Chilling Future

Martin Ruhe, ASC and director George Clooney on a glacier in Iceland.

Martin Ruhe, ASC and director George Clooney frame sci-fi thriller *The Midnight Sky*.

By Noah Kadner

While *The Midnight Sky* — shot by Martin Ruhe, ASC and directed by George Clooney — is a post-apocalyptic science-fiction epic, at its core it is an intimate character study. Based on the novel *Good Morning, Midnight* by Lily Brooks-Dalton, the film juxtaposes the journey of a crew of astronauts aboard the spacecraft *Aether* returning to Earth from a mission to K-23, a habitable moon of Jupiter, with the efforts of scientist Augustine Lofthouse to contact the crew and prevent them from returning home following a global catastrophe. Lofthouse, who lives on a research base in the Arctic — and is possibly the last person on Earth — suffers from a terminal disease, which requires regular transfusions to prolong his final days. As he

Photos by Philippe Antonello and the filmmakers. All images courtesy of Netflix.

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Scientist Augustine Lofthouse (Clooney) and the mysterious Iris (Caoilinn Springall); the actor-director on set with co-star Tiffany Boone.

endeavors to communicate with the *Aether* crew by finding a more powerful antenna, he must also overcome the harsh conditions of the Arctic.

The Midnight Sky is the third collaboration between Ruhe and Clooney, the latter of whom also stars as Lofthouse. Their other work includes *The American* and the miniseries *Catch-22*, which Clooney starred in and directed, respectively. "George and I were at the premiere of *Catch-22* in Los Angeles, and he invited me to work on his next project," Ruhe says. "He explained that the story was like a mix of *The Revenant* and *Gravity*, and I thought that sounded great. He also referenced *On the Beach*."

Says Clooney, "Martin's been shooting beautiful films for a long time, and it was really clear for me as a director what a gifted cinematographer he is. We talked about how to capture the size and scope of the locations. Because it's also a meditative piece, we looked for ways to get inside the characters' heads." To accomplish this, Ruhe selected Arri Alexa 65 and Alexa Mini LF cameras paired with detuned Arri Prime DNA and DNA LF prime lenses, respectively. The lenses, Clooney says, "were amazing because the focus was different on characters [who were] next to each other. We also wanted to shoot a lot of handheld so you'd feel as if you're there with the characters."

"We used mainly DNA lenses and had them detuned to our liking to give them more character — they're designed for it," says Ruhe. "We also used a special 58mm lens from Arri called the 58T, the only one of its kind; with it, only the very center of the frame is in focus, and everything else falls off very rapidly. We used it when we wanted to be in a character's head, in their mind space. One example is when Maya [Tiffany Boone] sees the first droplet of blood floating around in her helmet during the spacewalk. Another is when Sully [Felicity Jones] is on her own in the communications pod, contemplating things."

The key crew included Ruhe's longtime gaffer, Julian White, as well as rigging gaffer Tommy Royal and console operator Simon Baker. Ruhe also collaborated closely with production designer Jim Bissell and visual-effects supervisor Matt Kasmir.

On the Glacier

Principal photography took place November 2019 through February 2020, with production beginning on location at the Vatnajökull glacier in Iceland, which stood in for the exteriors of the Barbeau Observatory and research station. "We built the entrance to the station right off the glacier so you could film someone entering in Iceland and then cut to the studio," Bissell says. "When we first started, we considered places like British Columbia or Norway, which have beautiful vistas, but you need a helicopter to get to [them]. Iceland is much easier to access, and [Vatnajökull is] the largest glacier in Europe."

Shooting on location in a harsh environment was essential to Clooney because of the realism it provides both the actors and the audience. "You can't fake the scope of riding a snowmobile across the top of a glacier," he says. "You just can't make everything digitally, and for the actors, myself included, you need that degree of cold and loneliness to have everything feel authentic."

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"Because the conditions were rough, we worked mostly with natural light," recalls Ruhe, who adds that the production supplemented the crew with a local team when on location, as well as with a DJI Inspire drone crew. "I remember often looking down at a frozen light meter. We had to stop shooting George whenever we couldn't see his eyes because they were covered with ice. In many of the shots, his beard looks frozen, and it really was."

On the Virtual Stage

The production then moved to Shepperton Studios in the U.K. for the majority of its visual-effects scenes. To depict the frozen tundra visible through the arctic interiors' windows, the production deployed the StageCraft LED wall in-camera visual-effects process pioneered by Industrial Light & Magic (ILM) on the Disney Plus series *The Mandalorian* (*AC* Feb. '20). For the background imagery, Kasmir oversaw the capture of live-action footage from an array of five Alexa Minis in Iceland. "We shot various times of day and various weather conditions," Kasmir says, "and as luck would have it, we captured the only snowfall that occurred on the glacier during the production. We also did photogrammetry and Lidar surveys of the environment, which provided data essential to generating a dynamic 3D re-creation of the environment onstage. After stitching everything together, we ended up with about 270 degrees of imagery. Then ILM used Unreal Engine to [display] that material onto an LED wall that was approximately 130' long and 30' high outside the windows of our sets."

Ruhe agrees that the StageCraft process brought yet another layer of realism to the cinematography. "There's a shot when Lofthouse is in the control room drinking coffee in the morning and looking out the window. All those reflections in his eyes and on the set are in-camera and real. We used the LED wall to achieve those reflections and basically light the set itself."

"The wall was amazing," Clooney says. "I'd never seen anything like it. We had witness cameras every 8 feet or so on the stage to monitor and track our camera. If we were on a dolly and boomed up, it would immediately read that and change the perspective outside on the wall to match. You were lighting by the actual scenery, which allowed us to move much quicker and saved us a lot of work we would have had to do in postproduction. It was a great luxury to have that incredible setup."

Classic Technique

Although *The Midnight Sky* production team embraced many state-of-the-art virtual-production techniques, it also deployed traditional methods when appropriate. Examples included arctic exteriors captured onstage that often involved underwater work and elaborate stunts. To create a believable sky indoors, White surrounded the set with an enormous gray Rosco rear-projection screen — a technique, he says, that

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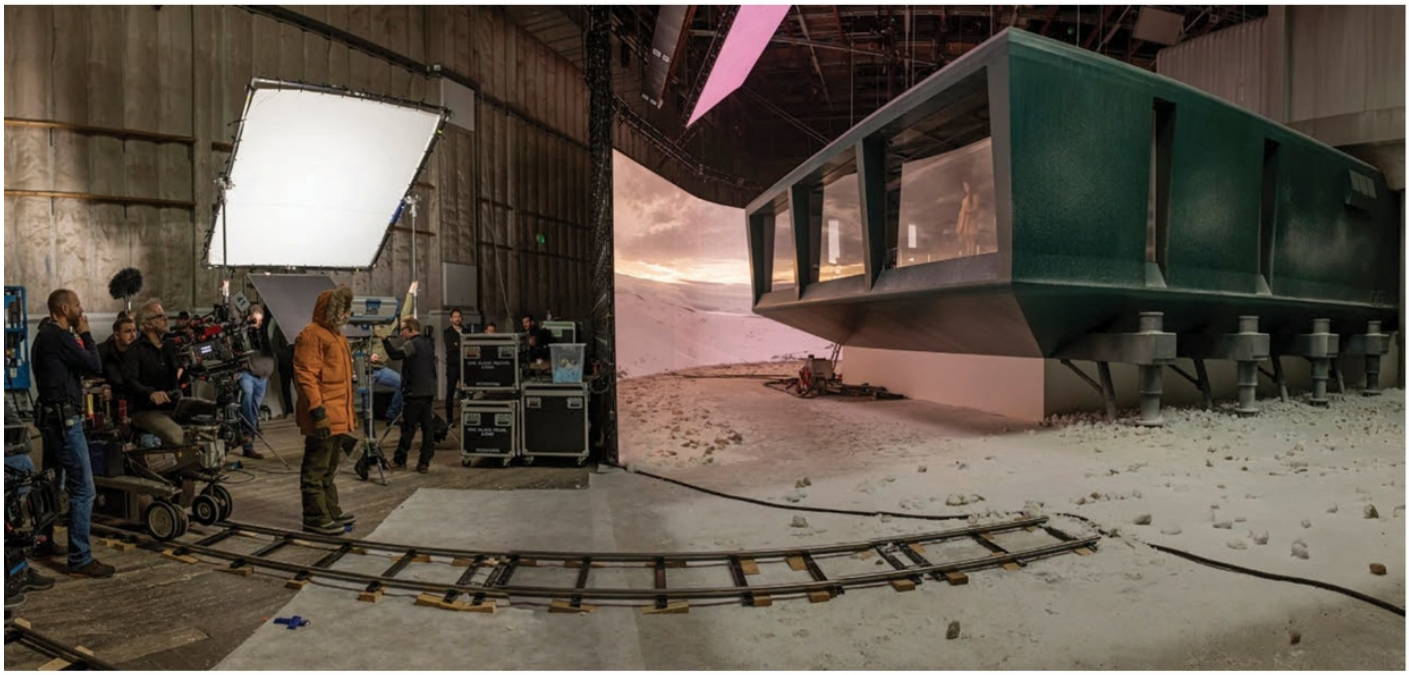
A creative blend of projection techniques and LED-wall panels helped simulate the Arctic on stage.



Haris Zambarloukos, BSC used on *Mamma Mia!*

"It's tough to create a skydome inside a studio, especially if you're using tungsten or HMI units, because you're always going to feel the source," White says. "We ordered 490 Arri SkyPanel S60s and 180 feet of the Rosco material and used them to create a huge, vertical soft-box cliff face, which wrapped [light] very naturally. We [controlled the intensity in] sections; off-camera [the screen] would be to exposure, and behind the actors it could be under[exposed] or a night sky. Sometimes we lit just the top row to create an edge light. As we also had the roof rigged with SkyPanels behind Grid Cloth, it [created a very realistic effect]. It works well on camera, especially when the background is defocused."

With the Rosco screen, Ruhe says, "We could also feed footage directly into the SkyPanels as RGBW data to create special lighting effects. You could make a specific blue sky, modulate a snowstorm or whiteout, and simulate the effects of the aurora borealis."

"To create the sun's look in a snowstorm, we used a Sumolight, a cluster of seven large-lensed LEDs in a hoist," White says. "It could travel backwards and forwards on an I-beam, allowing us to move it anywhere behind the Rosco. The postproduction team said the process saved a fortune [because] we didn't have to do everything [in post]."

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The cinematographer notes that postproduction did play a significant

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The spaceship-interior design was based on research into emerging technologies.

role, "adding landscapes and photoreal elements into the background."

An Inviting Spaceship

For scenes onboard the *Aether*, "George didn't want to use the typical industrial vocabulary you see in most sci-fi movies today," says Bissell. The production designer, who co-designed the iconic spacecraft in *E.T. the Extra-Terrestrial* (*AC* Jan. '83) with Ralph McQuarrie, sought an organic and inviting spaceship. "We envisioned a ship 30 years in the future which embraced two emerging technologies: topological optimization through the use of 3D printing, and expandable habitats. Expandable habitats involve layered fabric structures used to contain atmosphere and protect the crew from radiation. Unlike prebuilt modules, they can be efficiently manufactured and transported into space. Topological optimization is an engineering technique, which could be used to design and then 3D-print an exoskeleton used to tether the habitats as they spin around the spacecraft, creating artificial gravity through the use of centrifugal force. A computer generates designs that indicate exactly where material needs to be to respond to the physics and stress that are going to be exerted on it. You get these exquisite, organic forms that are like Gaudí on acid. It's very cool! The *Aether* has a visible endoskeleton and exoskeleton, which support the infrastructure and protect the astronauts as they hurtle through space."

A standout sequence involving the *Aether* features the astronauts making repairs to their communications equipment via a zero-gravity spacewalk. The action was shot on portions of a full-sized exterior set piece. "We didn't shoot bluescreen for the spacewalk," White says. "Instead, we put up a large black backing and shot with one Arri M90 9K HMI to simulate directional light coming from a distant sun. The ship has a latticework solar shield in front, which we simulated with an 8'x4'

Tech Specs:	2.11:1 Digital Capture Cameras: Arri Alexa 65, Alexa Mini LF Lenses: Arri Prime DNA, DNA LF

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gobo. We also made 20' 'bogeys' on wheels with Grid Cloth and SkyPanels and used them to create edge light and/or fill depending where the actors were placed along the hull."

A believable on-stage Arctic sky was created by surrounding the set with an enormous rear-projection screen.

Big Changes

The crew shifted to La Palma, Spain, which is part of the Canary Islands, for flashbacks in Lofthouse's life and the surface of K-23. "We changed the colors and rebuilt the vegetation, but we still needed the topography to make it work," says Clooney. "La Palma had all that as well as a nicer climate than England in February. We needed it to be warm and beautiful. [Real] locations make all the difference in the world."

The restrictions mandated by the Covid-19 pandemic meant the filmmakers had to complete postproduction in quarantine conditions. Clooney and Ruhe worked remotely with editor Stephen Mirrione. "I was supposed to remain involved in reviewing visual effects throughout post, but the situation prevented much of that," Ruhe says. Through Zoom and Streambox, he adds, "I was able to look at visual effects in London a few times and stay in the loop."

Due to travel restrictions, the final color grade was also completed remotely. "I was at Company 3 in London, and [ASC associate] Stefan Sonnenfeld was at Company 3 in Los Angeles," the cinematographer says. "George reviewed shots in L.A. as well. We'd talk and work our way through. It was not ideal, but amazingly, it all worked out."

Regardless of unexpected circumstances, Clooney speaks highly of the collaboration. The final look was "everything I could have hoped for and more," he says. "Between Martin and the visual-effects team, we made an elegant and beautiful film. A lot of this movie has no dialogue at all, so the cinematography, score and visual effects have to walk us home. I'm thrilled with the final product."

Looking Forward

"I love this film because it gets the right emotions across," Ruhe says. "It's a pity more people won't be able to see it on a big screen because it looks fantastic, and seeing it that way is so much more immersive."

He adds, "I believe we'll all go back to shooting movies on location once the health situation improves. I learn so much from every international crew I get to work with. It's a tremendous gift, and I hope we'll get back to a place where we can work normally again."

With its themes of human endurance and global catastrophe, the added dimension of premiering *The Midnight Sky* on Netflix instead of in theaters, due to a worldwide pandemic, was not lost on Clooney. "When I was growing up, we lived under the constant threat of a nuclear exchange between the Soviet Union and the United States," he says. "We've long had the understanding that if we ignore science or we ignore doctors, terrible things can happen. We live on a fragile planet, and we need to do a better job of taking care of it." Ⓒ