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SWIMMING WITH THE HD SHARKS



By Thomas Strodel

Any field production involves location, logistics, and handling unforeseen challenges. Add to that shooting in high definition—and underwater—and the challenges easily double.

Although the benefits of high definition are considerable (including superior sharpness, color, and the aspect ratio of film), one of the main drawbacks is its expense—especially with editing, which can cost upwards of \$1,200 per hour since it's still mostly linear-based.

Early in 2000, I had the opportunity to produce and direct one of the first videos to apply HD technology to an undersea shoot. The video allowed our team to discover, develop, and test a variety of new techniques and digital tools, including a specialized desktop computer-based editing technique.

The video was contracted by Air Sea Land Productions and Amphibico, a leading underwater camera-housing manufacturer, to serve two purposes. First, it would showcase the Amphibico,

staff we would use as talent, as well as a still photographer to capture behind-the-scenes images.

We scheduled a five-day shoot, diving in various locations around lower Nassau, Bahamas. The staff at Stuart's, including our divemaster/shark-tamer David Eads, helped us to formulate a strategy that would allow the greatest variety of dive locations, allowing us to fully test the camera system, while at the same time provide the best possible environmental conditions with which to capture the story. A simple schedule sheet was put together plotting each day's specific locations and shoots.

No matter how much you plan and coordinate, if you don't have an interesting story to tell, no one will want to watch. Instead of what might be a typical progression of product shots, I opted for a simple movie-like storyline, where the focus is on what the camera system can capture. The storyline involved six linked segments showing the talent exploring the undersea world. My intent was to combine this scripted storyline with the unpredictability of underwater marine life.

Shooting and Editing a Hi-Def Promo for Air Sea Land Productions and Amphibico Housings (and Re-editing HD in miniDV)

Amphibico's ground-breaking marine video housing (which can house the Sony HDW-700A and HDW-F900 HD camcorders, as well as most Betacams). Secondly, as ASL is a leader in underwater video and film production and production-support services, the video would serve as a promotional tool highlighting their underwater HD production capabilities.

The video would make its debut at the Amphibico booth at the DEMA (Diving Equipment and Marketing Association) convention in Las Vegas.

Preproduction

The first step was to assemble our team, which included award-winning shooters Anthony Lenzo and Steven Miller of Air Sea Land Productions (ASL), and the Director of Research and Development of Amphibico, Val Ranetkins. Next, I developed a simple budget using the "BoilerPlate Film/TV Budgeting Template" from BBP software (www.boilerplate.net). The template (with features much like Movie Magic's budgeting software) allowed me to quickly put together a workable budget, as well as make quick updates when the actuals came in.

ASL's production coordinator, Jennifer Kirsic, and I then worked on coordinating and scheduling the location, boat, crew, and talent from Stuart Cove's in Nassau, Bahamas, a facility known for its experience working with filmmakers. This location would provide us with a great diversity of dive sites and an experienced staff. Stuart also helped to identify two members of the

I used StoryBoard Quick from PowerProduction Software (www.powerproduction.com) to develop simple storyboards and blank storyboard sheets—all in the appropriate 16:9 HDTV aspect ratio. I then laminated the sheets on both sides so I could bring them with me underwater.

A Note on Customs

On any trip out of the country—even if you're using a broker—you need to make sure that you understand all the specific requirements of the country you're visiting and the U.S.'s re-entry rules. Make sure you ask in advance for all the fees and rates that the foreign broker will charge including shipping, travel, and even overtime. And, get it all in writing.

To handle the shipping and customs regulations, we contracted S.O.S. Global Express (www.sosglobal.com) to broker our equipment in and out of the Bahamas. They, in turn, hired a local broker in Nassau (as is required by Bahamian law), to handle the equipment once in the country.

Production

Our team arrived in Nassau on January 2, for the five days of scheduled shooting. Val met us in Nassau with two brand new prototype housings. One of the first things you notice about the housing is its large 100-degree aspheric lens. This lens allows you to get as close as nine inches to the subject and zoom-out to wide-angle shots—all with zero distortion.



Air Sea Land Productions and Amphibico, an underwater camera-housing manufacturer, created a video to showcase Amphibico's Amphibicam, a marine video housing, and to create a promotional tool highlighting ASL's underwater HD production capabilities.

The Sony HDW-700 cameras we rented fit snugly into the housings, requiring only the removal of their handles and viewfinders. This allowed us to quickly move from underwater to topside shooting in only five minutes.

Our initial dives were spent testing the prototype housings and perfecting operational techniques. Anthony Lenzo, Air Sea Land Productions, reports, "The neutrally buoyant housing has an awesome ability to stay on any shooting axis, causing less wrist fatigue—even after several hours of shooting."

As color accuracy/fidelity is a major consideration in underwater shooting, we wanted to see how the housing's optics performed at various depths. The deeper you go, the more red from the color spectrum is taken out of the scene. You compensate with various color-correction filters (accessed through the housing's pistol-grip controls) and repeated white balancing.

The production version of the housing has full access to all camera functions including iris, menu, and matrix. Unfortunately, access to the camera's paint control and variable iris were not yet available on the prototype, so we ended-up doing a lot of color correction in post.

After the first day of shooting, we previewed the footage back on land and were amazed with the clarity, color, and sharpness of the images. It was also amazing to notice that the camera captured subtleties and detail in images we couldn't even detect with our own eyes. After the testing was complete, we focused on the story I had developed.

One of the difficulties in any underwater shoot is team communications. You can't exactly call out camera or talent cues underwater. And as much as you plan topside, things can go astray and improvisation becomes the rule once you get into the water. During the shoot, we used OTS underwater communication devices (www.oceantechsystems.com), simple hand gestures, my "waterproof" storyboards, and a slate board with a pencil.

Over the next four days, we logged more than 12 dives, capturing shipwrecks, shark feeding, and a number of topside shots including interviews and beauty shots. The highlight was the unexpected discovery of a 100-year-old Loggerhead Turtle in the hold of a shipwreck. In the end, we ended up with over 13 hours of footage—more than enough for our purposes.

HD Post

Once back in New York, we had only a few days to compile all the footage into a video that would run no more than 10 minutes.

The first step was to log all the tapes. I built a custom log database in FileMaker for this purpose (which you can download from my website). The database allowed me to efficiently create a "paper cut" by printing out scenes on little strips of paper, complete with scene name, in and out time code points, and duration. I then arranged them in the order I wanted, with alternate clips available for each scene.

Choosing the postproduction facility very carefully, we decided to go with the Creative Group in New York City because of their reputation for quality, their color-correction capabilities, and their willingness to work within our time frame and budget.

My first step at Creative was to select the music. This was made easy by working with Troy Krueger, Creative's sound designer/mixer. With a customized database allowing random access to over 125,000 music selections, paired with Troy's skill and experience with sound, it was easy to identify selections that would work well for the edit.

Armed with my paper cuts for each segment, we began what would take us 11 straight hours to complete (most of which was for color correction). As there's currently no readily-available offline editing solution for HDTV, the video was edited totally online—which gave us only one chance to get it right.

As we had known on-site, most of the underwater footage would need to be color corrected. Creative's editor, Tom DeFeo, working on a Sony BVE-9100 edit control system with HDVS-7000 switcher, and dual-channel HDME-7000 (Digital Multi Effects System), compiled the edit and painstakingly color-corrected each underwater scene. The HDVS-7000 allowed Tom full control over primary and secondary color-correction tools, which enabled a greater control over subtleties of each color for each scene as well as the ability to



Sony HDW-700 high definition cameras fit snugly into the Amphibicam housings, which allowed ASL to move quickly from underwater to topside shooting in only 5 minutes.

recall previously stored settings. This saved a lot of time, when we would pull together scenes shot around the same time. The HDME system also allowed Tom to enlarge scenes, add special transitions, and crop-out areas, where necessary.

“This video gave me the opportunity to exploit the full features of the system, on this incredibly beautiful footage,” DeFeo commented.

Finally, we added the list of credits with the Chyron high definition Duet titling system (www.chyrongraphics.com), and the ASL and Amphibico logo animations. We then looped the video onto a 120 minute tape.

For the DEMA conference, Amphibico set-up a mini HD theater to showcase the video. No matter how much time, effort, and experience you put into your production, it’s the audience that has the final say. Thankfully, the video won the rave reviews of visitors to the booth.

Editing HD with Desktop and miniDV

Knowing that the first edit of the video was constrained in terms of time, cost, and the fact that it was done linearly, we knew we wanted to swap scenes if we had the opportunity. Luckily, with the prospect of the video being displayed at

NAB, we went in for another edit in late February. However, this time, we did things a little differently.

To cut the cost of the edit, we devised a technique that allowed us to preview and compile an EDL (edit decision list) using a desktop computer and miniDV deck. This relatively straightforward technique arose more out of cost-savings than anything else since it relies on desktop-based tools. It was a simple matter of putting together already-existing capabilities of various programs and systems that hadn’t been integrated before. The technique involves the following steps:

* First, we had Creative dub each of the camera masters onto miniDV tapes with a letterbox to accommodate the differences in aspect ratio going from HD’s 16:9 to NTSC’s 4:3.

* As most miniDV systems do not support professional time code, per se, we had Creative window-burn the time code from the HD tapes directly into the black area of the top letterbox. As Charles Suydam, chief engineer from Creative, explains it, “As a consumer product, miniDV uses a proprietary time code format loosely based on SMPTE dropframe time code, which is not compatible with professional versions of time code.”

The bottom line was that the only way to get the professional SMPTE time code from the HD tapes onto the miniDV would be via a window burn.

* The location of the window burn was important for a number of reasons. First, we had planned on using Adobe Premiere’s DECODE BURNED-IN TIMECODE function, where it optically reads time code visible on the video. Therefore, we needed it placed over an uncluttered background. Second, if we ever wanted to cut other videos from these tapes, we had window-burn dubs with a clean (preserved) image area that would then need only a simple black mask over the top letterbox to hide the burned-in time code.

* Next, using the FileMaker log database, we identified replacement clips and sequences from the miniDV tapes.

* These clips were then digitized into Adobe Premiere using a Sony miniDV deck with a FireWire connection to a Macintosh G4. Although the DECODE feature in Premiere didn’t work very well (it had trouble reading the code and keeping in sync—even after we tried several different time code font sizes and thicknesses), Premiere did allow us to manually set the time code in in-point.

* We then compiled the edit in Premiere, and

then exported the EDL to a file that Creative's editing system could read.

* As the color correction would still needed to happen in the HD editing suite at Creative, having previous settings on file in the HDME saved a lot of time when we went into the re-edit.

Now, of course, if you edit with a system capable of handling professional SMPTE time code, you can forgo the window burn and this technique should would work much the same way.

The final change we made was with the ASL and Amphibico logo at the end of the video. In the original edit, the animations became stretched when they were brought in from their native 4:3 NTSC source then converted to the 16:9 HD resolution. Although the sharpness was there, the logos were seriously skewed.

We could have corrected this skewing in a number of ways. Creatives' DME could have squashed the image, but the quality would have been sacrificed, and it wouldn't have been numerically accurate. We could have re-compiled each frame of the animation into an HD resolution, and re-created the animation frame-by-frame, but that would have been too costly.

Instead, we came up with a relatively inex-

pensive solution. Each of the animations, which were created by Alex Sanchez of Non-Stop Graphics (www.nonstopgx.com) using Adobe After Effects and Discreet's **3d studio max**, consisted of around 300 separate Targa files. We took the raw files for each animation and, using Equilibrium's Debabelizer, batch-re-sized each file to created a "squashed logo."

Next, we re-composited the animations in Premiere, and exported them to miniDV. This, in turn, was brought back into the HD edit system during our re-edit, which in doing so, stretched them back to their original and correct shape.

Conclusion (and More Info)

Since NAB, Air Sea Land has licensed the video to several companies for use in product demos, conferences, and trade shows. (Perhaps the most unusual use of the video, though, came in October of 2000, when it was licensed for use in a private residence as "digital art.")

The video proved very successful in promoting ASL and Amphibico's housing, which has since been released and includes full access to the camera's menu and paint system. The project

also afforded me the opportunity to develop tools and techniques that made the production run smoothly, and save money.

Having taken delivery of the full production version of Amphibico's housing, ASL now offers the Amphibico housing for rental paired with the Sony HDW-F900 high-definition camcorder.

For more details about the shoot, including the complete streaming video, and free downloadable files, you can visit the ASL website at www.airsealand.com. For more details on Amphibico's line of underwater housings, access www.amphibico.com.

For more information about underwater videography, check out Steve Miller's tape: *Guide to Shooting Underwater*, available from the ASL website. For the more adventurous, you can also check out the "making-of" documentary, *Under Pressure: Making The Abyss* on *The Abyss* Special Edition DVD (www.abysstdvd.com). ■

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