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### **CLN 18 will be paperless!**

Future issues of Camera Lens News will be distributed electronically by e-mail and via [www.zeiss.de/photo](http://www.zeiss.de/photo). This will enable us to bring news and helpful information to you much quicker. And we can use color, and illustrations like photos and graphics, all of which will improve the value of CLN significantly.

Please make sure you are on the mailing list. Register at no charge on our website [www.zeiss.de/photo](http://www.zeiss.de/photo).

### **DigiPrime® lenses take Hollywood by storm**

Once the first prototypes of the new Zeiss DigiPrime® lenses became operable, and the first demo footage was shot by Jeff Cree of Sony and Michael Bravin of Band Pro, in the Oberkochen region and in Munich, the DigiPrime prototypes went to Hollywood. Upon first evaluations and bench tests at major Hollywood rental houses, enthusiasm built in the cine world. Key industry persons commented that Zeiss had done a very good job on these new lenses. Some even see Zeiss DigiPrimes as the optics which will enable 24p digital cinematography to overcome the last obstacle keeping it from being fully accepted as a valid tool in the world of cinematography.

Orders for the new DigiPrime lenses were placed in encouraging quantities and without hesitation. One

customer immediately wanted five complete sets. Several others ordered three sets each – just to begin with.

Other centers of motion picture production also immediately expressed their eagerness to make Zeiss DigiPrime lenses available to their customers as soon as possible: Chicago, New York, Vancouver, London, Paris, Milano, Munich, Stockholm, Seoul, Tokyo will also offer Zeiss DigiPrime lenses soon after deliveries start in September 2002. More details are available at [www.digiprimes.com](http://www.digiprimes.com)

### **Fairburn on DigiPrime lenses**

B. Sean Fairburn, SOC, is a HD Cinematographer from Los Angeles, California. Sean is known in the industry as one of the most experienced HD cine experts, having been the director of photography on several commercials, TV productions, and worked on recent feature films like "Windtalkers". He was one of the first cinematographers to use Zeiss DigiPrime lenses on a real production. This is what B. Sean Fairburn has to say about his experience:

"Thanks for giving me the opportunity to share with the world my enthusiasm for the Zeiss DigiPrimes. I had the opportunity to shoot the Zeiss DigiPrimes with a project I was doing for the US Marine Corps which demanded the finest quality possible from the HD Medium. Until the Zeiss DigiPrimes, High Def lenses have been the weak link in the chain. Common problems in most all lenses are chromatic aberration, breathing, lens color shift, port holing, sharpness and best performance between a T-2.8 and T-5.6, and inconsistent back focus.

"Zeiss DigiPrimes are not only the best lenses I have ever seen in HD, but the best lenses I have ever seen. Zeiss lenses have no chromatic aberration, do not breathe, are pure and natural in

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color temp, pass even light all the way to the edges of the frame at every stop, and are sharpest at a T-1.6, however, every other stop still outperforms all other lenses as well as a revolutionary back focus system.

I make very deliberate choices with field of view and T-stop, often at extreme ends of the spectrum. The Zeiss DigiPrimes give me consistent excellent performance across its entire range. The photographic choices I like to make shouldn't be driven by limitations in my lens, and now, with the DigiPrimes I have a greater range of creative options without compromising quality. I hope this helps get the truth out."

### ***How many Zeiss/Arri ULTRA PRIME cine lens sets are available for rent?***

In a recent survey Zeiss wanted to get an overview of how many sets of Zeiss/Arri Ultra Prime lenses for 35mm cinematography are available for rent, now that they have been on the market for 3 years.

The result: Almost 500 sets of Ultra Prime lenses are now available for rent all over the world, about half of this quantity is stationed in North America in premier locations like Los Angeles, New York, San Francisco, Vancouver, Chicago, Toronto, Florida, and others.

Impressive inventory is also ready for rent in Europe and Asia, locations being Munich, London, Rome, Paris, Tokyo, Berlin, Prague, as well as other main regions of motion picture production, like India, Egypt, Russia, and Poland.

With two newly introduced lenses, among them the highly appreciated 12 mm, the Ultra Primes are the largest set of Super 35 mm prime lenses ever available to cinematographers, offering 15 different focal lengths ranging from 10 mm to 180 mm.

As cinematographers are becoming increasingly familiar with the particular

strengths of the Zeiss/Arri Ultra Prime lenses – their compact size, very high close-up performance, constant center of gravity due to genuine internal focusing designs, durable service friendly construction – and as more focal lengths appear in the range, the demand for Ultra Prime lenses is growing and production numbers continue to be high.

### ***Lens Testing – Which films are in use at Zeiss, and why?***

In the course of camera lens application testing, Carl Zeiss strives to gather working experience with most films that are currently important to still photographers. Right now some 40 different film types, mainly medium format roll films 120 and 220, and 135-36 films, but also APS and 4 x 5 including instant films, are in use with Zeiss lens testing activities of all kinds.

One area of particular interest is lens resolution testing. Any film used for this purpose must offer a resolution at the upper end of what can be achieved in general photography today. And the film should offer its resolution without noticeable variation due to film processing. For the latter reason we first searched the market for a film which could be developed in one of the two standard processes, E-6 or C-41, which are available almost everywhere on the globe. As a consequence of this requirement we concentrated on color films.

The highest resolving film we found in 1996, when we started our current research, was Kodak Ektar 25 professional color negative film. Kodak claimed that this material resolved 200 linepairs per millimeter (lp/mm) and we achieved this resolution reliably and consistently with many Carl Zeiss lenses. Sadly, Kodak discontinued this film in 1998.

So we switched to Fujichrome Velvia in 1999 which we found to

resolve 160 lp/mm, exactly what Fuji claims.

Also, we examined Agfaortho 25, an orthochromatic black & white film from Agfa, featuring enormous resolving power and virtually no grain. Testing this film, we reached beyond 250 lp/mm using Hasselblad cameras with the lenses Zeiss Distagon T\* 3,5/60 and Zeiss Superachromat 5,6/250. However, Agfa has discontinued this film in the meantime.

Also, we examined APX 25, a low speed black & white film, again from Agfa. We reached 200 lp/mm. Agfa claims exactly this figure for APX 25. This film was also recently discontinued, but we managed to secure sufficient stock before it was too late. In general, we found that figures about film resolution, as given by manufacturers Agfa, Fuji, Kodak, are reliably accurate.

Film manufacturers use special standardized lab techniques which include high resolution microscope optics to generate these figures. At Zeiss, we use photographic techniques similar to normal pictorial photography including commonly available cameras with Zeiss camera lenses and achieve the same resolving power figures. So the resolving power, as stated by the film manufacturers under lab conditions, is not just of some theoretical value, but it can be achieved and utilized in real world photography.

As we keep testing new film types as they appear on the market in order to find those that are best capable of recording the rich details that can be imaged with Zeiss lenses, we find a trend among the leading film manufacturers towards higher resolving powers combined with increasing film speed. Today, it is possible to resolve 150 lp/mm with 160 ISO color negative films. In black & white, the same resolution can now be had at a speed level of 400 ISO!



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We will report about our findings in future issues of CLN. This will enable CLN readers to make use of today's sharpest films.

## ***Achieving top sharpness with red filters on telephoto lenses***

When using telephoto lenses in black & white landscape photography, red filters are often used to cut through haze and produce far reaching vistas with stunning clarity.

Red filters used for this purpose, absorb significant amounts of light, requiring exposure compensations of three to four stops, which lead to rather slow shutter speeds. They also darken the viewfinder image considerably. Therefore, some photographers prefer to compose and focus their viewfinder image at full brightness and attach the red filter only just prior to releasing the shutter.

With the exposed films back from the lab they are sometimes disappointed with the sharpness they have achieved, although they used a sharp fine grain film of 100 ISO or even lower, and they made sure they locked up the mirror before tripping the shutter. Has something gone wrong? Was the tripod not good enough to avoid vibration at shutter speeds around 1/15 of a second? Did the wind shake the tripod and camera? Was the red filter of insufficient optical quality? Was it scratched or somehow dirty? Is something wrong with the individual telephoto lens? With the b & w film development? With the atmospheric situation on that day? Instable air? Was the exposure grossly incorrect?

How to identify the cause and what to do in order to prevent it from happening again next time becomes a key to further success. Almost any of the abovementioned reasons could have caused the problem of insufficient sharpness, or could have contributed to

it. But there is another suspect, not yet mentioned:

In theory, photographic lenses ideally focus all details of an object plane into one corresponding image plane – regardless of color. In real world optics, however, color does make a difference. The usual "achromatic" lenses cannot focus more than two different colors of an object in the same image plane, simultaneously. If only two colors can be perfectly in focus at the same time, all the others must then be slightly off. We are used to finding an "infrared index" on almost any lens. This in itself is a hint, that focus settings have to be corrected when dealing with the long wavelength end of the spectrum, in the red colors. This need for compensation is usually small with wideangle lenses; but it drastically increases with longer focal lengths, especially telephoto lenses.

To state it clearly: Focusing an achromatic telephoto lens of 200 mm or more in white light, then taking the photo through a red filter without correcting the focus, will unavoidably lead to less than convincing sharpness. Stopping the lens down is not sufficient to cure this problem. These statements even apply to many "Apo" lenses on the market.

There are three ways to get the sharpness really right when taking photos with a red filter:

1. Make sure the red filter which will be attached for taking the photo will also be attached in the same way during focusing. Then the focusing result, which is found visually, is also correct for the exposure on film.

2. Use an estimated correction index. If using the red filter during focusing is not convenient, an index half way between the normal index marked on the lens and the infrared index could be used for this purpose.

While not as precise as method #1, it will provide better results than no correction at all.

3. Use a Zeiss Superachromat lens. Because of their unique optical properties, these remarkable lenses do not need any of these considerations or corrections or work-arounds. Focusing can be done without filter and the focus position found can be used without correction, leading to perfect results.

One test with such a lens is sufficient to demonstrate the real difference between an ordinary achromat and a fully corrected Superachromat. If the difference is so readily visible under these specific conditions, just imagine what the difference could be in other applications. We invite you to see for yourself.

## ***Publisher's Imprint***

Camera Lens News

A newsletter for all who use, buy, sell, like, report about and are interested in Carl Zeiss camera lenses.

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