

Production Slate

Detectives Mack Foster (Kevin Kilner, left) and Jake Sullivan (Reid Scott) set out to investigate a string of mysterious disappearances in the metaphysical short *Meridian*.



Questioning Reality

By Michael Goldman

Los Angeles, 1947. People have been disappearing — three, to be exact, and all on the same stretch of road along the Malibu coast. A witness saw the last guy literally vanish during a freak lightning storm, and LAPD detective Mack Foster [Kevin Kilner] has a feeling there's more at play than mob hits or cliff jumpers. The hard-boiled cop sends his street-wise protégé, Jake Sullivan (Reid Scott), to check it out, and this time we get a glimpse of the particulars. A lightning storm, a mysterious woman (Elyse Levesque) in Sullivan's rear-view mirror, then he's gone too. Foster himself steps in to investigate, venturing through an ominous opening in a rock formation not far from Sullivan's abandoned car, and soon finds himself in a place where the rules of conventional time and space do not apply.

Meridian is a noir, short-form, suspense-driven and enigmatic science-fiction project directed and co-written by ASC Technology Committee chairman Curtis Clark and shot by Markus Förderer, BVK. The endeavor was spawned at a meeting as Clark was discussing developments in high dynamic range with Chris Fetner — now an ASC associate — and other Netflix executives. Clark recalls, "They proposed that I make a short film for them" — a project specifically designed to illustrate how the convergence of 4K, HDR, wide color gamut, and other high-end image acquisition advancements might enhance the viewer experience for the Web-based streaming service.

"Later, we were asked to work at 60 fps," Clark says. "And we also decided it should be an ACES-compliant workflow. Those were the kinds of key issues that needed to be taken into account.

The idea was that I would write the story with my writing partner [James Harmon Brown], and see how those [attributes] could provide expanded creative freedom to the filmmaker."

The majority of *Meridian* was shot on Sony's CineAlta F65, recording in the Sony Raw format at 3:1 compression to 256GB SRMemory cards. For one sequence, however, the production used Red's Weapon 6K system, recording in Redcode Raw format at 6:1 compression to 512GB Red Mini-Mags. On set, footage was ingested using Pomfort Silverstack, and an LMT and RRT/1,000-nit ODT combination were created within the ACES system and applied with Fujifilm's IS-Mini LUT box and IS-Manager software. The production primarily employed Leica Summilux-C lenses — mainly 21mm, 29mm, 35mm and 40mm — but for one key sequence they switched to 24mm and 32mm Cooke Speed Panchro lenses. The filmmakers shot the entire movie at 60 fps and monitored on-set with a Sony BVM-X300 high-dynamic-range monitor. The project was framed for a 1.78:1 aspect ratio.

Clark had previously shot and directed a couple of short films in partnership with Sony to assess the 4K F65 digital-cinema camera system. This time, however, Clark — in partnership with Netflix — recruited Förderer, who was fresh off his *Independence Day: Resurgence* shoot (AC July '16). The production then brought on Bill Taylor, ASC to handle about a dozen visual-effects shots — mostly composites of live-action background elements and greenscreen foreground actors. Adding clouds sweetened with lightning animation to clear skies was accomplished by Nuke artist Nathan Strong.

"I thought it was really interesting when I heard it was a period film set in the 1940s and that Curtis had a vision of shooting

Meridian images courtesy of the filmmakers.

it with the highest-quality imaging systems," Förderer says. "That sounds contradictory for a period film, but it was an opportunity to create something new, and to see how you could make something look period without using all the clichés."

Integral to *Meridian's* period nature was the project's LUT — or, in ACES vernacular, a look-modification transform (LMT) — which was developed in partnership with FotoKem "for the purpose of providing a Kodachrome-print emulation to the images," Clark explains. The LMT concept evolved out of Clark's decision to open the movie with genuine vintage Kodachrome imagery from 1947 Hollywood, which he located in the archives of the Academy of Motion Picture Arts and Sciences. As FotoKem principal color scientist and close collaborator Joseph Slomka opines, Clark's team had thus discovered a look that achieved "a combination of historical accuracy and artistic need."

"Curtis had the real Kodachrome footage scanned at FotoKem at 4K, [and it was] used as a reference to create the look-up table," Förderer elaborates. "The LUT mimics the characteristics of Kodachrome, but it is modified to use full dynamic range to allow us to get really bright highlights and deep blacks. So in that sense, it is a hybrid of what Kodachrome really looked like, but in an HDR space. We can use the deepest blacks that HDR can give us and still lend them a film-like look. And that means that going into the digital intermediate we will have the creative control to go really deep for certain shots and moments."

Also participating in the development of the LMT was FotoKem colorist John Daro, who explains that once the LMT — built with SGO Mistika — was finalized, it was converted to a series of transforms that were available to on-set production as well as to the dailies and visual-effects processes. The final result was left fully open for edits and changes during the DI within the ACES universe. Daro would go on to perform the final color grade at FotoKem, also with Mistika. At press time, the grade had not yet begun.

"We will be monitoring 4K, but my final renders will be 6K to preserve all of the original pixels for the Weapon," says



**Top: Director/co-writer Curtis Clark, ASC works with Kilner on location in Malibu, Calif.
Bottom: Cinematographer Markus Förderer, BVK lines up a shot on a police-station set dressed for the project's 1940s period.**

Daro. "The master, which the numerous deliverables will all be struck from, will be a 16-bit EXR sequence using ACES primaries."

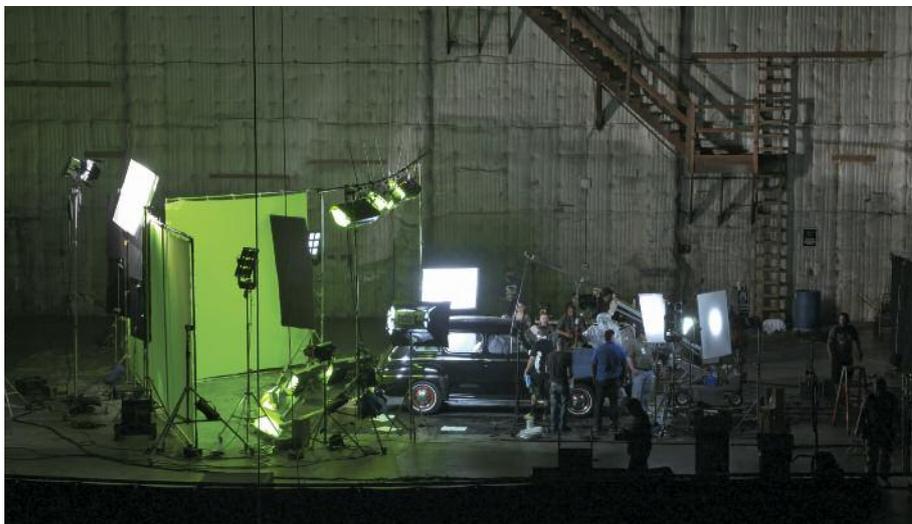
Slomka adds, "As for delivery, we are doing both a 1,000-nit, 60 fps, 4K Sony BVM-X300 grade as well as a Dolby Vision Pulsar grade. I expect there to be other deliverables as well, such as a 24-fps traditional DCP." A standard-dynamic-range deliverable is also planned.

Working at such a high resolution and frame rate meant that rendering visual-effects shots would take longer than usual. And since *Meridian* is an ACES show and Taylor was personally performing some of the composites — which included combining multiple elements to produce ominous skies and storm fronts — an initial task was deciding which file format to employ for his

work in Adobe After Effects, his preferred platform.

"ACES is not formally fully supported by After Effects yet, so there are a variety of approaches in this area," Taylor explains. He recalls that Ash Beck — After Effects expert and an informal advisor — "suggested that I utilize 16-bit OpenEXR for this show. The OpenEXR color space is bigger than that available from either camera we were using, so that protected us by making sure there would be no compromise in quality. Ultimately, the composites were executed in 32-bit floating-point EXR. Color scientist Joseph Slomka and digital-intermediate producer Jason Pelham, both of FotoKem, were also most helpful in working out the details."

Meridian was meticulously designed around storyboard images created by Clark,



Top: The crew prepares to shoot car interiors onstage at Red Studios Hollywood. Bottom: Elyse Levesque awaits the call of action for a scene in which her mysterious character's countenance suddenly appears in the rearview mirror of Sullivan's car.

and primarily features carefully composed shots with little or no camera movement, a technique designed to “convey the kind of emotional impact I wanted, in order to more empathetically engage the viewer with the narrative,” Clark says. In addition to Förderer, Clark points to the work of editor David Sconyers and production designer Mari Lappalainen as being key to ensuring that his visual agenda went according to plan. Clark also makes special mention of composer Alex Kovacs, “whose excellent original score further amplifies the emotional resonance of the images — along with Dolby sound designer Erik Foreman, at Dolby who did the final sound mix using Dolby Atmos.” Clark also compliments the work of producer Malcolm

Duncan, “who efficiently managed the production process.”

The movie essentially centers around three sequences. The first features a meeting at police headquarters between Mack and Jake, as the former tells the latter about the disappearances. This scene is the most evident example of “the impactful film-noir feel that we wanted,” Förderer notes. And as it immediately followed the opening archival footage, “I thought [the Leicas] might result in too harsh a contrast,” he says, “so I brought up the idea of using Panchros for the office scene to [provide] a smoother transition from older glass to newer glass, and to digital cameras [shooting] 60 fps and high dynamic range.”

The second sequence involves Jake’s

car ride to the scene of the disappearances, during which the sunny California weather inexplicably transitions to a threatening storm front as Jake suddenly sees the woman in the rearview mirror of his vintage 1947 Ford. The vehicle, shot with the Weapon on a greenscreen stage, was flanked by Digital Sputnik DS 6 and Arri SkyPanel S60 LED units — one of each on either side of the car. A DS 1 fixture was placed in front of the car to serve as an eyelight for Scott. Kino Flo 4’ four-banks fitted with green lamps were aimed at the greenscreens from above and below.

The SkyPanel and DS 6 units were operated through a dimmer board, allowing the filmmakers to create a sunlight effect with the SkyPanels and then dim them to an overcast look on cue, and to provide a variety of lighting effects with the Digital Sputniks as the weather radically changes. “The Sputniks started off as a sun backlight and then they faded off,” Förderer relates. “And then, later in the sequence, they flashed at a very cool temperature to mimic lightning flashes. We were able to use the same fixtures; we didn’t need special-effects lighting instruments. That makes things efficient and keeps the footprint small on set.”

Levesque had her reflection shot in close-up under low light for several takes, in what Taylor calls a “double-greenscreen shot. It’s an interesting shot because we are looking at the rearview mirror, and in it we see the mystery woman as well as the rear window of the car, [behind which] is a greenscreen. And because the rearview mirror does not fill the frame, we are looking out [the front window as well], onto another greenscreen. One of the things we discovered was that the mirror soaked up a lot of light — a [full] stop — so even though the two greenscreens were an exact match, we had to beef up the screen behind the car to ensure that the two greenscreens were recorded at the same level. After that, Markus lit the actress cleverly with a variety of sources, mostly through the windows, and then he had a [small custom LED eye light] stuck to the backseat, which brought just enough fill light into her face.”

In the third sequence — the movie’s climax — Mack enters the cave in which he has reason to believe his colleague may be located. Once inside, he sees strange

images of himself, the mystery woman and the chilling fate of all four missing people. Shot on a dark, smoke-infused stage with the F65, portions of the sequence were lit exclusively through a single stained-glass window, creating eerie shafts of light. Förderer explains that the light through the window was produced with 4K xenon units, and represented the only significant shots where he did not rely primarily on LEDs. "I realized in a test that we had to use traditional xenon fixtures to get the most parallel beams shining through the window," he says.

"The [cave set] is really a black box," Förderer continues. "With high dynamic range you get so much more detail, and because there is always some light bouncing off the actor, you have to create a really deep black background. I used extreme backlight [with Arri M18s] so that I could stop down and underexpose the black duvetyne as much as possible. [We also used] as little smoke as possible to protect our blacks. You always have to be way more precise with lighting and exposure with higher dynamic range."

"I'm a big believer in high resolution and enhanced depth of field," Clark concludes. "That helps with decisions regarding image composition, and what is needed to better facilitate an immediate emotional impact that creates a sense of allure, mystery or seduction. When the images organically relate to each other, the more options you have when expanding dynamic range and color palette. These things just add to the possibilities in creating images for the maximum storytelling impact. To me, the film must always be visually driven."

For further coverage of Meridian, visit AC's October-issue articles at theasc.com.

◀ TECHNICAL SPECS ▶

1.78:1

Digital Capture

Sony CineAlta F65, Red Weapon 6K

Leica Summilux-C, Cooke Speed Panchro