Therapy for Exposure Anxiety

By Joe Englander ©1994

It's been a gray day, but now the clouds are breaking up. Shafts of light are running across the mountains, and the low-lying clouds are picking up color. It is then that the anguished cry of photographers begins to build to hysteria: What are you metering at? What do you get for a reading? What's your exposure?

The cry begins deep in the photographer's soul with the anxiety of not getting a properly exposed transparency or negative at the critical moment when all the aspects of the image are coming together. The anxiety itself is twofold: distrust of self and distrust of the meter. The therapeutic road to calm resolution involves a couple of simple tests that will very accurately, in about an hour, calibrate your meter and your film, whether you're using color or B&W.

I check my meters for accuracy not only regularly, but constantly. It is actually very simple. I want to know two things: Is the meter accurate, and is it linear. That is, does it give a reliable reading, and does it do it at all levels of illumination. When I first evaluate a meter, I also check its spectral sensitivity, and you should, too, because you'll probably be surprised.

To check for absolute accuracy, I need a constant light source. Fortunately, on clear days between the hours of ten and two, the sun provides an extremely constant and consistent light source. By placing an inexpensive Wallace Expo Disc (1-800-446-4274) over my spot meter, or camera lens if I'm using a TTL meter, pointing at the sun and reading the result, I can tell if the meter is accurate. An Expo Disc is a piece of diffusion plastic sandwiched with a special multilensed light distributor, the main purpose of which is to turn your reflective in-camera or spot meter into an incident meter. But a side benefit of this little gadget is that it allows you to "zero" your meter. Each disc comes with a calibration certificate. When the meter is pointed at the sun with the disc in place, you should get a reading at ASA 100 of *f*/16 @ 1/125 second. Any variation from that reading is the amount your meter varies from accuracy. Wallace claims that the reason his disc is not generally sold through stores is because every camera or meter purchaser could test the accuracy of his intended acquisition before leaving the store, and most stores can't afford to lose that many sales.

In a recent letter to me, Fred Picker suggested that meters ought to be checked out once a year. Since it is easy to do, I check my meter almost every clear day I'm out making photographs. I don't want to find out after I've made my exposures that I've knocked my meter out of calibration, that accumulated dirt has caused fluctuation or that some battery defect has caused it to drift.

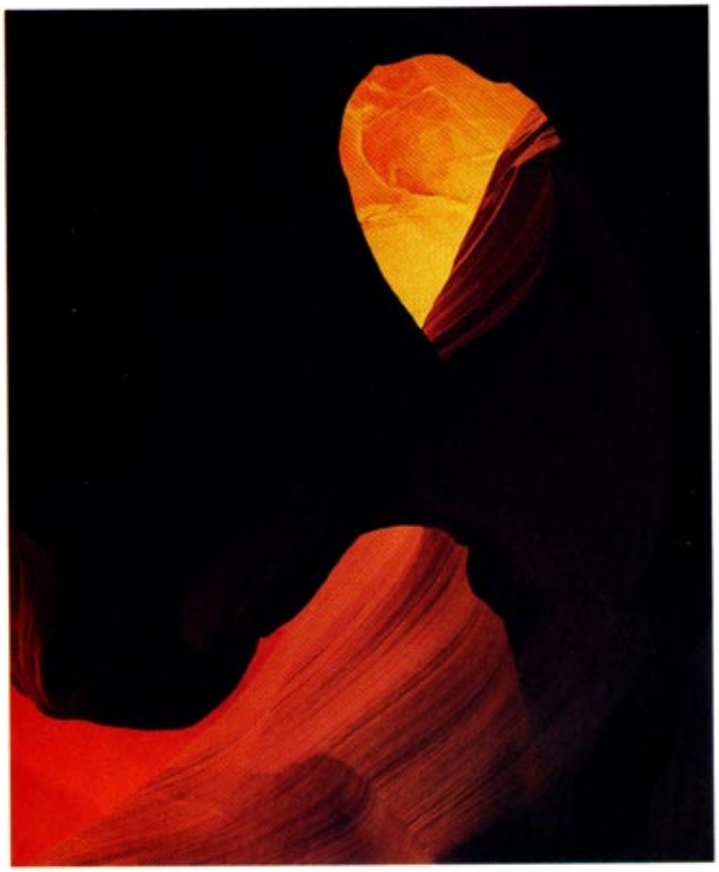
Using the Expo Disc during workshops, I've found meters supplied by the same distributor

Magnolias, West Austin, 1990. The range of tonality, from darkest leaf in shadow to the smooth white of the flower petals, must be placed exactly at the time of exposure. Having a meter calibrated to your film eliminates a major source of error.

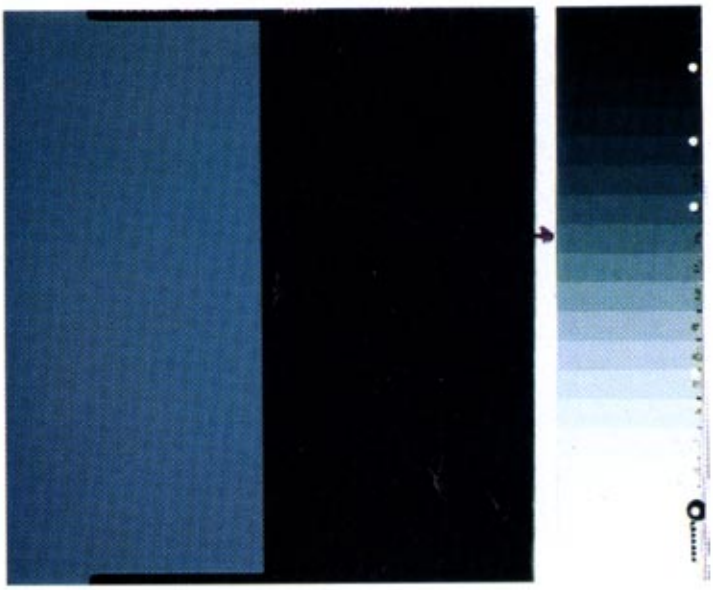
to vary by as much as two stops. For color users, particularly with transparencies, unwitting variations of even 1/3 stop can be catastrophic. Although some believe that bracketing is the solution to inaccurate meters and sloppy metering, and although some studio photographers do bracket in order to exactly match product colors, most professional landscape and stock photographers don't; it's too expensive not to know what you're doing.

To check for linearity, you'll need three or four 0.9ND filters, preferably gels or polyester. Each of these filters cuts the light by three stops, so depending on how many filters you use, you can check the linearity of your meter or camera on a tripod and point it at the sun. Take the Expo Disc reading. It should be EV 15 or *f*/16 at 1/125 with EI 100, but even if it isn't you can continue the test—just make a note of what your reading is. Place a .9ND between the Expo Disc and the meter. The new reading should be exactly three stops less. With another .9ND filter, it should drop by another three stops, and so on. With four .9ND, you'll be down around EV 3 or *f*/2.8 at one second. If your meter reads high in the low values, it may cause you to underexpose your shadows; if it reads low, you may overexpose them.

You need your meter to be linear over about ten stops, because that is the range you are likely to read outdoors. If your meter is not linear, you should have it checked by a competent camera repair shop. If your meter reads high or low overall, don't worry about it, because this procedure will compensate for it.



GOLDEN EYE OF THE COYOTE, SLOT CANYON, 1993. THERE IS NO ROOM—AND NO ROOM FOR MISTAKES—WHEN WORKING WITH COLOR IN THE NARROW CONFINES OF THE SLOT CANYONS. WITH SUCH HIGH-CONTRAST SUBJECT MATTER, THERE IS ABSOLUTELY NO ROOM FOR ERROR IN PLACING (AND ACHIEVING) TONALITIES: A 1/3-STOP OVEREXPOSURE WOULD WASH OUT THE GOLD; 1/3 UNDER, AND THE LIGHT IS SQUEEZED FROM THE IMAGE.



SHEET FILM STEP WEDGE AND MIDDLE GRAY: THIS VELVIA TRANSPARENCY SHOWS THE RESULTS OF EXPOSING 1/3 OF A SHEET TO A WALLACE DISC ACCORDING TO MY ZONE VI PENTAX METER SET TO EI 50. ANOTHER 1/3 WAS EXPOSED TO A 1/2-STOP STEP WEDGE AS DESCRIBED IN THE ARTICLE. THE INDICATED STEP MATCHES THE DISC EXPOSURE. IT IS VERY EASY TO SEE WHAT THE FILM'S RANGE IS AND TO ACCURATELY EXPOSE THE FILM WITHIN THE RANGE.

The next step in achieving absolute accuracy in metering is to expose one piece of film with your lens covered by the Expo Disc. This exposure doesn't have to be pointed at the sun, however. Just meter a scene with the disc covering your meter, and while pointing your camera at the same scene with the lens covered by the Disc, expose according to your meter set either at your usual EI or the manufacturer's suggested EI. *This exposure should produce an absolutely even, middle-gray exposure.* Incidentally, if you're using color film, this frame can be very useful for color-balancing your film. With transparencies, if the gray isn't exactly the color gray you consider "neutral," you can retest adding filters to achieve "neutral" gray. With color negative, a "gray exposure" at the beginning of each roll will provide the color balance necessary for the entire roll—if the roll was shot under the same kind of lighting.

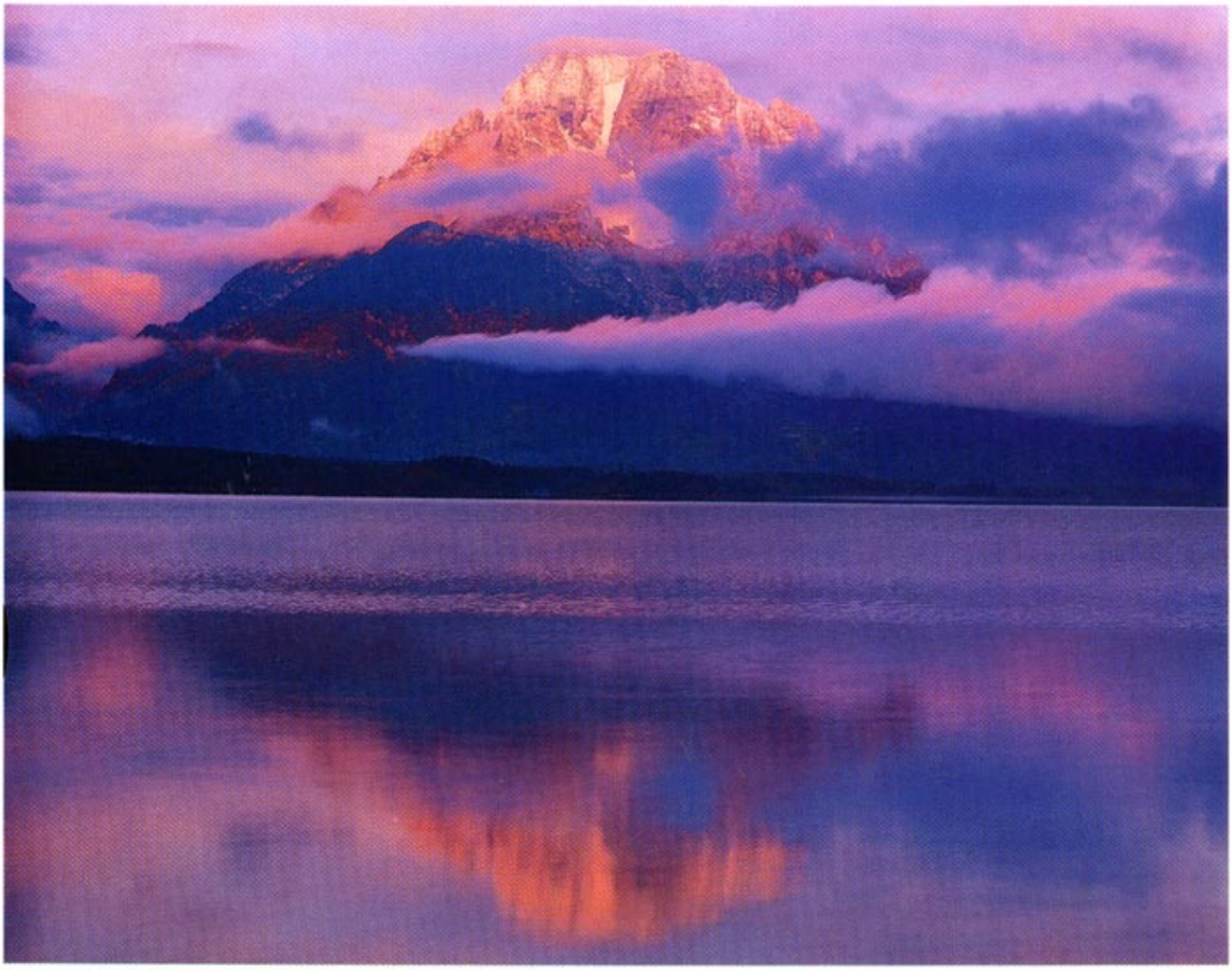
Now, in the darkroom (this is truly a CAMERA & DARKROOM procedure!), using a 21-step density tablet, make a contact print onto the same kind of film to be developed in exactly the same manner as the Expo Disc exposure. Step tablets produce 1/2-stop steps on your film. Density tablets are available as Stouffer T-2115, Fuji product #0910000 or Kodak #15203398. The Stouffer (800-779-1712) is available from Texas Type

(210-732-5116 or 800-292-7091) for around $12. A contact print is made by laying the tablet in direct contact with the emulsion side of the film and covering them both with a piece of clear glass.

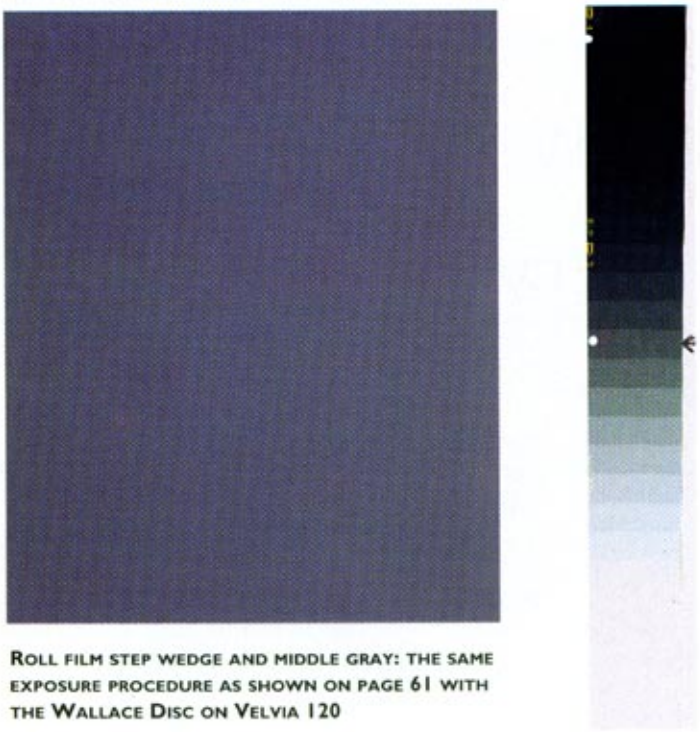
Under an enlarger or other light source adjusted to produce a meter reading of *f*/4 at one second at the EI of the film when reading a white card with all the room lights extinguished, expose the film for 7/10 second. If you are exposing daylight-balanced color film, you can adjust the color temperature of the light source by using a color-compensating filter such as an 80A to convert tungsten illumination to a daylight spectrum.

If you're working with negatives, contact print on the same sheet both the negative of the Expo Disc and the one produced by the step tablet; if you're working with positives, you can work directly. Compare the Expo Disc frame with each step on tested film until you find one that matches. Mark that step. The entire strip is like the keyboard on a piano: Those are the tones available to you; they're your entire range of tones, from lightest to darkest. Your meter will produce middle C, which you've marked. By counting, in 1/2-stop steps, you can see exactly what tonality or density you will get by under- or overexposing compared to that midtone. You can tell exactly what the range of your film is, how many 1/2 stops of latitude you have. You don't have to work with the old saw that transparency film has only five stops of range; you can see exactly how much range your film has and whether the middle gray it produces is really in the middle of the scale or not. Some transparency films, for example, have only one full stop below the midtone, but two or three above it. You'll be able to see just how dark midtones and shadows are and how high up the scale you can place a highlight before it blows out.

Now, if your meter were reading high or low overall, your midtone would be lighter or darker than exactly middle gray, and the position that the gray you marked occupies on the tone scale you've made would be higher or lower than exactly middle gray. If you leave your meter's EI set as it was when you made the test, then you know that if you meter an object, expose according to the meter and develop as in the test, that object will be the density that the Expo Disc produced. If you open up or close down after you've metered the object, the tonality will shift up and down the tone scale in 1/2 stops by the same amount as the change you instituted. So even though your meter may not be perfectly accurate, as long as it is perfectly linear you'll be able to make perfect exposures without bracketing and



***Sunrise Colors, Mount Moran, Grand Tetons*, 1993. If your meter and film aren't precisely calibrated, images such as this, which last only a fleeting second, will be gone before you've found the right exposure.**



ROLL FILM STEP WEDGE AND MIDDLE GRAY: THE SAME EXPOSURE PROCEDURE AS SHOWN ON PAGE 61 WITH THE WALLACE DISC ON VELVIA 120

without anxiety. Any errors in exposure will be errors of operator judgment in pacing tonality—all the responsibility and all the credit will be yours.

You may also be wondering about metering with filters and whether your meter responds to all colors based on brightness rather than on color. There are many old wives' and young mens' tales about metering filtration. The easiest way to know is to find out pragmatically. Put the filter between the Expo Disc and the meter, and note the change in exposure between the filtered and nonfiltered reading. That is your hypothetical filter factor. Now make two exposures through the disc, one with the filter and one without, using exactly what your meter tells you to. As far as the meter and the filters are concerned, the Expo Disc is a perfect gray card. If your meter is capable of reading through filters, a neutral gray should remain the same density after a filter is added. The two exposures should produce results that are exactly the same, or your meter lacks the ability to read through filters and is probably lacking in even spectral sensitivity.

To really check the spectral sensitivity, you need to use six filters: red (#25), green (#58) and blue (#47) and at least 150CCs of cyan, magenta and yellow. By reading and then exposing two pieces of film for each part of the spectrum, you'll know if your meter's sensitivity to color is linear. Take a reading and make an exposure through the magenta and the Expo Disc; then do the same with the magenta, the green and the Expo Disc. The two resulting densities should be the same or very close, because the addition of the green to magenta is simply neutral density, but the magenta is required to eliminate the cyan and yellow components from the meter's spectrum. Do the same with cyan and red, and yellow and blue.

These procedures, particularly checking spectral sensitivity, may seem involved, but even with development the results will be known in a couple of hours. And the results, considering how much we depend on our meters, are critical. If you take your meter through all aspects of these procedures, your faith in your meter will escalate. You will have calibrated your meter to the same critical tolerance you require from your other photographic equipment.

Joe Englander has been photographing and exhibiting for the past 20 years. Working primarily in the 8x10 format since 1980, he has been producing both color and black-and-white photography for commercial and artistic projects. Joe has been teaching photographic workshops since 1981.