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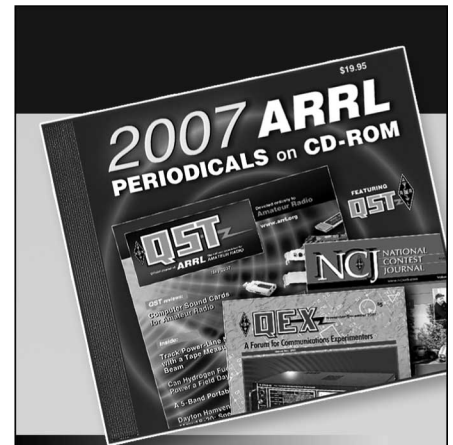
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Casting Off With Ham Radio

Own a boat, or thinking of getting one? Don't forget to take Amateur Radio along when you hit the water!

By Rick Booth, KM1G

c/o Offshore Publications
PO Box 817
Needham Heights, MA 02194

Americans have been turning to the water for recreation by the tens of thousands recently, and boat sales have soared in the past five years. If you're among the wave, do you take Amateur Radio along with you? If not, you may be catching one boat, but missing another.

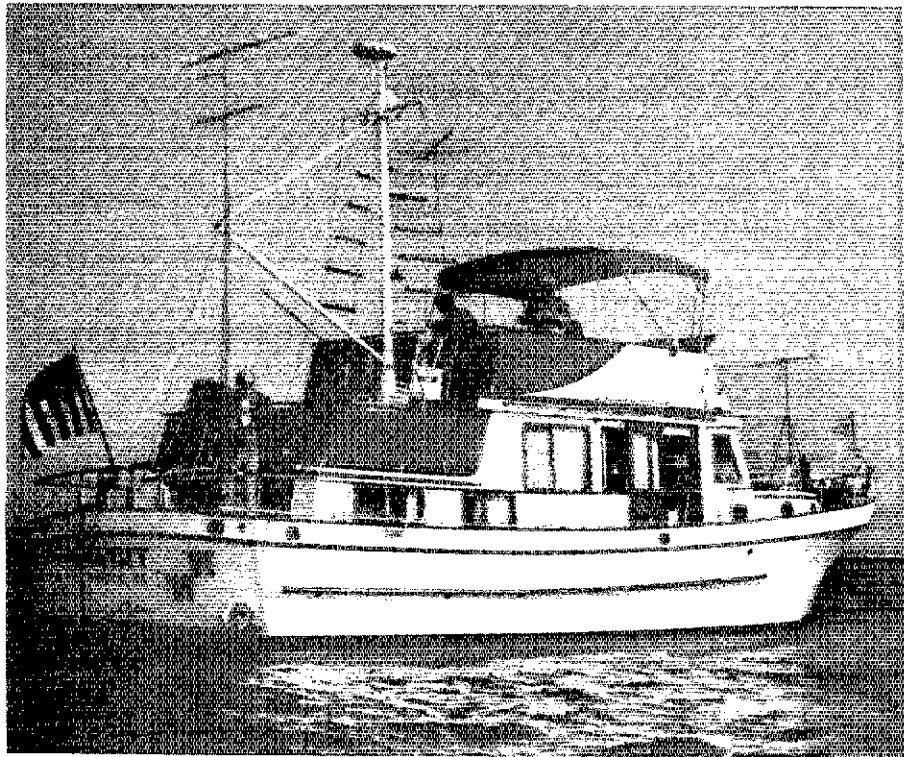
Of course, boats and radio are old chums. Most boaters are familiar with marine VHF, the channelized FM service at 156 MHz. The solid-state revolution that has swept hamdom has also brought small, affordable, bulletproof VHF rigs to boaters, and it's easy to obtain a license, if you own a boat. That's the bright side.

Unfortunately, there is a darker side as well. Marine VHF is without Amateur Radio's rich tradition of good operating practice. A few hours spent listening to marine VHF can sour anyone. A lot of nonham boaters I know won't even turn their marine rigs on, its mindless anarchy unnerves them so. But at least they *know* about radio, what it is—and what its potential is.

Imagine their delight when I introduce them to 2 meters with my little hand-held. Repeaters are virtually unknown to them, and the distances I can reach blow them away, thanks to flat "terrain." Moreover, they're awed by the number of hams who can take part in the same roundtable—no confusion, no anarchy, no wasted time. That such courtesy and skill allow so many hams to use the same air at the same time is a revelation to boaters, a miracle on the order of water to wine.

Of course, I'm careful to choose repeaters which I know are frequented by good ops, and I'm careful to add the disclaimer that ham ranks have their share of bad apples—and usurpers.

From that casual 2-meter demo, I slide right into my pitch on high frequency and the incredible array of modes open to licensed amateurs. These demos do as much for me as they do for my subjects—having seen those wide eyes and heard those exclamations, I'm not likely to take this hobby's wonders lightly.



Amateur Radio and boating are natural for each other, as exemplified by W1TUM's maritime mobile operation in the September VHF QSO Party. Give it a try! (photo courtesy W1TUM)

Of course, *you* don't need to be told about these wonders—you're already on the air. If you're a boater, whatever you do, don't leave ham radio at home when you get under way. Big mistake.

One of the best things about Amateur Radio is that it mixes so well with other hobbies. You've read of backpackers and campers, bicyclists, balloonists, fixed-wing and helicopter pilots who take ham radio along—boating hams do the same. Boating and Amateur Radio mix like peanut butter and jelly.

A Dream QTH

Think about it. Ever long for a wide-open QTH, a place with nothing to interfere with your signal—no buildings, trees, mountains, neighbors or power lines?

Put yourself on a boat, away from shore. Shazam! No obstructions, nothing but (we hope) calm water on every azimuth. There's

great operating to be had, routine hamming for sure, and when you add the mariner's periodic need for emergency communications, you've got a powerful brew. There are those who say a boat is the perfect QTH.

Advances in Radio Equipment

It wasn't always so. Sure, the ocean's always been a perfect ground, and it's always been just as flat (*most* of the time). But the rigs, that was something different. Put yourself on a small boat with a National NC-303 receiver and a Hallcrafters HT-37 transmitter. Tubes need high dc voltage; the final plate supply in the HT-37 puts out 800 volts. Tube supplies have to step up the ac voltage and then rectify it. We're talking major power supply here—you might as well leave the YL or OM home. Fishing tackle too. There's no room. In fact, there might not

be room for *you*.

Tube rigs didn't (and still don't) like boats. They need lots of ac; boats normally have only dc from batteries. Tubes don't like vibration, and periodic pounding is part of nautical life. Finally, tube rigs were *big*. Ever heard old gear called a boat anchor? And you thought it was just an expression!

Enter the solid-state revolution. The same technology that swept the racks from your shack also wiped out the single biggest impediment to putting ham radio afloat. Today's HF briefcases thirst for 12-V dc—no tubes to flatten batteries or go south from wave action, and they leave space aboard for something besides radio, like people.

Come Aboard

If you're sold, let's get on with it. Let's get that solid-state, HF rig wired and ready to be fired. The sunspot cycle's about to peak!

Not so fast, mate. If solid-state electronics demolished the single biggest obstacle between hamming and boats, it didn't beat them all. Boats are a special environment. You'll need to do some planning.

Your two biggest decisions will be what kind of antenna, and how to prevent onboard RFI. In the first place, boats don't have the space of home, not even a mobile one on a handkerchief lot. Secondly, RFI at sea can have more dire consequences than it does ashore.

Antennas

Balanced HF antennas are rare on boats; the vast majority are fed against ground. Not only is ground so close and so superb, in the form of water—there isn't room for a dipole or beam. Most sailboat hams use their backstay for an antenna. The backstay is a wire running from the masthead to the boat's rear, or stern. Rare is the sailboat that doesn't have a backstay. Egg insulators electrically insulate it from the rest of the boat's rigging, and you affix the feed line at the bottom egg, creating an end-fed random wire.

You'll need a tuner, preferably at the feedpoint and not near the rig. An automatic tuner (external, not in the rig) is especially suited to the task. Most sailboats have a compartment near the stern called the lazarette; a tuner stashes there nicely.

Beware: If your rig has a built-in tuner, don't rely solely on it. Without a tuner at the feedpoint, you're engraving an invitation to stray onboard RF. More on that in a minute.

You can energize other parts of the boat's rigging, and some sailors like mobile whips. But the backstay is so convenient, and works so well, that most sailors go with it.

Hydrocarbon-powered hams have more leeway. I've seen cabin cruisers with towers and beams, believe it or not, but weight and

Maritime Mobile Rules and Regs

Situation: You and some friends are boating one mile off the coast of Mexico. You are a ham, but, for some reason, the leash of your FCC license doesn't seem as tight as it did just a few hundred miles ago when you were off the coast of California. "It sure would be nice," you think to yourself, "to operate a little on the ham bands." You know your commercial marine rig will operate in the ham bands. Can you legally do this? No! Not until you meet the special conditions as specified by the FCC and by the country in whose territorial waters you are boating.

"Why not?" Well, for one thing, consider Section 97.101 of the FCC rules. "In addition to complying with all other applicable rules, an amateur radio station operated aboard a ship [or aircraft] must comply with all of the following special conditions: (a) The installation and operation of an amateur mobile station shall be approved by the master of the ship . . . ; (b) The amateur [maritime] mobile station shall be separate from and independent of all other radio equipment . . . installed on board . . . ; (c) The electrical installation of the amateur [maritime] mobile station shall be in accordance with the rules applicable [to ships as directed by] the appropriate governmental agency; (d) The operation of the amateur [maritime] mobile station shall not interfere with the efficient operation of other radio equipment [on board] . . . ; and (e) The amateur [maritime] mobile station . . . shall not constitute a hazard . . ."

Additionally, since you are in Mexican waters, you need to obtain a reciprocal operating permit for Mexico (or whatever country in whose territorial waters you are boating). Your FCC license applies when you are in the US, its territories or on the High Seas (ie, International Waters.) If you're a mile off the coast of Mexico, you're under that country's communications jurisdiction and you must apply to the government of that country in order to obtain a permit. Beware—certain countries have been known to seize gear operated without authorization.

Always check to see if the country in whose waters you are boating has a third-party agreement. In the case of Mexico, we do have a third-party agreement, so you can run third-party traffic while in that country's territorial waters. If the US does not hold such an agreement, you are prohibited from passing third-party traffic. Also, remember the prohibition on business communication in the Amateur Radio Service. You are "mobile" on water rather than land, but the same rules must be followed—except when you are in the territorial waters of another country, in which case you follow their rules. The Washington Mailbox column of October 1988 QST, "Amateur Operation On the High Seas," goes further into detail on the "dos and don'ts" of maritime mobile operation than we can here.

"But," you think to yourself, "it would be so 'convenient' to use the commercial marine rig to make that phone patch on the ham bands." It would be too convenient. The rules of the Amateur Radio Service are there to protect *us* and it is up to *us* to abide by them. If faced with a life-or-death emergency, almost "anything goes" since the providing of emergency communications is one of the basic purposes of the Amateur Radio Service. This privilege should not be abused. A boater should not possess an amateur rig to be used "only in emergencies" if he or she has no intention of obtaining an Amateur Radio license. Our spectrum is far too precious to be abused.

So, if you are operating your station maritime mobile and you decide to break a rule—"just once out of convenience"—remember that your fellow hams are counting on you and you on them to follow "the rules," to follow the Radio Amateur's Code and to uphold the tradition Amateur Radio offers.—*John C. Hennessee, KJ4KB*

windage aloft make that configuration a bad idea, even if your boat is big enough. If you're like the majority, you'll choose a mobile whip. As always, be sure it's fed against a good ground. Peek over the boat's side—you're looking at *the best* ground there is.

The Ground

Of course, you've got to harness it, which brings us back to stray onboard RF, which is likely if you're not mindful of ground. Nobody likes stray RF in the shack, but ashore you don't call on electronics to guide your home—satellite navi-

gation (SatNav), top band's old nemesis LORAN, or radar. There's even a new electronic compass, the fluxgate. If you don't check before leaving port, RFI may do to your navigation instruments what the Greeks did to Troy, and a lot faster. Of course, you shouldn't be in a boat unless you can navigate without electronic aids, but if you've got them, why handicap yourself?

Getting to ground can be as simple as a length of conductive ribbon (copper or aluminum) thrown over the side, attached to the ground side of the feedpoint. Use the widest you can get—remember skin effect.

Trailing ribbon is the quick and dirty way to find ground. It works, but it can have dire consequences if the engine is running. If you back the boat down, the ribbon can get caught in the propeller, and there's always the outside chance of the ribbon drifting forward. Best use another route.

A grounding method that doesn't actually use the water is to run conductive (read: copper) strips along the inside of the boat as a counterpoise. Shoreside hams do it with success. Trouble is, finding a convenient run that's a quarter wave on your favorite band might be a little tough in a boat's tight quarters, especially if your favorite band is 75 meters. The bright side is that a counterpoise can cut down on-board RF. It's especially useful in that capacity when used in conjunction with the third, last and best ground system.

A Serious Marine Ground

If the under-way ham bug really bites, you might as well get serious. Next time the boat's in dry dock, plan to have a ground plate installed on the underside of the hull.

Naturally, ensure that it's installed in a seamanlike manner. It doesn't make much sense to use ham radio to call MAYDAY because you're sinking when the cause of your leak is poor through-hull fittings on your ham ground!

The plate's size can vary considerably. For plain copper, some sources recommend a pretty sizable slab; 12 square feet is mentioned often. That's hard to find on a 20-foot walkaround outboard boat.

Fortunately, many reputable marine electronics outlets offer specially fabricated plates made of porous copper to fool electrons into thinking the plate is much bigger. The hull-plate method offers not only the best ground method for your ham station, but you can also tie all the boat's electronics into it.

Give It a Try

Don't think that HF is the only game in town, or that you have to plan an ocean crossing before you can get on the air. You can have just as much fun sitting a mile off your favorite beach, working DX on 10 or 15 meters with simple monoband whips, as

you can back home with your tribander-tipped tower. And you might be surprised at what you can do with VHF offshore. Even if you just take your outboard for a little fishing and throw a hand-held in your pocket, repeaters you usually don't hear can beckon. Park a 5/8-λ whip on there, or, better yet, a collinear array, and you're into some serious fun with only a hand-held.

Better still, take advantage of what your boat can do that the home QTH can't. It's *mobile*. It can move. Many's the ham who has found Amateur Radio handy in a strange land, even a county or two away. There's a never-ending supply of advice and directions, besides the usual rag-chewing fun. Take a run down the coast a few miles, cross the big lake and see what's on the other side. Ham radio will be there, and the hams waiting will greet you with open arms.

Just don't forget to take time demonstrating Amateur Radio to your nonham boating friends. I can use all the help I can get. QST

Strays



WHAT'S YOUR NAME?

It was one of those dreary, but ham-perfect, winter afternoons that I made a RTTY contact with KBØM (Duane) that triggered this incident.

After my initial greeting, I transmitted my RTTY brag tape which mentions that I was a high speed (Mil-Spec #777) fixed-station radio operator assigned to 8th Army Headquarters in the South Pacific during WW II.

Once the island of Leyte was secured, 8th Army management turned its attention to other nearby major islands. I was ordered to join the radio team assigned to the newly acquired communication ship *PCE 850*. This vessel was a floating command post with full communications and secret code facilities for use by the commanding general and staff if they needed it during invasion operations. The officer in charge of our communications team was Lt Daniel H. Mercer.

When Japan signaled its desire to surrender, our communications team was ordered to Tokyo Bay as initial occupation troops. We were anchored off the bow of the *Missouri* and were witness to the surrender ceremonies.

Shortly after our arrival in Tokyo Bay, we were ordered to disembark and take up duty in Yokohama at the Court House Army radio station, already in the process of being set up by the 8th Army. All during this time our radio team continued under the command of Lt Daniel H. Mercer.

In the months after the surrender, our war-time company started to disband as we were ordered home for discharge. January 1946 was the last time I saw my group as we scat-

tered to the 48 states.

From 1946 to 1980 I had no contact with communications or electronics other than as a consumer. My time and efforts were directed to business except for time spent boating. During 1980, I began to think of retirement, and it occurred to me that I was in need of a full-time hobby. A local illegal (high-power) CBER was receiving negative publicity in the newspaper at that time. The article mentioned the merits of ham radio and triggered my curiosity. I made contact with the local ham club and attended the Novice and subsequent upgrade courses.

Upon completion of the Novice course, I became a member of the South Jersey Radio Association and began attending the club meetings. It was at one of the meetings that I asked several members about mini quad antennas, as I was interested in one for the station that I was installing.

I was advised to call a member named Howard and I did. We talked for over an hour, and he patiently answered all my questions. During the next five years of membership in the club, I never got to meet Howard or be in contact with him again.

Upon retiring from business on July 31, 1984, my wife and I moved to Punta Gorda, Florida. My station was set up immediately, and I became active in the local ham community. On January 9, 1986, almost 40 years after my discharge, I was in RTTY contact with KBØM when another station (W2FAZ) broke in with a message directed to me. WHAT'S YOUR NAME? K. I responded with my name, and he came back THIS IS EX-LIEUTENANT MERCER ALSO OF 8TH ARMY HDQTRS. RADIO.

He became so excited he asked for my phone number and called me long distance, not taking any chance of propagation dropping out. He discovered that I don't live far from his daughter, and right then he announced his plan for visiting me. He ar-

rived several weeks later, and that's when we both learned how small the world really is.

When he arrived at my home, we began comparing a lot of cross information about the last 40 years. I learned that he lives in Cherry Hill, New Jersey, where I had lived for 10 years before moving to Florida. I learned that he lives no more than 10 minutes away from my former residence. I learned that he belongs to the South Jersey Radio Association but seldom attended meetings. He remembered my mini quad phone conversation with him in 1980, but it took a chance occurrence of his tuning his rig at the right time and the right mode to pick up my brag tape transmission! This is how I came to sort out that military Lt Daniel H. Mercer is really civilian Howard Mercer.

How small the world is, especially in ham radio! And WHAT IS YOUR NAME? K.—Paul London, K14XZ, Punta Gorda, Florida

QST congratulates...

Larnelle "Stu" Harris, WD4LZC, of Louisville, Kentucky on winning the Grammy for Best Male Gospel Vocalist. Stu is an active user of packet in the Louisville area. *Tnx to Paul Cook, KT7H*

I would like to get in touch with...

anyone who has modified the Kenwood TS-520S to use the AUX frequency band for 30 meters or other bands. Anthony L. Kelly, W2HAH, 17 Country Ct, Hicksville, NY 11801.

hams who are high school age and younger interested in daily net on 28.450 MHz at 0000 UTC. Presently the net is meeting on Sundays. Conway Springs Cardinals ARC, c/o Jan-Michael Steen, KAØZZU, Conway Springs High School, Conway Springs, KS 67031.