

Nikon D3 & Aquatica Housing

By Charles Hood

One of the issues in this digital age of imaging is that there are a lot of so-called experts out there, all with different views, trying to convince us by using buzz words that their product is the best on the market. Technology per se is generally difficult for the layman to fully comprehend so the boffins rely on the marketing guys to create the spin and put this techno gobbledgeek into what I call gizmo speak, so the end user is convinced that a certain feature is crucial to producing better images than his fellow snappers.

Let me give you a simple analogy. My Landcruiser has a 4.2 litre engine, a Porsche Boxer by comparison has only a mere 2.7 litre engine, both deliver around 240 horse power so which one is quicker? We all know the answer but perhaps to someone who knows nothing about cars given only the engine size as information they would probably pick the vehicle with the larger engine. So to some extent features and specifications need further investigation. Yes, you have to be somewhere in the right area with pixel count, high quality sensor and good

quality glass, but at the end of the day it is how the image looks that is of the utmost importance. The quality of light capture, processing of the resulting electronic bits and bytes and final output is what counts.

When Nikon decided to go 'full frame' they made a big deal out of the whole issue. But what they did was concentrate on showing their potential punters the images the D3 produced rather than on hyping up the bells and whistles. Technology was largely left to one side, instead their website was full of high resolution images that one could download and feast one's pork pies on at home on one's computer. The results were simply outstanding. With the camera set at high ISO's, which would be simply not useable on previous cameras, the D3 was razor sharp with not a hint of grain. This single feature alone convinced me the D2x had to go (which successfully sold through UWP magazine) to be replaced by the D3.

At this stage let me point out some of the downsides of using full frame. For those reading who used to shoot on 35mm film you'll be familiar with some of these issues



but for those who have only known digital they may come as a good reason to remain with smaller sensors. Full frame reduces depth of field, so for macro photography it's back to using f22 or even higher. Also a much greater accuracy from the housing manufacturers is required, particularly with domes. If you try to simply insert a spacer – that happens to be physically about the right size, so you can use a wide-angle zoom with a conventional port, it will result in blurred edges and at certain focal lengths a soft image.

Finally lenses are what they say they are and not 1.5x longer, this again will mainly affects slug shooters, their 90mm (effective) macro lens returns to being a 60mm (true) macro. But for me all these issues are largely irrelevant and I could return to using my Nikkor 16mm fullframe fisheye. The DX 10.5mm fisheye is good, but the legendary 16mm is in a league of its own. Also for diver shots my old Nikkor 20mm was dusted off and brought out of retirement, as too was the incredibly sharp (abnormally so) Nikkor 28mm for diver portraits. It is like going back in time, I can now use all my good old-fashioned optics that I know gave me superb results using film but now with digital. The downside is that now I have no excuses!

I'll elaborate a bit more later



With a touch of a single button all the shooting information can be displayed on the rear view screen

on about some of the D3's features that clearly put it in the premier league but before I do, a bit about the Aquatica housing. For me the choice of housing was relatively straight forward, I already had a D2x Aquatica housing, I liked it, knew all the quirky adjustments you have to make to it and I could retain the same ports.

When the new D3 housing eventually arrived, Aquatica can be a bit over optimistic with their delivery schedule, it looked quite similar to the old D2x housing. All the controls are roughly laid out the same with a few additions. Yes additions – I thought the old housing had too many controls! However, you do need more to drive the D3. The most important of which is the twin dials that let you change from single to continuous

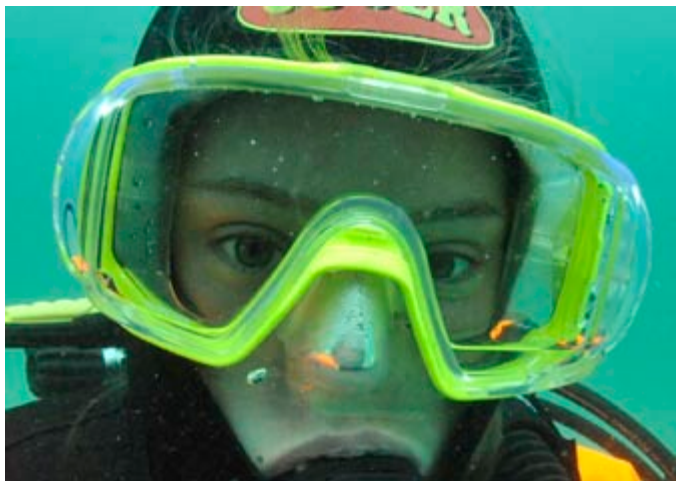
shooting – hardly important you may think, but if you keep rotating it gets you into 'Live View' (see on). Another extra feature added is a lever on the lower front of the housing that locks the port in position. This is a bit fiddly to use – especially with the large dome as it covers the button, but it does mean there is no way the port can be accidentally removed.

All other controls work well, including the focus select lever – I could never get it to work consistently with the old D2x housing. Disappointingly the top viewing window, although large and in the only position I could think of putting it, isn't great. It is virtually impossible see the shooting mode as it's right in the corner. Fortunately Nikon have the solution to this irritation. With a touch

of a single button all the shooting information can be displayed on the rear view screen – this is a feature to die for, especially when shooting in dark and/or deep conditions, furthermore the display is backlit and the digits quite large making it easy to read at arms length.

Externally the housing has a tough and scratch resistant black coating contrary to the silver one pictured on their website, and at the back and underneath are two sacrificial anodes that reduce the chance of corrosion in other areas. All buttons have large drain holes either side of them allowing easy access for fresh water in the rinse tank and quick drying.

Underwater it felt very similar to the D2x variant and it took me a



ISO 6400



ISO 12800



ISO 25600

matter of seconds to get to grips with it. The single feature I found most useful is the one mentioned above, that is camera's shooting details being displayed in the rear screen. As I shoot mainly in manual mode it's fantastic to have all this information at your fingertips rather than having to peer into the top window at the very small icons and numbers. The light meter is simply huge and allows you to accurately determine what exposure to use very quickly. But the big question is how was it at high ISO?

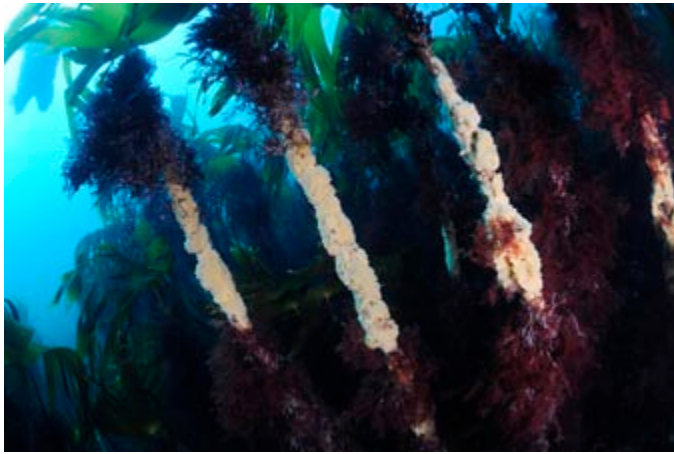
In a single word, as I'm not sure the editor would publish my expletives, stunning. At 800 ISO you just cannot tell the difference between 200 ISO. So for the macro shooters depth of field is back again by simply turning up the ISO enabling you to shoot at f22 or above, as I did after a disappointing macro dive using f11, an aperture that was OK when I previously used with the D2x. And what about higher? At ISO 1600 & 3200 there is very little noise, if shooting wrecks or larger animals it

would be very difficult to detect. At a whopping ISO 6400 noise is still perfectly acceptable for similar types of subjects. Hi1 and Hi2 are effectively 12800 and 25600 ISO respectively and yes noise is certainly detectable but perfectly useable if that was the only way of getting an image – I've seen a lot worse images printed in newspapers!

So how does the D3 do it, what's its secret? First of all, the Teflon-heads back in Japan developed a new CMOS (Complimentary Meta-Oxide Semiconductor) sensor with new optical low-pass filters (OLPF). These OLPFs are the key. On the D3's sensor there is an innovative twin-layer mechanism. Just above the Bayer pattern filter are two layers of micro-lenses. The upper ones are physically larger than the pixels below leaving virtually no gaps between it and its neighbours. In any normal camera this would be good enough, however, not good enough for Nikon. They decided that due to circuitry that runs between the pixels, they needed to add a second layer of micro-lens that

capture any light that would have otherwise not hit a pixel, ie. Landing on the circuitry instead (note this twin-layer system is not available on the D300). Once virtually every last photon has been collected these are then processed by the D3's new single ASIC (application specific integrated circuit) greatly speeding up processing power (the D2x has two ASICs making it far slower) but more importantly giving extra grunt for more tasks to be completed.

Nikon claim that the D3 has a 1.4 times improvement in dynamic range over the D2x helped by what this extra processing capacity can handle. In a nutshell once all the light is initially processed the D3's ASIC is put to work automatically correcting for lateral chromatic aberration and the effects of vignetting. Nikon have further dispensed with the old optimised image controls and colour mode options, and replaced them with a much more comprehensive Picture Control System giving you complete control over, contrast, brightness, saturation, hue and sharpness. And there's more.



f8 1/60 400ISO 16mm good dynamic range



f8 1/20s 200ISO 16mm very low edge distortion

In situations where the image has highlights as well as very dark patches the Active D-lighting can be put to use. What this effectively does is to automatically adjust the exposure across the frame reducing highlights and bringing up the shadows. This last feature can be very useful when shooting underwater where light can vary as much as ten stops. In practice it works well and certainly gave me images I wouldn't have managed to capture with previous cameras.

The only disappointment I could find is the area of the matrix focussing display. Due to the larger frame size it is considerably smaller when compared to the area of the D2x and D300. If you generally keep the main point of interest in the centre third of the frame then this shouldn't be a problem, but you can't ask it to focus near the edges. For me, shooting mainly with wide-angle lenses, I only use the viewfinder for general aiming, although if you can get close enough the D3 actually gives 100% viewing of the image. If I require more accurate framing then I switch to 'Live

View' mode. Similar to compact digital cameras the D3's rear screen can be used to view the frame before exposure. There is a drawback though to using Live View. The camera needs the mirror to be down in order to use its super fast phase-detection auto-focus. That is, it can't focus on-the-fly with the mirror up. Thus you have to slightly depress the shutter, wait until it focuses (the mirror drops) and then depress full way down to take the image. Here again if using wide-angle lenses it isn't an issue but for macro it's virtually useless, unless the subject is static. Staying with the rear display, it has to said, it's massive. Being a gigantic 3-inch 920,000 dot TFT LCD monitor it gives true VGA (640x980) resolution and can be viewed at up to around 170 degrees. It is also considerably brighter and clearer than older Nikon DSLRs.

My final useful feature that I found is that the D3 can take two compact flash cards. This means you can simply carry double the amount of memory or use the second card for either back-up (for ultra mission critical shoots) or you can store RAW files



The rear display is massive.



The D3 can take two compact flash cards.



f16 1/100s ISO800 105mm- pin sharp



on one card and JPEGs on the other. The last feature is great if you are shooting for a client onsite. You can quickly drop the low resolution JPEG card out and download the images for instant review on a relatively low powered machine.

In conclusion the D3 delivers virtually exactly what I need, Nikon have decided to go for quality rather than pure pixel count, and providing you are using the optics to match super sharp prints that would supersede that of tradition medium format are simply not a problem. The low light capabilities and wider dynamic range of the D3 over its

predecessors makes it perfect for underwater use. The Aquatica housing for me is a workhorse. It works when the going gets tough. Sometimes on a rolling hardboat it's inevitably going to slide around and take the odd knock. Also I don't particularly take good care of it, yes I protect the port as much as I can but at the end of the day its there to do a job and not look pretty on the mantle-piece. Aquatica housings appear to cope well with the abuse I give them. The controls on the D3 version I suspect have improved over the old generations, they feel a little more positive in their action. Cost wise, don't try and justify the

purchase it's simply insane – I've just put off buying a new car for another five years!

Charles Hood
charles@dive.uk.com



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