

PUSH/PULL

Cross Processing

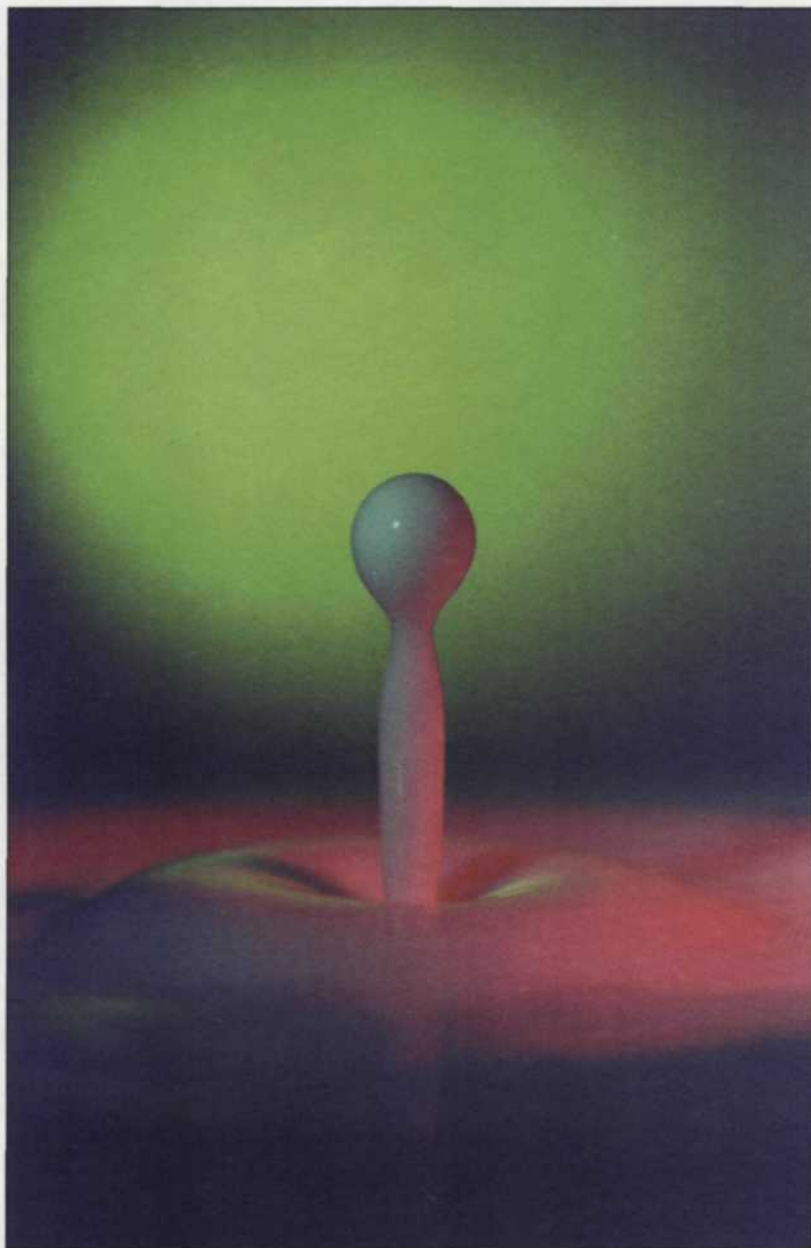
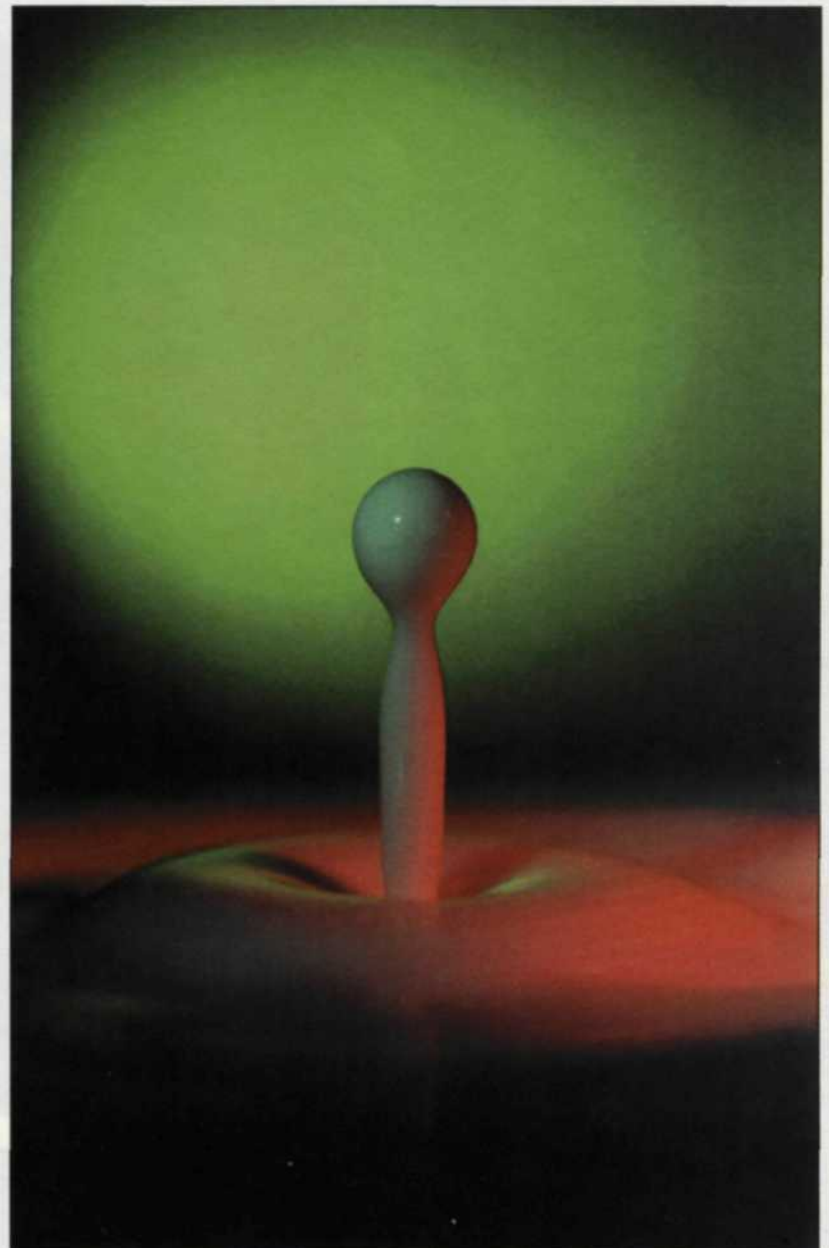


Image 1: Color negative (ISO1600) pushed to ISO 6400



Gamma corrected negative.

Many years ago when we first learned how to push film, it was considered a last resort process. When you really screwed up a film shoot and set the camera wrong, or you needed film speed beyond what was available in the marketplace, you increased the development time. Then you crossed your fingers and hoped for the best. The results generally were close to unacceptable, but that was your only choice.

Since then film technology has greatly increased and several brands of high speed negative and slide films are available. Photographers now have options, so you would think that the demand for pushing would decrease. Wrong! As with anything in photography, when you set a limit on film speed, photographers want it at least two stops faster. As in the past, they continue to push film to the limits and beyond.

Jack and Sue Drafahl

PHOTOGRAPHERS OFTEN assume that pushing a roll of film is as simple as changing the film ISO and pushing the shutter. The photo lab will push process the roll and magically-correct exposures will appear. Right? That might be so if we lived in a perfect world, but since we don't, good communication between the photo lab and the photographer is critical. Since most photographers today don't process their own film, it ends up being the lab tech's responsibility to educate them about pushing film.

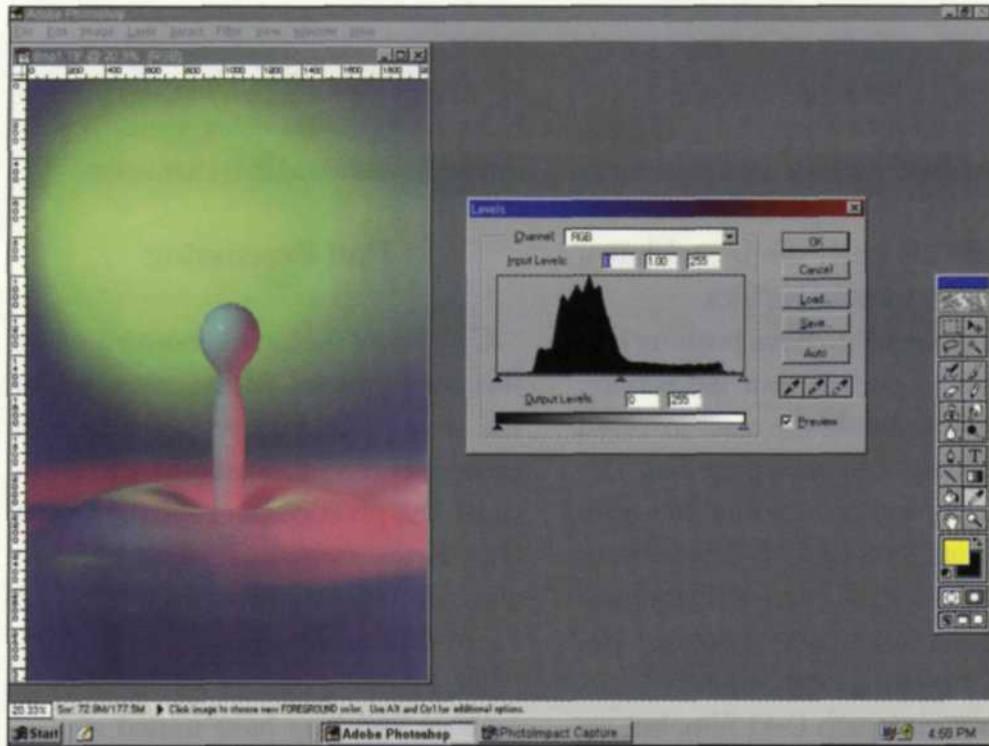
The first point that you must get across is that pushing is not an exact science. Each type of film pushes differently and mixing different types in one processing run can even be a problem. In addition, new films come out every few months and each reacts differently to pushing in E-6 chemistry. So, there is no way to set a push process in stone because there are so many variables.

The photographer should also understand that pushing does have trade-offs. Grain and contrast does increase. Shadow detail will also start to decrease as the push becomes greater. We have found that film pushed one stop has little change in image quality, while the two stop push will start to have a slight decrease in base density. In most, the D-Max level leans towards the red and will no longer have pure blacks. After considerable testing with the push process, we feel that when pushing film beyond two stops the customer should be warned that the results may be less than they expect.

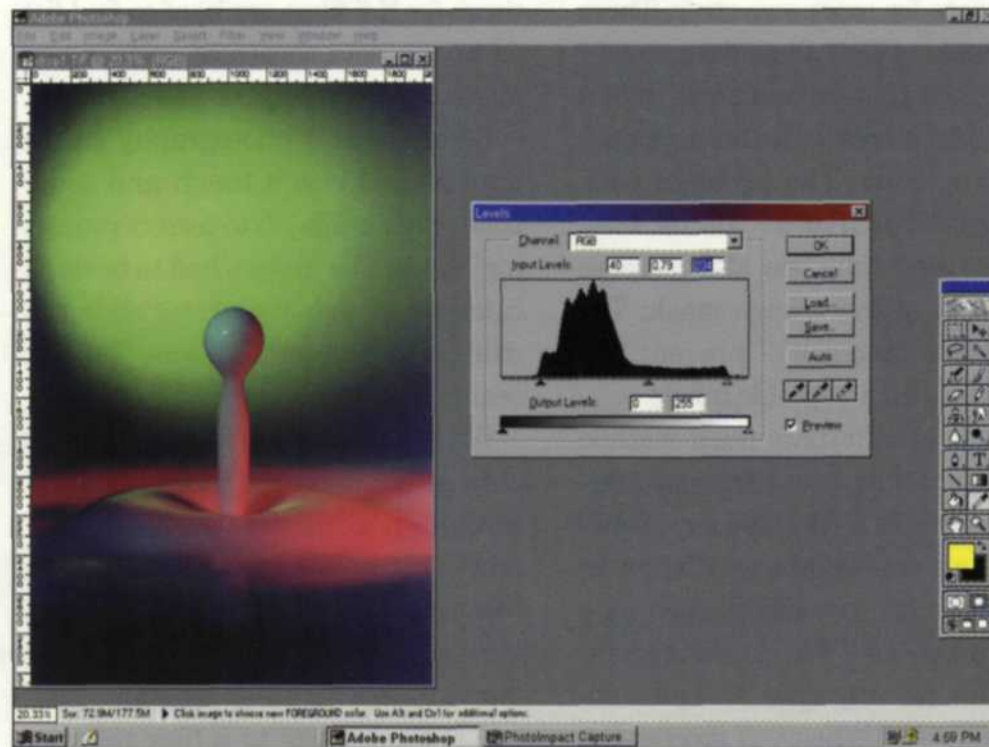
This is where samples of pushing film will come in handy. If you are seriously considering adding push processing as a service, you will need to run a few tests with several of the popular brand names. Keep them handy and label them as to their level of push. Make sure you use the same subject for the tests and always use a roll of normal processing as a control. Kodak and Fuji both have slide films designed for pushing and have recommended starting times. Remember that these are just a starting point and you should run tests before running a specific job through a push process.

If a photographer has several rolls of film to be pushed, you might recommend that they shoot an extra roll for testing purposes. The same subjects should be shot over and over so that you can break the roll into two or three processing runs called snip tests. Process the 1/2 or 1/3 roll using the push time recommended for that push level. Show it to the photographer and if an increase or decrease is necessary, run a second snip test.

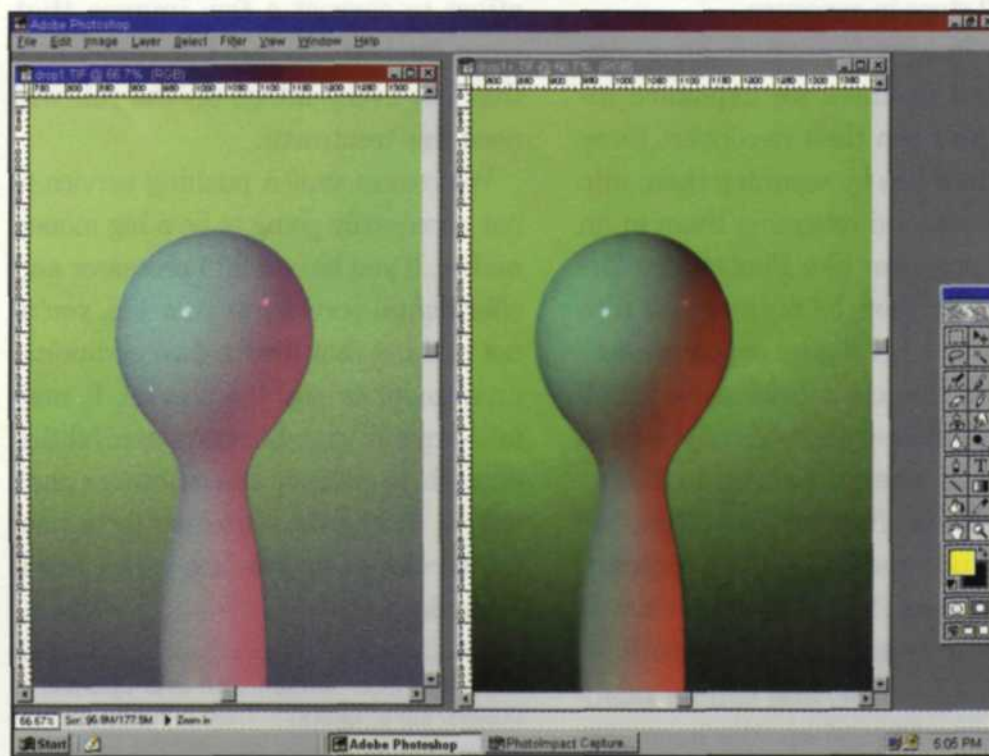
We also recommend that you keep a push log book of customers who push film on a regular basis. Note the type of film they shoot and the best pushing time for their film. We know one famous wildlife photog-



Color negative (ISO 1600) pushed to ISO 6400



Screen shot of Image 1 Gamma correction



Before and after grain reduction to Image 1



Full image at normal processing



Full image at 3 stop push processing

rapher who shoots 300+ rolls of Velvia at a time and pushes them all one stop. He has to have consistent control, so he works with a photo lab that understands his push needs and has a specific push time for his film.

If you do decide to have pushing and snip tests as part of your lab service, you should evaluate the costs involved before adding it to your price list. The cost will depend on whether you have to stop your standard E-6 process to make these special runs or if you have a smaller rotary tube processor designed for making push runs.

You can also push C-41 film, but we usually find that the 6-7 stop latitude in color negative films is enough to compensate for most any error. There are a couple of C-41 films designed for pushing, but they demand less than a one minute increase in the developer processing time. The problem with pushing C-41 is that as you increase the processing time you also increase the density of the orange mask. Too much development will prevent you from getting an acceptable image.

There is an alternate push method for slide film that uses a cross processing technique in C-41 chemistry. Cross processing can be accomplished in most single use processors such as a rotary processor. We do not recommend this for any type of replenishment processor. When you process E-6 slides films in C-41 chemistry, the resulting images are negatives pushed from 1-2 stops in exposure.

These images do not have an orange mask but do have an exposure increase. You can then re-convert these images to slides by scanning them into a computer, and reversing them in an editing program like Photoshop. The images can then be output to a film recorder or other digital output device.

We use this cross processing for all our EIR infrared slide films. We have found that when processed in E-6 as designed, the film has less than 1/2 stop latitude and is very high contrast. If you process it in C-41 chemistry, it is pushed 1 stop, has a latitude of more than 2 stops, and can be easily reversed in Photoshop. We have also used this cross processing to salvage

old out-of-date slide films that would have had drastic color shifts if processed in standard E-6 chemistry.

Pull Processing

Up to now we have concentrated on the push process. At the other end of the scale is the pull process. The pull process is rare and usually occurs because the photographer set the wrong ISO on the camera. In most cases, a one stop pull will have little effect on the overall quality.

The resulting images will be lower in contrast and may have muted whites. A two stop pull is not recommended as image quality is hard to maintain. Pull times for E-6 films are hard to find listed in any data sheets, so some experimenting will be necessary.

Before digital photography gained approval, it was a tough and sometimes impossible job to correct processing errors. The images had to be duplicated on a higher contrast slide film using color correction filters. The success rate was quite low.

With digital photography, it is as easy as scanning the image into your computer, adjusting the D-max red level or contrast control and saving the new image. You can even reduce the grain size with a variety of tools found in most editing programs. Output is then made to a film recorder, inkjet, or other digital output device. This might sound like a lot of extra effort to correct a few images that were pushed too far, but remember that not every image on the roll will need this treatment.

We realize that a pushing service is not necessarily going to be a big money maker. If you have a film processor and offer digital services in your lab, you're not making that much of an additional investment to add the service. It may just expand your business capabilities enough to attract the photographer who is frantically searching for a new full service photo lab. You never know if you don't try!

Jack and Sue Drafaahl own and operate a custom lab in Oregon. They are also professional photographers, specializing in underwater photography.