Surrounding China

Discovery HD Canada taps Holophone to capture audio in 5.1 for documentary

by Mary C. Gruszka

“Made in China," a new series in production for Discovery Channel HD Canada, takes a look behind the curtain at the back story of how clever and innovative products are made, with the twist that they are all made in China.

The idea is that the average person has suspicions of everything made in China, but we’re doing a different slant on how they build [things],” said Michael Nunn, post sound supervisor for CTV Television, whose properties include Discovery Channel HD Canada. “We’re doing it in HD of course, and with authentic surround sound.”

The pilot proved that good location 5.1 could be recorded on a HDCAM with a single camera operator. For logistical reasons, the production was not able to use a separate audio mixer, and a double system of recording. The production for the pilot entailed what Nunn called a sense of R-folls. 

“Where’s my camera dial, which means there’s no need for an operator to swing a boom,” he said. “This opens the door to shooting with just a camera operator. We can put a mix on top of the camera and capture the sound from the camera’s point of view. The camera points at people doing things, so far this application, we can use the camera’s audio channels exclusively for ambient sound, sound that in other circumstances would be the background, but here it’s the foreground.”

There was a catch, however. The Sony HDW-F900 HDCAM camera, used to lens the pilot, has only two external line level audio inputs, plus the camera’s mic contacts, (there are all analog—a few channels short of the needed six for surround plus one for a shotgun mic).

Nunn was reluctant to record in mono and “cheat” as he calls it, by up-converting to simulated surround, or by trying to find suitable effects from a library.

“That’s not accurate for factual TV, which has to be about the experience,” Nunn said. “We have to come up with something authentic, to give the audience a sense of what it is like to be there, to put a camera in a real place.”

LOCATION 5.1 RECORDING

To accomplish this, Nunn used a Holophone H4 SuperMini Surround Sound microphone system mounted on top of the camera, which he evaluated prior to use. A Sennheiser MKH16 shotgun mic was also used for audio capture.

Nunn already had experience with the larger Holophone H2-PRO surround sound mic which typically is used where video and audio were recorded separately (double system). Holophone introduced the H4 SuperMini just over a year ago, and have been shipping it for the past six months. The H4 is battery operated, and weighs about one pound, and mounts on any broadcast video camera, said Jonathan Godfrey, CEO of Holophone in Toronto.

Five small omnidirectional microphone capsules are mounted on the surface of the oblong-shaped mic head, which measures 2.5 inches by 1.5 inches. These pick up front left, center, right, and surround left and right. In addition, a sixth capsule sits inside the mic head for the low frequency effects (LFE) channel.

The mic head is mounted on an electronics chassis, and the whole unit is mounted on the camera head. The total package is about eight inches tall.

“This size when placed on top of the camera means it is about the head of the camera operator to pick up a full 360 degrees of sound,” Godfrey said.

The chassis provides the battery plus the electronics for the pre-amplifiers, and, key to its suitability for "Made in China," a Dolby Pro Logic II matrix encoder. In addition to its discrete analog outputs, the H4 also provides an LFE encoded stereo output. All outputs being matched to decode it properly, you need to exercise care that the levels for left and right match.”

With the total setup, for very little effort on the part of production, we get a program with 100 percent authentic end-to-end sound,” Nunn said.

For “Made in China" the unbalanced outputs from the H4 didn’t pose any problems. "Still we are interested to see subsequent products that are coming out,” Nunn said.

Godfrey said that the company is looking into providing balanced outputs. "Unbalanced outputs were installed on the H4 to fit on the compact chassis, he said.

Also in the works is an adapter to allow the mic head to be separated from the electronics chassis. “People want to put the head on the camera and the box somewhere else, like on the side of the camera or on a belt-pack," Godfrey said. Currently, "the head and the box are attached by two thumbcrews, and it won’t work if one is taken from the other.”

Because post production/editing takes place in-house, "we have a significant say in how the editor assembles the tracks," said Nunn. “For every mix, the two audio channels of the stereo track-for the H4 and the 416, plus all the handles.

After the mixes are edited, the timeline is sent via AAF to a Digidesign Pro Tools editing station. Nunn was the sound editor for the pilot, and helped set the benchmark for the overall sound design for the program.

Audio editing and level adjusting was done with theDecimator 1000 and Decimator LIIF location tracks, although the monitoring was done with decoded 5.1. In addition to the LIIF and the H2-PRO track, Nunn mixed in music and effects, plus an off-camera narrator.

There is a concern that they would have to be mandator to work in a given format for any of our properties,” Nunn said. “We are completely free to use the soundfile as it’s coming from the left.

Music is delivered from the composer as multiple stereo stems that break down the composite mix into logical pieces, like percussion, drums or strings. When summed together to unify they reconstitute the composer’s full stereo mix.

Godfrey said that music allows the mixer/editor to place the different stems in different places in the soundscape to create an overall 5.1 mix. In addition, “this lets us get around collisions in the mix, rather than ducking all the music, we can just lower the offending tracks,” Nunn said.

Once the audio edits were adjusted to “our taste”, then recorded the 5.1 into the system [via a Pro Logic II decoder] and then turned off the stereo tracks.

The edited program is finally mastered onto HDCAM (airplay standard plus) plus Sony SR format. The HDCAM master contains LIIF encoded from the total edit in channels 1 and 2. Channels 3 and 4 have a Dolby E surround encoded plus the AC-3 decoder.

The Sony SR format, which has 12 channels of audio, contains the 21 separate audio tracks encoded as four Dolby E streams. This aids in creating international versions.

Nunn said that one concern of using the H4 was how it would sound after multiple Pro Logic II passes. “Pro Logic encoding muddles the image a little bit, it makes things more like it’s not doing nothing,” Nunn said. “The alternative would be to have stereo or essentially mono.”

FOR THE SERIES

As the series is being planned, there will be some changes compared to the pilot.

“We are faced with the possibility that the show may need to feature interviews,” Nunn said. “If we need to record with a lawyer and a boom, then a lot of things we could do. One is to set the H4 to output a mix level signal and substitute it for the stereo sound mix.”

If the newer Sony HDW-9008 version of the Cinelux HDCAM is used, that opens up another possibility—two XLR connectors for the H2-PRO can be set for analog mix or line, plus AES3 digital audio. And since each AES3 channel is really two audio channels, one AES3 input could be used for the law and boom via a digital mixer, while the other could take a digital version of the H4 output.

Nunn emphasized that using the H4 with a matrix output isn’t a substitute for the full five-channel H2-PRO Holophone with discrete outputs. Still, given the limitations of the current format, capturing location sound for a documentary, is, as Nunn said, “a hell whether moment for us.”

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