Post Focus

The crew of mining spaceship *Red Dwarf* stands on a digital G-Deck, created by visual-effects house Fin Design & Effects in Sydney, Australia, for the three-part miniseries *Red Dwarf: Back to Earth*.

Red Dwarf Returns

by Stephanie Argy

When director Doug Naylor and cinematographer Andy Martin set out to shoot three new episodes of the sci-fi sitcom *Red Dwarf* for the British channel Dave, they wanted to give the show added polish, but they knew they would have to work within a very limited budget. In collaboration with visual-effects supervisor Mike Seymour, they devised an innovative workflow that included a mostly greenscreen shoot with multiple Red Ones, the distribution of visual-effects work to 18 artists around the world, and a final color-correction at Evolutions in London.

The original *Red Dwarf* series, which ran from 1988-1999, centered on a Liverpudlian slacker named Dave Lister (Craig Charles), a crewmember on a mining spaceship. After a Cadmium 2 radiation leak, Lister finds himself three million years in the future, the last surviving human in the universe; his only companions are the hologram of his pompous bunkmate (Chris Barrie); a sanitation robot, Kryten (Robert Llewellyn); and a bipedal humanoid, Cat (Danny John-Jules), who is the distant descendent of a pregnant cat Lister had smuggled aboard the ship. The series careened from genre to genre, referencing such films as *Alien*, *Dark Star*, *Citizen Kane* and *Rebel Without a Cause*.

Red Dwarf became a cult phenomenon, and when Dave began re-broadcasting it, the station "started to get incredible figures," recalls Naylor, who co-created and co-wrote the show with Rob Grant. That viewer interest led Dave to ask Naylor to do a clips show, but Naylor suggested doing two new narrative episodes, which soon evolved into three. In the new episodes, *Red Dwarf: Back to Earth*, the four characters end up on Earth in 2009 and discover they are characters in a TV series. Concerned about their eventual fate, they embark on a metaphysical quest to track down their creators, beginning with the actors who portray them.

To keep expenses low, Naylor decided to shoot much of the show against greenscreen, something he hadn't been able to do with the Digi-Beta cameras he'd used on the original production. He was keen to try the Red One, but his cinematographer, Andy Martin, was initially less enthusiastic. "I'd read about it, and I'd heard a lot of people talking about it — usually maligning it," recalls Martin, who had been a camera operator on *Red Dwarf*'s last season.

Above: The original shot, captured onstage at Shepperton Studios against a greenscreen measuring 50'x120'. Below: Cinematographer Andy Martin (gesturing) and visual-effects supervisor/2nd-unit director Mike Seymour (left) examine the shot at hand.

Images courtesy of Mike Seymour and Fxphd.

Seeking advice about Red One workflows, Naylor turned to visual-effects supervisor Mike Seymour, a colleague. At the time, Naylor didn't know Seymour was an early Red adopter — he owns camera body #22. "Mike knew the path we'd have to go through," says Naylor. "Immediately, all my anxiety dissipated."

Seymour and John Montgomery are co-founders of fxphd.com, an online training resource for visual-effects professionals. They recognized early on that the One would require a bridge between what's required of the camera in terms of production and what's required for a timely post process. On *Red Dwarf*, the cameras' r3d files were immediately copied to RAIDs for safe-keeping; the files were then transcoded to Avid's native DNxHD for editing in Avid, and the same project could be shared with Final Cut Pro via Automatic Duck Pro Import FCP 2.0. While one copy of the r3d files stayed in London, ready for use in the final online, another was sent to Australia to be used for the visual-effects shots.

Although Seymour designed *Red Dwarf*'s production workflow, Naylor initially believed he couldn't afford to have Seymour work on the actual episodes. Then, Seymour suggested he come aboard as the visual-effects supervisor and second-unit director, and that he use the artists and resources of his Web site to create most of the effects shots. "We put together what we called a Special Ops group, a group inside the fxphd.com structure," says Seymour. He corralled 18 specialists and set up a virtual post structure enabling them to exchange files via a network built by Sohonet. The systems and programs used by the artists included Adobe After Effects, Apple Shake, Autodesk Maya, Inferno and Flame, The Foundry Nuke and RFX Pftrack. Seymour also tapped Fin Design & Effects in Sydney for some virtual set designs. In all, the effects team completed 262 shots in 27 days.

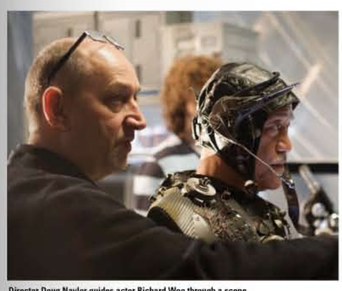
Martin delivered textbook

Right: Kryten (Robert Llewellyn, left) and Arnold Rimmer (Chris Barrie, wearing blue) find their marks in the sleeping-quarters set while Martin lines up a shot. Below left: Martin checks the backlight on The Creator (Richard O'Callaghan) for a scene referencing *Blade Runner*. Below right: The crew prepares for a crane shot on the Coronation Street set in Manchester.

greenscreen photography, which simplified Seymour's work. The greenscreen measured 50'x120', which allowed Martin to get a good separation between the foreground and background, both of which he exposed at the same level. The cinematographer also tried something new: he occasionally switched two-thirds of the greenscreen lights off while lighting the foreground actors and elements in order to judge the contrast on those subjects. "That worked really well," he says.

Before the shoot began, Martin conducted a series of tests, pushing the One to its extremes to see what he could learn. Some of his discoveries contradicted what he'd heard about the camera. For instance, he had been told to avoid strong backlight, especially when shooting against a greenscreen, because an "edging" effect would appear around the subjects. In fact, he found that backlighting looked very good, and he consequently decided to push that look.

Fitting the cameras with Zeiss Ultra Primes, Martin rated the One at 160 ASA, but the filtration the camera required at the time to shoot under tungsten light resulted in an effective ASA of 50. "I found my results were looking a lot like Fuji 250-ASA daylight



Director Doug Naylor guides actor Richard Woo through a scene.

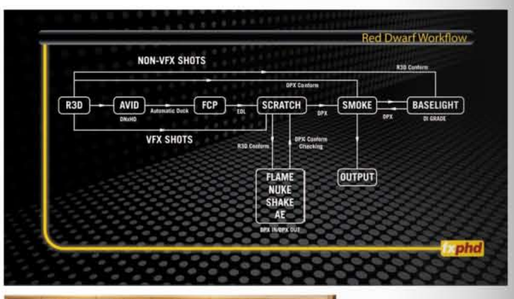
stock," he notes. "I thought they looked very natural." In turn, Naylor was pleased to find that the One's 4K mode allowed him to pull more than one angle out of each shot during the edit. "We could zoom in 200 percent on any frame," he recalls. This allowed the filmmakers to turn three shots into two shots, two shots into singles and singles into close-ups; this was especially beneficial given that the crew had 14 days to shoot all three episodes.

Seymour's team rendered the finished shots as DPX files, which were sent to London via Sohonet for the final online at Evolutions, where a Baselight was used. For the non-visual-effects material, colorist Nick Adams was able to access the original media at full resolution. (Most shots were 2K, but some were 4K.) James Hunter, chief engineer at Evolutions, notes, "Working natively with the Red rushes gives you a lot more flexibility in the grade. In general, grades aren't done from rushes in long-form TV post. People convert from Red to DPX and essentially bake in a first-light telecine equivalent. That was probably the most important aspect of us changing the traditional workflow; it has a lot of benefits for all formats." Seymour adds, "We worked with the look Andy established on set, except for some tricky shots where we did a second special-effects grade for a technical reason, normally detail for keying."

Martin was initially concerned that the image's blacks might wash out to a gray somewhere along the workflow, but that fear never materialized. "I was gobsmacked by the density of the blacks," he says. "They really are very rich." He was also surprised at how little grain and noise was in the image. "At times, it was almost too clean, but I would much rather have that than the alternative!"

Once the episodes were finished, production rented a cinema to screen them for the cast and crew. Naylor notes that one of the great surprises for the actors was seeing their work combined with the virtual sets; during the shoot, they were somewhat baffled by the massive greenscreen. "It was very different from how we used to shoot the show," says the director. "In its time, *Red Dwarf* was responsible for some less-than-brilliant greenscreen shots — because of budget, not talent — so they were right to be dubious. There was nothing onstage other than a square floor and a

Top: In order to complete 262 visual-effects shots in 27 days, Seymour formed a "Special Ops" group from participants on fxphd.com. A custom workflow was devised to bring the work, which was spread across the globe, back together for the final output. Middle and bottom: Chicago-based visual-effects artist Jeff Heusser worked with Autodesk Flame to comp Dave Lister (Craig Charles) onto the television screens around actress Karen Admiral.



single squid tentacle! When they saw the final images, they were absolutely thrilled."

Even during production, it was clear how much the series meant to its fans. "People were going mental when they saw the actors on the street," recalls Seymour. "When we went on location and the actors were in costume, people's mouths would drop as they drove by. These characters are really loved in English culture." ■