

R2Sonic Case Study

A GLIMPSE INTO LIFE AT ECH081

R2Sonic is excited to feature this blog from Lisa Brisson, a Senior Systems Engineer at ECH081, a US-based distributor for hydrographic survey equipment and marine instrumentation. Lisa provides a look into what it's like to be a Systems Engineer and Survey Equipment expert in the field of Hydrography. Read on to get a glimpse into her typical day.

The warm glow of the sun peaks through the window blinds and reminds me it's time to get up and put on my uniform: light breathable shirt, shorts, sneakers, and lots of sun block. About an hour later, I'm sitting on a boat tied up next to a dock, sweating in the North Carolina heat. A new multibeam installation is underway.

“And thank God, we are dealing with a R2Sonic I2NS system today. The combined topside box for both the multibeam and inertial navigation system saves me from integrating multiple topside interface boxes, cuts back on more than half the cables required, and simplifies the setup for each device driver in our acquisition software.”

Within the first hour I've already gone through the equipment and figured out we have a few missing pieces to our puzzle. They're the usual culprits: serial cable, null modem, and a USB-to-Serial adapter. No biggie, I've come prepared with backups in my tool kit. I have learned from this mistake many times over in the past. Let's just say I've driven too many hours out of the way to find the elusive RadioShack store.

Next, I critically analyze the boat's space to find the best location for each component. This fine survey vessel has a relatively small cabin, which on most days probably holds a crew of 2-3 mates. Today, it's holding five: the usual crew, plus myself and my partner in crime at ECHO81, Mr. Damon Wolfe. There's a topside interface box, computer, and three monitors to be placed, cables to be routed, and lever arms to consider all with keeping the crew's comfort in mind. I decide to go with the KISS (Keep-It-Simple-Stupid) method. I place the motion reference unit under the door step so that it's protected and located as close as possible to the natural center of gravity of the boat.

Then, I mount the GPS antennas to the vessel's roof with a clear and open view of the satellites above it. By that time, the crew has decided where they want the other peripherals, so those go in without a glitch. And thank God, we're dealing with a R2Sonic I2NS system today. The combined topside box for both the multibeam and inertial navigation system saves me from integrating multiple



Figure 1: Author with installed equipment aboard “The Clock”, one of McKim & Creed’s hydrographic survey vessels

topside interface boxes, cuts back on more than half the cables required, and simplifies the setup for each device driver in our acquisition software.

Now, the “Pièce de résistance”. I unbox this beautiful bright blue housing which is accompanied by the intoxicating smell of new urethane. “Wow, the Sonic 2022! And, man is this thing sexy!!” I exclaim while winking over at Damon. I get a perplexing look from my colleague. “What? I mean, from a hardware standpoint it is...?” Damon just chuckles, shakes his head, grabs the echo sounder from my hands, and moves on to securing it and the sound velocity sensor to the customer’s existing pole mount.

The crew takes a step back to check the alignment, and at this moment I notice: everyone’s staring at it – mesmerized by the shiny blue aura. I know the feeling they’re experiencing right now... It’s the all too familiar disappointment that sits in your belly when you know you must hang this expensive piece of kit in the murky waters below. No matter, this will fade and turn to excitement once they see the data!

“I figured it’s time to show them the vertical mapping capabilities of the system.”

We map a few passes in the Cape Fear River and the crew is starting to feel comfortable behind the wheel. I decide to change it up a bit and instruct the captain to get close to the nearby seawall. I figured it’s time to show them the vertical mapping capabilities of the system. As we transit parallel to the wall, we notice a peculiar object starting to take shape with every new ping of data. There, lying on the seabed is what looks like a Dodge pickup truck. And a newer body style at that! We decide to log a few more passes and the more we move around, the more vehicles we find. We’re all in disbelief and wondering how they got here.



Figure 2: McKim & Creed’s survey vessel showing the Sonic 2022 echo sounder at the end of the mount.

Okay, back to reality... We finally splash her and run a few quick tests to make sure the Sonic 2022 is functioning properly. We then enter the final offsets for each device in their corresponding software modules and run one last check. It’s good! A push from the dock and we’re off to find the perfect patch test site.



Figure 3: Investigation area is located just under the bridge and to the left, closest to the seawall.

As we meander around under the bridge, we catch the attention of a local police boat. They eventually come over and start questioning us. Ecstatic, we tell them what we've found. In disbelief, they board our survey vessel to peer over my shoulder and review the data that we just collected. One of the police officers mentions they've been looking for a Dodge Ram 1500 that was reported stolen a few weeks ago. Hmm, doesn't look good for the so-called "victim."

We later found out these vehicles are part of an ongoing investigation in a case of insurance fraud. Turns out the insured owns the lot adjacent to where we were surveying where he had been dumping cars for a number of years and getting away with it. Not anymore! I take a couple of screenshots showing the vehicle in question and its geographic location, save it to a small USB drive, and hand it over to one of the officers. Pleased with their good detective work, they hop back on their boat and motor away.

Still in awe, I look at my watch and realize we're quickly losing daylight and instruct the captain to get back on line. We have a patch test to finish! The crew and I complete our survey lines for the day, capture the necessary draft and patch test values, and head back to the dock. We finish up with a freshwater rinse for all the equipment and secure the boat for our adventure tomorrow. It's been a good first successful day, and now it's time to reward ourselves with an ice-cold beer as we watch the sun set off in the distance.

Over the course of the next few days, I will have showed the crew how to properly and efficiently install, patch test, and carry out a hydrographic survey using this echo sounder. This in-house capability will open more doors for them and create new revenue streams to ensure their profitability. As an added bonus, I even made some new friends along the way.

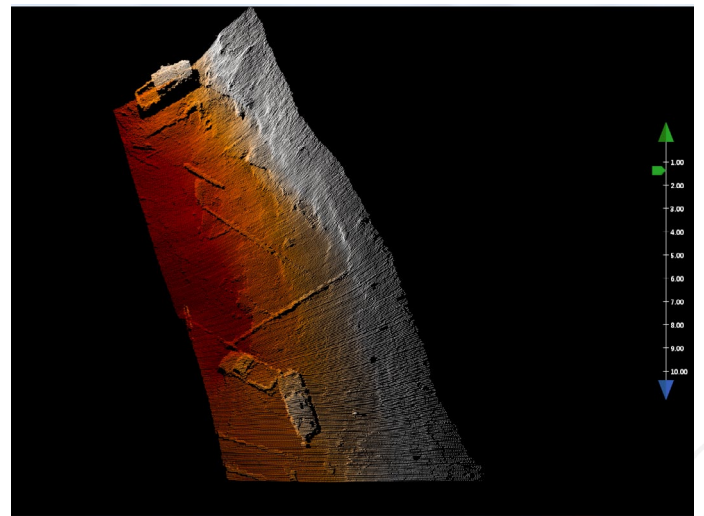


Figure 4: Single pass of sonar data showing the vehicle in question (top) and two other vehicles (bottom).
Sonar image courtesy of SonarWiz.

Ten years ago, when I set out on this career path I had no idea I would be designing, integrating, and passionately using this type of instrumentation. Every day, every client, every location is like a new expedition. Similar to Lewis and Clarke, except... only underwater. The setting and the sonar may be different, but our goal at ECHO81 is one in the same: provide our clients with top of the line equipment and keep them productive, profitable, and pleased with their purchase.

“Every morning when I walk out that door, I wonder... what will I discover today?”

I know this lifestyle isn't for everyone but I love it! I could be in Cape Canaveral one day, Hilton Head the next, and even São Paulo the following week. The life here at ECHO81 is very rewarding. It brings new opportunities to discover uncharted waters, a chance to see things only others dream of, and create everlasting connections with people around the world.

Every morning when I walk out that door, I wonder... what will I discover today? *Expedition courtesy of McKim & Creed.*

ABOUT:

ECHO81 is a US-based distributor for hydrographic survey equipment and marine instrumentation offering sales, rentals, installations, and training. The company has partnered with several leading manufacturers throughout the industry to provide a comprehensive portfolio serving the offshore windfarm, oil and gas, marine construction, port and harbor security, and research markets. Over the last 5 years, ECHO81 have become THE equipment specialist and trusted provider to many. To learn more about ECHO81, **visit www.echo81.com, or call +1 (706) 522-3022.**

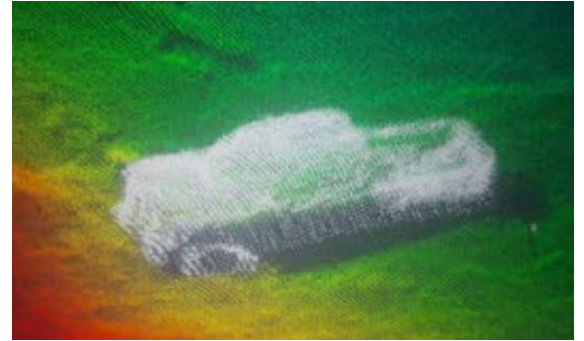


Figure 5: Multiple passes over vehicle in question to create a high density point cloud image. Image courtesy of SonarWiz.



Figure 6: Piece of the vehicle in question, later retrieved by local police. Photograph courtesy of McKim & Creed.