

Streambox's ACT-L3

WDIV-TV in Detroit delivers live signals from the Great Lakes sailboat race.

BY JEFF LIEBMAN

Two years ago, WDIV-TV — the Post-Newsweek owned, NBC affiliate serving the Detroit TV market — was challenged with providing viewers with live coverage of the Port Huron to Mackinac Island's 82nd annual sailboat race. The race incorporates 250 racing regattas in the Great Lakes, hosting sailors from around the world. The event generally lasts three days, depending on weather conditions. It begins in Port Huron (about an hour north of Detroit), goes up through Lake Huron and ends on Mackinac Island (where Lake Huron meets Lake Michigan).

A local TV station covering a sailboat race might not seem like that much of a challenge; however, this race takes place over a 200-mile course, and depending on weather conditions, can be as much as 10 miles to 15 miles off the coast, between the Michigan and Canadian shorelines. It's not possible to use portable microwaves and standard KU-band uplink technology.

Back in 2006, our first year of coverage, we rented two portable, gyro-stabilized Nera F55 Inmarsat fleet satellite dishes from a London-based company. The boats are very expensive, so we couldn't drill into the deck of the boat we were using. Instead we built a small, lightweight metal suction-cup platform to anchor the dishes on the deck. The problem we still encountered was the listing of the vessel from side to side, as we could only get a signal when the sailboat listed one way. Both satellite dishes were tied together using a Talking Head videophone. The technology offered us 64K bandwidth on each end, for a total of 128K. The picture quality, albeit poor, achieved what we wanted, which was live video from a



WDIV-TV photographer Tim Pamplin took edited content and encoded it using the Streambox software. He then transmitted the data using the two Hughes BGANs.

vessel speeding in the middle of the Great Lakes. On day two of the race, we encountered harsh weather conditions. Most of our equipment became waterlogged, and we lost a camera. Maintaining communication to coordinate live shots was hampered because of our crew's difficulty to re-

er and STB3-D5101 decoder. This system was attached to a wireless Sprint air card and two Hughes 9201 BGAN Inmarsat terminals as the means of transmission. The term BGAN stands for Inmarsat's new "Broadband Global Area Network" transmission.

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main in one position to get a satellite phone call out to the station.

A new plan

Today, the technology enabling remote transmission from a moving boat has improved drastically. This year we used Streambox's ACT-L3 Portable Video Transport Solution with the company's SBT3-6102 encod-

every inch counts. By combining these two types of technology, we saved a massive amount of space and weight, meaning we could add other devices. BGAN guarantees a video stream of up to 256K. Each terminal looks much like a portable laptop, with similar weight and design.

Our crew took advantage of background IP, available aboard the

Inmarsat bird. This allowed us to occasionally reach as much 400K. However, because you're using background IP, and not streaming class, it is susceptible to decreasing at any moment in the middle of a transmission if multiple other users suddenly access the network.

We based a WDIV crew — photographers Tim Pamplin and Cesar Gonzalez and reporter Paula Tutman — onboard the 154ft-gaff-rigged topsail schooner, the Highlander Sea. This restored, 83-year-old sailing vessel was large enough to accommodate our crew and equipment. Keep in mind, our crew spent three days onboard the boat, so we needed to pack all the equipment in watertight cases, including plenty of tape and batteries. Prior to the race we worked with vendors to ensure our technical plan would actually work. Hughes could not guarantee our success on a moving vessel, without the particulars of the degree of list of the boat or exact speed at which we'd be moving. Similar transmissions have been attempt-



WDIV established a temporary control room aboard the Highlander Sea.

market to transmit video over IP and selected Streambox's system for its ease in use, durability and reliability.

To assist with the race coverage, we had a team follow the racers on land, up the coastline, including WDIV chief photographer Dave Klein and news operations manager Jeff Liebman. Our land crew used a powerboat during the day to capture video and sound with

the race in progress.

To protect the cameras, we used a combination of underwater housings and simple plastic resealable zipper storage bags. The cameras were then firewired into the Streambox, and when EvDO coverage was available, we delivered the signal back to our Web site. When the sailboats tacked to the northwest, toward the Canadian border and away from the Michigan coastline, we switched to the BGAN terminals for connectivity through Inmarsat in the Netherlands, and eventually on the Internet.

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ed by a broadcaster from a boat in the Caribbean with limited success.

Two weeks before the race, Pamplin took the equipment out on a much smaller boat and ran tests for us, putting the system through some paces. The tests were aimed at delivering the best possible live video signal over IP using first wireless EvDO, then BGAN satellite technology. Our second goal was to guarantee the store-and-forward process that the Streambox system offers. In this manner, we could be assured that at the very least we'd be able to get content, whether it be "look lives" or news packages back to the station. We looked at products on the

the other racers, feeding that video back to Highlander Sea by portable 13GHz microwave, when available. In this manner, all video would be assembled on the main workboat, edited on an Avid Xpress laptop, and then stored and forwarded via the Streambox back to the television station for broadcast.

In addition, using a series of Sony Mini-DV HVR-A1U cameras mounted on Sticky Pods around the Highlander Sea, we were able to produce a live stream back to the television station's Web site. The Mini-DV cameras were outfitted with Century Optics 37mm fisheye lenses to provide Web viewers with a dynamic view of

Reporting back

Tutman provided live reports back to the station all weekend long for all newscasts, along with a video blog and the occasional live commentary for the stream. Web viewers from around the world — coming from North Carolina and as far away London — responded by e-mailing questions.

Pamplin worked as the transmission expert onboard the main workboat, managing the live stream to the Web site and our newscasts. "With EvDO we peaked at about 600K, over a 0.5Mb," he said. Pamplin also said the learning curve on the Streambox was easy, allowing him to worry about everything else happening onboard the boat. He did run into a challenge when it came to keeping the BGAN terminals aimed prop-



Onboard Highlander Sea, video was assembled and edited on an Avid Xpress laptop. It was then stored and forwarded using the Streambox system.

erly to Inmarsat because the wind changed direction without warning, thus changing the heading. To combat the wind, Gonzalez used gaffers tape to keep the laptop from moving from side to side as the boat moved.

The video quality was impressive, with little pixelation in the signal. Using the store-and-forward method to deliver the news packages, it was nearly impossible for the average TV viewer to notice the difference. Live shots were delivered as video over IP.

For the station team back in the newsroom, getting material from the

Streambox to air was simple because the device offers standard broadcast connections out, such as BNC video and XLR audio outputs. It also holds material in the box, awaiting an operator's command at a computer screen to play out the material. From a workflow standpoint, we did have to adjust things such as deadlines and material size.

When using the store-and-forward method, plenty of time (up to 45 minutes) has to be added into the normal mix for sending material. The material must be kept small in size,

which will probably please many news producers, as the longer the length in media, the longer it takes to send. Dependent upon what encoding rate we could use, we averaged (using a 2Mb rate) about 20 minutes to 30 minutes from the time the media was encoded to the time the material was registered, decoded back at the station and available for playout in real time. That meant Pamplin, as the transmission guru, had to stay on top of Gonzalez and Tutman to meet their deadlines early while onboard the boat.

The experience for the WDIV team was incredible. Viewers both on TV and online were treated to

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live and taped images they ordinarily wouldn't experience without sitting on a racing sailboat in the middle of the Great Lakes. The technology and news workflow that we chose was truly nonlinear and was bolstered by the ease with which we could move video over IP.

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