PHOEBE PASCOE - MULTIPLE EXPOSURE SETTINGS

The workings shown below are the result of research into “traditional” film camera exposure settings and in particular focused on large format camera use, and were the basis for the settings I used with the Canon 1Dxiii. In brief the process for calculation the exposure settings for in camera multi exposure image creation are as follows:

Step1:simply divide your indicated exposure into two equal parts using the through the lens spot and overall meter readings through the camera. By taking a number of spot meter readings within the image sing the live view facility on the rear touch screen to take specific readings through out the entire image without moving the camera on the tripod I was able to understand the differences in light levels around the image.

f/16 @ 1/125 = 2 exposures of f/16 @ 1/250 (or, if you prefer, 2 exposures of f/32 @ 1/125)

Step 2: Run the derived exposure through the aperture and shutter speed equivalents:

f/16 @ 1/250 =
f/32 @ 1/125 =
f/45 @ 1/60 =
f/64 @ 1/30 =
f/90 @ 1/15 =
f/128 @ 1/8 etc.

So, if you want one exposure at 1/8 sec, you would need f/128 for that (or use a larger aperture and an ND filter to achieve the same thing)

For the second exposure you'd need f/45 (or, again, the equivalent with an ND filter).

I find this easy enough to do on my exposure record or on my head that I don't bother with calculators/spreadsheets. You probably won't need to either.

With very long exposures and with scenes that are moving or have people/cars, etc. moving through them, I often use intermittent exposures. A 30-sec. exposure gets broken down into as many other units as needed to arrive at the 30 seconds total time (often in 5-10 instalments).

Extending the same method as above, you can divide exposures into ratios, e.g., 1:3, etc.

Step1:simply divide your indicated exposure into four equal parts

f/16 @ 1/60 = 4 exposures of f/16 @ 1/250

Step 2: Run the derived exposure through the aperture and shutter speed equivalents:

f/16 @ 1/250 =
f/32 @ 1/125 =
f/45 @ 1/60 =
f/64 @ 1/30 =
f/90 @ 1/15 =
f/128 @ 1/8 etc.

If I needed 4 of these to make the complete exposure, I simply combine three into one. So if I want one exposure at 1/15 sec, I use the hypothetical f/90 (or equivalent) for the first exposure.

Next combine two of the others: For example 2x f/16 @ 1/125 = f/16 @ 1/60. Now we need a quarter stop more exposure to make up the difference, which we deal with with the aperture. Final second exposure, if you want to be precise, f/12, which is one-quarter stop smaller than f/11. Since 1/3 stops are marked on most shutters, I would just use f/13, 1/3-stop smaller than f/11. The very slight overexposure would help compensate for the tiny loss of speed due to the intermittency effect.

By following the formula shown above I got an understanding of what the camera would try to do automatically if set to simply divide the total exposure into equal parts. This formed what I call the adaptive approach which would when combined give the “correct” exposure for the main focus of the image. The alternative method which I quickly discarded was to simply expose the single frame multiple times and inevitably resulted in a dramatically over exposed image.

By gaining an understanding of the theory of multiple exposure calculation I was able to adapt it to suite my own needs and the variations needed to capture an image in camera while controlling which part of the image held prominence.

Obviously this is not an exact art and there was some degree of trial and error involved however knowing the theory behind multiple exposure calculation I was able to create images in camera that only required minimal colour grading to complete.