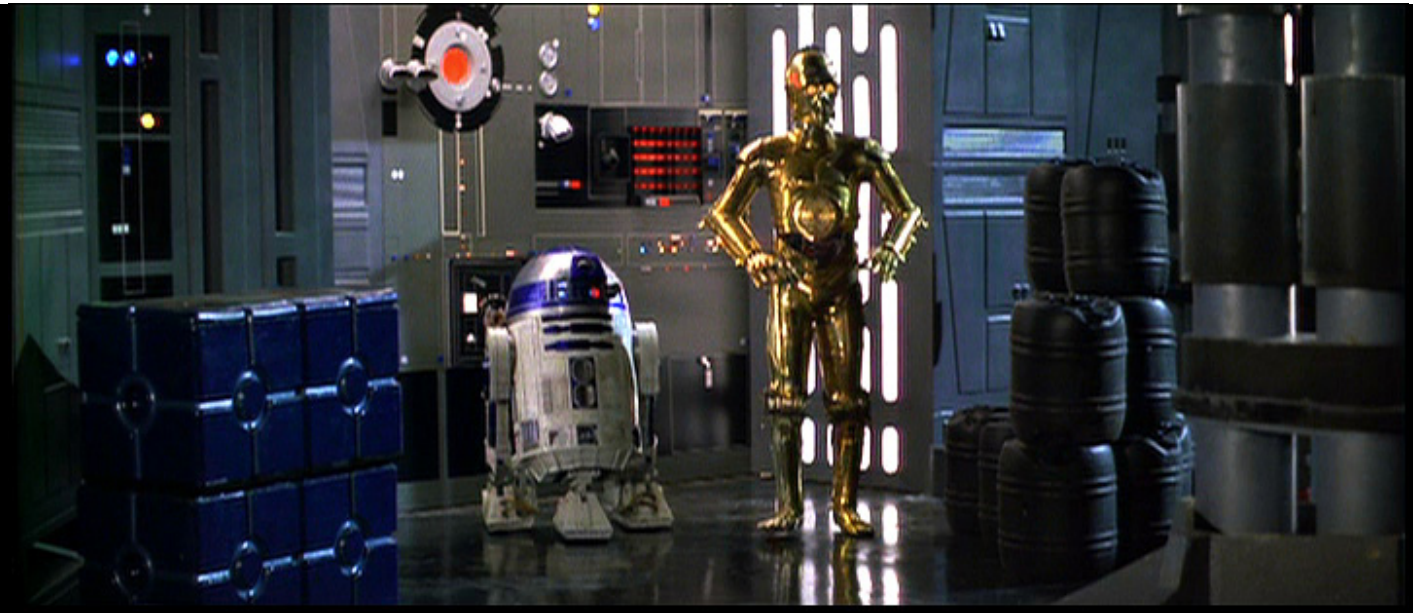
As mentioned, there are a number of Death Star interior shots with more subdued--or even grey--colouring. This one is, and so is most of the chase with Han that follows this shot.

On the other hand, this sequence is quite blue.

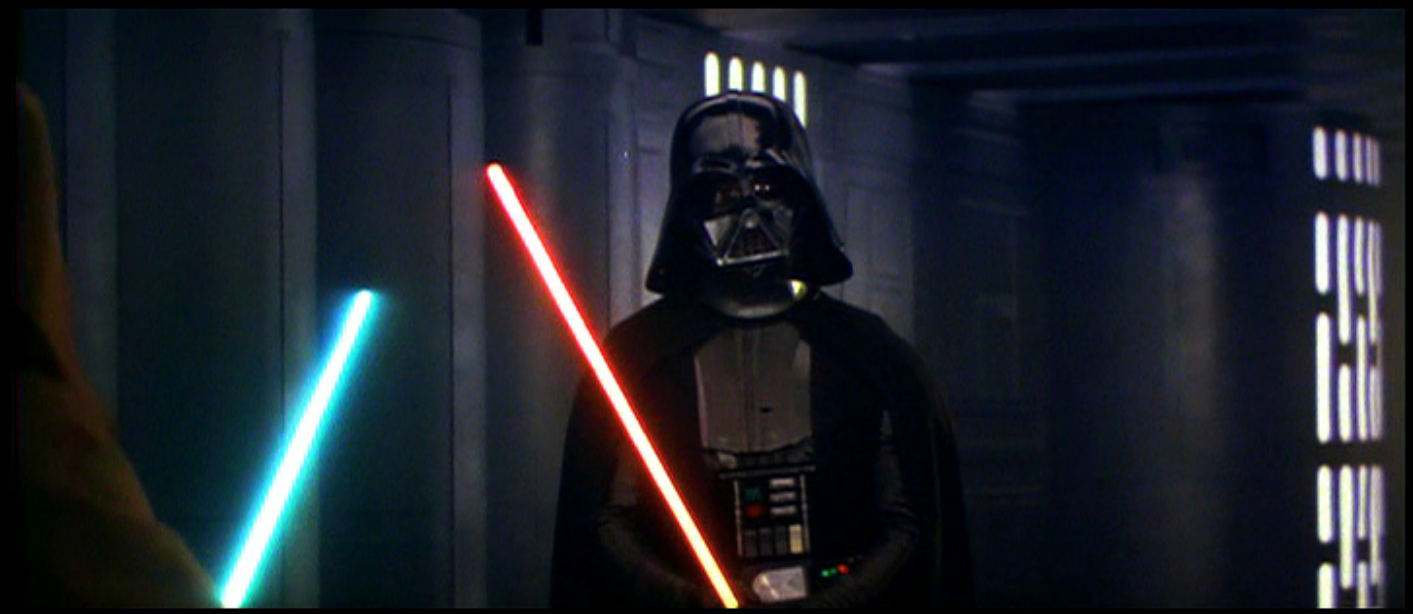
This scene was photographed during the Technicolor screening. The mild red hue only appears in this scene and may be from the composite. Puggo's 16mm looks like it exhibits it as well. The Technicolor photo:

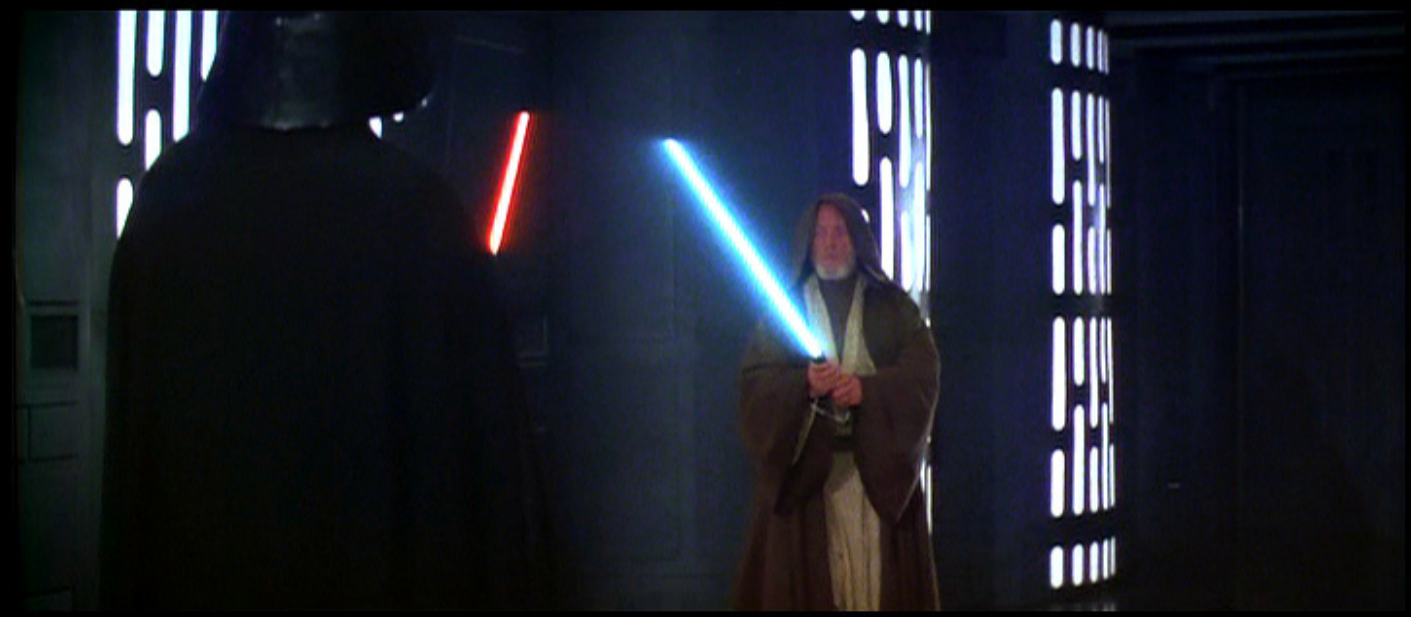






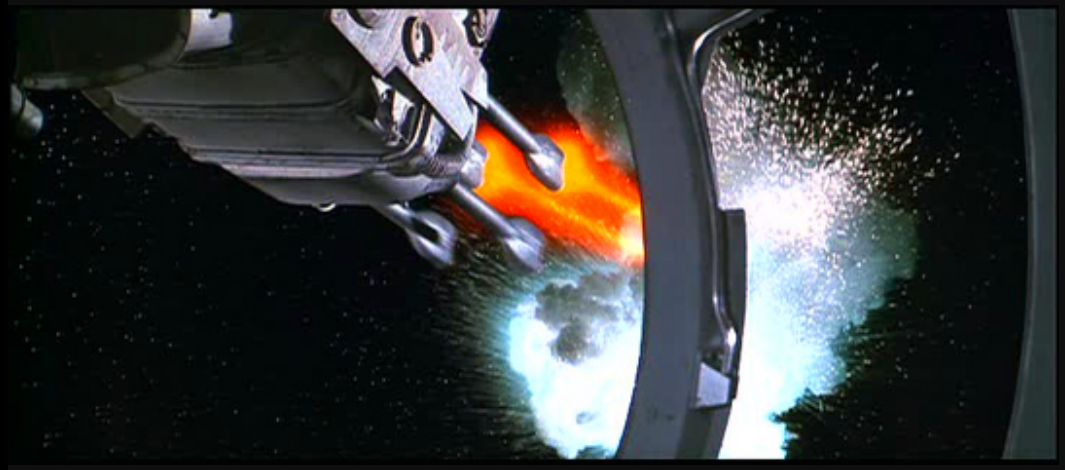
The skin looks a bit red here. The Technicolor print indicates this scene had a bit of a red shift due to the optical composite, so perhaps this explains it. Technicolor photo:



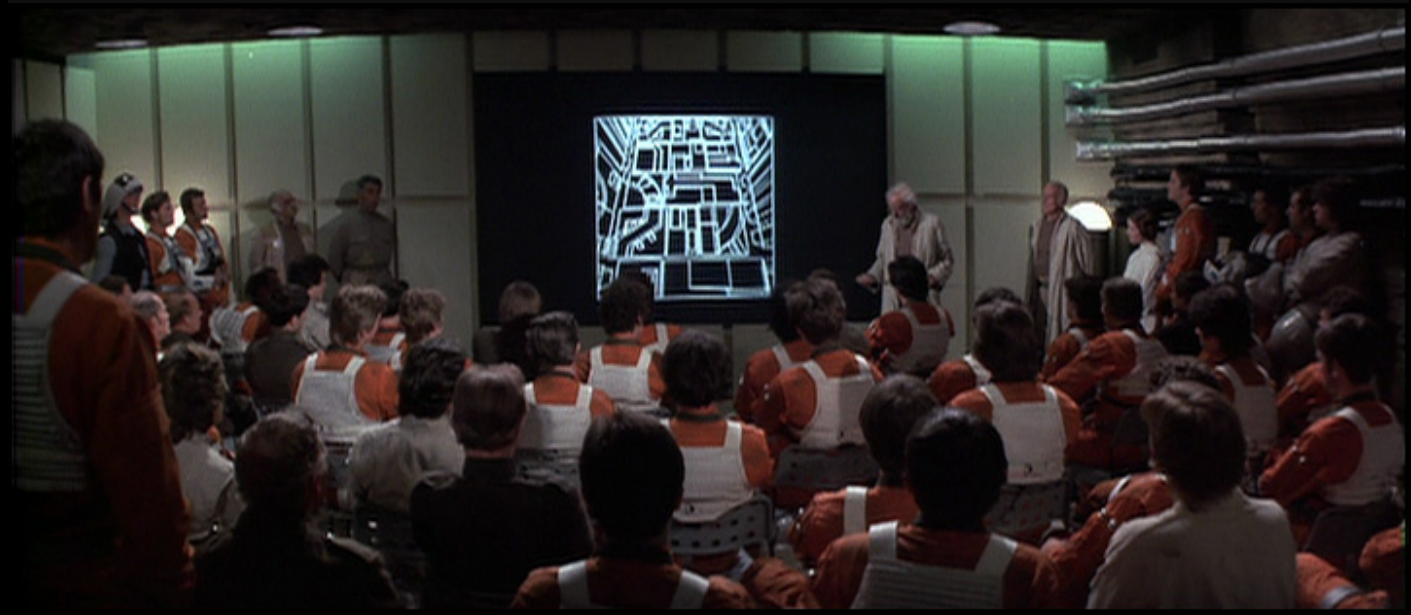


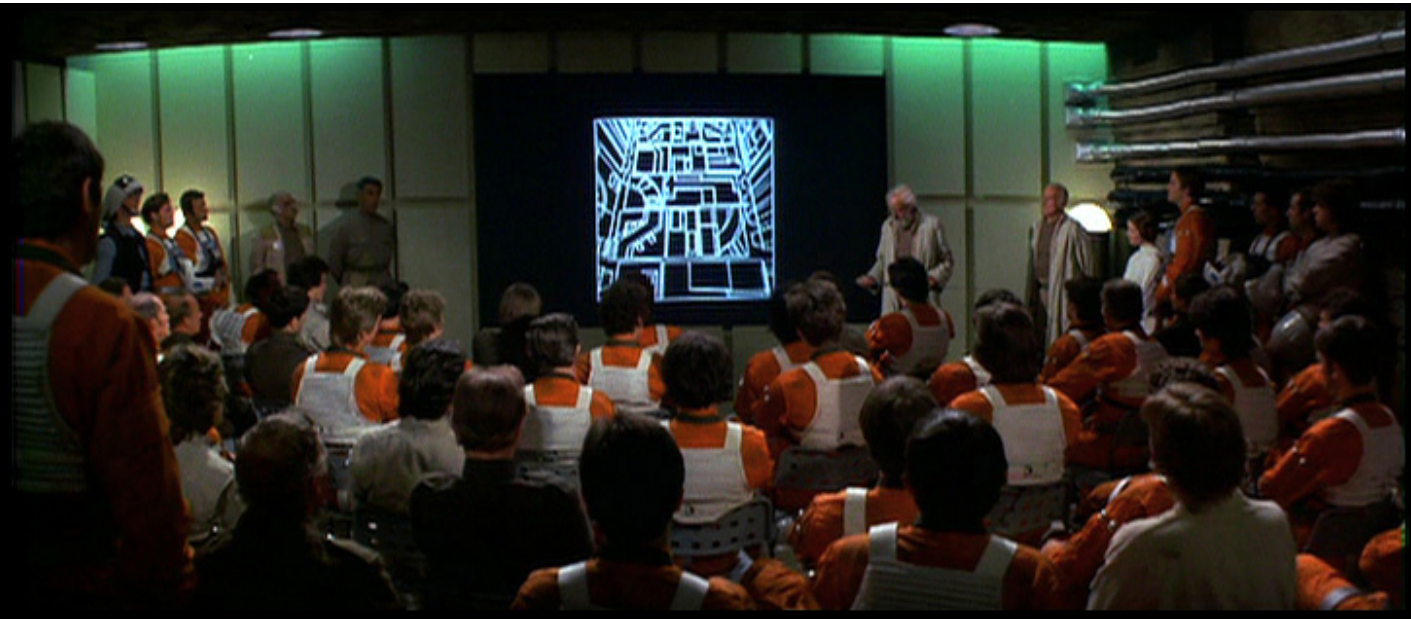
The video noise is very pronounced in this shot. It is difficult to see from a still. This occurs throughout the scene because of the grain from the optical composite.

Difficult to see on the uncorrected GOUT, some cockpit point-of-views exhibit bluescreen spill.

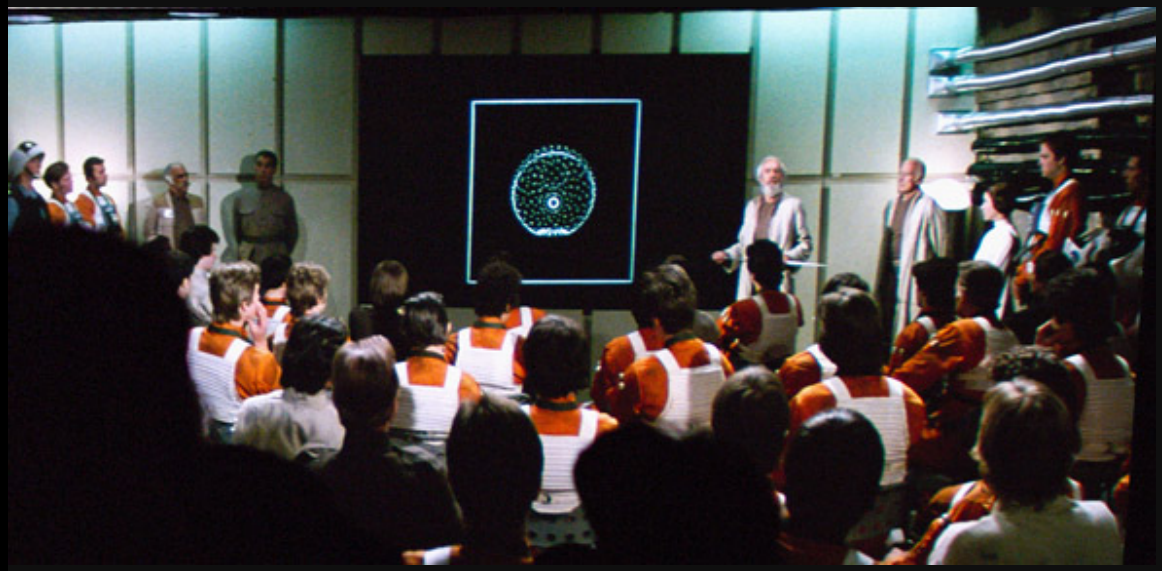


A lot of the explosions in this scene composited with green smoke. A similar shot on Puggo's 8mm:



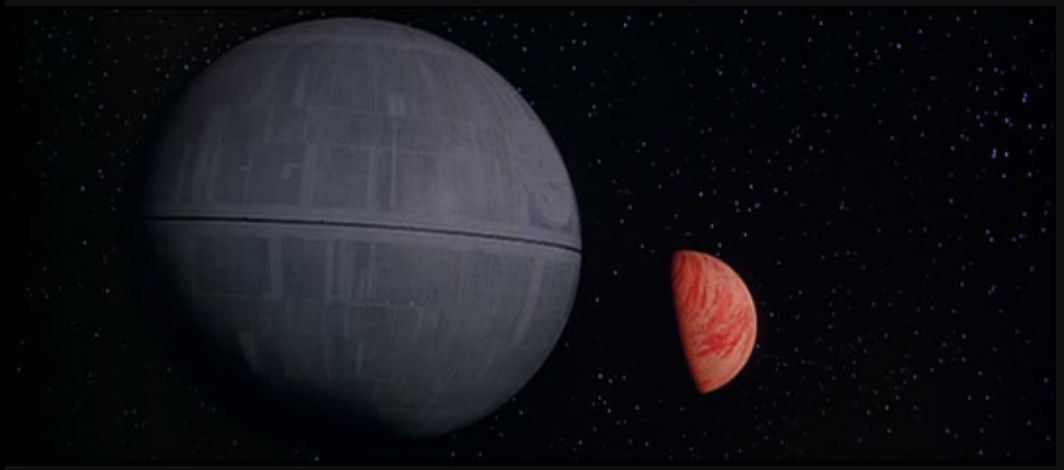


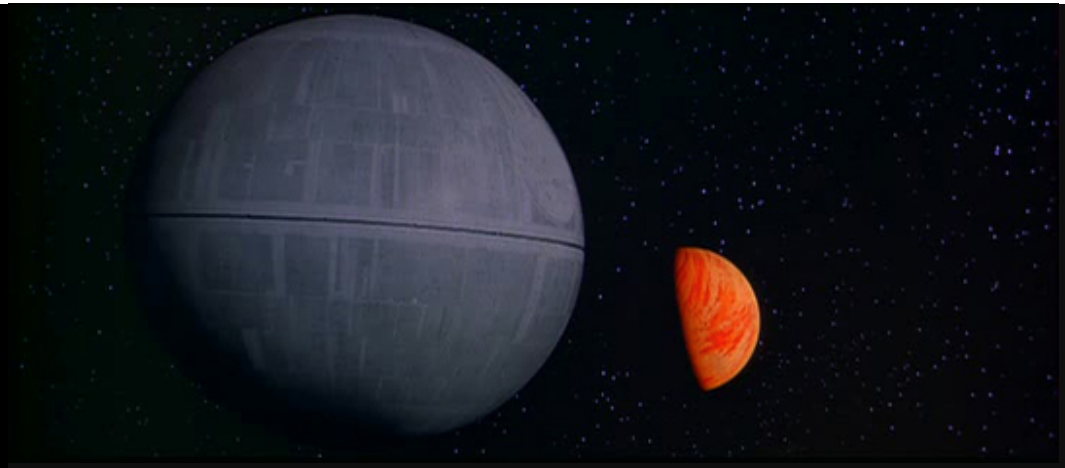
There is a Technicolor shot of this, which looks very similar but is a bit overexposed in the photograph.



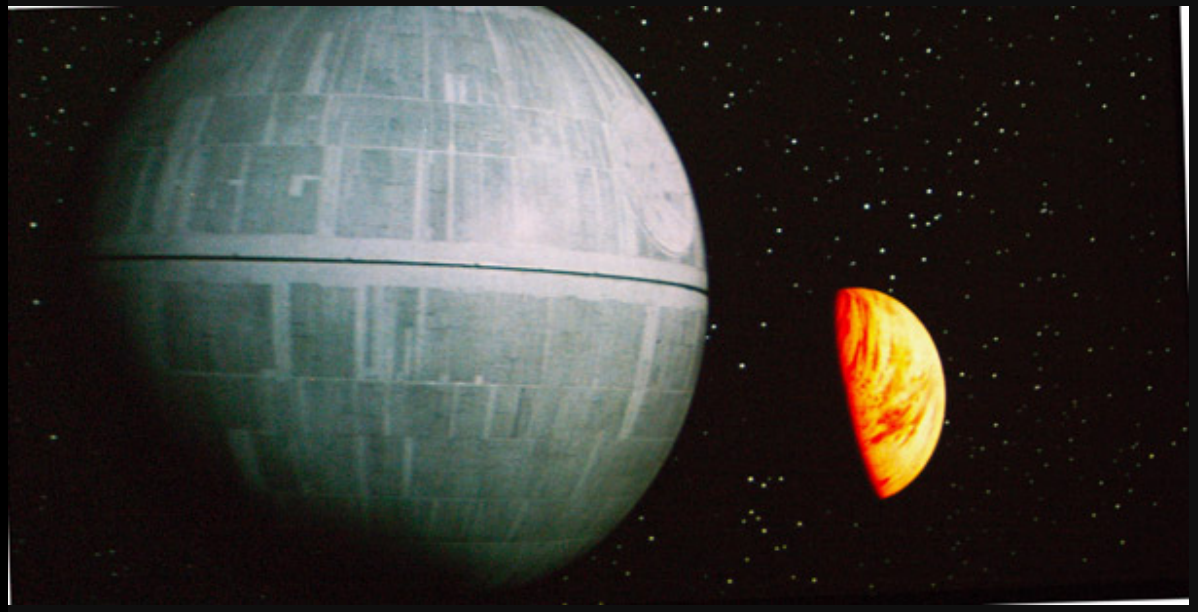
Below is a photo from the Technicolor screening, which again is overexposed. Han's shirt throughout the GOUT has the yellow colouring you see above, possibly exaggerated by cyan-shifting out the red on the telecine. This whole sequence looks a little on the dim side too.

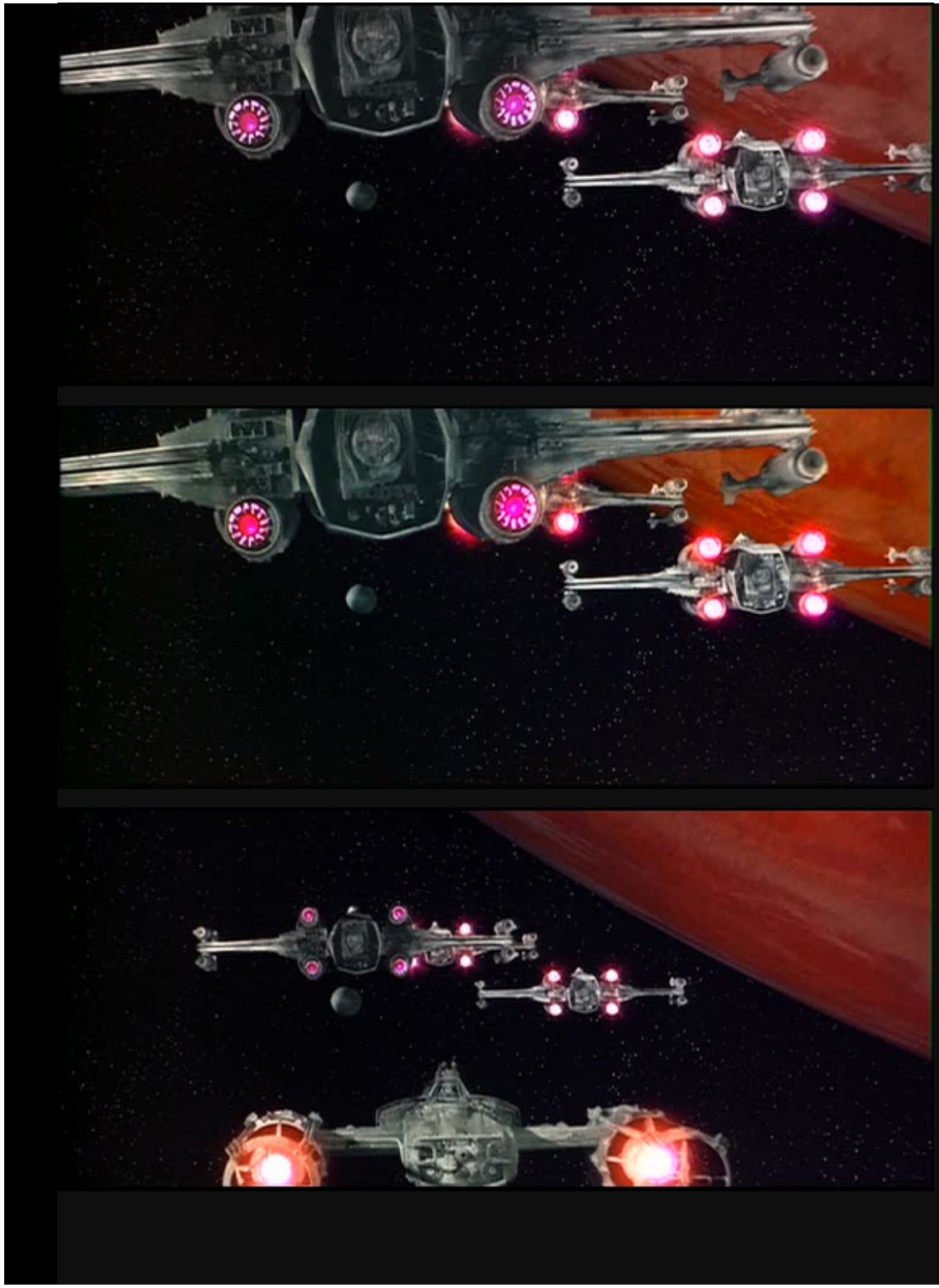
Here is the same shot on the 35mm and Catnap bootlegs:

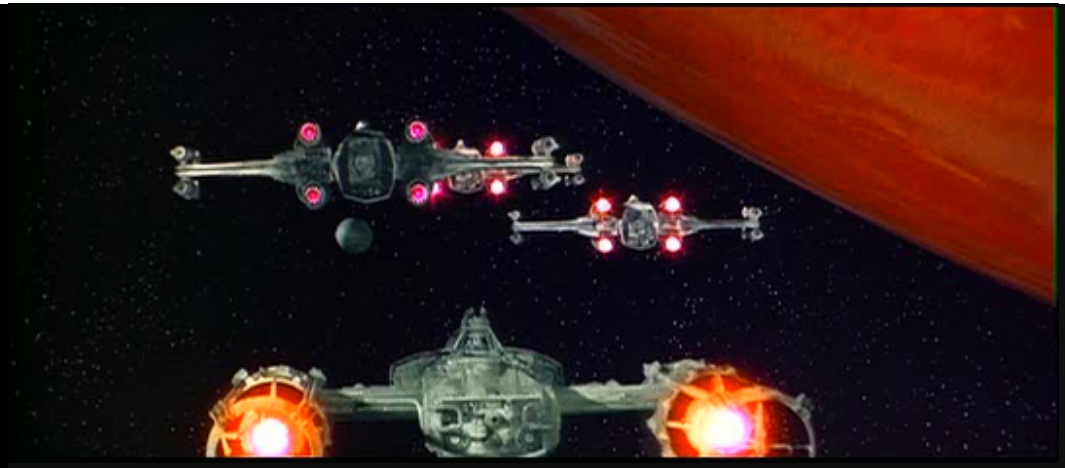




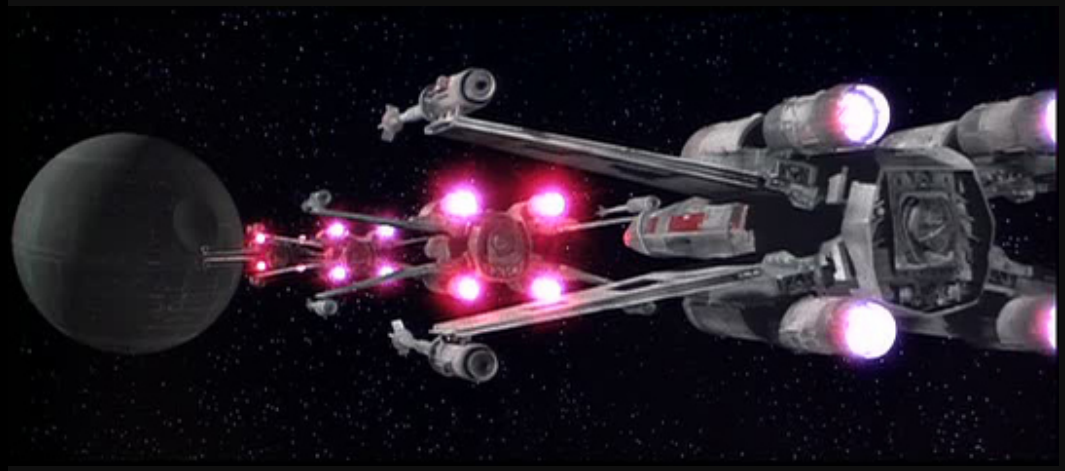
The same shot from the Technicolor screening is below. It has more green and yellow information than the red and blue oriented GOUT. This probably is partly due to the dim levels of the GOUT.

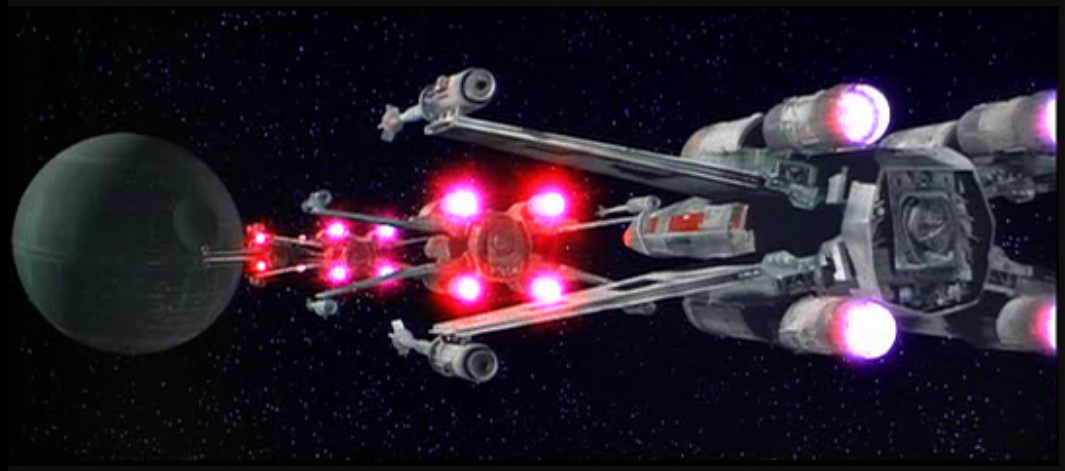




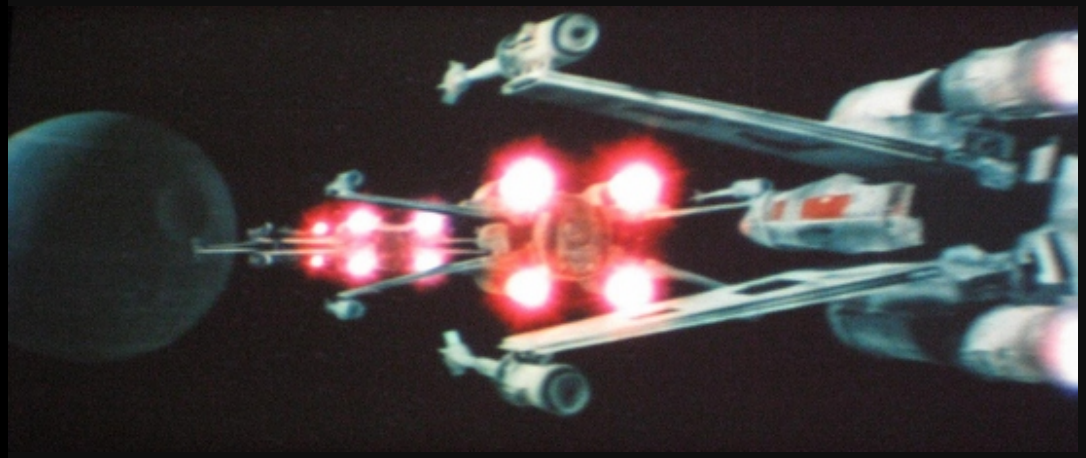


One thing to notice is that even within the same shot, different ships have been printed different shades in the optical composite (usually shades of green, which are not apparent on the uncorrected GOUT) and have different hues of engine glows.



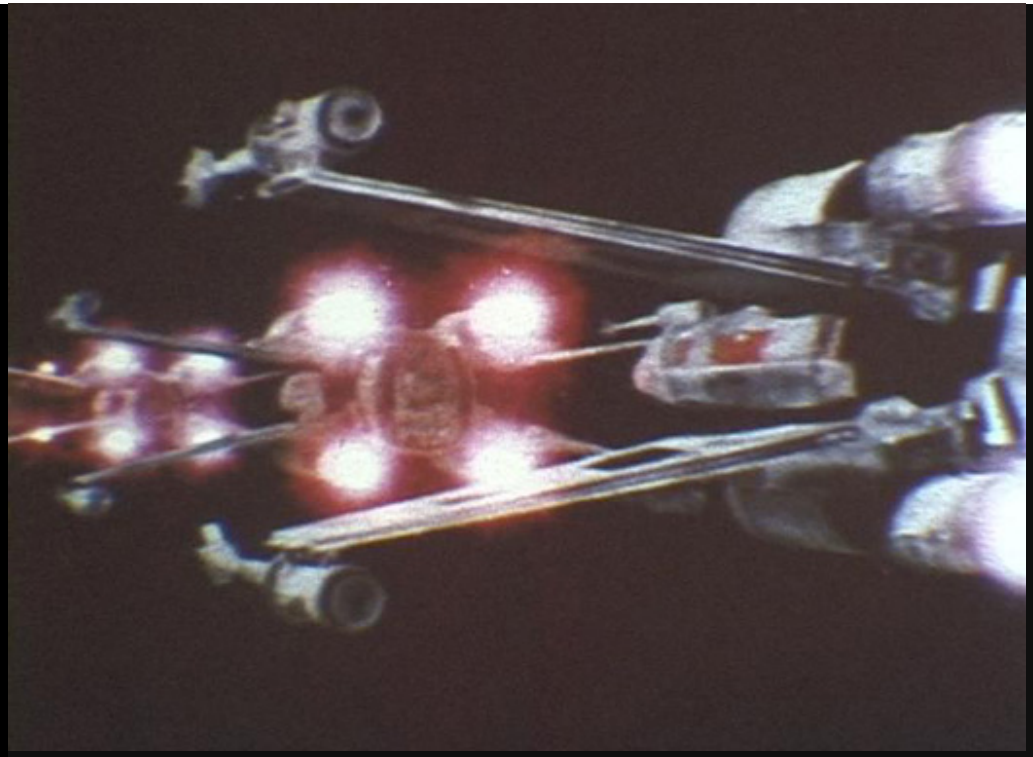


There is a photo of this from a Derann print:

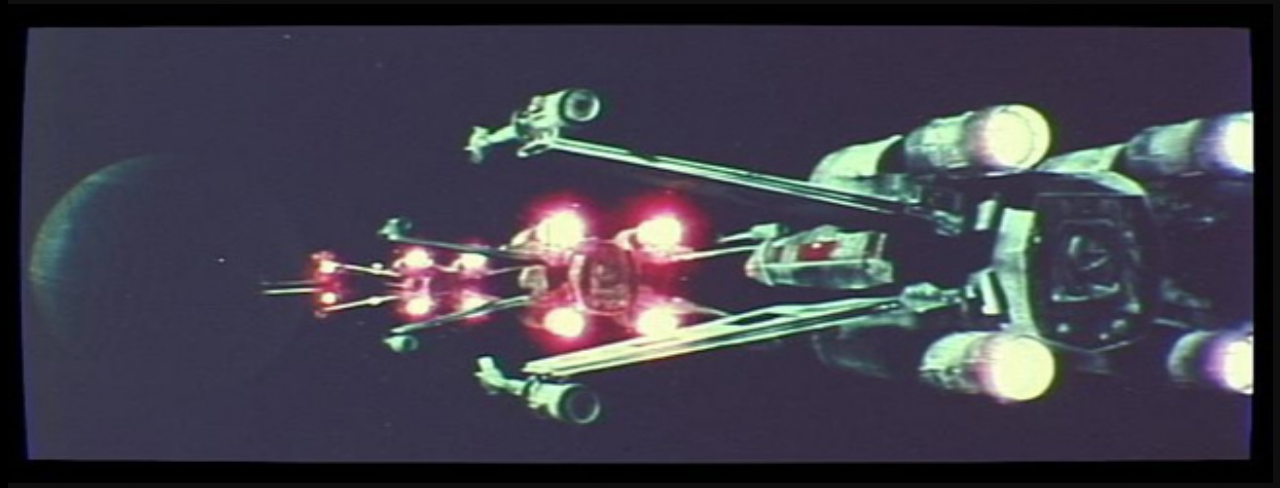


Below is from a second Derann print, although this one (or the camcorder white balance) is obviously very green:

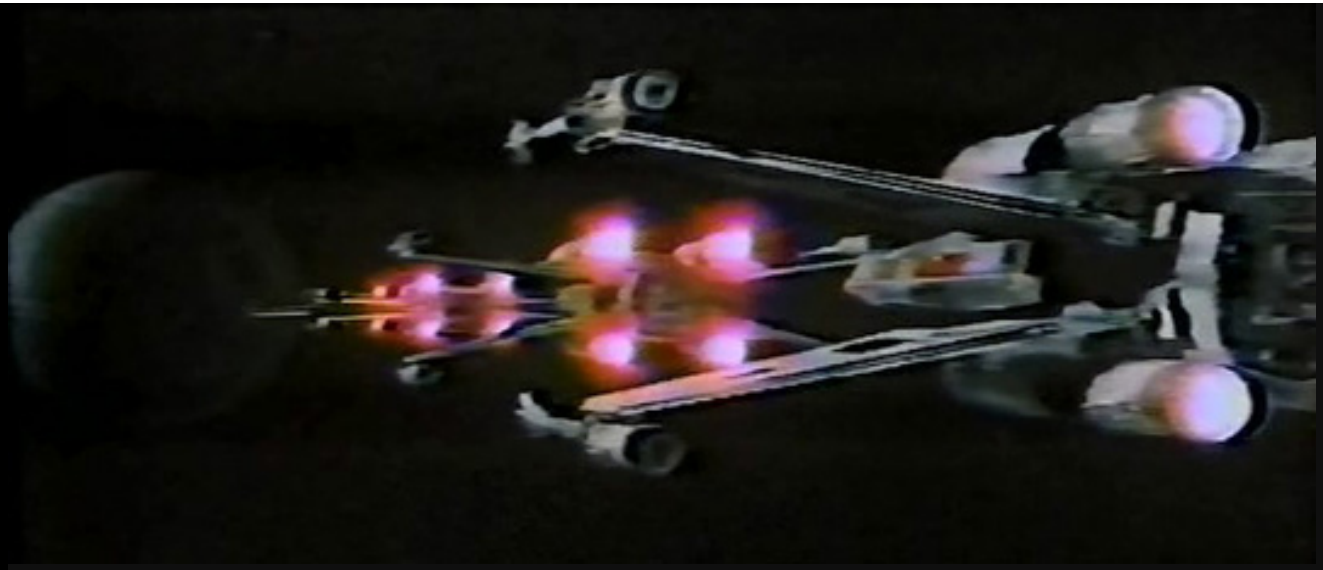
In fact, that entire print is as green as there. When I colour-corrected other caps from that print so that skin tones look normal and then applied those exact settings to the above image, the result was in between the other Derann print and the enhanced GOUT: normal-looking, but with a tiny hint of green (probably due to the optical composite). On Puggo's 8mm the shot looks like this:

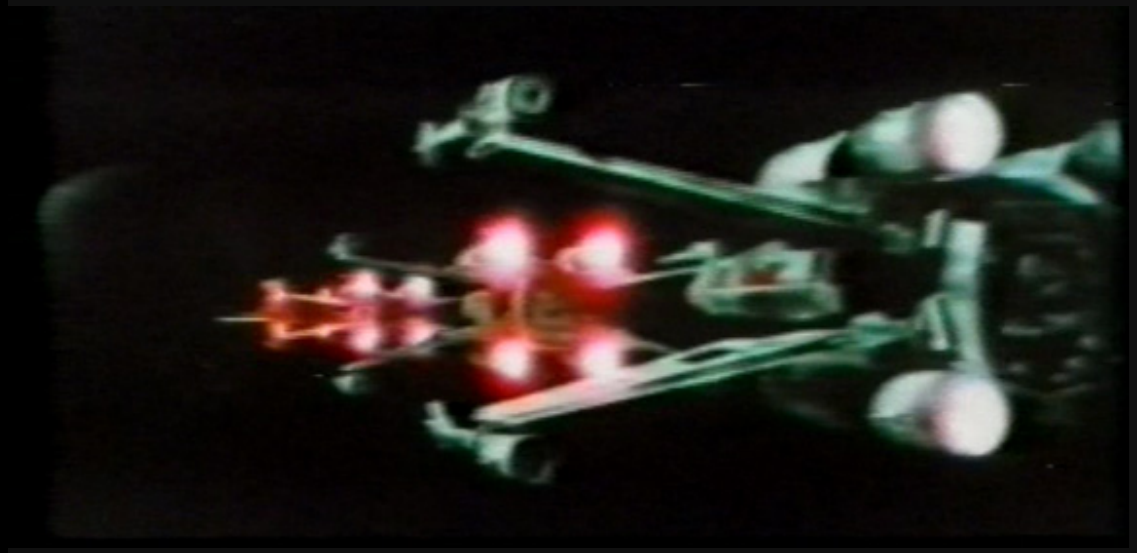


While on Puggo's 16mm the shot looks like this:



The shot on the 35mm and then the Catnap bootleg:

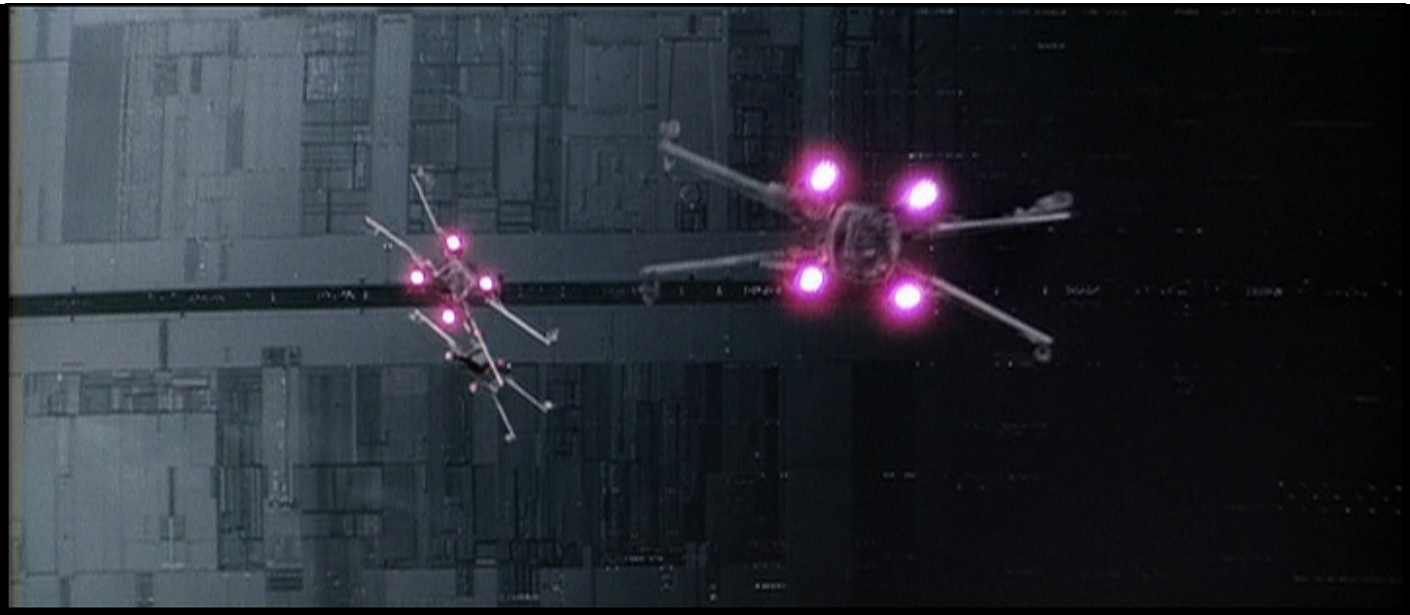


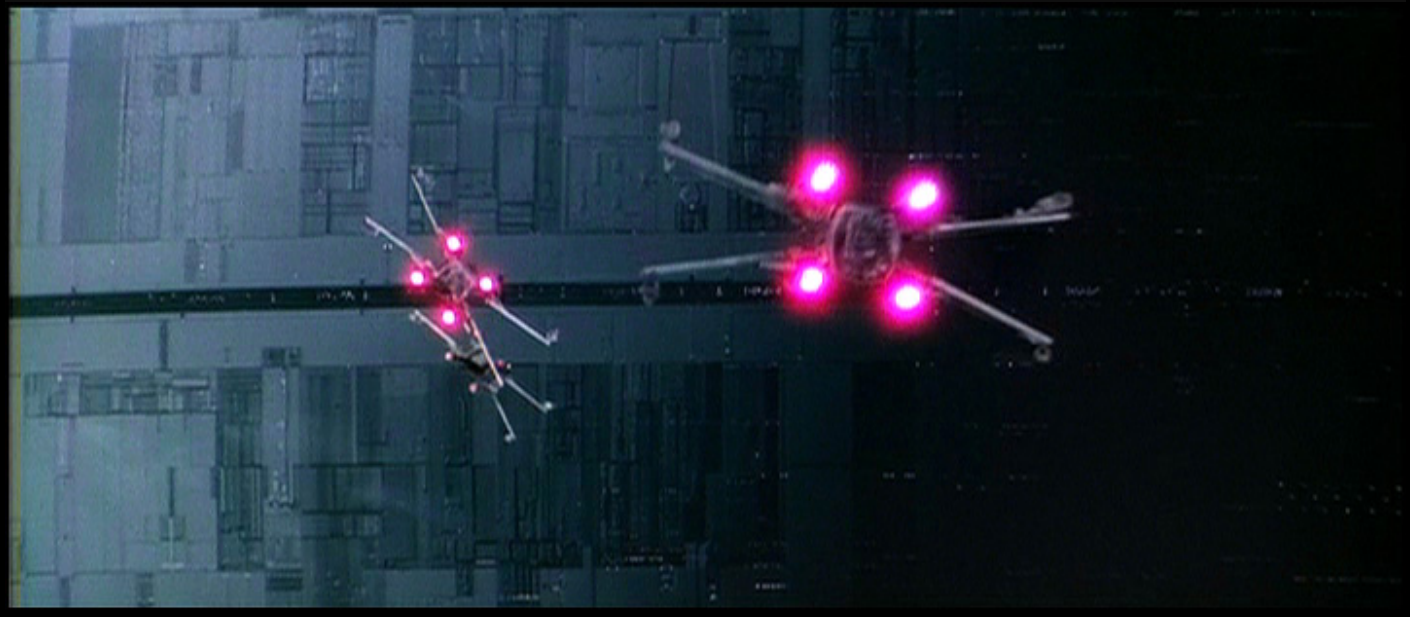


As the Catnap bootleg has a mild green-shift in this reel while the 35mm telecine a mild pink shift, my conclusion is that the actual shot may have a tiny bit more green than the GOUT indicates (if you look, there is indeed the faintest of green), but that most of the green tinting in the other caps is due to print fluxuations.

The jumpsuits tend to pop a bit in most shots they are in. I fixed this a bit with the settings of my second pass, which shifted more towards green, reduced the saturation a bit, and increased the brightness and contrast. See below.

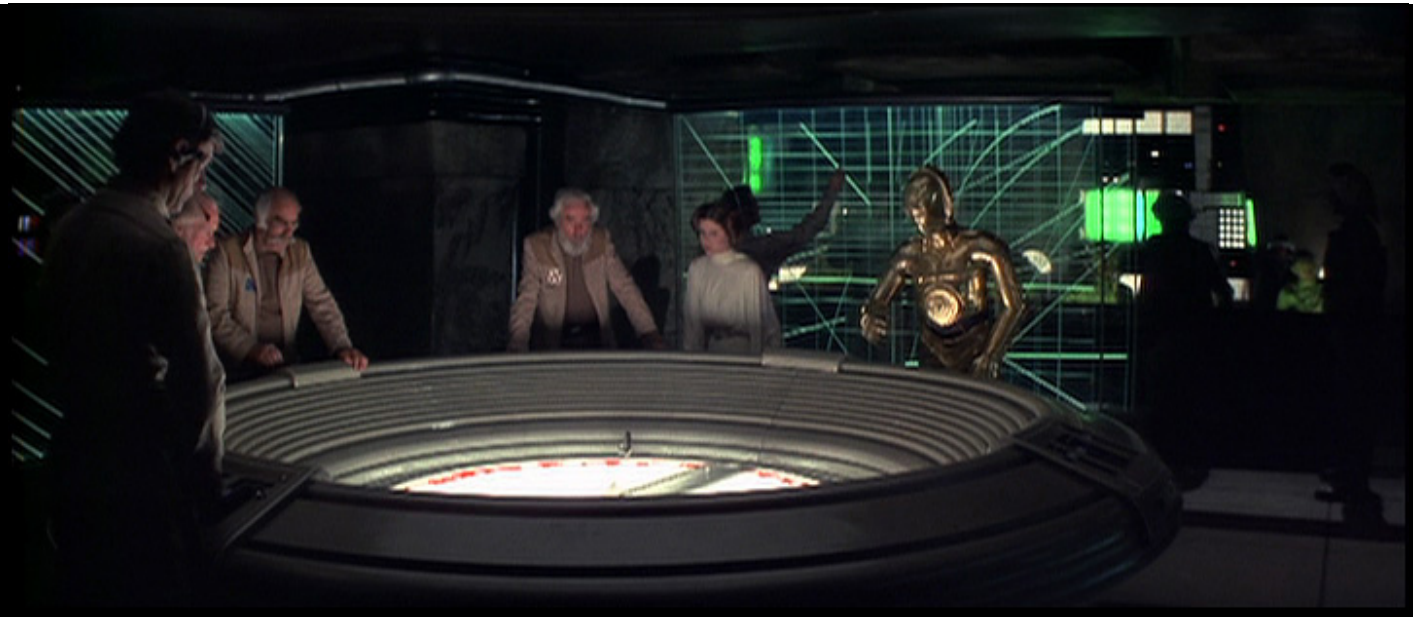
A similar shot from a photo of a Derann 8mm print:

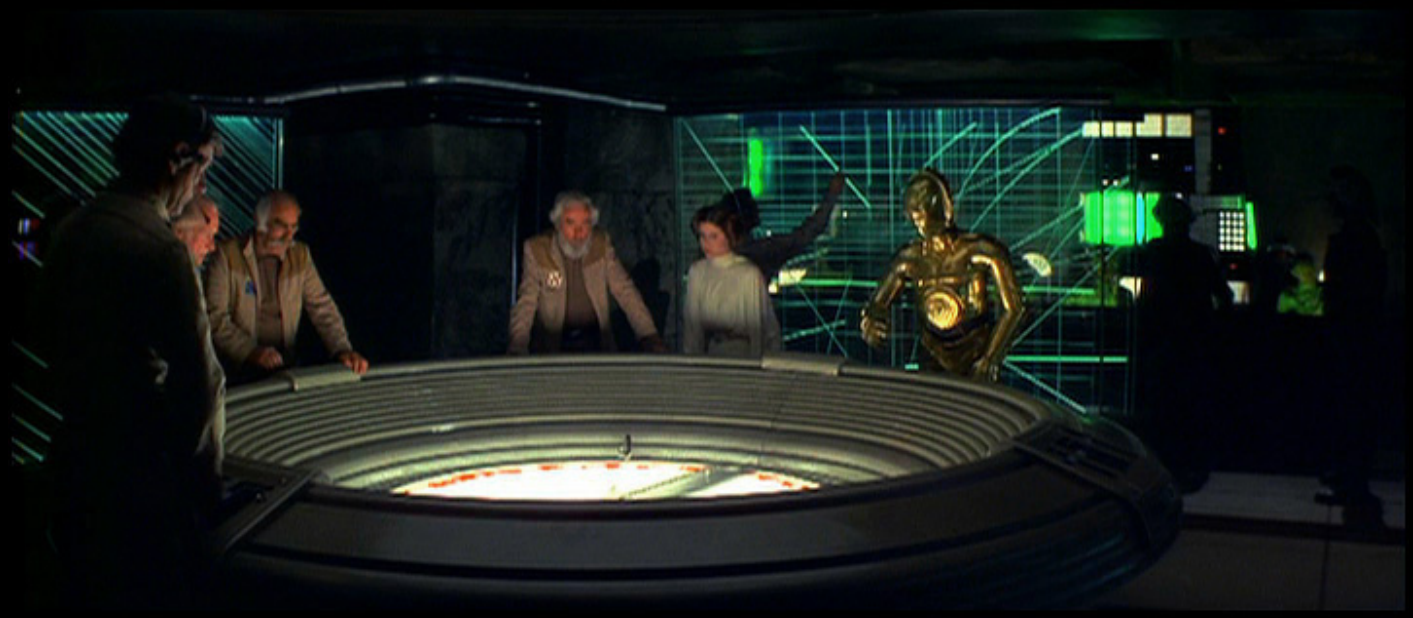




The Death Star is sometimes blue in space as well. The engine glows are bleeding a bit with the added saturation; they were often not composited as red as well. The sequels got them more consistent.

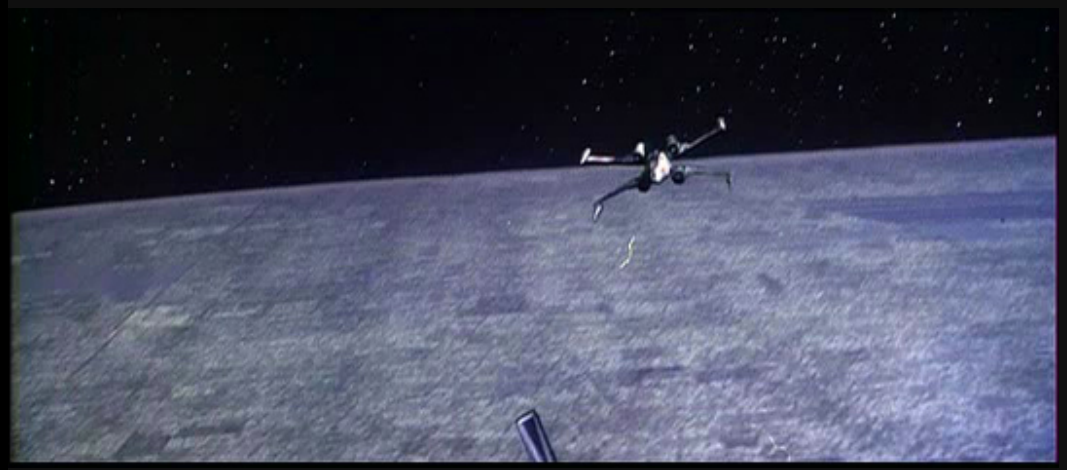
This is a perfect example of mis-printing in the opticals, where the x-wings are clearly tinted green.



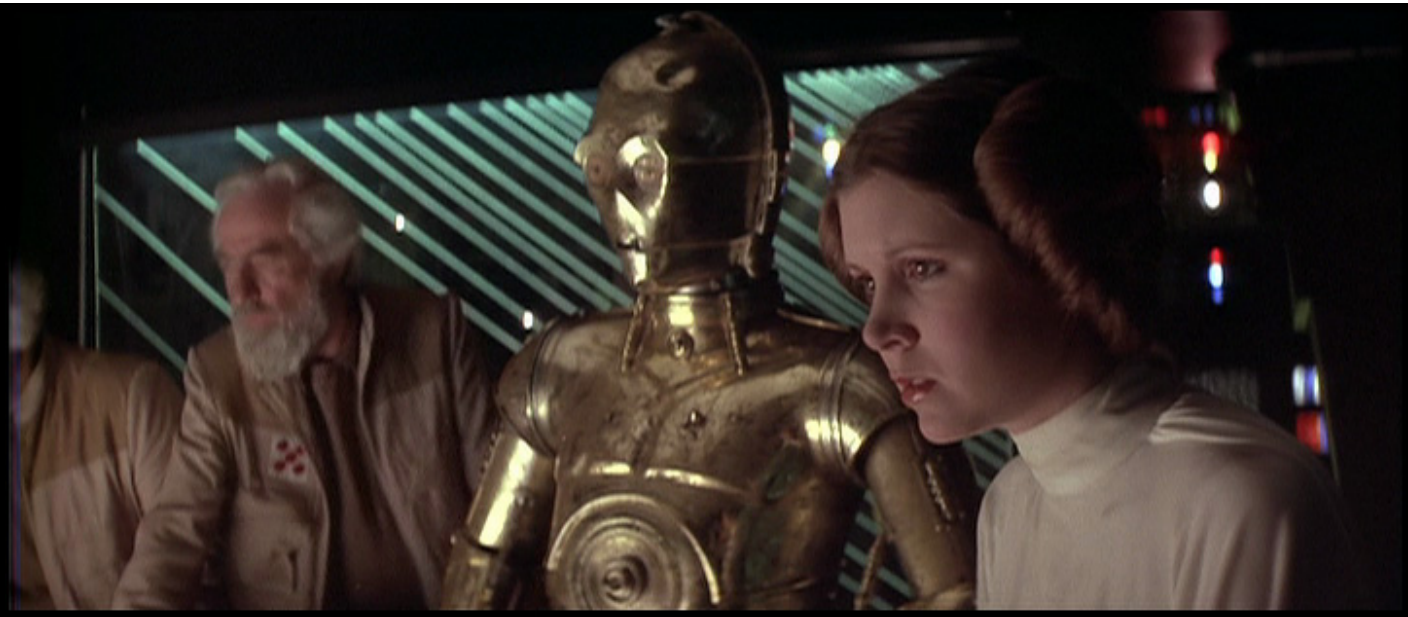


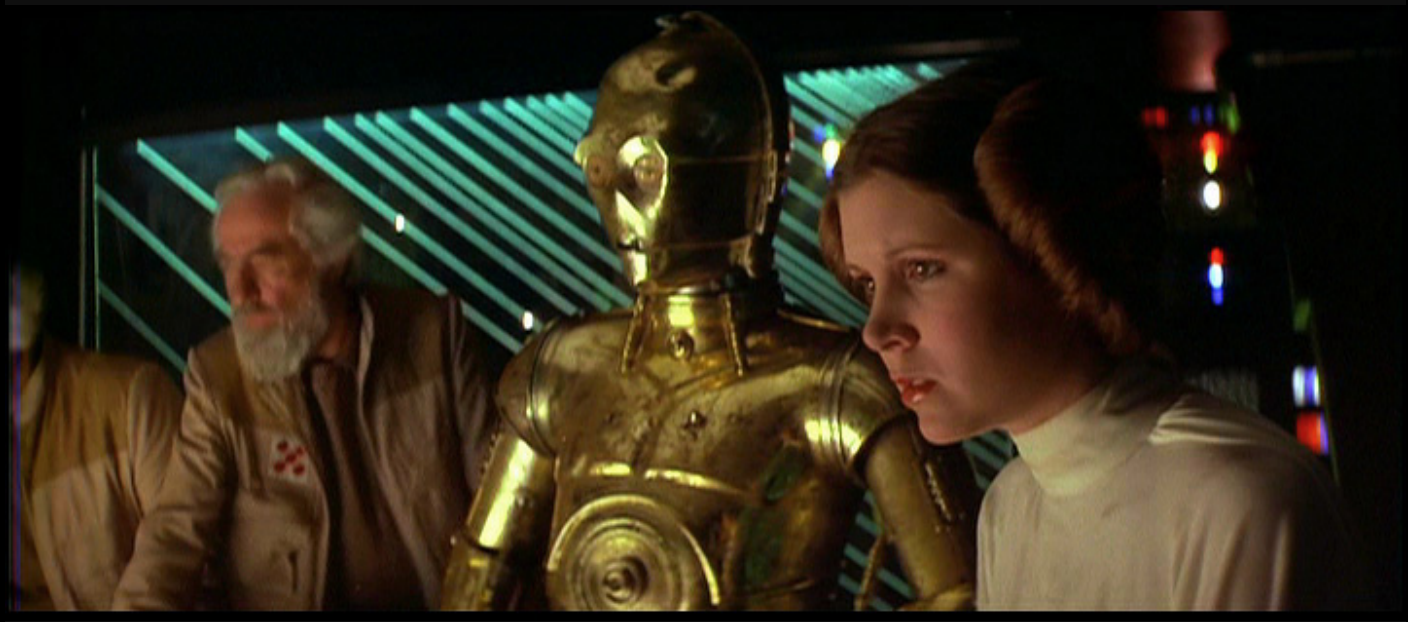
The greens look a bit too strong here, because of the bleeding.

It is difficult to get optical composites to match. The Death Star background is slighly blue, while the foreground tower is green. This is not apparent in the original GOUT transfer. Below is another example.

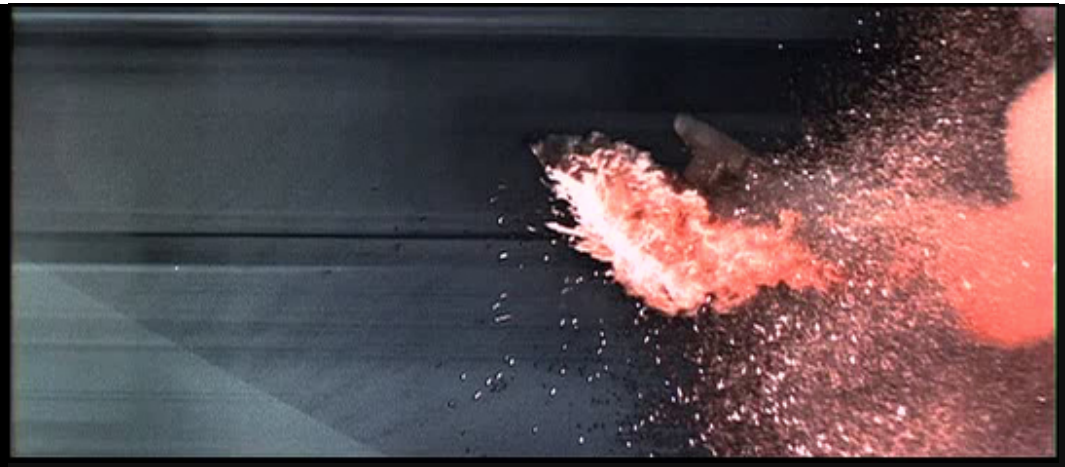


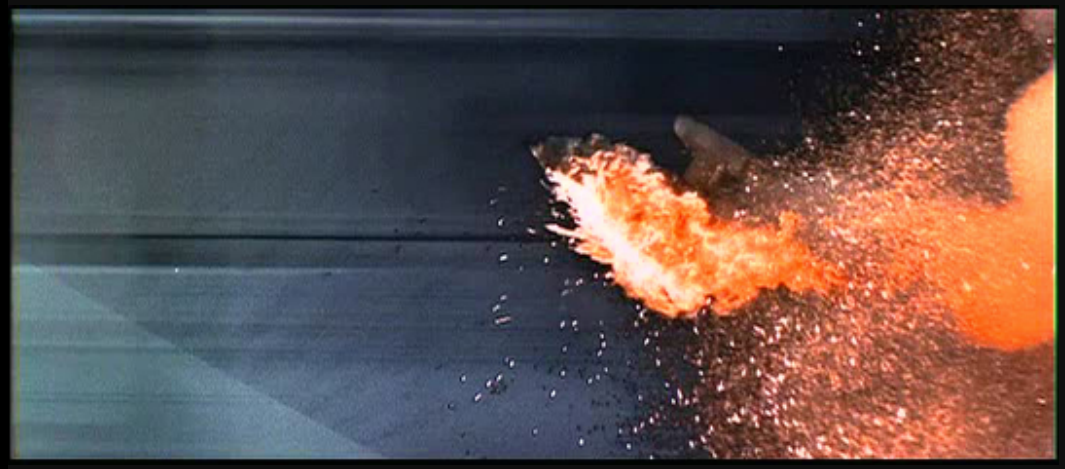
Similar blue opticals.



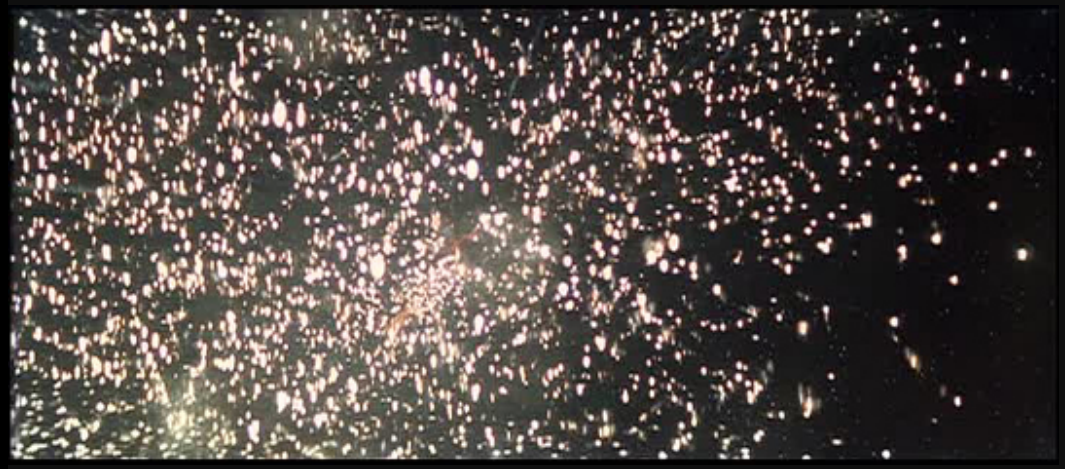


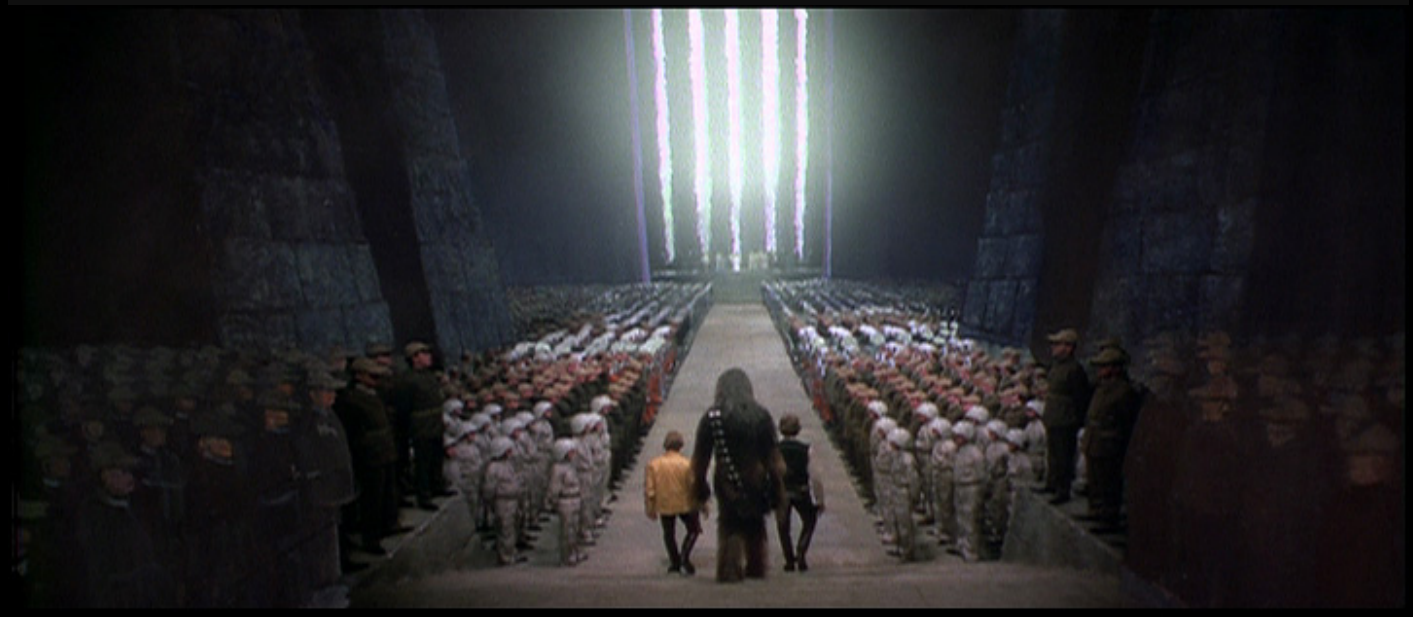
The background here is printed yellow-shifted so that it looks brown. The foregrown piece with Wedge has a bit of blue or green in it too. The red from his flightsuit is bleeding, but that's just because of the video.





This shot was recomposited in the SE to get rid of the very visible composite matte which did not fill the whole screen (you can see the edge of it on the bottom left).





Return to the previous page for Empire Strikes Back.