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THE RADIO AMATEUR'S JOURNAL

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departments

All-Terrain Performance

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More Countries Drop Code Tests

The fallout from the 2003 World Radiocommunication Conference (WRC-03) continues, as at least four more countries have dropped their code test requirements, two more have indicated they are likely to do so soon, and the FCC is considering more than a half dozen petitions to drop code testing for amateur licenses in the United States. At WRC-03 the International Telecommunications Union made Morse code testing for amateur licenses optional by country, rather than mandatory worldwide.

On September 15, Ireland's Commission for Communication Regulation announced that "in line with the outcome of WRC 2003 ... we have removed the compulsory requirement for an examination in Morse Code Signals. As of today's date ... (a)ll Class B licensees now have Full License Privileges."

According to "Newsline," other countries that recently dropped the code requirement include Norway, the Netherlands, and Austria, with both New Zealand and Australia suggesting that they are likely to follow suit in the not-too-distant future. Here in the U.S., the FCC issued a Public Notice requesting input on six petitions it had received regarding code testing (comments were due September 29), and an FCC official close to the proceedings told *CQ* that several more petitions had arrived after the public notice had been issued. It is likely that the FCC will review all of the petitions and issue a single Notice of Proposed Rule Making (NPRM) based on what they have in common.

Internet Repeater Links Crucial in Isabel

Echolink and IRLP, the two most popular internet-linking systems for amateur radio repeaters, proved to be vital during Hurricane Isabel in maintaining communications between the affected areas, the Hurricane Watch Net on HF, and the National Hurricane Center in Florida.

According to Bill Morine, N2COP, the ARRL Public Information Officer for Wilmington, North Carolina, HF conditions as the storm approached were "deplorable, with much QRM." He reported on the ARRL's PR reflector that the Hurricane Watch Net "is being relayed to us locally through Echolink and IRLP." After the storm had passed, Morine added that "only the largest of beams or longest of wire antennas (could) work even moderately well on HF," due to poor conditions. "For those of us with compromised HF systems during this hurricane," he continued, "IRLP and Echolink were godsends as a replacement for HF." Many of the updates to the National Hurricane Center on ground conditions reportedly came via the linked repeater network because of the poor HF conditions.

North Carolina's ARRL state Public Information Coordinator, Gary Pearce, KN4AQ, told "Newsline" that there was some early confusion with too much different information coming into a single Echolink/IRLP conference node, but that it was soon straightened out. "(R)epeater operators are finding that they can't mix local emergency and logistics traffic with a full-time internet connection that's carrying similar traffic on other repeaters," Pearce explained, adding, "That's a lesson for the next emergency."

Despite the few kinks, it appears obvious that repeater linking via the internet is quickly finding a permanent place as one of the many tools available to amateur radio emergency communicators.

Additional and updated news is available on the Ham Radio News page of the CQ website at <http://www.cq-amateur-radio.com>. For breaking news stories, plus info on additional items of interest, sign up for CQ's free online newsletter service. Just click on "CQ Newsletter" on the home page of our website.

ARRL Emergency Comm. Training Grant Renewed

The ARRL has received a second $180,000 grant from the Corporation for National and Community Service to subsidize the costs of its Level I emergency communications training program. The overall grant covers three years, according to the *ARRL Letter*, but each year's funding must be approved separately, with approval based on how well the program functioned during the previous year. Amateurs taking the online training course must pay the usual fee, but those who take it under the grant program are reimbursed after they successfully complete the course.

OSCAR-14 Silent, May be Lost

AMSAT reports that the UO-14 satellite has left the air, and there appears to be disagreement among experts over whether it can be recovered. The satellite, built by the University of Surrey in England, was launched 14 years ago. It's one of the so-called "EasySats," operating on FM with an uplink on 2 meters and a downlink on 70 centimeters.

IARU Calls for End to Code Testing Worldwide

The Administrative Council of the International Amateur Radio Union (IARU) met in early September to review the results of WRC-03 that affected amateur radio. It called on member societies to urge their regulatory agencies to adopt the changes approved at the international conference last summer, according to the *ARRL Letter*, including the removal of Morse code testing as a licensing requirement. The IARU also looked at possible issues for WRC-07, in four years, including the worldwide threat of Broadband over Power Lines (BPL) and the possibility of another attempt to get a 300 kHz worldwide amateur allocation at 40 meters.

CQ Readers Favor HF for Techs; Split on Code Tests

More than 400 *CQ* readers responding to the magazine's September survey, indicated support for granting limited HF operating privileges to Technicians by a two-to-one margin, but were split nearly evenly on whether the FCC should continue to require code tests for General and Extra Class licenses. Additional details are in this month's "Zero Bias" editorial.

Spanish CQ Editor EA3DUJ, SK

Miguel Pluvinet Grau, EA3DUJ, Editorial Director of *CQ Radio Amateur*, the Spanish-language edition of *CQ*, became a Silent Key on August 26 after a long illness. *CQ Radio Amateur* had just celebrated its 20th anniversary. Pluvinet was its editor for most of those 20 years, creating a mix of articles translated from the English-language edition and original articles by Spanish authors that gave the magazine its own distinct personality.

Interim editorial duties will be divided between Xavier Paradell, EA3ALV, currently Assistant Editor, as Managing Editor, responsible for editorial content; and Lluis Lleida, currently Advertising Manager, as Technical Director, responsible for production, advertising, and coordination. We extend our condolences to the staff and readers of *CQ Radio Amateur*.

—W2VU

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T-2X, $649.95. *Extra heavy duty Tailtwister antenna rotator!* For large antennas up to 20 square feet wind load when mounted in-tower, or 10 square feet when mast mounted with optional support bracket. Triple 138 ball bearing race, strong electric locking steel wedge brake. Control Box has an illuminated directional indicator with North or South center of rotation scale, separate snap-action brake and rotation control switches. Accepts masts up to 2 1/16 inches diameter. Rotator size is 14 1/16Hx9 3/16D in.

CD-45II, $389.95. *Medium duty antenna rotator.* Handles antenna arrays up to 8.5 square feet windload area when mounted in-tower, or 5 square feet when mast mounted with supplied lower support. Dual 48 ball bearing race, disc brake system. Control Box has an illuminated directional indicator with North or South center of rotation scale, separate snap-action brake and rotation control switches with disc brake release. Accepts mast sizes up to 2 1/8 diameter. Includes light duty lower mast support, Rotator size is 17 3/8Hx8 D inches.

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Brake Power (in pounds)	9000	5000	800	450
Brake Construction	Electric wedge	Electric wedge	Disc brake	Disc brake
Bearing Assembly/How many	Tripl race/138	Dual Race/96	Dual race/48	Dual race/12
Mounting Hardware	Clamp plate	Clamp plate	Clamp plate	Clamp plate
Control Cable Conductors	8	8	8	5
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zero bias

BY RICH MOSESON, W2VU

HF Privileges for Techs and the Future of Code Tests—*CQ* Readers Speak Out

Normally, our reader survey response summaries are tucked away inside the magazine, and in the November and December issues, we generally don't report results at all, since we send the survey staff on vacation for a couple of months and use the space to sell calendars. But we felt the results of September's survey were too important to keep under our hats until January, so I'm going to use *this* space to talk about the results instead.

If you recall, our questions in September dealt with the decisions made at the 2003 World Radiocommunication Conference (WRC-03) that affect hams, and how you felt the FCC &/or ARRL should respond. We got at least double the usual number of responses, so it's obviously a topic that's very important to many of our readers. In addition, since *CQ* readers as a group tend to be more active on the air than ARRL members as a group (many inactive hams maintain their ARRL memberships), your views provide an important snapshot of how the most active amateurs feel on these issues. So what did you have to say on these questions?

The most significant response, in our view, is that nearly two-thirds of the readers who responded to the survey favor giving limited HF privileges to currently-licensed Technician Class hams who have not taken a code test, while 36% of respondents said there should be no changes in operating privileges (including one reader who attached a note saying he was "damned sick and tired of seeing fulfillment of the old adage, 'All good things come to he who waits,' " and referring to anyone who didn't pass the same tests he did as "lazy, whining, carping, unmotivated, and IQ-deficient." We'll talk more about that attitude later).

Among those who favor changes, 43% support merging the current Novice and Technician licenses and combining the privileges of both, while another 26% favor expanded privileges for both classes, including HF subbands offering voice, CW and data at limited power levels. In addition, 14% support giving Novice HF privileges to Technicians, but not giving full VHF privileges to Novices. The remaining 17% were split between giving current Technicians only current Novice voice privileges (9%) and only current Novice code privileges (8%).

What's really interesting here, though, is that very few of you would benefit personally from changing the rules. Among those who responded to the survey, 84% already have HF operating privileges, 75% report already being active on HF, and 58% hold Extra Class licenses. This is important because it's people who already have HF privileges saying others should have them, too, notwithstanding the views of my friend above. You see, it's not the "lazy, unmotivated, and IQ-deficient" clamoring for "freebies," as he puts it, it's his fellow Extras, along with a good many Advanced and General Class hams, saying, "the rules of the game have changed. It's time to let the 'other half' of our hobby get a taste of HF."

To be sure, there may be some benefits for traditional HF operators—CQ World-Wide DX Contest Director Bob Cox, K3EST, just reported working a European DX contest and being "pleasantly surprised to find hundreds of VHF prefixes now operating on HF. At one time on 15 meters, I had a run of 50 QSOs and half were (former) VHF guys!"

Interestingly, many of you who felt that under the new international rules, Techs should be allowed on HF without passing a code test, did *not* feel that the FCC should do away with code testing. In fact, 50% of you said there should be no change in the current code requirements for General and Extra; 21% of you said the FCC should drop the code test for General but keep it for Extra; and 25% said it should be dropped entirely (4% voted for a code recognition test like the one used for the Foundation license in the UK). Overall, an almost right-down-the-middle 50-50 split between "leave it alone" and "make some changes." But keep in mind that this is 50% of a group in which 84% have already passed their code test. Along the same lines, six of the first seven Petitions for Rule Making filed with the FCC, requesting changes in licensing rules and Technician operating privileges, were submitted by hams holding Extra Class licenses. Clearly, this is not a situation such as that described by the gentleman decrying the "lazy, whining, unmotivated, and IQ-deficient" Technicians whom he feels want something for nothing.

Watered-Down Privileges?

Speaking of that gentleman (for lack of a better word), here's the full text of his note, attached to his survey reply:

> And, the answer to the question you did not ask: Yes, I am damned sick and tired of seeing fulfillment of the old adage, "All good things come to he who waits." Petition after petition is filed with the FCC, often by or with tacit support from ARRL (in particular), proposing to water down my Extra privilege I worked for and give it to lower classes of licensee automatically—just because they've been waiting for it. I worked for my Amateur Extra Class privileges a long time ago, so I've seen just about all the watering down of my privileges to hand out as freebies to the lazy, whining, carping, unmotivated, and IQ-deficient whose only asset is their patience. And here we go again, all in the name of more ARRL memberships (and most of these non-achievers never join)!

I wonder exactly which of his Extra Class privileges have been watered down over however many years it's been since he got his? Let's see, what exclusive Extra Class band segments have been reduced since they were created by the incentive licensing decision in 1967? That's right. None. From 1967 to 2000, what changes were made in the exams needed to earn an Extra Class license? None. True, the theory exam changed from fill-in-the-blanks to multiple choice, and you no longer have to draw circuit diagrams, but very few of today's hams (even old-time Extras) can design and build their own integrated circuits and microprocessors, and today's Extra Class candidates must answer questions about such things as interlaced scanning in television signals and libration fading on an EME (Earth-Moon-Earth) signal path. Could you pass the test today without really *understanding* all of the concepts? Of course, but you always could. It is in the *application* of those concepts *after* passing the test that you gain understanding. So, other than the reduction of the code speed requirement for Extra three years ago, the only way in which this gentleman's ham radio life has been changed is that he now must share his Extra class privileges with more people—and that, perhaps, is what's got him so upset—a loss of exclusivity.

Of course, "exclusivity" has played a big role in amateur radio over the years, with far too many efforts made to keep it an exclusive club for those deemed worthy. Ham radio has always included in its ranks a fairly large group of peo-

(Continued on page 104)

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announcements

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K7UGA, from Chandler, Arizona. The callsign K7UGA, once held by Senator Barry Goldwater, was re-issued to The Central Arizona DX Association in October 2000. K7UGA will be on the air November 8–9 on CW (32 kHz up from the band edge) and SSB (5–10 kHz up from the General band edge), plus on 10.110, 18.090, and 24.905 MHz CW, and 18.160, 50.125, and 24.965 SSB. QSL via K7UGA Special Event, CADXA, P.O. Box 11042, Chandler, AZ 85248, For more information see <http://www.cadxa.org>.

W8NJH, from "Remembering the Edmund Fitzgerald," Whitefish Point, Michigan; Stu Rockafellow Amateur radio Society; 1700Z November 7 to 1700Z November 9 on 7.265, 14.265, 21.325, 28.465 MHz. For certificate send QSL and SASE to Richard Barker, W8VS, 264 N. East Street, Brighton, MI 48116.

KØAIR & KØGRL, to recognize Veteran's Day and General Curtis E. LeMay's birthday, Bellevue, Nebraska; Strategic Air Command Memorial ARC; 1200–2400Z November 11 on or near 3.947, 7.247, 14.247, 21.347, and 28.347 MHz on whichever band is open best to most locations (also on 51.47 and 146.46 MHz). For QSL send QSL and SASE to address listed at <http://www.sacmarc.org>.

HP100RCP, to commemorate the centenary of the Republic of Panama; Panama Radio Club; November 1–3, all bands and modes (CW, SSB, RTTY, PSK31, PSK63). For commemorative QSL send QSL and two IRCs or one green stamp to Radio Club de Panama, P.O. Box 10745, Panama 4, Panama. See <http://www.radioclubdepanama.org>.

The following hamfests, etc., and slated for November:

Nov. 1, **Holland ARC Lakeshore Super Swap & ARRL State Convention**, Zeeland High School, Holland, Michigan. Contact Chuck Rich, W8GCW, 616-396-2294, or see <http://www.hollandarc.org>. (Talk-in 147.060 –PL 94.8; exams 10 AM)

Nov. 1, **Lake ARA Hamfest & Computer Show,** Umatilla High School, Umatilla, Florida. See <www.qsl.net/k4fc/index.html>. (Talk-in club repeaters 147.255+, 147.000–, 442.900+.

Nov. 8, **Grant ARC Hamfest,** ABCEOI Building, Georgetown, Ohio. Contact Rodney Crawford, WD8CTX, 937-446-2338, e-mail: <wd8ctx@juno.com>. (Talk-in 146.730)

Nov. 8, **Montgomery Hamfest & Computer Show,** Garrett Coliseum, South Albama State Fairgrounds, Montgomery, Alabama. Contact Phil, K4OZN, 334-272-7980 (after 5 PM CST); e-mail: k4ozn@charter.net>; <http:www.w4ap.org>. (Talk-in 146.24/84; exams beginning at 8 AM)

Nov. 9, **Davenport ARC Hamfest & Computer Show,** Iowa National Guard hangar, Davenport Municipal Airport, Mt. Joy, Iowa. Contact Phil McMillan, K9ZK, 309-441-6884; e-mail: <hamfestchairman@arcsupport.com>; on the web <http://www.arcsupport.com/drac/hamfest.html>. (Talk-in 146.28/88 and 146.04/.64)

Nov. 15–16, **Fort Wayne Hamfest & Computer Expo,** Allen County War Memorial Coliseum, Fort Wayne, Indiana. Call 260-484-1314 (leave message); <http://www.fortwaynehamfest.com>. (Talk-in 146.88–; exams Saturday)

Nov. 16, **Central Illinois/St.Louis Area Amateur Television Club Banquet,** Ariston Restaurant, Litchfield, Illinois. Contact Scott Millick, K9SM, 217-324-2412; e-mail: <smillick@wamusa.com>.

Nov. 29, **Evansville Winter Hamfest,** Vanderburgh County 4-H Fairgrounds Auditorium, Evansville, Indiana. Contact Neil Rapp, WB9VPG, 812-333-4116 or 812-327-0749; e-mail: <ears@w9ear.org>. (Talk-in 145.150– [107.2], backup 145.11– [107.2]; exams)

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Albania returned to the amateur radio bands with a bang in 1991 when an international group of volunteers put ZA1A on the air and began to train a local amateur population. Now, OH2BH takes you to the next step—putting ham radio into their educational system with a program that can serve as an a guide in other countries.

Project Goodwill Albania 2003

BY MARTTI LAINE,* OH2BH

Recently, several people have taken note of extensive on-the-air activity by foreign amateurs in Albania, and indeed, ZA1B and ZA1A have surfaced on the bands—for a good reason.

After Albania broke out of Communist dictatorship a dozen years ago, immediate recovery was expected. However, following many dramatic developments, including NATO's liberation of Kosovo through Albanian territory, those prospects were put on hold. More than 300,000 residents of Kosovo poured into an already suffering ZA-land, resulting in massive chaos. Although a complete democratic turnaround will take generations, it looks as if many advanced and well-educated Albanians are ready to take a major leap forward at this point. This includes many current ZA hams, together with their foreign friends. Here is our opportunity to do more that can serve well as an example for many other developing countries.

Skandeberg statue, featuring the hero of Albania and located in the heart of Tirana, is also a symbol of the ZA1A program. Many of the 30 to 50 program participants will have their daily walk at this square. The program QSL will be a rare treasure for those who work the station.

The Current Situation

The thirty or so new Albanian licensees trained in 1991–1992 under the ZA1A training program have done quite well for the most part and can form a good foundation to do some more. Even so, it is obvious to most DXers that activity by local ZAs is not high, as many necessities of life occupy the minds of our fellow hams in Albania. For example, when you hear Dik, ZA1E (probably the most active Albanian ham), on the air, remember this story:

Dik and his entire family came to visit us in November 2002, during the ZA1B CQ World-Wide DX CW Contest activity. We shared many wonderful memories from our visit of a decade before, but we also learned that ZA1E is not terribly active nowadays. Dik explained that one reason is because electricity typically is off in Tirana during daylight hours, leading us to wonder how they manage their household chores when the temperature falls below freezing. I asked this of Dik's daughter. "We just stay home, all of us together under one and the same blanket, because that way we generate needed warmth," she replied with an embarrassed blush on her cheeks, adding, "I am not going to school during those hours because the school building is too cold for us."

Let's all hope that electricity will soon be available 24-hours-a-day so that Dik and other Albanians can look forward to a bright and healthy future, with full educational opportunities and a fair share of time devoted to hobbies—including, of course, amateur radio.

Project Goodwill Albania 2003

Taking those in the lead to help those who may suffer is a formula that works in advanced societies. We want to do our share with our past students, and new students, through what is hopefully a highly satisfying project. We call it Project Goodwill Albania 2003, and we

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e-mail: <oh2bh@sral.fi>

invite all of you to be part of it or just live through the experience over the radio waves and the World Wide Web.

This project needs to be a well-balanced link between the past and the future. Yes, we need to support those hams who are already licensed, but we also must secure a strong future base. This same formula is eminently evident in all societies looking at how to protect amateur radio's future. While walking down the streets in ZA-land in November 2002, and again during the lovely spring days of April 2003, a new approach gradually emerged, and the purpose of this article is to share it with you.

Securing the maximum number of competent students for the future of amateur radio definitely surfaced as a most practical starting point, considering the overall situation. However, in an evolving society and to a growing extent in well-developed societies as well, amateur radio is not a hobby that will automatically attract large numbers of people to its ranks.

In Albania the entry barrier is even worse than normal, because amateur radio requires a major investment of time in a demanding society, plus equipment that most people cannot presently afford. On the other hand, though, the amateur-radio-related success stories of Albania's existing ham population are the best kind of "promotional messages." Therefore, *involving the local existing ham population* is a must for securing the continuation of our hobby and the transition to the next phase. With these ideas in mind, the project was carried further.

During the 1991 ZA1A training session each government building had at least one of these signs to warn of impending attack by various weapons of mass destruction. Albania has come out of this fearful state, while the rest of the world now seems to use these terms in its daily vocabulary.

Dik, ZA1E, is most active these days using the original Yaesu-donated radio. An electrical surge once damaged the radio, but Dik was able to sort it out with his QSL manager, Mario, I2MQP. Dik has exceeded DXCC with tens of thousands of QSOs, making ZA just another DXCC country.

Visiting the Ministry of Telecommunications

From the outset we were welcomed at the Ministry of Telecommunications, because the 1991 efforts of ZA1A were well remembered. Actually, the Director General was a young engineer at that time, and he had seen our enthusiasm and the power of "Goodwill DXpeditioning." Furthermore, the hams used his office at that time for storing their equipment! All historical details were quickly recognized at a glance, and in no time at all we were able to gain the ministry's blessing for a good cause—to do another Project Goodwill, with the aim of safeguarding the future of amateur radio by *using* amateur radio to train the best students studying for careers in telecommunications. All this was done under the guidance and direction of the Ministry of Transport and Telecommunications, as well as the International Amateur Radio Union (IARU), whose standing in the International Telecommunication Union (ITU) was duly appreciated by the ministry officials.

We immediately learned several lessons: Involving the Ministry of Telecommunications and getting our program onto their "agenda" provides us with a much needed status for all other stages of this project. The most obvious advantage is that our efforts are under the Ministry's watchful eye, and hopefully the value of amateur radio will be seen as a worthwhile asset. In return, this link provides amateur radio with immediate regulatory implementation, which remains in the hands of local telecommunication administrators. The efficiency was demonstrated on the spot when codeless licenses were implemented for HF and the European CEPT license structure was established in terms of allowing license-free operating by foreigners, plus granting ZA hams the same privileges in other CEPT countries. Our ministry connection also provided a much-needed avenue between the Ministry of Telecommunications and the Ministry of Education, informing each other of their support for a meaningful activity aimed at guiding young people on the road to professional careers in wireless telecommunications and other related fields.

Opening the Door To the Best Youth

We received another warm welcome at the Polytechnic University of Tirana, just a stone's throw away from the Ministry of Telecommunications. Amateur radio was remembered from 1992, when we ran the IARU Radiosport Championship from the university building, hoisting our beams on top of the building and spending nights there amid the broken windows of their early tur-

Geni Mema, ZA1B, and Martti, OH2BH, put in the main effort needed for a second phase of the ZA1A activity this November and December. Here they are outside the Ministry of Transport and Telecommunications.

moil (their warm regards to Bernd, DF3CB, and Tomi, OH6EI).

Again the enthusiasm of those early efforts was noted positively. The entire school board was present, headed by the dean, and our project got off to a serious and professional start. That meeting will be long remembered by those present: Pertti, OH2PM, Teemu, SMØWKA, and myself. The doors were wide open to integrate the amateur radio course into the university's current study programs and credit system, thus providing amateur radio in Albania with an "entry ticket" that cannot be easily topped for the best students.

At the end of Tirana's main street stands the Polytechnic University of Tirana, the site of the ZA1A program, with attractive blue lights highlighting the building in the evening. At the very left is Sheraton Hotel Tirana, opened in September this year.

Following my later visits to the university, it was agreed that the entire amateur radio course would be integrated into the regular subject-related courses, such as theory of signals, wave theory, antennas, and microwaves, not to mention courses in basic electronics and many others that technical university students take during their first semester. For our program, though, we chose second- and-third year students, selecting them through language assessment and making course participation mandatory. This created the best framework you could ever dream of.

How To Motivate Students To Become True Hams?

The definition of "true hams" is one which should be revisited by all of us during these changing times. I guess true hams are not only those working DX or studying propagation, although they may do that, too, but maybe those who have a vision about the future of this great pastime of ours. Motivation is therefore a highly relative factor…it may happen through friends; it may happen by following the success stories. It may also happen as an added element to regular studies. If you enjoy what you are studying, you may easily become impassioned about your subject. If you study at the Telecommunications Engineering Department in Tirana, you will study these subjects of ours. The extra step to becoming a licensed amateur radio operator is surprisingly small.

Together with the dean of the department, a list of motivational elements was developed (see sidebar). These are expected to bridge the gap between regular studies and an amateur radio license, with the students becoming productive members of Albanian society and, hopefully, part of our great brotherhood. They can then carry the mission further, radio-wise, by flying the flag of amateur radio high as one of their early motivational elements. Good enough for us!

Implementation

The six-week course is scheduled to begin in November 2003, and the course delivery is as unique as the course itself. To highlight the international nature of amateur radio, each week will carry a different country's flavor. Several IARU national teams are involved and so are many individuals from many areas of amateur radio. The course is organized professionally in conformity with a well-known Radio Society of Great Britain approach, carefully considering the

The ZA1A program will include a mixture of young and seasoned hams, not only for operating, but also for teaching. Young people often listen better to people in their own age group and identify with their success stories. Teemu, SMØWKA, age 22, shown here operating in Albania, will be one of our instructors.

entry point into our ranks and utilizing highly developed study material, as well as having the entire undertaking led by a professional educator from the ranks of amateur radio.

Get Involved!

You will be able to hear and see the course in action by contacting ZA1A over the radiowaves and following its progress on the Project Goodwill Albania 2003 website, <http://www.za1a.com>. Better yet, you may contact some of the ZA1A volunteers[1] and become part of this great program. It will be one of the ultimate thrills in amateur radio to "Teach Amateur Radio in Albania—Yesterday's Dream, Today's Friendly Gesture," as the teaching slogan says. At the very least, you should contact the original re-activated ZA1A station and hark back to those days when the mysterious Albania was the rarest of all DXCC countries.

Prospects for the Future

Can this program be duplicated in other countries? The situation and efforts described here are unique to Albania. In other countries the case may be different and the program can be adjusted. However, the basic principle is the same: Get amateur radio officially recognized through an educational program on whatever level of education is suitable in the target country. This will ensure that there are good-quality students and potentially free up some of the local resources needed to make all of this happen. In the case of Albania, we help to bring together international manpower and establish a professional complementary curriculum; we organize training material, select and motivate students, provide funding, and boost public interest in the local Albanian society. We feel that this approach has some merit and should be studied further by those who care about the future of amateur radio.

Come on board and join the project or its support organizations, or just contact ZA1A on the air, or follow our progress on the World Wide Web. Do your share by helping amateur radio flourish in the future, in this case in Albania.

Adding to a rich amateur radio experience for ZA1A team members will be several events at this cultural palace along Tirana's main square. Both theater and ballet performances are scheduled. DXers at a ballet in ZA-land . . . it can't get any better!

Amateur Radio Motivation List

Here is the list of motivational elements developed by the Polytechnic University of Tirana to encourage students to get involved in amateur radio:

Let amateur radio provide you with hands-on practice and guide your way to your professional career

1. Elevated credit for unique foreign language CEPT exam/pass
2. Connecting theory with practical experimentation in electronics and telecommunications
3. Building an international professional human network through amateur radio
4. Creating a window to the world through radio waves
5. Making use of foreign languages in a practical environment
6. Finding a supporting passion to drive telecommunications-related studies and interests

Note

1. For more information on getting involved in Project Goodwill Albania 2003, contact any of the following ZA1A volunteer/support coordinators: Carsten Esch, DL6LAU, <carsten.esch@appello.de>; Roger Brown, G3LQP, <g3lqp@aol.com>; Mario Ambrosi, I2MQP, <ari@micronet.it>; Warren Hill, K7WX, <k7wx@earthlink.net>; or Martti Laine, OH2BH, <oh2bh@sral.fi>. ■

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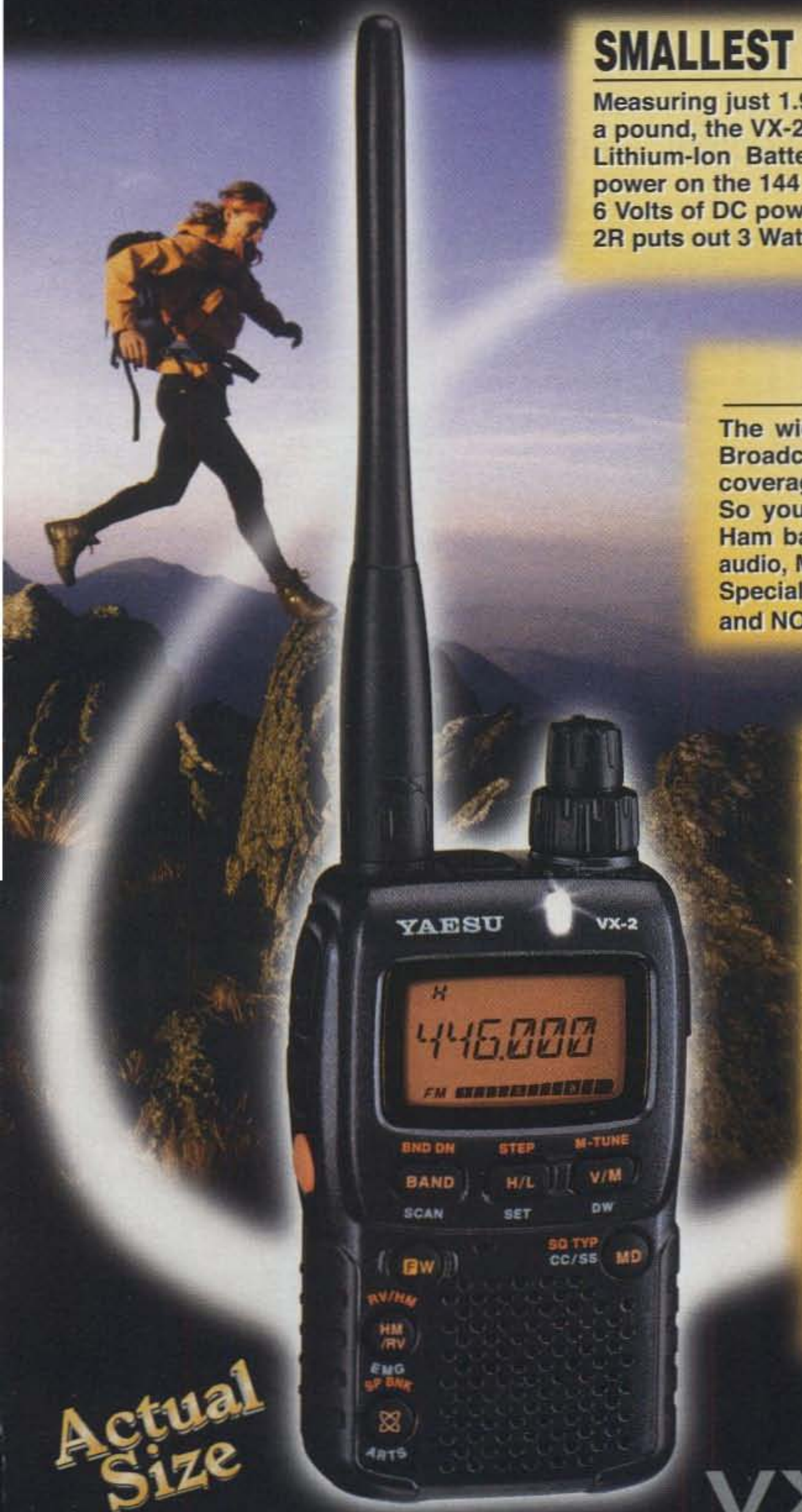

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If you are the proud owner of a piece of classic Collins equipment but it needs some repairs, W6IRD will give it "star treatment." As can be seen in the photos, he has an extensive, impressive workshop to do just that.

The "Wizard of Orange"

BY HARVEY S. LAIDMAN,* W8DX

Sharon heard the "thud" at the front door. It wasn't the usual "thud" that announces the arrival of another project for her husband, Wayne. It was a "clank" and a grinding of loose and broken parts, fractured seams, and rivets popping. It was sickening. According to the manifest, it had once been a Collins HF 380 transceiver, but it wasn't the ruggedized, military radio. It was the civilian model, the KWM-380, with a very low serial number. A sightless ham radio operator had sent the unit to Wayne for overhaul, and now Wayne had to tell him that not only had the radio been horribly damaged in shipping, it was not what it was supposed to be. "There are unscrupulous people out there dealing equipment," says Wayne Spring, W6IRD. "You have to be careful."

The telephone rings at all hours with hopeful classic radio owners seeking Wayne's expertise. Once received for repair, the units travel through his lab, metal shop, and test bench. They get "star treatment" from Wayne. First they are cleaned; even the crystals get polished. Obvious problems are repaired. "Collins used those black capacitors. They draw current," Wayne reports. "I change them right away."

In his extensive metal shop Wayne creates replacement parts. Cabinets are sent out for powder coating, which is more resilient than the original baked-on lead-based paint. "Holes in the Collins 'S line' front panel are a problem," Wayne continues. "Art Collins had the panel etched in the Moroccan Leather pattern of his favorite Leica camera." Wayne keeps a few scavenged front panels, and to repair a hole, he meticulously matches an inserted piece.

"When Wayne finishes, the radio is actually better than the original," says friend of 31 years, Larry Mallek, K6YUI.

Wayne's spotless shop is a large, sunny room located just off the back patio and swimming pool. It contains a complete machine shop: milling machine, shears, presses, metal brakes, lathe, punches, and more. Bins and cabinets with rare spare parts line the walls and fill a closet. A refrigerator is stocked with soft drinks for guests, and if the soft-drink can rests on a bench, the visitor is expected to use a coaster.

To understand Wayne's meticulous and precise nature, you must know the history.

Wayne wanted to learn electronics, and he entered the Coast Guard right after the ninth grade. After six years in the Coast Guard, he was hired by Northrop Aviation. With a keen eye for detail and the curiosity of a pack of hungry cats, he fit the profile of the quintessential inspector—picky! This continued during a 48-year career as an "Engineering Support Supervisor." Wayne was exposed to modern engineering and fabrication processes, and he learned by observation.

Wayne, W6IRD, with a Collins KWM-1 and a collection of tubes on the shelf above. (Photos by the author)

"He's a wizard," says Sanford Simmons, W6YY. Sanford needed a device to raise a marine helical fiberglass antenna

Shown here is a KWM-380 on the bench awaiting repairs.

*22918 Crespi St., Woodland Hills, CA 91364
e-mail: <harveyl@outadaloop.com>

on the roof of his motor home. Wayne made a few notes on his blackboard, sent Sanford to a welding shop with prefabricated parts, and in a few days it was done.

Ed Jay, N6EJ, was the founder of Signal One. "I went to grammar school with Larry (Mallek)," Ed recalls. Wayne got "hands on" experience with the Signal One when Ed Jay gave "dead" ones to Larry and him. "There was a bad run of filters. We kept replacing them until we realized they were faulty," Wayne says, shaking his head. "Walt Henry would send me Signal Ones to fix," Wayne recalls. Walt was the Naval Officer and Henry brother who ran the Anaheim Henry Radio store. (Signal One of Scottsdale, Arizona continues to manufacture and service high-end transceivers.)

"I really learned a lot about Collins when I purchased 25 Collins KWM-2 transceivers in 1974," Wayne says as points to the remaining two left in his shop. These were Vietnam veterans, and in terrible shape. Harry Snyder, W7HC, worked on Collins KWM-380's and HF 380's. Just before Harry's death, Wayne bought his stock of parts.

"The 380's are fabulous radios, but when they were built, CMOS digital technology was state of the art," Wayne explains. Ribbon cables with dual-inline plugs and sockets and crudely fabricated RF connectors complicate repairs.

Dr. Clifford Coleman, K9JTS, is a KWM-380 owner. Lightning struck his tower and ravaged his radio: "Wayne spent almost an entire year replacing most of the solid-state devices and even put in sockets for the devices to make future servicing easier. The radio is still in constant use at my QTH."

Wayne met Sharon in 1963. They were both single parents at the time. Sharon, a glamorous and powerful business executive, retired at the peak of her career in human resources and now devotes much of her time to serving on state and local employer councils and educating newcomers in the field. Consulting with the Small Business Administration led to a memorable lunch at the White House. Sharon and Wayne are much alike; neither can walk past a picture frame without "tweaking" it. Their neat ranch house is in picturesque Orange, California, near Disneyland. "When we moved, I didn't sleep until everything was in place," Sharon says, laughing. Sharon spends the rest of her time collecting Disney memorabilia.

After his retirement, Wayne's talents did not go unrecognized. He traveled to Brunei, Costa Rica, and the Philippines on engineering consulting assignments.

There are no ads or commercials or blurbs in magazine columns that tell about Wayne, yet he receives, on the average, a radio a week, mostly Collins or Signal One. Many have been crudely modified. "I truly enjoy the challenge," he says.

"It's not possible to have a career like I did anymore," Wayne muses. "Nowadays, once someone becomes highly skilled, that person is too expensive for the company to maintain and is phased out before those skills can be passed on."

Wayne picked out a beautifully restored HF 380 and sent it to the vision-impaired ham who had received the misrepresented radio. The story has a neat and happy ending. "The insurance plus a little bit covered it," he confides with a wink.

Thanks to Wayne and Sharon Spring; Ed Jay, N6EJ; Larry Mallek, K6YUI; Dr. Clifford Coleman, K9JTS; Sanford Simmons, W6YY; Al and Bunny Friedman, K6YRA and N6OVX; Skip and Marilyn Bolnick, KJ6Y and N6GIL; and The Collins Collectors Association website for their contributions to this article. ■

Neatness is the keynote in W6IRD's workshop. Top left: workbenches, punches and riveters, and parts bins. Top right: drill press, milling machine, and metal-working tools. Bottom left: Collins equipment in for repair. Bottom right: enclosures and parts.

On-line auctions are quickly becoming a popular way to buy and sell used ham gear. KC9CRZ offers tips to both sellers and buyers to help make everything go as smoothly as possible.

"Going, Going, Gone!"

Ten Steps to Successfully Selling Ham Gear in an On-line Auction

BY GARY SHEA,* KC9CRZ

That old rig in the attic has been collecting dust for years. You're moving. It's a shame not to find it a good home. A few dollars compensation won't hurt either. There is an option open to you now that didn't exist just a few years ago. It is to sell it on-line to the highest bidder. The buyer may be nearby or may be like that DX station you just worked—on the other side of the world!

There are a number of on-line auction sites. The best known is eBay. Others include Amazon.com, sellyouritem.com, ioffer.com, and Yahoo! Auctions. At any given time on eBay there are typically between 7600 and 8000 items for sale in the *Radio Equipment: Ham Radio* category. In ioffer's *Ham* category the average is 25. At Yahoo! Auctions there is an *Amateur Radio* category with, on average, 275 items for sale. Of these, many (about 130) are in the *CB Radios* subcategory. Amazon.com and sellyouritem.com do not have amateur radio as an identifiable category. eBay's *Amateur Radio* subcategories are *Receivers*, *Accessories*, *Transceivers*, *Antennas*, *Books/Manuals*, *Transmitters,* and *Other*.

eBay dominates the on-line auction market-space in general and specifically for amateur radio gear. For this reason eBay is the example application used here. Many concepts are applicable for the other on-line auction sites. Table I highlights recent on-line auction sales. Table II lists the web addresses of the on-line auction sites.

This article takes you through ten steps to a successful sale:

1. Prepare for selling
2. Research on-line what you plan to sell
3. Learn the basics about on-line auctions from the success of others
4. Take pictures of your item
5. Become a registered auction-site user
6. List your item for sale
7. Monitor and tune your listing
8. Close the deal
9. Ship to the buyer
10. Give feedback on the buyer

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Several on-line auction sites are available to help you sell your used ham gear (among other things). The author's examples are specific to eBay, but the advice applies to other sites as well.

Step 1: Prepare

Before you go to the web, get ready to sell by following this checklist:

- Find the equipment you want to put up for sale.
- Find all its documentation (if you don't have any or even if you do, write down its history and any hints and kinks).
- If you have the original box, packing material, and receipt, pull that out too.
- Try the equipment.
- Start a worksheet on each item. This can be electronic (good for copying and pasting later) or on paper. Here's what you should note, if you can:
  - make and model
  - year of purchase
  - physical condition
  - how well it works
  - what accessories or added features it has

Surprisingly, your equipment may not have to work in order

Item	Sale Amount
Hammarlund Pro-310 Receiver	$1600
Refurbished AM Station	$1500
ICOM M710 Transceiver	$1550
Ten-Tec Linear Amplifier	$1175
10 GHz Transmitter & Receiver	$975
Collins 75A4 Receiver	$875

Table I– Some examples of completed auction sales.

to sell. Buyers may want spare parts or the thrill of putting together an old unfinished kit.

Step 2: Research

Now is a good time to go on-line and do some research. Go to <http://www.ebay.com>. Click on search. Try to come up with the best terms to narrow in on what you are going to sell. Searching here is very much like searching with Google or Yahoo. eBay has an advanced search that allows for more complex logical search operations.

With a little luck there will be hits that match your item. These will be of auctions in progress, with the auction to close the soonest listed first. That's the default way that eBay displays search results. These are interesting to sellers for many reasons. You can get a sense of whether your item sells (are there bids?), whether it is in demand (are there lots of bids?), and how much it sells for.

Click on the "Completed items" link to the left on the search results page. If there are hits that match your item, these are more valuable in answering the questions posed above. These could show real sales. Be aware that the list only covers auctions that closed in the last 30 days.

If you can't find an item comparable to yours, or you think what you have is worth more, you may want to track a bit before you do your listing.

Read through the descriptions of matching items. Generally, well-described items get more bids than sparsely worded listings. You might like some and use them as examples for your own sale. Go ahead; copy the titles and descriptions. Paste them into your worksheet. Listings are not copyrighted. If you feel guilty, paraphrase when you write up your description.

Step 3: Learn from On-line Auctions

There's more to note from the comparable listings:

• What categories are the items listed in? If you see that the same item sells for more in one category than another, then note the stronger category.

• At how much did the seller start the bidding? The higher the starting price, the higher the listing fee. An item tends to reach its market value, however. If too few potential buyers see the listing and you have set a low starting price, you may have to sell low.

• Who pays for shipping, the seller or buyer? Some say having the seller pay shipping costs increases the number of bids. In practice, it is hard to see that this advice holds true.

• Is the shipping charge fixed and upfront in the listing, or "to be determined" after the auction completes? The heavier an item, the more the cost of shipping will vary, depending on where it is going.

• If shipping is fixed, how much is it? If you pay for packing

materials, these costs can be included in the shipping fee.

• Is shipping insurance included? If shipping insurance is mentioned, is it optional or required?

• How long did the auctions run? The standard or default on eBay is 7 days, but 3, 5, or even 10 days are also possible. (There's an extra charge of ten cents for a 10-day auction.) Whatever you choose, ensure the item is visible during at least one weekend.

• When did the auction end? Auctions that finish on Sunday night often see more bids because that is when the most people are seeing what's on eBay. Another eBay feature is that the start date and time can be scheduled (it has a 10-cent fee), allowing sellers to do their listing whenever they wish.

Here are a few more important considerations for sellers:

Successful sellers are forthright in their descriptions. If there's a ding in the front panel or paint wear, it is stated. Buyers depend on honesty. They don't want to be surprised. When you list, do your best to disclose all you know that's good and bad about the item up for auction. Be a salesperson, too, and don't dwell on the negative or potential buyers will move on to the next listing.

Items can be listed with a low starting price but a higher reserve price. If no bid meets your reserve price, there is no sale. The reserve price generally is not posted publicly on your listing. Use a reserve price to attract more bidders and ensure your item doesn't sell too low.

Fees! eBay charges sellers from 30 cents to $3.30 for each item listed, depending on the starting or reserve price that sellers set for the item. Adding optional features that might enhance a sale usually means additional fees. For example, it costs an additional $2 to put an item title in bold, and an additional $5 to emphasize a listing with an "eye-catching" yellow band. eBay also gets a final value fee for successful sales: It ranges from 1.50% to 5.25% of your final sale price.

This Drake 2A receiver was sold successfully by the author via an eBay auction. See text for specifics on listing the item.

Expect that eBay will receive about 5% of the sales price for ham gear.

Researching and learning are lots of fun. You yourself might end up bidding on something! When your inside voice says, "I think I can do this," it's a good time to stop researching and move on to the next step.

Step 4: Take Pictures

Three images should be enough: one of the entire piece, a close-up, and one of the back. A digital camera is an excellent tool. With it you can upload files directly to your personal computer. If you have the software to edit images, resize those that are big and crop out unnecessary background. If you don't have a digital camera, you can take photos with a

10 Rules for Buying Ham Gear in an On-line Auction

Hams collect QSL cards, wallpaper, logs, magazines, vintage gear, and more. Amateurs are also a practical bunch, seeking good deals on the hobby items they need and want—equipment, study guides, parts, and supplies. That's why it seems that whenever we congregate face to face, there is always a swap meet or a flea market. With the advent of on-line auctions, the passions of collecting can be gratified and great prices can be found. Here are ten rules for *buying* by on-line auction.

1. Decide on what you are after. If you are just going to look, that's okay.

2. Determine in advance about how much the item you want is worth and how much you are willing spend on it. Be sure to include in that limit the costs of shipping and taxes.

3. Go to one of the on-line auction sites, search effectively, and find your item. eBay has most of the on-line auction market space, but there are other sites. Search by category, by terms, or by using a specialized search. By category is a great way to browse if you are looking for a certain kind of item. By terms searches will look for *any* of the words in items' titles and descriptions. Be aware that images are not searchable and you are dependent on how items are written up by sellers. Specialized searches include items sold by a specific seller.

4. Shop during off-peak hours. Although there may be fewer items closing when you are looking, there will also be fewer competing bidders. Peak hours are during the evening and especially Sunday evenings.

5. Read the item description carefully to make sure the item is what you want and that it is in an acceptable condition. If something isn't clear, fire off an e-mail to the seller and ask before you bid.

6. Review the conditions of the sale before you bid. These include geographic limitations the seller has made—such as "as is"—payment options, and insurance. Look for delivery insurance. It's reasonably priced and it's worth it. If the seller does not offer insurance, ask for it.

7. Check out the seller by looking at his/her feedback number and some of the opinions other buyers have written about their dealings with the seller (see main text for more on feedback). You can also look at other items the seller has listed. Before you make a bid, make sure you have no reasons to distrust the seller.

8. Bid smart. Put in your limit amount from the start to save having to return to the auction again and again (although eBay will let you know by e-mail if you get outbid). The system will not post or reveal your maximum bid unless the bidding has reached that level. Bid a penny more than a dollar amount so that you have one-upped (pun almost intended) the competition. Bid on items that are closing very soon—again, so that there are fewer competitors.

9. Pay promptly. You will get your item more quickly, and a good feedback about you from the seller is assured. Consider using an on-line method such as PayPal for immediate payment. The buyer incurs no fee for using PayPal. For other services, such as BidPay, the buyer pays a fee. Immediate payment will result in even faster delivery.

10. Once you have the item in hand and are satisfied, leave positive feedback for the seller. Be cautious about leaving negative feedback. It may get you negative feedback in return. It is best to work out any differences before resorting to negative feedback.

35 mm camera and scan them. In either case you need jpeg-type files ready to use when you list. It is possible to sell an item without any pictures of it. However, having pictures makes a big difference.

Step 5: Register

You are almost ready to create a listing of your item and put it up for auction. You first must be registered to use the on-line auction site. On eBay, in the upper center part of the screen at <http://www.ebay.com>, to the right of "Welcome New Users," click on "register now" to get an ID. The same ID can be used for buying and selling. Sellers must provide additional information, however, so that eBay can bill them.

Step 6: List

Follow the example below of the sale of a vintage Drake 2-A Receiver (see photo).

Research showed that there were no Drake 2-As (or 2As) for sale or recently sold. However, there were a number of Drake 2-Bs.

- They sold in the $100–$200 range.
- All were listed in the *Electronics & Computers: Radio Equipment:Ham Radio:Receivers* category.
- Titles were basic—for example, "Drake 2-B Receiver."
- Descriptions were relatively brief. For this well-known item, buyers most likely know all about it.
- Descriptions included caveats—for example, "sold as-is."
- Shipping costs were to be paid by the buyer.
- Shipping costs were to be determined after the sale, dependent on the location of the buyer.
- Insurance was mandatory and included in shipping costs.

Now for the listing! eBay makes it a five-step process that is easy and straightforward. Once a seller does a listing, many preferences are stored for the next time. Start at <http://www.ebay.com>. Click on the Sell box in the top center of the screen.

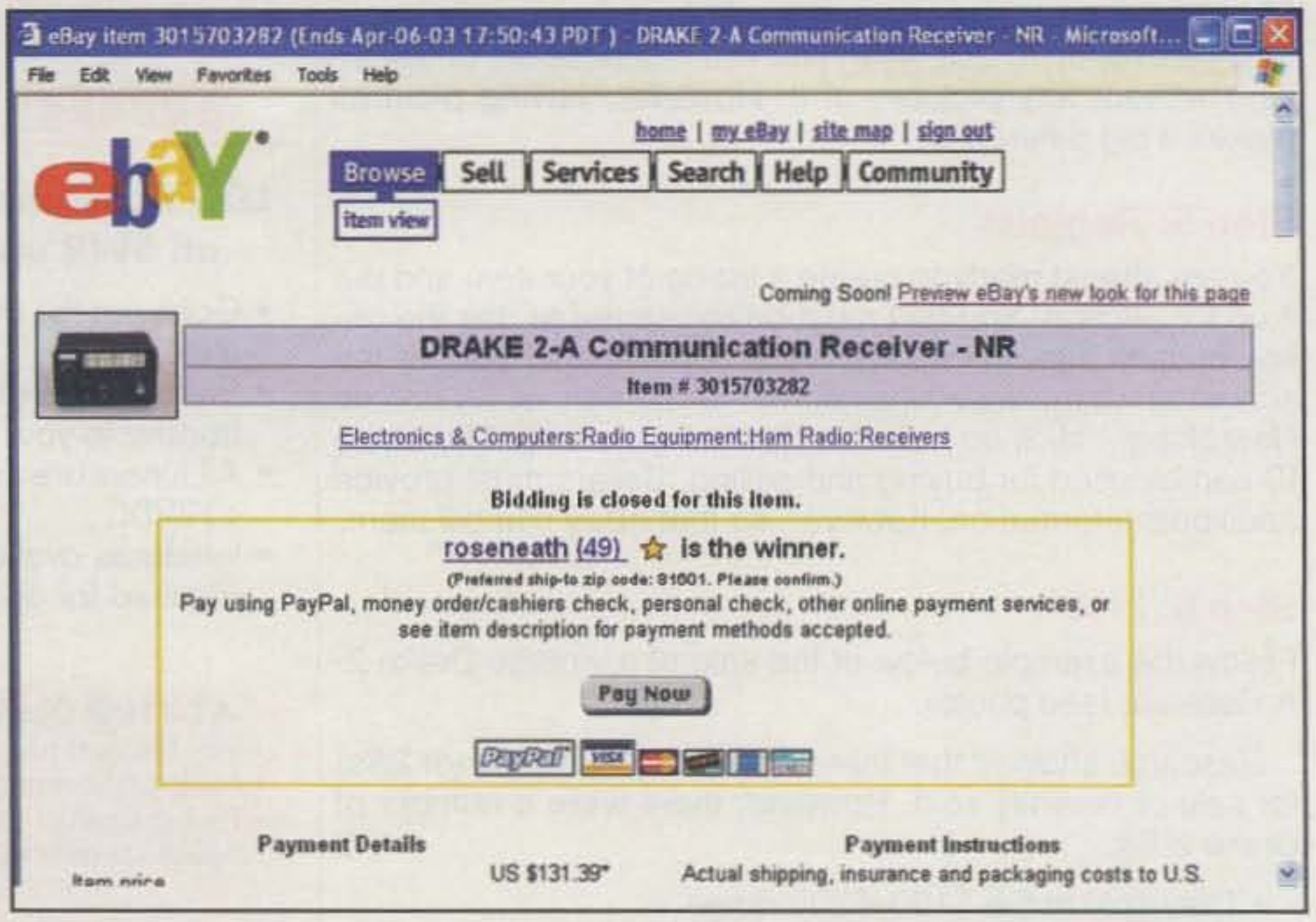
At the **Choose Selling Format** page, keep the pre-selected button at "Sell item at on-line Auction" then click Continue.

At the **Select Category** page, Select *Electronics and Computers*, then *Radio Equipment*, then *Ham Radio*, then *Receivers*, then click Continue. A second category could garner more visibility for your item. It also doubles the listing fees. Remember buyers can search by category or by the words in your title and/or description. Interestingly, Transceivers has a further subcategorization by manufacturer: *ICOM*, *Kenwood*, *Motorola*, *Yaesu,* and *Other*.

At the **Describe Your Item** page, enter your title (here's one place where some CAPITALIZATION helps draw viewers) and description. Copy the text from your working document (remember your worksheet in Step 1) and paste in the description box. Put in all the details about your item. Use good grammar and correct spelling. Try reading your words aloud before you finish the description. Click on Preview your description to see how it will appear. Then click on Continue.

At the **Provide Pictures and Item Details** page, the required fields are

- Select auction duration (default 7 days)
- Quantity (default 1)
- Enter starting price
- Enter Item Location (City, State or Country)
- Tell eBay where the picture you will upload is located on your computer. They resize it and allow you to use it as the Gallery picture.



This is the screen that appears on eBay after an auction has ended, indicating who the winner is and what price he/she agreed to pay.

Until you become more familiar with on-line auctions, it's advisable to keep it simple. You can increase the visibility of your item by selecting some of the optional features. Use the page counter; it's one feature that is free. It will tell you how many different users have looked at your item. The Gallery is another option that is worth trying. It costs an extra 25 cents (50 cents for two category listings).

At the **Enter Payment & Shipping** page, you have more decisions to make. For payment method you can accept money orders, cashiers' checks, and personal checks. The other methods require more setup on your part. Willing buyers expect and pay for reasonable and actual shipping, packaging and insurance costs. The biggest unknown for a heavy item is the shipping cost, as that varies depending on how far it will go, so it's fine to state this information will be provided later. Sales tax is appropriate if you are in the business of selling ham gear. You can leave the Payment instructions box empty. Ship-to-locations is another choice. Shipping costs increase for sending your item outside of the United States, but if the buyer is willing to cover them, then you are increasing your marketplace many times over. Go with the default on Escrow—i.e., none.

At the **Review and Submit** page, preview your listing and what it will cost. Make sure everything is correct and says what you want. Check the up-front damages to your pocketbook! Make changes before you click on the Submit Listing button. When you Submit, the auction has begun.

Step 7: Monitor and Tune

You can relax and watch your listing until it closes. However, you can revise your listing until it has a bid or up to 12 hours before the auction closes. If a bid has been made, you can only add to your description.

If your item is not getting bids, you may want to revise the listing. If you have been asked a question about the item, you may want to update the listing with the answer.

You may want to check out how your auction looks on another computer. You can proofread again and see how your photography looks there. If the picture is too dark or too big, get in a revision before someone bids!

http://s1.amazon.com
http://www.ebay.com
http://www.ioffer.com/
http://sellyouritem.com
http://auctions.shopping.yahoo.com/

Table II– On-line auction site addresses.

Step 8: Close the Deal

When the auction is over and you have a winning bidder, contact them within three days. E-mail works best. eBay sends you the buyers e-mail ID. In your e-mail, identify the item sold, the price and shipping costs, how to pay you,

your name and address, and be sure to say Thank You.

eBay also has an invoicing process. If you go to the listing of the closed item, there's a choice that only the seller can exercise to initiate invoicing. The result is essentially the same as sending e-mail directly except that the winner gets the e-mail from eBay. One advantage to invoicing is that eBay ensures all of the sale's particulars are covered.

If the shipping charges are to be determined at the close of the auction, obtain the buyer's Zip code and plug it in along with your Zip and the estimated weight of the item at the carrier's website (for example, <www.usps.gov>). Include amounts for insurance or packing materials if appropriate.

Step 9: Ship

You've been paid, and if by personal check, it has cleared. Pack up the item as carefully and neatly as you can and mail it to the buyer. For infrequent shippers, the Postal Service seems to have the best prices. The Post Office offers you a number of additional services, including priority delivery, return receipts, and insurance. Insurance is a good idea. Use your judgment on the others. For example, is the one or two days quicker delivery for Priority Mail worth the additional cost (unless the buyer has specifically paid for Priority Mail delivery)?

Step 10: Feedback

The very last thing is to leave feedback on your buyer. Feedback is a cornerstone of the trust system on eBay. It is a numeric value and the accumulated comments entered by others about the transaction. A positive feedback earns one point. A neutral is worth no points. A negative subtracts a point. Sellers often use feedback to see how reliable buyers are. Buyers use it to decide whether or not to bid. The items of sellers with many unexplained negatives may turn off potential bidders. Someone with a Feedback value of zero will be looked upon as an unknown, so a polished listing for a new seller is that much more important.

Feedback can be seen as a chicken and egg game: Who goes first? Both parties should give it freely and honestly, but it's generally in the buyer's court to initiate the feedback process. Hopefully the buyer will say he/she is pleased with the purchase. Sellers should hold off on providing feedback on the buyer until the buyer has completed his/her feedback. There are unknowns to allow for such things as delayed delivery, or lost or damaged goods. Buyers and sellers should try to work things out without resorting to negative feedback. One way to tell your buyer that you want to receive feedback without pressing is to include a thank you note in the package with the item. You can say "Thank you for your winning bid. Please leave feedback to let me know you received it."

When you do leave feedback, be positive if the experience was good for you. Sellers evaluate buyers, sometimes rejecting those with bad feedback. Buyers evaluate sellers based on their feedback. Feedback is an important feature of eBay that establishes a trust basis.

Summary

That's it. You have made a successful sale and learned about on-line auctions. It took a little time, but your item is sold, your attic is a little less cluttered, you've made someone happy, and you have a few bucks to be able to buy yourself something . . . or start saving for a brand new rig. ■

Today's go-anywhere, do-anything, HF/VHF/UHF radios are missing something commonly found on other portable radios: a keypad for fast frequency entry. W2FS to the rescue...

CQ Reviews:

The W2FS "Universal QSYer KeyPad"

BY GORDON WEST,* WB6NOA

ICOM America and Yaesu USA have each introduced HF plus VHF/UHF small transceivers ideal for portable and mobile operation. The new ICOM IC-703 is designed for the QRP operator, and the IC-706 MK IIG might slip into a backpack along with a gel-cell battery. The Yaesu FT-817 and FT-897 have the batteries inside, so both manufacturers purposely designed their equipment for portable as well as fieldpack and mobile use. However, their designs left out something–*the keypad.*

I think it was a wise choice to conserve space by leaving out a front-panel keypad, but where the keypad gets missed most by the avid ham operator is when programming channels into the over 100 channels of memory that each set may offer. Spinning the knob and carefully dialing in each channel requires plenty of patience, while computer-download programs still won't give you keypad capability in the field. The problem has been solved by John Hansen, W2FS, with his "Universal QSYer KeyPad," a direct frequency-entry keypad for certain ICOM and Yaesu radios. Depending on the radio, it may perform other functions as well.

"My keypad is indispensable to those operators who own very small radios, such as the ICOM 706 series, the Yaesu FT-100, or the very small FT-817," comments Hansen. "The keypad is also essential for those operators who are visually impaired. It simply plugs right into the back of ICOM or Yaesu radios, and no outside computer control is necessary."

The Universal QSYer KeyPad by W2FS offers quick direct-frequency entry for various Yaesu and ICOM transceivers on which a front keypad was left out for space considerations. Depending on the radio, it may perform other functions as well.

The keypad allows for direct entry of frequencies into the radio memory channels. You can enter either kHz or MHz, and the keypad will figure out which you intended. The keypad also knows which mode to program in for different frequencies. While you can override this feature, it's handy when mixing lower sideband and upper sideband memory channels; and when you go to 10 MHz, it faithfully switches the mode to CW. Key-enter an FM broadcast-band frequency, and it will automatically switch to wide FM.

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With the new ICOM IC-703, the keypad allows you to go quickly to any memory channel simply by entering the *A* key and the two-digit channel number. For 2 meter FM repeater operation, the keypad also allows a single keystroke to toggle between VFOs and split functions. With the Yaesu FT-817 you can change the repeater shift from the keypad, or step through the various modes on the radio.

The keypad is designed to be operated from an internal 9-volt battery, and it draws under 10 microamps (that's *micro*) when idling.

Before you plug the keypad into your specific ICOM or Yaesu radio, you simply depress the star key twice and enter "817" for the Yaesu FT-817 or "100" for an FT-100 transceiver. To switch to the ICOM radio, depress the star key twice and enter the zero and XX, where XX is the CI-V address of the ICOM radio (if you have one and don't know what this means, check your manual). The keypad includes one cable to connect to the computer jack on your radio (specify either ICOM or Yaesu cable when ordering), and the other brand cable is available for just $5 each if ordered with the keypad.

It usually takes me about 60 minutes to completely program 100 channels via the big frequency knob on an ICOM IC-706 or Yaesu FT-100. Now, with the keypad, I can program up 100 memory channels in less than 15 minutes if I don't break my concentration.

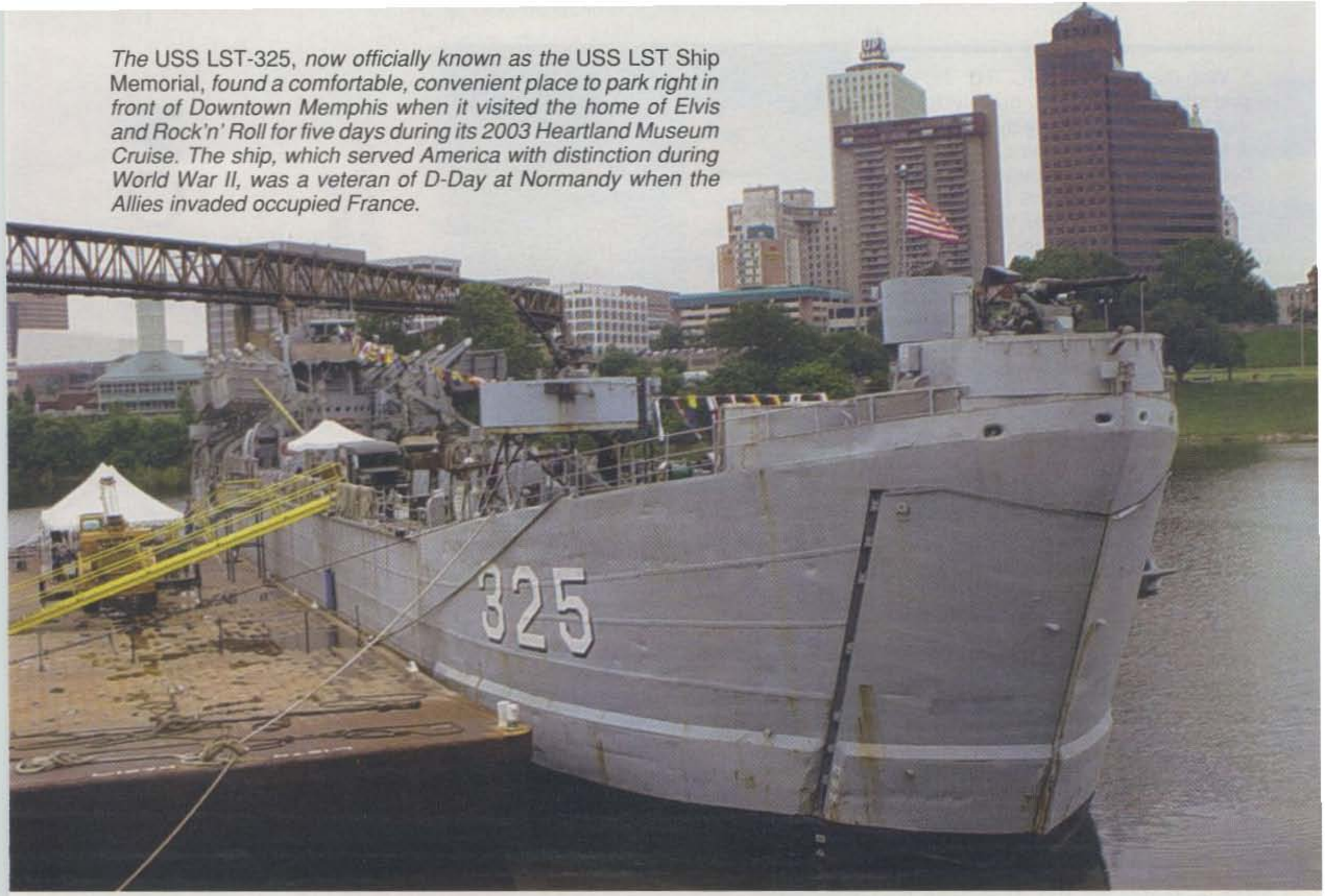
I regularly use the keypad during classroom demonstrations, and it is a fast way to jump around the bands and store frequencies rather than just spinning the dial or taking the time to hook the equipment into a computer program that takes almost twice as long as just punching in the frequency on the Hansen keypad.

The John Hansen "Universal QSYer KeyPad" is available either as a kit or completely assembled. A complete set of kit instructions perfectly matches all parts supplied, and it is definitely an easy one-evening project without surprises. Kit price is $70, and the fully assembled version sells for $95. You can see how easy the kit project is by downloading the instruction and operating manual at <http://john.hansen.net/keypad.htm>, which is also the ordering page.

John indicates some older and newer ICOM and older and newer Yaesu radios also work quite nicely with his keypad, and anyone with questions may e-mail him at <john@hansen.net>, or call him at (716) 818-7311. ■

www.cq-amateur-radio.com

The USS LST-325, *now officially known as the* USS LST Ship Memorial, *found a comfortable, convenient place to park right in front of Downtown Memphis when it visited the home of Elvis and Rock'n' Roll for five days during its 2003 Heartland Museum Cruise. The ship, which served America with distinction during World War II, was a veteran of D-Day at Normandy when the Allies invaded occupied France.*



The traveling museum made headlines while crossing the Atlantic. Last spring and summer, the USS LST Ship Memorial *(LST-325) toured middle America, and ham radio was a part of it all. WV5J paid a visit to the ship during a stop in Memphis.*

WW2LST

Ham Radio On Board the *USS LST Ship Memorial*

BY JOHN WOOD,* WV5J

Memphis, Tenn. was honored last spring with a visit by the *USS LST-325* (Landing Ship Tank) as it cruised up the Mississippi River as part of a sentimental journey aptly titled 2003 Heartland Museum Cruise. Now officially called *LST Ship Memorial,* the 60-year-old vessel arrived in Memphis on June 13 and berthed at Mud Island (where the Wolf River joins the Mississippi), the city's traditional front doorstep that has been welcoming riverboats and river travelers for over 200 years.

The *LST-325,* under the command of Capt. Bob Jornlin, began its Heartland tour on June 2, departing Mobile, Alabama en route to its first port of call, Vicksburg, Mississippi. From there, Memphis was the next stop. After Memphis, *LST-325* was expected to continue its three-month tour with visits to Cape Girardeau and St. Louis, Missouri; Evansville, Indiana; Paducah, Kentucky; Jeffersonville, Indiana; Greenville, Mississippi; and New Orleans before returning to Mobile—a 52-day trip expected to cover 3149.3 miles.

Knowing that the museum ship included a ham radio station, amateur radio buddy Jim Moffatt, WD4SMW, who works with me, joined me in using a lunch hour to take a quick tour of the *LST-325.* We hoped that during our brief stay on board the battle-tested ship we would get to see the radio shack, named the Jackson Carter Memorial Radio Room, and

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maybe talk to some of the fellow hams who were known to be manning the shack and operating under the callsign WW2LST. We were not disappointed.

Walking Back in Time

At the ship's berth on Mud Island, we were warmly greeted by *LST-325 rep*-resentatives busy selling tickets, T-shirts, and other memorabilia. Making quick work of the IDs and amenities, we were welcomed aboard by a volunteer who was pressed into service as a tour guide to move us immediately up, onto, and across the ship's weather deck and aft of the bridge to the radio shack. Being so surrounded by gray-painted steel, port holes, and ship's ladders, it was almost like walking back in time to 1944. With some close listening, it wasn't hard to imagine the sounds of battle this ship and her crew experienced as a part of the D-Day landings at Normandy, France in June 1944 (see sidebar "History of *LST-325*" for more).

Eventually we arrived at the radio shack, where we were introduced to Ted Pendarvis, WØMTP, one of the three hams fortunate enough to draw the duty of manning the *LST-325*'s radio shack during the summer Heartland tour. Also filling shifts and operating WW2LST on this three-month trip were Perry Ballinger, W8AU, and Rene Steigler, K4EDX.

Pendarvis welcomed us to the communications heart of *LST-325*, which Moffatt and I found to be spartan but roomy despite being well-populated with World War II and Korean War vintage radio equipment. These veteran receivers and transmitters stood in quiet testimony to the history of the ship, while the radio that seemed to be carrying the bulk of the communication responsibility was a modern, super-clean Yaesu 767EX complete with matching speaker and power supply.

Besides operating phone on the 20 and 40 meter bands plus CW on 40 as WW2LST, *LST-325* was scheduled to be heard on Navy/Marine Corp MARS frequencies as NNNØCCG. The ship was also expected to check into the Maritime Mobile Service Net on 14.300 MHz several times a day. With the constant interruption of tour groups filing through the shack, there was plenty to keep Pendarvis busy.

Unfortunately, our lunch hour was rapidly expiring, and with all there was to see and talk about just in the shack, we did not have time to make any contacts using the station. I did invite Pendarvis to use the Tri-State Repeater

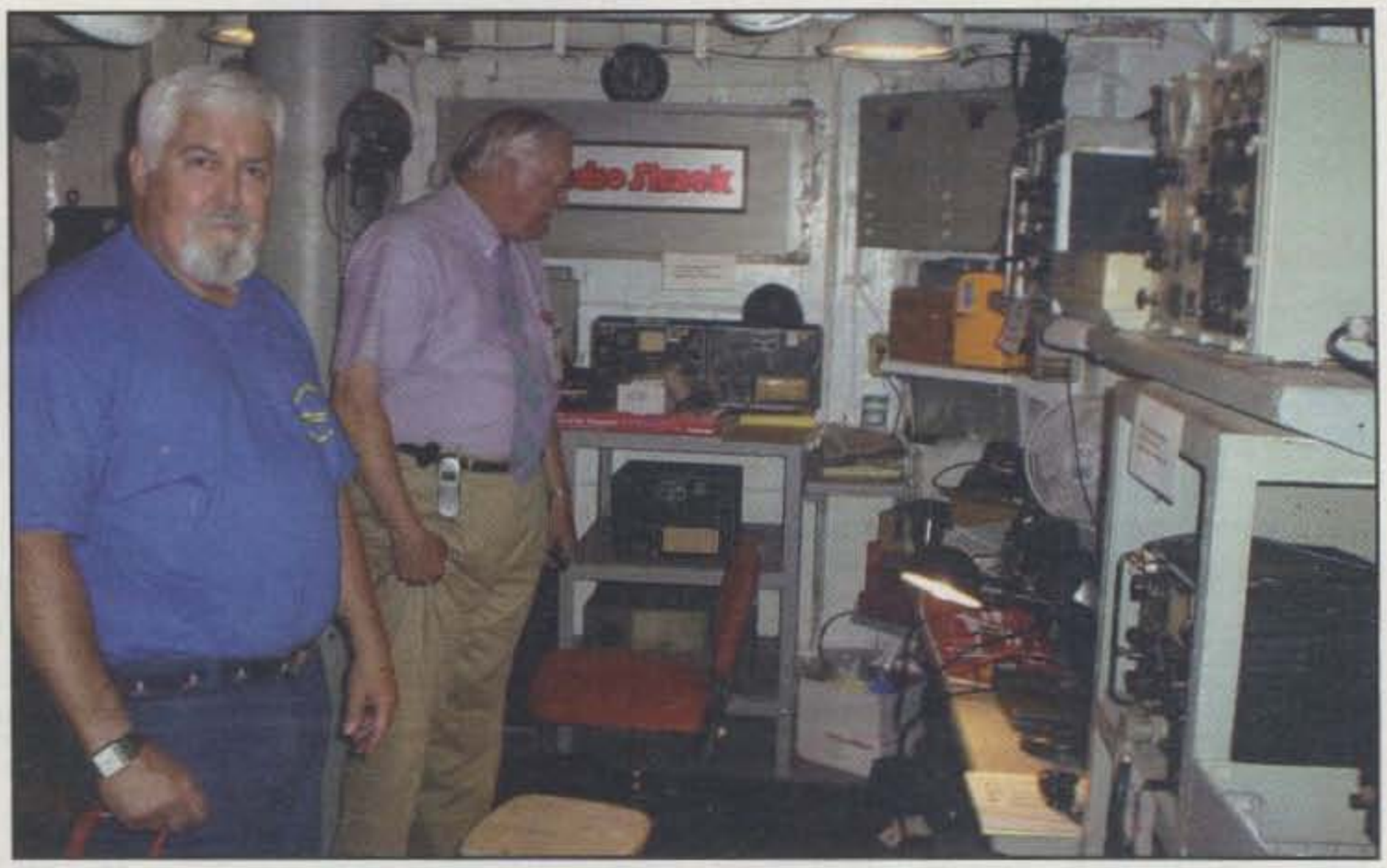
On the Cover

Steve Gilbert, K1SG, says his hometown of Hopkinton, Massachusetts is "26 miles, 385 yards from downtown Boston." Anyone familiar with running will know that that's the distance of a marathon race, and indeed, Hopkinton is the starting point for the annual Boston Marathon. You won't find Steve in that race, though. His preferred sporting venue is the 6-meter ham band.

In the photo on the cover, you're seeing just some of Steve's antennas. This tower is 140 feet tall, with the lower half fixed and the upper half rotating. From the top, there are beams for 432 and 222 MHz, the "upper" 6-meter Yagi—a 50-foot long 2.5 wavelength beam from M²— then a 2-meter Yagi, an HF tribander, the "lower" 6-meter Yagi (a twin of the upper one), a rotating guy point at 110 feet, a 3-element beam for 12, 17, & 30 meters, and a 2-element 40-meter beam. There's also an 80-meter dipole hanging off the tower.

Tower #2, not seen in the photo, is 110 feet tall and "in the process of being populated by a *really* big array for 6 meters," according to Gilbert. He says it will include eight 3-element beams stacked vertically on the northeast side, fixed on Europe; and another eight stacked on the southwest side, fixed on the population centers of the United States. (Tower #3, at 40 feet, holds his satellite antennas, and Tower #4, at 4 feet, supports his mailbox!) We don't have room here to describe the inside of K1SG's shack, but we'll include more in our online version of "On the Cover." (See November issue highlights on our website.)

While Steve is well-equipped for operating on every band from 80 meters through 70 centimeters, he says "everything I've got, one way or another, supports my activities on 6 meters." Steve so far has worked 147 countries on the "magic band" (146 confirmed), more than 500 grids, 78 grid *fields* (big blocks containing 100 grids), all continents, and 28 zones. He recently heard signals off the moon for the first time and is looking forward to making 6-meter EME (Earth-Moon-Earth) contacts. *(Cover photo by Larry Mulvehill, WB2ZPI)*



Radio shack operator Tom Pendarvis, WØMTP (left), gives Jim Moffatt, WD4SMW, a quick tour of the ham shack aboard the USS LST-325 *during our lunchtime visit made while the ship was berthed at Mud Island, front door to Downtown Memphis. Pendarvis was one of three hams providing communications for the ship during its tour, operating as WW2LST.*

Association repeaters, especially the Downtown Memphis 147.18/78 repeater which was a stone's throw from where the ship was docked. We stretched our lunch hour slightly, imposing on Pendarvis' hospitality with a couple of closing questions. He graciously satisfied our curiosity before we were forced to say goodbye and 73. We were returning to the 21st century and the workaday world, and Pendarvis was going back to a radio amateur's dream assignment of giving a third life to the *LST-325*'s radio shack and providing communication services for the proud ship and its crew. ■

The History of *LST-325*

This venerable vessel, now being given a third life as a museum craft, served proudly in the U.S. Navy after being launched on October 27, 1942 at the Philadelphia Naval Ship Yard.

First pressed into service for the invasions of Sicily and Salerno, *LST-325* and her crew were next dispatched to England, where they spent time training for the invasion of Hitler's Fortress Europe. On D-Day, June 6, 1944, *LST-325* landed at Normandy, primary site for the Allies' invasion, with the Royal Engineers. Subsequently, *LST-325* made 44 trips between France and England over the next 11 months to support the Allies' liberation of occupied France and their march to Berlin and V.E. Day.

After being decommissioned twice and brought back each time for duty in Labrador and in Greenland, respectively, *LST-325* eventually was transferred to the Greek Navy to become the *Syros,* or *L-144*. There it served for 35 years in its second life until the year 2000, when it was transferred to a non-profit group that wanted to bring it back to the U.S. and use it as a floating museum. It was at this point that the ship and her crew of former Navy and Coast Guard sailors, with an average age of 72 years, began to receive widespread media attention for their goal of crossing the Atlantic and returning the ship to the U.S.

Despite the inherent difficulties of such a voyage, the crew successfully sailed the *LST-325* from the island of Crete to Mobile, Alabama, and arrived precisely on schedule January, 10, 2001, after traveling 4000 miles.

The Heartland tour, also known as the 2003 River Cruise of the Mississippi and Ohio rivers, began June 2. Much of the credit for making the voyage possible goes to Luhr Bros. Inc., of Columbia, Illinois, the company that provided push boats for the river tour. According to information gleaned by Moffatt, the *LST-325* is reportedly capable of operating under its own power, but given the ship's age and inherent problems, Coast Guard officials directed the crew to use an alternate method of propulsion. Consequently, Luhr Bros. stepped up to donate employees and equipment for the cause. Along with push boats, Luhr Bros. also supplied barges, an entry tent, gangways, and even a crane, all to make it easier for visitors to tour this ship and get to know her proud and illustrious history.

For more information about the *LST Ship Memorial,* visit the ship's website at <http://www.lstmemorial.com/>.

Following up WB6NOA's August operating guide to the new 60 meter band, WA6CAX offers these tips for operating mobile on 5 MHz.

60 Meter Mobile on a Budget

BY WILLIAM ALBER,* WA6CAX

Wow, the new 60 meter band is great! Now how to go mobile? You could just set your screwdriver antenna to tune it (if you have one), or you could buy a single-band whip at the local ham store. Wanna bet? Sorry, Charlie, no 60 meter whips available yet. I know, I'll build one! Ah, but where to begin? That question was answered at the local monthly ham swap meet.

I bought a center-loaded 40 meter mobile antenna for eight bucks (photo 1), took it home, and removed the shrink covering below the coil. Next I measured the coil (10.5 inches, photo 2) and decided that adding 65% more coil would bring the antenna down to 5 MHz. By carefully winding new magnet wire of the same size around the form to add 6.5 inches more coil, then running it in a 2-inch-spaced spiral to the mount (photo 3), 5 MHz *should* be the new resonant frequency. Wrong. My MFJ-269 SWR analyzer says 5.9 MHz. Lesson learned: *Always* put more wire on than you think you need; you can always remove coil to raise the frequency.

Now to remove all the carefully wound wire and add more. I put the antenna back on the car and checked the MFJ analyzer. Yikes! Only down to 5.65 MHz! By now, running low on wire, I opted to splice on to the coil again and add another 2 inches. This time the resonant frequency was just below the lowest frequency channel. This was more like it.

I removed a few turns at a time until the resonant frequency was right in the middle of the five-channel band at 5.360 MHz. VSWR at the band edges was better than 1.6 to 1 as measured on the analyzer (photo 4). Next step was to cover the bottom half of the antenna with heat-shrinkable vinyl, and put it on the air (photo 5). Running approximately 12 watts (the LOW power setting on my rig), I made several daytime contacts in the 200 mile range. Later that evening contacts of 800 to 1200 miles were made with good signal reports—60 meter mobile for a total parts cost of about $11!

*c/o CQ magazine

Photo 1– A 40 meter mobile whip, an $8 find at the swap meet.

Photo 2– First step, remove coil covering and measure the 40 meter coil. ↓

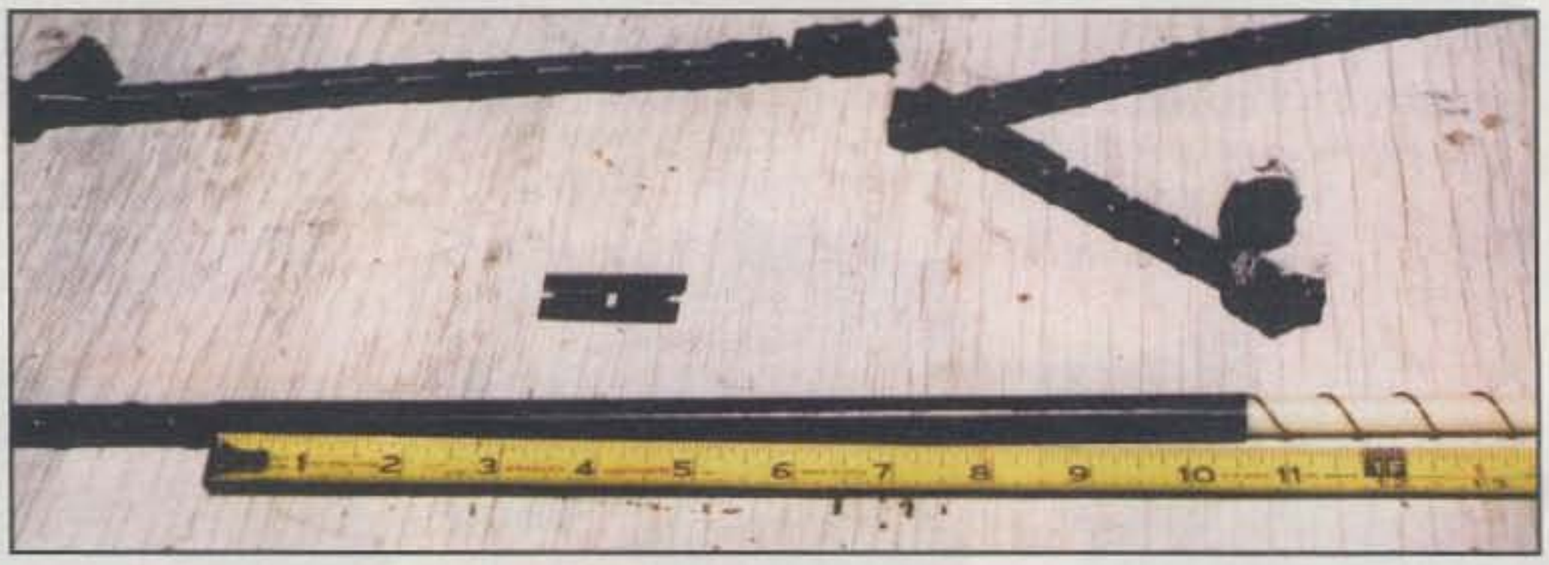


Photo 3– Here the new coil has been added to bring the resonant frequency from 7 down to 5 MHz. Clear vinyl tape keeps it from unwinding.

Photo 4– The MFJ-269 antenna analyzer shows the SWR of the "new" antenna is better than 1.5 to 1. →

Photo 5– Final step, cover the new coil (and old) with shrinkable vinyl, mount on your vehicle, and you're ready to radiate. →

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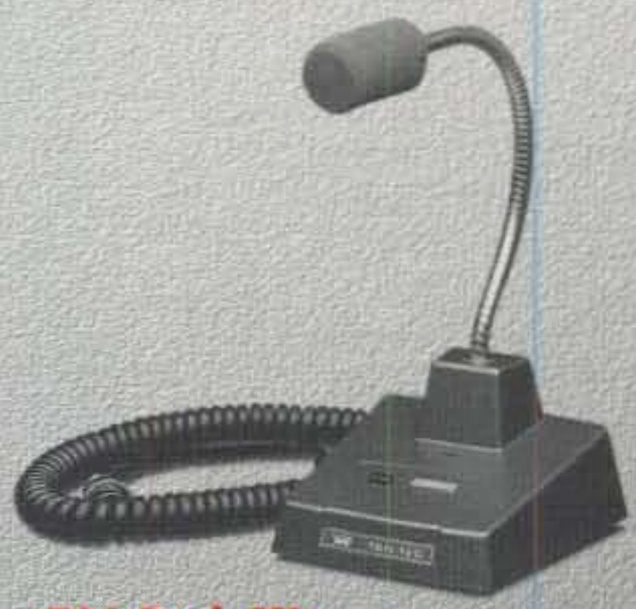

706 Desk Mic – Our standard communications desk mic comes ready to plug into any 4-pin-equipped Ten-Tec transceiver. Quality audio with plenty of punch. **$99.95.**

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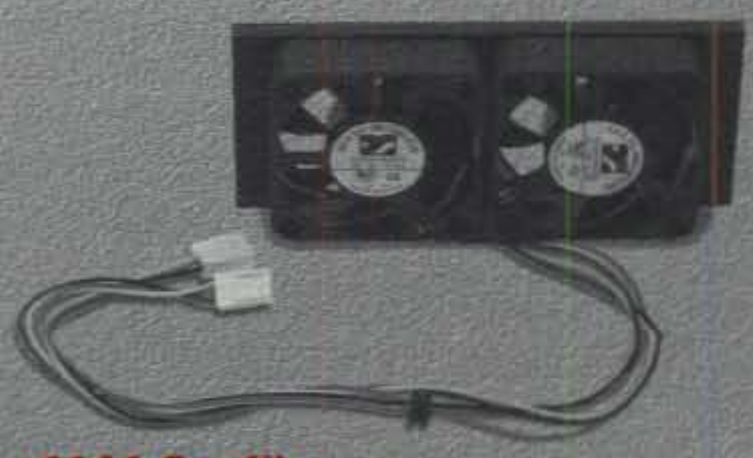

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Back in the 1930s, Grote Reber, W9GFZ,[1] used his ham radio skills to build an unusual antenna to pick up even more unusual signals—radio signals from outer space. Today Dr. Reber is recognized as the father of radio astronomy. In late 2002, Jack Najork, W5FG, visited Dr. Reber just a few days before his death. Here is Jack's story, based on his visit and additional information from Dr. Reber's friend, Jim Davis, VK7OW.

120 Dipoles on 400 Acres: Grote Reber's Final Legacy

BY JACK NAJORK,* W5FG

As a young ham in 1937, Dr. Grote Reber built one of the world's first radio telescopes in his back yard in Wheaton, Illinois. Dr. Reber died last December 20 in Tasmania, two days shy of his 91st birthday.

Born in Chicago, Reber studied radio engineering and worked for various radio manufacturers from 1933 to 1937. During this time, he applied for a job with Karl Jansky at Bell Labs. In 1932 Jansky had discovered that radio waves were originating in the vicinity of the Milky Way, and Reber was anxious to explore this field. However, America was in the midst of the Great Depression, and jobs were not easy to find. He struck out with Jansky.

Reber decided to explore radio astronomy on his own. In 1937, using half a year's savings from his radio manufacturing jobs, he built his radio telescope. The radio mirror, which was made of sheet metal and had a diameter of 31.4 feet, was first used with a receiver tuned to 3300 MHz, but failed to detect signals. A second receiver, at 900 MHz, also failed. Finally, in 1938, a receiver tuned to 160 MHz detected radio emissions from the Milky Way, confirming Jansky's discovery.

Reber began surveying radio radiation from the sky and displayed this data as contour maps, with the brightest parts toward the Milky Way galaxy in the south. Other bright radio sources, such as Cygnus and Cassiopeia, were recognized for the first time.

From 1938 to 1943, Reber published his results in both engineering and astronomy journals. His work ensured that radio astronomy became a major field of research following the end of World War II. Research groups in many countries began building bigger and better antennas and receivers to follow up on Reber's discoveries.

Reber went to work on new radio telescopes worldwide. From 1957 to 1961, he worked at the National Radio Astronomy Observatory at Green Bank, West Virginia, where he donated his original dish in the early '60s. It remains there as a historical monument.

Later in the 1960s, Reber turned his attention to the lower-frequency spectrum—1 to 2 MHz. At these frequencies, outer space radiation has difficulty penetrating the ionosphere, except over certain parts of the Earth and at times of low solar activity.

Jim Davis, VK7OW, Dr. Reber, and William Howe (left to right) outside Reber's radio shack in Tasmania in 1984. Howe was with the US Naval Research Lab in Washington, D.C., and worked with Dr. Reber for many years. (Photos courtesy VK7OW)

One such location was "down under," in the region of Australia. Nearby Tasmania offered a view of the southern sky and the middle of the Milky Way galaxy. There, on 400 acres of sheep-grazing pasture, Reber erected a huge array of over a hundred 80 foot poles strung with 120 dipoles resonating near 143 meters, fanning out like spokes on a bicycle wheel.

From 1963 to 1967, Reber gathered enough data to map almost the entire southern sky.

Despite the favorable Tasmanian location, the ionosphere still shielded some radiation from Reber's array. According to Australian newspaper reports, Reber was able to call

* *PMB-84286, 705 Martens Ct., Laredo, TX 78041*

Dr. Reber in front of his solar-heated house in Bothwell, Tasmania.

on NASA for help. On a pass over Tasmania, the space shuttle *Challenger* reportedly ejected ionospheric dispersants from a pre-arranged payload, thereby giving Reber's array a clear, unobstructed view of space at 143 meters.[2]

Last year on a tour of New Zealand, Australia, and Tasmania, I visited Dr. Reber in the hospital just a few days before he died of cancer. Although very feeble, Reber was still mentally alert, and he joked that sudden old age had stopped his work. When asked what happened to his huge array, Dr. Reber smiled and said that those seasoned wooden poles had been cut up for firewood and had kept most of Tasmania warm for several winters.

Dr. Reber was cremated in December 2002. In accordance with his wishes, his ashes were scattered over two locations. The first was Mt. Rumney, where he first successfully probed for LF space radiation. The second was the site of his antenna farm in Bothwell. Both locations are in Tasmania, where he lived for 30 years.

Often described as a "loner," Dr. Reber never married and left no family.

Notes

1. Although Reber dropped out of ham radio as his career progressed, his old call, W9GFZ, is in use today as a memorial by the National Radio Astronomy Observatory Amateur Radio Club in Socorro, New Mexico.

2. This report could not be confirmed in the United States. ■

If you want the station you're working on to sound like the only station on the band, N4QB says the SCAF-1 Audio Filter from Idiom Press should perk up your ears.

CQ Reviews:

The Idiom Press SCAF-1 Audio Filter

BY JOE VERAS,* N4QB

My search for a compact, easy-to-use, and relatively inexpensive means of enhancing the selectivity of my vintage receivers/transceivers ended when I discovered Idiom Press's SCAF-1 filter. Those of you who read *CQ* regularly know I collect classic radios and use many of them on the air. After trying this audio filter with a variety of gear, new and old, I found it a beneficial accessory for nearly any radio, regardless of vintage or price class.

Heading the list of the SCAF-1's attributes is its ease of connection and set-up. Using the unit for the first time, one follows a short procedure from the instruction manual involving the adjustment of two PC-board-mounted pots. This equalizes the audio level with the filter in or out of the circuit and minimizes white noise. With the setup complete and the top cover back on, all further operation is done with two front-panel controls, a knob and toggle switch. The two-position switch controls whether the filter is in or out of the circuit. The knob sets the low-pass filter's cutoff frequency, which ranges from 450 Hz to 3.5 kHz. The SCAF-1 rolls off, or attenuates, audio signals at 96 dB per octave (audio frequency doubles or halves by octaves) above whatever cutoff frequency is set. Also of importance to me is the filter's small size. It measures $3^{15}/_{16}$" W × $^1/_2$" H × $5^1/_{16}$" D. Only one connection between the SCAF-1 and radio is required. A shielded cable from the radio's headphone or speaker output plugs into an RCA jack on the filter. That's it!

The SCAF-1 Audio Filter from Idiom Press. (Photo © Joe Veras)

Power is supplied to the filter through a 2.5 mm coaxial jack (plug supplied). It requires 12–14 VDC @ 300 mA from a well-regulated source. The ubiquitous wall transformer is *not* suitable in this application. The final two connectors are $^1/_4$ and $^1/_8$ inch stereo jacks for headphones and speaker audio output, respectively. All connections mentioned are on the rear panel. Though the function of each might be obvious to most users, none is marked.

If SCAF-1 appears to be an acronym, you're right. This *Switched-Capacitor-Audio-Filter* uses technology developed in the telecommunications indus-

*P.O. Box 1041, Birmingham, AL 35201
e-mail: <n4qb@cq-amateur-radio.com>

try a quarter-century ago, and it was used in several amateur homebrew and commercial circuits in the mid-1980s. Switched capacitor filters may be configured as high-pass, low-pass, band-pass, or notch devices. The SCAF-1 is the low-pass filter variety. How do SCFs work? Even a concise explanation would take half-a-dozen pages of text, equations, and diagrams . . . more space than I'm allotted here. If you're curious, though, W1JF and W3MT did a good job of explaining basic switched cap filter principles in a 1984 article leading up to a filter construction project.[1] Right after how they work, the important question is: *Do* they work? In the case of Idiom's SCAF-1, the answer is, most assuredly, yes.

The first radio I used with the filter was my Altas 210X, a compact, solid-state classic that is my favorite take-along rig for trips to our QTH at the beach. It has only a sideband filter and no way to add CW selectivity internally . . . at least not without more microsurgery than I care to contemplate. I powered the SCAF-1 from the transceiver's accessory socket, made the audio connection, and plugged my headphones into the filter's output jack. After the initial setup adjustment, the cover went back on the filter. Europe was coming through on 20 meters. My first impressions were strong and immediate. This unit is both very effective and extremely easy to use.

A review can be either on-the-bands subjective or just-the-facts laboratory style. My curiosity led me to combine a little of both with this one. One of the European stations on 20 CW was a DL6 with a weak, but consistent, signal. I parked my Hewlett-Packard 8640B signal generator 600 Hz away from his frequency and, using a short piece of wire for an antenna, set its output to produce an S9 + 20 dB reading on the Atlas's S-meter. Solid copy on the Hewlett-Packard.

Then I tuned back to the DL6, now blocked by the signal generator, and flipped on the SCAF-1. The signal generator heterodyne disappeared and I could easily copy the German as if he were the only station on the band. I should point out that my S-meter was still reading well up-scale, since the 8940B's now inaudible signal was within the transceiver's 2.7 kHz passband. Depending upon your radio's AGC characteristics, a strong signal you can't hear may push the weak station you *do* want to copy down into the noise. Based on this quickly put together test, as well as the hours spent operating, the manufacturer's claim of 96 dB roll-off per octave is easy to accept at face value.

The impression of absolute selectivity, of being able to pick out that one signal, may be less on SSB than CW, but the SCAF-1 brings additional dimensions to the voice modes. Being able to turn the filter's front-panel knob to dial out extraneous noise or off-frequency chatter does much to make one's hours in the shack more pleasurable. Suddenly you're in a cozy room having a conversation with one person instead of trying to communicate in a crowd, being jostled about and having your feet stepped on. No matter which mode is being used, the SCAF-1's ability to eliminate white noise is almost worth the price of admission by itself. I did not use the filter on any voice mode other than SSB.

I found it easy to move the SCAF-1 from radio to radio, needing only a source of 12 VDC power when using it with one of my boatanchor receivers. Changing headphones or speakers generally required doing the initial setup procedure again, though.

If you have a PC, soundcard, and an internet connection, Idiom Press provides the next best thing to hands-on experience without actually hooking a SCAF-1 to your radio. On its homepage at <www.idiompress.com> is a link for more information on the SCAF-1. On the next page is a panel inviting you to hear it in action. Following that link brings up a menu of .WAV files demonstrating the filter's being used during on-the-air operation for both CW and SSB QSOs.

With the SCAF-1, I not only met my original goal of finding additional selectivity for my vintage gear but also found a great companion piece for my modern radios, as well. The latest and greatest transceivers in the marketplace come equipped with many tools; the SCAF-1 provides yet another very effective one.

The SCAF-1 is available in kit form ($89.95) or assembled and tested ($134.95). I opted to go with the already assembled filter from Idiom. Amateurs who have built the SCAF-1 kit report assembly times ranging from two to five hours. It may be ordered from Idiom Press, P.O. Box 1025, Geyserville, CA 95441; telephone 707-431-1286; e-mail: <sales@IdiomPress.com>; or online at <www.idiompress.com>.

Note

1. Schellenbach, Richard, W1JF and Noble, Frank, W3MT. "Switched-Capacitor Filters—An Emerging Technology for Amateur Radio Use," *QST*, March 1984, pp. 19–25. ■

antennas

BY KENT BRITAIN,* WA5VJB

Linear Loading and Tips on Ground Radials

In the September column we went over traps and how they can be used to shorten an antenna or make the antenna resonate on multiple bands. This time we'll look at another approach to shortening antennas called *linear loading*.

In fig. 1 we have a simple 1/4-wave vertical. Two of the many ways to shorten a vertical are shown in fig. 2. One of those ways is to put some of that 1/4 wave of wire in a coil, but another way is simply to fold the antenna back on itself. This folding of the element is known as linear loading, and as you can see, there are many ways to fold the element. The decision of which technique to use is more a mechanical one than an electrical one.

Linear loading an antenna can have several advantages over loading with coils. First is a lower Q factor. This means linear loading usually works over a broader range of frequencies and usually has less loss.

Next is the open nature of the loading, meaning it is less likely to trap moisture and tuning is less affected by rain, snow, ice, bird droppings, etc.

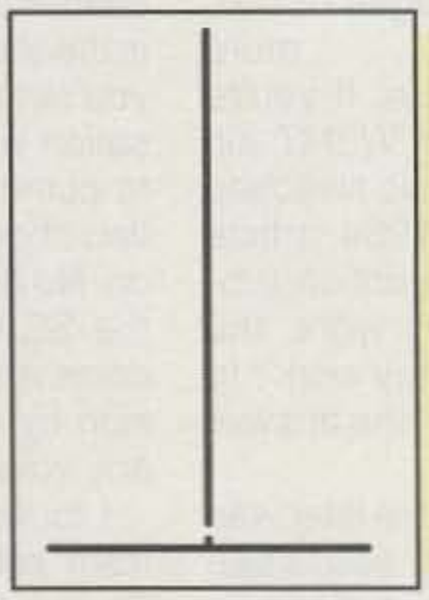


Fig. 1– Simple 1/4-wave, ground-mounted vertical antenna.

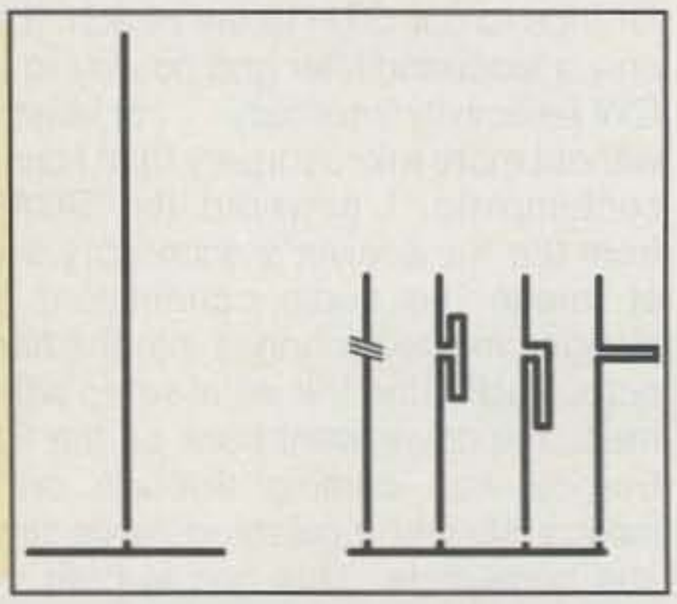
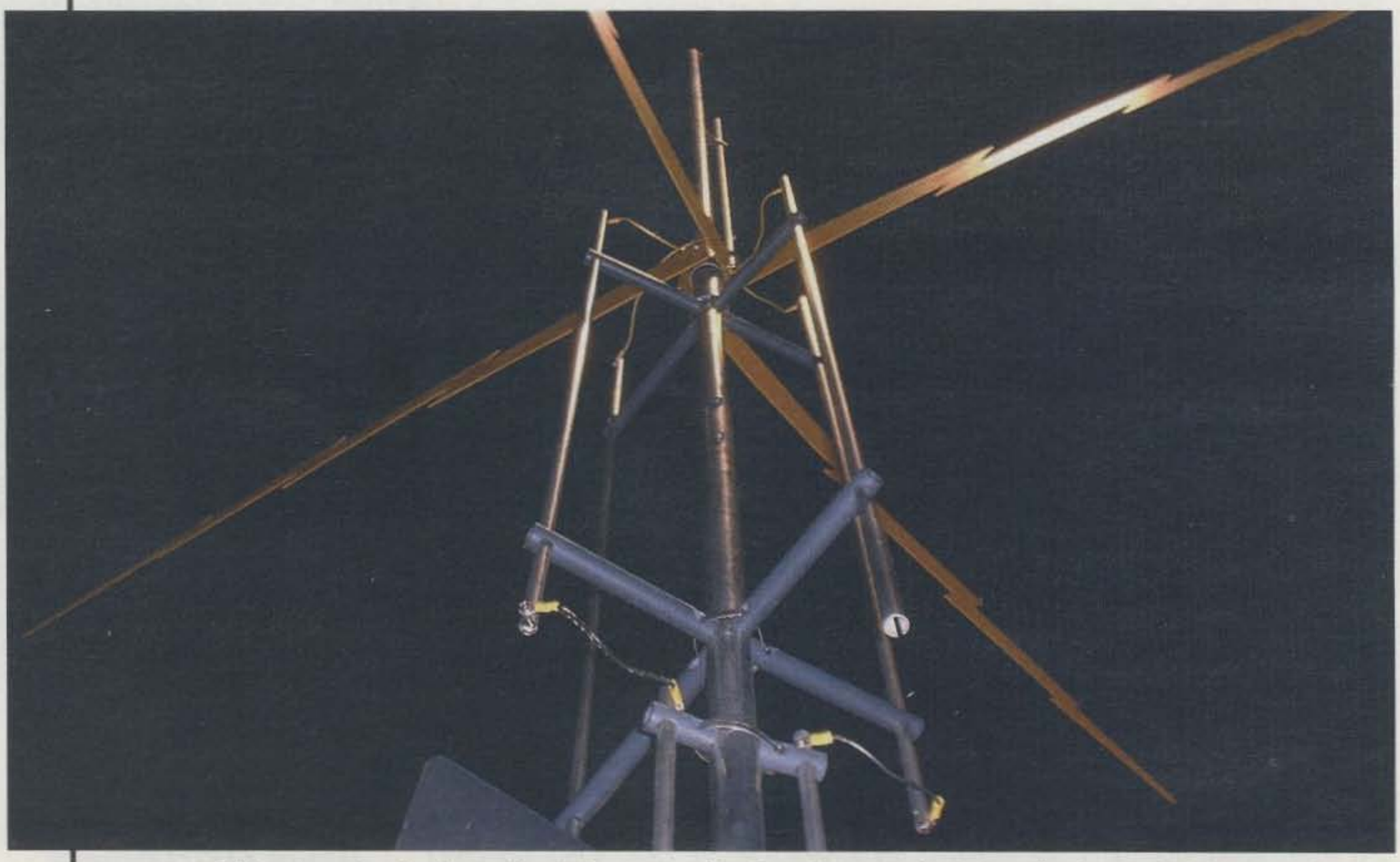


Fig. 2– Different ways to load and shorten a vertical antenna

*1626 Vineyard, Grand Prairie, TX 75052
e-mail: <wa5vjb@cq-amateur-radio.com>



This example of a linear-loaded antenna (by Gap Antennas) was on display at the Hamcom hamfest in Dallas this past June.

MFJ *Balanced Line* Antenna Tuner

Superb balance . . . Very wide matching range . . . Covers 1.8-54 MHz . . . Cross-Needle SWR Wattmeter . . . Handles 300 Watts . . . Compact size . . .

The MFJ-974H is a* fully balanced true *balanced line antenna tuner. It gives you superb current balance.

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Johnson Matchbox

For decades, the Johnson Matchbox has been the standard of comparison for balanced line antenna tuners. But, it had a severely limited matching range and covered only 80, 40, 20, 15 and 10 Meters.

***The** MFJ-974H is its successor*. It meets today's needs and even surpasses the Johnson Matchbox outstanding performance.

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The MFJ-974H gives you excellent current balance, very wide matching range(12-2000 Ohms) and covers 1.8 through 54 MHz *continuously* including all WARC bands, 160 Meters, 6 Meters and the new 60 Meter band. Handles 300 Watts SSB PEP and 150 Watts CW.

Tuning is fast and easy - - just three tuning controls. You can adjust for highly efficient broadband low-Q operation or use higher Q when you encounter extreme loads.

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Compact 7½Wx6Hx8D in. fits anywhere.

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The MFJ-974H tunes any balanced lines including 600 Ohm open wire line, 450/300 Ohm ladder lines, 300/72 Ohm twin lead - - shielded or unshielded.

Superb current balance minimizes feedline radiation that can cause troublesome TVI /RFI, painful RF bites, mysterious RF feedback problems and radiation pattern distortion.

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The MFJ-974H is a *fully balanced* wide range T-Network. *Four* 1000 Volt air variable capacitors are gear driven. A high-Q air wound tapped inductor is used for 80-10 Meters with separate inductors for 6 and 160 Meters. The tuning components are mounted symmetrically to insure electrical balance.

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6-80 Meter Balanced Line Tuner

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MFJ-974, $169.95. Same as MFJ-974H but for 6-80 Meter operation (no 160 Meters).

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Provide multiple high current DC outlets for transceivers and accessories from your main 12 VDC power supply – keeps you neat, organized and safe. Prevents fire hazard. Keeps wires from tangling up and shorting. Outlets are fused and RF bypassed.

All MFJ DC power strips have *built-in* six foot, eight gauge, flexible color-coded cable with ring tongue terminals -- *no extra cost*. *RF-tight* aluminum cabinet has mounting ears and ground post with wing nut.

Choose MFJ's *super versatile* super heavy duty 5-way binding posts (spaced for standard dual banana plugs) and/or *Anderson PowerPole®* outlets.

Each *Anderson PowerPole®* is individually fused as needed. Standard color coded automobile fuses plug in externally. Extra *PowerPole®* connectors, contacts, fuses are included at *no extra cost*.

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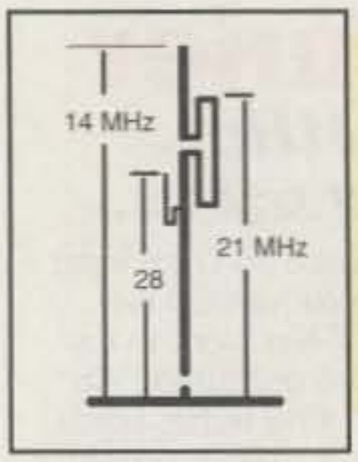

Fig. 3– Using different parts of a linear-loaded vertical on different bands.

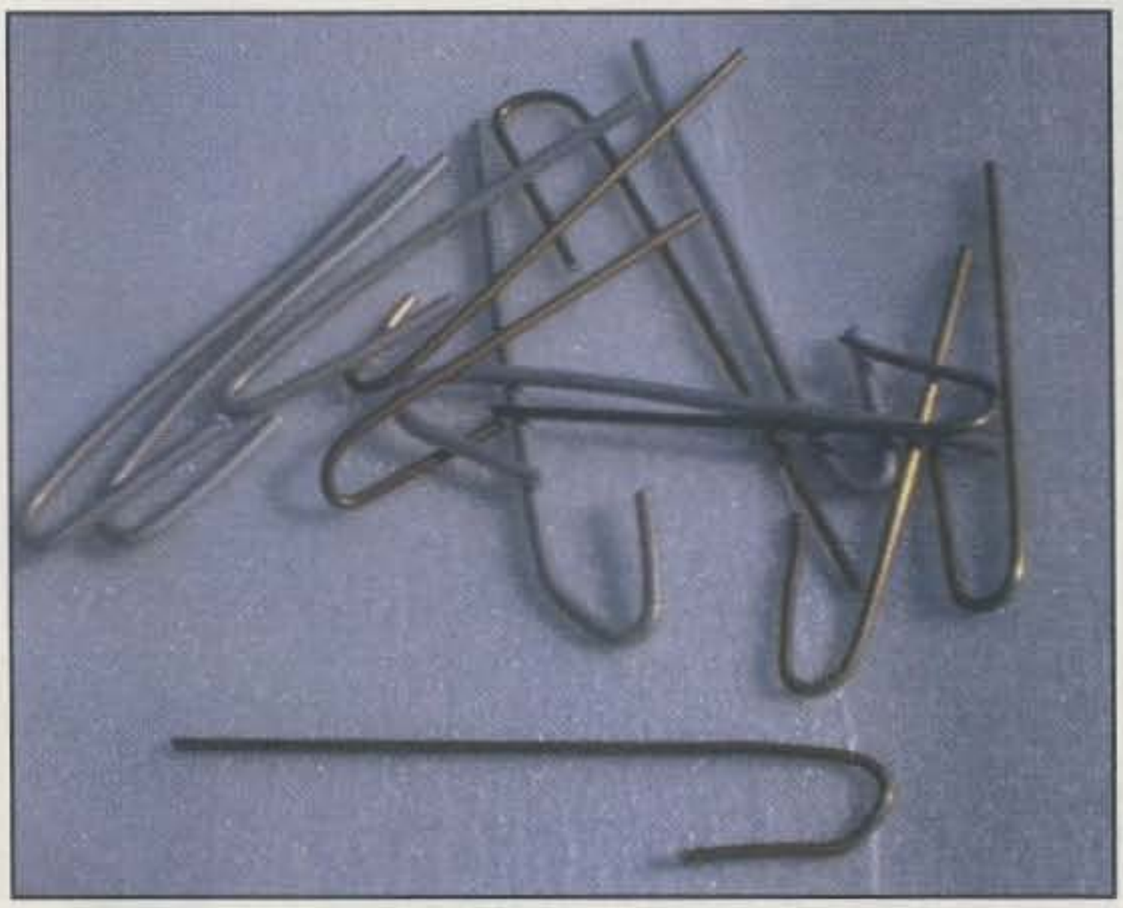

Photo A– Ground wire hooks.

Also, if the designers are clever about it, they can make other sections of the structure resonate on other ham bands, as shown in fig. 3.

About the only down side to linear loading I've been able to come up with is the extra surface area of the antennas. A linear-loaded antenna tends to collect a bit more ice and wind, but the difference is pretty small. This technique doesn't work very well if you need to seriously load an antenna. By seriously load, I mean a 4 ft. long 75 meter antenna. I have never seen linear loading used on an HF mobile antenna.

Ground Radials

Boy, are there a lot of ways to install ground radials for your vertical. The first time I did it, I used a rototiller to make several trenches into which I stuffed several wires—a heck of a lot of work for five radials. Next time I used a concrete working tool to cut slits in the ground—a "little" easier. The third time was probably the easiest; while the contractor was digging the septic system for my new house, I told him where I wanted a pit, 50 ft. by 50 ft. and 2 in. deep. That got a few strange looks, but with that front-end blade it didn't take him even 5 minutes. The 150 ft. long 6 in. deep trench to run the coax back to the shack took a little longer. Next I took 48-conductor telephone cable, wedged all 48 ends together, slit the insulation cover, and spread out the wires. I ended up with about 400 radials in that pit and a mount for my Hustler 5BTV in the middle! Then we put back the dirt.

Twenty-five feet is a bit short for a radial on 75 meters, but the quantity really helped make up for the lack of length.

Later I wanted to add a dozen much longer radials, and this method worked well: First I set the lawn mower as low as it would go and mowed a strip where I wanted to place the radial. By having the mower blade that low I'd be less likely

Photo B– Slipping the hook over the ground radial.

to catch a wire when mowing at the usual setting. I used a lawn trimmer once. . . . Maybe you can hold a straight line better than I can.

Next I made up a batch of hooks. As you can see in photo A, old coat hangers work pretty well, and you can clean up that rat's nest of hangers in the front closet. No. 10 and No. 12 copper wire will also work, as will 1/8 in. solid-aluminum ground wire. You just want to hold the wire down in the grass. You will need one holder for every two or three feet of ground radial. Start near the antenna end and work your way out to the tip of the wire. Especially when the ground is soft, it's easy to push the hook just below the dirt.

This looks kind of funny when you have finished, but by the next morning the grass has relaxed and the wire is sinking under the grass. In a few days the grass grows back and the wire is nearly invisible. Any high spots might need an extra hook or two. After a few lawn mowings the wire is completely under the turf and completely invisible. Of course, the lawn is not in perfect condition for a week or so, but I'll leave that problem up to your negotiating skills with the XYL.

It's also probably not a good idea to do this when the grass is not growing. Grass has a natural churning effect on your

Photo C– Pushing the hook and the wire just below the surface.

turf. Roots pull up moisture and minerals. The grass clippings then lie on the top of the turf. This natural churning buries the ground wire to a depth of about an inch over ten years or so. It's not as slick as a plow, but you're not going to damage any plumbing or sprinkler systems. In all I've run about a dozen 75 ft. radials and two 150 ft. radials this way.

More radials has been a good way to get rid of a lot of old wire, too. Do you have some RG-58 that's turning black or green around the core? Radials are a great way to find a good use for something that's otherwise useless. I've used old mic cable, old rotor cable, telephone cable, and electric fence wire, all with good results. Bare or or insulated wire doesn't make much difference. The typical insulated wire has about 30 pF of capacitance per foot to the earth, so a 30 ft. radial, even with insulated wire, has almost 1000 pF to ground. Multiply that by 10, 20, or more radials, and that's pretty grounded even at 160 meters.

Of course, 120 1/2-wavelength annealed No. 6 copper wires would work better, but you could buy a heck of an HF station with the money you save, and I like to think of it as recycling that old wire. How "green" of me!

Why go to all this trouble? Like money and good looks, it's hard to have too many of them. For ground-mounted verticals, if you have 16 radials, 24 would work better. If they are 40 ft. long, 60 ft. long works better. With radials, more is always better.

Coming Up in January

I keep using the term *Q* for antennas and loading coils, so it looks as if I need to come up with a good, yet simple definition of Q for you. I certainly hope two months is going to be enough time! *(You chaps with PhDs in electronics understand!)* We will also touch on capacitance hats next time.

E-mail Problems

For those of you who may have tried to e-mail me in the last couple of months, I'm afraid that some of those anti-worm patches added to the CQ server during all that "Blaster" stuff blocked my new e-mail address. I'm told that our web host has a brand-new mail server, though, so by the time you read this, <WA5VJB@cq-amateur-radio.com> should be working again. It's certainly not like me to ignore e-mail, so please try again if you have any questions. Some of my best topics for columns come from your questions.

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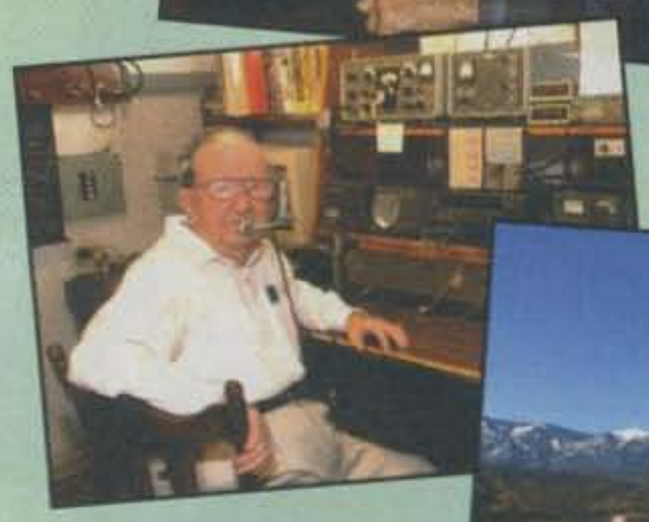

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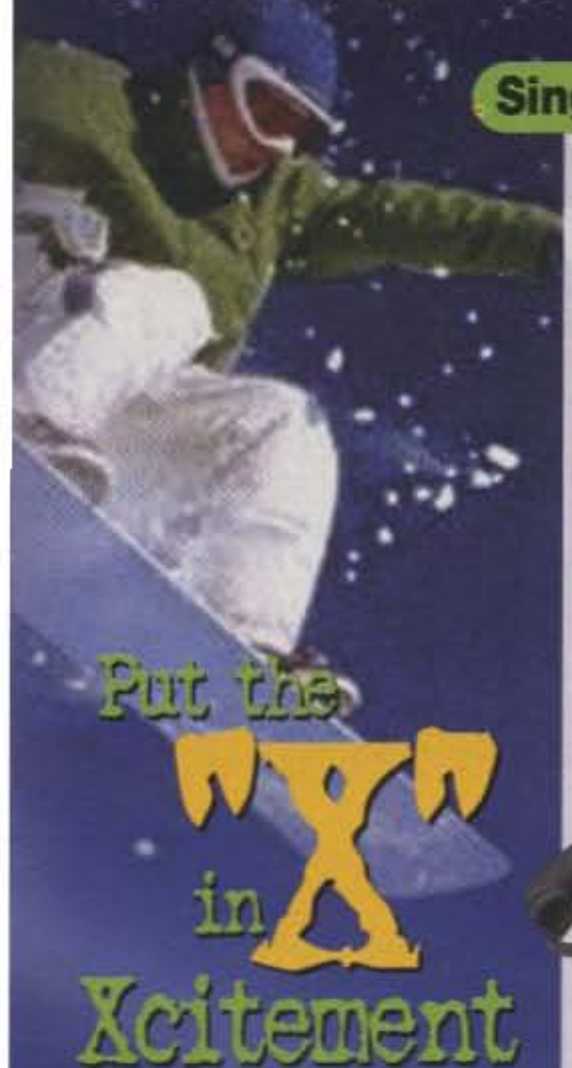

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BY BOB JOSUWEIT, WA3PZO

ICS: The New Standard for Emergency Management

Public Service Editor Bob Josuweit, WA3PZO, is temporarily unable to do his column. Our guest columnist this month is Brian Williams, NB5R.*
— W2VU

Imagine this: You receive a late-night phone call from your local ARES/RACES manager asking if you can respond to a large suburban HAZMAT (HAZardous MATerials) incident to help with emergency communications. Nearly a square mile of residential and commercial buildings have been evacuated. The local media are already on the scene, along with more than fifty personnel from nearly a dozen agencies, including police, fire, EMS, Red Cross, and utility departments, even though the chemical spill was reported less than an hour before.

During the hasty two-minute briefing received by phone, you are given the location of the Incident Command Post (ICP) and instructed to report to the Resource Unit Leader in the Logistics Section.

**P.O. Box 200, Ranchos de Taos, NM 87557*
e-mail: <nb5r@arrl.net>

It takes almost 45 minutes to find and gather up the radio gear and personal items you think will be appropriate. You rush to the scene, feeling a surge of adrenalin, accompanied by the fear of not knowing what exactly you're supposed to do when you get there. As you drive, you monitor your scanner, and it seems as if every emergency frequency you've programmed is jammed with traffic.

Upon arriving at the ICP—a large, enclosed fifth-wheel trailer—a police officer asks for your name and ID. You quickly are ushered inside to a folding chair in front of a long table against one wall. The mysterious Resource Unit Leader appears, introducing himself as he hands you a stack of paperwork. Your new boss, noticing the baffled look on your face, raises one eyebrow and asks, "Do you know ICS? No? That's okay, no problem. I'll just give you a quick lesson. Let's start with the Unit Log, Form 214..."

Welcome to the **Incident Command System**, or ICS, a standardized method of coordinating multi-agency emergency response that is quickly becoming the new standard for emergency management. Many of us who volunteer to help in emergencies don't take time to consider what dangers might be awaiting us as we run out the door, adrenalin pumping, anxious to get to the command

The Incident Command Post for an ICS/Search-and-Rescue exercise near Taos, New Mexico, last June. (All photos copyright Brian Williams, used by permission.)

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The command staff holds a planning meeting to plot their next moves. There are two hams in the group: Operations Section Chief Carl Berghofer, Jr., N5ANP, on left, and Perry Patton, KD5IJU, on the far right.

post and receive an important assignment. As you might expect, the larger the incident, the more challenging management becomes. Unfortunately, failing to meet that challenge can result in the needless loss of property and even the lives of those who are trying to help, including volunteers.

ICS is designed to help emergency managers meet the challenge, regardless of the size or scope of the event, or incident. The odds of casual ARES (Amateur Radio Emergency Service) and RACES (Radio Amateur Civil Emergency Service) volunteers being called out for an ICS-type event are becoming greater every day, what with the threat of terrorist attacks and weapons of mass destruction (WMD), not to mention the radical extremes Mother Nature is throwing at us these days. Tornadoes are appearing out of season and in places never before seen. Several metropolitan areas are "due" to receive major earthquakes in the next twenty or so years, and recently we've all been reminded of what chaos can result from a simple blackout!

Our heightened state of preparedness is prompting more private and government agencies, departments, and municipalities to adopt ICS as their standard protocol for emergency management. ICS has even been used during some non-emergency events, such as the 2002 Olympics held in Salt Lake City. In some urban areas, public schools are training their faculties to use ICS in the event of a fire or other emergency. Periodic drills are held to practice and refine these skills *before* disaster strikes.

The information that follows will give you a basic understanding of the ICS chain of command, where you, the radio amateur, fit in, and where to get additional training and materials.

ICS History

"So, where the heck did this ICS thing come from anyway?" you might be wondering. "It must be another government-imposed bureaucracy being forced upon us!"

In fact, ICS was developed as a result of the disastrous southern California wildfires of 1970, which burned nearly 600,000 acres (including over 700 homes) and claimed 19 lives, including those of several firefighters. There were many different agencies responding to individual wildfires, and no one individual or agency had overall control of the incident or could account for all the personnel, vehicles, and equipment committed to the event.

Responding agencies also brought their own communications, each on different frequencies and systems, some on low-band, some VHF, others on UHF. Of course, too, there were dissimilar policies and procedures, as well as unique radio codes and unit IDs to deal with. It was not unusual to have more than one supervisor on the scene, sometimes issuing conflicting orders, unwittingly placing others in unnecessary danger.

The confusion and lack of reliable information at the scenes of these large fires made it clear that new procedures were needed to ensure the safety and success of future emergency responses. The most effective way to bring order to this kind of "emergency chaos" is to consolidate every person, truck, helicopter, and piece of equipment together, operating as a single entity, under a common chain of command, and with a single leader.

After the 1970 disaster a number of key agencies came together in California, forming FIRESCOPE (FIrefighting RESources of California Organized for Potential Emergencies), a cooperative organization directed by the U.S. Forest Service. FIRESCOPE was tasked with developing a management system with four essential components: (1) Must be flexible enough to meet the needs of any type or size of incident—i.e., fires, HAZMAT, social events, police emergencies, etc. (2) Must be suitable for routine situations as well as major emergencies. (3) Must be standardized so that multiple agencies from different geographic locations can quickly come together under a common management structure. (4) Must be cost effective.

Over the next eight years FIRESCOPE developed what was to become known as the Incident Command System, which became a key component of the National Interagency Incident Management System (NIIMS) in 1980 and was adopted by the National Fire Academy in 1982. Today, the standard for training is the ICS National Training Curriculum, developed by the National Wildfire Coordinating Group (NWCG) and distributed by the National Interagency Fire Center (NIFC) in Boise, Idaho, the national command center for wildfire management. Had enough acronyms yet?

The Pyramid Scheme

The result of FIRESCOPE's research, development, and testing was a pyramid-shaped hierarchy (see fig. 1), with the Incident Commander (IC) at the top, and up to four positions, known as Section Chiefs, directly under the IC.

There is only one ICP (Incident Command Post) and one IC for the entire incident. Section Chiefs are in charge of the four primary command functions: Operations, Logistics, Planning, and

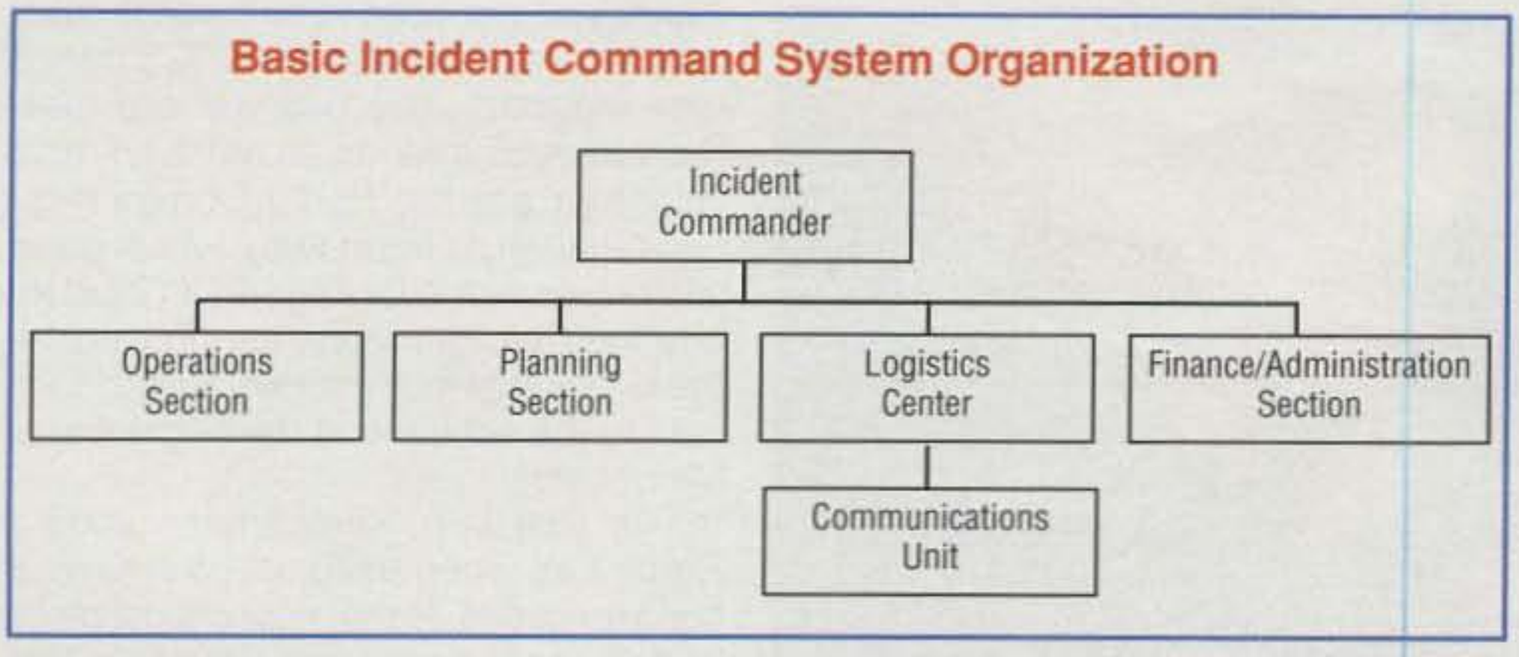

Fig. 1– Basic Incident Command System (ICS) organization chart. The Communications Unit is generally part of the Logistics Section, the chief of which reports to the overall Incident Commander.

Finance/Administration. Each person on the incident answers only to his or her direct supervisor, thus eliminating any confusion about who is in charge.

Sorry, folks, ICS is not a democracy and should not be treated as such. Every person, piece of equipment, or similar group thereof is considered a "resource." Resources are called into action as needed to accomplish the incident objectives, as defined by the Command Staff. Communications normally falls under the Logistics Section, but is one of the most critical functions on any incident.

The real magic of ICS is its ability to grow or shrink relative to the size of an incident. A typical Search & Rescue (SAR) incident here in New Mexico starts out with only an IC running the entire operation. Often the missing person is found or rescued within a few hours and everyone goes home. During those first few hours—the "Initial Attack" phase—the IC orders up the resources required to accomplish mission objectives, additional command staff, and even his replacement for the next Operational Period, that being a time frame he or she designates (usually between 12 and 24 hours), based on factors such as "How long can I stay awake and be effective?"

With each passing hour that the missing person is not found, the incident grows, becoming more critical and requiring additional resources. Under ICS, the optimal "span of control" (number of persons/resources being supervised by any one person) is between two and five. For example, when the incident grows to the point at which the IC has more than five resources under his direct supervision, it's time to activate one or more Section Chiefs to share the burden.

As the incident continues to escalate, an Operations Section Chief with, say, three aircraft and four fire engines under his command may decide to activate two branches, dividing these similar types of resources into an Air Branch and a Ground Branch, each with its own Branch Director (see fig. 2). It may also be appropriate to group resources located in different geographical areas

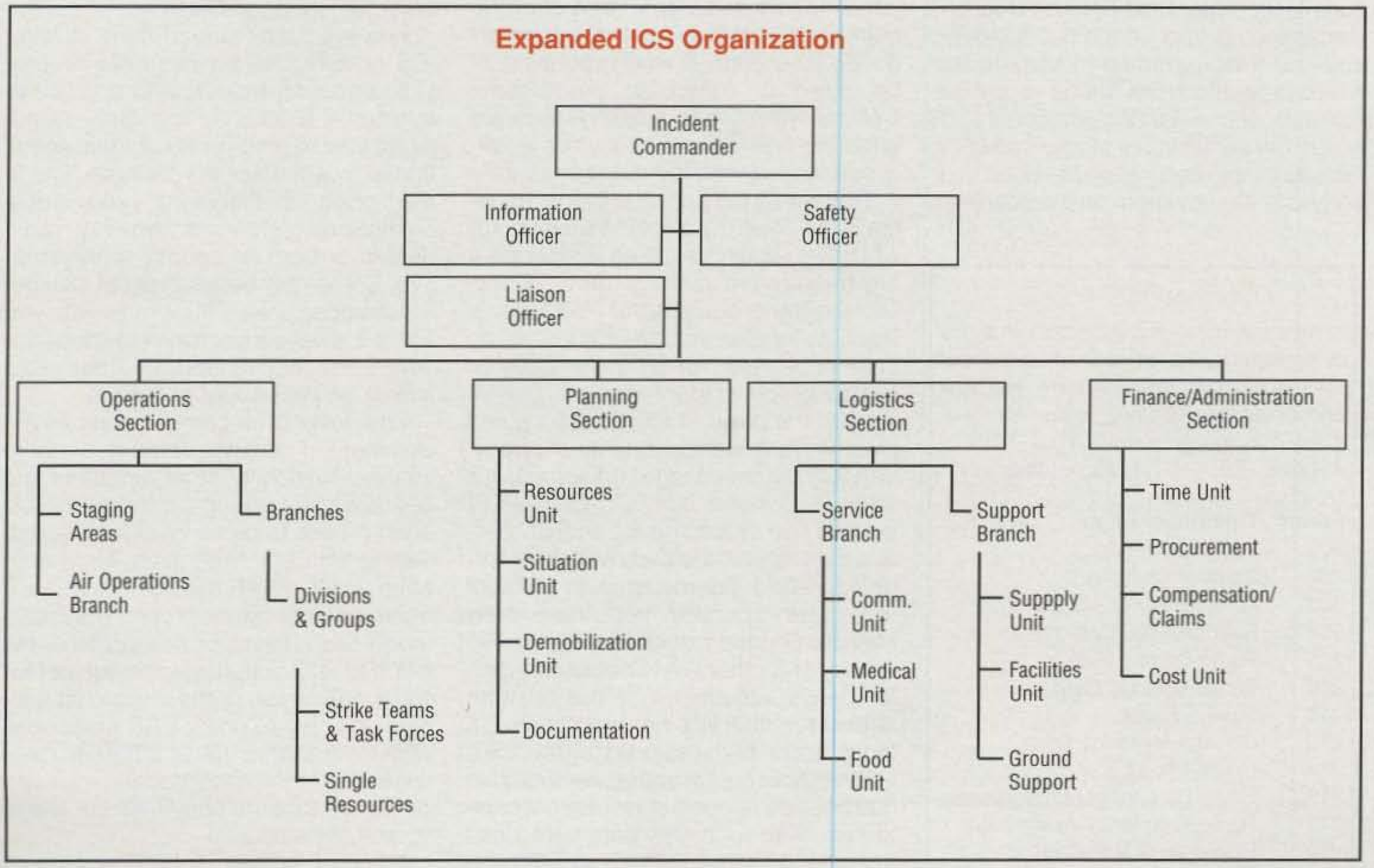

Fig. 2– As an incident grows in size, scope, or complexity, the ICS organization expands to accommodate increased needs.

As part of a 2001 exercise, a condemned building was burned to add realism to the drill.

into divisions, managed by Division Supervisors. There is theoretically no limit to the size of a command structure, providing the Span of Control rule is followed throughout.

Where Do I Fit In?

As a communicator, you will most likely be asked to serve in a Communications Unit, under the Logistics Section. If responding to a very small incident, you might be reporting directly to the IC—communications being a critical function, often requiring additional support in the early stages of an incident. In fact, as more resources are called in, if you have already been on the scene as a communicator for several hours, you could be asked to take on a supervisory position—providing you have the necessary qualifications and experience.

For larger incidents, you may be reporting to the Communications Unit Leader. It's not unusual to be placed in a completely different type of unit, such as a Situation Unit, Food Unit, or Air Tactical Group. Keep in mind these units may be miles apart and often require radio communications, especially during emergencies when phones may be down or otherwise unavailable. Cellular-type mobile phone systems are often the first to fail, as they are quickly overloaded with too many callers.

There also may be occasions, especially in small rural communities, for which you could be asked to operate a fire department radio or other public-service-band equipment. Yes, this is legal, as long as you are authorized by your supervisor (or by the agency in charge of the incident) and are provided with the proper FCC type-accepted gear *(If it's a standard piece of public-service communications equipment, it's safe to assume it's FCC-certified. I wouldn't go searching for an FCC certification label in the middle of an emergency.—ed.)*. For instance, in some of the more sparsely populated New Mexico counties such as Taos, Rio Arriba, and others, it is not uncommon for ARES volunteers to assist other agencies with traffic handling or liaison functions on their radio systems once a well-established working relationship has been developed. If you are not comfortable with such an assignment, don't hesitate to ask for something different.

Regardless of which radio you're using, you will need to become familiar with several standardized ICS forms (see sidebar). The two you are most likely to encounter as an amateur radio volunteer are the Radio Communications Plan (ICS Form 205), which gives all frequencies in use during an incident and their assignments, and Form 214, the Unit Log, which greeted our fictitious ham in the scenario at the beginning of the column.

The Unit Log, sometimes called a Radio Log when used for communications functions, is the most critical piece of documentation on an incident. This log should contain all pertinent details of every communication and action taken by you or your unit. From the unit log, you should be able to virtually recreate all important events of the incident in chronological order.

Common ICS Forms

As a volunteer communicator in a drill or emergency being coordinated under the Incident Command System, you may encounter the following forms. Many of them may be downloaded via NB5R's website, <http://skyserver.net/bw>.

Form#	Title/Description
201	Incident Briefing
202	Incident Objectives
203	Organizational Assignments
204	Resource Assignment
205	Radio Comm. Plan
210	Status Change Card
211	Sign-in Sheet
213	General Message Form
214	Unit/Radio Log
216	Radio Requirements Worksheet
217	Radio Frequency Assignment
219	Resource Status Card or "T-Card"

Operating Procedures For the Radio Amateur

Once a situation has been declared an ICS incident, everyone is supposed to use plain English only, no codes whatsoever. Now actually getting all those cops and dispatchers to do this can be a real challenge! Many fire departments already use ICS on a regular basis, but it's taking longer to catch on in law-enforcement agencies.

However, any department utilizing ICS on a regular basis should be providing enough training and practice to overcome such problems. Still, it's not a bad idea to obtain a list of radio codes in use by agencies in your area. These are often available at your local RadioShack store, a two-way radio dealer, or from an agency representative. Some may be reluctant to give out these codes unless they know who you are. It's always a good idea to keep your ARES/RACES ID and amateur radio license in your wallet or vehicle.

Whenever on a communications assignment, I always carry a portable scanner to monitor other repeaters and key agencies during an incident. This often proves to be an invaluable asset, saving time and frustration. More than once during a SAR mission I have overheard another agency report they have found the subject of our search—but failed to realize that was the subject we were looking for, or the dispatcher simply neglected to notify SAR personnel. *(Different states have different rules regarding mobile use of scanners, even by hams. Be sure you know the law in your state.—ed.)*

If you do happen to be operating on a non-amateur frequency, such as a

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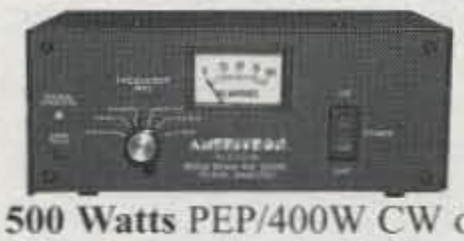

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AL-800H
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Suggested Retail
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Command Net (a sort of "private" channel often used by members of the command staff to communicate directly with each other), initiating a radio transmission is done in much the same way hams are already accustomed to, just with different callsigns. Generally, "tactical" callsigns are used, identifying the location of the job of the individual. "Plans, this is Communications, please report to the Command Post ASAP, over." If you are unsure how to identify, use your given name. Also, remember where you are: Never use your amateur call on commercial or public-service frequencies. Trust me, it's very easy to do with three or four microphones lying on the table, and rather embarrassing, too!

In keeping with good communications practice, regardless of frequency, it is always recommended that the receiving station repeat the transmission over the air to confirm that it was correctly received, and also reply with what action is being taken. This is now standard practice at many E-911 dispatch centers. "Roger," "Copy," or "10-4" does not let you know your transmission was correctly received or what action will be taken as a result.

Any time you feel safety is an issue, whether your own or that of another, do not hesitate to direct your concerns or questions to the Safety Officer on duty. If this position has not been filled by a specific individual, then by default, that responsibility lies in the hands of the next person up the chain of command—most likely the IC.

Often, news reporters looking for inside information will head for the guy with the radios and just start asking questions. If you are not sure whom you are talking to, find out before offering any details that may get you or someone else in trouble. Always direct media personnel to the Information Officer, or if none has been assigned, to the IC.

Get Involved!

ICS is now mandated by many state and federal agencies, such as the US Coast Guard and Federal Emergency Management Agency (FEMA)—now both part of the Department of Homeland Security—as well as the U.S Department of Transportation (DOT), Environmental Protection Agency (EPA), Bureau of Land Management (BLM), and the U.S. Forest Service. ICS is also rapidly growing in popularity with more state, local, and even foreign governments. As an example, the New Mexico State Police are now being trained in ICS theory.

If your club or ARES/RACES group doesn't already have a working relationship with local authorities, set up a meeting with your area Emergency Operations Center coordinator, fire chief, or sheriff to let him know what amateur radio can offer. Find out what their needs are and what training you can acquire in order to be of better service to the community. You might even find yourself in the position of educator, especially in smaller suburban areas where big emergencies are few and far between.

In Closing . . .

I hope this has given you a basic understanding of ICS and how to operate within its structure. For a formal introduction to ICS, try the NWCG *ICS Orientation I-100* text.[1] I would also highly recommend enrolling in FEMA's free Independent Study course, *IS-195 Basic Incident Command System*, also available on the web.[2] I would call this one an in-depth basic course. Study the downloadable manual at your own pace, and then take the test online. Upon passing, you will be issued an official Certificate of Achievement by the Emergency Management Institute (fig. 3).


EMERGENCY MANAGEMENT INSTITUTE

Certificate of Achievement

This Certificate of Achievement is to acknowledge that

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IS-195

Basic Incident Command System

June 10, 2000

1.0 CEUs

Stephen G. Sharro
Acting Director
Training Division

Fig. 3– This certificate is issued on completion of the free online Basic Incident Command System course.

Once you have finished this basic training, if public speaking does not intimidate you, offering to give a talk or seminar to your local Emergency Operations Center (EOC) staff or Local Emergency Planning Committee (LEPC) can be a great way to help build a working relationship with emergency service professionals in your area. Last year I presented a one-day Introduction to ICS for the dispatchers at our regional dispatch center here in Taos, New Mexico, using the IS-195 curriculum as a go-by, and later gave a one-hour talk on ICS at the New Mexico State APCO (Association of Public-Safety Communications Officials) Convention.

Shortly after the 9-11 terrorist attacks, the Village of Taos Ski Valley Fire Chief, Richard Holmes, KD5SGQ, organized an impressive ICS practice event, even burning down a condemned building just to make it more realistic! (See photo.) Participants included Taos County ARES, New Mexico State Police, local marshals and deputies, Bureau of Land Management, Taos Search & Rescue, Taos Central Dispatch, the Carson National Forest, and nearly a dozen area volunteer fire departments.

You might also want to consider joining or starting up an Incident Dispatch Team (IDT)[3] in your area. These specialized teams are usually comprised of professional dispatchers and often include amateur radio operators. IDTs can respond to any type of incident operating under ICS. It's another way to get your local amateur community involved with the professionals. Public-service agencies are a lot more likely to request your services when they know you and your capabilities.

There are quite a number of additional ICS resources on the web (too many to list here), including forms, training, organizations, articles, and more. I have organized some of the best links at <http://skyserver.net/bw>. I'd love to hear your feedback, ideas, and successes integrating amateur radio with ICS.

73, Brian, NB5R

Notes

1. I-100 download at: <http://www.nysemo.state.ny.us/TRAINING/trainingcatalog/ICS100.htm>.
2. FEMA IS-195 Course: <http://training.fema.gov/EMIWeb/IS/is195.asp>.
3. Incident Dispatch Teams: <http://www.springhillfire.com/idt.htm>.

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Tiny 4½x2¼x3 inch tuner handles full 150 Watts! Covers 80-10 Meters, has tuner bypass switch, tunes nearly anything!

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MFJ-902H, same as MFJ-902 *Tiny Travel Tuner* but has *4:1 balun* for balanced lines and 5-way binding posts for balanced lines and random wire. 5¾Wx2¼Hx 2¾D inches.

MFJ-902H
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MFJ-904, same as MFJ-902 *Tiny Travel Tuner* but has *Cross-Needle SWR/Wattmeter.* Read SWR, forward and re-flected power all at a glance in 300/60 and 30/6 Watt ranges. 7¼Hx2¼Hx2¾D in.

MFJ-904
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ALL-in-one *Tiny Travel Tuner* with 4:1 Balun *and* SWR/Wattmeter

ALL-in-one! MFJ-904H, same as MFJ-902 *Tiny Travel Tuner* but has *4:1 balun for balanced lines* and Cross-Needle SWR Wattmeter. Read SWR, forward and reflected power all at a glance in 300/60 and 30/6 Watt ranges. Has 5-way binding posts for balanced lines and random wire. 7¼Hx2¼Hx2¾D inches.

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10 foot extended, 19 inches collapsed, MFJ-1954, $19.95. 12 foot extended, 22.5 inches collapsed. MFJ-1956, $29.95. Standard 3/8 inch by 24 threaded stud for use with all standard mounts. Durable 1/2 inch diameter plated brass. Telescopes for full 1/4 wave operation 2 to 12/15 Meters. Cover 17, 20, 30, 40, 60, 80, 160 Meters with loading coil. Use two for multi-band dipoles. Replace screwdriver antenna whip for highly efficient *fixed* mobile operation.

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12 Feet

MFJ RF Isolator

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prevents unwanted RF from traveling on the outside of your coax shield into your transceiver. This unwanted stray RF can cause painful RF "bites" when you touch your microphone or volume control, cause your display or settings to go crazy, lock up your transceiver or turn off your power supply. In mobile installations, stray RF could cause your car to do funny things even blow your car computer. Clear up these problems, plug an MFJ-915 between your antenna and transceiver. *Don't operate without one!* 5x1½ inches. For 1.8 to 30 MHz.

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Half-size 52 foot *G5RV Jr* 40-10 Meters, 1500 Watts.

1500 Watt Lightning Surge Protector

MFJ-272
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Package of six. (69 cents each)

Authentic *glazed ceramic* antenna insulator. Extra-strong -- will not break with long antennas and will not arc over or melt even under full legal power. Molded ridges give extra-long high voltage path to prevent high-voltage breakdown. Smooth wire holes prevent wire damage. Use as center or end insulator for dipoles, doublets, G5RVs, guy wires and others.

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math's notes

BY IRWIN MATH,* WA2NDM

Visit to Arecibo

For those of you who are interested in antennas, we have a unique story this month. Toward the end of last May we took the family on a short, but much-needed vacation to Puerto Rico. While we were there, we could not resist the temptation to visit the Arecibo Observatory, home of the "largest radio telescope on the Earth," as they are proud to indicate. As you are no doubt aware, a radio telescope consists of an antenna and various receivers and/or transmitters and is used for a variety of astronomical purposes. We knew the Arecibo antenna was large, but really were not aware of any of the specific details. After seeing the site in person, however, I can only say that it is truly awesome and well worth the trip.

Before leaving, at the suggestion of Rich, W2VU, we contacted Angel Vazquez, WP3R, who both lives in Puerto Rico and works at the observatory. He graciously offered to give us a personal tour of the facilities, and of course we took him up on it.

The trip to Arecibo is quite an adventure in itself. First you take a modern two-lane (in each direction) highway for about 45 miles from San Juan, the capital of Puerto Rico, to the town of Arecibo. After exiting the highway, you head south, with the roads getting progressively smaller until you turn onto route 635. This is a 1 1/2-car-wide road with more turns, curves, hills, and valleys than a super roller coaster. Although the posted speed limit is 35 mph, if you can manage 15 mph you are a professional driver. Finally, after turning onto route 625, you see the first of the antenna supports—which is huge. Soon we saw why.

Angel met us at the gate with a big smile, and the tour began. The Arecibo radio telescope is a giant antenna in the form of a spherical reflecting dish with an overall area of about 20 acres! It is located in a 530 foot deep natural valley (geographically known as a sinkhole), which helps support it and provides some shielding from ground-radiated signals. The dish measures 1000 feet (305 meters) across and is accurate in curvature to 1–2 arc seconds, or 2 millimeters (0.080 inch) rms. This accuracy is achieved by the adjustment of 39,000 sections which comprise the reflective surface.We took a photo of the dish (photo 1), but it is so large it is hard to capture it completely.

Above the dish, at an altitude of about 500 feet, is a 700 ton assembly (photo 2) that contains receiver front-ends, some UHF RF finals, and various transmit/receive antennas used to illuminate the dish. These can be moved from "dead on" center to about ±20 degrees around a 360 degree circle for steering. In the photo you can see the tracks on which the antenna cluster moves. The covered "radome" area contains sensitive receiver front-ends as well as additional antennas. This assembly is supported over the center of the dish by cables of the type used to hold up suspension bridges, anchored to concrete pilings sunk into the ground. The antenna normally is used at frequencies from 300 MHz all the way up to 10 GHz with the electronics on hand. Gain at 430 MHz is a whopping 55 dB (times approximately 500,000) which rises to 78 dB (times more than 40,000,000) at 5 GHz. Because of the high gain, Angel told us that he plans to try moonbounce with a small 1–2 watt 450 MHz HT when the time is available, and he feels that it might not be a problem to set a world record for HT operation!

The telescope is used for three primary investigations: bouncing signals off planets and asteroids for detailed radar-type investigations, determining the density and other properties of the ionosphere, and of course listening to signals from deep space. Although pulsars and the like are routinely heard, no signals from other civilizations have been detected yet.

*c/o CQ magazine

Photo 1– The Arecibo radio telescope is a giant antenna in the form of a spherical reflecting dish with an overall area of about 20 acres. The dish is so large it is hard to capture completely in a simple photograph.

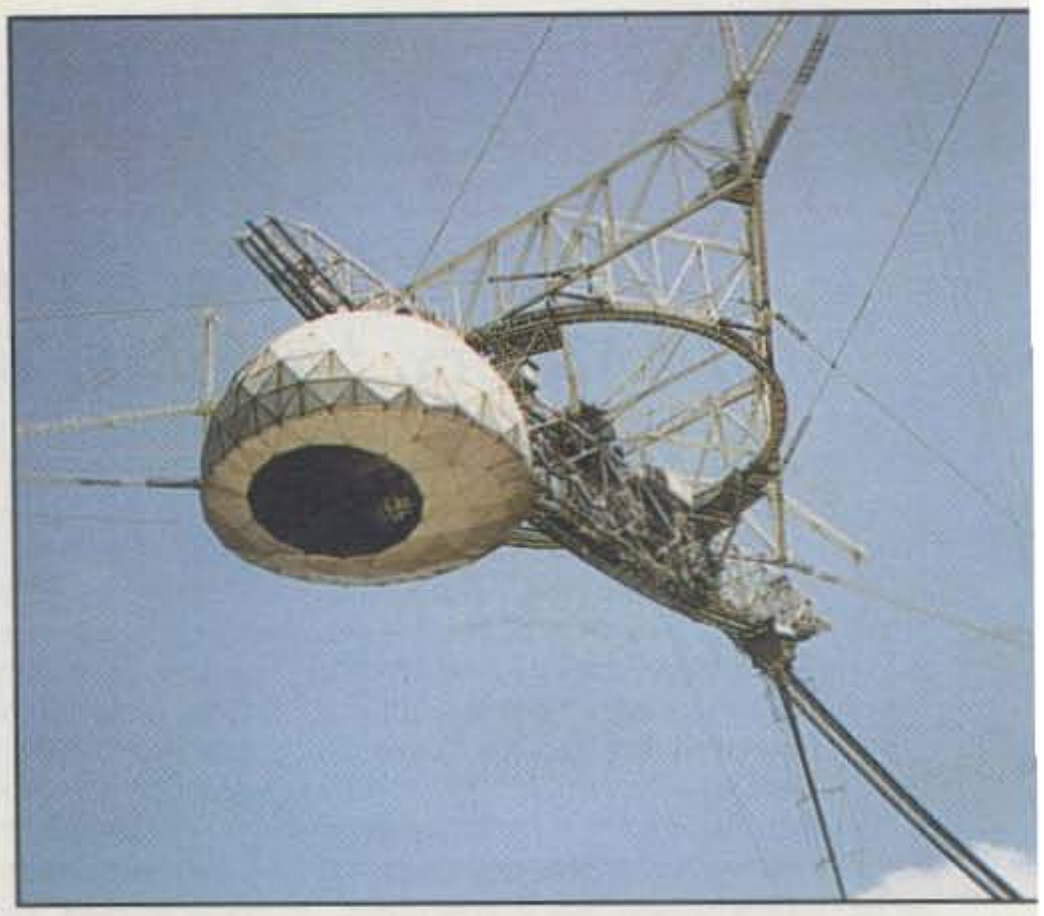

Photo 2– At an altitude of about 500 feet above the dish is a 700 ton assembly that contains receiver front-ends, some UHF RF finals, and various transmit/receive antennas used to illuminate the dish.

Photo 3– For atmospheric studies a 2.5 megawatt pulsed transmitter is used. This is what some spare 1 and 2.5 megawatt finals look like.

When the telescope is used to do radar observation of planets in our solar system, a 1 megawatt CW transmitter is used as a signal source. The beam width obtained with the telescope is so narrow that a surface resolution on the order of 1.5 km has been achieved on the planet Venus and reflected signals have been received from as far away as Jupiter.

For atmospheric studies a 2.5 megawatt pulsed transmitter is used, since the return path is quite short compared to deep space. When listening, liquid-nitrogen-cooled front ends are employed, resulting in ultra-low noise and extreme sensitivity. Photo 3 shows what some spare 1 and 2.5 megawatt finals look like.

It is interesting to note that the first planets outside our solar system were discovered with the use of the Arecibo telescope in the early 1990s. These were three Earth-like bodies orbiting around a pulsar star (B1257+12 for the astronomers in our midst). Alas, though, no intelligent signals were heard. We discussed the reason that might be, considering the extreme gain of the antenna and sensitivity of the receivers, and came up with several possible reasons.

First, of course, might very well be that we simply are not listening to the right frequencies. Researchers, however, have scanned and continue to scan thousands of potential frequencies in and around certain "natural" regions, such as the resonance of various elements, including hydrogen, water vapor, etc. Computers are then used to analyze signals received and look for any artificial patterns compared to random noise. Although many extra-terrestrial signals have been identified, most turn up to be reflections or harmonics of signals from Earth, the result of natural phenomena or simply non-repetitive bursts of static. The search in this mode goes on, though.

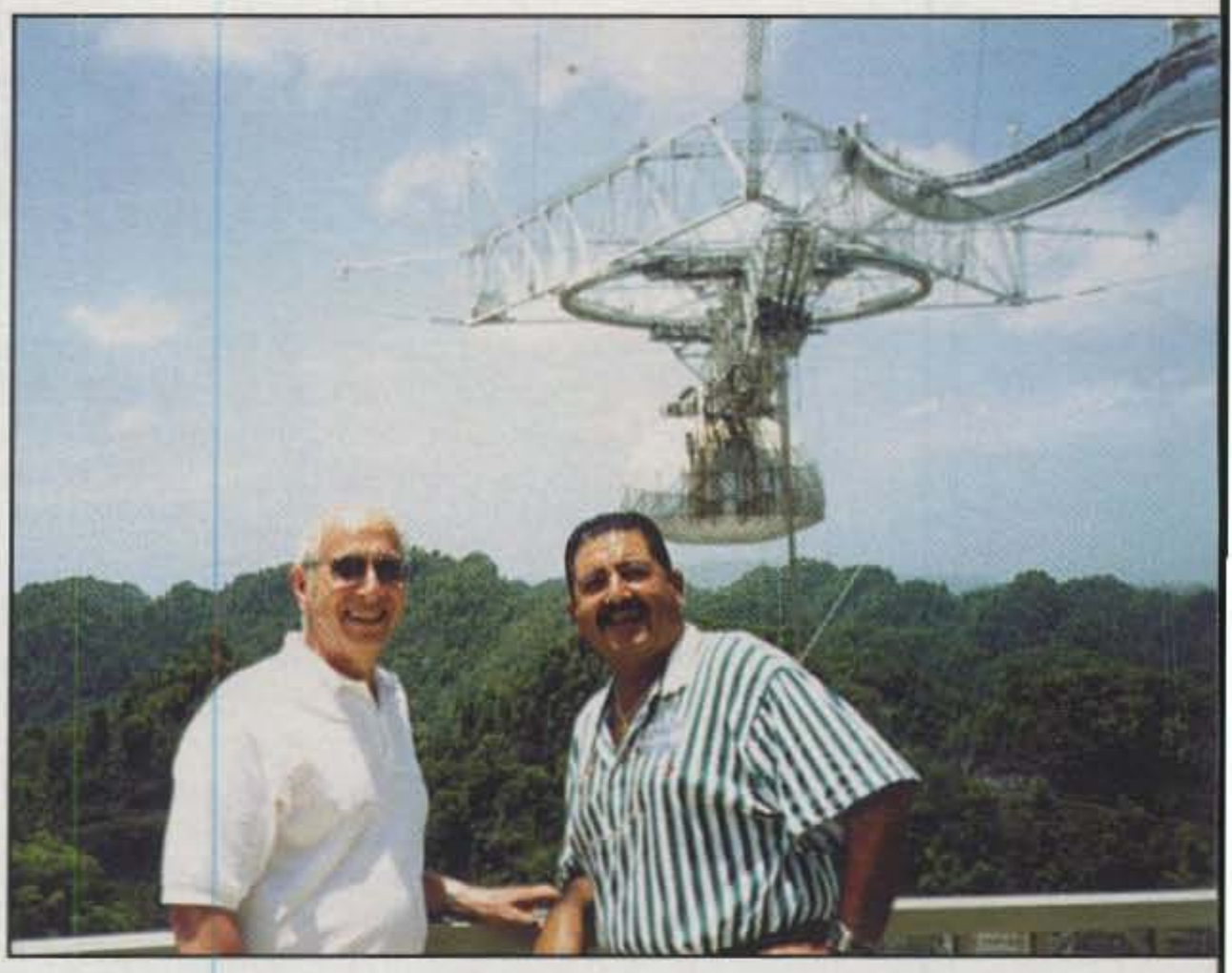

Photo 4– Yours truly (on the left) with WP3R on the observation terrace that overlooks the antenna.

A second reason might be that in order to cover the vast distances in space, very tight beam widths would be used. If this is so, unless you are directly within a particular beam, you will receive nothing. It is also possible that laser-type equipment has been developed that is several generations beyond what we currently have accomplished, and it is this technology that is being used. Remember, light is also electromagnetic radiation, and a laser-type device potentially could produce an extremely narrow beam. Also, if aliens did not want us to hear them, steering such signals away from the Earth would be easy.

You will remember that at the dawn of radio, wavelengths shorter than 200 meters were deemed worthless and given to the amateurs. Soon propagation studies led to the HF region, and suddenly worldwide communications with a few watts became a reality. Perhaps propagation modes exist in the super-high frequencies (in and beyond the THz region) that enable interstellar communications with only a watt or two as readily as a 3000 mile QSO when 20 or 10 meters is open. Cosmic rays and x-rays, to name but a couple of candidates, appear to exist in this region and are known to have extreme penetrating power, so who knows what else might be there.

Finally, it is possible that RF as we know it is not the preferred method for long-distance communications at all! In the 1800s, before Maxwell published the famous equations that led to the discovery of electromagnetic radiation, the thought of radio waves was not even a guess. Who knows whether there are other modes just as simple to produce that can easily carry intelligence over these vast distances. Maybe someday the historians of the future will remark, "Can you imagine? In the old days they actually used electromagnetic signals for communications! How quaint." This is an interesting thought, and perhaps some of you will discover one or two of the "other" modes. I'll bet they exist.

Photo 4 shows yours truly with WP3R on the observation terrace that overlooks the antenna. Again, photos do not do it justice. I am truly grateful to Angel for the hospitality he extended throughout our visit. It was a trip that I will never forget.

73, Irwin, WA2NDM

BY FREDERICK O. MAIA,* W5YI

FCC Invites Preliminary Comments on Morse Code Related Petitions

At press time nine Petitions for Rulemaking seeking changes to the Morse code proficiency rules in the Amateur Service have been filed with the FCC, and undoubtedly more are on the way. Seven had been posted to the FCC's Electronic Comment Filing System (EFCS) by August 28, and by the time you read this, the other two—and probably more—will have joined them, along with hundreds of comments. On August 29, the FCC issued a Public Notice inviting preliminary comments on the petitions, with a closing date of September 29. (There will be an additional opportunity to comment when and if the FCC releases a Notice of Proposed Rule Making, or NPRM, based on the petitions and preliminary comments.)

As mentioned last month, the push to end Morse code testing in the United States was brought on by a decision at this past summer's World Radiocommunication Conference (WRC-03) that, effective July 5, 2003, amateur radio operators would no longer be required—as a matter of international regulation—to demonstrate the ability "...to send correctly by hand and receive correctly by ear..." Morse-encoded messages. It is now up to each country to decide whether to retain the code exam as part of its amateur licensing requirements. Several countries moved quickly to drop their code requirements, and several petitions seeking changes in the U.S. licensing rules were quickly filed with the FCC.

Petitions Filed by the Public

In last month's column we mentioned four of the petitions that had been filed. That was before they were formally acknowledged by the Commission, assigned rulemaking "RM" file numbers, and posted for public comment. They were:

RM-10783 received July 21, 2003. *Filed by Kiernan Holliday, WA6BJH, Santa Fe, NM (Extra Class, ARRL life member).* He said the Morse code requirement "...limits the number of people who take advantage of the Amateur Radio hobby" and "...drastically limits the ability of handicapped people to obtain Amateur Radio licenses."

RM-10785 received July 30, 2003. *Filed by Eric R. Ward, NØHHS, Durham, NC (Extra Class).* He said "...no clear rationale for using Morse proficiency as a 'gate keeper' emerged from the Commission's consideration of the more than 2000 public comments" in the recent restructuring of the Amateur Service "...nor at the time of the Codeless Technician decision." He added that the FCC stated, "...the emphasis on Morse code proficiency as a licensing requirement does not comport with the basis and purpose of the Amateur Service." He calls for the "...immediate removal of the telegraphy requirement from Amateur Radio licensing...."

RM-10784 received July 28, 2003. *Filed by Dale E. Reich, K8AD, Seville, OH (Extra Class).* He wants the 5 words-per-minute telegraphy requirement removed from the General Class only and retained for the Extra Class license.

RM-10787 received August 1, 2003. *Filed by the National Conference of Volunteer Examiner Coordinators (NCVEC), the umbrella group consisting of 14 VEC organizations.* NCVEC called Morse testing a burden to the applicant, the VEC system, and the FCC, and said, "With the elimination of the international requirement for skill in manual telegraphy, there is no longer any reasonable justification for requiring an applicant to demonstrate this antiquated skill." They requested that the FCC "take expedited action" to allow Volunteer Examiner Coordinators (VECs) to discontinue administering Element 1 "as soon as possible."

The ARRL-VEC abstained from voting on the NCVEC's petition when it came up during the NCVEC's July 25 meeting in Pennsylvania. At its own July meeting in Connecticut, the ARRL Board of Directors affirmed its interest in reviewing members' input on the Morse issue. The Board's current position is to retain the Morse requirement for HF access.

Three more petitions included in the FCC's Public Notice were filed after last month's issue went to press. They are:

RM-10781 received July 15, 2003. *Filed by Peter M. Beauregard, KI1I, Westfield, MA (Extra Class).* He calls for "...allowing the current Technician Class licensee a taste of HF operating privileges" by permitting their phone, image, RTTY, CW, and data operation on various segments of the 80, 40, 15, and 10 meter bands. He proposes:

80 m	3675–3725 kHz	CW only
	3850–3900 kHz	CW, Phone and image
40 m	7100–7150 kHz	CW only
	7225–7300 kHz	CW, Phone and image
15 m	21100–21200 kHz	CW only
10 m	28100–28300 kHz	CW, RTTY and Data
	28300–28500 kHz	CW and SSB

Beauregard concludes, "This will encourage Technician Class licensees to upgrade to General, because it would give them a 'practice' area in which to bring up their Morse code efficiency to the point where an upgrade is within reach."

RM-10782 received July 18, 2003. *Filed by the Coppola family. Dr. Pete, KG4QDZ, Tina, KG4YUM, and Pete, KG4QDY, are all Technician Class operators.* They believe removing the CW requirement in the bands below 30 MHz "...would increase the pool of available stations which would

*Chairman, NCVEC Rules Committee
Member, Question Pool Committee
1020 Byron Lane, Arlington, TX 76012
e-mail: <w5yi@cq-amateur-radio.com>

be capable of operating in times of national or statewide emergencies. This would have positive implications for Homeland Security as well as in furthering the fundamental purpose of the Amateur Service."

They also contend that manual CW is no longer the most effective method for weak-signal operation. Instead, automatic digital modes now hold that distinction. The petitioners want the current CW-only subbands retained.

The Coppolas want Element 1 permanently removed as a requirement for any license class and current Technician Class licensees permitted to access all 'Technician with Element 1' spectrum. "These changes should become effective immediately, on a provisional basis, while the Notice of Proposed Rulemaking is issued."

RM-10786 received August 13, 2003. *Filed by No Code International (NCI), an organization which says it has "...thousands of members in 63 countries and active chapters in 12 countries." However, a significant majority (74%) of NCI's current members are U.S. licensed amateurs.* NCI maintains that "...changes in technology have rendered Morse telegraphy essentially obsolete, except in the Amateur Service, where some number of Morse enthusiasts remain, pursuing the use of Morse telegraphy as an essentially recreational activity."

NCI wants to eliminate the Morse testing examination and contends that the FCC has already "...clearly determined [in previous rulemaking] that a Morse requirement did not comport with the basis and purpose of the Amateur Radio Service and, further, that it served no regulatory purpose."

Since this decision has already been made, NCI asks that the Morse proficiency requirement be immediately abolished and that "...it is clearly within the Commission's authority to do so promptly by an expedited order without formal notice and comment input."

Many arguments for eliminating the code exam were put forth by NCI including:

•Virtually no government or commercial radio service uses Morse telegraphy in today's world;

•Morse skill is no longer required for effective emergency communications by amateur operators;

•The International Amateur Radio Union (IARU) recognizes that the Morse requirement is not in the best future interest of the Amateur Radio Service;

•The only reason the FCC cited for keeping Morse testing—i.e. the international Radio Regulations—no longer exists, and

•Other countries are already eliminating Morse testing and many more are expected to follow suit.

NCI asks that the Commission "in the most expeditious manner possible" eliminate the Element 1 code exam and extend the Technician with code credit privileges to all Technician Class licensees.

Two additional petitions...

...were filed after the FCC's Public Notice was issued. One from two individual amateurs and another from FISTS, a Morse code enthusiast club, are on their way to the FCC, but as of press time, had not been assigned RM file numbers and were not yet listed on the ECFS. They are:

Petition for Rulemaking. *Filed by Robert G. Rightsell, AF4FA, Lexington, SC. and Harry A. M. Kholer, NØPU, St. Louis, MO on August 21 (both Extra Class).* This 19-page petition suggests a restructuring of license classes, frequency/mode privileges, and examination requirements. If adopted, it would be much more difficult to pass an examination and take longer to upgrade from one class to another.

The petitioners want to combine the Novice, Technician and Tech Plus class into one Technician license, and consolidate the Advanced and Amateur Extra classes. They also want the newly revised Technician Class to have the following privileges:

80 m	3600–3750 kHz	CW and Data, 200W
40 m	7100–7150 kHz	CW and Data, 200W
15 m	21100–21200 kHz	CW and Data, 200W
10 m	28100–28300 kHz	CW and Data, 200W
	28300–28500 kHz	CW and Voice, 200W
Above 30 MHz	Same as in current regulations	

The petitioners want the Morse code exam continued but scored with a point value which would be added to the examinee's written test score. A maximum of 24 continuous code characters transcribed correctly (at one-half point each) would result in a maximum of 12 points.

They also want the number of Technician written exam questions increased to 44, with each question scored as two points—a maximum of 88 points—and the reinstatement of FCC-mandated exam question topics. The final score would be a mix of the telegraphy and written exam points, a possible 100 points with a score of 75 points passing. CSCEs (Certificates of Successful Completion of Examination) would no longer be issued.

The General and Extra Class written examinations would consist of 88 questions, with each question worth one point. A similar composite scoring system is also suggested for upgrade to the General and Extra classes. A Technician Class operator would not be allowed to upgrade to General with less than one year experience as a Tech; Extra Class upgrades would require a minimum of two years time-in-grade as a General Class operator.

The petitioners believe, "The proposed testing requirements allow a more comprehensive evaluation of a candidate's knowledge of the greater technical, safety, and operational aspects attendant to modern communications."

Petition for Rulemaking. *Filed August 22, 2003 by the FISTS CW Club, an organization seeking to further the use of Morse code on the amateur bands.* In a 14-page petition, FISTS (also known as the International Morse Preservation Society) wants to retain Morse code testing, increase technical skills required on the written exams, and allow Technicians to use digital modes in the Novice subbands without first passing a code test.

For the General Class, FISTS wants the 5 wpm code exam retained and the technical level of the Element 3 written exam increased. Extra Class examinees would be required to pass a 12 wpm code exam in the FISTS proposal. The Novice CW subbands should be retained for narrow-band digital modes only.

FISTS also "...recommends only allowing one failed written examination element and one failed Morse code element per examination session." The group also wants the FCC to once again "...reinstate in their regulations a syllabus of topics and specific guidance on the depth of the knowledge required for each class of license."

Comments from the Public Are Pouring In!

Hundreds of comments have already been added to the online Electronic Comment Filing System. So far, more than two-thirds of all comments filed on the ECFS support ending Morse code testing. Here is a sample of what has already been submitted:

The Morse code testing requirement has hindered and stifled many qualified and competent radio amateurs from becoming higher-level licensees. —*Tommy G. Berg, KG4TDM, Miami, FL*

CW is just one of many modes of communications used and should not carry any more weight than any other. *—Greg Dunn, N0MLR, Somerset, KY*

I'm not a dumb guy ... my ears just don't recognize Morse code. To me, it is an unbreakable barrier. *—Bryson R. Adams, KD7NWL, Fort Bridger, WY*

Since Morse is a unique language; it needs to be retained and required for HF operation. 5 wpm is hardly a hardship and can be learned by anyone at any age.
—Alan Tanner, W8FAX, Fairborn, OH

I believe that the service and the mission of the FCC would best be served by allowing the use of HF frequencies by all licensed amateur operators. *—Terrence Glass, N0YXE, Leawood, KS*

I passed my code years ago and honestly believe that it has seen its day; now that day has passed. ...*Bob Feuer, W0ZPE, Menahga, MN*

In the interest of handicapped people, national emergency, and the mission of the FCC to promote the use of radio, the restriction posed by the Morse requirement is not in the best interest of amateurs, the FCC, or the United States of America. *—Sharon Glass, KC0DWR, Leawood, KS*

The Morse proficiency test is the only thing standing in the way of bedlam. If that test is eliminated, the other exams should be made harder to compensate. *—Brian Wood, W0DZ, Loveland, CO*

Elimination of the Morse code (CW) requirement will make it so easy for trash to get into the ARS that it will eventually sound like CB Radio. *—Daniel L. Jeswald, W4NTI, Anniston, AL*

To require the mastery of this one form of communication only serves to hamper the growth of amateur radio. With the increased importance of homeland security, our nation will be better served by having more people able to utilize the powers of amateur radio during times of emergency, both local and national. *—Robert M. Lowry, KD7UNL, Scottsdale, AZ*

I find learning the code to upgrade my license an extra burden placed upon myself, especially when I have no interest in using the mode once I attain HF privileges. *—John J. Bombard, KC9ECL, Oaklawn, IL*

There are forces that wish to degrade this service. Keep Morse code testing by making no change! *—Charles A Lemarbre, W8VOM, Grand Rapids, MI*

If the code requirement is dropped I feel that the bad CB operators will become bad amateur operators. If anyone really wants to become a ham you will have to show some initiative and dedication. *—Gary L. Adams, AF5K, Hamilton, OH*

I have many hundreds of practice hours listening to, and copying, Morse code. Yet I still fail the examination every time I try. Citizens of the USA shouldn't be penalized and prohibited from operating voice emissions on the HF bands while our Ham Buddies around the world are enjoying the privilege. *—Gaylon D. Overton, KC0PQA, Westminster, CO*

I think No Morse code is a giant leap into the 21st century for amateur radio. This should have been done years ago. *—Mike Shelby, KD5LDW, Stevenville, TX*

The elimination of the CW requirement will only encourage hams to upgrade their license and cause ham radio to grow in numbers. *—Andrew Cogswell, KC2SSB, Beachwood, NJ*

The efforts by some licensed hams to selfishly retain exclusive use of the ham radio frequencies is not in the public interest.
—Larry Gadbois, K7RSP, Bothell, WA

Now that the international [Morse] requirement has gone away, and the fact that the FCC has said that code testing serves no regulatory purpose, it is time to remove Element 1 from the tests. *—Robert Casey, WA2ISE, Oradell, NJ*

If the [Morse] requirement is removed, then soon there will not be enough operators with viable knowledge of the code to provide emergency communication support in this mode. *—Kevin Neal O'Dell, N0IRW, Ardmore, OK*

If you listen to the CW bands on HF, over half of the people are using a computer to generate the code and I would guess about that many are doing the same to receive the code. *—Dan Vanevenhoven, N9LVS, Appleton, WI*

Please do not remove the current requirement for code testing. Creating a world where everything is given to people and nothing has to be earned seems to me a poor direction to go. *—Robert T. Keim, W4TAT, Mims, FL*

I feel we should continue CW testing in ham radio only as an optional skill, and not as a mandatory requirement. *—David R. Fuller, KD4IFB, Jack, AL*

The code is now an unnecessary part of determining the competence of a person seeking to participate in amateur radio. Competence in the technical arena is far more important. *—Kenneth E. Stringham, Jr., AE1X, Attleboro, MA*

I feel that the elimination of the Morse code exam is a step backwards. If for some reason the code exam is eliminated, I feel that the No Code hams should have limited phone bandwidth on 10 meters only, with a max power output of 100 watts. *—J. Mark Harrison, KB4QLZ, Hickory, NC*

I am college educated, but somehow lumped into a class of "lid" or "CB" operator by my peers, due to the fact that I haven't passed the code. This type of hierarchy is negatively impacting qualified, and technically proficient new blood from entering the hobby. *—David A. Goodman, KG6JTB, San Dimas, CA*

The code has outlived its usefulness and has been replaced in regular use by other, more technically advanced modes. *— Gerald Santomassimo, N0DOZ, Aurora, CO*

There are many Electrical Engineers who, for reasons involving physiology (not covered under what may be considered a disability), cannot pass a Morse Code exam, even with months or years of practice. Yet these same individuals are, or would make, excellent radio operators. *—Trever Adams, AE6HR, Biddeford, ME*

I disagree with the proposal to no longer require Morse code for certain Amateur Service licensing. Morse code is efficient in times of emergency. *—Chris Cook, KB4CDC, Snellville, GA*

I passed the 5 wpm [code] in 1978 and have never gotten better. But I have an Extra ticket. It was always holding me back. I spent 8 years in the Air Force in electronics countermeasure repair, so I knew the electronics. Make code a matter of pride, but not a requirement for use of the HF bands. — *Thomas C. Lish, II, N6AJR, Suisun City, CA*

Requiring an individual to demonstrate his or her ability, at a minimum level (5 wpm), is not only beneficial to the individual, but is part of the "structure" in amateur radio that one can attain. How do you explain "Espirit de Corps"? The ability to establish and maintain communication in worst-case conditions is achievable via CW, over any other mode. Requiring three levels of competency, i.e., 5, 13 and 20 wpm, is a reasonable program and should be re-instituted in amateur radio licensing. *—Dennis G. Sarver, W7HN, Deerfield Beach, FL*

I support the petition to discontinue testing new applicants with Element 1. I am concerned, however, that other elements of the qualification tests are not adequate to ensure a high level of expertise in new applicants to the Amateur Radio Service. *—Hans Brakob, KØHB, Plymouth, MN*

I see no need to maintain a slow-speed CW requirement for access to HF privileges. I do not believe it acts as a "filter" to keep out undesirable elements from the ham radio service, nor do I believe that CW proficiency (or lack of it) determines the worth of a licensee. *—Roger Davis, AB8JH, Cambridge, OH*

Please do not eliminate the 5 word per minute CW requirement for operation below 50 MHz. Eliminating the minimum requirement of 5 words per minute will soon eliminate the viability of this mode for emergency traffic handling, as newer amateurs will not be familiar with this mode of transmission. — *Gary L. Stratton, Sr., K5GLS, Shreveport, LA*

You can express your views to the FCC by going to the ECFS, located on the web at <http://www.fcc.gov/cgb/ecfs/>, where you may also view all comments already posted by clicking on "Search for Filed Comments."

To file a comment, click on "Submit a Filing" under "ECFS Main Links." In the "Proceeding" field, type the full RM five-digit number, including the hyphen, in capital letters. Your comments can either be transmitted to the FCC as an attachment, or you can just type in your comments.

Keep in mind, however, that the initial comment period for the first seven petitions closed on September 29. Unless the Commission has provided an additional opportunity to comment on the petitions filed after August 29, at this point you may need to wait for a Notice of Proposed Rule Making to be issued before filing comments. 73, Fred, W5YI

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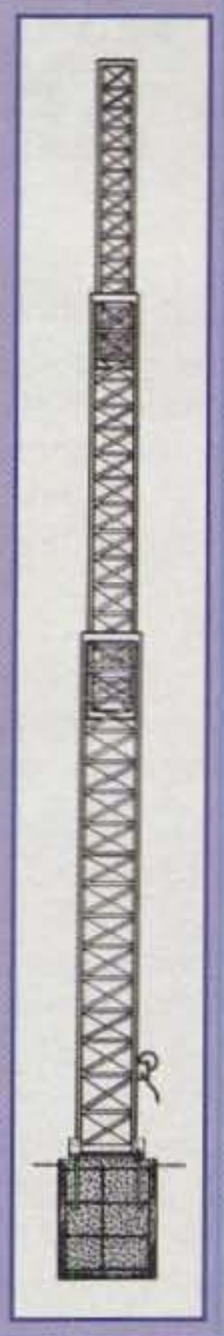

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HDX-689MDPL	89'	23'8"	3450	$19,039	$14,999
HDX-5106MDPL	106'	24'8"	3700	$20,719	$15,999

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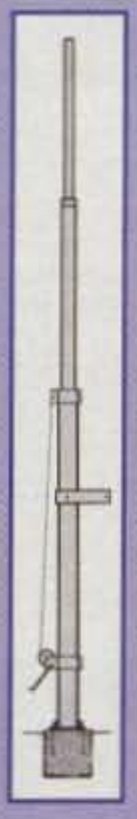

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MA-550	55'	22'1"	435	22	9	$1,704	$1,399
MA-550MDP	55'	22'1"	620	22	9	$3,258	$2,729
MA-770	71'	22'10"	645	15.5	5.5	$2,810	$2,359
MA-770MDPL	71'	22'10"	830	15.5	5.5	$4,445	$3,729
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beginner's corner

BY WAYNE YOSHIDA,* KH6WZ

Where in the World . . . A Look at APRS

I've always been fascinated by those "tracker systems" used in the movies and television. You know, like the scene in the movie *Armageddon,* where the ground controllers are watching each member of the "A" and "B" Shuttle teams, or the "homer" made by "Q" in the James Bond movie *Goldfinger.*

Today, and in the real world, hams have access to this interesting technology. It's called the Automatic Position Reporting System (APRS), developed by Bob Bruninga, WB4APR. Basically, it uses accurate latitude and longitude information from the Global Positioning System (GPS) satellites and transfers the data via packet radio on 2 meters. Mix in an APRS receiving station and the internet, and we have a system in which hams can remotely keep track of moving objects. Interfaced with a suitable weather station, local "micro-weather reports" can be viewed. If you know anyone already into APRS, take a look at the N1BQ website, <http://www.wulfden.org/APRSQuery.shtml> and plug his or her callsign into the search field. You'll be able to see what he or she has been up to (or at least where he or she went) lately.

I recently noticed that a few people in my Radio Amateur Civil Emergency Service (RACES) group made "tracker boxes" and used them for special events such as the Baker-to-Vegas Challenge Cup Relay race. However, that event is once a year.

When I saw their APRS systems for the first time, I thought, "Hey, that's really neat." My next thought was "Hmmm. What would I do with such a thing?"

Like a lot of hi-tech gadgets, if you think hard enough, you will come up with a lot of reasons to build, buy, or otherwise own one. (Also, I suppose a lot of folks need to justify to their spouse the expense of getting the gadget.) Here are some examples of what you can do with an APRS tracker box:

- If you are involved in any public service volunteer group, you can watch where a person or vehicle is in real time.
- When interfaced with a compatible weather station, the APRS beacon can also transmit weather-condition information.
- You can retrace your driving (or sailing or boating, or . . .) vacation, and friends and relatives can, too.

I can add another reason for building an APRS box: Put that working, but old and unused 2 meter HT or mobile radio to good use.

Still not quite convinced that APRS is a hot topic? I plugged "APRS and Ham Radio" into the Google search engine and came up with over 15,000 entries. That's a lot of information! You should spend some time looking at this stuff, as you can learn a lot. Some of the more interesting and useful links and websites are listed in the References section at the end of this column.

The next question is: How much is this going to cost? Like a lot of things in life, this can be a very broad or vague answer. You can spend as little or as much as you want. Since I am a frugal person, and I wasn't sure how much I would use this capability, I decided to get into the APRS game for as little as possible.

*16428 Camino Canada Lane, Huntington Beach, CA 92649
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Photo A– A collection of amplified GPS antennas. The GPS module is in the lower center. It is a little magnetic box with integrated antenna and a power/data cable. It looks like a small computer mouse and does not have LCD mapping or data display.

AOR ARD9800 Fast Modem – Digital Voice and Image Interface

Convert Your Analog Transceiver to Digital Voice & Image In One Easy Step!

No transceiver modifications are necessary.

Use any conventional voice transceiver for digital voice communications and images* while you maintain analog capabilities.

The ARD9800 is a breakthrough in communications technology. By simply connecting the ARD9800 to a pair of transceivers, clear, reliable digital communications are a reality.

- **Digital voice communications using existing analog 2way radios.**
The ARD9800 uses the same audio frequencies (300 Hz ~ 2500 Hz) as microphone audio to modulate the voice signal. This allows you to use an analog radio as a digital voice radio.

- **Works on Single Side Band (SSB) mode.**
The Automatic frequency clarifier function adjusts frequency drift automatically in the SSB mode. (Approximately up to +/- 125 Hz). Utilizes the OFDM (Multi Carrier Modulation) circuit that is effective against Multi-path or Selective Fading, a powerful tool against adverse band conditions.

- **Automatic digital receive**
Automatic voice signal detector recognizes the received signal as analog or digital, automatically switching to the appropriate mode.

- **Digital Slow Scan TV***
Built-in video capture function (NTSC). Compresses the signal into AOR's original adaptive JPEG. Send and receive images (similar to analog slow scan TV, but better) in the digital mode. Built-in video output connector (NTSC) allows viewing the picture on an external monitor.

- **Built-in high grade Vocoder (AMBE)**
Utilizing high-grade digital voice compression delivers quality digital voice communications.

- **Built-in FEC error correction**
A powerful error correction circuit delivers stable and reliable communications also allowing "round table" conversations.

- **Small and compact unit. Easy to operate.**
Simply connect the ARD9800 between the microphone jack and microphone. No complicated modifications necessary.

- **Utilizes a uniquely designed high performance DSP engine**
- **Uses the established G4GUO open protocol**

Digital Amateur Radio could be the biggest development on the ham bands since SSB! Be sure to see the FAQ at www.aorusa.com!

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**image feature requires optional memory module.*
Specifications subject to change without notice or obligation.

There are several ways to "do" APRS. First is what I call the "home station, stationary mode," in which you turn your home station into an APRS station. In this case, you don't need a GPS receiver, but you will need a computer, the APRS software, and a packet radio terminal node controller (TNC). Determine your latitude and longitude so you can enter your location into the APRS program. Check an atlas, or borrow a friend's GPS unit. Put your radio on 144.390 MHz simplex, and your TNC will automatically transmit your position at regular intervals. If you have a weather station interfaced to the APRS system, it will also transmit your current readings and conditions. You can even use APRS to exchange bulletins and enjoy live conversations with others on the network.

Oh. yes . . . the software is a free download from the Tucson Amateur Packet Radio (TAPR) group. There is even a version for the Macintosh (see the References section).

The stationary mode is not that exciting, but it is one way to see what this APRS stuff is all about. After a short time you'll want to send a beacon while in motion, so others can "see" you. After all, this is what APRS is really all about.

In order to have a moving APRS station, you will need a 2 meter station (rig, antenna, power source), a TNC with APRS capability (firmware), a computer, and a GPS unit. If you are doing packet radio now, or have some packet gear in the closet someplace, you already are more than half way there. By the same token, if you enjoy boating or camping, you may already have a GPS unit.

Some VHF/UHF transceivers have an APRS capability already built-in. This makes APRS a snap; just plug the GPS into the radio with the correct cable, and you're set.

If you do not have one of these fancy radios, there is a way to build a simple starter system. However, before we get into that, let's go through the main parts of an APRS setup.

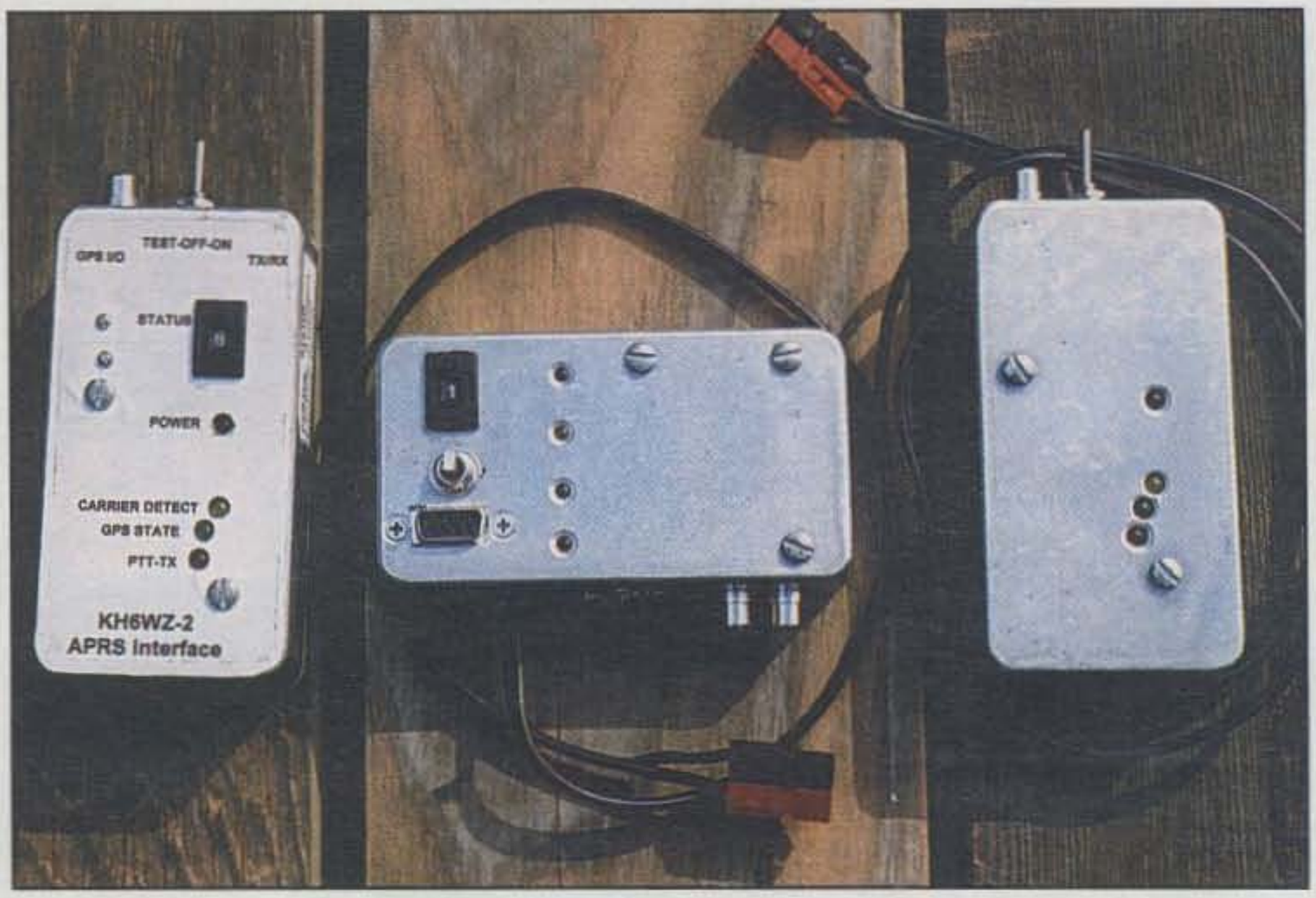

Photo B– I have several TinyTrak units in various forms. The Hammond 1590 (3.62" × 1.50" × 1.07") die-cast aluminum box makes a compact and very rugged unit.

The Main Ingredients: The GPS Receiver and Antenna

In essence, any GPS unit is really a radio receiver, and just like your radios, requires the best antenna possible for the best performance. Photo A shows my collection of external GPS antennas. Each antenna contains a little amplifier for increased sensitivity. (Voltage is supplied to the antenna amplifier via the coax antenna lead.)

Almost any GPS receiver can be used for APRS. The main thing is that the GPS unit must have connector ports for GPS data output (and maybe input) in the National Marine Electronics Association (NMEA) format. This usually means that GPS units for aircraft navigation may or may not be suitable. However, just about all "camping" and "marine" GPS units have this data interface.

I suggest looking for the following features, in this suggested order of importance:

1. Ability to get the GPS data (a connector or cable) via serial port; this is that NMEA standard format. Also check to see if the data interface cable is readily available, or at least can easily be made or modified. See an interesting alternative source for Garmin-compatible cables and plugs in the Reference section.

2. Ability to use an external antenna. I have found amplified GPS antennas on eBay and at local swap meets (tag sales or flea markets elsewhere) for about $20 and less. Earlier, when I didn't know much, I spent almost $90 on the "official accessory brand" external GPS antenna.

3. Ability to apply external 12 VDC power. Small penlite cells can get expensive after a while, so the ability to plug into an alternative power source would be good. Be aware that some units need a power source lower than 12 to 15 volts, and can be damaged if 12 volts is applied directly to the unit. Do not fret, though. If your GPS unit needs something other than 12 volts, you can build or buy a suitable voltage converter to handle this. The simplest way to use external power is to see if the unit has a cigarette-lighter accessory or some other external DC cable, and use that. For non-automotive use (such as pedestrian mobile), you can remove the cigarette-lighter plug and hook onto a gel-cell or other 12 volt battery source.

The GPS unit does not have to be new. In fact, a slightly older unit might actually be better, since some newer units have gone to the strange MCX antenna connector, rather than the more common BNC connector.

Check the *CQ* "Ham Shop" classified ads, eBay, and other online stores for good deals on new or used GPS units. It pays to shop around, especially with all those dealers offering "price matching" these days.

As a personal preference, I've settled on the Garmin brand, since they seem to be the most popular GPS units for APRS. I think the excellent customer service contributes to this, based on personal experience.

Full-featured GPS units might be a bit extravagant for just APRS applications, so if you are not into flying, backpacking, sailing, or other activities requiring navigation, you might want to consider a GPS "module" rather than a GPS "receiver." The GPS module is just a "plain data receiver box" with no display

and is intended for use with some other gadget, such as a computer. Because no other "support electronics" is involved, GPS modules are much cheaper than GPS navigation units.

The "Homer" and The Rest of the Components

An APRS "Homer" is not Mr. Simpson's first name, but rather the "brain" that transfers the digital location data from the satellites and instructs the radio transceiver when to transmit and when to receive. More sophisticated units can intrepret more GPS information and transmit more than simple latitude and longitude. For example, on a moving vehicle the APRS unit can send not only position, but also speed, rate of climb or rate and direction of turn, altitude, a station identifier, and an icon. As mentioned before, weather information can also be transmitted from an APRS beacon station.

There are dozens of different symbols used in APRS to indicate what sort of object is being tracked. For example, my friend Peter Barbour, N6RAS, is an avid sailor and uses a boat icon when he is "beaconing." Bill Honeyman, KG6CNL, uses a Jeep, and Steve Graboff, W6GOS, used a "running man" symbol during the Baker to Vegas race. Our Field Day symbol (Huntington Beach RACES Special Event callsign K6Z) was a little tent. The icons are fun, and you can choose your favorite one from a table.

A Suggested Starter System

There is a simple way to try APRS. The TinyTrak unit, by Byon Garrabrant, N6BG, is a wonderful little circuit that eliminates the packet TNC. If you have a "TT," all you need is a GPS receiver, a 2 meter radio, antennas for the GPS, and radio and a power source. The unit is configured via the serial port in your personal computer. Photo B shows my collection of KH6WZ APRS units based on the TT kits. The units with the digital switches are based on the article entitled "Build an APRS Encoder Tracker," in *QST*, February 2002, page 28.

Now in its third generation, the TinyTrak units are available in a "fully-assembled" version. However, you still need to interface the TinyTrak III to your GPS and 2 meter radio. In other words, this "assembled and tested" unit is sort of like the phrases used in radio control (R/C) modeling: almost ready-to-run (ARR) or almost ready-to-fly (ARF). This means that although you can open up the box and you will have a completely assembled unit, some work is still needed in order to "play" with a working system.

I have several units and one or two more under construction. My units vary somewhat from the "out-of-the-book" instructions. One of the important modifications I do is include a three-position switch for power. My units have a power switch with a "test" function. In the test mode, the unit is powered up normally, and the LEDs illuminate to verify operation. After checking the blinking lights, the switch is thrown into the "operate" mode, which simply cuts off the ground connection to the LEDs (making the lights go off) to conserve power.

Remember that the TinyTrak is a simple beacon device. It will not receive and decode APRS data for display purposes. It is the "data transmitter beacon" or "homer" part of an APRS setup, but it is really quite fun nonetheless.

Once you get your APRS beacon going, I am sure you will want to do more. In the meantime, the simple starter system will enable you to beacon your position while you do your favorite radio activity, from public service to outdoor events. James Bond's homer technology is here for hams, and is an exciting and interesting bit of technology we can use just for kicks or for serious public-service assistance.

Have you tried APRS? If so, tell me about some of your adventures, send along a good photo or two, and I'll share the best stories in a future column.

73, Wayne, KH6WZ

References

General APRS info

Bob Bruninga, WB4APR: <http://web.usna.navy.mil/~bruninga/aprs.html>
Steve Dimse, K4HG: <http://www.aprs.net>
Tucson Amateur Packet Radio (TAPR): <http://www.tapr.org>

APRS Symbols

<http://www.aprs.net/vm/DOS/SYMBOLS.HTM>

See Beacon Locations on the Internet

<http://www.wulfden.org/APRSQuery.shtml>

TinyTrak "TNC-less" APRS kits

<http://www.tinytrak.com>, also <http://www.byonics.com>
Carter, Jim WB6HAG, "Build an APRS Encoder Tracker," *QST*, February 2002, p. 28

GPS Module for PCs

Deluo Electronics: <http://www.deluo.com>

An Interesting Source for Garmin Accessory Plugs

<http://pfranc.com>

Baker to Vegas Challenge Cup Relay

<http://www.bakervegas.com>

Announcing:

The 2004 CQ World-Wide 160 Meter DX Contest

CW: 0000Z January 24 to 2359Z January 25
SSB: 0000Z February 28 to 2359Z February 29

The objective of these contests is for amateurs around the world to contact other amateurs in as many U.S. states, Canadian provinces, and countries as possible on the 160 meter band. *Note:* Each contest is 48 hours long and starts at 0000Z. Single operator stations may only operate 30 out of the 48 hours.

Classes: Single and Multi-Operator only. Use of packet, a spotting net, or logging assistance makes an entry Multi-Operator. Multi-Operators must show all operators, even helpers. Under Single Operator there will be a designation of power level: H = power over 150 watts, L = power under 150 watts, and Q = 5 watts or less. Single operators must show the actual call of the operator as a guest operator if it is different from the call used in the contest. Score listings will be per state or country, but if there is sufficient category activity or if a high enough score is made, then a certificate will be issued. Minimum score for a certificate is 5000 points for Low Power and 1000 points for QRP. Multi-Operators will all be considered high power.

Exchange: RS(T) and state for U.S., province for Canada, and either prefix or country abbreviation for DX. Contacts without some location indicator will be ruled invalid.

Scoring: Contacts with stations in own country, 2 points. Contacts with other countries on same continent, 5 points. Contacts with other continents, 10 points. Maritime mobile contacts count 5 points. There is no multiplier value for a maritime mobile contact.

Multiplier: Each continental U.S. state (48), U.S. District of Columbia (DC), Canadian area (14), and DX country. KL7 and KH6 are considered DX and not states for this contest. DX countries are DXCC plus WAE (IT, GM Shetland Islands, et. al). Canadian areas include VO1, VO2, NB, NS, PEI, VE2, VE3, VE4, VE5, VE6, VE7, NWT, VYØ, and Yukon. Do not count the United States and Canada as separate countries.

Final Score: Total QSO points times the sum of all multipliers (states, VE, DX countries).

Penalties: Three additional contacts may be deleted for each unverified contact removed from the log.

Disqualification: A log may be disqualified for violation of amateur radio regulations, unsportsmanlike conduct, or claiming excessive unverified contacts.

Awards: Certificates will be awarded to the top scorers in each class (see provisions under classes) by state, Canadian area, and DX country. Runners-up with high scores over 100,000 may also receive certificates. The following plaques, with donating sponsors as indicated, will be awarded for exceptional efforts.

2004 PLAQUES

SINGLE OPERATOR

	CW	SSB
World	W4ZV	N4NX
USA	K4TEA	K4JRB
Canada	K8FC	WØETC
Zone 3 USA	N5IA	N4TMW
Zone 4 USA	K4WA	N4XMX
Zone 5 USA	N4PN	K4ODL
Europe	K9DX	WS9V
Africa	WS9V	WB4ZNH
Oceania	K9DX	D4B/4L5A
Asia	K4SX	NT4TT
Japan*	W4ZV	—
Russia	TBA	—
S. America	W4NU	D4B/4L5A
N. America**	CQ	CQ
	N4IN Memorial	K2EEK Memorial

MULTI-OPERATOR

World	N4RJ	SE DX Club
USA	W8UVZ, WØCD, K8GG	WB9Z
Zone 3	4X4NJ	4X4NJ

TBA = to be announced.
**There is no SSB operation allowed in Japan at present.*
***North America outside U.S. and Canada.*

The plaque procedure is the top scorer in the indicated area wins the plaque. However, a station can only win one plaque per contest section. The plaque is then awarded to the next highest scoring station. For example, WX8ZZZ wins top World Multi-Operator. Then the next station in the U.S. wins the U.S. plaque.

Please observe the DX window from 1830 to 1835 kHz during the hours of darkness. The DX window is for intercontinental contacts. All stations will operate under the rules and regulations of their licensing agency regarding frequencies allowed and power levels. This is a gentleman's contest and band, so let's help make intercontinental contacts happen.

Computer Logging: Please submit your log via e-mail in the Cabrillo format. The Cabrillo format is created by all the major logging programs. Be sure to put your call and mode in the "Subject" line of each e-mail. The log must be an attachment and not in the body of the text. Large logs may be zipped using WINZIP only. The correct name of the contest is either CQ-160-CW or CQ-160-SSB. Put in a claimed score in the Cabrillo summary if you want to be listed in claimed scores. Use your call .log (k4jrb.log for example) as the log name. Your e-mail log will automatically be acknowledged by the server and checked for proper Cabrillo format. You may mail a diskette; if you do so you must attach a printed summary sheet. The diskette must be clearly labeled with the call of the entrant, the mode (CW or SSB), and the category. If you print out a computer log, you must also send a diskette. Do not send .bin files, database files, or other non-conforming files. Do not remove duplicates from your log, as there is no penalty for duplicate contacts.

Manual Logs: Sample log and summary sheets may be obtained from *CQ* by sending a large SASE with sufficient postage to cover your request. You can also download paper log forms from the CQ website <http://www.cq-amateur-radio.com>, or make your own with 40 contacts per page with columns for GMT, exchanges, multiplier, and points. Paper logs with over 200 QSOs must include a dupe/check sheet with all calls in alpha-sort order. Show the multiplier only the first time it is worked. Each page must have sub-totals for multipliers, contacts, and points. A running total below the sub-total on each page is recommended. Include a summary sheet with your entry showing the scoring and other essential information. A printed name/mailing address is recommended and a signed declaration that all rules have been observed. Clearly mark all duplicate contacts and remember they have no point value. Please put the summary sheet at the front of the log. Manual logs should clearly indicate total multiplier, W/VE multiplier, and DX multiplier.

Club Competition: Any club that submits at least three logs may enter the Club Competition. The name of the club must be clearly identified under club competition on the summary sheet, or summary portion of the Cabrillo log. Club Competition is "for fun" to foster more activity. There is a separate listing for club scores.

Log Submissions: Mailing deadline for CW entries is February 28, 2004; for SSB entries March 31, 2004. *Exception:* You may send both logs at once as long as the logs are received by March 31, 2004. For manual and diskettes logs send them early to assure receipt by the deadlines. For a return receipt enclose an SASE or SAE with postage or 1 IRC. Unreadable paper logs will be put in as check logs.

Send CW e-mail logs to: <cq160cw@kkn.net>; send SSB e-mail logs to: <cq160ssb@kkn.net>.

All other logs go to CQ 160 Meter Contest, 25 Newbridge Road, Hicksville, NY 11801 USA. Indicate CW or SSB on the envelope.

OUTbacker The Performance Antenna

We Make it Simple ... But GOOD!

Most mobile antenna installations are notoriously inefficient and complex to install. Some are so big and cumbersome, they need guy ropes and special mounts to handle the wind load when under way. Some are single band only, others need a bag full of resonators for multi-band operation. Whips with automatic tuners or "screwdriver" types are nice, but even more cumbersome to install, usually requiring extra wiring and a controller.

The OUTBACKER eliminates these "big antenna" problems while providing efficient, multi-band performance in a rugged, lightweight, single whip design. Its sleek, low profile design allows use with standard 3/8-24 bases and trunk-lip mounts.

Fiberglass shaft construction, using a pre-tuned copper helical winding with clearly marked brass band taps at points along its length. A final coating of smooth epoxy resin and polyurethane, gives the OUTBACKER a toughness and durability not found in other brands, while making a really good looking mobile installation.

Changing bands is a snap; simply plug into the desired band tap and resume operating without changing whips, resonators, or re-tuning.

MODEL	BANDS	POWER	LENGTH	PRICE
OB 8	75-10M	300W P.E.P.	6 ft.	**$279.00**
OB HP (HIGH POWER)	75-10M	500W P.E.P.	6 ft.	**$299.00**
OB SPLIT*	75-10M	300W P.E.P.	6 ft.	**$299.00**
*Breaks down into two 3 ft. sections, includes a cloth carrying pouch				
TRI-SPLIT Same as OB SPLIT except it breaks down into three 2 ft. sections, pouch included				**$329.00**
PERTH*	75-10M + WARC	150W P.E.P.	7.5 ft.	**$289.00**
*The Most Efficient model for HF Mobile				
PERTH PLUS*	75-10 + 6/2M	150W P.E.P.	6 ft.	**$299.00**
*Perfect for HF Radios with added 6 & 2 meter capability				
STEALTH PLUS*	75-10 + 6/2M	150W P.E.P.	4 ft.	**$269.00**
*Perfect for HF Radios with added 6 & 2 meter capability				
OUTREACH*	160-10M+ WARC	300W P.E.P.	12 ft.	**$399.00**
OUTREACH 500*	80-6M + WARC	500W P.E.P.	12 ft.	**$439.00**
*OUTREACH and OUTREACH 500 perfect for use with the OUTPOST, below				
MARINER*	Marine/HAM*	150W P.E.P.	6 ft.	**$429.00**
*Marine: 2.182, 4.1, 6.2, 8.2, 12.4, 16.5, 22 MHz • HAM: 75, 40, 20, 17, 10M				
Joey	80-2M + WARC	20W P.E.P.	50 in	**$249.00**
*Improves portable performance of FT-817 and other QRP rigs.				
MicroMount Desktop tripod for Joey, 8 in. tall with 12 ft. counterpoise				**$49.95**

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- Spectacular efficiency results from careful OUTbacker design with center and 5/8-wave loading over a 12 ft. length and effective use of exclusive band taps.
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- A mobile-type mount on top accepts a standard 3/8-24 antenna stud and PL-259 connector. The fold-over top bracket, allows the antenna to be easily removed or folded down for changing bands, or to be out of view.

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how it works

BY DAVE INGRAM,* K4TWJ

Amplifiers and Their Classes of Operation

Our ongoing discussion of tubes, transistors, and amplifiers and how they work continues this month with a special look at classes of operation and how they affect an amplifier's overall performance. This subject is closely related to our previous studies of push-pull, parallel, and grounded-grid circuits, incidentally, but it proved too extensive for brief inclusion in past columns. It is important, because regardless of the circuitry used, an amplifier's class of operation dictates its signal quality and input versus output power efficiency.

Yaesu's popular FT-1000MP Mark V is a real-life example of that fact (photo A). The transceiver's RF amplifier section normally operates class B and delivers up to 200 watts output (quite hefty for a "barefoot" transceiver!). By pressing a front-panel button, however, operation can be switched to class A for an exceptionally clean and terrific-sounding SSB signal with a maximum power of 75 watts. That "power versus quality" exchange is one of the main reasons behind different classes of amplifier operations. More details and characteristics will become apparent as we continue. Let's begin with a brief overview of amplifier classes and input versus output transfer curves used to analyze their differences.

The ABCs of Amps

As one might logically surmise, amplifiers are divided into specific categories, or classes, to fill a variety of needs. Why? In some cases we want exquisite, top-of-the-line sound—rich and full-bodied audio supreme—and we are willing to pay the price or make the sacrifice to get it. That is referred to as *class A* amplifier operation. In other cases audio or sound quality is secondary to acquiring maximum output power for CW or FM. That is referred to as *class C* amplifier operation.

Between those extremes we find an attractive balance between audio quality and output power—a "best of both worlds" compromise referred to as *class B* amplifier operation. The linear transfer area between class A and class B is also noteworthy for good-quality signal reproduction, and it is further divided into *class AB1* and *class AB2* amplifier operation. That is the "five minute tour" of classes; now let's look at transfer curves used to evaluate each class of operation.

Curves Ahead

An amplifier's class of operation is determined by a combination of bias, driving signal level, and duty-cycle rather than circuit design, so let's bring in a special input/output transfer curve for studying their operation (fig. 1). In the case of vacuum tubes, this is called a plate current (Ip) versus grid voltage (EG) curve, which is technically stated as *Ice of P versus Ece of G* curve. As we discussed in previous columns, plate current is associated with (stage) output power, while grid voltage is associated with input signal level. In the case of transistors, this curve is referred to as a collector current (Ic) versus base current (Ib) curve, which is technically stated as *Ice of C versus Ice of B.*

Referring again to fig. 1, a tube or transistor's input signal is plotted horizontally along the Eg or Ib plane, while its output signal is plotted vertically on the Ip or Ic plane. In addition, the tube or transistor's point of bias is marked for input/output reference between plate/collector saturation (maximum current flow), cut-off (zero current flow), and beyond cut-off (current only flows on peaks above cut-off for class C operation). Finally, the curve's' angle or slope between cut-off and saturation is different for every type of tube and transistor. That is how their sensitivity, gain, and signal-handling abilities are plotted for evaluation and comparison.

Now let's use a typical tube or transistor's Ip/Eg or Ic/Ib curve to visualize classes of amplifier operation.

Class A Operation

As previously mentioned, an amplifier operating class A exhibits the best sound quality but has the *lowest gain and efficiency—typically 30 to 35 percent. Note:* Efficiency relates to DC voltage and current input versus AC signal output. As an exam-

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e-mail: <k4twj@cq-amateur-radio.com>

Photo A– Recognizing the superior quality of class A amplification, Yaesu includes direct front-panel selection between class B and class A operation in its popular FT-1000MP Mark V transceiver. The owner thus has a choice of high output power or an exceptionally good-sounding SSB signal, as desired.

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MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25M	20	25	3½ x 19 x 9⅝	6.5
SRM-30M	25	30	3½ x 19 x 9⅝	7.0

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MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25-2	20	25	3½ x 19 x 9⅝	10.5
SRM-30-2	25	30	3½ x 19 x 9⅝	11.0

WITH SEPARATE VOLT & AMP METERS

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
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*ICS – Intermittent Communication Service

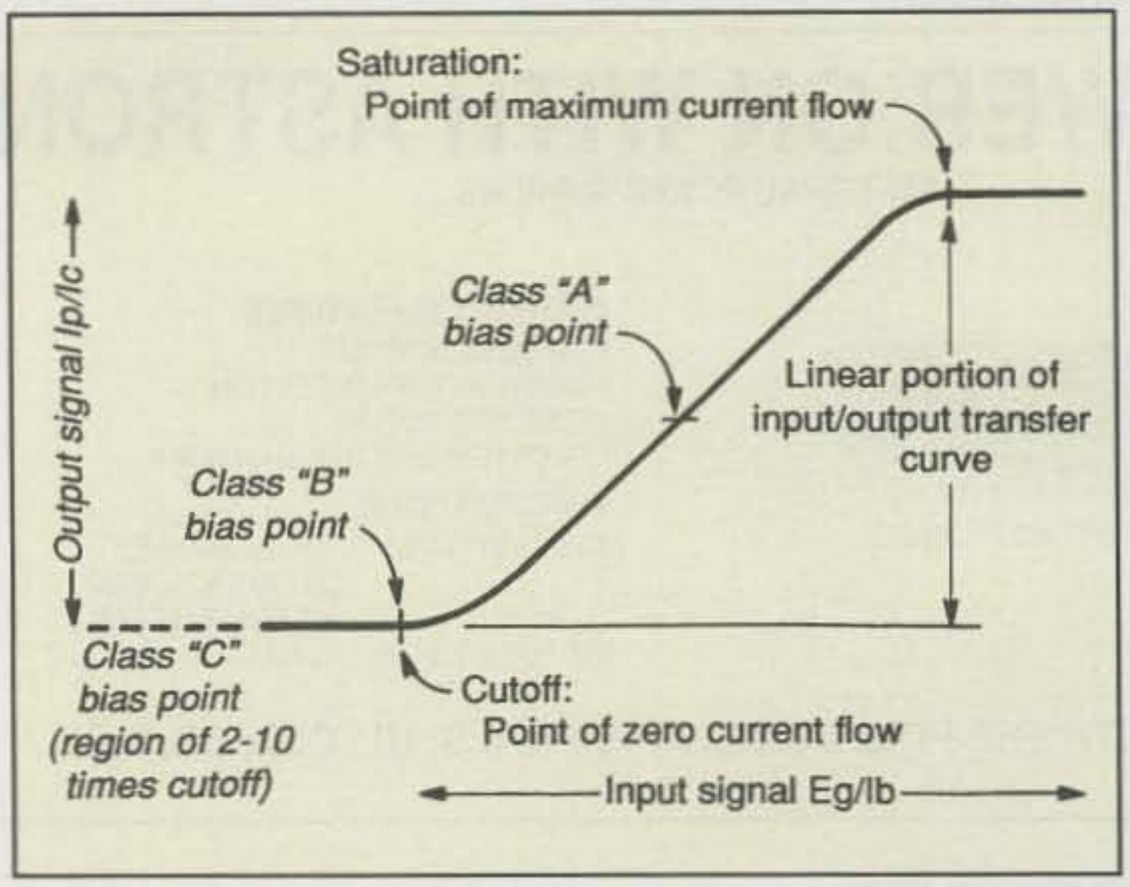

Fig. 1– The famous Ip/Eg and/or Ic/Ib transfer curve for vacuum tubes and transistors. Bias points for class A, B, and C operation plus device saturation and cut-off are marked for easy comparison. (Discussion in text.)

ple, 70 watts output for 200 watts input is 35 percent efficiency. Class A operation is best visualized with the aid of fig. 2. Here the utilized transistor is biased in the middle, or most linear, portion of its Ic curve. An incoming signal (Ib) then instantaneously adds to and subtracts from the transistor's base bias, causing comparable fluctuating in collector current—or signal amplification.

Now notice these important points. Since the transistor is biased midway in, or in the linear portion of, its curve, collector *current flows continuously, or during the full 360 degrees of an input signal cycle.* In other words, the transistor/collector current might idle at 3 amps and then rapidly fluctuate between 1 amp and 5 amps when "driven" by an input signal of approximately ±400 ma.

Here are more important points: If the input signal (drive) is increased to 600 ma or more, resultant collector current will "top" and "bottom out" at saturation and cut-off. Since output (sine) waves will then "flat top" rather than continuing to increase and decrease in step with the input signal, distortion and an inaccurate reproduction of the input signal will result. Notice also, the continuous (360 degree) flow of collector current for class A operation imposes significant stress, or heating, of the associated transistors (or tubes, if used). This pitfall can be alleviated in one of two ways: by reducing power so the transistors (or tubes) operate comfortably and well within safe limits, or by using large transistors or tubes so they can easily handle the high-power/full-duty-cycle stress.

The demands of class A operation do not end there, either. The associated power supply must be capable of continuously delivering full current with "stiff" voltage regulation, or miniscule maximum versus minimum output voltage change.

Are all the limitations of class A worth the effort? If superb-sounding signals are the objective, the answer is yes indeed! Quality costs more, but it is worth the investment!

Class C Operation

An amplifier biased for and operating class C exhibits the *highest signal gain and efficiency* (approximately 75 percent, or 150 watts output for 200 watts input). Since the output wave, or signal, from an amplifier operating class C is not an accurate replica of its input wave, it has the lowest (most poor) sound quality. What good is a poor-sounding amplifier? It is not suitable for audio amplification, that's for sure, but its high efficiency is ideal for CW and FM. That is because audio intelligence is not superimposed on CW and FM signals like it is on AM and SSB (we copy CW as on/off variations, and FM varies in frequency rather than amplitude).

Class C amplifier operation is shown in fig. 3. Here a hypothetical high-power vacuum tube is biased between two and ten times past cut-off, so it *conducts for less than 180 degrees, or only during positive peaks of the input/driving signals.* A larger (than class A or B) driving signal is required. Controlling the input signal level so it fully drives but does not overdrive a class C amplifier is almost impossible, so it typically "flat tops" on peaks. As previously mentioned, however, amplitude distortion is not noticed on CW or FM. Just do not use a class C amplifier on SSB or AM, as it will sound terrible!

Since current flows in short (less than 180 degree) pulses, transistors, tubes, and power supplies used for class C "rest" more than they "work." The only stipulation is to remember to avoid abusing them—such as pushing beyond maximum ratings so the device(s) melts down when transmitting key-down or full output for more than a few seconds.

Class B Operation

As you probably surmised, an amplifier biased for class B operation exhibits the *best overall balance between signal quality and gain/efficiency* (approximately 60 percent). As such, it is very well suited for both audio and RF applications (indeed, it is the popular choice for SSB, AM, CW, and FM modes alike). Study the input versus output transfer curve for a class B amplifier in fig. 4, and you will see it is biased right at cut-off so its associated tube(s) or transistor(s) *conduct during 180 degrees, or during the positive alternation of the input signal.* An amplifier operating class B requires an input signal of lower level than a class C amplifier, but higher level than a class A amplifier. Tubes or transistors in a

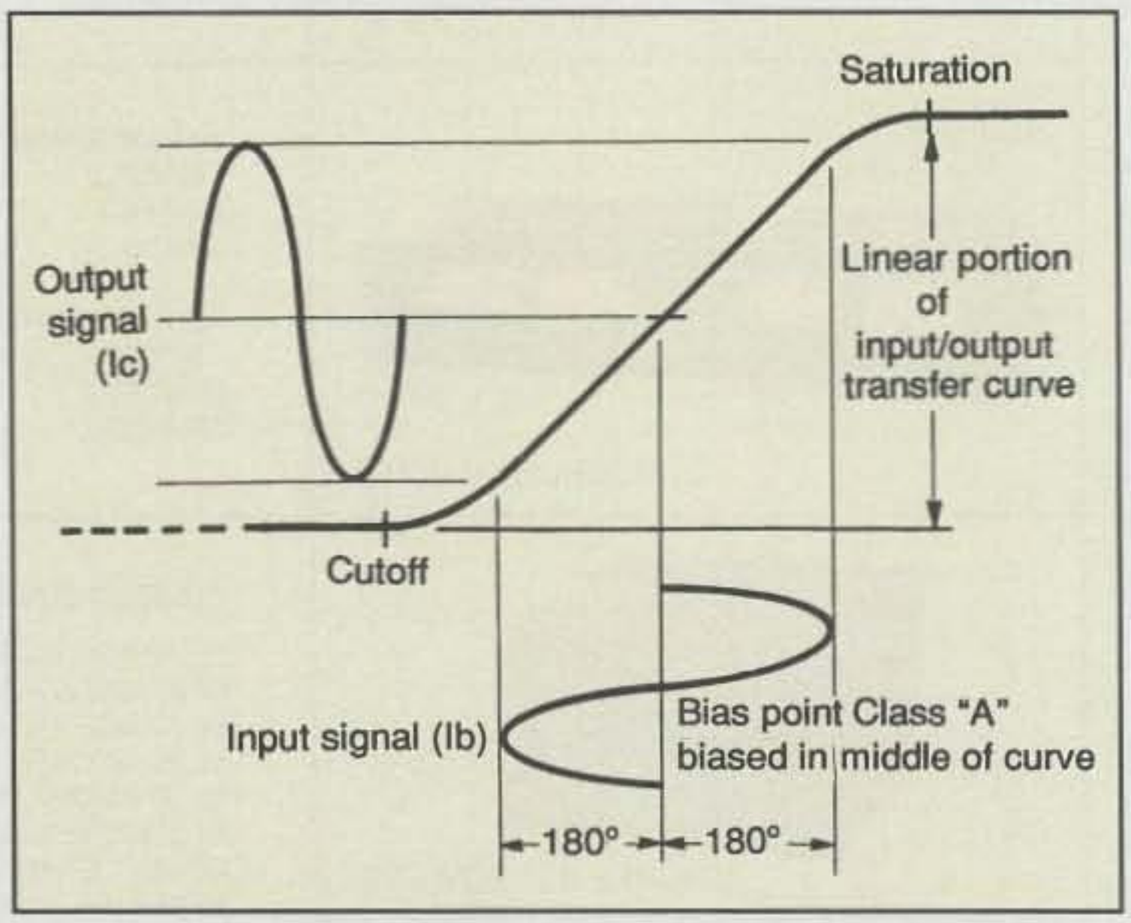

Fig. 2– Ic/Ib transfer curve for a transistor amplifier biased for and operating class A. Notice a mild amount of collector current flows continuously, and signal- or drive-related variations are held low enough to stay within the linear portion of the curve rather than being allowed to reach saturation or cut-off.

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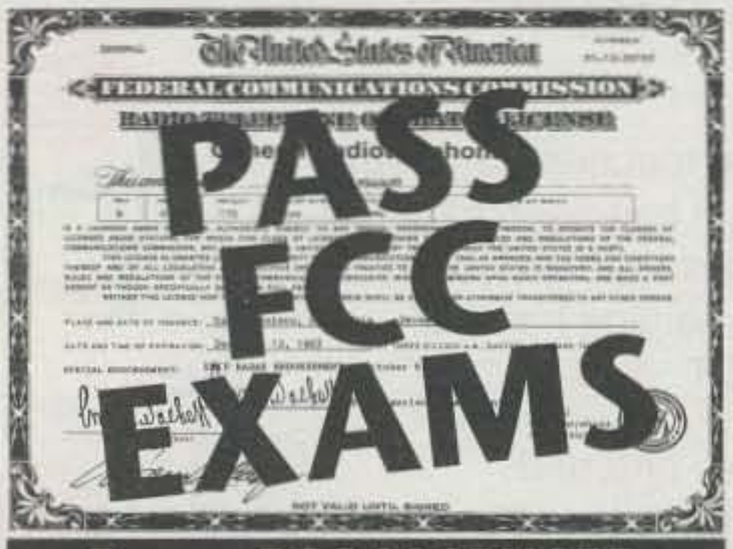

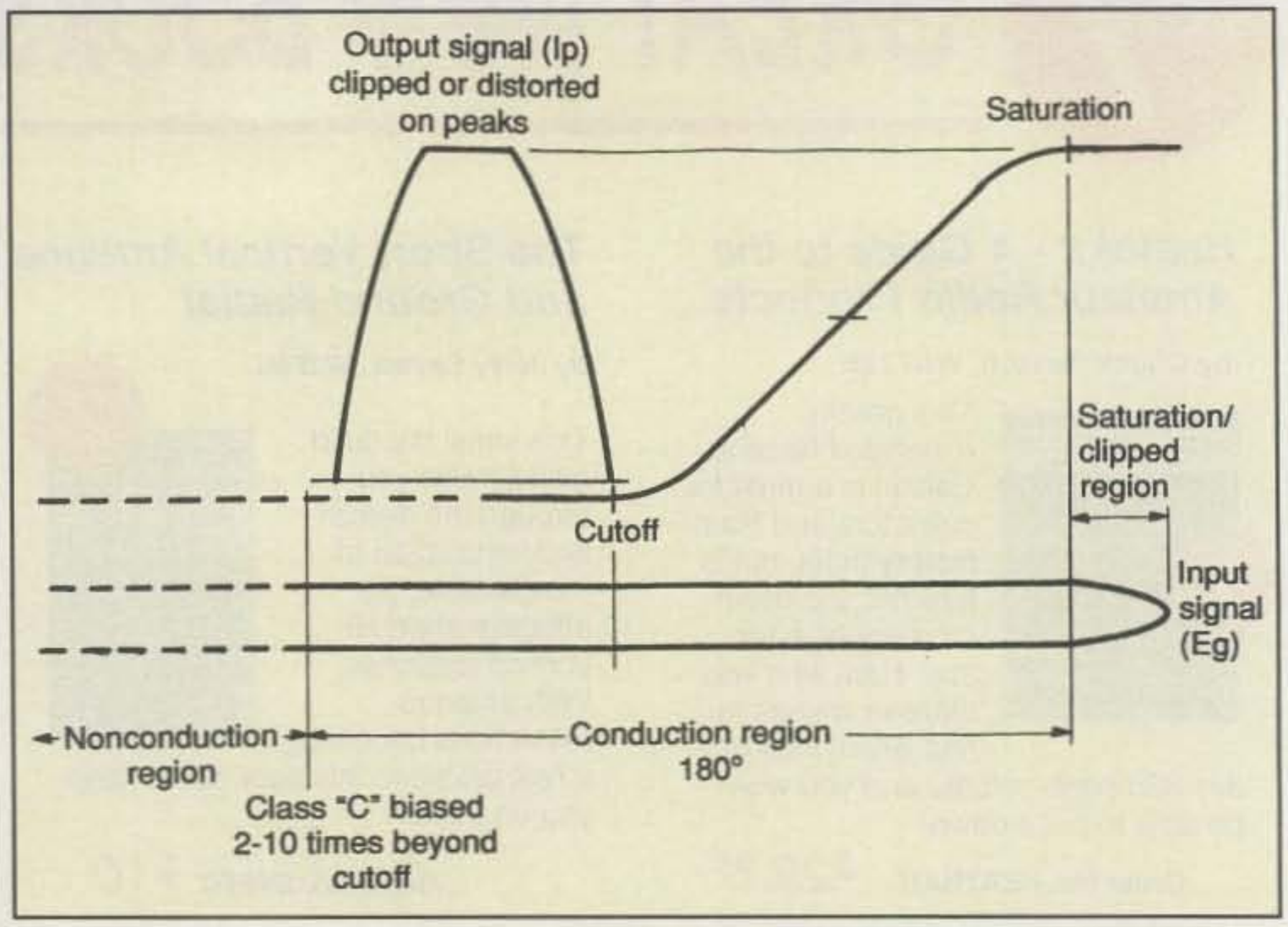

Fig. 3– Ic/Ib transfer curve for a transistor amplifier biased for and operating class C. Notice collector current flows only during positive peaks of the incoming signal, typically causing the transistor (or tube, if used) to hit saturation, "flat top," and distort audio intelligence superimposed on the signal.

class B amplifier also get to "rest" during the non-conducting 180 degrees of an input signal's sine wave.

Class AB1 and AB2 Operation

If we look closer at the input versus output transfer curve area between class A and class B, some interesting capabilities come to mind. If the bias on a class A amplifier is increased so operation is shifted "down" toward class B or if the bias on a class B amplifier is decreased so operation is shifted "up" toward class A, an even better mix of quality and efficiency results. These AB1 and AB2 classes are exceptionally popular in modern high-power linear amplifiers, mainly because they reflect the best value in cost versus performance.

If you have followed our discussion of amplifier operating parameters this far

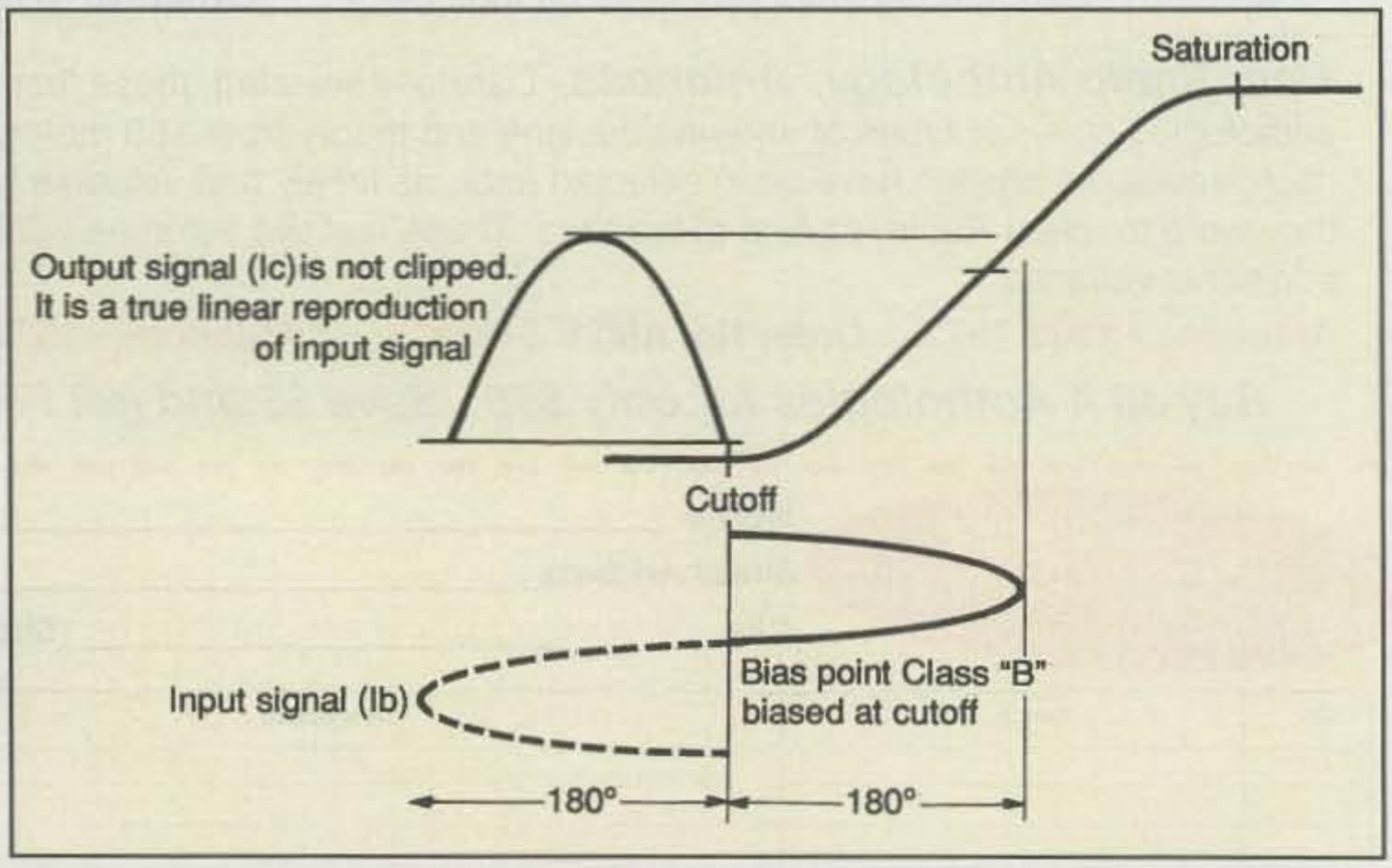

Fig. 4– Ic/Ib transfer curve for a transistor amplifier biased for and operating class B. Notice collector current flows during the full positive alternation of the incoming signal, yet stays within the linear portion of the curve, resulting in an accurate and clean-sounding reproduction of the input signal.

Amplifier Class	Gain/ Efficiency	Driving Signal Level	Bias Point	Current Flow During Input Signal	Audio Quality
A	35%	low	linear portion of curve	360°	excellent
AB1, AB2	approx. 45%	low	linear portion of curve	approx. 250°	very good
B	60%	medium	at cut-off	180°	good
C	approx. 80°	high	2–10 times cut-off	less than 180°	poor

Fig. 5– Summary of main factors/parameters associated with class A, B, C, and AB1 and AB2 amplifiers. (Discussion in text.)

(congratulations!), you can probably "reason out" that *a class AB1 or AB2 amplifier would sound slightly better than a straight class B amplifier on SSB.* You should also realize it would *exhibit a slightly heavier duty-cycle (conduct for more than 180 degrees) and run slightly warmer.* Likewise, a class AB1 or AB2 amplifier with its bias reset or switched to class B operation would run slightly cooler on CW (assuming the same power level is used).

This discussion obviously could continue indefinitely (amplifiers are a very extensive subject, and we have only scratched the surface). Column space is limited, however, so a summary chart for your assistance is shown in fig. 5.

Bias versus Idling Current

A quite understandable question at this point relates to what is the difference between bias voltage and idling current, especially since an amplifier's class of operation can be varied slightly by resetting its bias/idling current. Simply explained, bias is akin to an electrical "hold back force" on a tube or transistor—a force to prevent "overconduction" of the device. The greater the (hold back) bias, the lower the metered plate or collector idling current (on transmit, but without CW keying or SSB speech input). Zero idling current (on transmit) usually corresponds to class B operation for linear amplifiers. A slight amount of idling current corresponds to class AB1 or AB2 operation. Remember that little "bias" control on the back of your rig? When you adjust it to increase bias (voltage), idling current decreases. When you adjust it to decrease bias (voltage), idling current increases—and yes, within reasonable limits, the class of operation also follows bias/idling current. Amplifiers are indeed fascinating to study!

Conclusion

Now it is your turn to tell us how helpful or beneficial you are finding these discussions. Are they understandable, too complex, too simple, or just right? We will take our cues from you for both additional column topics and levels of technical study, and as promised last time, we will return to more studies of basic electronic components next time.

73, Dave, K4TWJ

mobiling

BY JEFF REINHARDT,* AA6JR

Antenna Ideas, Super Tuners, A New Band, and Contacts!

It's a great time of year to hit the road and make some contacts! Whether you're traveling for business or pleasure or engaging in some of the contests as they gear up for another season, get on the air and have some fun.

In the northern plains, the Rockies, and the northeast, it's a chance to get in some operation before the winter weather closes in. There are some great sightseeing opportunities with the fall colors as well. Across the south, you'll find a lot of mobile activity hitting the airwaves as travelers steer clear of fall and winter storms and "snowbirds" migrate to their winter quarters.

Contesters are among the most ardent mobile operators. From the HF "QSO Parties" to the VHF/UHF contesters who go "hilltopping" or DFing (direction-finding), these mobile competitors have gathered a lot of information on what works and what doesn't. If you're considering a mobile installation, you'd do well to check out their setups and ask a lot of questions.

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e-mail: <aa6jr@cq-amateur-radio.com>

Sharing the Info

Each year the Santa Barbara (CA) ARC puts on a most enjoyable hamfest, and this year was no exception. Exciting to me was the display of mobile HF installations in the parking lot exhibit area. We saw a wide array of antenna-mounting and rig installations. Be sure to check out the photos.

Take a look at W6JEO's 160 meter mobile setup pictured below. It works! It's a 5 ft. base-loaded whip with capacitance hat and is good enough to work from California to eastern Illinois. Check out the mounting setup on the red Ford F-150 pickup, too, on the next page. There's a wealth of ideas out there.

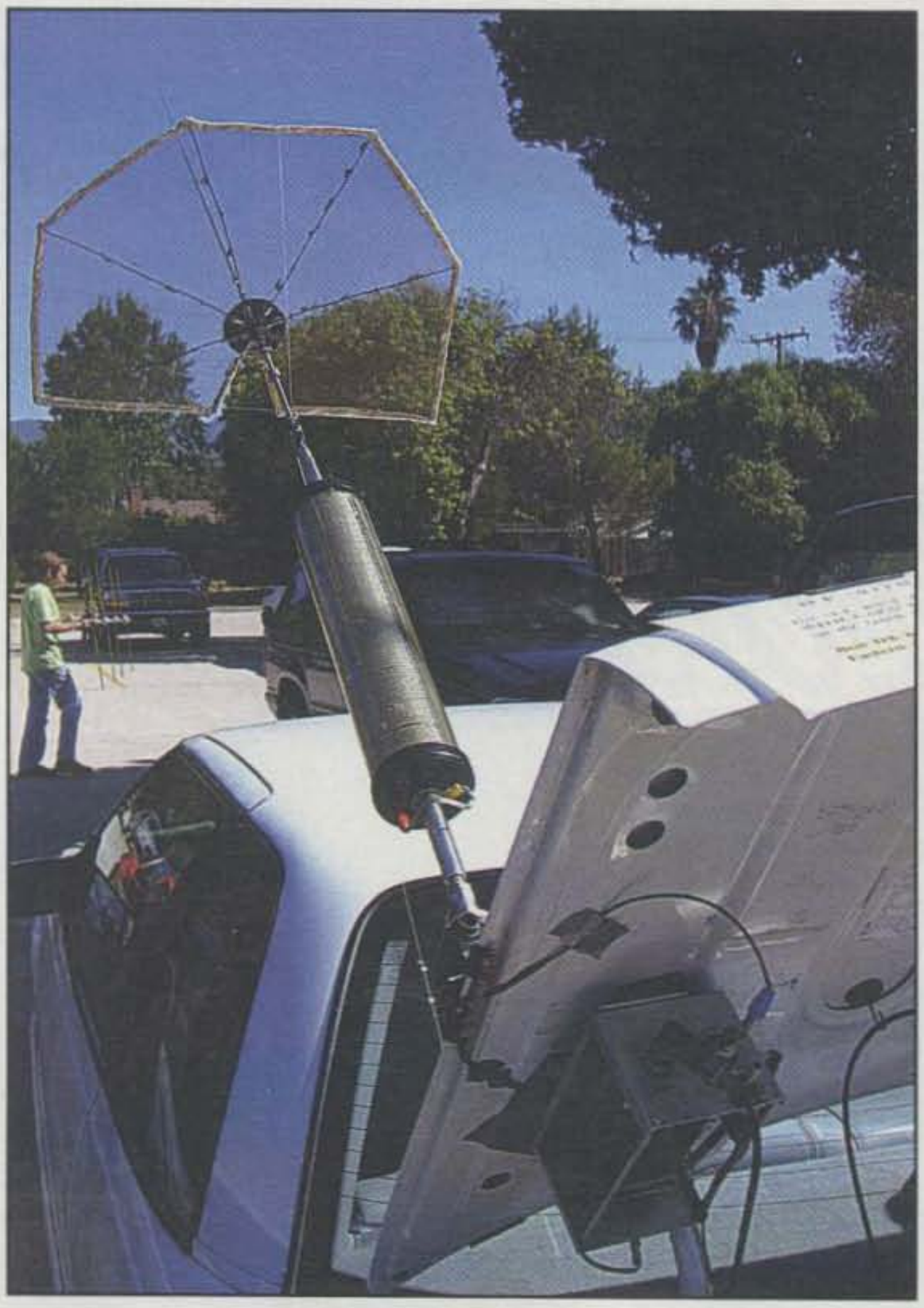
Also, if you think your mobile is good, the SBARC mobile van can work just about anything, from DC to light!

Using a "Super Tuner"

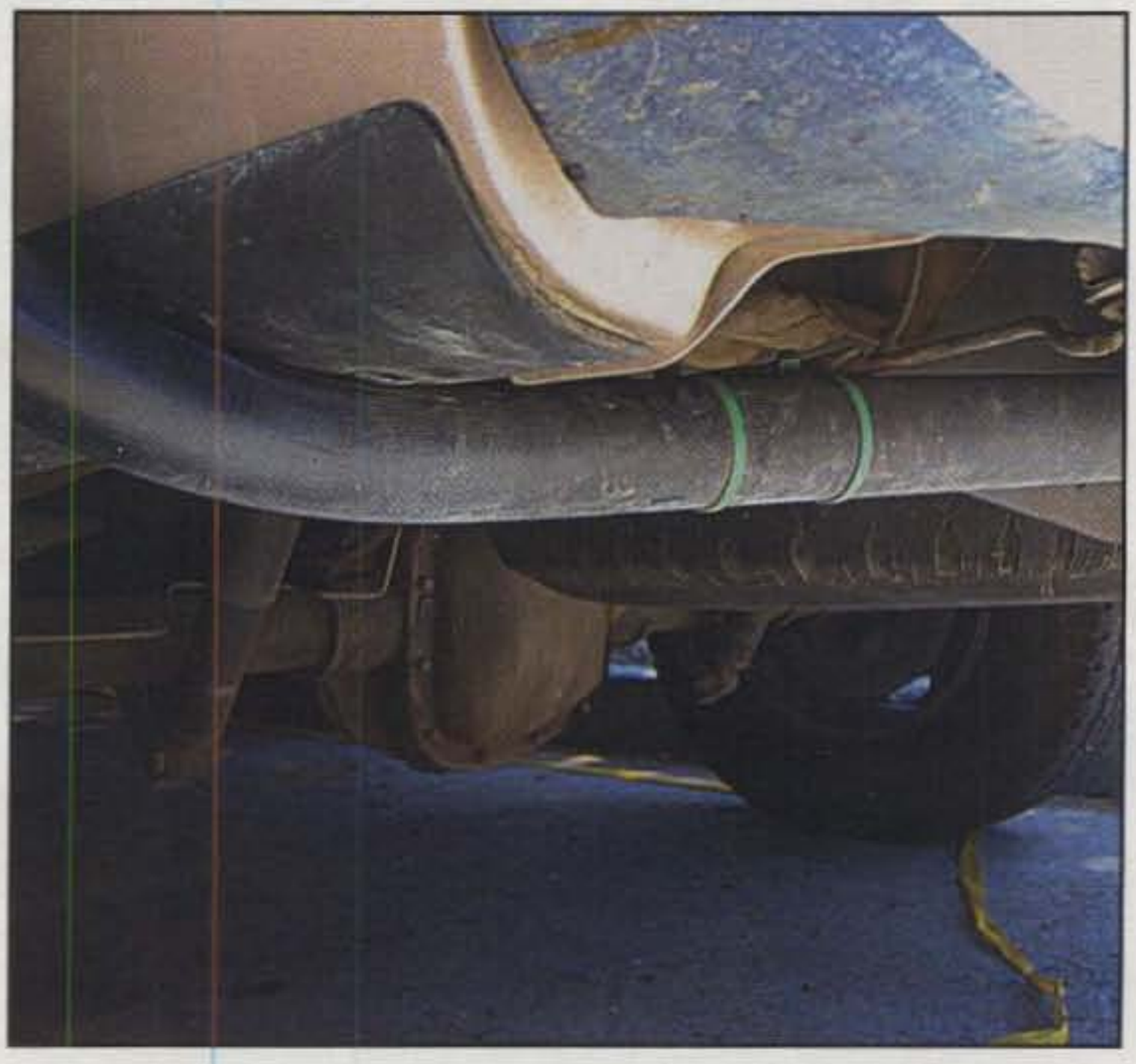
In my opinion, the antenna is the biggest challenge in mobiling. It's tough enough for VHF/UHF, but it's a real "bear" for HF operations. One concept that's intriguing to many, myself included, is the use of a so-called "super tuner," which is really a very sophisticated LC matching box that automatically finds the best combination of components to achieve a decent match. Alinco, ICOM, and SGC are manufacturers of the more popular units, each making tuners that interface with their respective radios, but SGC also makes "universal" units.

On the plus side, you can use just about anything for an antenna, from a 108 inch "CB whip" to a "stick" antenna. You can also use these tuners with longer wires for home use or a field setup if you're not planning to move the vehicle. The Alinco tuner needs only 40 feet of wire to work 160 meters.

A big disadvantage of the super tuners I have seen is that they cannot accommodate a coax cable connection to the load (antenna). Their output terminal also begins the radiation system, which has caused grief to many a ham seeking to use these



W6JEO is proud of his 160 meter mobile antenna, which works well. Who said you need a huge array for the "Gentleman's Band"? (Photo by Jeff, AA6JR)



Larger antennas or heavy "screwdriver" tuners need a sturdy support. This well-designed mount for a Ford F-150 pickup appears to be strong without drilling visible holes in the truck body. (Photos by AA6JR)

boxes in mobile units. Some have tried to connect coax to the tuners in spite of instructions not to do so. Needless to say, the results are often poor (and could damage the tuner).

On the other hand, I have seen some effective setups that are less than aesthetic. One mobile I saw (on a very old car that was pretty well depreciated) had the tuner mounted on the ceiling *inside* the car, directly feeding a ball-mount antenna drilled through the roof. I have seen similar installations through the rear quarter panel, with the tuner mounted in the trunk. These tuning

The Santa Barbara ARC built this van as a club project. Inside are comfortable operating positions and the ability to facilitate emergency communications on just about any band or mode. (AA6JR photo)

boxes must also be well grounded, no matter where they're installed.

Some marine mobile operators use these tuners to load up various items on sailboats, including masts, backstays, or dedicated wires. While I don't have direct experience in these matters, even though the tuners are weather resistant, I would think that the marine environment is very hostile to the tuner.

I have an Alinco tuner mounted to the floor of my car's trunk. Its feedline drops through a grommet in the floor and runs to the antenna, which is mounted behind the rear bumper. I try to keep the non-shielded, Teflon®-coated, feedline as far away from metal as possible, but there are compromises. The good news is that it works, and using a 108 inch CB whip, I can tune and work 40 through 10 meters pretty well, changing bands while in motion. I do get some vehicle noise which medium to strong signals can overcome. When the engine is off, generally if I can hear 'em, I can work 'em.

Check out the interesting mount of the ICOM AH-4 tuner done by Pat Masterson, KE2LJ. Pat has the tuning box located right at the antenna's feed point, as it should be. Pat did a quick setup for photos, so ignore those stray wires you see, except the feedline to the antenna. It must be kept as far away from metal as possible or it may de-tune the match.

The SGC "strap-on" system has been shown at Dayton and elsewhere. It's well thought out. I personally haven't used it, but have heard good reports from those who have. It's versatile in that it can move from vehicle to vehicle, but it's an obvious add-on to a vehicle that's not all that attractive (except to another ham), and the owner would be well advised to stow it when leaving the vehicle unattended.

None of these tuning units is inexpensive, but they open some interesting possibilities for those who want to be "band agile" while in motion.

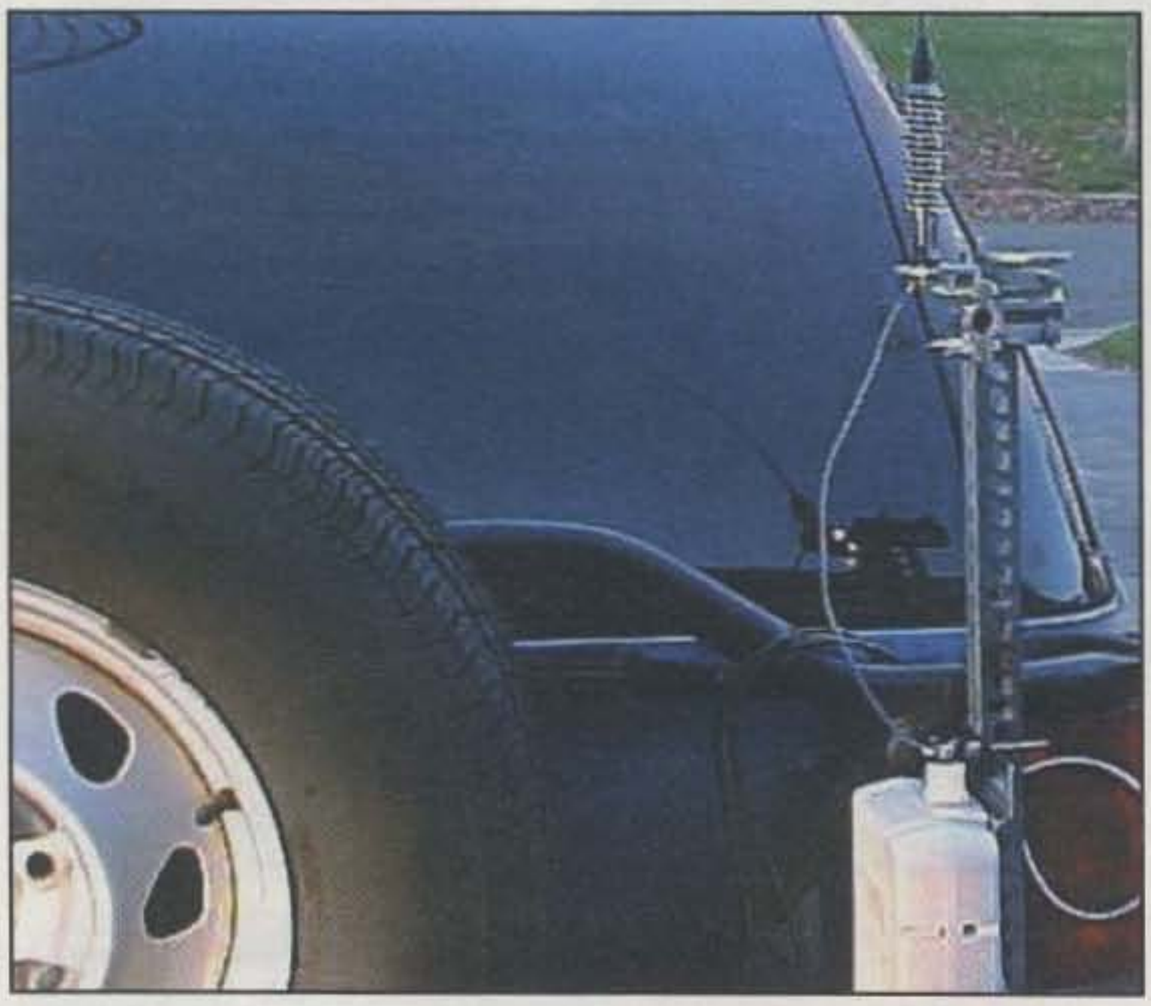
I sometimes use an Outbacker Perth antenna in combination with my tuner. It helps "fine tune" the antenna's setting. You can probably do the same using dedicated-band "stick" antennas, and perhaps attenuate some of the interference you *don't* want to hear.

Next time we'll take a look at some developments and products that use the popular "screwdriver" approach to tunable mobile antennas.

Who's on 60 Meters?

Has anybody tried 60 meter mobile yet? Granted, there's a lack of commercial antennas available and the band poses some challenges and limitations, such as a maximum of 50 watts ERP, but hey, we're hams. We should be able to overcome these challenges.

One advantage of operating mobile 60 is that "big guns" shouldn't be able to cover you up, as they have the same 50 watt limitation. It will be interesting to share what we learn about 60. If you've



Here are ways to mount the ICOM AH-4 (or other) antenna coupler close to the antenna without drilling holes to mount the tuner in the vehicle. (KE2LJ photos)

Here's KE2LJ's remote-mount setup for the popular IC-706. It's a very clean installation that's convenient for the operator. (KE2LJ photo)

done it, please send me an e-mail message describing your setup and we'll add to the meager mobile knowledge base about this new band. *(See the article, "60 Meter Mobile ... on a Budget," elsewhere in this issue.—ed.)*

BTW, a recent policy statement by the FCC makes it easier to get the "mods" for many transceivers from your radio. Better to rely on manufacturer info for mods than someone who may have "hacked" their way into expanding their transceiver's capabilities.

To Whom Can You Talk?

After all that work installing your mobile setup, whom can you contact? Many hams enjoy putting out a CQ or responding to one. As mentioned above, some enjoy contesting or the added assurance of having HF along as they travel into some remote regions.

Mobile operators might also enjoy joining in some mobile nets or putting their mobile QTH on the air for those working toward awards. One popular mobile net is the County Hunters found on 14.336 MHz. Its primary purpose is to listen for emergency traffic from mobiles, but the members fill the time exchanging reports with mobile operators. See the May 2002 issue of *CQ* for more details, or visit their website, <http:/www.countyhunter.com>.

The 3905 Net conducts Worked All States (WAS) nets on 40 and 80 meters, with mobiles welcome to join the fun. Check them out at <http://www.3905ccn.com>.

Also down on 80 there's the Geratol Net, at 3.767 (plus or minus) for Extra Class ticket holders to earn their WAS. There aren't many mobiles on the net, but they're welcome, especially from some of those "hard to get" states. Go to <http://skyport.com/geratol/geratol1.html>.

There are also net awards for mobiles, YLs, and contacts from state capitals. I've often thought of what a "pile-up" there would be on a mobile YL Extra working 80 meters from Honolulu! The trip there to operate is almost enough to get my XYL studying for the Extra test.

Keep the Ideas Coming!

Sharing your mobile installation or operating experience is yet another great way to "give something back" to the hobby we share. I appreciate the photos and feedback, along with suggestions. I'm pleased to report the K9XT Honda CRV spare-tire antenna mount we showed last time has already inspired a number of similar projects. Thanks for sharing.

73, Jeff, AA6JR

Sources

For more information on antenna couplers, popularly known as "super tuners," you can check out the following websites:

http://www.sgcworld.com/index.html
http://www.alinco.com/
http://www.icomamerica.com/
http://www.mfjenterprises.com

BY DAVE INGRAM,* K4TWJ

Converting Old AM Radios into Ham Rigs

Oh, those marvelous little table-model AM radios of the 1950s and '60s . . . their warmth, their beauty, their charm! Not only do these classic collectibles look like real radios, their rich vacuum-tube audio still blows those impersonal solid-state jobs right off the table. There is no comparison. The only hitch is original '50s and '60s era radios are dedicated AM-band receivers, and modern trends have shifted to favor FM-band entertainment. As a result, a fair number of these sweet little delights are being tossed out. Some are being rescued by collectors and some are hitting the trash bins (ouch!).

Photo A– Approximately one out of three table-model AM radios from the 1950s and '60s is a good candidate for conversion into a mini-transceiver. Here it is the rescued-from-trash-pile Emerson on the right. Why? It is small, a common style, and has a (reusable) metal chassis. The Zenith on the left is an early clock radio with a difficult-to-modify PC board, and the little red Arvin in rear has a unique reverse-reading dial—a neat collectible.

But wait . . . step back and consider the main attraction here, fellow dinkers and frugal-minded friends. Classic all-American five-tube radios, particularly those falling outside the "prized" collectible category, can be converted to VXO-controlled 5 or 10 watt output CW transceivers fairly easily. Far fetched? Not at all. In fact, this could become the most personally gratifying, fun project you have pursued in a while!

If you have ever homebrewed a small receiver, transceiver, or similar item, you know the wiring phase is the easiest part. Finding and cutting a suitable chassis, mounting sockets and dials, plus finishing up with an attractive cabinet is the big challenge. All of those time-consuming entanglements are bypassed in this "do it your way" project. You just change some components, wind some coils, rewire the circuitry, and fit in a couple of trimmer capacitors for the transmitter. Even the radio's dial lamp (or at least its socket/mount) can be reused as a plate tuning indicator for the transmitter. Thoughtfully executed, your little project can also retain its original radio appearance. No one will even realize your little treat has been converted until it is switched on and starts emitting ham band signals from its speaker. Total class for sure!

That's a peek preview of this "concept project" (which you are invited, indeed encouraged, to build using your own circuits and ideas rather than just copying mine). Now let's discuss the fine points in finding, converting, and assembling your own mini rig!

Collectibles vs. Convertibles

Although table-model AM radios of the '50s and '60s are starting to become scarce, a few still surface at garage sales, estate sales, and hamfest flea markets. Recognizing a potentially classic collectible begging to be restored and a more traditional radio suitable for conversion to a mini-ham rig, however, can prove a mite challenging for non-collectors. I recall, for example, an article in a magazine several years ago that described how to convert a (now highly sought) Vibroplex Zephyr bug into a single-lever paddle for an electronic keyer. All you needed was a hacksaw—heaven forbid! Let's not repeat that scenario!

As a general guide, radios with unique cases, shapes, decorations, or unusual dials fall into the "collectible" category, while more traditional-looking items such as Admirals, Emersons, Crosleys, etc., qualify as good "convertibles." Still unsure? Ask an old timer or radio collector his opinion of your radio(s) under consideration.

Good "convertible" radios are five-tube items with a clean (or at least unbroken) case and an inverted U-shaped metal chassis rather than a PC-board assembly. If its dial turns and it plays well at first turn-on, you are really in luck. If it at least hums, it signifies the audio section (which is actually the only section you may choose to leave intact, use as is) works, and you still have a winner. If the radio is flat-out dead but has a good cabinet with a metal chassis and everything inside seems intact, you still have a goodie. Purchase it, grin, and proceed to step two: preparation for conversion.

Cleanup and Checkout

Following your brief look at the radio and purchase, subsequent steps typically will include a general

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e-mail: <k4twj@cq-amateur-radio.com>

cleanup and review of your radio's "innards" and circuitry to determine what should go and what should stay. Opinions on cleanup may vary, but I use water-softened automobile rubbing compound to clean dirty, marred, and even faded plastic cases (be careful to avoid rubbing out dial markings, however). Follow that with two or three applications of top-grade automobile wax, and the case should look like new.

Next, use a service station's air hose to blow out the radio's tuning capacitor and tube sockets. Then proceed to (carefully!) evaluate the radio's circuitry. ***Note: If you have not worked with vacuum tubes, high voltage, and transformerless AC/DC radios, ask a knowledgeable old timer to help and guide you. Understand that 150 to 250 volts DC is 10 to 20 times more potent (shocking!) than the 13 or 14 volts used with solid-state gear. Watch your fingers! Also remember that one "side" of the AC power line is connected to the chassis of an AC/DC radio. Add a 120 volt to 120 volt isolation transformer between the radio's plug and an AC outlet for safety.***

Presenting a full troubleshooting guide for AM radios in our limited space obviously is impossible, so a few very brief notes and tips follow. They are short, so read them carefully!

If the radio is totally dead, a tube's filament is probably open, and it is probably the 50C5 or 35W4, since they dissipate the most heat. Check the filaments plus the AC line cord and on/off switch with an ohmmeter to locate the problem. If the radio hums noticeably regardless of the volume control's setting, replace its large filter capacitor(s) (that's audio-amplified AC you are hearing, and it also indicates the radio's audio section is working well). If the radio emits a putt-putt or motorboating sound, its bypass capacitors (those less than 1 mFd capacitors) need to be replaced. If you hear a slight hum but cannot receive any stations, *carefully* inject an audio signal at the volume control's wiper to determine if the problem is in IF or AF stages. If the AF section works okay, you can leave it intact rather than rebuild it. Just inject the (direct conversion) mixer's output to the wiper on the volume control. If the IF section is kaput, don't fret. It (along with the local oscillator coil and IF cans) will be replaced during conversion. Also, don't expect to achieve perfection with your first mini-transceiver conversion. Just think of it as a learning experience and include those fine "realized in ret-

Photo B– A more obvious example of a true collectible rather than a candidate for conversion is this plastic-case "Charlie McCarthy Radio" produced in limited number by the Majestic Radio Company. Bill Shepard, W4YEG, spotted this delight in hopelessly poor shape, recognized its glamour, and restored it to like new.

Photo C– I originally planned to convert this little Arvin into a mini-transceiver, then realized it was an attention-grabbing classic with unique circuitry and reverse-reading dial. It is now 50 years old, restored to new, and still tunes in old-time music from the Grand Ole Opry on WSM in Nashville, Tennessee.

rospect" touches in your second (or third!) conversion.

The Conversion

As previously mentioned, several variations of oscillator, power amplifier, receive mixer, and audio amplifier circuits can be mated or combined to make this mini-transceiver (vacuum tubes are oh so versatile!). In my case, I built a four-tube rig consisting of a two-stage (oscillator and power amplifier) transmitter and a direct-conversion receiver sharing a common VXO for frequency control (fig. 1). A typical '50s or '60s table-model radio uses a 50C5, 35W4, 12AV6, 12BA6, and 12BE6 tube, with series-wired filaments equaling 121 volts for direct AC-powered operation. I changed that tube lineup to two 50C5s, a 12BA6, and a 12AU6, which tally to 124 volts at the same 150 ma of current (all series-connected filaments must draw the same current).

Rather than using an isolation transformer as mentioned earlier, I took a less-expensive alternate approach of just protecting the radio's circuitry (and operator) from exposure to a "hot-ground." How? The antenna connections are isolated by link coupling on a plastic pill bottle form, the radio's built-in speaker is used in lieu of earphones, the complete radio is enclosed in a plastic case with plastic knobs, and the mating key is a plastic-case bug. No smoked ham here, friends!

The Four Stages

Space is now tight, so let's briefly discuss a few fine points of the circuitry I chose to use in my particular mini-rig (fig. 1). Starting with the oscillator, I first used a 12BA6, but quickly changed to a 12AU6 because its circuit is both simple and better suited to VXO operation. Look through ham magazines and handbooks of the '50s and '60s, and you will find other equally suitable circuits that will work well here. The 47 µHy coil (not critical) is a "molded inductor"

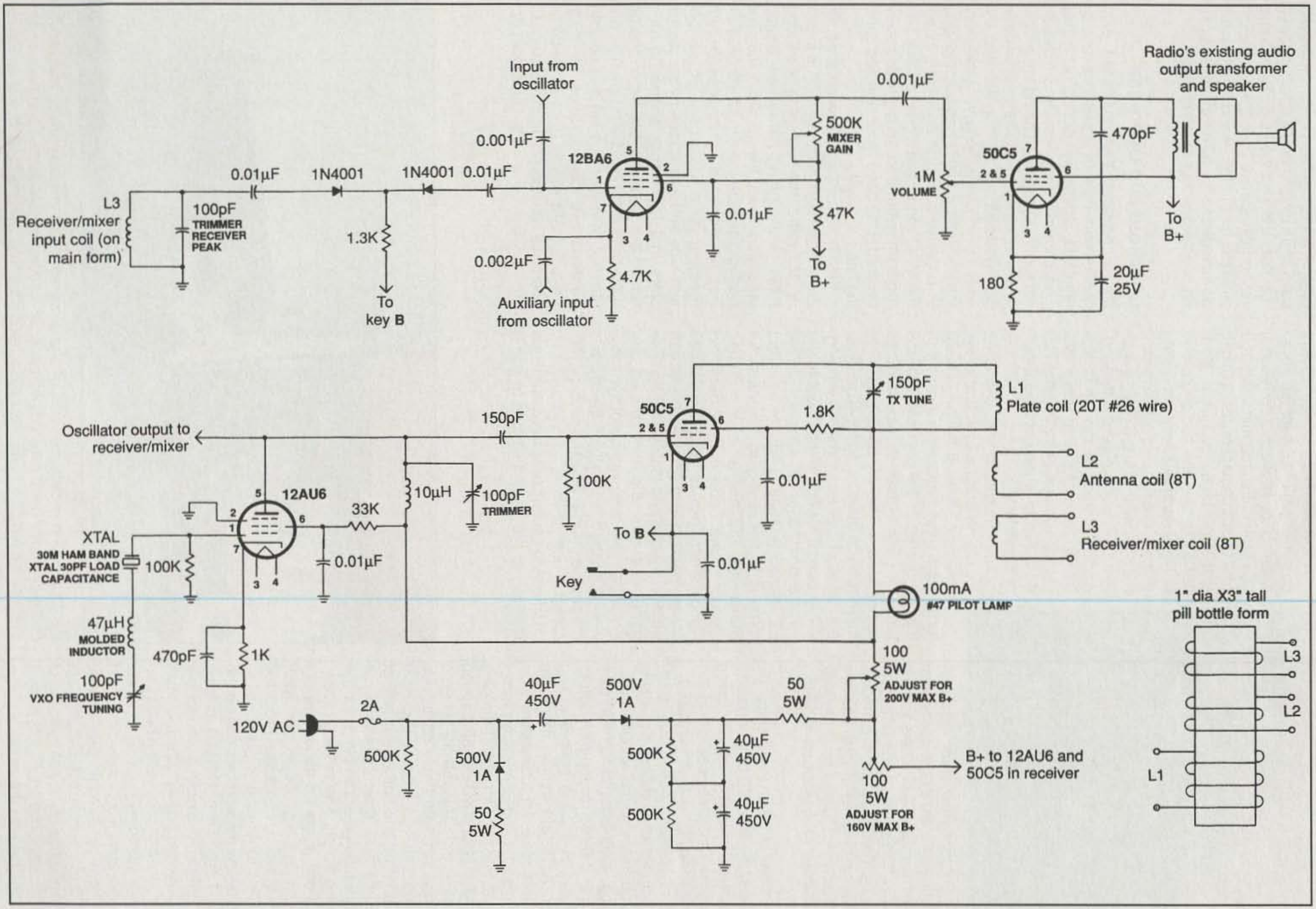

Fig. 1– Circuit diagram of my Emerson mini-transceiver. Basically, the rig consists of four interconnected circuits gleaned from old amateur radio magazines, plus a solid-state power supply and VXO mod oscillator. The rig works 30 meters as is. (Coil mods for 40 or 80 meters in text.)

Photo D– Interior view of my rescued-from-extinction Emerson midway through conversion. A crystal socket is mounted in the space of one removed IF can; a pill-bottle coil form is mounted in place of the other IF can. The two 50C5 tubes are mounted near the rear of the chassis for maximum cooling.

obtained from Mouser Electronics (1-800-346-6873). The 100 pFd capacitor (also not critical) was made by using only the small/oscillator section of the radio's main tuning capacitor with a couple of its rotor plates pulled out. In my next mini-rig I plan to shift and use twin same-frequency crystals wired in parallel (a cool VXO-expanding trick) plus a varicap and three- or ten-turn potentiometer rather than a simple tuning capacitor. As I said earlier, there are always more ideas for future rigs!

My selected direct-conversion mixer employs a 12BA6 with both incoming (RF) and oscillator/VXO signals applied to its control grid. This mixing scheme works okay, but it probably could use refinement—such as injecting the oscillator's signal on the cathode (pin 7 of the 12BA6) and then resetting the mixer's potentiometer (on pin 5) for the best mixing action. The mixer's/receiver's input coil is wound above the antenna's coil on the pill-bottle form, with its input trimmer capacitor mounted nearby. The transmitter's plate coil is mounted below the antenna coil on the pill-bottle form. Twin 1N4001 diodes with .01 mFd DC-blocking capacitors mute the receiver on key-down. A small amount of leakage produces a buzz that serves as a sidetone.

The audio-amplifier circuit was copied directly from a Knight Kit "Space Spanner," but in retrospect I should have just left this section of the AM radio intact and used it as is. Once again, this proves first versions may be the worst.

A 50C5 makes a nice little 5 watt power amplifier tube for the transmitter (7 or 10 watts if "pushed"), so I mated it with a miniature 150 pFd tuning capacitor (not critical) and a pill-bottle coil form. Both 50C5s (one in the audio and one in RF output) get very hot during use, so an extra layer of aluminum foil is glued inside the radio's cabinet to reduce plastic's heating. Adding a small muffin fan is also highly recommended here. As mentioned earlier, a 100 ma No. 47 dial lamp is used as a plate-current indicator.

The coil windings of 6–8 turns for L2/the antenna (wound in the middle of the pill bottle), 18–20 turns for L1/the transmitter (wound in the lower area of the pill bottle), and 8 turns for L3/the receiver (wound in the upper area of the pill bottle) work 30 meters. If you build the rig for 40 meters, add three or four turns to each winding. If you build it for 80 meters, double the turns count (16 for L2, 40 for L1, 16 for L3, approximately). Add or subtract turns if/as necessary to resonate the transmitter and receiver coils with their mated tuning capacitors. Check old radio handbooks for more band/coil ideas; most of the lower power ones can be directly adapted to this mini-rig. The general circuit diagram of an all-American five-tube radio, incidentally, was published in *Popular Electronics* magazine, June 2003 issue, p. 46. Check it out.

Throwing caution (and maximum tube ratings!) to the wind, I elected to use a basic voltage-doubler power supply with solid-state diodes and a small dropping resistor. The idea works well, but a conventional halfwave circuit would be less stressful on the tubes and will definitely be included in our next version of a mini rig (less power but much cooler!).

Checkout and Operation

As you probably have surmised, each of this mini-rig's four sections can be checked "on the fly" during assembly. That should reduce final setup to tweaking the VXO circuit, peaking the receiver's input trimmer, and setting the mixer gain potentiometer for undistorted CW copy. Then close the key, quickly tune the transmitter's plate capacitor for a dip in brightness on the pilot light, check the VXO range and signal quality on a modern communications-grade receiver, and hit the band (your selected band) in style!

Finally, I must again emphasize this definitely is not the "final word" in a mini-rig, but rather the beginning of a (hopefully) long-running homebrew project creative-minded friends will continue to perfect for many years to come. Feel free (encouraged!) to browse through amateur radio magazines of the '50s and '60s and substitute any stages/circuits that look more appealing. Just remember to take a couple of photos, draw your favored/utilized circuits, and share it with all of us via this column. Together we can save/rescue many beautiful AM radios from extinction—and have a barrel of fun in the process!

73, Dave, K4TWJ

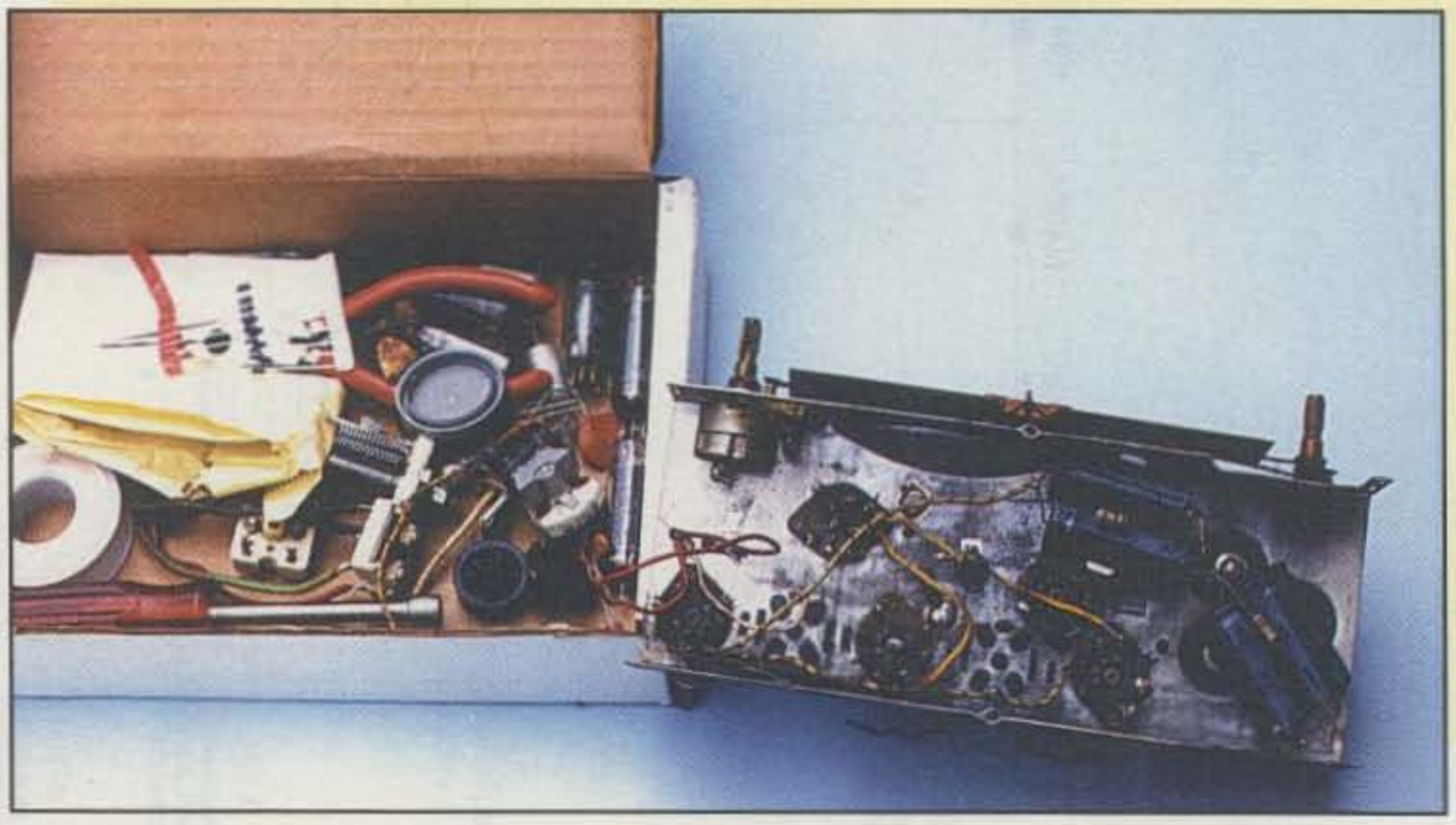

Photo E– Under-chassis view of the Emerson also midway in its conversion. Filaments have been rewired (with one tube socket ignored), and two pairs of parallel-connected filter capacitors have been mounted. My "parts kit" box is on the left.

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What's new

BY KARL T. THURBER, JR.,* W8FX

Dual-Band HT, Weather Stations, Antenna Tuners, and more

This month we again shine the *CQ* product spotlight on a wide variety of new radio shack gear, antennas and related goodies, net news, books, and radio resources we think will be of great interest to you. Are you ready?

Radio Gear

Yaesu VX-2R Dual-Band Hand-Held FM Transceiver. Vertex Standard has announced what it says is the world's smallest dual-band HT, the Yaesu VX-2R dual-band hand-held FM transceiver (see photo A). This ultra-compact unit measures a mere 1.89" × 3.19" × 0.91", proving that good things come in small packages. Besides being ultra-compact, the HT is also lightweight at only 4.7 ounces in its rugged, die-cast aluminum chassis.

Photo A– Vertex Standard has announced what it says is the world's smallest dual-band HT radio, the Yaesu VX-2R dual-band hand-held FM transceiver. Besides being ultra-compact, this HT is also light in weight at only 4.7 ounces. (Photo courtesy Yaesu/ Vertex Standard)

A highlight of the VX-2R HT is the ultra-slim-line, high-capacity lithium-ion battery, offering 1 ampere-hour at 3.7 volts. However, small size is not this radio's only claim to fame. The VX-2R offers relatively high output power, including 1.5 watts on 144 MHz (with internal battery) and 1 watt on 440 MHz. You can connect an optional DC adapter cable and increase power output to 3 watts on 144 MHz and 2 watts on 430 MHz.

An ergonomic case design, large buttons, and carefully crafted operating firmware make operation simple, as do the built-in CTCSS and DCS systems. The feature list continues with wideband receiver coverage. Besides 144 and 430 MHz transceiver operation, the radio provides receive coverage of the AM (MF) and FM broadcast bands, HF shortwave bands, VHF and UHF TV bands, and VHF AM aircraft band, as well as a wide range of commercial and public-safety frequencies, from 500 kHz to 960 MHz, except 730–799 MHz and cellular frequencies.

The VX-2R offers factory-loaded, preprogrammed memory banks for monitoring the marine, shortwave, and NOAA weather bands; the latter includes a "severe weather" alert feature. The radio's memory capacity includes 900 "regular" memories, 11 "home" channels, and 50 pairs of "band edge" memories, in addition to 100 channels that allow you to skip particular frequencies during band scanning. More than 1300 memory channels are possible using 20 Memory Group configurations. Each memory may have a sixcharacter label for easy channel identification. A full complement of options and accessories is available.

For more on the Yaesu VX-2R and VX-2R/E (the European version with 1750 Hz Tone Calling for Repeater Access) contact Vertex Standard, U.S. Headquarters, 10900 Walker St., Cerritos, CA 90630 (1-800-283-7839; e-mail: <vertexstandard @vxstdusa.com>; <http://www.vxstdusa.com>).

MFJ-192 Wireless Weather Station. Are we amateurs interested in the weather? Of course we are, and in a big way. To meet this interest, MFJ Enterprises has introduced its complete Wireless Weather Station, the MFJ-192, with bright display and one remote sensor (photo B). It is priced attractively at $59.95.

Here's some of what you get: an indoor temperature range of +32° F to +122° F; humidity range of 20% relative humidity (RH) to 99% RH; humidity resolution of 1% RH; accurate quartz clock; 24/12 hour switch; two time zones, with

Photo B– MFJ Enterprises has introduced a Wireless Weather Station, the MFJ-192 with bright display and one remote sensor. An impressive feature is the storm alarm, which sounds a warning alarm when conditions may become threatening. (Photo courtesy MFJ Enterprises)

*289 Poplar Drive, Millbrook, AL 35054-1674
e-mail: <w8fx@cq-amateur-radio.com>

scroll-mode alternatives; date/day display; a transmission range of 100 feet maximum; transmission frequency of 433.92 MHz; a brilliant green backlight that shines for 3 seconds; forecast icons of sunny, slightly sunny, cloudy, rainy, and stormy; maximum/minimum temperature recording; and pressure trend.

Perhaps the most impressive feature is the storm alarm, which sounds a warning when conditions may become threatening. With it, you have a good chance to unplug your equipment in case of lightning. This is just the thing for those of us who don't know when to quit hamming and protect the shack from danger!

The unit uses two AA 1.5 V batteries (not included) for the receiver; the outdoor remote sensor, with a range of +14° F to +122° F, uses three AAA batteries (also not included).

The MFJ-192 comes complete with one outdoor sensor. Additional MFJ-192S sensors are $19.95 each. You may select up to three sensors, allowing monitoring of three different zone areas of interest within range.

For additional information or a free catalog, contact MFJ Enterprises, Inc., 300 Industrial Park Road, Starkville, MS 39759 (1-800-647-1800; e-mail: <mfj@mfjenterprises.com>; on the web: <http://www.mfjenterprises.com>).

Novatech Model 2904A Function Generator. Like many amateurs, I like to visualize rugged, high-accuracy, top-of-the-line "dream" gear, even if the gear might be well outside my price range. If only the best will do in your radio ham shack or lab, Novatech Instruments has a function generator just for you.

Novatech has announced the Model 2904A, a precision function generator in a tabletop instrument case (photo C). The Model 2904A outputs sine, cosine, and TTL signals

Photo C– If only the best will do in your radio ham shack or lab, Novatech Instruments has a first-class function generator for you. It's the Model 2904A in a tabletop instrument case. Details are in this month's column. (Photo courtesy Novatech Instruments, Inc.)

simultaneously. The sine and cosine output amplitudes are programmable with 12 bits of resolution, the output frequency is programmable from 1 Hz to 10 MHz, and the phases can be controlled to 14 bits of resolution. Programmable functions include frequency sweep, chirp, FSK, and BPSK. The 2904A includes an internal TXCO with ±1 PPM accuracy and excellent spectral purity.

Menu-driven Windows® software is included to make it easy for you to use the unit's many features. An RS232 serial interface is provided, and an optional USB adapter is available.

Photo D– The AT-897 Autotuner is new from LDG Electronics. The unit was designed specifically for the Yaesu FT-897 transceiver and mounts directly on the side of the radio. The tuner is compatible with the One-Touch Tune hardware from W4RT Electronics. (Photo courtesy LDG Electronics)

The Model 2904A also can be used in command mode from any DOS, Windows®, Unix®, or Linux based computer. You can save programmed settings in nonvolatile memory.

For more information and pricing, contact Novatech Instruments, Inc., P.O. Box 55997, Seattle, WA 98155-0997 (phone 206-3634367; e-mail: <sales@novatech-instr.com>; web: <http://www.novatech-instr.com>).

Antennas and Accessories

Two New Tuners from LDG Electronics. As we mentioned in a recent column, Dwayne Kincaid, WD8OYG, of LDG Electronics, has introduced a new line of high-tech tuners that tune from memory. He also told us that over the next few months he'll announce "lots of cool new products."

Dwayne has done just this with the recent release of the AT-897 Autotuner. The AT-897 was designed specifically for the Yaesu FT-897 transceiver and mounts directly on the side of the radio (photo D). Power is drawn directly from the radio via the supplied CAT cable; there is a second connector for the CAT port on the AT-897 so you will not lose functionality of the port. The new LDG Electronics tuner was specifically designed to be compatible with the One-Touch-Tune hardware from W4RT Electronics (on the web: <http://www.w4rt.com>).

The AT-897 handles 0.1 to 100 watts over 1.8 to 54 MHz continuous. It tunes coax-fed antennas that have a 10:1 SWR or less. An external balun can be used for random-length or long-wire antennas. Power requirements are 10 to 18 VDC, powered from the CAT port of the radio. The front panel features a tune/bypass button and a status LED. The AT-897 retails for $239 plus shipping. The enclosure measures 10.5" × 3.25" × 1.5". Weight is approximately 1.5 lbs.

At the same time, LDG also announced their 1000 watt AT-1000 (photo E). The AT-1000 Autotuner features a cross-needle meter reading forward and reflected power and SWR. User control is performed from the front panel of the AT-1000, which includes the ability to fine-tune the adjustment of the tuning inductors and capacitors. Tuning is performed with the amp in standby. Once a low SWR is obtained, you can switch the amp to operate.

The AT-1000 specs include handling 1000 watts SSB, 750 watts CW, or 500 watts continuous. Minimum tuning power required is 20 watts. The unit covers 1.8 to 54 MHz continuous. It tunes coax-fed antennas that have a 10:1 SWR or less. A balun of suitable power rating can be used for random-length or long-wire antennas. Power requirements are 11 to 18 VDC @ 1 amp. The enclosure measures 13" × 9" × 3", and its weight is approximately 6 lbs. The AT-1000 retails for $599 plus shipping.

Contact LDG Electronics, 1445 Parran Road, St. Leonard, MD 20685 (phone 410-586-2177; e-mail: <ldg@ ldgelectronics.com>; on the web: <http://www.ldgelectronics.com>).

MFJ Manually Tuned Screwdriver Antennas. MFJ's series of Manual Tuned Screwdriver Antennas (photo F) let you turn boring automobile drives into fun-filled ham radio adventures. Each antenna comes with a 4.5 ft. and a 10 ft. telescopic whip.

MFJ's Manual Screwdriver Antenna Series consists of continuous-coverage, multiband, vertical HF antennas built for mobile (with 4.5 ft. whip) and stationary (10 ft. whip) use. The advantages of these antennas are the size and ease of operation; the smallest model can easily fit into a briefcase. With them, you can operate anywhere with any HF transceiver: in your vehicle mobile or on the side of the road; on your apartment balcony; or from a mountaintop, campground, or motel room.

The antennas are tuned by sliding the aluminum cover over the coils; the coils can be marked for quick band changes. The antennas are made of tin-plated copper wire wound around a grooved PVC core with optimum spacing for maximum Q. Copper beryllium finger stock completely surrounds the coils for solid connection. All unused turns on the antennas are shorted out and completely shielded. Once tuned, a nylon-tipped thumbscrew locks the cover in place to prevent movement.

Four antenna models are available in the series: the MFJ1661, MFJ-1662, MFJ-1664, and MFJ-1668. Prices range from $129.95 to $189.95, depending on band configuration. Various optional accessories also are available for the antennas.

Photo E– LDG Electronics also has announced their 1000 watt autotuner, the AT-1000, which features a cross-needle meter reading forward and reflected power and SWR. User control is performed from the front panel of the AT-1000. See the column for details. (Photo courtesy LDG Electronics)

Photo F– MFJ's Manual Tuned Screwdriver Antennas are continuous coverage, multiband, vertical HF antennas built for mobile (with 4.5 ft. whip) and stationary (10 ft. whip) use. Copper beryllium finger stock completely surrounds the coil for solid connection. (Photo courtesy MFJ Enterprises)

As we noted, each model comes with both 4.5 ft. and 10 ft. telescopic whips. Of course, you have to pull over in your car to use the 10 ft. whip. It wasn't made to withstand mobile wind elements and low overhangs; it's for stationary use only. MFJ's telescopic whips have a hex base threaded $^3/_8 \times 24$ stub, and the base is reinforced.

For additional information or a catalog, contact MFJ Enterprises, Inc., 300 Industrial Park Road, Starkville, MS 39759 (1-800-647-1800; e-mail: <mfj@mfjenterprises.com>; <http://www.mfjenterprises.com>).

New on the Net

MAXRAD™ Launches New Discussion Forum. MAXRAD™, which makes "antennas for today's wireless communications"™, has launched a new public discussion forum. The forum is for those interested in antenna-related topics for land mobile, within-building, or broadband wireless access communications. Once you register, you can start posting questions, initiating discussions, or suggesting new product ideas to the MAXRAD™ product development team. You also can learn more about the company's product and marketing initiatives.

To participate, you just go to the MAXRAD™ website, click on the discussion forum link, and complete the registration information. The company will e-mail you a confirmation that your account has been approved. You'll then be ready to post questions or comments, as well as read what others have posted.

For more information, contact MAXRAD™, Inc., 4350 Chandler Drive, Hanover Park, IL 60133 (630-372-6800; e-mail: <support@maxrad.com>; <http://www.maxrad.com>).

Software Announcements from N3FJP. In several columns we profiled N3FJP's Amateur Radio Software Site. As we noted, many useful shareware and freeware amateur radio programs are offered here. You'll find the site, designed and operated by Scott Davis, N3FJP, at <http://www.n3fjp.com>.

Recently, Scott made changes to his e-mail list procedure. It seems that the number of N3FJP software users is now so large that it has become difficult for him to send e-mail to the group directly from his AOL e-mail account. Consequently, he's set up a Yahoo Users Group to replace the e-mail list. If you're on his list and want to continue to receive e-mail announcements concerning upgrades, enhancements, and new releases, you should subscribe to this group. If you no longer wish to receive e-mail from N3FJP Software, no action on your part is required.

This N3FJP Software group is set up so that Scott's the only one allowed to post to it, so you won't be swamped with e-mail by subscribing. Just send a blank e-mail to: <N3FJP_Software-subscribe@yahoogroups.com>, or link to: <http://groups.yahoo.com/group/N3FJP_Software/>. Scott also offers a separate group, N3FJP Software Users, for extended discussions.

For more details, contact G. Scott Davis, at 118 Glenwood Rd., Bel Air, MD 21014-5533 (e-mail: <snkdavis@aol.com>; <http://www.n3fjp.com>).

From the Bookshelf

Bebop to the Boolean Boogie. As we've noted previously, Newnes offers many book titles in computing, electronics and electrical engineering, broadcasting, film and TV, video and audio, and other technology. One new "catchy" Newnes title is of special note: *Bebop to the Boolean Boogie*. Subtitled "An Unconventional Guide to Electronics," this entertaining, highly readable book provides a solid, compre-

hensive introduction to contemporary electronics. Written in a quirky fun style, it has generated a strong following for the author, Clive "Max" Maxfield.

It's not a "how-to-do" electronics book. Rather, it's an in-depth explanation of how today's integrated circuits work, how they are designed and manufactured, and how they are put together into powerful and sophisticated electronic systems. Besides the technical details, the 504-page, $39.99 paperback is packed with practical information of interest and use to engineers and support personnel in the electronics industry. The book even tells you how to pronounce the alphabet soup of acronyms that runs rampant in electronics.

For more information and details, contact Newnes, an imprint of Elsevier Science, 200 Wheeler Road, Burlington, MA 01803 (1-800-545-2522; e-mail: <custserv.bh@elsevier.com>; <http://www.newnespress.com>).

Radio Resources

Low-Cost Weather Instruments from AAG Electronica. Recently, Aitor Arrieta, XE1YAW, told me of his AAG Electronica website where he offers low-cost weather instrument kits and related goodies. He offers the 1-Wire® Weather Instrument Kit V3.0, which at $79 USD is designed to convert your PC into a professional weather station. Measuring wind speed, wind direction, and temperature, the unit lets you view the weather outside from the comfort of your armchair. Point your browser to <http://www.aag.com.mx/weather.html> for details and shipping information.

Aitor also notes that TAPR (Tucson Amateur Packet Radio) has used the sensor for its T-238 APRS weather reporting system. Link directly to TAPR at <http://www.tapr.org/tapr/t238.html> for availability and other information. (When we checked, we found the T-238 kit is sold out, but a new design is in the works.)

Contact Aitor Arrieta, XE1YAW, at AAG Electronica LLC, 413 Interamerica Blvd., Suite 01-1018, Laredo, TX 78045 (telephone: +52[442]215-3166; e-mail: <aag@aagelectronica.com>; <http://www.aagelectronica.com>). The AAG Electronica website also features a number of 1-Wire sensors, thermocouples, counters, hubs, conversion kits, and related items.

Cheap Antenna Hanger Idea de WA4JA. Recently, John Almon, WA4JA, wrote to tell us of a "cheap antenna hanger" idea that he found in a local Academy Sports store. Other stores should have the $2.99 Lantern Hanger he found, since it's made by Texsport®, which has good distribution (go to <http://www.texsport.com>).

The Lantern Hanger is simply a couple of formed pieces of metal that have a semi-hook on the far end to hang a lantern. It should work well as a Field Day or portable wire antenna anchor point. The hook also comes complete with a 55 inch chain to wrap around a tree or pole. The other end of the hook piece has a couple of spikes to hold tension against the bark.

John says that depending on how high you can get the hook, the hanger should work well for slopers and low dipoles. Plus, since it costs only about $3, a pair is cheaper than a fishing pole or line shooter. John admits that he hasn't actually tried out his idea, but if you do so, let us and John know the results. You can contact John via e-mail at <almonj@mindspring.com>.

Wrap-Up

That's all for this time, gang. Next time more "What's New." See you then.

Overheard: I've always been especially thankful if I can work at a job that's actually worth doing.

73, Karl, W8FX

How and When To Call

BY CARL SMITH,* N4AA

The temperature has started its downward trend here in early September, a sure sign that fall and winter are not far away for those of us in the "north." We can expect some improvement in propagation, but with the 11-year cycle on the downhill side, it won't be great. This is the time for DXers to be paying more attention to those lower frequency bands, checking the logs to see what they need, and watching the DX news sources to see if they can pick up any new ones. I also keep hearing stories about guys putting up some pretty impressive antenna systems for 160, 80, and 40 meters. Those huge Yagi arrays for 80 meters are beyond the capability of most DXers, so we will just have to make do with our little wires, verticals, etc. Now is the time when patience will pay off, along with using some "tricks of the trade."

Several books I've mentioned before—*The Complete DXer,* by Bob Locher, W9KNI, and *Up Two,* by Roger Western, G3SXW (both available from Idiom Press, <www.idiompress.com>)—reveal some of those "tricks," and I encourage you to pick up one, or both, of them and see if you find something to help you as you chase low-band DX over the next few years. Of course, the book *Low Band DXing,* by John, ON4UN (published by the ARRL, <www.arrl.org>, offers a lot of ideas for those low bands, too.

Mike, KM9D, and Jan, KF4TUG, have been sailing the Don Henry *yacht around the Pacific, stopping and operating from various locations. Most recently they were in Vanuatu (YJ) waiting for a license so they could operate from there. (Photo courtesy Jan, KF4TUG)*

Listen . . . and Wait

I'm going to get on the soapbox again this month with something about operating that recently came up. A reader commented:

XXXXX had a nice simplex pile-up going on 7004. He was using proper QSO exchange procedure in that in his ending QSO transmission he was giving the callsign of the station he had just worked and his own callsign.

A big problem, however, was that most stations trying to work XXXXX were not waiting for him to end his QSO exchange. Instead, they hammered their calls while XXXXX was still transmitting. Do stations doing this not realize that if XXXXX is still transmitting, he cannot hear their initial calls?

Also, don't they realize that many times they prevent the station that XXXXX just worked from confirming his QSO? Don't they realize that they are blocking the callsign of XXXXX, preventing other stations from getting a proper callsign ID?

I just wonder how many other "Little Pistols" didn't make it because of this premature calling??

This is another one of those operating techniques that should have been learned as a novice DXer. How and when to call are two of the most important things a DXer should learn. The old days of "tail-ending" worked for many of us, but that was then—not now. Most DXpeditioners won't accept that type of operation any more. It creates havoc, with tremendous QRM, as dozens of impatient DXers throw their callsigns out there. It's bad enough when the DX station finishes a contact and everyone starts calling. Tail-ending worked in years gone by, but it just doesn't fit today's operation with split frequencies, etc.

The reader quoted here notes that this station was operating "simplex." This is not a good idea these days for a DX station with any size pile-up. At least split operation levels the playing field somewhat in that (without frequency "Kops") we usually can still hear the DX station. However, timing our

Members of the LLDXT (Low Land DXpedition Team) operating from the Faroe Islands (OY) earlier this year. Here we see Ronald, PA3EWP, and Dick, PA3FQA, keeping the pile-ups happy. They made nearly 27,000 QSOs even with poor propagation. (Photo courtesy Ronald, PA3EWP)

*P.O. Box DX, Leicester, NC 28748-0249
e-mail: <n4aa@cq-amateur-radio.com>

The WPX Program

CW

3119 ..... W2OO
3120 ..... N4JED
3121 ..... N4GM

SSB

2873 ..... WA5VKS
2874 ..... CT1DWJ
2875 ..... KB9VMP
2876 ..... N4JED

Mixed

1926 ..... N4JED
1927 ..... AK6I

CW: 450 W2OO, N4JE. 550 N4GM. 750 VE3CR. 1250 AI6Z. 1400 HB9DOT. 2150 JH3SAC. 2250 K9UQN. 2300 OZ5UR.

SSB: 350 KA9HFA. 650 W2OO, JK7QJK, IZØBNR. 750 AK6I. 800 KU4BP, VE3CR. 1050 AI6Z.

MIXED: 700 EA5QB. 750 AK6I. 800 JHØSGG. 1100 VE3CR. 1600 AI6Z. 1750 N4JED. 2650 K9UQN. 3350 I5RFD.

10 Meters: W2OO, JK7QJK, AK6I
15 Meters: W2OO, AK6I
20 Meters: W2OO, AK6I, AI6Z
40 Meters: W2OO
80 Meters: AI6Z
160 Meters: W2OO, JA6GWU

Asia: W2OO, AK6I
Africa: AI6Z
Europe: W2OO, AK6I
N. America: W2OO, KB9VMP, AK6I
S. America: AI6Z
Oceania: AK6I

Award of Excellence Holders: N4MM, W4CRW, K5UR, K2VV, VE3XN, DL1MD, DJ7CX, DL3RK, WB4SIJ, DL7AA, ON4QX, 9A2AA, OK3EA, OK1MP, N4NO, ZL3GQ, W4BQY, IØJX, WA1JMP K0JN, W4VQ, KF2O, W8CNL, W1JR, F9RM, W5UR, CT1FL, WA4QMQ, W8ILC, VE7DP, K9BG, W1CU, G4BUE, N3ED, LU3YL/W4, NN4Q, KA3A, VE7WJ, VE7IG, N2AC, W9NUF, N4NX, SMØDJZ, DK5AD, WD9IIC, W3ARK, LA7JO, VK4SS, I8YRK, SMØAJU, N5TV, W6OUL, ABØP, FM5WD, I2DMK, SM6CST, VE1NG, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, HA8XX, K7LJ, SM3EVR, K2SHZ, UP1BZZ, EA7OH, K2POF, DJ4XA, IT9TQH, ONL-4003, W5AWT, KBØG, HB9CSA, F6BVB, YU7SF, DF1SD, K7CU, I1PO, K9LNJ, YBØTK, K9QFR, 9A2NA, W4UW, NXØI, WB4RUA, I6DQE, I1EEW, I8RFD, I3CRW, VE3MC, NE4F, KC8PG, F1HWB, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, KC7EM, YU1AB, W5ODD, IØRIZ, I2MQP, F6HMJ, HB9DDZ, WØULU, K9XR, JAØSU, I5ZJK, I2EOW, IK2MRZ, KS4S, KA1CLV, KZ1R, CT4UW, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, OE1EMN, W9IL, S53EO, DF7GK, I7PXV, S57J, EA8BM, DL1EY, KØDEQ, KU0A, DJ1YH, OE6CLD, VR2UW, 9A9R, UAØFZ, DJ3JSW, HB9BIN, N1KC, SM5DAC, RW9SG, WA3GNW, S51U, W4MS, I2EAY, RAØFU, CT4NH, EA7TV, W9IAL, LY3BA, K1NU, W1TE, UA3AP, EA5AT, OK1DWC, KX1A, IZ5BAM, W4BP, K4LQ, KØKG, DL6ATM, VE9FX, DL2CHN.

160 Meter Endorsement: N4MM, W4CRW, K5UR, VE3XN, DL3RK, OK1MP, N4NO, W4BQY, W4VQ, KF2O, W8CNL, W1JR, W5UR, W8RSW, W8ILC, G4BUE, LU3YL/W4, NN4Q, VE7WJ, VE7IG, W9NUF, N4NX, SM0DJZ, DK3AD, W3ARK, LA7JO, SMØAJU, N5TV, W6OUL, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, UR1QD, AB9O, FM5WD, SM6CST, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, K7LJ, SM3EVR, UP1BZZ, K2POF, IT9TQH, N8JV, ONL-4003, W5AWT, KBØG, F6BVB, YU7SF, DF1SD, K7CU, I1POR, YBØTK, K9QFR, W4UW, NXØI, WB4RUA, I1EEW, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, YU1AB, IK4GME, WX3N, WBØDD, IØRIZ, I2MQP, F6HMJ, HB9DZZ, K9XR, JAØSU, I5ZJK, I2EOW, KS4S, KA5CLV, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, S53EO, S57J, DL1EY, KØDEQ, DJ1YH, OE6CLE, HB9BIN, N1KC, SM5DAC, S51U, RAØFU, UAØFZ, CT4NH, W1CU, EA7TV, LY3BA, RW9SG, K1NU, W1TE, UA3AP, OK1DWC, KX1A, IZ5BAM, W4GP, DL6ATM.

Complete rules and application forms may be obtained by sending a business-size, self-addressed, stamped envelope (foreign stations send extra postage if airmail desired) to "CQ WPX Awards," P.O. Box 593, Clovis, NM 88101 USA. ***NOTE:*** *WPX will not accept prefixes/calls which have been confirmed by computer-generated electronic means.*

"QRZ, this is Hotel 74 Charlie." The family team of Mike, AD5A, and his sons Michael, AB5EB, and Jake, KB5KSN, spent some time activating Little Corn Island (NA-013) last spring using the callsign H74C. In the end they made nearly 4000 QSOs pretty evenly split between SSB and CW, with just a bit of PSK31 operation. (Photo courtesy Mike, AD5A)

calls is critical if we expect to be heard. As noted above, if the DX station is still transmitting, he certainly can't hear *anyone* calling him. If you can't be heard, why waste your time, and the time of others, generating QRM? Think about that!

A point made repeatedly in the books mentioned earlier is "LISTEN-LISTEN-

CQ DX Awards Program

SSB

2411 ..... PY1LJ
2412 ..... KW1DX
2413 ..... WØROB
2414 ..... YBØIR

RTTY

34 ..... OK1MP

SSB Endorsements

320 ..... OK1MP/335
320 ..... K2ENT/335
320 ..... K1UO/333
320 ..... ZL1BOQ/330
320 ..... CT1CFH/329
320 ..... EA1JG/327
320 ..... EA3CYM/323
300 ..... KW1DX/295
275 ..... WØROB/287
28 MHz PY1LJ

CW Endorsements

320 ..... OK1MP/334
320 ..... K2ENT/334
320 ..... K1FK/324
310 ..... W6YQ/312

RTTY Endorsements

320 ..... K2ENT/333
320 ..... K3UA/325
310 ..... OK1MP/312

The basic award fee for subscribers to *CQ* is $6. For non-subscribers, it is $12. In order to qualify for the reduced subscriber rate, please enclose your latest *CQ* mailing label with your application. Endorsement stickers are $1.00 each plus SASE. Updates not involving the issuance of a sticker are free. All updates and correspondence must include an SASE. Rules and application forms for the CQ DX Awards may be found on the <www.cq-amateur-radio.com> website, or may be obtained by sending a business-size, self-addressed, stamped envelope to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. Currently we recognize 335 active countries. Please make all checks payable to the award manager.

5 Band WAZ

As of September 15, 2003, 634 stations have attained the 200 zone level and 1343 stations have attained the 150 zone level.

New recipients of 5 Band WAZ with all 200 zones confirmed:

None

The top contenders for 5 Band WAZ (zones needed, 80 meters):

N4WW, 199 (26)
W4LI, 199 (26)
K7UR, 199 (34)
W0PGI, 199 (26)
W2YY, 199 (26)
VE7AHA, 199 (34)
IK8BQE, 199 (31)
JA2IVK, 199 (34 on 40m)
NN7X, 199 (34)
IK1AOD, 199 (1)
DF3CB, 199 (1)
GM3YOR, 199 (31)
VO1FB, 199 (19)
KZ4V, 199 (26)
W6DN, 199 (17)
W6SR, 199 (37)
W3NO, 199 (26)
K4UTE, 199 (18)
HB9DDZ, 199 (31)
RU3FM, 199 (1)
HB9BGV, 199 (31)
N3UN, 199 (18)
OH2VZ, 199 (31)
K5MC, 199 (22)
W1JZ, 199 (24)
K2UU, 199 (26)
W1WAI, 199 (24)
W1FZ, 199 (26)
SM7BIP, 199 (31)
PY5EG, 199 (23)
SP5DVP, 199 (31 on 40)
KY7M, 199 (34)
W8AEF, 199 (40)
K8RR, 199 (26)
UU5JR, 199 (4)
W8GF, 199 (22)
N4NX, 199 (26)
OE2BZL, 199 (1)
EA5BCX, 198 (27, 39)
G3KDB, 198 (1, 12)
KG9N, 198 (18, 22)
UA4PO, 198 (1, 2)
JA1DM, 198 (2, 40)
9A5I, 198 (1, 16)
K5PC, 198 (18, 23)
K4CN, 198 (23, 26)
KF2O, 198 (24, 26)
G3KMQ, 198 (1, 27)
N2QT, 198 (23, 24)
OK1DWC, 198 (6, 31)
W4UM, 198 (18, 23)
US7MM,198 (2, 6)
K2TK, 198 (23, 24)
K3JGJ, 198 (24, 26)
W4DC, 198 (24, 26)
N4XR, 198 (22, 27)
N4PQX, 198 (24, 26)
RU3DX, 198 (1, 6)
UT5JAJ, 198 (12, 30)
N6HR/7, 198 (34, 37)
N4MM, 198 (24, 26)

The following have qualified for the basic 5 Band WAZ Award:

VE6ZT (151 zones)
HB9DOT (153 zones)

Endorsements:

None

****Please note: Cost of the 5 Band WAZ Plaque is $80 ($100 if airmail shipping is requested).**

Rules and applications for the WAZ program may be obtained by sending a large SAE with two units of postage or an address label and $1.00 to: WAZ Award Manager, Paul Blumhardt, K5RT, 2805 Toler Road, Rowlett, TX 75089. The processing fee for the 5BWAZ award is $10.00 for subscribers (please include your most recent *CQ* mailing label or a copy) and $15.00 for nonsubscribers. An endorsement fee of $2.00 for subscribers and $5.00 for nonsubscribers is charged for each additional 10 zones confirmed. Please make all checks payable to Paul Blumhardt. Applicants sending QSL cards to a *CQ* checkpoint or the Award Manager must include return postage. K5RT may also be reached via e-mail: <k5rt@cq-amateur-radio.com>.

The WAZ Program

15 Meter CW

314 ..... JA9RT

160 Meters

109 ..... DL3JJ (endorsement 40 zones)
186 ..... LY3UM (31 zones)

All Band WAZ

SSB

4881 ..... K4DXA
4882 ..... JE1GZB

Mixed

8254 ..... JA1ODB
8255 ..... N4QI

All CW

384 ..... KT2C
385 ..... JA3WLN
386 ..... SP3VT
387 ..... DL5KUA

Rules and applications for the WAZ program may be obtained by sending a large SAE with two units of postage or an address label and $1.00 to: WAZ Award Manager, Paul Blumhardt, K5RT, 2805 Toler Road, Rowlett, TX 75089. The processing fee for all *CQ* awards is $6.00 for subscribers (please include your most recent *CQ* mailing label or a copy) and $12.00 for nonsubscribers. Please make all checks payable to Paul Blumhardt. Applicants sending QSL cards to a *CQ* checkpoint or the Award Manager must include return postage. K5RT may also be reached via e-mail: <k5rt@cq-amateur-radio.com>.

LISTEN." Pay attention to what the operator is saying and where he is listening. Is he working simplex? If he's working split, is he moving up or down after each contact to find the next contact? Is he working "by the numbers" (targeting particular call areas)? If he is, don't call out of turn; it just causes more unnecessary QRM.

Every DX operator has his/her own way of operating. There are some basics to which they all adhere, but each one does things a little differently. If you don't spend at least a few minutes listening, you may end up spending hours sitting there yelling your head off and getting nowhere. Most of today's radios allow you to at least switch between VFO A and B, if not listen simultaneously with the sub-receiver. With this capability it is very easy to locate the station being worked, listen to the pile-up, and determine where the DX station is listening so you can time your call on a frequency where he is most likely to hear you.

As we spend more time on the low bands, where "local" signals tend to be very loud, let's try to be more responsible in our operating technique so everyone has a reasonable chance of hearing and being heard.

DXpeditions

Kure Atoll KH7K was expected to be on the air in October. Unfortunately, there were some difficulties related to access because of wildlife and transportation that had not been anticipated. This DXpedition has been postponed until early 2004, but it *will* take place according to Kimo, KH7U. Keep watching DX news sources for the latest developments on this one.

As this is being written, **Annobon 3CØ** is scheduled for a major operation the end of September and early October. Ranked at #21 on *The DX Magazine*'s Most Wanted survey for 2002, this one is sure to generate a lot of interest worldwide for a couple of weeks.

Pratas BQ9P was scheduled for October 9–16. Hopefully you were able to catch this one if you needed it. Paul, BV4FH, periodically puts together trips to Pratas as time and conditions permit,

CQ DX Honor Roll

The CQ DX Honor Roll recognizes those DXers who have submitted proof of confirmation with 275 or more ACTIVE countries. With few exceptions, the ARRL DXCC Countries List is used as the country standard. The CQ DX Award currently recognizes 335 countries. Honor Roll listing is automatic when an application is received and approved for 275 or more active countries. Deleted countries do not count and all totals are adjusted as deletions occur. To remain on the CQ DX Honor Roll, annual updates are required. All updates must be accompanied by an SASE if confirmation of total is required. The fee for endorsement stickers is $1.00 each plus SASE. Please make checks payable to the awards manager, Billy F. Williams. All updates should be mailed to P.O. Box 9673, Jacksonville, FL 32208.

CW

K2TQC 334	K4MQG 334	N7RO 333	W1WAI 331	W4UW 329	NC9T 326	KUØS 322	CT1YH 313	K4IE 291
K2FL 334	EA2IA 334	K4CN 333	K2JF 331	K1HDO 328	W7IIT 326	KE5PO 322	PY4WS 313	KD8IW 288
K9BWQ 334	PA5PQ 334	W4MPY 333	K3JGJ 331	K7JS 328	W4LI 325	K6CU 321	N1HN 313	EA3BHK 282
K9MM 334	K3UA 334	PY2YP 333	PT2TF 331	K9OW 328	OK1MP 325	HA5DA 321	K9DDO 312	YC2OK 282
W7OM 334	DL3DXX 334	K6GJ 332	W2VJN 331	K9IW 328	WA8DXA 325	IKØTUG 321	W3II 312	DJ1YH 281
K2JLA 334	K2ENT 334	KA7T 332	N4CH 331	K8PV 327	I5XIM 325	VE7DX 320	W6YQ 312	UA9SG 279
N7FU 334	OK1MP 334	W8XD 332	W2UE 330	W4QB 327	K5UO 325	IKØADY 320	KF8UN 308	XE1MD 278
K2OWE 334	WB5MTV 333	WØJLC 332	I4LCK 330	I1JQJ 327	IK2ILH 325	WG5G/QRPp 320	YU7FW 306	EA2CIN 278
N4MM 334	W7CNL 333	K8LJG 332	VE7CNE 330	YU1TR 327	N5FW 325	HA5NK 319	LU3DSI 302	I3ZSX 276
F3TH 334	YU1HA 333	YU1AB 332	4N7ZZ 330	I4EAT 327	9A2AA 325	F6HMJ 319	N1KC 302	G3DPX 275
F3AT 334	IT9QDS 333	K5RT 332	W6DN 330	DL8CM 327	N4OT 325	N7WO 318	KH6CF 301	WA4DOU 275
DJ2PJ 334	G4BWP 333	NØFW 332	K7LAY 330	SM6CST 327	LA7JO 324	G3KMQ 317	VE7KDU 300	
WA4IUM 334	K4CEB 333	N4AH 332	WB4UBD 330	N4KG 327	SM5HV/HK7 324	OZ5UR 317	W9IL 300	
W4OEL 334	K4IQJ 333	HB9DDZ 332	G3KMQ 329	K4JLD 327	K1FK 324	F5OIU 317	KØHQW 299	
W2FXA 334	WØHZ 333	K6LEB 331	KZ4V 329	IT9TQH 326	9A2AJ 323	YT1AT 317	WG7A 295	
N4JF 334	N5FG 333	VE3XN 331	N5HB 329	I2EOW 326	W6SR 323	K8JJC 315	KE3A 295	

SSB

K6YRA 335	4Z4DX 335	K3UA 334	EA3BMT 332	CT1EEN 329	I1JQJ 327	LU7HJM 322	YV5NWG 311	KØOZ 291
K2TQC 335	N7RO 335	K4JLD 334	W2FKF 332	CT1CFH 329	CP2DL 327	K5NP 322	LU3HBO 310	W4PGC 290
W6EUF 335	IØZV 335	N5ZM 334	DL9OH 331	KE4VU 328	NI5D 327	WA4ZZ 322	SV3AQR 310	I3ZSX 290
K2JLA 335	EA2IA 335	PY2YP 334	N2VW 331	K1HDO 328	EA1JG 327	WN9NBT 322	HA6NF 310	WØROB 287
K4MQG 335	IN3DEI 335	AA4S 334	YZ7AA 331	K5UO 328	W6SR 326	LU5DV 322	WA5MLT 310	KKØDX 285
IK1GPG 335	EA4DO 335	4N7ZZ 333	YV1JV 331	KF8UN 328	N4KG 326	WW1N 322	XE2LV 310	VE7HAM 285
K5OVC 335	PA5PQ 335	KE5PO 333	WA4WTG 331	EA3EQT 328	K7TCL 326	N3RX 321	EA3BHK 307	F5RRS 284
NØFW 335	K9OW 335	VE1YX 333	W8KS 331	WØULU 328	W9HRQ 326	XE1CI 321	RW9SG 307	N8LIQ 284
K9MM 335	W6DPD 335	I4LCK 333	YV5IVB 331	K1EY 328	W4QB 326	CT1ESO 321	XE1MDX 305	WØIKD 283
W6BCQ 335	XE1VIC 335	W2JZK 333	KX5V 331	KZ4V 328	K8PV 326	EA8TE 321	EA5OL 305	W9ACE 283
XE1AE 335	K2ENT 335	K8LJG 333	I8LEL 331	XE1D 328	DL6KG 326	W6MFC 321	WB2AQC 305	KBØRNC 282
W7OM 335	OK1MP 335	VE4ACY 333	K3JGJ 331	KD8IW 328	W4LI 326	N4CSF 320	KC4FW 304	WN6J 281
KZ2P 335	IZ6GPZ 335	KØKG 333	N5ORT 331	KE3A 328	WR5Y 326	N4HK 320	K3BYV 303	IK8TMI 281
IK8CNT 335	WDØBNC 334	W4WX 333	PT2TF 331	W9IL 328	W5LLU 326	KØFP 320	YC2OK 303	F5JSK 281
VK4LC 335	DU9RG 334	VE2WY 333	CT1AHU 331	KE3A 328	N1ALR 326	EA7TV 320	WB2NQT 303	KA5OER 280
OE7SEL 335	K2FL 334	WB3DNA 333	EA3JL 331	K3LC 328	K9IW 326	SV1RK 320	VK3IR 303	KK5UY 280
VE3MR 335	WØYDB 334	K6GJ 333	W6DN 330	I1EEW 327	WA4JTI 325	N1KC 320	VE7KDU 302	YU1TR 280
VE3MRS 335	W4UW 334	W9SS 333	K8CSG 330	SV1ADG 327	HB9DDZ 326	WA4DAN 319	W2GZI 302	F5INJ 279
K4MZU 335	K9BWQ 334	K9PP 333	YV1CLM 330	DL8CM 327	WA4JTI 325	CE1YI 318	N5QDE 302	EA3CWT 278
OZ5EV 335	W4NKI 334	W2CC 333	LA7JO 330	F9RM 327	KC4MJ 325	W5OXA 317	KD4YT 302	VE2DRN 277
N7BK 335	WB4UBD 334	VE7WJ 333	AB4IQ 330	XE1MD 327	PY2DBU 325	YV4VN 317	KK4TR 301	9A9R 277
K7LAY 335	W4UNP 334	W3AZD 333	AE5DX 330	I4EAT 327	IKØIOL 325	EA5GMB 317	VE7SMP 301	W6UPI 276
ZL3NS 335	W8AXI 334	DL3DXX 333	KB2MY 330	W3GG 327	YT1AT 325	NK5X 317	SV2CWY 300	Z31JA 275
N4MM 335	VE2GHZ 334	K1UO 333	K3PT 330	AA6BB 327	K7HG 324	K6RO 316	4X6DK 300	G4URW 275
OZ3SK 335	OE2EGL 334	VE2PJ 332	ZL1BOQ 330	SM6CST 327	AC7DX 324	N5HSF 316	YT7TY 300	VE2AJT 275
K7JS 335	WA4IUM 334	YV1KZ 332	WS9V 329	WD8MGQ 327	KØHQW 324	N8SHZ 316	XE2NLD 300	4Z5FL/M 275
XE1L 335	K5RT 334	YV1AJ 332	K2JF 329	CX4HS 327	EA3BKI 323	KE4SCY 315	K4IE 300	
YU1AB 335	W2FXA 334	KSØZ 332	ZL1AGO 329	IØSGF 327	K4JDJ 323	WZ3E 314	K6GFJ 299	
OE3WWB 335	N4JF 334	I8KCI 332	N5FG 329	IT9TQH 327	EA3BMT 323	IZ6CST 314	AC6WO 297	
K5TVC 335	W6SHY 334	LU4DXU 332	W9OKL 329	IT9TGO 327	W6WI 323	K9YY 313	WA1ECF 295	
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DJ9ZB 335	K4CN 334	W7FP 332	I2EOW 329	UY5XE 327	F6BFI 322	W5GZI 311	N5WYR 293	
PY4OY 335	EA3KB 334	K9HQM 332	VE7DX 329	KW7J 327	K6CF 322	VE3CKP 311	K7ZM 292	
VE3XN 335	N4CH 334	CT1EEB 332	W2FGY 329	KE5K 327	K6CF 322	CT1YH 311	OA4EI 292	

RTTY

K2ENT 333	NI4H 325	EA5FKI 320	G4BWP 312	PA5PQ 311	W4EEU 299	I2EOW 291	W4QB 280	YC2OK 280
WB4UBD 329	K3UA 325	W2JGR 316	OK1MP 312	N5FG 305	KE5PO 297	I1JQJ 289		

so you should not have a problem working this one.

I had just finished this column when an announcement came in from Bob Allphin, K4UEE, on a DXpedition to one of the Top Ten Most Wanted. Here's the story:

Planned DXpedition to Peter I Island, Antarctica

Bob Allphin, K4UEE, and Ralph Fedor, KØIR, are pleased to announce they have organized a DXpedition to Peter I Island (3YØ/P). The DXpedition is scheduled to occur during the upcoming Austral summer 2004. Their 15-person team is scheduled to depart from Ushuaia, Argentina on January 3, 2004 and arrive at Peter I on approximately January 9th (± weather). They will build the camp infrastructure and install all antennas before going QRV. This will be a high-power DXpedition with an international team of experienced operators and multiple stations on all HF bands covering SSB, CW, and RTTY modes.

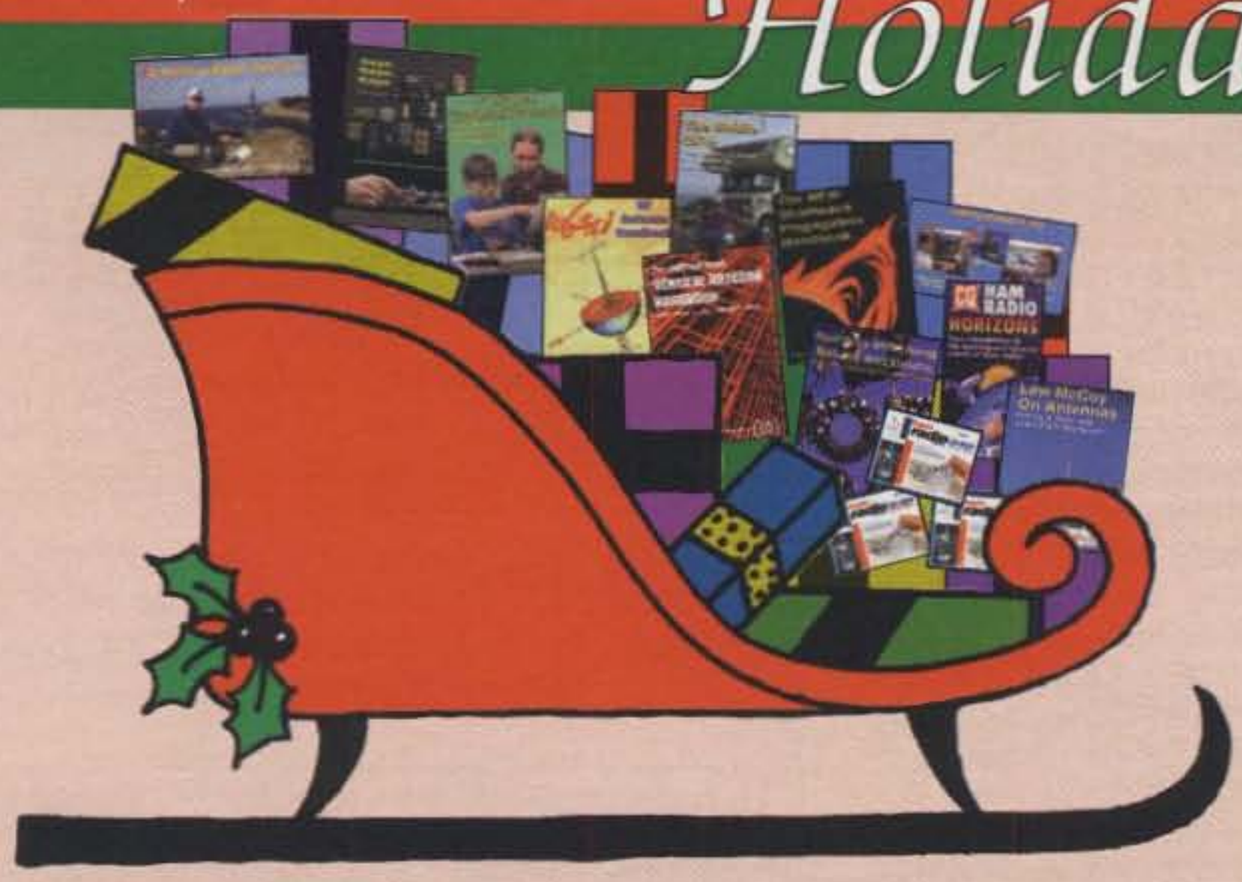
The team hopes for a three-week stay on Peter I. Weather, of course, may dictate otherwise. Additional details including QSL information, website, and the team roster will be forthcoming. Several operator positions are available.

Also, there are opportunities for ham or non-ham travelers to visit Peter I, the Antarctic continent, and the South Shetland Islands, returning around January 19th to Ushuaia, Argentina. Contact Bob, K4UEE, at: <k4uee@arrl.net> for information.

This is great news, as Peter I is in the top ten of the most-wanted surveys the world over. A three-week operation by this group will certainly provide ample opportunity for everyone to get a chance to put this one in the log.

Unfortunately, there have been no rumors of any planned operations from any of the other top 25 Most Wanted in the near future. Most DXers are begging for VU4, BS7, VU7, P5, 7O, etc., but there doesn't appear to be anything in the works for any of those. A lot of DXers only need one or two of them to make it to the top of the Honor Roll, and it doesn't look as if that will happen any time soon. Other operations of which I am not aware may be in the planning stages, though,

Holiday gift ideas



33 Simple Weekend Projects

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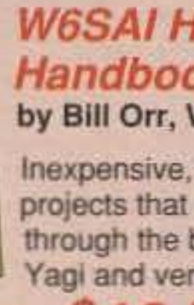

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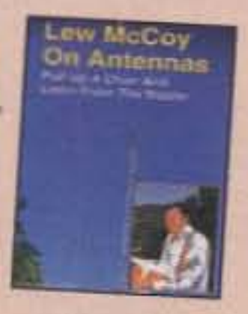
by Lew McCoy, W1ICP



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CS4BWW via CT1BWW
CS4EEP via CT1BWW
CS5BWW via CT1BWW
CS5C via CT1BWW
CS5CRA via CT1BWW
CS5F via HB9CRV
CS6BWW via CT1BWW
CS7BWW via CT1BWW
CS8BWW via CT1BWW
CTØB via CT1BWW
CTØBWW via CT1BWW
CT1BWW via CT1BWW
CT3/CT1EAT via CT1EAT
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CT7JUN via CT1BWW
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ED6LGH via EA6LP
EGØ3PFG via EA3MM
EG9IC via EA4URE
EH9IC via EA4URE
EJ5E via EI2SDR
EN72ØK via IK1GPG
ER3IDO via IK3OYY
EZ8AQ via DJ1MM
F/GØMEU/P via ON4ON
FH/F5SIE via F5SIE
FH/G4IRN via G4IRN
FO/DF6IC via DF6IC
FO/DJ4OI via DJ4OI
FO/DL1IAN via DL1IAN
FO/DL3GA via DL3GA
FO/G35WH via G3SWH
FO/G3SWH via G3SWH
FO/G4MFW via ZS1FJ
FS/VA3YDX via VA3YDX
G0RLU via ON4ADN
GB3RN via GØVIX
GB5FI via GWØANA
GB5HQ via G3TXF
GJ2A via GJ3DVC
GM2T via GM4UYZ
GM4V via MMØANT
GM5C via GMØDEQ
GM7X via G3SQX
GU3HFN via MU3EFB
GU8D via G3LZQ
H4ØV via JA1PBV
HBØ/DL7NS via DL7NS
HC2DX via PY2ZM
HGØHQ via HA6NY
HI3/ON4IQ via ON4IQ
HI8ROX via ON4ANT
HKØ/K4QD via K4QD
HKØ/K9MDO via K9MDO
HKØ/N1WON via N1WON
HKØ/N2WB via N2OO
HKØ/N5VL via N5VL
HKØ/W1LR via W1LR
HKØ/W4WX via W4WX
HKØ/W9AAZ via W9AAZ
HL3IUA via JA5AQC
IF9MI via IT9FXY
IK2QPR/VP5 via IK2QPR
IL7M via IZ8CGS
IMØM via ISØBMU
IMØR via ISØAGY
IU3X via IV3SKB
IV3/IN3XUG via IN3XUG

(The table of QSL Managers is courtesy of John Shelton, K1XN, editor of "The Go List," 106 Dogwood Dr., Paris, TN 38242; phone 731-641-4354; e-mail: <golist@golist.net>.)

A really nice collector's item, a QSL from ST2CF. This card belongs to John, KDØJL, for a 15 meter SSB QSO on March 26, 2003.

The back of the ST2CF QSL card shows operator Claudio, IV3OWC, obviously enjoying being such a rare DX station. Also shown is the multiband quad antenna he used. (Photo courtesy KDØJL)

so keep watching and listening. . . . You never know what may happen.

Logbook of The World

I have it on good authority that the Logbook of The World system will be initiated on September 15, so at least the initial phase should be up and running by the time you read this. There should be an article in the October issue of *QST* with details on how it will work. One thing that came from my source is this: *You had better be sure the address on your license is current.* If it is not, you are not going to be able to register to obtain your "digital certificate," and without that certificate, you will not be able to use the LoTW. I'm told that approximately 25% of the licensees in the U.S. have an *invalid* address on their license. Are you one of them?

A number of things about the LoTW have been discussed, but I think the best thing for all of us to do is either go to the ARRL website or read the October *QST* article to get the details. A number of minor things are yet to be worked out, but I am assured that the system is on track for implementation, at least for the initial phase of obtaining the digital certificates starting September 15.

One thing I will mention is that you must request the certificate to obtain your password. That password will be *mailed to your license address*, not by e-mail, but by the U.S. Postal Service. If your license address is wrong, you will never get the password. When you get the password, you can then go to the LoTW website and finish the process by requesting and downloading the program which will allow you to make submissions.

As for fees to be charged for submissions, etc., that information will be forthcoming, but was not available when this column was written.

Summary

We have a lot of things going on, and it should be interesting to sit back and watch what happens to DXing and QSLing over the next year or so. Hopefully, the very sophisticated LoTW system will solve many of the complaints of recent years, and we can get on with DXing and spend less time–and money–trying to get confirmations.

Until next time, good luck in the DX pile-ups and the contests, and I'll see/hear you there. 73, Carl, N4AA

Operating in Japan

Editor, *CQ:*

I would like to take slight exception to AA6JR's comments in the July issue (p. 68, "Magic in the Sky" column) about operating in Japan. Although a reciprocal license can be expensive and requires advance planning, I have not found it a "bureacratic nightmare" and disagree with the comment that one should not "even bother trying." An application form in English is available on the internet at <http://www.jarl.or.jp/English/3_Application/A-3.htm>.

The Tokyo International Amateur Radio Association is also happy to help potential visitors (from countries which have reciprocal privileges with Japan). Just drop us an e-mail at <tiara@bosai.org>.

Incidentally, one of our club's top projects is to urge the regulatory authorities to create true reciprocity—that is, just as Japanese hams can sign portable without needing to have a license issued in the U.S. and other countries, visitors from those nations should be allowed to have the same privilege here.

Steven Herman, K7USJ/7J1AIL
President, Tokyo Int'l Amateur Radio Assn. (TIARA)

Steve—Thanks for the info. Perhaps the changes in international rules for reciprocal operating made at the 2003 World Radiocommunication Conference (see our wrapup in last month's issue) will make it easier for you to succeed in your efforts.

PSK31 Basics

The following letter was sent to Digital Editor Don Rotolo, N2IRZ:

Hi Don,

I want to tell you how much I enjoyed reading your article about PSK31 in the August 2003 edition of *CQ* magazine. I hooked up an interface from my FT-920 from the AF Out jack to the Line 1 input of my sound card. I downloaded the software you recommended and it worked! I can't use it for transmission, but it is a very low cost way of seeing how this digital mode works. I then got a demo of some SSTV software and I am "playing" with that. Being able to experience these digital modes without spending money really helps. If I decide to get involved, I can go through the expense of making or buying a "full" interface.

Sonny, KD5GBI

N2IRZ replies:

Hi Sonny,

Thanks for writing. I am not only glad you enjoyed the article, but I'm REALLY glad you went and tried it! That's the whole idea, and you got it.

Maritime and Aeronautical Mobile

Editor, *CQ:*

Long ago when I had just been trained as a commercial operator and also became a ham, the terms *maritime mobile* and *aeronautical mobile* had specific meaning. I'm not sure when or *if* the terms have changed internationally. Back then, hams in the U.S. were required to "indicate" portable or mobile operation if they were out of their call area. While this is no longer true in the U.S., I don't remember ever reading that the use of maritime mobile or aeronautical mobile was changed. Both require the user to be "on or above *international waters.*" Twice in the past two years, *CQ* has published reports of hams using these terms when not in international areas, August '03 being the latest. I have heard hams on the Great Lakes using /mm. There is no location on the Great Lakes that is outside of U.S. or Canadian jurisdiction.

I have 40 years of *CQ*s and I remember many years ago an explanation of /mm or /am usage to get everyone back on board. They can use boat mobile or surf board mobile, etc., but the two terms *maritime* and *aeronautical* were reserved for specific use and meaning. I would like to see again an explanation of these terms, in perhaps the "Zero Bias" section. There may be lots of newer hams who have never seen the standard usage.

Don Jaster, K9YLI
Bruce, WI

Don—You are correct. "Maritime Mobile" and "Aeronautical Mobile" should be reserved for use while on or over international waters. The correct usage while operating on domestic waters is "Marine Mobile," and "Air Mobile" would be correct for operating while flying anywhere except over international waters.

As to the reference in CQ, the only one I could find in the August issue was about Capt. Rick Dougherty, NQ4I, who operates from the business jet which he pilots all over the world. The specific flight referenced in the article was one from "Mauritius in the Indian Ocean to London..." and talked about a band opening "while high above the Seychelles area..." Unless he happened to briefly be in the airspace of the Seychelles, then "aeronautical mobile" was the correct designator. Later in the same paragraph, there is reference to contacts made while "air mobile." Thanks for the reminder, though, about correct usage of these terms, as I, too, often hear them misused.

More Beginner Articles

Editor, *CQ:*

I am new to ham radio. I read your magazine and I'm a little disappointed at the lack of attention to articles for new folks. But, it is not just your magazine that has this flaw. They all do.

I have a great suggestion to help your magazine step up a notch. As a beginner I am always scanning ham magazines for information on how to plan to set up a radio bench. At this time, I do not yet have a radio. I need help in the area of designing a ham bench, picking the right radio(s), accessories, etc. etc.

Example: On the cover of July 2003, you have a photo of Chuck O'Neal, K1KW. You write a whole lot about him, but there is nothing in your article about what all that stuff in the little photo is. Doesn't it occur to you that as new hams we are desperately interested in what the pros do and buy, so we may keep all these things in mind for the day we want to buy accessories? What I mean is I want to see an excruciatingly detailed breakdown of each and every piece of equipment on someone's radio setup (perhaps a different person every issue), to include, but not limited to, what RX/TX they have, what kind of antenna is associated with it, what are all those power meters....where did they get their bench...what would they do differently if they had it to do all over again? How do they organize the power inputs and/or battery backup? . . . etc., etc.

I would also like to see many, many more articles as described above, but on others such as Disaster Preparedness organizations, radio clubs, etc. How do all these people set up there ham shacks? Inquiring minds want to know! Are there any books on this? If so, why is it not in your magazine? Can't you contract with some ham gurus to write a monthly piece on "The Anatomy of Ham Bench"? This kind of informative article would be of interest to your readers.

Emil Pfeiffer

Emil—Many thanks for your comments and suggestions. You're right, it's very difficult to meet the needs of both new operators and experienced operators at the same time. CQ, however, is the only ham magazine that really tries on a regular basis, with two columns devoted to beginners, our monthly "Beginner's Corner" and bi-monthly "How it Works." We don't have the space to go into the detail you'd like on every station we picture, even every one on the cover. But the idea of a regular column about ham shacks and topics associated with setting up and maintaining your station is a very interesting one, and we will be looking into it.

"How it Works" Works for Him

Editor, *CQ:*

I wanted to drop you a line letting you know how much I enjoy "How it Works" in *CQ.* I recently wrote an e-mail to Dave, K4TWJ, via his <k4twj@cq-amateur-radio.com> address listed in the byline. Apparently, my return e-mail address was truncated and he couldn't send me a reply via the internet. A couple of days ago I received a nice post card in the mail responding to my note; now that's service! :) All the best, and I hope K4TWJ keeps up the great writing.

Art, AB4RL

Thanks for the note, Art. I'd like to take this opportunity to note that Dave is continuing to have problems with e-mail sent to his CQ address. We're trying to get to the bottom of it, but haven't worked out the kinks yet. At least for now, the best way to reach Dave is via the "snail mail" address listed in his columns, and please include a self-addressed stamped envelope (SASE) for a reply.

awards

BY TED MELINOSKY,* K1BV

Short-Term Awards

Russian awards are known for their bold themes, good design, and splashes of color. Gene Shcumat, UA9AB, follows in this tradition with his short-term award commemorating the anniversary of Troist, Siberia. The price is reasonable and so are the requirements. You have about two months left in 2003 to make the needed contacts, so as the bands improve, aim your antenna north and listen for stations in this city. (Gene is also known for his assistance in securing hard-to-get Russian and other ex-USSR Republic QSL cards.)

To earn the City of Troitsk 260th Anniversary Award, sponsored by UA9AB, work three different stations located in this city during the calendar year 2003.

City of Troitsk 260th Anniversary Award. Work three different stations located in this city during the calendar year 2003. SWL okay. All bands and modes are permitted. Active stations include RK9AWT/UE9AAA, UA9AB, UA9AC, UA9AAP, UA9AFO, UA9AKW, RK9AA, RK9AY, RX9AF, RX9AFR, plus others. One contact with club station RK9AWT/UE9AAA is required. Send a log extract and fee of 4 IRCs or US$2 to: Gene T. Shcumat, UA9AB, P.O. Box 17, Troitsk, 457100, Chelyabinskoy Oblast, Russia.

Worked All Bavarian Contest Club Jubilee Award (WABCC). This short-term award will be a snap for the contesters among our ranks. The Bavarian Contest Club is one of the major German clubs active in the CQ WW, CQ WPX, ARRL, and WAE (Worked All Europe) contests. You'll recognize the club by its characteristic big signals.

To celebrate its 20th anniversary, the Bavarian Contest Club (BCC) is sponsoring this prestigious award. SWL okay. Work (or hear/log) the members of the BCC during the time period from October 1, 2003 to September 30, 2004.

QSOs with BCC members count one point. Each BCC member may only be worked once and must be using his/her own callsign. The contact with the member is counted, not the callsign. This means if a member changes callsigns during the specified time period, applicants may work him/ her only once. The total points is the sum of the QSOs with individual BCC members. One QSO with special station DAØBCC is a required contact and also counts one point. Throughout the duration of this time period, DAØBCC will be actively participating in all major contests. All bands and modes except packet are okay.

You must earn at least 20 points (one of which must come from working/hearing/logging DAØBCC). Special "stickers" will be issued, in addition to the certificate, for single band, single mode, etc. Stickers will also be issued for achieving additional points (i.e., total 30, 40, 50, etc.).

*12 Wells Woods Rd., Columbia, CT 06237
e-mail: <k1bv@cq-amateur-radio.com>

USA-CA Special Honor Roll

Randy Miller, N3RM
USA-CA All Counties #1071
August 18, 2003

Les Green, KØLG
USA-CA All Counties #1072
August 18, 2003

James Barham, KC5DSP
USA-CA All Counties #1073
August 25, 2003

USA-CA Honor Roll

500

N3RM	3256
W4OV	3257
DL5CW	3258
KØLG	3259

1000

N3RM	1634
W4OV	1635
KØLG	1636
KC5DSP	1637

1500

N3RM	1363
KØLG	1364
KC5DSP	1365

2000

N3RM	1262
KØLG	1263
KC5DSP	1264

2500

N3RM	1182
KØLG	1183
KC5DSP	1184

3000

N3RM	1093
KØLG	1094
KC5DSP	1095

The total number of counties for credit for the United States of America Counties Award is 3077. The basic award fee for subscribers is $6.00. For nonsubscribers it is $12.00. To qualify for the special subscriber rate, please send a recent CQ mailing label with your application. Initial application may be submitted in the USA-CA Record Book, which may be obtained from CQ Magazine, 25 Newbridge Road, Hicksville, NY 11801 USA for $2.50, or by a PC-printed computer listing which is in alphabetical order by state and county within the state. To be eligible for the USA-CA Award, applicants must comply with the rules of the program as set forth in the revised USA-CA Rules and Program dated June 1, 2000. A complete copy of the rules may be obtained by sending an SASE to Ted Melinosky, K1BV, 12 Wells Woods Road, Columbia, CT 06237 USA. DX stations must include extra postage for airmail reply.

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HF Antenna Collection

RSGB, 1st Ed., 1992. 233 pages.
A collection of outstanding articles and short pieces which were published in Radio Communication magazine during the period 1968-89. Includes ingenious designs for single element, beam and miniature antennas, as well providing comprehensive information about feeders, tuners, baluns, testing, modeling, and how to erect your antenna safely.

Order: RSHFAC $16.00

IOTA Directory - 11th Edition

Edited by Roger Balister, G3KMA.
RSGB, 2002 Ed., 128 pages
This book is an essential guide to participating in the IOTA (Islands on the Air) program. It contains everything a newcomer needs to know to enjoy collecting or operating from islands for this popular worldwide program.

Order: RSIOTA $15.00

Antenna Toolkit 2

By Joe Carr, K4IPV
RSGB & Newnes, 2002 Ed.
256 pages.A definitive design guide for sending and receiving radio signals. Together with the powerful suite of CD software included with this book, the reader will have a complete solution for constructing or using an antenna; everything but the actual hardware!

Order: RSANTKIT2 $40.00

Practical Projects

Edited by Dr. George Brown, M5ACN
RSGB 2002 Ed, 224 pages
Packed with around 50 "weekend projects," Practical Projects is a book of simple construction projects for the radio amateur and others interested in electronics. Features a wide variety of radio ideas plus other simple electronic designs and a handy "now that I've built it, what do I do with it?" section. Excellent for newcomers or anyone just looking for interesting projects to build.

Order: RSPP $19.00

Low Power Scrapbook

RSGB. © 2001, 320 pages.
Choose from dozens of simple transmitter and receiver projects for the HF bands and 6m, including the tiny Oner transmitter and the White Rose Receiver. Ideal for the experimenter or someone who likes the fun of building and operating their own radio equipment.

Order: RSLPS $19.00

The Antenna File

RSGB. ©2001. 288 pages. **$34.95.**
Order: **RSTAF**
50 HF antennas, 14 VHF/UHF/SHF antennas, 3 receiving antennas, 6 articles on masks and supports, 9 articles on tuning and measuring, 4 on antenna construction, 5 on design and theory, and 9 Peter Hart antenna reviews. Every band from 73kHz to 2.3GHz!

Order: RSTAF $32.00

The Antenna Experimenter's Guide

RSGB. 2nd Ed, 1996. 160 pages.
Takes the guesswork out of adjusting any antenna, home-made or commercial, and makes sure that it's working with maximum efficiency. Describes RF measuring equipment and its use, constructing your own antenna test range, computer modeling antennas. An invaluable companion for all those who wish to get the best results from antennas!

Order: RSTAEG $28.00

HF Amateur Radio

RSGB. 2002 Ed.
The HF or short wave bands are one of the most interesting areas of amateur radio. This book takes the reader through setting up an efficient amateur radio station, which equipment to choose, installation, and the best antenna for your location and MUCH more.

Order: RSHFAR $21.00

Radio Communication Handbook

Edited by Dick Biddulph, G8DPS and Chris Lorek, G4HCL.
RSGB, 7th Ed., 2000, 820 pages.
This book is an invaluable reference for radio amateurs everywhere. It also provides a comprehensive guide to practical radio, from LF to the GHz bands, for professionals and students.

Order: RSRCH $50.00

Amateur Radio Mobile Handbook

RSGB. 2002 Ed., 128 pages.
The Amateur Radio Mobile Handbook covers all aspects of this popular part of the hobby. It includes operating techniques, installing equipment in a vehicle and antennas, as well as maritime and even bicycle mobile. This is essential reading if you want to get the most out of your mobile station.

Order: RSARMH $21.00

Backyard Antennas

RSGB, 1st Ed., 2000, 208 pages.
Whether you have a house, bungalow or apartment, Backyard Antennas will help you find the solution to radiating a good signal on your favorite band.

Order: RSBYA $30.00

RSGB Prefix Guide

By Fred Handscombe, G4BWP.
RSGB. 6th Ed., 2003. 48 pages.
This book is an excellent tool for the beginner and the experienced hand alike. Designed with a "lay flat" wire binding for ease of use the new "Prefix Guide" is a must for every shack.

Order: RSPFXG $13.50

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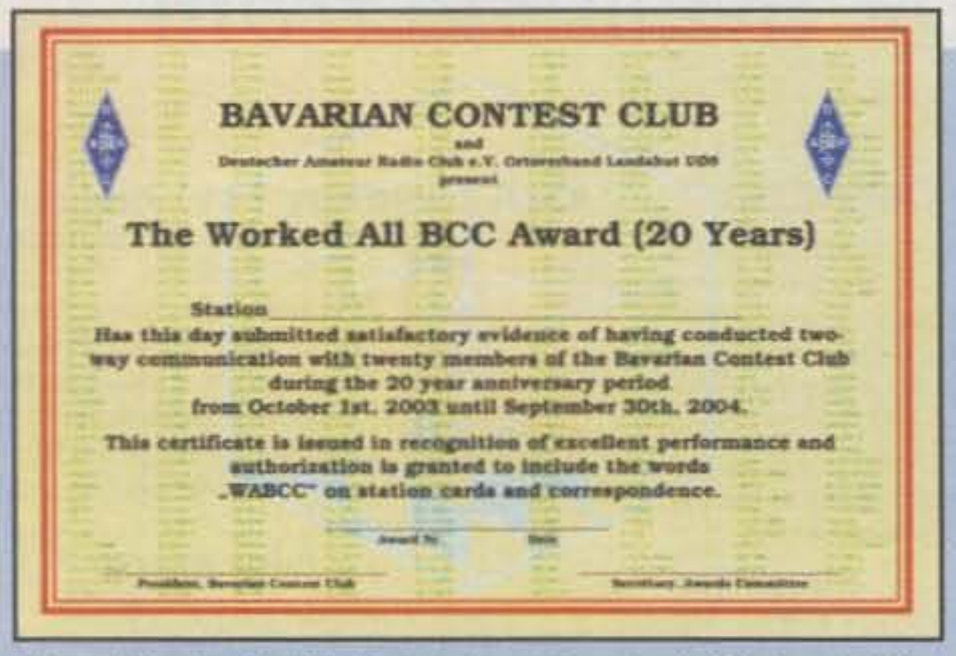

BAVARIAN CONTEST CLUB
and
Deutscher Amateur Radio Club e.V. Ortsverband Landshut U06
present
The Worked All BCC Award (20 Years)
Station
Has this day submitted satisfactory evidence of having conducted two-way communication with twenty members of the Bavarian Contest Club during the 20 year anniversary period from October 1st, 2003 until September 30th, 2004.
This certificate is issued in recognition of excellent performance and authorization is granted to include the words „WABCC" on station cards and correspondence.
Award No Date
President, Bavarian Contest Club
Secretary, Awards Committee

The Worked All Bavarian Contest Club Jubilee Award is being issued in celebration of the club's 20th anniversary.

A list of contacts from your log is sufficient proof of contacts. The cost of the certificate is 5 Euros (Europe), US$6, or 7 IRCs (outside of Europe), and must be submitted with the award application form, which includes a list of all official BCC members, will be made available on the club's website (given below) starting October 1, 2003.

The award may also be applied for via e-mail. Applicants wishing to apply electronically should complete the Excel file spreadsheet prepared by the award manager. The deadline for submitting applications is December 31, 2004. Applications should be sent to: Ralf Stieber, DL9DRA, Privatstrasse 27a, 01108 Dresden, Germany. Questions and electronic applications may be sent via e-mail to <dl9dra@darc.de>. Full details and member list and application form may be found at <http://www.bavarian_contest_club.de/wabcc>.


Diploma Nº 33
Fecha 02 de Septiembre de 2002
DICE
diploma islas chilenas
Nombre Marco Quijada
Indicativo CE6TBN
Endoso Básico
En reconocimiento por haber contactado radialmente con estaciones en islas del territorio chileno
Presidente Federachi
Award Manager

The Chilean Islands Award is a version of the IOTA award, but is issued only for contacts with islands belonging to Chile.

Chilean Islands Award

Chile joins the growing group of countries that offer a version of the IOTA award, but only for those islands belonging to them. All DXers know about CEØZ and CEØX, all of us who watch the Travel Channel know about Easter Island, but frankly I was astounded at the list of other eligible islands belonging to Chile that are valid for this award. This will be a tough one, but the true award hunter rises to the challenge!

Islands of Chile Reference List

Reference #	Name	IOTA Reference
ICE001	Isle de Pasco CEØY	SA-001
ICE002	Isle Sales y Games CEØY	SA-083
ICE003	Isle San Ambrosio CEØX	SA-013
ICE004	Isla Robinson Crusoe CEØZ	SA-005
ICE005	Isla Alenjandro Selkirk CEØZ	SA-005
ICE006	Isla San Felix CEØX	SA-013
ICE101	Isla Santa Maria	SA-069
ICE102	Isla Pan de Azucar	SA-085
ICE103	Isla Channaral	SA-085
ICE104	Isla Grande	SA-085
ICE201	Isla Damas	SA-086
ICE202	Isla Choros	SA-086
ICE203	Isla Gaviota	SA-086
ICE501	Isla Quiriquina	SA-070
ICE502	Isla Santa Maria	SA-070
ICE601	Isla Mocha	SA-061
ICE701	Isla Grande de Chiloe	SA-018
ICE702	Isla Quinchao	SA-018
ICE703	Isla Lemuy	SA-018
ICE704	Isla Ascencion	SA-043
ICE705	Isla Huincha	SA-064
ICE706	Isla San Pedro	SA-053
ICE707	Isla Tranqui	SA-018
ICE708	Isla Puluqui	SA-018
ICE709	Isla Quenac	SA-018
ICE710	Isla Talcan	SA-018
ICE711	Isla Caguache	SA-018
ICE712	Isla Guaiteca	SA-043
ICE801	Isla Wollaston	SA-031
ICE802	Isla Wellington	SA-032
ICE803	Isla Tierra del Fuego	SA-008
ICE804	Isla Riesco	SA-091
ICE901	Isla Navarino	SA-050
ICE902	Isla Nueva	SA-050
ICE903	Isla Picton	SA-050
ICE904	Isla Lenox	SA-050
ICE905	Islas Rey Jorge (King George)	N-010

We congratulate Marco, CE6TBN, for keeping the award fee in the very reasonable range.

Contact Chilean Islands and earn 70 points from the following schedule:

a. Chilean islands that count for DXCC countries, such as CEØA Easter Island, CEØZ Juan Fernandez Archipelago, or CEØX San Felix = 10 points.

b. Chilean islands that count for IOTA = 5 points. (Different islands in an archipelago with the same IOTA reference count as different islands. Chiloe Island and Quinchao Island are in the same archipelago, SA-018, but have different ICE designators [see table].)

c. Other islands = 3 points.

Send a list of QSOs plus the QSLs. The fee for the award is 4 IRCs or US$2, plus extra for return the QSLs. All contacts must have been made with a licensed amateur radio operator/station, and after January 1, 1980. All amateur bands from 6 to 160 meters, including the 12 and 17 meter WARC bands, may be used. All modes okay. Contacts with land mobile stations on islands are permitted; however, contacts with maritime mobile stations near islands do *not* count. Contacts with ships in a harbor are valid *only* if one or more essential parts of a station—such as the transceiver, antenna, or power supply—are shown to have been on shore on the island for the QSO. Endorsements are available for each additional 20, 25, 30, and 50 points. There is a special plaque for any station that earns 70 points on the same band on the same mode, or confirms QSOs with 60% of the islands shown in the list. Apply to: Award Manager, Marco A. Quijada, P.O. Box 1234, Temuco, Chile (e-mail: <ce6tbn@qsl.net>.

The Croatian Prefixes Award is issued for confirmed contacts with Croatian amateur radio stations with different prefixes on or after July 5, 1992.

Croatian Prefixes Award

Croatia is a popular summertime vacation destination for many Europeans. The country is also well represented by amateur radio operators, a fact that is especially evident during contests. The sponsor has designed a handsome award combining color photography, coats of arms, and an appealing design. Check your box of 9A QSLs. You've probably already earned this one.

The award is issued for confirmed contacts with Croatian amateur radio stations with different prefixes on or after July 5, 1992. The basic award, Class I, requires three different contacts; Class II requires two. The 9A-PFX Gold Medal requires five different 9A prefix contacts, and the 9A-PFX Trophy requires ten.

Each class allows a one-time use of any special 9A prefix—i.e., 9A2000, 9A900, 9A700. The award may be endorsed for all CW, all Phone, all RTTY, and Mixed. All bands, including WARC, allowed. The award is available for both 50 MHz and 144 MHz contacts as well, but only in the Mixed category. No use of repeaters, packet radio, or satellite allowed. SWL okay. The award manager has the right to check one, or several, cards on request.

Send GCR list (including callsign, date, time, frequency, mode, and RS/T) and fee of US$6 or 5 Euros for basic award. The fee for Gold Medal is US$17 or 15 Euros. The trophy is US$35 or 30 Euros. Apply to: 9A-PFX Award Manager, Kresimir Juratovic, 9A7K, P.O. Box 88, HR-48001 Koprivnica, Croatia (e-mail: <kresimir.juratovic@kc.htnet.hr> or <9a7k@qsl.net>).

Cosmic Legend Award

This Russian award was established in honor of Yuri Gagarin's first manned space flight back in 1961. I was a college student back then, and the space race was really hot. Yuri put a human face on the "other side." This is also a good case of an award using what I call the "incrementing point system"—namely, one that starts from a base amount in the first year of the award and goes up as time goes on. You'll need 41 points if you apply in 2003, 42 if you apply in 2004, etc. It shouldn't be too hard, since UA4C, RA4C is not one of the rare Russian designators. Point values are as follows:

1. Each QSO with radio amateurs of the Saratov Region (UA4C.., UV4C..., UW4C..., RA4C..., RZ4C...) and members of AFARU = 1 point.

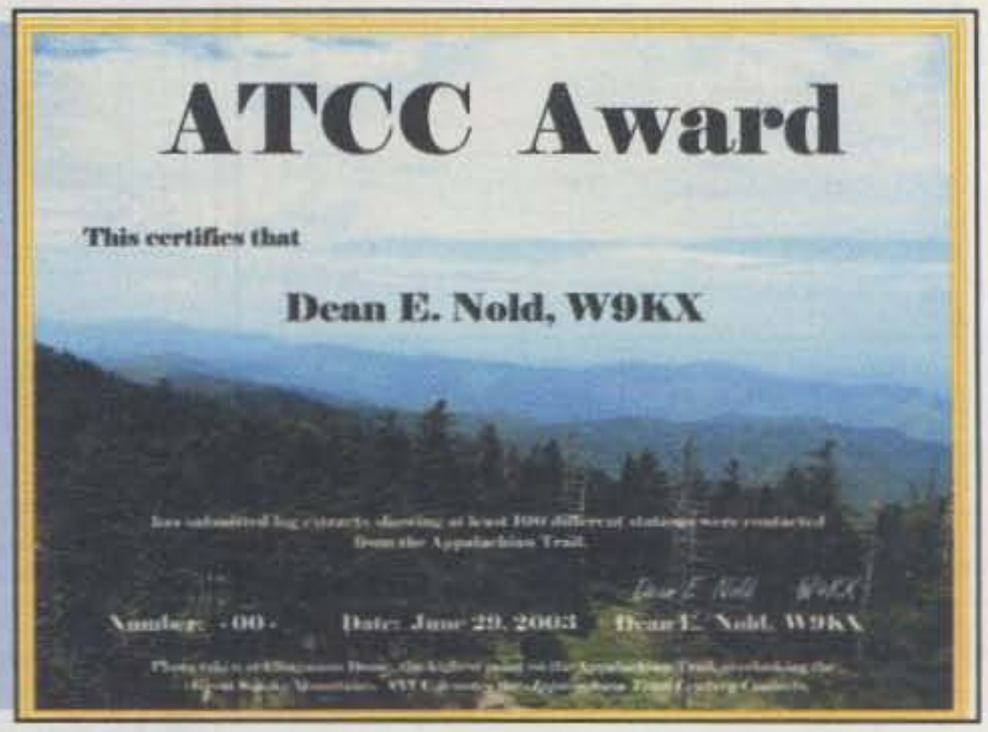
2. QSOs with special stations R4CG, R3CPK, R3K, RK1G = 5 points.

3. QSOs with radio amateurs who are astronauts or cosmonauts = 10 points.

QSOs on different bands with same station are allowed. Send log extract and fee of US$3 to: Alex Makevkin, RA4CEO, P.O. Box 135, Svetly, Saratov region, 412163 Russia (e-mail: <ra4ceo@mail.ru>).

Russia's Cosmic Legend Award was established in honor of Yuri Gagarin's first manned space flight back in 1961.

Work at least 100 different stations while operating on the Appalachian Trail to earn the Appalachian Trail Century Contacts Award.



Appalachian Trail Century Contacts Award

The Appalachian Trail winds for more than 2160 miles, starting in Georgia and ending in Maine. This neat award allows you to pursue amateur radio and hiking, making QRP contacts and getting out into the great outdoors. You can make contacts anywhere along the trail, so the award isn't restrictive at all.

Submit log extract showing that you worked at least 100 different stations while you were operating on the Appalachian Trail. The award sponsor hopes that you will experiment with antennas on the way and use a QRP rig to add enjoyment to your hiking experience. Applicants must pledge to send US$5 to the Appalachian Trail Conference in Harpers Ferry, West Virginia, and send just a US$2 award application fee. Send an SASE for a special application form. With another stamp on your SASE, you might want to ask the sponsor for his special handout on trail antennas, including the "Squashed Quad" for 40 meters. Apply to: Dean Nold, W9KX, 110 Eagle Fork Drive, Waynesville, NC 28786-8121 (e-mail: <w9kx@arrl.net>).

URL of the Month

RK3ZK is one of the new internet publishers of ham radio material. He produces the free E-Zine, which is devoted to antennas and amateur radio. The first issue has many articles on antenna construction, operating on 136 kHz, and other topics. The introductory pages are in traditional HTML format, and the articles are in PDF format, requiring that you have the Adobe Acrobat reader program. Take a look at <http://antentop.bel.ru>.

Attention radio clubs and specialty operating groups: I still need to hear from you. *CQ* magazine is an excellent way to tell the world about your award.

73, Ted, K1BV

BY JOHN DORR,* K1AR

Questions About Contesting I Always Wanted to Ask

November's Contest Tip

Have you read the fine print in contest rules lately? Even when major contests are involved, I find it's a good idea to give the rules a quick read before a contest, just to be sure you haven't missed any changes in the rules that may affect your score and/or operating tactics. It's easy to gloss over this one, especially if you have years of contest experience. A good rule of thumb in life is "never take things for granted." Contest operating is an excellent example!

The experienced hobby enthusiast often takes for granted his or her hard-earned knowledge, and contest operators are no exception. This month I want you to place yourself in the shoes of a new contester. In fact, many of you may already be there!

I began my contesting career in 1970 by operating in the Novice Roundup. To this day, I will never forget the combined exhilaration and confusion from that single operating event. I remember studying the rules and trying to make some sense out of the series of phrases and colloquialisms that included words such as contest exchange, multipliers, off-times, and QSO points, to name a few. As I stumbled through the event, I wished there was someone I could ask who would tell me more about what I was doing. It was brutally painful, and I have great empathy for the fellows who have written to me in recent months asking for a column such as this.

As we all know, contesters are at the risk of extinction unless we identify, train, and motivate a new and enthusiast group to replace the aging lot of current pros. If you are an experienced contester, this month's column may not be useful to you personally. However, sharing contesting fundamentals does apply, and I encourage you to use these words to facilitate your own campaign to bring youth into our fold. If you're new to the sport, read on and let the games begin!

Some Fundamentals

The first logical question is: "What is a contest?" Contesting's beginnings took place over 60 years ago. The concept was originally developed in an attempt to improve the operating ability of amateurs around the world and grow the state of the art. Those goals are not only admirable, but reflect many of the same tenets that we subscribe to today.

To the novice contester, a contest is nothing more than a scheduled operating event designed to encourage amateurs to contact as many other amateurs as possible over a fixed period of time and frequency spectrum. These events range from domestic affairs such as state QSO Parties to others with a worldwide scope, such as the CQ World-Wide DX Contest. You probably have noticed the wide-ranging list of contest sponsorships in this column and in other publications as well.

*2 Mitchell Pond Road, Windham, NH 03087
e-mail: <K1AR@contesting.com>

Calendar of Events

Oct. 18–19	JARTS WW RTTY Contest
Oct. 18–19	Worked All Germany Contest
Oct. 18–19	W/VE Islands QSO Party
Oct. 19	RSGB 21/28 MHz CW Contest
Oct. 19	Asia-Pacific CW Sprint Contest
Oct. 19–20	Illinois QSO Party
Oct. 25–26	**CQ WW DX SSB Contest**
Nov. 1–2	Ukrainian DX Contest
Nov. 1–3	ARRL CW Sweepstakes
Nov. 8–9	WAE RTTY DX Contest
Nov. 8–9	Japan Int'l SSB DX Contest
Nov. 8–9	OM/OK CW DX Contest
Nov. 15–16	LZ DX Contest
Nov. 15–16	RSGB 1.8 MHz CW Contest
Nov. 15–17	ARRL SSB Sweepstakes
Nov. 29–30	**CQ WW DX CW Contest**
Dec. 5–7	ARRL 160M Contest
Dec. 13–14	ARRL 10M Contest

Contest operating ability and knowledge are acquired skills that can only come from experience. While many operators have "instinctive proficiency" (e.g., the capability to copy fast CW, good hearing, etc.), the fastest way to grow your skill set is to meet other contesters and dive right into the fray.

Unfortunately, contests can also be intimidating. On CW there are seemingly hundreds of stations sending at least 200 wpm! When listening to SSB, you find world-class experts working other stations at rates that seem as if they're over 5000 QSOs per hour! The new competitor says, "That's not an environment for me!" The key is to remember that each and every station you hear in a contest started like you. Many of the champions of today were the newcomers of the '80s.

Here are a few basis points to always keep in mind while operating:

• Always sign your *entire* callsign when calling another station.

• Accuracy is more important than speed. However, try to say/send the minimum amount of information necessary to complete a valid QSO as defined by the rules.

• Practice, practice, practice. Not every contest is a "free for all." Many competitions are low-key and offer a more subdued environment in which to hone your operating skills.

• Practice your operating skills outside of contests. There is no substitute for improved skills on CW and good ears on SSB.

• Never give up or feel dismayed. Success in contesting is always a relative term. Most com-

peting stations will never win. Those having the most fun compete against their previous accomplishments or a variety of other personal goals.

Contesting's Confusing Terms

The experienced contester uses a different vernacular than the average person or even the average ham. I discover this time after time when a non-amateur looks at my column and undertakes the impossible task of understanding the subject. What follows is hardly a complete list, but it is a beginning step to unleashing the confusion that comes from our jargon:

Broken QSOs: Contest QSOs that have been proven to be illegitimate during the post-contest log-checking process. These types of contacts occur when a callsign or a portion of the exchange is copied incorrectly. It is rare to not find occurrences of this type in most contest logs (from new and experienced operators alike).

Club Competition: Contest clubs are not only a way to lead and encourage new operators to enter the world of contesting, but result in "mini-competitions" among themselves. You will often see the cumulative scores of club members appearing in contest results such as the CQ World-Wide, ARRL DX, or ARRL Sweepstakes.

Disqualification: Contest operations are scrutinized and subject to disqualification as with nearly any other competitive sport. Runners of the hundred-yard dash, for example, may be disqualified after their second false start. New contest operators should not operate in fear of being disqualified. Most disqualification criteria are designed to identify flagrant abuse of the rules and/or sloppy operating. Each contest usually defines its own disqualification criteria, which should be reviewed before the beginning of the contest.

Duplicates (Dupes): Contest rules and regulations are generally very specific about the accuracy of log submissions. For example, a basic contest QSO is not considered valid unless the minimum information (i.e., contest exchange) is transferred between stations. When a station is worked more than once on a single band (or on any other band in some contests such as the ARRL Sweepstakes), it is considered a duplicate QSO and must be removed from the contest log prior to final submission.

Exchange: The exchange is a predetermined information set required by the rules to be interchanged between participating contest stations. Contests vary in the content of this requirement. Some common examples include: RS(T) + QSO Number (e.g., 599001), RS(T) + CQ Zone, RS(T) + QTH (DXCC Country, State, County, ARRL Section), etc. This information, in addition to the callsign, is the basic information required to claim a valid contest QSO.

High-Claimed Scores: Many contest sponsors produce a list of high-scoring stations in each major category soon after the contest. This does not reflect the contest's final results. High-claimed scores are designed to provide an early indication of the contest's top scores prior to log checking.

Multi-Operator: This is one of the operating classifications in contesting. The most familiar form of multi-operator events is the ARRL Field Day. Multi-operator stations can use a single transmitter (i.e., "multi-single" class) or multiple simultaneous transmitters (i.e., "multi-multi" class).

Multiplier: The multiplier in a contest is one of the mechanisms used to compute the competitor's final score. The actual definition of a multiplier varies by contest. In the CQ WW, for example, multipliers are DXCC countries and CQ Zones. Other contests use U.S. states or counties, ITU Zones, ARRL Sections, etc. The final score of a contest operation is usually derived from multiplying the total number of complete QSOs times the total number of multipliers (see QSO points).

Operating Period: All contests specify a certain amount of operating time. The major DX contests are usually scheduled for 48 hours. Many others limit total operating time to a subset of this period. In addition, when you take a break, you often are required by the rules to have a minimum amount of time off the air. Refer to individual contest rules for more details.

Operating Frequencies: In order to reduce QRM across an entire band, many contest sponsors suggest certain frequencies for contest operation in their event. This is especially true for specialty events such as state QSO Parties. This practice is usually not practical for major events such as the CQ WW due to their high participation level.

QSO Points: Many contests attempt to apply a "weighing factor" to QSOs when computing final scores. For example, a valid QSO within your continent may only be worth 1 point, while contacts with other continents are worth 3 points. Generally, the final score of a contest log is computed by adding all of

the QSO points together and multiplying them by the total multiplier (see multiplier definition). Refer to various contest rules for more examples.

Rate: The rate measurement is a method to evaluate the speed at which you are entering valid contest QSOs into your log. It is often used as a measurement of performance and helps guide the decision-making process for band/mode selection at any point in time. Rates are usually measured on an hourly basis (e.g., 60 QSOs/hour).

Run: This is an operating technique characterized by a contest station remaining on a single frequency for a sustained period of time working other stations that respond to the call "CQ Contest." Contest runs can range from a few minutes to several hours in which the operator may log 300+ stations per hour at the extreme. Although larger contest stations are more likely to experience this operating environment, smaller operations can often enjoy this style of operating for short periods of time.

Search and Pounce (S&P): This method of operating is the opposite of the run. It is characterized by tuning up and down the band looking for new stations to work. This is a common mode of operation when the contest is slowing down or conditions are poor. Smaller stations use this operating method more frequently, as they sometimes lack the "horsepower" to sustain long stretches of contest runs.

Single Operator: This is the operating category where you operate by yourself (as opposed to multi-operator). In recent years, in many contests there have been changes in this class, such as adding QRP and Assisted (i.e., using packet spotting as a way to help find needed multipliers).

Well, now that we have some of the basic terms out of the way, let's get to those questions on your mind. What follows is a subset of topics I've been asked over the years. Maybe it would be a good idea to compile these over time and post them on the CQ website. What do you think? Here's my list:

Contesting Q&A

Are contests only for big stations? Although contest operating can be intimidating, the answer is absolutely not! The key to contesting is establishing a goal for yourself. As I've said many times, there are only a few winners out of the thousands who participate in any given contest. Your goals may range from beating last year's score to improving your code speed. If contests were only for big stations, there wouldn't be contests; there just aren't enough big stations to go around.

What about antennas? Antennas are a good addition to a contest station and I recommend that everyone should use them! All kidding aside, antenna-selection decisions are determined by many factors, including financial resources, time, and/or real estate. The guidelines for choosing antennas should be no different for a contest station than for any other amateur setup. After all, whether you are interested in contesting, DXing, or casual ragchewing, the goal is to have the best signal possible.

For years contesters have led the field in antenna innovation. Although most amateurs have limited resources to play in the mega-station field, a simple setup with a 60 ft. tower, tribander for 10/15/20 meters, 2-element "shortie" 40, and a few strategically placed dipoles can do amazing things. Another alternative is to focus on a single band and place all your efforts in that direction.

Don't forget that remarkable accomplishments can be gained with wire antennas. For example, Phil, KT3Y, has done extremely well from his modest station with "wire-only" antennas. A quick pass through the *ARRL Antenna Handbook* (and other publications) will not only educate you, but also provide low-cost alternatives for the newcomer.

How do I choose my operating category? Choosing an operating category begins with reading the rules and understanding your options. I am an advocate of multi-operator operation for the "novice" contester. If you are fortunate enough to latch onto an experienced contester, so much the better.

How can I maximize my score from a small station? Most of the strategic skill in contest operating can be based fundamentally on common sense. Unfortunately, not everyone has the opportunity to operate from a contest "superstation." The vast majority of competitors use tribanders and dipoles. The question is: Can I have fun with that kind of setup and how can I make the most of it?

For most people, contesting is a sport that allows us to operate and "see what we can do." The issue of maximizing your score begins with an honest assessment of your station's strengths and weaknesses. If you are using a dipole on 40 meters, it is going to be difficult to compete in the world of large beams at the low end of the band. However, running up and down the band and working people can be very productive.

Second, selection of operating times is key. If you have limited operating time, try to choose a schedule that matches the times when conditions are optimum for peak rates (e.g., 15/10 meters in the morning for Europe).

Computer logging has greatly assisted our ability to track progress during a contest. It may seem obvious, but always be sure to work the easy stuff! I remember a CQ WW in which I forgot to work a Zone 3 (California) on 40 meters.

Operating from smaller stations actually forces you to be a better operator. It requires that you be clever in how you sign your callsign in pile-ups (brute force just doesn't work). A strategic callsign placement during a lull in a pile-up often pays off! More important, the small station can still be very effective during the peak times of activity. My advice is to use your VFO liberally. Also, when you feel there is opportunity to run stations, stay high in the band and avoid the "big guns."

Where can I get more information about contesting? Depending on your geographic location, there are a number of active contest clubs around the world that are interested in gaining new members. I, for example, belong to the Yankee Clipper Contest Club, which is located in the northeast part of the U.S. I suggest you check the internet for some guidance. For example, see <www.contesting.com> as a source of clubs and much more information about contesting in general. The ARRL contest branch can also help answer some of your questions. The *National Contest Journal* (published by the ARRL) is an excellent reading resource that focuses exclusively on contesting. Not only are there interesting articles and features, it can be useful to help identify specific contesters who would be more than willing to answer questions and provide direction to the new operator. Of course, you also should always feel free to contact me directly with anything on your mind.

Final Comments

Sadly, as I conclude my writing assignment this morning, I'm keenly aware of the fact that today is September 11th. While the pain of that day has faded ever so slightly, I can't help but recall exactly where I was and what I was doing that fateful day. In my case, I was on an airplane.

While I'm reminded that this is just a contesting column, I can't help but think about the differences between the evil forces that planned the events of September 11th and our community of ham radio operators. Ham radio has always fostered worldwide goodwill and camaraderie, and will continue to do so. It knows no bounds. I first saw this in a very practical way when I arrived at the "social laboratory" called WRTC 1990. As contesters gathered for this first of many more "contest olympics," we all were struck by the kinship that existed among everyone, a group of individuals who could not have cared less about the world's geographic and ideological boundaries. We can only hope that the rest of the world will someday approach the model of worldwide friendship that our hobby has embraced since its infancy.

That's all for this month. See you in the CQ WW!!

73, John, K1AR

Zero Bias *(Continued from page 6)*

ple who think the hobby is constantly under attack by outsiders ... that "the great unwashed" are clamoring at the gates to get inside our castle and steal our hobby and "our" frequencies. This attitude has actually guided the course of amateur radio regulation over the past half century.

Consider that virtually every change made in amateur licensing rules from before World War II until the codeless Technician decision in 1991 was aimed at making it *more difficult* to get into, stay in, or advance in the hobby. Example: Back in the 1930s, the FCC increased the speed on the code exam from 10 to 13 words per minute. Why? Simply to raise the bar and let fewer people into ham radio. To help keep it "pure" for "the worthy ones" (those already in). And incentive licensing, that great debacle of the 1960s, was designed to make it harder to get full operating privileges, in other words, to raise the barriers still higher and keep more people out.

The Novice license, introduced in 1951, was a one-year *non-renewable* license. Some people today would like to see a return to that, but consider this: What other hobby—or for that matter, profession—gives you one year to advance to a specified level *or get tossed out*? Were model railroaders ever told that if they couldn't demonstrate their ability to build a more complex track layout within a year after getting started that they couldn't play with trains anymore? Ridiculous. Yet, that's exactly how our "introductory" license worked for nearly 30 years.

The fact of the matter is that if there ever were hordes of potential hams trying to scale the walls of the castle, they're not out there anymore. Ham radio continues to grow, but slowly, and we can't keep pushing people away. We can, and should, have high standards, but they should be realistic, relevant, achievable standards designed to encourage "immigration" of people who are likely to become good hams, rather than arbitrary ones designed to punish those who have not yet achieved them. We must become more *inclusionary,* encouraging good people to join us, helping them achieve the realistic standards that we've set, and then welcoming them into the hobby rather than looking down on them and calling them lazy, whining, carping, unmotivated, and IQ-deficient.

Is BPL Already Obsolete?

One threat that *is* real is that posed by Broadband over Power Lines, or BPL, a new method of high-speed internet access that certain members of the FCC are pushing hard to authorize (see last month's Zero Bias). But they may be pushing a technology that's already obsolete. The September issue of *IEEE Spectrum*, the monthly magazine of the Institute of Electrical and Electronic Engineers, includes a special report on "What's Next for Home Networking," including one excellent article by former *CQ* Digital Editor Steve Stroh, N8GNJ. The lead article in the special report (by Steven Cherry) starts out by describing how a utility in Kentucky recently "rolled out a high-speed broadband service to the city's 58,000 residents at US $25 a month, just $2 more than what many were paying for low-speed dial-up access." Uh oh, I thought, they're going to be singing the praises of BPL. But no, BPL was never mentioned. The broadband internet access being provided by Owensboro Municipal Utilities is *wireless,* operating under a new IEEE standard (802.16) for wireless *metropolitan area networks,* or MANs. Basically, Cherry explains, the utility is using radio for its "last mile" of coverage to consumers (the most expensive part of any broadband internet service), saving the cost of updating or replacing lines, installing amplifiers, etc. by covering that final leap to the consumer's front door via a secure wireless network.

This is where the future of broadband is—large, secure, wireless networks that can be built at a fraction of the cost of a BPL system. With power companies under intense pressure from consumers and the government to focus on using their lines to reliably deliver electricity in the wake of last summer's massive system failure, the FCC ought to be promoting wireless MANs instead of the already-obsolete BPL ... unless, of course, some highly-placed government officials are in some company's pocket... nah, that would never happen here ... would it?

73, Rich, W2VU

BY JOE LYNCH,* N6CL

Record-Breaking VHF-UHF Opening

Early September brought days of tropo opening on 2 meters and above for operators as far west as Kansas, Oklahoma, and Texas; as far northeast as Maine and Canada; and as far southeast as Florida. In particular, on 7 September there was hardly a place on the map of the eastern portion of the U.S. that was out of the opening. The various VHF columnists are still gathering reports. Thanks to the W6YX VHF reflector, and Ron Klimas, WZ1V, Sam Whitley, K5SW, and Peter Shtun, VE3DSS, the VHF editor for *The Canadian Amateur*, some of these reports are included below.

Ron Klimas, WZ1V, wrote: "This was a huge opening! Here's my report from Sept 7th: I had just put up new 144-5WL, 222-5WL, and 432-9WL Yagis on the tower Saturday afternoon. At 0200Z I fire up 2 meters and work KM5PO in EM12. I thought, man that antenna's working good, HI! I wound up filling two log pages of 4's, 5's, 8's, 9's ,and Ø's on 2, 222, and 432. Some of the stations worked on 2 meters included K4TO EM77, KD4EVB EM78, WB8ED EM79, KG9BV EM79, WB8JHI EM79, K4OM EM88, N8OB EN80, AG4V EM55, K9OIM EM56, KCØONF EM56, WAØSJR EM56, WA9GYH EM57, NM9H EM59, K5UR EM35, KG5MD EM36, WØDFK EM47, KØHHB EM48, KOØZ EM48, NIØD EM48, KA5DWI EM12, KM5OL EM13, W5FKN EM13, W5MB EM13, WA5TKU EM13, NL7CO EM04, KD5TGM EM15, K5CM EM25, K5SW EM25, W5VHF EM25, K5XH EM26, K5YY EM26, N6CL EM26, NØMST EM27, and best DX was N5TIF in EM12hk 1485 miles. On 222, I worked K8TQK EM89, N8XA EM79, KB8U EN71, K4TO EM77, KR8L EM57, K5UR EM35, and best DX W5LUA EM13 1423 miles! Signals weren't as strong on 432, but worked K8TQK EM89, KB8U EN71, K4TO EM77, and best DX K5UR EM35 1164 miles. I put up some microwave antennas Sunday afternoon, but that evening brought diminished conditions; just managed to work K4EJQ EM86 on 2 meters.

"I'd like to personally thank Fred Stefanik, N1DPM, for helping me put up the antennas, getting me back in the game, and making all thispossible."

Jon Jones, NØJK, wrote: "From EM18 'Cattle Pens' running 10 watts and a 4-element Yagi I worked K5MA, K1RZ, K8TQK, and KD4EVB, among others, on 2 meters tropo on 7 September UTC."

Sam Whitley, K5SW, wrote: "My good fortune was to be in the right place at right time. Regarding the weather conditions that seemed to precipitate the band conditions, on the first two days there were two fronts: the northern one was along central Kansas to Toronto area and a second front was lying across southern Oklahoma to about West Virginia. In the middle area between the two fronts were the K5–VE3, OH, IN, and others within that corridor. However, by the 5th that propagation closed off and a large high-pressure area over the eastern half of the U.S. was present. Along the back side of that front was where my tropo was occurring. By late on Sunday it was changing, to where I began to lose the long DX. I only was able to work the shorter stuff. Illinois and Tennessee was all that was left.

"On 50 MHz I worked K2DRH EN41. I ran with Bob to see what lower frequency propagation was like and the signal was very good for tropo.

"On 144 MHz I worked all of W1 land except VT—none heard. Contacts that I made include: W1: ME–K1WHS FN 31 (my best of the period 2249.7 km); NH–W1ZC FN42; MA–K5MA FN41; RI–N1DZ FN41; and CT–K1TEO, WZ1V, W1COT, K1PXE, all FN31. W2: NY–K2AXX FN12, NY2Z FN02; and NJ–K1JT, W2KV, K2SMN, K2PLL, all FN20. W3: DE–none; MD–K1RZ, W3ZZ, both FM19; PA–K3AX FN20, W3EME FM19, WA3LTB EN92, K3ZGY FN00, and N3FZ EN90. W4: GA–W4EUH; KY–K4TO EM77, KI4OT EM67; VA–W4RX FM19; AL–KU4WW EM54, WB4VHF EM64; NC–K4QI FM06; TN–KG4PSR EM65, WB4ECR EM66, AE4BK EM75, KF4ODI EM55, WB4JGG EM75; SC–none; and FL–none. W5: all local, including AR, LA, MS, OK, and TX. W8: MI–OH, too many worked to list; and WV–K2PQI FM09. W9/WØ: far too many to list; all states were worked, except CO, ND, and SD. VE3: VE3AX FN02 worked many times over the period.

"On 222 MHz I worked: IL–KR8L, W9RVG, both EM57, K9SM EM59; MO–WAØSJR EM56, WØDQY EM48, KØWYN EM38, AR–KG5MD, N5DZQ, both EM36, KS–NØLIE EM27, OH–K8TQK EM89, TN–WB4JGG EM75, KG4PSR EM65, IA–KMØT EN13, VA–W4RX FM19, MI–KB8U EN71, ONT–VE3AX FN02, CT–K1TEO FN31, which is state number 32, grid number 127, for a distance of 2018.55 km, which was my best of the period.

"Thanks to internet postings to prompt all, many QSOs were made that would have been passed up."

Speaking of being in the right place at the right time, two weeks prior Sam enjoyed an earlier tropo

VHF Plus Calendar

Nov. 2	Moderate EME conditions
Nov. 9	Full Moon. Poor EME conditions
Nov. 10	Moon apogee
Nov. 13	Highest Moon declination
Nov. 15-16	Second weekend of the ARRL International EME Contest
Nov. 16	Last quarter Moon. Good EME conditions
Nov. 18	*Leonids* meteor shower predicted peak
Nov. 23	Moon perigee. Moderate EME conditions
Nov. 24	New Moon
Nov. 26	Lowest Moon declination
Nov. 30	First quarter Moon. Moderate EME conditions

—EME conditions courtesy W5LUU

e-mail: <n6cl@fuller.edu>

opening in which he worked the following stations on 2 meters. On August 24: KØMQS EN31 IA, K9HMB EN52 IL, N9DG and WD9BGA (also copied WD9BGA/B .298) EN53 WI, KB8U EN71 MI, K9MRI EN70 IN, WB9Z EN60 IL, K2DRH EN41 IL. On August 25: K4JMN EM77 KY, KV4DT EM55 TN, WØDQY EM48 MO, NG4C FM16 NC (but this was a meteor-scatter burn, not tropo), K9OIM EM56 KY, K2EVW EM96 VA, NØJA em49 MO, and K4QI FM06 NC. He also worked K4QI on 222 MHz for grid number 125 but not a new state.

Jeff Klein, K1TEO, wrote: "I'm pretty sure that was the best tropo opening that I've ever heard in my 30+ years on the air. Too bad this did not happen during the contest. I had limited operating time, but worked a lot of the same stuff. I did work WB5AFY on 222 in EM04, which appears to be a new overland tropo record (1505 miles). I heard him on 432 for what would have been another record, but no contact. I did work KB8U on 903, 1296, and heard him on 2304 for my best DX of the night on microwaves. K8TQK was really loud on 2.3 GHz, but unfortunately my 3.4 GHz stuff was having a problem so we didn't work there. Worked KS, MO, and AR for new states on 432, and TX and OK on 222 for new states there. Worked K5CM, K5SW, K5UR, W5LUA, and WB5AFY on 222, among many others. Best DX on 432 was WØRT in KS EM27, a little over 1200 miles. All this happened on Saturday night to Sunday morning with my antennas below the trees. They weren't cranked up and there was no way to do so without getting neighbors upset. Amazing!"

Lloyd Korb, K8DIO, wrote to Ron, WZ1V: "We got very little enhancement in the Cleveland area. Yes, I heard W5LUA, but only S2 or so. I also heard VE3AX giving S9+40 dB reports. Most of it went over us and ended up in your yard!"

Bill Duval, K5UGM, wrote to Ron: "I was hearing you on 222 MHz after you worked W5LUA. You were 59+ 10 dB and I called and called. You would have been close to 1500 miles from me in EM12MS. Maybe next time. I did work a few new grids and one new state (MI). It was close to 1000 miles from me! I mainly stayed on 222 MHz, as I did not need anything on 144 MHz. I had heard that Dan Osborne, WB5AFY, worked Maine, for a new distance record on 222 MHz. He is in EM04. It would have been close for me. I did hear the station in Maine, but I was not heard."

Art Jackson, KA5DWI, wrote to Ron: "Thank you so very much for being there that Saturday night. You were state number 39 and grid number 186 for me. More interesting was that Dave Olean, K1WHS, showed up right after I worked you. I completed a QSO with him. It appears that that QSO may have set a DX record near 1596 miles (tropo over a complete land path). It is currently being verified by the keeper of the records (W5LUA) and still is subject to other reports. **Bob Landrum, W5FKN**, in EM13 also worked him a short time earlier. Our coordinates will solve that one. At the moment, though, it appears that I have the edge by a mere four miles!

"It was a wild opening. It was the most fun I have had in a couple of years, but I enjoy all openings. I was handicapped by two hills that are one-third to one-half miles from me and are at 40 to 60 degrees from me. To have worked you at all was a miracle. I was pointing the single KLM 16LBX antenna between the hills. I was running 170 watts."

Dana Shtun, VE3DSS, wrote: "For your information, my longest DX contact in 34 years on 144 MHz took place on 6 September. The contact was with K5BST at 1312 UTC on 144.220 MHz with signal reports 5×7 each way. Chad was pretty surprised! He is in EL18, in Seadrift Texas on the Gulf Coast. That contact was 1419 miles and my best on 144 MHz since I first got on the band in 1969.

"Also worked here were K5QE in EM31 at 1113 UTC with 57 each way on 144.2 MHz, and W5LSB in EM20, 30 miles north of Houston. The signals were 55/57 each way on 144 MHz. I also worked K5QE on 432 at 1145 UTC. Marshal was 57 with the 1200 watts and he gave me 52 with my 100 watts on SSB. We initially worked on CW at 1144 UTC, with his signal at 599 and mine at 579; not too shabby from here! I also worked WA5USB at 1316 UTC, W5MRB (EM35) at 1345 UTC on 144.200 MHz.

"On September 7 I worked K4ZOO in EM08 at 0000 UTC, W3EME in FM19, KC4TIQ in EM85, who was running 10 watts up in the Smokey Mountains of Tennessee, and K5UR at 0247 UTC from EM35. The main tropo was south of us by about 80 miles."

Peter Shilton, VE3AX, wrote to Dana, VE3DSS: "**Mark Hoffman, K2AXX**, worked **Tom Haddon, K5VH**, and that appears to be a new tropo C record for 222 MHz, as the current tropo C record between K2YAZ/8 and W5UWB is 2166 km. The K2AXX– K5VH QSO looks like 2277.98 km/1415 miles."

Peter wrote the following summary to your editor: "That was some opening indeed! I worked a number of new grids and 432 MHz states. Also worked K4TO on 1296 MHz for a new state (Kentucky).

"On Saturday morning things got really hot for about a half hour from 1245 to 1315 UTC. Best DX here was K5BST in EL18 at 1370+ miles. Dana, VE3DSS, also worked him, and distance on that one is about 1419 miles. I know there were longer contacts made afterward between TX–OK and W1 land. The 222 MHz tropo C record was broken at least three times during that session! My best DX on 222 MHz was K5VH in EM00 at 1337 miles. I had already worked Tom on 222 MHz meteor scatter.

"Steve Land, VE3TFU, about 20 miles west of me in EN92, was also in on the session, but the folks north in Toronto were pretty well shut out except for a brief period on Saturday morning (when Dana worked K5BST and others). Gordon Curling, VE3KKL, in FN25 managed a few contacts with TN and KY, but did not work any of the W5s.

"The big question we'd all like to know is 'Why were the upper bands so much poorer than 144/222 MHz?' I have already asked Emil Pocock, W3EP, to consider a presentation on this opening for next year's CSVHFS convention. I have audio tapes of VE3DSS and me working K5BST, W5LUA, and others. Again, it was pretty amazing!"

Your editor worked the following stations on 144 MHz: WB9UWA EN50, KCØONF EM56, K2DRH EN41, NØMXA EM27, W3EME FN41, WZ1V FN31, K2SMN FN20, N8KOL EN80, K9MRI EN70, K1TEO FN31, N8XA EM79, KBØPE EM48, W1COT FN31, WØDQY EM48, WB2SIH FN31, K1PXE FN31, WA8CLT EN80, W8PAT EN81, WD9EMF EM57, W5RCI EM44, and KG5NE EM25, along with the usual locals. The best DX was Connecticut, with four stations worked, along with New Jersey and New York.

As you can see by the reports, there is still some sorting out to do regarding who actually set records on the various bands. We will have more information on that and perhaps a few more reports in the December column.

European Sporadic-*E* Wrap-up

Udo Langenohl, DK5YA, continued posting on his website reports of the remarkable European sporadic-*E* propagation this past season, through the end of August. As of the writing of this column, his reports ended on August 15. As anticipated, the season began winding down during mid to late July. To date, he had no reports posted for

September. Should he have additional reports, they will be listed here next month. The following are the remaining reports that he has posted to date:

August 08, 2003: Finally a sign of life after 12 days of silence. After July 26 sporadic-*E* was in very bad shape. Even 50 MHz was almost dead for many days. Perhaps these conditions were due to the high level of geomagnetic disturbance by two very big coronal holes. I don't know, but today suddenly MUF rose very, very fast in the early morning above western Ukraine causing a small and spotty meteor-scatter-like 144 MHz sporadic-*E* opening from 0637 UTC until 0750 UTC. Openings were very short and the activity was very low, too. Seems that most OMs are tired of sporadic-*E* for this year. Countries involved today included UA3, UB5, I, 9A, S5, HA, OK, and DL.

August 11, 2003: There was yet another very short opening today. The MUF *(maximum usable frequency—ed.)* was jumping up and down the whole day though mostly in the eastern part of Europe. In the early afternoon at approximately 1500 UTC there was lots of BC from I, 9A, DL, and OK into UA6. At 1540 UTC the first signals from UT5 were audible in DL and OK. Everybody thought this must be meteor scatter because the *Perseids* is close to its maximum. However, suddenly at 1544 UTC, 144 MHz opened from UA3 into 9A and UT5 into DL and OZ. Yet the opening was again very short. UT5 was also heard in SM6 for some three minutes. The band closed at 1558 UTC, while BC from UA was into DL until the late evening. Activity was pretty low because almost everybody was on that horrible crowded 144.370 MHz for FSK441 meteor-scatter operations. Countries involved today included: UA3, UA6, UT5, 9A, DL, and OZ.

August 15, 2003: This was another day of a short opening and low activity. Just after a poor *Perseids* shower 144 MHz was in a good shape again. The MUF was up and down the whole day all across Europe. Then, in the late afternoon, the cloud above the French Mediterranean coast reached 144 MHz at 1655 UTC. The first QSO were made between the western Spanish coast and Italy, and a bit later EA6 was pretty loud in PA. CTs reached the band working 9A and S5 and also OE, while EA1 was strong in S5 and 9A. Suddenly EA7 and EA5 were pretty loud in both DL and HB9, only for some minutes, while 7X was heard in F. The last signals were heard at approximately 1730 UTC. Countries involved today included: EA, EA6, CT, F, I, HB9, DL, OK, OE, 9A, and S5.

Udo's documentation ends on August 15, 2003. An article about this intense sporadic-*E* season is slated for publication in the Winter 2004 issue of *CQ VHF* magazine.

Model Airplane Flies Across Atlantic

On August 9, Maynard Hill, W3FQF, made history by launching his model airplane, the Spirit of Butts Farm, from Cape Spear, Newfoundland. Around 38 hours and 1888.3 miles later, across the Atlantic, Dave Brown (not a ham) landed the plane near Marrin Beach in County Galway, Ireland. Assisting him were Ronan Coyne, EI8HJ, Richard Glynn, EI5GC, Tom Frawley, EI3ER, and Aengus Cullinan, EI4AB. While not a ham radio fete, this record-setting flight certainly involved ham radio operators. More information on this flight will appear in a future column.

Current Contest

The second weekend of the **ARRL International EME Competition** is November 15–16. For details see the September issue of *QST,* or go to <www.arrl.org/contests>.

Current Meteor Shower

The ***Leonids:*** While another peak in activity is two years away, it is still important to pay attention to this shower, as it may produce a ZHR in excess of 100 at its peak. It is predicted to peak at 0230 UTC on November 18.

And Finally . . .

This month too much news collides with too little time. Some of that time has been devoted to assembling the fall issue of *CQ VHF* magazine, as well. Your support of that magazine continues to make it grow and be a well-accepted venue for a variety of different types of VHF+ activity. While this column is mainly devoted to weak-signal activities, *CQ VHF* magazine is devoted to so much more of what is happening on our favorite bands. If you have not done so, please take a look at it. You might find something new that interests you as well.

Insofar as this column is concerned, it will remain a comprehensive source of weak-signal and other VHF+ related activities—thanks to you and your reports. Please keep them coming.

Until next month...

73, Joe, N6CL

BY TOMAS HOOD,* NW7US

Great Conditions Expected for CQ WW CW Contest

Flash!

High Normal Conditions Expected for CQ WW DX SSB Contest

Since this issue of *CQ* should reach most subscribers prior to the start of the CQ World-Wide DX SSB Contest weekend of October 25–26, here is an updated forecast made at press time for the general propagation conditions expected. Based on the 27- and 74-day recurrence tendencies of solar and geomagnetic conditions, it looks like conditions will be good to excellent October 25 and 26. Expect High Normal HF conditions both days.

Daily 10.7 cm solar flux levels are expected to be around 110 during the contest weekend. The geomagnetic planetary *A*-index is expected to be about 15 during both days of the contest.

There are no major storms expected for the weekend, so propagation conditions should be great. To maximize scores, be sure to plan your operation based upon the details covered in last month's column.

The 2003 CQ WW DX CW Contest will start at 0000 UTC Saturday, November 29 and continue until 2400 UTC Sunday, November 30. Expect Above Normal conditions for the first day and High Normal for the second. The Planetary *A*-(*Ap*) index should remain at about 15 for both days. The 10.7 cm flux should be about 110 for both days, making for great openings on bands as high as 15 meters.

The best tool available to predict HF propagation conditions in advance is the 27-day recurrence tendencies of geomagnetic, solar, and ionospheric conditions. It is not an absolute method, but it does give a very good indication of what is expected. Predictions for one 27-day rotational period are far more accurate than for three 27-day rotational periods. Be sure to carefully check conditions on October 7 and 8, since this would be one rotational period before the CW contest weekend. There is a better than 90-percent chance that conditions observed on those days will recur during the November contest weekend.

See the "Last-Minute Forecast" for additional information concerning expected day-to-day conditions for the entire month of November. An updated day-to-day forecast for the CW contest weekend will appear as a bulletin at the beginning of next month's column. The December issue should reach most subscribers before the CW contest begins.

Current Solar Cycle Progress

The world's official keeper of sunspot records, The Royal Observatory of Belgium, reports an observed monthly mean sunspot number of 73 for August 2003, down from 85 for July. The 12-month running smoothed sunspot number centered on February 2003 is 78.5, down from 81 for January 2003. The sunspot low for August 2003 was 49 on August 1, while the peak was 95 on August 28. This range was moderate, compared with the wider range during July.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7 cm observed monthly mean solar flux of 122 for August 2003, down from 128 for July. The 12-month smoothed 10.7 cm flux centered on February 2003 is 145, down from January's 149.

The observed monthly mean *Ap*-index for August 2003 is 23, up three points from July. The 12-month smoothed *Ap*-index centered on February 2003 is 19, up about a point from January.

A smoothed sunspot level of 51 and a 10.7 cm solar flux of about 104 are predicted for November 2003. The geomagnetic planetary *A*-index (*Ap*) will continue to quiet down just a bit through the winter months.

November Propagation

Last month's column contained a detailed review of conditions expected during October. Let's look at what we can expect this month.

160 meters: Expect quite an increase in DX openings on this band during the hours of darkness and into the sunrise period. After a rough summer with very high geomagnetic activity, things are now quieting down nicely. Such elevated geo-

LAST-MINUTE FORECAST

Day-to-Day Conditions Expected for November 2003

	Expected Signal Quality			
Propagation Index.....	(4)	(3)	(2)	(1)
Above Normal: 1-2, 8-9, 21, 28-29	A	A	B	C
High Normal: 3-7, 16-20, 22-27, 30	A	B	C	C-D
Low Normal: 14-15	B	C-B	C-D	D-E
Below Normal: 10	C	C-D	D-E	E
Disturbed: 11-13	C-D	D	E	E

Where expected signal quality is:

A—Excellent opening, exceptionally strong, steady signals greater than S9.

B—Good opening, moderately strong signals varying between S6 and S9, with little fading or noise.

C—Fair opening, signals between moderately strong and weak, varying between S3 and S6, with some fading and noise.

D—Poor opening, with weak signals varying between S1 and S3, with considerable fading and noise.

E—No opening expected.

HOW TO USE THIS FORECAST

1. Find the *propagation index* associated with the particular path opening from the Propagation Charts appearing on the following pages.
2. With the *propagation index*, use the above table to find the expected signal quality associated with the path opening for any given day of the month. For example, an opening shown in the Propagation Charts with a *propagation index* of 3 will be excellent (A) on Nov. 1st and 2nd, good (B) on the 3-7, excellent (A) on the 8–9, fair to poor (C-D) on the 10th, etc.

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A Quick Look at Current Cycle 23 Conditions

(Data is rounded to nearest whole number)

Sunspots
Observed Monthly, Aug. 2003: 73
Twelve-month smoothed, Feb. 2003: 79

10.7 cm Flux
Observed Monthly, Aug. 2003: 122
Twelve-month smoothed, Feb. 2003: 145

***Ap* Index**
Observed Monthly, Aug.t 2003: 23
Twelve-month smoothed, Feb. 2003: 19

magnetic activity is common during the few years following a solar cycle peak, but it is also usual for a seasonal dip in geomagnetic activity to occur as we move away from the autumnal equinox. This winter season will be reasonably quiet. The combined effect of the decreased static levels and longer hours of darkness in the northern latitudes will make 160 a pleasurable band all winter. During this month's CQ WW CW Contest participants should experience fair scores on this band. Look for openings toward Europe and toward the south from the eastern half of the U.S., and toward the south, the Far East, Australasia, and the South Pacific from the western half of the country. These openings should be strong during the contest period. Remember, the best propagation aid for this band (and for 80 and 40 meters as well) is a set of sunrise and sunset curves, since DX signals tend to peak when it is local sunrise at the easterly end of the path.

80 meters: This should be a great band for DX openings to many areas of the world during the hours of darkness and into the sunrise period. Eighty meters becomes a reliable long-distance band throughout the entire period of darkness. The band should peak toward Europe and in a generally easterly direction around midnight. For openings in a generally western direction, expect a peak just after sunrise. The band should remain open toward the south throughout most of the night. Noise levels will be down considerably from October, and the period for band openings in a particular direction will be a bit longer. Some contest operators may take the challenge of operating exclusively on 80, an adventure in skill and patience. The conditions are expected to be favorable for high scores on this band.

40 meters: Competing with 80 meters, this should be the hottest DX band during the hours of darkness, as the seasonal static levels are lower than they were during the summer. However, because nighttime MUFs (Maximum Usable Frequencies) could fall below 7 MHz this month, it might lose some steam until the morning hours. The band should be open first for DX toward Europe and the east during the late afternoon. Signals should increase in intensity as darkness approaches. Signals should peak from an easterly direction closer to midnight, and from a westerly direction just after sunrise. Remember, just as with 80 meters, signals tend to peak as the sun rises on the *eastern* end of a propagation path. Working against the CW operator is the interference that increases when the propagation is excellent.

20 meters: This is the workhorse band for the contest. DX openings should be possible on this band mostly during the day, and somewhat during the night. However, because of the shorter daylight hours in the Northern Hemisphere, nighttime path openings will be open for a shorter period this month compared to October, with signal peaks from about an hour or two after sunrise and again during the late afternoon and early evening hours. Don't forget to look for long-path openings for about an hour or so after sunrise and again for an hour or so before local sunset. On days with quiet geomagnetic conditions look for transpolar DX.

15 meters: DX propagation conditions should be fair to good on this band. A daytime band, reasonable conditions are expected from shortly after sunrise through the early evening hours. The band could remain open into the evening toward southern and tropical areas. While 15 meters might possibly be the best daytime band for the contest weekend, it will close a bit earlier and open a bit later than it did in October.

10 meters: With an expected flux no higher than about 115 on the best days of the month, 10 meters will be a poor band. Those in low- and middle-latitude locations can expect some daytime contacts during the contest weekend, mainly on north/south paths. If open, the band will peak right after sunrise, and just a bit before sunset, local time. Openings toward Europe and in a generally easterly direction will be sparse, if at all, and should peak an hour or two before noon, while those toward South America and Africa are expected to peak during the early afternoon hours. Optimum conditions towards the Far East, Australia, southern Asia, and the South Pacific are forecast for the late afternoon and early evening hours, especially from stations in lower lati-

HOW TO USE THE SHORT-SKIP CHARTS

1. In the Short-Skip Chart, the predicted times of openings can be found under the appropriate distance column of a particular meter band (10 through 160 meters) as shown in the left-hand column of the chart. For the Alaska and Hawaii Charts the predicted times of openings are found under the appropriate meter band column (15 through 80 meters) for a particular geographical region of the continental USA as shown in the left-hand column of the charts. An * indicates the best time to listen for 80 meter openings.

2. The propagation index is the number that appears in ( ) after the time of each predicted opening. On the Short-Skip Chart, where two numerals are shown within a single set of parentheses, the first applies to the shorter distance for which the forecast is made, and the second to the greater distance. The index indicates the number of days during the month on which the opening is expected to take place, as follows:

(4) Opening should occur on more than 22 days
(3) Opening should occur between 14 and 22 days
(2) Opening should occur between 7 and 13 days
(1) Opening should occur on less than 7 days

Refer to the "Last Minute Forecast" at the beginning of this column for the actual dates on which an opening with a specific propagation index is likely to occur, and the signal quality that can be expected.

3. Times shown in the charts are in the 24-hour system, where 00 is midnight; 12 is noon; 01 is 1 AM; 13 is 1 PM, etc. In the Short-Skip Chart appropriate *standard* time is used at the path midpoint. For example on a circuit between Maine and Florida, the time shown would be EST, on a circuit between New York and Texas, the time at the midpoint would be CST, etc. Times shown in the Hawaii Chart are in HST. To convert to standard time in other USA time zones add 2 hours in the PST zone; 3 hours in the MST zone; 4 hours in the CST zone; and 5 hours in the EST zone. Add 10 hours to convert from HST to GMT. For example, when it is 12 noon in Honolulu, it is 14 or 2 PM in Los Angeles; 17 or 5 PM in Washington, D.C.; and 22 GMT. Time shown in the Alaska Chart is given in GMT. To convert to *standard* time in other areas of the USA subtract 8 hours in the PST zone; 7 hours in the MST zone; 6 hours in the CST zone; and 5 hours in the EST zone. For example, at 20 GMT it is 15 or 3 PM in New York City.

4. The Short-Skip Chart is based upon a transmitted power of 75 watts CW or 300 watts PEP on sideband; the Alaska and Hawaii Charts are based upon a transmitter power of 250 watts CW or 1 KW PEP on sideband. A dipole antenna a quarter-wavelength above ground is assumed for 160 and 80 meters, a half-wave above ground on 40 and 20 meters, and a wavelength above ground on 15 and 10 meters. For each 10 dB gain above these reference levels, the *propagation index* will increase by one level; for each 10 dB loss, it will lower by one level.

5. Propagation data contained in the charts has been prepared from basic data published by the Institute for Telecommunication Sciences of the U.S. Dept. of Commerce, Boulder, Colorado 80302.

CQ Short-Skip Propagation Chart
November & December 2003
Band Openings Given In Local Standard Time At Path Mid-Point (24-Hour Time System)

Band (Meters)	*Distance From Transmitter (Miles)*			
	50-250	*250-750*	*750-1300*	*1300-230*
10	Nil	Nil	08-11 (0-1) 11-17 (0-2) 15-17 (0-1)	08-09 (1) 09-11 (1-2) 11-15 (2) 15-17 (1) 17-19 (0-1)
15	Nil	09-11 (0-1) 11-15 (0-2) 15-18 (0-1)	07-08 (0-1) 08-09 (0-2) 09-11 (1-3) 11-15 (2-4) 15-16 (1-3) 16-18 (1-2) 18-19 (0-1)	07-08 (1) 08-09 (2) 09-11 (3) 11-15 (4) 15-16 (3) 16-18 (2-3) 18-19 (1-2) 19-21 (0-1)
20	10-12 (0-1) 12-14 (0-2) 14-16 (0-1)	06-07 (0-1) 07-10 (0-2) 10-12 (1-3) 12-14 (2-4) 14-16 (1-4) 16-17 (0-3) 17-19 (0-2) 19-22 (0-1)	06-07 (1) 07-09 (2-3) 09-10 (2-4) 10-12 (3-4) 12-16 (4) 16-17 (3-4) 17-19 (2-3) 19-22 (1-2) 22-00 (0-1)	06-07 (1-2) 07-09 (3) 09-15 (4-3) 15-17 (4) 17-19 (3-4) 19-21 (2-3) 21-22 (2) 22-23 (1-2) 23-00 (1) 00-06 (0-1)
40	07-08 (0-2) 08-09 (1-3) 09-17 (3-4) 17-19 (2-3) 19-21 (1) 21-00 (0-1)	06-07 (0-2) 07-08 (2-3) 08-09 (3) 09-15 (4-3) 15-17 (4) 17-19 (3-4) 19-21 (1-3) 21-00 (1-2) 00-03 (0-2) 03-06 (0-1)	06-07 (2-3) 07-08 (3) 08-09 (3-2) 09-15 (3-1) 15-17 (4-2) 17-19 (4) 19-21 (3-4) 21-03 (2-4) 03-06 (1-3)	06-08 (3-2) 08-09 (2-1) 09-15 (1-0) 15-17 (2-0) 17-19 (4-3) 19-03 (4) 03-06 (3)
80	08-21 (4) 21-01 (3-4) 01-04 (42-3) 04-07 (1-2) 07-08 (3)	08-09 (4-2) 09-16 (4-1) 16-18 (3-1) 18-20 (4-3) 20-04 (4) 04-06 (3-4) 06-07 (3) 07-08 (3-1)	08-09 (2-1) 09-16 (1-0) 16-18 (3-1) 18-20 (4-3) 20-04 (4) 04-06 (3-4) 06-07 (3) 07-08 (3-1)	08-09 (1-0) 09-16 (0) 16-18 (1-0) 18-20 (3-2) 20-04 (4) 04-06 (4-2) 06-07 (3-1) 07-08 (1)
160	07-09 (3-2) 09-11 (2-0) 11-17 (1-0) 17-19 (3-2) 19-07 (4)	07-09 (2-1) 09-17 (0) 17-19 (2-1) 19-04 (4) 04-07 (4-2)	07-09 (1-0) 09-17 (0) 17-19 (1-0) 19-21 (4-2) 21-04 (4) 04-06 (2) 06-07 (2-1)	07-19 (0) 19-21 (2-1) 21-04 (4-2) 04-06 (2-1) 06-07 (1-0)

HAWAII
November & December 2003
Openings Given in GMT

To:	*10 Meters*	*15 Meters*	*20 Meters*	*40/80 Meters*
Eastern USA	08-10 (1) 10-12 (2) 12-14 (1)	07-08 (1) 08-12 (2) 12-14 (3) 14-15 (2) 15-17 (1)	06-08 (2) 08-13 (1) 13-14 (2) 14-17 (3) 17-20 (2) 20-00 (1)	16-18 (1) 18-02 (3) 02-04 (1) 18-20 (1)* 20-01 (2) 01-03 (1)*
Central USA	08-10 (1) 10-14 (2) 14-16 (1)	06-07 (1) 07-09 (3) 09-11 (2) 11-13 (3) 13-15 (4) 15-16 (3) 16-17 (2) 17-18 (1)	06-07 (2) 07-08 (3) 08-13 (2) 13-14 (3) 14-16 (4) 16-18 (3) 18-20 (2) 20-00 (1)	17-19 (1) 19-20 (2) 20-02 (3) 02-03 (2) 03-04 (1) 19-21 (1)* 21-02 (2)* 02-04 (1)*
Western USA	08-10 (1) 10-14 (2) 14-17 (1)	06-07 (1) 07-08 (2) 08-12 (3) 12-14 (4) 14-16 (3) 16-17 (2) 17-19 (1)	06-07 (2) 07-09 (4) 09-14 (3) 14-16 (4) 16-18 (3) 18-22 (2) 22-02 (1)	17-18 (1) 18-20 (2) 20-01 (4) 01-04 (3) 04-06 (2) 06-07 (1) 18-19 (1)* 19-21 (2)* 21-04 (3)* 04-05 (2)* 05-06 (1)*

ALASKA
November & December 2003
Openings Given in GMT

To:	*10 Meters*	*15 Meters*	*20 Meters*	*40/80 Meters*
Eastern USA	19-22 (1)	16-18 (1) 18-21 (2) 21-23 (3) 23-00 (2) 00-01 (1)	18-21 (1) 21-23 (2) 23-01 (3) 01-02 (2) 02-04 (1)	06-12 (1) 07-11 (1)*
Central USA	19-23 (1)	17-18 (1) 18-21 (2) 21-00 (3) 00-01 (2) 01-02 (1)	17-20 (1) 20-23 (2) 23-02 (3) 02-03 (2) 03-05 (1)	06-14 (1) 07-12 (1)*
Western USA	19-21 (1) 21-23 (2) 23-00 (1)	17-20 (1) 20-21 (2) 21-22 (3) 22-00 (4) 00-01 (3) 01-02 (2) 02-03 (1)	14-17 (1) 17-20 (2) 20-22 (3) 22-00 (4) 00-02 (3) 02-04 (2) 04-06 (1)	02-03 (1) 03-05 (2) 05-14 (3) 14-15 (2) 15-16 (1)

**Indicates best times to listen for 80 meter openings. Openings on 160 meters are also likely to occur during those times when 80 meter openings are shown with a propagation index of (2) or higher.*
For 12 meter openings interpolate between 10 and 15 meter openings.
For 17 meter openings interpolate between 15 and 20 meter openings.
For 30 meter openings interpolate between 40 and 20 meter openings.

Propagation charts prepared by George Jacobs, W3ASK.

tudes. This band will require a lot of skill and better-than-average antennas.

CW Contest Tips

Overall, expect good conditions on 15 meters, and excellent DX openings on 20 meters during most of the daylight hours. Twenty meters will be hot for most of the contest period.

From sundown to midnight 40 meters should be the best band for openings toward the east, north, and south. Twenty meters will close in many locations before midnight, while 80 meters will be a hot band with openings into the same areas as for 40.

Between midnight and sunrise the best DX band should be 80 meters, with 40 a close second. Openings on both bands should be possible to most areas of the world, with conditions peaking towards the south and west. Some good 20 meter openings are also expected during this period, mainly towards the south and west. The 160 meter band should wake up, offering some fair DX openings, similar to 80 meters but with somewhat weaker signals.

It is unlikely that there will be any major solar or geomagnetic storm during the November contest weekend. However, if a storm should develop, work the higher bands, and look for openings on a north/south propagation path.

During the contest, be sure to check my propagation page, <http://prop.hfradio.org/>, for up-to-the-minute conditions. If you are at a location where you do not have easy internet access, but you have a WAP/WML device, you can gather the latest propagation information, warnings, and alerts, and take a look at conditions by pointing your WAP device to <http://wap.hfradio.org/>. This is a special URL for wireless access to this free resource. There are more resources listed in the October "Propagation" column.

VHF Conditions

6 meter DX: Solar activity has been steadily declining, and *F*-layer propagation has become rather rare on VHF and above. However, there is a slight chance for some *E*-layer and sporadic-*E* (*Es*) propagation throughout November. Occasional 6 meter DX openings might be had during November's CW contest. If so, conditions should peak toward Europe and in a generally easterly direction before noon. After noon, openings should improve toward Africa, and then swing in a clockwise direction during the early afternoon hours. Openings toward the Caribbean and Central and South American areas should occur from late morning until shortly after noon. By late afternoon, start looking for openings to the south and southwest. Conditions will be erratic, and most openings will be short, if they occur at all.

Auroras are possible during November, but none is forecast for the contest weekend. Aurora can result in short-skip propagation on the 6 and 2 meter bands for distances up to approximately 1200 miles. However, after a very stormy summer, expect quite a calming down of the geomagnetic activity starting in November and going through the winter season. Looking at the "Last-Minute Forecast" for days with Below Normal or Disturbed conditions, it is unlikely that there will be many days supporting aurora.

I hope to hear your station on the air, especially during the contest weekend. I am not the fastest CW operator, but I expect to be in the mix somewhere on the bands, increasing my skill little by little. Good luck in the 2003 CQ WW DX CW Contest!

73, Tomas, NW7US/AAMØEWA

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