

Boats On the Air: Inaugural Activation on San Francisco Bay

The San Francisco Radio Club faced the triumphs and challenges of getting on the air from a sailboat.

Kent Carter, AJ6NI

Members of the San Francisco Radio Club completed the inaugural Boats On the Air (BOTA) activation of San Francisco Bay on Saturday, June 5, 2021. BOTA was inspired by other successful “On the Air” programs, including Summits On the Air (SOTA) and Parks On the Air® (POTA). The basic idea is to bring mobile radio gear onto any floating object, set up a station, and then activate it within a specific time window. For more information, visit www.boatsontheair.com.

The team chartered *Auriah*, a 37-foot Beneteau Oceanis sailboat based in Sausalito, California. We cast off from the dock at 10 a.m., headed out into the Bay by motor, and began to set up the stations.

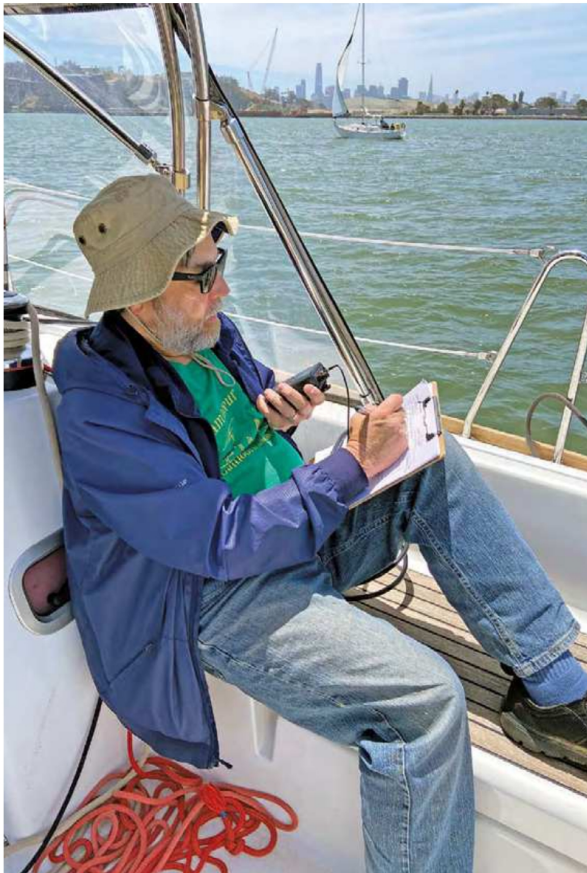
Preparing *Auriah*

Our plan was ambitious — we wanted to activate four bands and modes: 2 meters on FM simplex, 17 meters on FT8, 20 meters on SSB, and 40 meters on CW. First, we set up a simple wire antenna. One end of the insulated electric fencing wire was attached to the boat’s spinnaker halyard (a line that goes up to the top of the mast), and the other was attached to a fitting on the back that connected the antenna to the center wire of a coax. Lacking another ground system in the boat, the team opted to ground by hanging copper hanger tape off the stern and submerging it in the salt water. This created a ground, as demonstrated in Gordon West’s seawater grounding experiments (see www.sfbaysss.org/resource/doc/SeawaterGroundingFor_HF_Radios_byGordonWest.pdf). A total of 10 feet of 1-inch-wide copper hanger tape was connected to the coax’s shield and dropped into the Bay. This created a sloping antenna that we hoped would cover both 40 and 20 meters.

However, we realized that the end of the copper hanger tape was bouncing off the waves. Dan Valins, KG6EWL, thought to wrap and tape the end of the copper around his full water bottle, giving it enough weight to stay just under the surface.



Auriah's antenna setup. [William Meng, K9TTL, photo]



John Owens, N6JSO, operating on the 2-meter band from the cockpit. [Kent Carter, AJ6NI, photo]

Time to Test

Ryan Connolly, N9PYL, connected the coax from the wire antenna to his portable battery-powered Elecraft KX3 in the boat's galley, achieving a 1:1 match using the internal tuner. Richard Lesnick, KJ6PTX, then made a call using SSB on 20 meters. Within a couple of minutes, we had our first contact: the USS *Midway*, NI6IW, in San Diego! It turned out that our first activation was concurrent with the annual Museum Ships Weekend.

Richard had thought ahead and brought a Low Band Systems multiplexer, allowing us to use two different radios/bands with the single wire antenna. Our CW operator, Rick Ellis, K6TOR, connected his battery-powered Lab599 TX-500 transceiver to the multiplexer. He began operating on 40 meters from his dining table position and soon completed a contact.

Next, we set up the FT8 rig at the boat's navigation station. I brought my Icom IC-7300 and hooked it up to my 33 Ah SLA battery. I also brought an inverter that I plugged into *Auriah's* dc power system for my Mac laptop. Our antenna solution was an IAC standard Double Bazooka 17-meter dipole that we attached to the spinnaker halyard via antenna cord. This was lowered to about 20 feet below the top of the mast. The ends were then attached to the rails with more antenna cord to create an inverted v setup. With this in place,



Ryan Connolly, N9PYL (right), works 20 meters SSB while Richard Lesnick, KJ6PTX (left), looks on. [Kent Carter, AJ6NI, photo]

I used *WSJT-X* software to make a call, and made a contact right away. FT8 on 17 meters was ready to go.

Finally, we took an Ed Fong DBJ-1 VHF/UHF antenna and attached it to one of the stanchions on the starboard (right) side amidships. We led the coax back to the cockpit where our 2-meter operator, John Owens, N6JSO, used his Kenwood TH-D74A handheld transceiver to get a radio check using simplex with another ham operating from Mount Tamalpais in Marin County.

Setting Sail

By then it was 12:15 p.m., and we felt like we were ready to go in terms of our radio setup. We had reached our desired spot to start the activation — just east of the former Navy base on Treasure Island. This location offered protection from the San Francisco Bay's strong westerly winds. It was also near the marina where *Naut-A-Lone*, a Ranger 33 sailboat skippered by David Chenette, AI6XM, would be doing its own activation during the same time window. When we rendezvoused with the boat, we were excited to hear that Dave had enlisted the help of Stanford Amateur Radio Club members!

After a quick lunch, we raised our sails and cut the engine. Soon after, the 1 – 4 p.m. PDT activation window began. This is where we ran into our first problem. Our CW operator, Rick, found it difficult to operate his paddle with the boat's rolling motion. Then he started to feel seasick. That meant the end of CW operating for the day.



Stanford Amateur Radio Club members Samyak Rajanala, KN6MYI (left), and Anita Kulkarni, KM6OUB (right), on *Naut-A-Lone* with *Auriah* in the background during the activation. [William Meng, K9TTL, photo]



The end of the 20 – 40-meter wire antenna was attached to the aft railing of *Auriah* with a copper hanging tape counterpoise weighed down by a full water bottle. [Kent Carter, AJ6NI, photo]



The team and crew sailing home after the activation. [Kent Carter, AJ6NI, photo]

Naut-A-Lone got underway with their sails and headed north toward Angel Island with us in chase. As soon as we left the lee of Treasure Island, San Francisco Bay showed its muscle by hitting us with 25 knots of wind. *Auriah* began to heel and hit 7 knots of speed, so our 20-meter rig showed the SWR jumping from under 1:1 to over 8:1! This was because the water bottle placed at the end of our wire antenna's counterpoise was bouncing out of the water. There were two causes for this — the speed of the boat, and the fact that we had put the counterpoise for this antenna off the port (left) end of the rear railing. That part of the boat was higher in the air than before because of the heeling.

We also realized that propagation of the VHF/UHF J-pole would change depending on how much the boat was heeling. It became imperative to finish the piled-up 2-meter contacts before tacking the boat in the other direction, as we were likely to lose some stations.

Once reaching the east side of Angel Island, we found the wind shadow that brought our speed and heeling down. This allowed the counterpoise to stay in the water and let us focus on getting more contacts.

Conclusions

We stayed there until our activation ended. Despite our challenges, the event far exceeded our expectations.

We ended up with 40 contacts; 2-meter logs showed the most, with 25. It was great to hear from so many local hams that were chasing us after learning of the activation. We even reached a local SOTA participant, giving us each a 2-for-1 for “On the Air” challenges. Our farthest contacts were Brazil and Japan, made using FT8 with 50 W.

Though none of us claim to be marine radio experts, we were able to successfully use our radio equipment on a sailing vessel while underway, and we had a great time doing it! After putting away our gear, we enjoyed a nice sail back to Sausalito in a cool, 15-knot breeze. The sun was shining and there were smiles on everyone's faces. We will all be doing BOTA again soon and hope that others will, too.

Kent Carter, AJ6NI, is a composer living in San Francisco, California, and has been a licensed ham since 2017. His primary interest in radio is FT8/SSB on HF, and he is a cofounder of the Boats On the Air (BOTA) program. Carter's other hobbies include sailing, fishing, and surfing.

For updates to this article, see the QST Feedback page at www.arri.org/feedback.

