Carbon Dating

In Altered Carbon, Netflix is adding to its rich vein of sci-fi where most of the budget is on screen and most of the VFX are in-camera.

Words: Julian Mitchell
Images: Neill Xu / Martin Ahlgren

Above: The world of Altered Carbon was created in a 1000 foot long sound studio in Vancouver.
you wanted to speak to any of the departments they were all there, you just had to walk to their offices. It's like you imagine a Hollywood lot would be back in the day. It was great, as if you were prepping an episode in between blocks you could speak with the art department for instance and just walk over there. The producers and writers were also there talking about things coming up.

The really big sound stage for the street set was a great asset, as unless you pointed the cameras very high up all you could see was the blue sky. They could even push through the walls and build restaurants with fronts to continue a shot or knock out a wall on the second level and it could be a balcony to a hotel. The downside was that when they weren't shooting they had to tear the lighting down as they couldn't afford to have it in place permanently. The Netflix production model does have downsides.

FIRST TIME
We spoke to both shooters about how they shared the load and how they shot over the 11 months of Skyscapes. The two got very close (even carpooling to work) and bounced ideas off each other to the extent that they didn't need a dedicated second unit as they shot each other's episodes. They moved to show units near the end of production when it was busy.

Marky talked about the choice of the ARRI ALEXA 65 as the main camera. "We were the first episode to use the camera, now it's relatively commonplace. We needed the camera for the main unit and the second unit and we were very grateful to ARRI for letting us use so many of the 65s so it was exclusive to the show. Eventually we had five ALEXA 65 bodies at a time, where there weren't that many in the world. There was also an ALEXA Mini camera on both units which initially we thought of as a response to a broken camera, but as it turned out it was on its 4K mandate and the Mini is around 3.4K so we got very specific guidelines on its use, it had to be used less than 20% of the show but also it couldn't be used when you're holding on the shot, so if you're doing a dialogue scene where someone is doing a long monologue it definitely has to be the ALEXA 65. A quick action scene could be the Mini."

As it turned out nearly 90% of the show was shot using the 65 with the Mini being used if they wanted more than 60fps. Most of the pre-production talk however was about the huge data rate that a full-sensored ALEXA 65 outputs at 6K when the mandate is only for 4K. Both Neville and Martin really wanted to use the bigger part of the sensor, part of the look is the large format 70mm photography, so you can't get with a 53mm sensor. Neville and Martin asked another Netflix show, Ozark, also shooting in Vancouver, about their ALEXA 65s, and it turned out the difference in price for LTO tapes alone with 65s and 3K was around $100,000. They shot occasionally on the full sensor but only when post needed the extra resolution to play around with. Some of the lenses started to vignette but post still needed everything available.

RIGHT Actor Joel Kinnaman as B-camera operator Sasha Kooker, ready for more action.

BELOW Actors Lisa Chandler and Dehill Lachman with director (Episode 2 and 3) Executive Producer Nick Hurran.
Neville explains the camera choice further. “We used one of the largest remained digital cinematography cameras and before we started shooting, we went into a long period of testing which lenses would suit. The camera can shoot 6.5K images which results in a lot of data to deal with; we decided to bring that down to 5K, so it would be cheaper to post-produce. We then had a problem with slow focus using some lenses, so we looked at the Canon Cinema lenses and realised that they would cover the cropped sensor perfectly and give us the range we really needed.

“The only problem was we needed XPL lens mounts and the Cooke Primes up to now have only been available in Canon EF mount,” Neville continues. “But luckily, and because of their popularity, the excellent 50mm full-frame Canon CN-E Primes will work on just about any PL mount camera with a simple modification that can be returned to factory spec with the OEM Canon EF mount if needed.

“We ended up with two sets of the lenses from the CN-E Lummit T3 to the CN-85mm T1.5. These are great fast lenses which is what you need in these types of episodic – everything has to be quick. We thought about using vintage glass but they are just not fast enough. Now we used the primes for most of the shooting; we did use other character glass but the Canon lenses punch up beautifully in the grade. We were really happy with the performance. We got nice flares out of them and they match the other lenses beautifully. When we saw that, we knew we were up and running. Now they are our go-to lenses.

“We tested so many lenses for AC and because we weren’t going down the 6.5K route, we looked at vintage primes, the old Vintagion lenses which are fantastic but a bit slow. A lot of those are like T4 working on a TV schedule in episodic mode, you kind of need faster lenses. You can’t have lenses that jump around too much. The Canon’s vary from T1.2 to T1.5 depending on the focal length. The main priority was the coverage of the sensor, but we were really happy with the performance.

“ARRI had converted them through Zechutz for the XPL lens mount. They had to get a second set for our third unit as well. We used the Canons from T1.4 to T2.8 then started using the Cookes. The advantage of the Cookes is when you get to the longer lens you don’t need the coverage as much and we had the short focus ability so we had the 65, 100, 150, 200. The Cookes have got that Cooke look and the Canons are a little bit more contrasty, a bit more crunchy. We managed to match the lenses and actually just to complicate things even more, we’ve used a few Zeiss compact primes as well. Basically all the lenses that were made for large sensor DSLRs that have been reborn for the Alexa 65. I certainly loved the Cookes and the 65mm was the one we used a tremendous amount; it’s also great for close focus.”

They used the Cooke S5s from 65mm and up because the longer lenses and a bigger image circle projected back towards the sensor, so the 65mm, 75mm, 100mm and 150mm big enough to cover the VistaVision sensor. Then they moved to the Cooke S4s for the really long ones like the 250mm and 300mm, they also carried a Hawk 100-400mm zoom.

VistaVision

Originally the plan was to shoot wide-screen like a 2.35 format but after long discussions Netflix didn’t agree to it, basically because of the way viewers watch their content.

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WHITE AND BLACK LIGHTING

For Alfred Carson’s main street set the DP’s put up huge softboxes full of ARRI Sky Panels as they knew that every time a camera filled up those shots would be replaced by digital set exteriors. The boxes could come down and articulate into key lights and back lights and other set-ups which was a very flexible way of organizing rental stock. Perhaps more interesting was the use of ‘black light.’ Martin explains, “Our production designer Carey Meyer had this idea that at each end of this huge street set we needed translights to continue the look, like a never-ending street. The idea was to use ultraviolet paint on the front of this translight and then light it with black light (UV light) from the front and it would pick up very intensely and shine back towards the camera. These translights became fixtures but in a good way because we didn’t have to do green screen or CG Afterwards, it was basically a frosted glass enclosure with a continuous black background then it would have things like neon and street lights or anything that needed to look like a light source painted with the UV paint. There would also be translucent parts of the backing and we would use a gel filter to paint the background with a projected video pattern of the mass transit system in the city. So you’re seeing trains passing through tubes with the other elements of translights and back lights on both sides of the street. This all meant that 90% of the lighting was in-camera, lessening the need for CG effects. Although there was an extensive post budget, Alfred Carson is a ten-hour movie, not a ninety-minute one so VFX for that amount of time is too cost prohibitive. ‘This led me and Neil to use projection onto netting and plastic, just to do things to the background that would give it movement and look like a futuristic light source without calling for a visual effect. The agenda was to capture as much in-camera as possible. Shots on green screen were actually no more than ten in the whole show.’

‘The ARRI Sky Panels were our workhorse light because of their reliability when you’re shooting off-speed and their colour range. All our lights were worked through a dissolver board so we could create sequences of movement through the lights. Something I enjoyed doing was to programme the lights to slowly go from one colour to another, it gives another dimension to the scene.’