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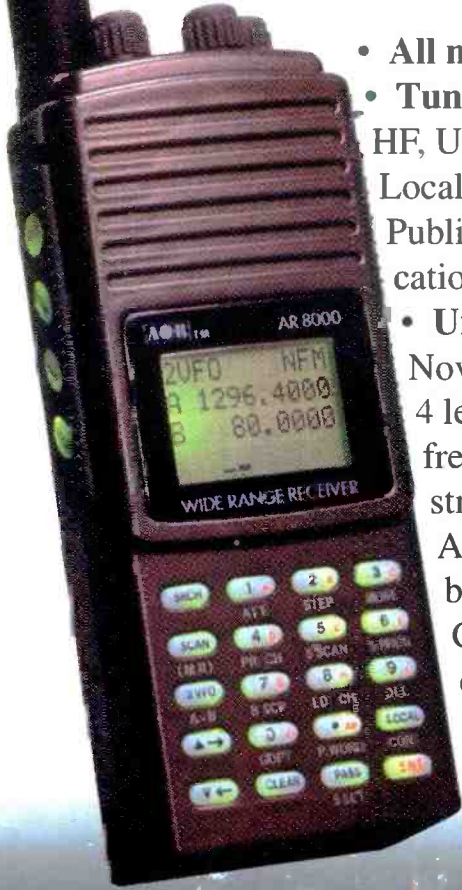
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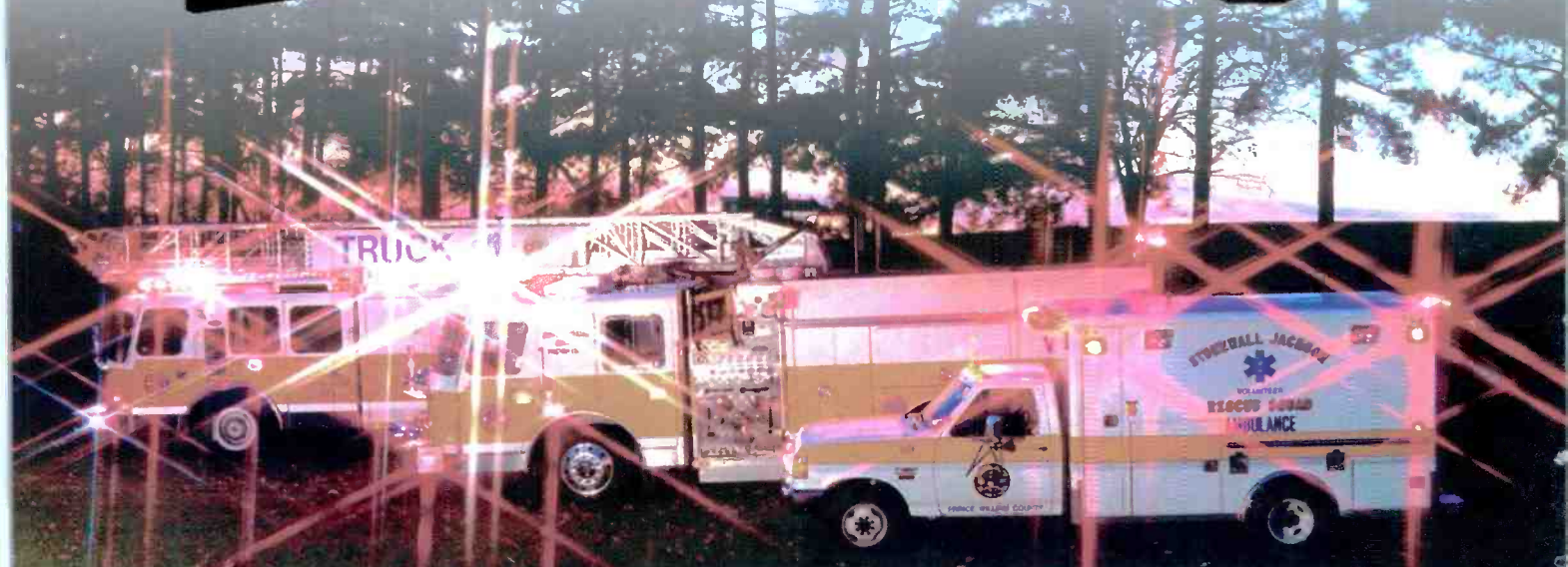
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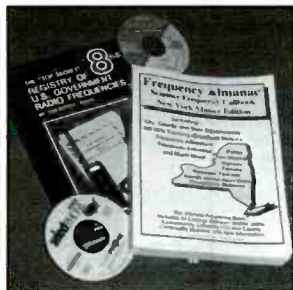
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This month's cover: Public Safety Officer Randy Roddy of the U.S. Tennessee Valley Authority talks with headquarters on federal frequencies from the Norris Dam site at Norris, Tenn. The dam is the first in the TVA sites built in 1933-1935. Photo by Larry Mulvehill, WP2ZPI.

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We've Been Quite Busy

POP'COMM's writers and editors have been quite busy over the past few months working on a few projects we think you'd be interested in. It's all in our quest to bring you all the information you need to stay in touch with the radio hobby.

In a few speaking engagements I've had since becoming the editor of POP'COMM, the one thing I have been able to stress to my audiences is that POP'COMM is such a well-rounded magazine; that is, we cover just about every aspect of the radio hobby. There's scanning and shortwave, perhaps our top two facets, as well as CB, ham, pirate broadcasting, AM-FM listening, satellite tuning, radio nostalgia, cellular and personal communications, and so much more. In fact, if you look close enough, you'll even find things like lowfers (below 500 kHz). We've got quite the mix.

We don't have room in the monthly magazine to include all the information we'd like to share with our readers. However, one thing that we have been able to do successfully over the past years is put together an annual guide that is chock full of information to help the radio hobbyist even more. The annual guide helps us present information that you can use at your listening post or shack for the coming year.

The 1996 *Popular Communications Communications Guide* will hit the newsstands on Nov. 21. My friend and associate, Harold Ort, N2RLL, once again has assembled an impressive lineup for the annual guide. I'd love to tell you all the articles we have planned for this great guide, but the final touches still are being put on the project as I write this column. But from what Harold tells me, you'll really like what he and the rest of our writers have been working on this past summer and fall. As usual, there will be plenty of articles on shortwave and scanning, with some articles on other topics as well.

Harold also has assembled a very inclusive listing of products that our readers can peruse. These listings hopefully allow our readers to get a good fix on the features of various radios while you are considering purchases. In fact, if you are considering buying a new shortwave receiver or scanner, or other types of gear for your shack, you should check out the 1996 *Popular Communications Communications Guide* first and compare the specs on all the rigs in the category you are considering.

CB First, Though

While the annual guide has been in production, Harold also has been assembling

something new for POP'COMM: our first-ever *Popular Communications CB Buyer's Guide*. Yes, we know many of our readers also are CBers and there has been a surging interest in CB radios in the past year or two. For those of us who were CBers back in the 1970s, it's almost *deja vu*. When CB became ultra-popular back in the mid-1970s, it seemed every one had a CB rig under the dash. Even Betty Ford (wife of Gerald Ford) was on the air with a CB call sign from the FCC! And I know Tom Kneitel has quite the file of photos of Hollywood celebrities all posing with CB microphones and chatting with the common "good buddies" on the old CB.

But that was then and this is now. Articles declaring the newfound popularity of CB have been appearing in newspapers and general-interest magazines. It's a little more low-key now, but there are a lot of CB radios on the nation's highways once again. And these aren't folks finding the old 23-channel rigs on the garage shelves and plugging them in. These are folks buying new 40-channel models with all the great bells and whistles available today: things like built-in weather channels and scanable channels.

I cut my teeth on radio with shortwave and CB. I still claim both as hobbies to this day. I don't get on the CB rig as much as I did when I was in junior and senior high school, or even college, but there's still a CB rig in my shack to this day and most of the time it sits on Channel 9, the emergency frequency. There's no one monitoring Channel 9 in my locale, so I have taken it upon myself to monitor the channel for emergency calls. I got my start on Channel 9 when I was a junior member of the now-defunct ALERT organization back in the early '70s. As a member of an ALERT team that served the Philadelphia area, I handled scads of calls for help on Channel 9. And I've used Channel 9 myself to get help in various situations. One such incident led to the arrest of some car burglars a block from my home after I spotted unusual activity, placed the call on Channel 9 and had police officers pulling over the suspects (who subsequently were charged and arrested) within minutes a few miles away. I've never doubted the effectiveness of CB and Channel 9.

In any event, Harold's put together one bang-up *CB Buyer's Guide* that will hit the newsstands on Nov. 2. If you're already a CBER, or you are thinking about buying a new rig, whether or not it's the first you've ever bought, we think you'll want to check

out this new guide. POP'COMM's own CB Scene columnist, Jock Elliott, kept busy writing some of the articles for the guide and we know you'll want to see what Jock has in store. Our articles not only will tell you how to go out and buy what you need and how to get it on the air, but we also have extensive listings of CB gear to help you make your selection. It doesn't matter whether you're looking for a base, mobile or handheld CB rig: the information is inside the POP'COMM *CB Buyer's Guide*. Antennas and microphones get equal treatment, too, in our product listings.

And for those who have ventured onto the original CB service, the General Mobile Radio Service on FM UHF frequencies, the buyer's guide also offers information to help you learn about this valuable radio service that's hand-in-hand with CB.

Let us know what you think about our two guides hitting the newsstand this month. If you can't find the POP'COMM *Communications Guide* or the *CB Buyer's Guide* on your favorite newsstand, check out the ads in this issue, or give us a call toll-free at (800) 853-9797 and your order will be sent by mail. And if you feel so inclined, circle all those goodies you'd like in the product listings of either guide and leave them on the coffee table for your spouse, parents or friends to see what you wouldn't mind receiving gift-wrapped for the holidays next month!

New Writer

One of the most difficult decisions I had to make as POP'COMM's new editor was whether or not to continue writing the scanner column that I have penned since 1983. It was so hard coming to terms with whether or not I wanted to give up the column.

However, my decision was made a little easier when J.T. Ward expressed an interest in writing the column; you know, in case I wanted to give it up! Like myself, J.T. is a long-time journalist and also ran around in ambulances like I did. When I finally came to grips with making a decision, I decided that I needed to concentrate my efforts on learning the ropes of this magazine from my predecessor, Tom Kneitel, and then perhaps make a few mistakes of my own along the way. I also decided I needed the time to run the editorial operations of the magazine and wanted to have the time to work on some feature articles myself. With J.T. volunteering to take over the scanner column, I felt comfortable surrendering

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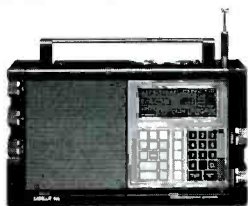
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MAILBAG

LETTERS TO THE EDITOR

Each month we select representative reader letters for our Mailbag column. We reserve the right to condense lengthy letters for space reasons. All letters submitted must be signed and show a return address. Upon request, we will withhold sender's name should the letter be used in Mailbag. Address letters to Chuck Gysi, N2DUP, Editor, Popular Communications Magazine, 76 North Broadway, Hicksville, NY 11801-2953, or send e-mail via the Internet to POPCOMM@aol.com.

Alice Fan Club

A letter to the editor from a German reader in the May issue objects to the amount of space given to Alice Brannigan's feature on radio history each month.

This is one of the features I like best in *Popular Communications* and I would certainly object if it were cut back. I'd like to see more, not less, on the history of radio.

Wes Leatherock
Oklahoma City, OK
(via the Internet)

I am a devoted reader of Alice Brannigan's "Ye Olde Tyme Radio." Several years ago, you occasionally published photos of Alice in the column. I am sure that if you did that again, Leif Dehio (Mailbag, May) would find at least that part of the column worth reading.

Jack Althouse
Escondido, CA

Not to worry about Alice, readers. We're not going to apply the scissors to her writing. I'm not too sure you'd want to "read" her photo, though. It might be worth looking at. In fact, we had to convince Alice a few years ago of not going into the business of selling photos of her in her shack to our readers. We were convinced that if she spent all her time stuffing photos into envelopes for our readers and answering their mail that she wouldn't have the time to research and write her column. We think you'd rather "read" Alice's stuff.—Editor

They Love Us

In your Telephones Enroute column (May), you were very generous in your mention of our Cellular Surveillance Interface and our newly released RFM. Once again, we became aware of the impact of your magazine when we began to receive an unusual number of telephone calls from all over the world. Your magazine has a

wide-based audience and readers who take your words as gospel. Some callers even went so far as to purchase units without any further information other than that in your article. Amazing!

Thank you very much for your efforts.

W.J. Fischer
Electronic Countermeasures Inc.
Calgary, Alberta, Canada

I have been a subscriber since 1983 and have every issue since May 1983. I wanted to tell you that *POP'COMM* helped me with my hobby to the point that I now have my extra class ham ticket. Thanks for all the years of enjoyable reading.

Thomas Whatley, KO4BM
Boynton Beach, FL
(via America Online)

I'm just dropping a line to say that I think your magazine is excellent. I've learned a lot about scanners and shortwave from reading it. I've been into the shortwave hobby for 10 years. Reading about other shortwave stories makes this hobby even more interesting. Keep up the good work.

Dan Neprily
St. Catharines, Ontario, Canada

An Idea to Get Blood Boiling

In the July issue, the *You Should Know* column offered "an idea to get your blood boiling." The author was correct when he wrote that there are many frequencies available for public broadcasting. CB radio is one such medium. This is why we formed a group called the Quality of Life Support Programs of New York City Inc./CB Communications Network.

The group was formed in 1991 to develop a CB network wherein public issues could be discussed. Also, we serve as a crisis network, with operators available for emergency situations. Our goal is to provide freedom of expression and quality information in an organized manner.

The CB service is ideal for our purposes. We are applying for funding for our project and seeking additional members in order to help achieve our goals. Any help you could provide in letting readers know about us would be appreciated.

Our phone number is (718) 267-2872.

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Ending "Whozzat?" Problems

Nailing Down IDs of Those Mystery Stations on Your Scanner

BY TOM KNEITEL, K2AES, SENIOR EDITOR

Ever notice how few VHF and UHF stations you hear on your scanners use call signs? A TV news crew dispatcher I monitor IDs with only the three digits in the station's call sign, but omits all three letters. A private security agency has a base station that IDs as "370," though those digits aren't part of its actual call sign. Many stations use no identification at all. These problems exist in all FCC-licensed land mobile (public safety, business, industrial, land transportation and some other) services, and also in many federal agency and military stations.

FCC regulations require that call signs be announced. Federal stations aren't licensed by the FCC, so they aren't bound by those rules. Maybe some federal stations don't use call letters for security purposes, but when FCC licensees don't use them, it's either because of ignorance or indifference. No matter. Stations failing to identify often are not readily identifiable to scanner users, and that gets vexing.

Here are some ideas to help. Alone, or in combination with one another, they can point you in the right direction, or completely zero you in on the identities of unknown stations. Possibly you already have tried one or more, but still had no luck. Keep on going, and think of it as collecting bits and scraps of information that you need to complete a jigsaw puzzle. Write down every "find" in a journal.

Let's Get to Business

On the most basic level, it's a fact that FCC-licensed and federal stations normally communicate in frequency bands that are almost exclusively their own. American stations monitored in the following bands are most likely federal activities (including military): 30 to 30.56, 32 to 33, 34 to 35, 36 to 37, 38 to 39, 40 to 42, 138 to 144, 148 to 150.75, 162 to 174, and 225 to 420 MHz. With the exception of the bands just listed, most American land mobile communications systems operating in the following frequency ranges are privately owned and subject to FCC regulations: 30 to 50, 150.775 to 162, 450 to 512 and 806 to 940 MHz.



The Optoelectronics D440 decoder displays CTCSS tones to help you identify unknown stations. It also decodes DTMF tones.

Under the present FCC system, individual land mobile frequency allocations between 30 and 512 MHz are designated for use by specific radio services such as police, fire, business, taxi, etc. Hence, by checking FCC frequency allocation information, you can determine which of these categories an FCC licensee is utilizing.

Federal stations, not being licensed by the FCC, obviously don't appear on FCC lists. You often can check out many of these in commercially available federal frequency guides. If you tune in an active unknown federal station, tune a few megahertz above and below its frequency and attempt to locate additional communications from the same agency. Sometimes federal agencies group several frequencies near one another, and one of those could be one you already have information about.

The Ears Have It

Based on the foregoing, listen to determine whether the frequency is being

referred to by a certain name or number. Obviously, if it's called "Channel 3," then there must be at least two more frequencies in the system. That's not the most important point, however. What you are hoping for is the use of a special or distinctive channel designator that could make it easier to tie it to a specific operating agency or licensee. Hearing references to "Channel Bravo 3," "Channel Tango," or "Channel Tac 3" adds good information to your database.

What can be learned about the station from the traffic it is passing? You can get a feeling about whether it is a police, fire, broadcast news crew, security guard, business, military operation, or whatever. If it's a law enforcement agency and they are "running" license plates or drivers' licenses, note if they are coming back from your community or a neighboring town. If it's a business, are they mentioning street or company names that you can look up?

Keep reference maps and telephone directories near your scanner. If you have



Universal's M-400 decoder tackles numerous tasks, including reading out CTCSS tones for you.

a CD-ROM drive on your computer, consider getting *Select Phone*. This set of five CD-ROMs lets you search every telephone directory in the United States according to any field: name, address, city, state, telephone number or ZIP code. *Select Phone* allows you to access more than 80 million residential and business listings, but doesn't include cellphone or beeper numbers, nor the nation's 14 million non-published numbers. A Canadian version is available, too.

You also may find *Street Atlas U.S.A.* to be useful. This CD-ROM provides a complete and highly detailed street map of the entire nation, down to the smallest back roads. *Select Phone* and *Street Atlas U.S.A.* are available from most computer software dealers.

Listen Up!

Pay close monitoring attention to any unusual words, jargon, lingo and codes. You can use that information as you try matching your mystery station to known networks using those same words or operating procedures. The manner of station identification itself can help you. For example, some branches of the U.S. Treasury Department identify base stations by a city location, while portable units are summoned by using the agents' last names. The U.S. Secret Service has a preference for coded tactical identifiers.

FBI offices often use code words plus digits or four-digit identifiers for contacting portables, though their base stations some-

times transmit standard call signs in CW a few times each hour.

The Tone of Their Voices

Commercial, federal agency and amateur repeater networks often utilize Continuous Tone Coded Squelch Systems (CTCSS). This is commonly referred to as "PL tones," which relates to Motorola's trade name, Private Line. In addition to the voice messages, all transmissions going out over a CTCSS-equipped system are continuously accompanied by one of 42 standard CTCSS audio tones. Lying between 67.0 and 254.1 Hz, the CTCSS tones are subaudible. Though you can't hear any of them, they are nevertheless detected by communications equipment.

CTCSS has numerous uses. Here are a few examples. Differing tones may be employed by one network on a single frequency to permit portable stations to access specific repeaters. Or, it can restrict repeater use to only those certain control and portable stations exhibiting one particular required CTCSS tone. CTCSS tones also control the squelch circuits of portable units, maintaining silence except when transmissions containing the proper tone are received. These attributes allow several unrelated networks to share a single frequency without accessing one another's repeaters or portable units. There are other uses, too.

To scanner enthusiasts, the best thing about CTCSS tones is that they can be useful for sorting out stations sharing a fre-

quency, and even identifying mystery stations (especially federal). An FCC-licensed station may select any CTCSS tone. Naturally, the licensee will pick one not already used locally on their system's frequency.

Tracking the CTCSS tones of an FCC licensee on one frequency, then matching it up against the same tones noted on another local frequency, might provide a useful clue. Also, note that a number of federal agencies prefer to stick with certain particular CTCSS tones nationally. When you grasp that information, you may have a handle on a major piece of the puzzle.

There's good news and bad news here. First, the bad: Not all stations use CTCSS tones. Moreover, scrambled transmissions are useless for determining the CTCSS tones. Now, the good news: Decoders for reading out CTCSS tones are readily available. Next, a chart with the commonly used federal agency CTCSS tones accompanies this POP'COMM feature. Place this chart near your scanner.

Reasonably priced effective CTCSS decoders are made by several *Popular Communications* advertisers, including Optoelectronics Inc., Universal Radio Inc. and MoTron Electronics. CTCSS readings sometimes can be obtained with no more effort than plugging into the scanner's external speaker jack. Other installations, however, may require a simple internal connection for best results.

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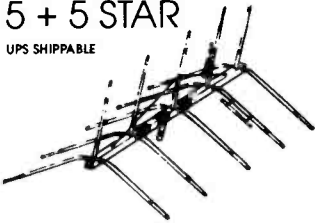
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Common Federal Agency CTCSS Tones

82.5 Hz	U.S. Postal Service
91.5 Hz	U.S. Postal Service
97.4 Hz	U.S. Postal Service
100.0 Hz	U.S. Customs Service Border Patrol
103.5 Hz	U.S. Secret Service National Highway Traffic Safety Admin.
110.9 Hz	U.S. Postal Service
114.8 Hz	Environmental Protection Agency
123.0 Hz	Internal Revenue Service Border Patrol Bureau of Alcohol Tobacco & Firearms
127.3 Hz	Veterans Affairs Dept. of Energy General Services Administration
136.5 Hz	Federal Aviation Administration U.S. Marshal Service
141.3 Hz	Coast Guard Intelligence
151.4 Hz	Dept. of State Immigration & Naturalization Service Border Patrol
156.7 Hz	Drug Enforcement Agency Federal Aviation Administration National Marine Fisheries
167.9 Hz	Dept. of Justice Federal Bureau of Investigation
173.8 Hz	Federal Communications Commission
206.6 Hz	Border Patrol

Table 1. Here are the CTCSS tones most commonly used by specific federal agencies. Save this chart.

Get the Big Picture

Should you suspect that your mystery station is not an isolated loner, try to see whether its operations, unit numbers and activity level fit in with other stations being monitored, including other unidentified stations. Are they mentioning any identical location names?

When you begin to pay very close attention, you will realize that your target station operates on a particular schedule, such as full time, or only during business hours, or weekdays only, or maybe it is silent for weeks at a time. Write this down, for surely this is relevant to completing the puzzle.

In the event you hear names or places mentioned, enter them in your journal. Then, watch the news media for possible coverage of events in which those names

or places strangely appear. Weeks or months may pass, and it could be an investigation or an arrest. When the media provides the report, you will find out which agency conducted the operation, and there you are with valuable information!

Getting the big picture always means having a serviceable reference shelf, providing reliable information about frequency allocations and stations. You already knew that.

These ideas have worked well over the years. Sure, some stations still resist being identified, but the challenge has only served to add an interesting dimension to the monitoring. Patience is a must-have, even when it wears thin. Keep trying. Possibly you have one or many great thoughts that didn't get included here. If so, jot them down and send them to me so we can share them with others in a future report. ■



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 - Memories: 50 ch. x 20 banks=1000 total
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The NSA Cryptologic Museum

Crypto Machines, Computers and Other Historical Cryptography Items and Individuals

BY DON SCHIMMEL

If you are traveling in the Washington-Baltimore area, allow some time for a visit to the National Security Agency Cryptologic Museum located just off Maryland Route 32. Enter Route 32 by leaving the Baltimore-Washington Parkway at the 32 East exit. The museum is found directly behind the Shell service station. (See map.)

Museum hours are 9 a.m. to 3 p.m. Monday through Friday and 10 a.m. to 2 p.m. on Saturday. The museum is not open on holidays.

Upon entering the museum lobby, there is a guest book you may sign, and displayed are various free booklets and pamphlets.

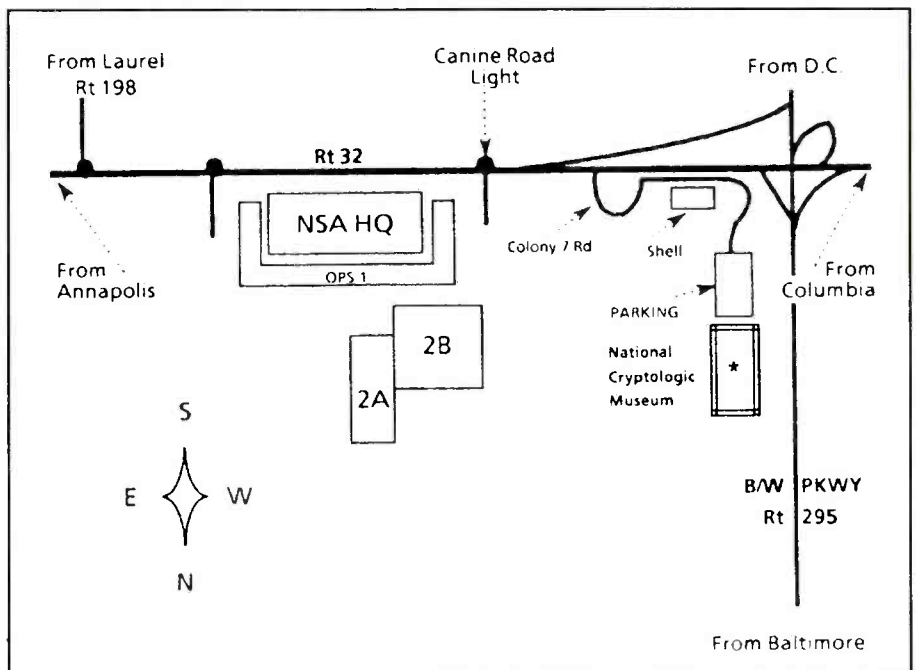
One booklet will help you in taking a self-guided tour of the museum. In addition to a diagram showing the location of the various exhibits, the booklet offers explanatory statements for each exhibit.

Another booklet presents a capsule review of "The Origins of NSA." The chronology of events is outlined that led to the formation of NSA in 1952.

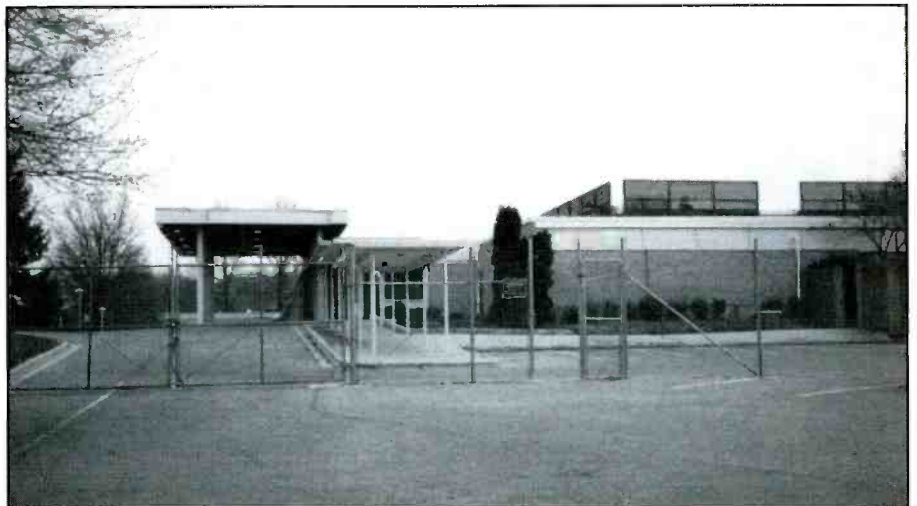
Yet another brochure will appeal to those who like to dig into mathematics. This one is called, *The Cryptographic Mathematics of Enigma*. When you open up this booklet, you will be treated to terrific photos of an Enigma machine, including close-ups of the plug boards, rotors and other features of the cipher machine.

Amateur cryptanalysts will enjoy the *National Cryptologic Museum Activities Book*. Here are examples of codes, ciphers and puzzles you can try to solve.

As you take a self-guided tour, exhibits will take you through various developments in signal intelligence (SIGINT). These include the Civil War, World War I and the "Black Chamber" headed by Herbert Yardley and closed by Secretary of State Henry Stimson (who reportedly made the statement, "Gentlemen don't read each other's mail."). This is followed by exhibits highlighting individuals such as William F. Friedman, Laurance Safford and others.



This map shows how to find the NSA museum.



External view of the NSA Cryptologic Museum. Note the security fence surrounding the museum. It's hard to believe this was once a motel.

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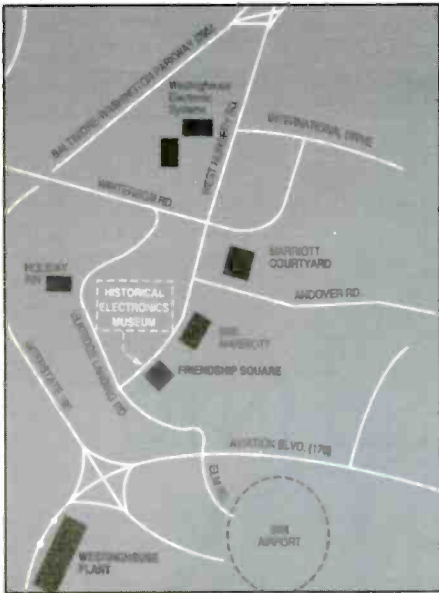
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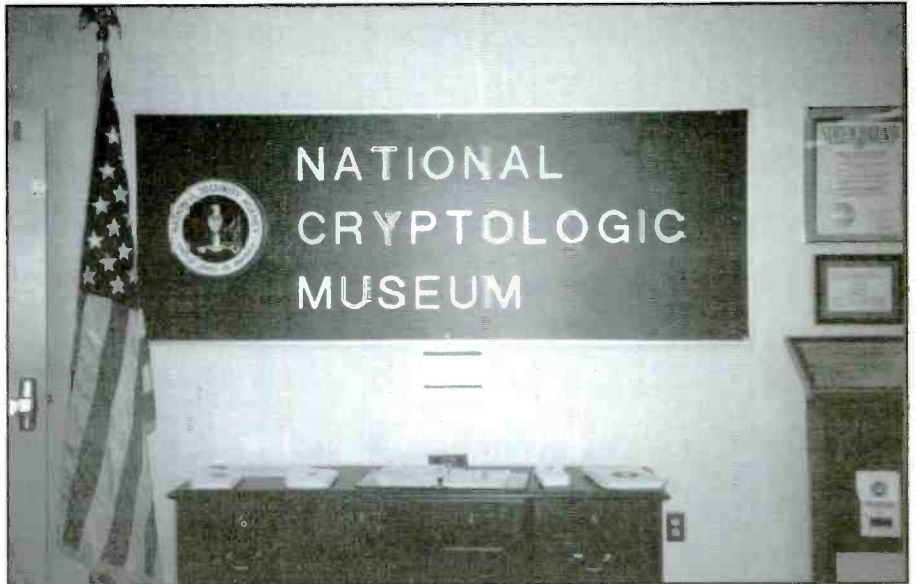
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This map shows you how you can find the Historical Electronics Museum.

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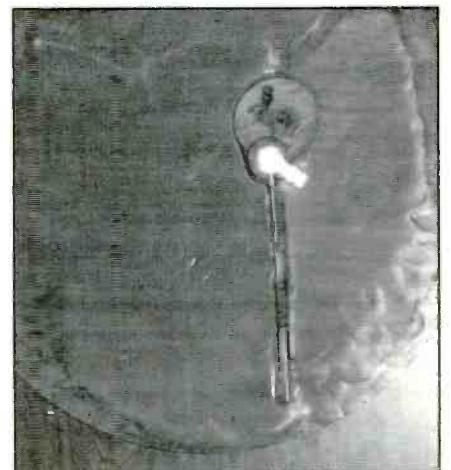
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The infamous Great Seal.



Here is the Great Seal opened showing the hidden microphone/transmitter.

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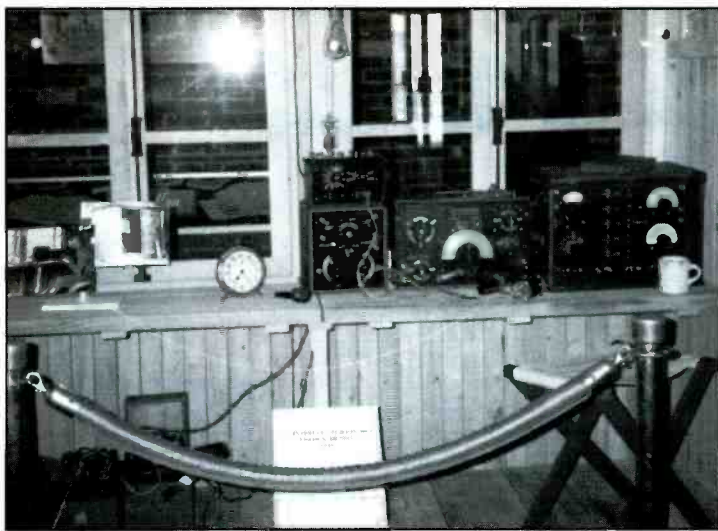


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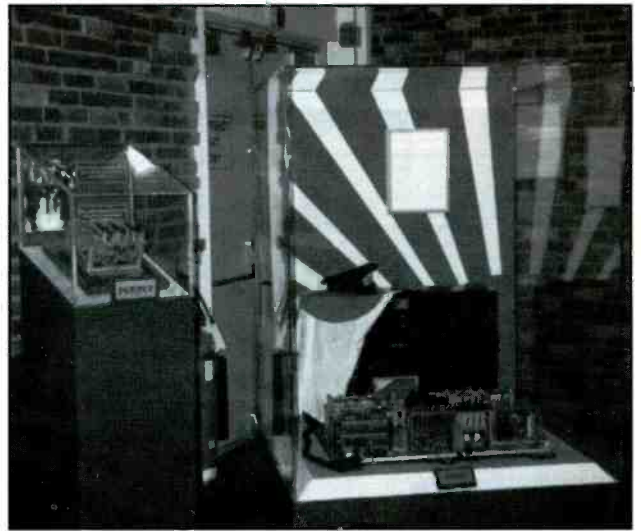


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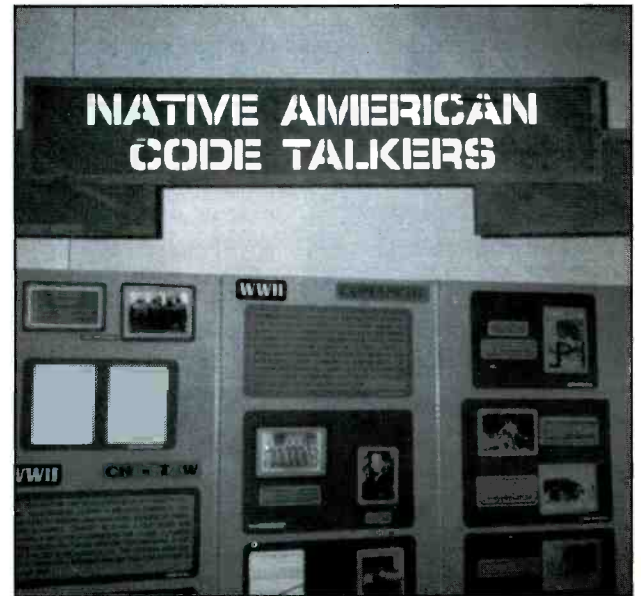
World War I intercept equipment installation.



Japanese cryptographic machines.



German cryptographic machines



Members of many American Indian tribes were employed during World War II for encrypted voice communications. Such coded voice messages never were broken by the enemy.



This Russian exhibit contains an agent radio.

The Soviets are not overlooked. A Russian crypto machine is displayed as well as the carved wooden seal of the United States that was in the ambassador's office in the U.S. Embassy in Moscow. Years later, it was discovered the seal had a microphone hidden inside it. The seal can be opened and you will see the concealed microphone and transmitter.

A visit to the NSA museum will certainly give you an appreciation for the efforts in the SIGINT field whose contributions have assisted the U.S. government in peace and war.

While you are in the area, why not pay a visit to another free museum? The Historical Electronics Museum also is accessible

from the Baltimore-Washington Parkway, located next to the BWI Marriott on West Nursery and Elkridge Landing roads, Linthicum, Md. (See map).

The museum hours are the same as the NSA museum—also not open on holidays.

One of the attractions at this museum is the SCR-270 radar. This type of radar detected Japanese planes when they approached Pearl Harbor on Dec. 7, 1941.

Other exhibits at the museum include various receivers and transmitters, test equipment and a collection of airborne radar devices.

Also open to the general public during the museum's regular hours is a collection of electronics-related reading material. ■

NEW PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS

Protect Spikes On Video Coaxial Cables

If you've got a satellite dish in the back yard, this is something you may want to take a look at. While most of us with radio towers and antennas mounted on our roofs use techniques to ground the antennas and make an effort to eliminate problems should lightning



Tripp Lite's Isobar Audio-Video offers surge suppression for your video coaxial cables, too.

strike, how about satellite dishes? Sure, even that dish on the ground could be susceptible, plus it could cause other problems.

Enter Tripp Lite, the folks who call themselves The Power People. They make the Isobar Audio-Video surge suppressor that features not only protection for what you plug into the AC outlet on the wall, but also your video or satellite coax cables.

The Isobar Audio-Video features gold-plated F connectors to protect large-screen TVs, satellite receivers and cable TV converters from surges and spikes carried on coaxial cables. The unit also has multicolor indicator lights that detect and display wiring faults, loss of power and integrity of the surge protection circuitry. This allows the unit to alert the user of problems before equipment is turned on.

The Isobar Audio-Video comes with a lifetime insurance guarantee. This means that should your unit take a surge—including direct lightning strikes—it's guaranteed for life for up to \$25,000 should damage result to the equipment it is designed to protect. The manufacturer says that if surge damage occurs while plugged into the Isobar Audio-Video, it will repair or replace the damaged equipment free.

The Isobar Audio-Video has 1,200 joules of surge energy absorption at up to 96,000 amp-spikes, six AC outlets with three isolated filter banks to prevent interference between connected components and multiple filtering components all in a rugged all-metal case.

The Isobar Audio-Video carries a suggested list price of \$119.95. Contact Tripp Lite in any of the following methods: mail, 500 N. Orleans, Chicago, IL 60619-4188; phone, (312) 755-5401; fax, (312) 644-6505; fax back service, (312) 755-5420; or Internet e-mail, info@triplite@mcimail.com.

Keep Yourself On Time Anywhere in the World

When POP'COMM editor Chuck Gysi saw this item, he knew he had to have one.

Being one who likes to travel, he finds himself in various time zones at different times of the year. While Indiana is confusing enough when daylight-saving time is observed, this little device helps you stay on time just about anywhere else. That is if you aren't in the Mountain Time Zone.

If you are a shortwave listener, chances are you have more than one clock at your listening post. Perhaps one clock is set to your local time, while the other is set for Coordinated Universal Time so you can be sure when certain SW stations and programs come on the air. This little pocket-size World Star travel clock will help you get rid of those old kitchen clocks or alarm clocks cluttering up your shack. This one simple clock allows you to monitor the time just about anywhere in the world. Except perhaps the Mountain Time Zone. Did we mention that?

You set the clock to your local time zone



With the push of a button, you can tell the time in half the world's time zones on this clock.

and the clock can be used to check the time in any of 12 other world time zones with the simple push of a button. Time zones represented on the buttons are indicated as such: TYO (Tokyo), HKG (Hong Kong), BKK (Bangkok), LON (London), PAR (Paris), CAI (Cairo), HNL (Honolulu), LAX (Los Angeles), CHI (Chicago), SYD (Sydney), MOW (Moscow) and NYC (New York City). There's no DEN for Denver in the Mountain Time Zone, in case we didn't mention that.

But we do like this clock's handy size of 3.25 inches by 2.6 inches by 0.6 inches. It fits easily in your pocket and has a 24-time-zone map below the clock display.

But, wait! That's not all. This handy clock also can be used as a travel alarm to wake you in the proper time zone. It also has a built-in calculator and times can be displayed in 12- or 24-hour time formats, which is handy for radio hobbyists.

The World Star travel clock-calculator is finished in matte black thermoplastic. The clock's retail price is \$25 postpaid and it's available from Executive Travelware, P.O. Box 59387, Chicago, IL 60659, (800) 397-7477. And while you're at it, ask them where the button is for Denver's time. Just in case we forget.

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Some Early Broadcasters Wouldn't Stay Put

BY ALICE BRANNIGAN

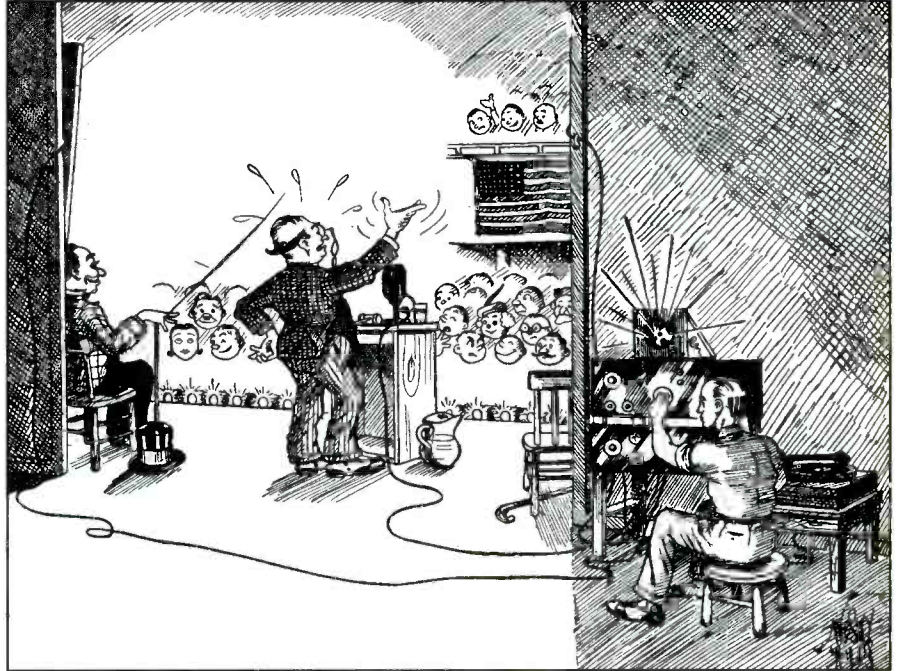
A POP'COMM staff member received an e-mail inquiry that was passed along here for reply. It had been sent in from an unspecified location in cyberspace by radio researcher Barry Mishkind. Barry writes that during the 1920s, Chicago's C.L. Carrell, owner of the Carrell Theatre Company, was the licensee of several "portable" broadcast stations. Barry is curious about why broadcast stations might have been portable, because broadcasters usually are licensed for use at specific sites.

Broadcasting was embraced by the public soon after it began in earnest in 1922. Stations started popping up all over the place, except nobody knew what could be done with radio. Most stations were located in stores, newspapers, hotels, churches, schools, homes, factories or their own studios. Still, some imaginative souls were intent on exploring broadcasting's less obvious potentials. Unrestrained by today's strict federal prohibitions and industry taboos, broadcasters of the 1920s and 1930s felt challenged to pursue innovative concepts in their fledgling radio service. Their imaginations ran wild.

C.L. Carrell owned no less than five portable broadcast stations in the mid- to late 1920s, including WBBZ, WHBM, WIBJ, WIBM and WKBG, all of Chicago. He started out in 1925 with two stations, one running 10 watts and the other 50 watts. By 1928, his five portable stations were running 100 watts.

Carrell didn't have the only portable broadcast stations during the 1920s. The concept was popular. For instance, Charles Messter's WCBR, Providence, R.I., ran 30 watts (eventually 100 watts), the New Jersey National Guard operated WIBS with 20 watts from Elizabeth, N.J. There was Harl Smith's WOBR with 100 watts in Shelby, Ohio, and the Brant Radio Power Co.'s 1,000-watt KGFO in Los Angeles, Calif. There were many others, too.

These portables operated on regular broadcast frequencies. They could be used for various purposes, especially for being hired out for on-site broadcasts from rallies, fairs, openings, speeches and other special events. Alternately, a radio dealer could hire a portable station. The dealer could set it up in front of his store for a couple of weeks to boost receiver sales to area residents. Many transmitter manufacturers would bring a portable station to a small town as a way of generating local interest in establishing a permanent station there.



A brochure from the 1920s shows how a portable radio station could be hired for broadcasting political speeches around a neighborhood.

The A.H. Grebe Co. of Richmond Hill, N.Y., was a broadcaster (WBOQ/WABC) and equipment manufacturer. WGMU, Grebe's 100-watt Atlantic Broadcasting Co. portable station on 1490 kHz, was used for making field-strength measurements at proposed broadcasting sites. WGMU would be set up at the site, then a vehicle with signal-measuring equipment would circle WGMU at various distances in order to prepare signal contour maps for new broadcasters.

Broadcasting Afloat

Imaginative broadcasters of the early days certainly didn't end at portables, they only began there. Broadcasters went to sea, too. In the late 1920s, Atlantic Broadcasting Co. held a broadcasting license for WRMU, a 100-watt on 1490 kHz. WRMU was licensed for being aboard A.H. Grebe's yacht, the MU-1.

In 1933, floating broadcaster RXKR, The Voice of Panama, aboard the ship City of Panama, serenaded Los Angeles with its 5-kW signal from offshore. This was a lavish pleasure vessel offering illegal gambling and alcohol to Americans. U.S. and Mexican broadcasters near RXKR's 815 kHz frequency complained of interference, call-

ing RXKR a "pirate," even though it had a valid Panamanian license. It took the U.S. State Department months to convince Panama to revoke RXKR's license. The full RXKR story was in our August 1983 issue.

From 1936 to the 1940s, the Australian liner M/V Kanimbla ran a daily shortwave broadcast sked with its 50-watt station, VK9MI, on 6053 and 11710 kHz. The Kanimbla was 494 feet long and carried 400 passengers between Australia and New Zealand. VK9MI had its own disc jockey and sent out QSL cards, claiming to be the "world's first ship broadcaster."

Starting about 1937 and lasting into the early 1940s, DXers reported hearing broadcaster ZMBJ, located aboard the T.S.S. Awatea, a 520-foot Union Steam Ship passenger liner sailing from New Zealand. ZMBJ ran 300 to 400 watts on 8840, 13200, and 13600 kHz, and sent out QSL cards.

DXers reported special musical and other broadcasts often coming from well-known luxury liners, such as the S.S. Normandie and S.S. Leviathan.

Hitting the Heights

In 1928, the Federal Radio Commission licensed an unusual broadcast station in an

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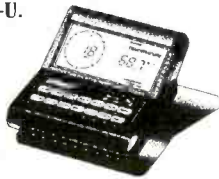
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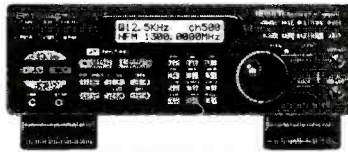
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The Weather Monitor II (7440) comes complete with anemometer with 40 feet of cable, external temperature sensor with 25 feet of cable, junction box with 8 feet of cable, AC power adapter, detailed instruction booklet and one year limited factory warranty.



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The Bearcat 9000XLT gives you pure scanning satisfaction with amazing features like TurboSearch™ to search VHF channels at 300 steps per second. This base and mobile scanner is ideal for surveillance professionals because it has a selectable attenuator to help eliminate annoying intermodulation from adjacent frequencies in highly populated areas and selectable AM, Wide FM and Narrow FM modes that allow you to change the default receiving mode of the BC9000XLT. Other features include **Auto Store** - Automatically stores all active frequencies within the specified bank(s). **Auto Recording** - This feature lets you record channel activity from the scanner onto a tape recorder. **Hi-Cut filter** to help eliminate unwanted static noise. You can even get an optional **CTCSS Tone Board** (Continuous Tone Control Squelch System) which allows the squelch to be broken during scanning only when a correct CTCSS tone is received. For maximum scanning enjoyment, order the following optional accessories: **PS001** Cigarette lighter power cord for temporary operation from your vehicle's cigarette lighter \$14.95; **PS002** DC power cord - enables permanent operation from your vehicle's fuse box \$14.95; **MB001** Mobile mounting bracket \$14.95; **BC005** CTCSS Tone Board \$54.95; **EX711** External speaker with mounting bracket & 10 feet of cable with plug attached \$19.95. The BC9000XLT comes with AC adapter, telescopic antenna, owner's manual and one year limited warranty from Uniden.

CB/GMRS Radios



The Maxon GMRS 210+3 transceiver is a PLL synthesized 10 channel radio on General Mobile Radio Service frequencies. It's the ideal radio for long range communications. Two repeater channels are programmable and one channel (462.675 MHz) is set aside for emergency and safety communications. The seven remaining interstitial frequencies 462.6875, 462.7125 MHz are all-purpose GMRS radio channels. 2 watts of RF power for exceptional transmitting range. Up to 5 watts when used with the supplied 12 volt vehicular DC power cord. CTCSS built-in. Includes 450mAh NiCad rechargeable battery pack, AC/DC wall battery charger, owner's manual, FCC license application, belt clip, antenna. Call 1-800-USA-SCAN to order.

Maxon GMRS210+3 U GMRS transceiver \$188.95

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RELM® WHS150-U Transceiver/SPECIAL

Mfg. suggested list price \$481.67/CE price \$299.95

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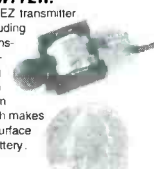
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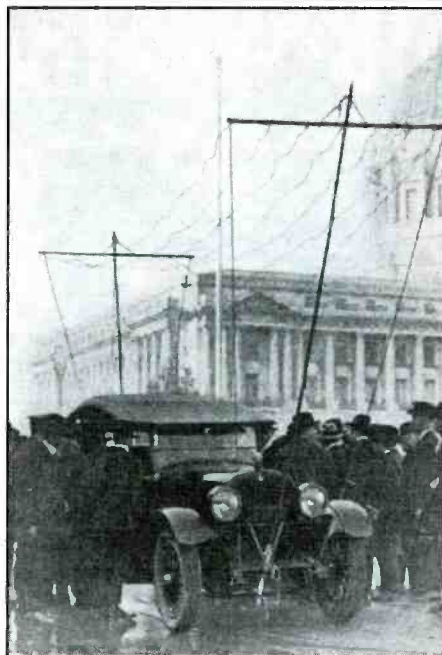
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Portable broadcaster WHBM of Chicago always attracted a crowd. It was good for stimulating radio receiver sales by local merchants who could hire it to park in front of their stores.



Portable broadcaster WGMU (with its call letter sign in the rear window) shown performing field-strength tests about 1931.

airplane. This was Los Angeles station KFB1, with 50 watts on 1470 kHz, owned by Flying Broadcasters Inc. Apparently, however, the first known radio broadcast from an inflight aircraft took place on Feb. 2, 1929, when NBC placed a 100-watt 1604 kHz transmitter (W2XCQ) aboard a U.S. Army aircraft and spoke to amazed radio owners in New York City.

DXers of 1935 were thrilled to hear 8-watt NBC station W10XFH on 13050 kHz. It was located aboard the Explorer II, a manned high-altitude National Geographic Society balloon that ascended to 72,395 feet over South Dakota. While the crew's broadcasts and two-way conversations with ground stations and the China Clipper airliner over the Pacific were carried live on the NBC Network, shortwave listeners throughout a wide area heard it all via direct reception from the stratosphere. What a station!

Eccentric millionaire Howard Hughes was granted a license for a shortwave broadcasting station aboard his aircraft NR18973 during its 1938 transworld flight. Station KHRH operated with 100 watts on six shortwave frequencies, and was nationally reported by DXers.

Steamed Up, Too

W2XDY was a 50-watt broadcasting station they tried on a moving Baltimore and Ohio train in March 1932. The train traveled between Washington, D.C., and Baltimore, Md. Operating on 1542 kHz (just a shade above the end of the broad-

cast band's edge at 1500 kHz), this was a complete self-contained station installed in Dining Car No. 1055. The antenna was on the car's roof.

Two wayside receiving stations picked up the W2XDY signals and fed them to the CBS Network, also over worldwide shortwave. From the W2XDY studio, came the sounds of a 12-piece orchestra, singer Belle Baker and the Ever-Ready Radio Gaities.

When the Warner Brothers' film *42nd Street* was going to open in 1933, the studio chartered a train to travel from coast-to-coast on a promotional tour. A license had been secured for use on the train, allowing its station, KIED, to be used with 250 watts on 1518 kHz.

The train would show up in every large city where the film was opening. Part of its function was to play all the songs from the movie as well as broadcast interviews and other publicity. Listeners could tune to KIED directly, although the station was freely rebroadcast over one or more higher-powered local stations.

In 1939, 50-watt station WOEG was installed aboard the Union Pacific's transcontinental exhibition train. This broadcaster operated on 2000 kHz and was specially constructed and installed by GE engineers from WGY, Schenectady, N.Y. WOEG's location was a soundproofed room in a baggage car that followed the two locomotives (a diesel-electric and an antique wood-burner). WOEG's antenna stretched out for 200 feet across three cars, providing an average range of up to 20 miles. Its transmissions while the train was moving were



Broadcaster WRMU existed in the late 1920s aboard the yacht, MU-1. Notice Vivienne Segal singing into the mic. You might be able to make out the vessel's name on the transom.

The Australian vessel M/V Kanimbla was an early shipborne broadcaster that had a daily sked.



picked up by the NBC Network.

Tracking back to Australia, we find another innovative broadcaster who had a new idea. In 1937, someone realized that many remote communities would like to hear radio but couldn't support a full-time radio

station. At that point, he equipped a railroad car with a self-contained broadcasting station. This was licensed to the Mobile Broadcasting Service of Melbourne, receiving the call letters 3YB for 1060 kHz with 50 watts. Station 3YB then was towed along

a regular touring circuit and dropped off for stays in a succession of small communities. It would remain for a week at a time in each location, broadcasting four hours daily. Then it would then be taken to the next town down the line. While 3YB was in one town,

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DELTA COMM™ I-7100 communication manager and your MS-DOS computer gives you a custom interface integrated with optimized software that will not just control but will maximize the potential of your R7100. Here are a few (there are many more) examples of the advanced features DELTA COMM™ I-7100 has to offer.

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- Individually programmable database volume levels (by channel) while scanning.
- Spectrum log function will sweep a frequency spectrum, generate a histogram and log frequency/activity to screen and/or disk in real time.
- Dual squelch detect electronics integrated with DELTA COMM™ I-7100 software guarantees optimum speed and performance during a frequency search or database scan.
- Programmable signal strength threshold limits with full 8-bit accuracy allow selective monitoring and logging. Only stations having signal strength less than or greater than or within upper/lower user defined signal strength window limits will be monitored and/or logged.
- Continuously updating activity information window displays the last 19 active channels.
- Channel activity status is displayed in real time with activity log function. To determine system loading when first 5 channels are simultaneously busy, "All Trunks Busy" message is logged to disk.
- Receiver characterization with DELTA COMM™ I-7100 birdie log function automatically logs any receiver birdies prior to a frequency search operation. Birdie channels are then locked out during a frequency search operation, thus eliminating false channel logging.
- Custom interface allows selective program control of relay contact. Possible uses include activating an operator alert, switching antennas via coax relay or turning on a tape recorder when user defined frequencies are found to be active.



DELTA COMM™ I-7100 communication manager comes complete with Delta Research custom (C-I-V) communication interface, UL listed power supply, manual and receiver interface cable for \$349.00 + \$8.00 (U.S.) or \$25.00 (foreign) S&H. Contact us for additional information on DELTA COMM™ communication managers for ICOM™ R7000, R71A, R72 and IC735. Performance is proportional to video card, type of computer and receiver squelch detection method.



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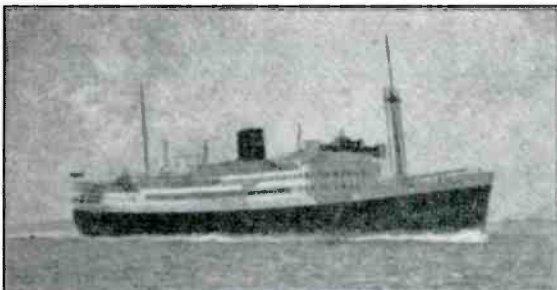


CIRCLE 60 ON READER SERVICE CARD

THE MONITORING MAGAZINE

CIRCLE 61 ON READER SERVICE CARD

November 1995 / POPULAR COMMUNICATIONS / 23



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New Zealand's T.S.S. Awatea was a widely reported broadcasting ship of the 1930s.

Veri from VK9MI, the broadcast station aboard the Kanimbla.

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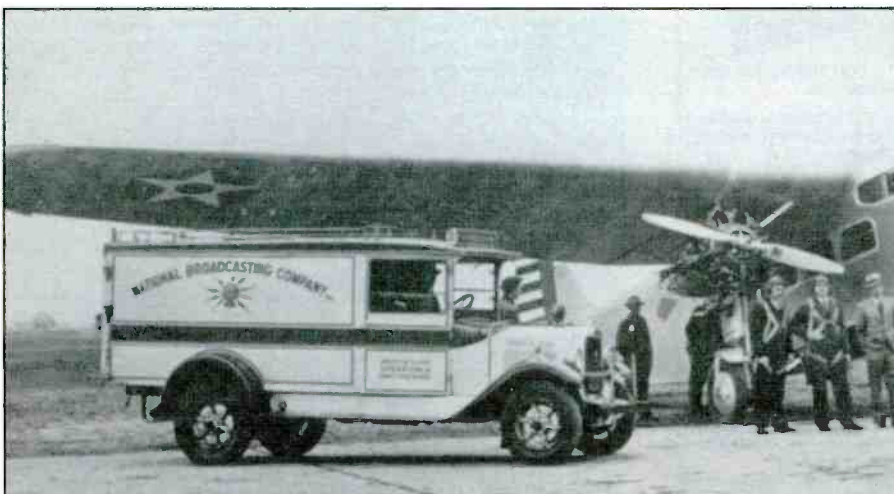
RECEIVER: 16 V Superhet on Doublet Aerial

Thank You for Report. 73.

Verified
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Wireless Officers.



Capt. Orvil Anderson, U.S. Army, shows the W10XFH broadcast transmitter aboard the Explorer II stratosphere balloon (1935).

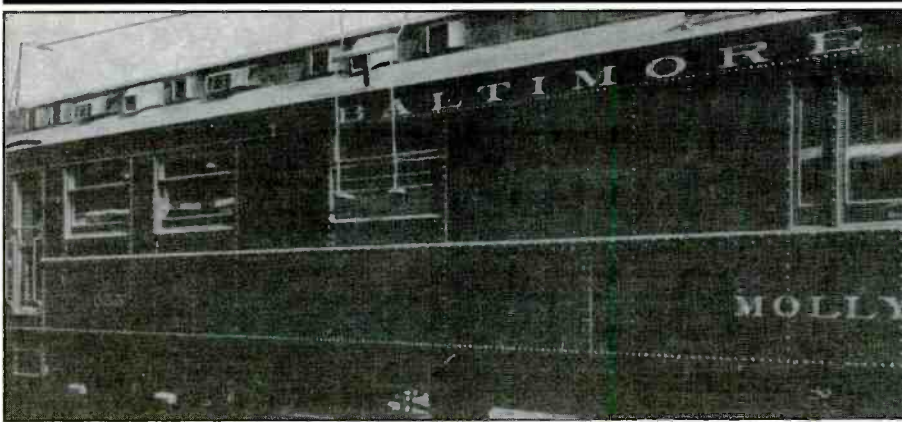


The first broadcast from an in-flight aircraft was made by NBC on Feb. 2, 1929.

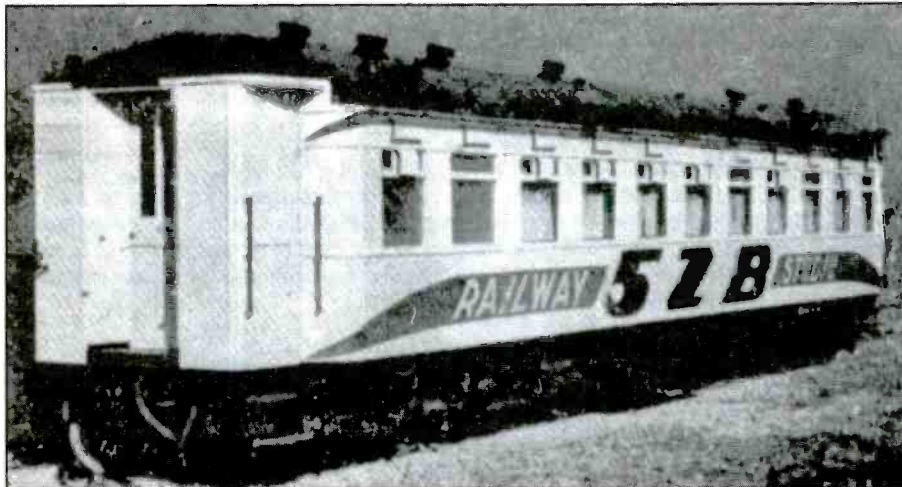
its representatives would work two and three towns ahead on the circuit to publicize the station's forthcoming stopover, and line up sponsors. In this manner, 3YB may well have visited every small town in Victoria where there was a convenient railroad siding for it to park for a week.

New Zealand broadcaster 5ZB was a similar railroad car broadcaster that was towed around to different rural areas for brief stays. The concept was to bring radio to remote areas beyond the normal coverage of New Zealand's nine other stations. Station 5ZB operated from 1940 to 1942.

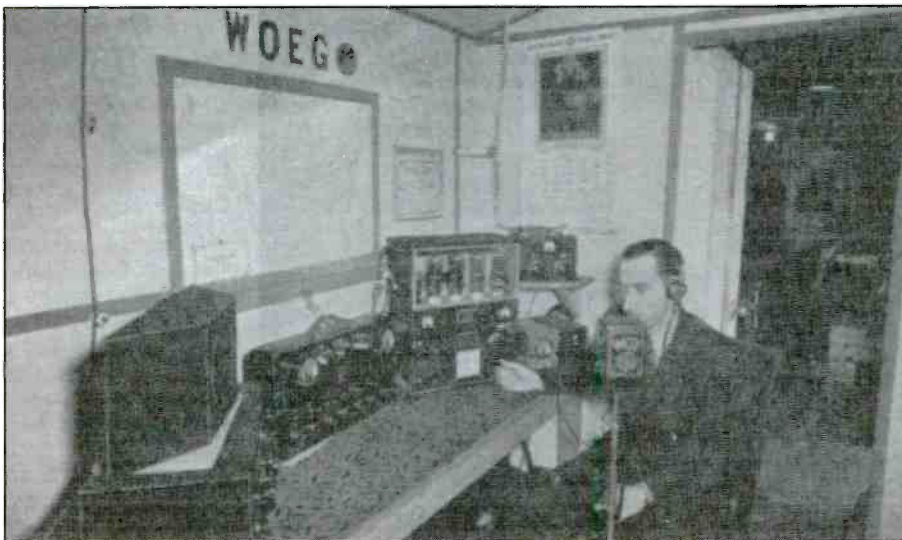
Broadcasters had no shortage of ideas for how to attract attention and audiences by being different. That's half the battle anyway, isn't it? As new laws and technologies



The B&O dining car was outfitted into a rolling broadcast station. Notice the antenna on the roof with the two lead-in wires coming through the window.



New Zealand broadcaster 52B was in a railroad car that was towed from one rural town to another for short stints.

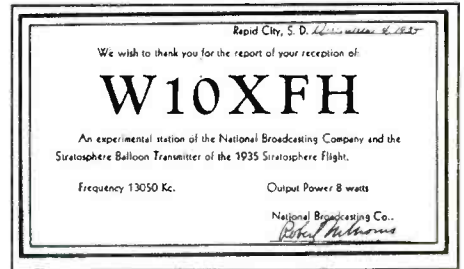


Station WOEG was a 50-watt station on a special transcontinental Union Pacific train back in 1939.

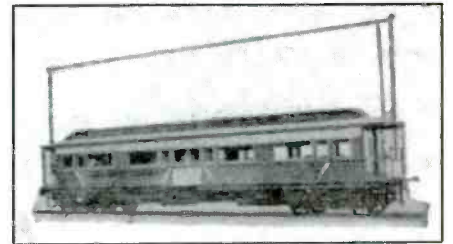
came along, they either ended or replaced the need for the odd approaches of the early years. Maybe a couple were ahead of their time.

Your help and continuing letters to this column are always appreciated. We can use

old QSL cards and letters (originals or good copies), picture postcards or photos of old radio or wireless stations, pre-1960 station listings, as well as your questions, comments, anecdotes and suggestions. Happy Thanksgiving. ■



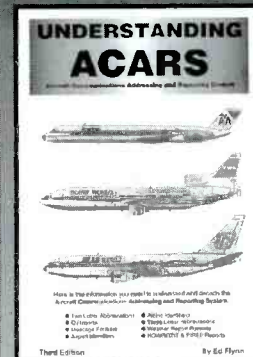
W10XFH, the NBC broadcast station in a manned stratosphere balloon, sent out these QSLs in 1935. Nice addition to any wall!



Australian station 3YB was in a railroad car. That's the antenna system strung on masts across the roof.

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Selected English Language Broadcasts

Fall 1995

BY GERRY L. DEXTER

There are hundreds of English language broadcasts aired every day on shortwave. This is a representative listing; it is not intended to be a complete guide. While every attempt is made to make the list as up-to-date as possible, stations often make changes in their broadcast hours and/or frequencies with little or no advance notice. Some broadcasters air only part of a transmission in English or may run the English segment into the next hour or more. Some stations have altered schedules on weekends. Numbers in parentheses indicate an English start time that many minutes past the hour. All times are in UTC.

Time	Country	Frequency	Time	Country	Frequency
0000:	Radio Australia	15365, 17795	Radio Cairo, Egypt	9475	
	Radio China Int'l	9710, 11715	(30) Radio Portugal	9570	
	Voice of Russia	7105, 7165	Voice of Free China, Taiwan	5950, 9680	
	Radio Bulgaria	7205, 9700	0300: China Radio Int'l	9690, 9710, 11715	
	(30) BBC	5975, 6175, 7335	(40) Voice of Greece	7448, 9420, 9935	
	(30) VOIRI, Iran	7100, 9022	Radio New Zealand Int'l	15115	
	(50) RAI, Italy	7275, 9725, 11800	Monitor Radio, USA	5850, 9455	
	Radio Pyongyang, N. Korea	11335, 13760, 15130	Radio Prague, Czech Republic	7345	
	Radio Prague, Czech Republic	7345, 9405	Deutsche Welle, Germany	6185, 9615, 9640, 11750	
	REE, Spain	9540	Radio Japan	11840, 11895, 17810	
	(30) Radio Thailand	11905	Voice of Turkey	9445	
	Radio Ukraine Int'l	9750, 9835, 11780, 11875, 11950	(30) Radio Sweden	7120, 9850	
	0100:	(30) Radio Austria Int'l	9655	ZBC, Zimbabwe	3306, 3396, 4828
Slovak Radio		5930, 7300, 9440	HRVC, Honduras	4820	
(30) Voice of Greece		7448, 9420, 9935	Channel Africa, South Africa	5955, 7185, 9585	
(Sun) Radio Norway		7480, 9560	Radio Thailand	9655, 11905	
HCJB, Ecuador		9745	0400: China Radio Int'l	9730	
Deutsche Welle, Germany		6040, 6085, 6145, 9555, 9640, 11740, 11865	Voice of Russia	5905, 5930, 5940, 7105, 7165, 7175, 7180, 7270, 7345, 9850, 9895, 12050	
(30) Radio Budapest, Hungary		6010, 9835, 11910	(30) Radio Netherlands	6165, 9590	
Radio Japan		5980, 11810, 11840, 17845	Kol Israel	7465, 9435	
(30) Radio Tirana, Albania		9580, 11840	Radio Romania Int'l	5990, 6155, 9510, 9570, 11940	
Radio Havana Cuba		6000, 9830	Swiss Radio Int'l	6135, 9885, 9905	
Swiss Radio Int'l		5885, 6135, 9885, 9905	Radio Bulgaria	9700, 11720	
0200:		(30) Radio Austria Int'l	9655	Monitor Radio, USA	7535, 9840
		Radio Canada Int'l	6120, 9755, 11940, 13670	0500: (30) Radio Austria Int'l	6015
	RAE, Argentina	11710	RFPI, Costa Rica	7385, 9400	
	Deutsche Welle, Germany	7285, 9615, 9640, 9690, 11945, 11965, 12045	Radio Havana Cuba	9820	
	Radio Romania Int'l	5960, 6155, 9510, 9570, 11940	Radio Netherlands	6155, 9590	
	(30) Radio Budapest, Hungary	6010, 9835, 11910	Deutsche Welle, Germany	6185, 9515, 11705	
	(30) Radio Sweden	7120, 9850	Voice of Nigeria	7255	
	(50) Vatican Radio	6095, 7305	REE, Spain	9540	
			Radio New Zealand	9570	



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- Rapid charge NiCads with 10 hour discharge time
- Scout Spectrum CD-ROM/PerCon FCC database (optional)
- AC Adaptor/Charger
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At right: Scout shown with CLIPMATE™. A handy windshield mount for Scout, for quick access and visibility.



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CIRCLE 166 ON READER SERVICE CARD

Time	Country	Frequency	Time	Country	Frequency	
0600:	(30) Radio Austria Int'l	6015	1400:	China Radio Int'l	7405, 9535, 9785	
	Voice of Russia	5905, 5930, 7175, 7270, 7345, 9850, 9895, 12050		Voice of the Mediterranean	11925	
	HCJB, Ecuador	9745		Radio France Int'l	12030, 15405, 17560	
	ELWA, Liberia	4760		Radio Jordan	9560	
	Voice of Mediterranean, Malta	9765		All India Radio	7412, 9950	
	Trans World Radio, Monaco	7115		Radio Copan Int'l, Honduras	15675	
	Voice of America	3980, 5995, 6040, 6060, 6140		Radio Japan	9535, 9750, 11705, 11895, 11915	
	Vatican Radio	7360, 9725		1500:	HCJB, Ecuador	15115
	GBC, Ghana	4915			Radio Pyongyang, N. Korea	9325, 9640, 9977, 13785
	Radio Kiribati	9825			FEBA, Seychelles	9810
	(40) TWR, Monaco	7115			Polish Radio Warsaw	7285, 9525, 11840
	Radio Vlaanderen Int'l, Belg.	9925			Radio Ethiopia	9560
					(30) R. Finland Int'l	11900, 15400
0700:	R. For Peace Int'l, Costa Rica	7384, 9400 USB	VOIRI, Iran	9575, 11790		
	CHNX, Canada	6130	1600:	Radio Pakistan	11570, 15555, 17660	
	(30) Croatian Radio	5920, 7370, 9830, 13830		(Sun) Radio Norway	11850	
	Voice of Free China, Taiwan	5950		Radio Prague, Czech Republic	5930, 17485	
	Wings of Hope, Lebanon	11530		UAE Radio	13675, 15320, 15395	
KNLS, Alaska	6150, 9615	Radio France Int'l	11700, 11975, 12015, 15530, 17795			
0800:	KTWR, Guam	15200	1700:	Radio For Peace Int'l	6200, 15050	
	Radio Korea, S. Korea	7550, 13670		All India Radio	7412, 9950, 11620	
	Radio Australia	5995, 6020, 6080, 9580, 9860		HCJB, Ecuador	15490	
	HCJB, Ecuador	6135, 6205		BBC, England	9410, 9515, 11775, 15400, 17830	
	KNLS, Alaska	9615		(30) Republic Sweden	13605, 15600	
SLBC, Solomon Islands	5020 9545	1800:	Radiobras, Brazil	15265		
CFRX, Canada	6070		Radio Algiers, Algeria	11715		
0900:	Swiss Radio Int'l		9885, 13685, 17515	Radio Kuwait	11990	
	CKZN, Canada		6160	RAE, Argentina	15345	
	FEBC, Philippines	11690	Voice of America	9760, 9770, 15410, 15580		
	Radio One, Singapore	5010, 5052, 11940	1900:	HCJB, Ecuador	15490	
Radio New Zealand	6100	RAE, Argentina		15345		
1000:	Kol Israel	15640, 15650, 17575		AWR, Costa Rica	13750, 15460	
	Voice of Vietnam	9840, 12020, 15010		WRMI, USA	9955	
	(30) Radio Korea, South Korea	11715		(30) VOIRI, Iran	9022	
FEBC, Philippines	9800, 11685	(30) Radio Austria Int'l	13730			
1100:	(30) Radio Austria Int'l	13730	2000:	Radio Canada Int'l	13650, 13670, 15150, 15325, 17820	
	Radio Australia	9580, 9860, 15530		Radio Kuwait	11990	
	HCJB, Ecuador	15115		(05) Radio Damascus, Syria	12085, 15095	
	AWR, Costa Rica	5030, 6150, 9725, 13750		(30) Radio Finland	6120, 9730, 11755	
	Radio Pyongyang, N. Korea	6576, 9977, 11335		Monitor Radio, USA	13770	
	Voice of Vietnam	7285, 9730v	2100:	Radio Havana Cuba	11720	
	Radio Pakistan	15625, 17900		All India Radio	7412, 9950, 11620	
	(20) Vatican Radio	6245, 11740, 15210, 17585		(30) R. Dniestr Int'l, Modavia	9620	
	(30) Radio Korea, S. Korea	9650		(10) Radio Damascus, Syria	12085, 15095	
	1200:	Radio Australia		5995, 9560, 11800, 15530	BBC	5975, 9410, 11750, 11835
Radio Ulanbaatar, Mongolia		7290, 12015	2200:	UAE Radio, Abu Dhabi	9605, 9770, 11885	
Radiobras, Brazil		15445		Radio Yugoslavia	6100	
Radio Bangladesh		9548, 13615		Radio Canada Int'l	5960, 9755, 11895, 13670, 13740, 15305	
(30) Voice of Vietnam		9840 or 12020 or 15010		VOFC, Taiwan	17750, 21720	
BBC, England		6195, 9515, 11865		(30) Radio Finland Int'l	9650, 9665, 11845	
(irreg) Radio Iraq Int'l	13680	2300:		AWR, Costa Rica	5030, 6150, 7375, 9725, 13750	
Radio Jordan	9560		Radio Canada Int'l	5960, 9755		
Radio France Int'l	13625, 15155, 15530		(30) Radio Netherlands	6020, 6165, 9840 USB		
1300:	Polish Radio Warsaw		7145, 7270, 9525, 11815	(30) R. Vlaanderen Int'l, Belg.	9925, 13800	
	Radio Canada Int'l		15315, 17820, 17895	Radio Pyongyang, N. Korea	11700, 13650	
	(Sun) Radio Norway	9590, 11850	Voice of Turkey	9445		
	Radio Vlaanderen Int'l, Belg.	13670	Radio Bulgaria	9700, 11720		
	Radio Pyongyang, N. Korea	9345, 9640, 11740, 13760, 15230				
	KNLS, Alaska	7365				
	(30) Voice of Vietnam	9840, 12020 or 15010				
(30) Croatian Radio	5920, 9830, 13640, 13830					
(30) R. Tashkent, Uzbekistan	7285, 9715, 15295					
Radio Finland Int'l	11900, 15400					

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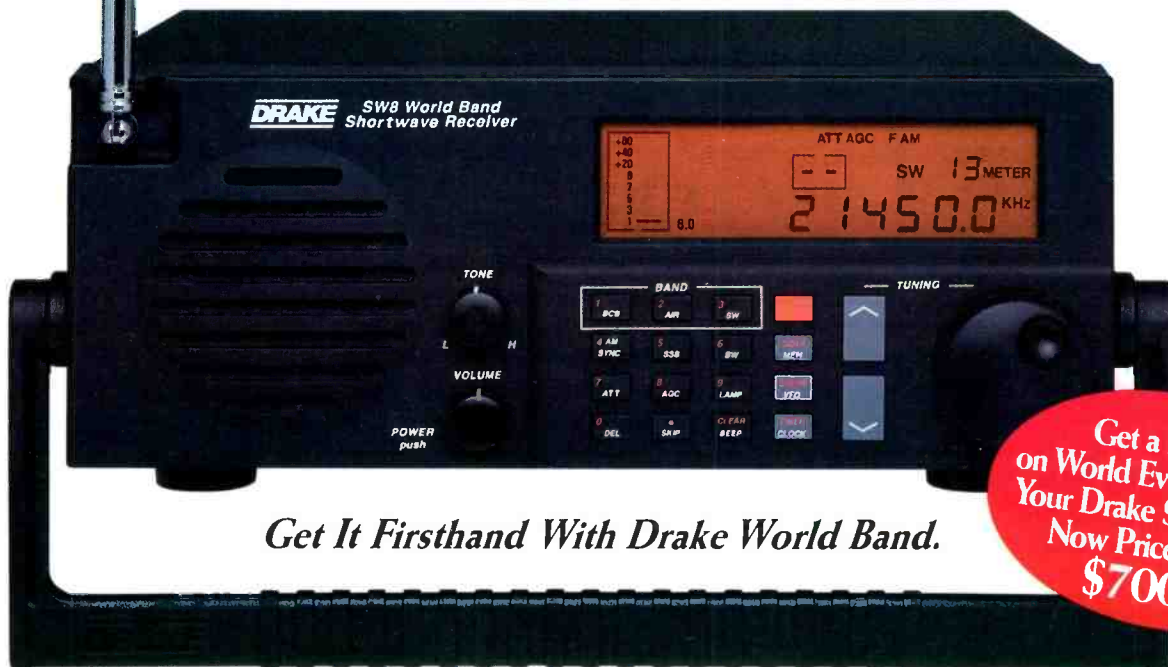
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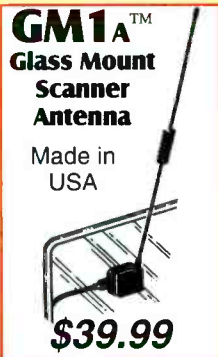
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POP'COMM Reviews:

Alpha Delta's DX-ULTRA Antenna System

If you own either a communications receiver or a portable shortwave receiver, you know the antenna is a very important part of your listening station. Although the telescoping rod antennas supplied with portables and random wire antennas work well on many signals, there is no substitute for an antenna preferably located outside and mounted as high as possible for serious DXing on the broadcast or shortwave bands. Alpha Delta Communications Inc., a manufacturer of wire antennas and accessories for the SWL and amateur radio markets, recently introduced their latest wire antenna design—the Model DX-ULTRA.

Overview

The DX-ULTRA antenna is an inductively loaded multielement wire dipole with an overall length of 80 feet with specified operation from 500 kHz through 30 MHz. The antenna can be fed with 50-ohm coax through Alpha Delta's exclusive DELTA-C center insulator (included) or with open wire line, and can be installed in a dipole, inverted-V, or sloping dipole configuration. (Note: The DELTA-C center insulator contains a replaceable Model SEP ARC-PLUG that discharges potentially destructive static charges present on the antenna). The DX-ULTRA is comprised of three 12-gauge solid copper wire elements with gray PVC protective insulation: the top-most and longest element utilizes inductive end-loading with Alpha Delta's exclusive ISO-RES inductors; the middle element is 48 feet in

length; and the bottom element is 32 feet in length. Each element is separated by gray PVC rod spacers strategically placed to provide proper separation and overall strength. The package also includes the two end insulators.

Assembly

Although the DX-ULTRA antenna comes essentially fully assembled, some minor preinstallation work on the antenna is necessary. A well-written instruction and installation sheet is included. Carefully unwind the antenna so not to "kink" the wire. Simultaneously route each of the two shorter wire elements on each side of the DELTA-C center insulator through the PVC rod spacers. Everything is included for installation, even a small-diameter rope for securing the end insulators to an attachment point. All you need to supply is a sufficient length of coax or open-wire feedline to reach your receiver.

Performance

For this review, the DX-ULTRA antenna system was installed in an inverted-V configuration at a height of 30 feet at the apex of the V. Because of the multiple wire elements, the DX-ULTRA exhibits resonance on several shortwave bands, including the 41-meter and 90-meter (tropical) bands, 31-meter and 25-meter bands. Plus, the antenna offers good broadbanded performance because of being electrical 1/2- and 3/4-wavelength multiples

long at various other frequency bands. This broadbanded performance is enhanced by the use of Alpha Delta's exclusive low-Q ISO-RES inductors.

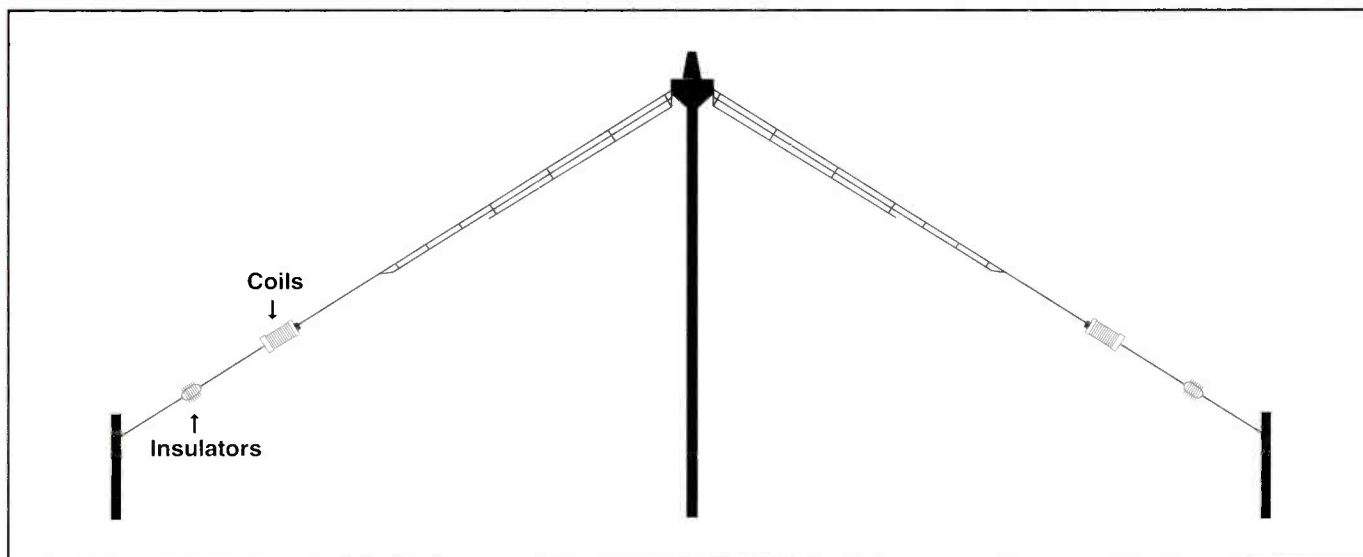
In addition to its broadbanded nature, another noticeable feature of this antenna is its low noise. Most dipoles exhibit some form of static or precipitation noise. This antenna does not seem to suffer from this malady. This may be because of the Model SEP ARC-PLUG static electricity protector that is integral to the DELTA-C center connector of the DX-ULTRA.

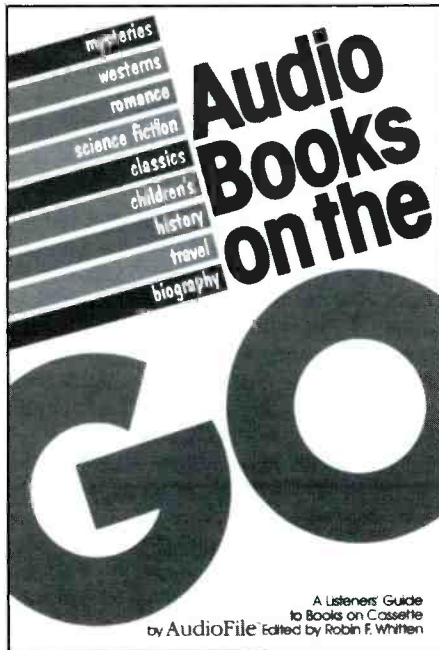
Compared to a random wire antenna and a 40-meter dipole at the same elevation, the DX-ULTRA provided consistently stronger signal strengths to the receiver on all bands under test. This is one very good all-around wire antenna. Additionally, the antenna can be used as a transmitting antenna with an antenna tuner. Thus, if you are an avid SWL and ham, this may be just the ticket for your "all-band" antenna!

Summary

If you want a full-spectrum broadbanded wire antenna, the DX-ULTRA is one to seriously consider. Its low noise, broadbanded nature and signal-capture ability is excellent. The price of the DX-ULTRA is \$119.95, plus \$5 for shipping. For more information, please contact your favorite dealer or Alpha Delta Communications Inc., P.O. Box 620, Manchester, KY 40962; or (606) 598-2029.

Reviewed by POP'COMM Staff





An Earful on the Go

Audiobooks on the Go is a listeners' guide to about 350 of the best audiobook tape cassettes released between 1992 and 1995. The selections were made from *AudioFile* newsletter's reviews of more than 1,600 titles from 100 publishers.

The cassettes in this book have been arranged according to subject categories, such as popular fiction, science fiction, fantasy-horror, westerns, romance, mystery, history and biography, classics, today's culture, humor and storytelling, travel, nature and science, and young people's. Each entry provides information about the reader, publisher, price, if the text is abridged, playing time, ISBN and other relevant data.

Best of all, there is a concise 100-word review of each recording covering the reader's voice and narrative style, and how the audio performance captures the author's original work. Exceptional and other special titles are noted by icons. Extensive, detailed resource listings round out the book.

Whether you're commuting to work, flying on business, painting a house, visually impaired, putting a few miles on the exercise cycle, or if your spouse drags you to boring movies, you are someone who will enjoy audiobooks. This guide is a fine way to get started. *Audiobooks on the Go* is \$9.95, plus \$3 shipping and handling. Order from Country Roads Press, P.O. Box 286, Castine, ME 04421. VISA/MC are accepted; phone orders: 1 (800) 729-9179.

The Inside Story

The world of technology is moving forward at an ever-increasing speed. Our lives, financial dealings, communications, businesses, privacy, and every aspect of our society continue to become more and more dependent upon that amazing invention, the computer.

"The computer says...", is too common of a response when something goes wrong. This is invariably followed up by, "The computer is never wrong." In our haste to find the easy life, we tend to minimize or overlook the risks involved with expecting that a computer or other technology will be risk-free.

A computer does have occasion to suffer from its own internal or networking problems. All too often, though, problems result because a computer is a tantalizingly unlocked door that invites entry by the technologically elite. Hackers, whether they are considered the technologically elite or cyberspace criminals, have been a fact of life for several years.

Hacking: Frequently Asked Questions, was written by "Voyager," sysop of the Hacker's Haven BBS. Here's a 100-page book brimming over with information. You just knew that someday a hacker was going to step forward and write this book. Don't expect to find this one on sale at your local computer store.

Voyager's enlightening book is divided into five sections covering computers in general, telephony, resources, 2600 and miscellaneous. Within these sections, Voyager provides experiences, perspectives and insight on more than 120 different topics, questions, pieces of hardware, software and hacking techniques. This information is drawn from Voyager's own extensive knowledge, backed by additional material supplied by no less than 19 others who have stepped forward to add something to this blunt and candid look at the many aspects of hacking, as seen from the inside.

There are plenty of BBS and other phone numbers provided, as well as ways to computer-access security and other relevant groups (includes WWW). You'll learn about how hackers crack all types of passwords, how they modify data, about viruses and copy protection. What are the default accounts for XXX, and what's an Internet Outdial? What are the ethics of hacking? How does someone get on hackers' mailing lists? These and many, many

more things are revealed by Voyager and his associates.

Hacking: Frequently Asked Questions, the book someone was bound to write, is \$19.95, plus \$5 shipping and handling (\$6 to Canada). N.Y. state residents add \$2.12 tax. Order from CRB Research Books Inc., P.O. Box 56, Commack, NY 11725-0056. MC/VISA phone orders: 1 (800) 656-0056, Canada/AK/HI orders: (516) 543-9169.

Copying ACARS, V.3

ACARS is an acronym meaning Aircraft Communications Addressing and Reporting System. This is a digital two-way communications method used in the VHF aeronautical band by ground stations of all major airlines and their inflight airliners.

Using ACARS, airlines exchange text between ground and air relating to schedules, weather, fuel usage, emergency conditions, equipment performance, as well as private and company traffic. The ACARS message texts are transmitted in a format consisting of a type of shorthand that is both quickly and easily understood by airline personnel. To the eyes of an outsider, these texts look to be little more than random and meaningless groupings of letters and digits.

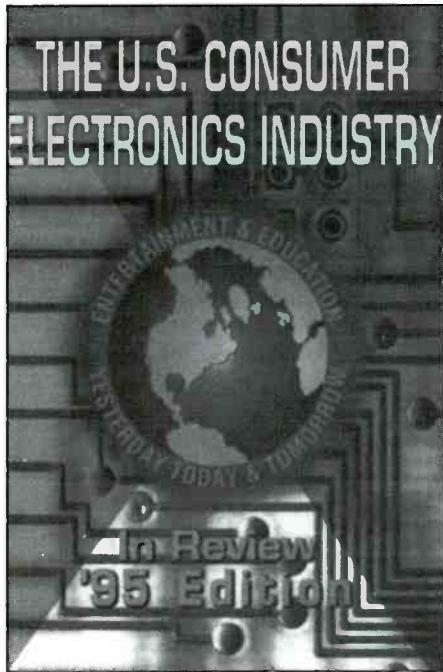
Using a standard scanner tuned to the VHF aero band (an exterior antenna helps), you can pick up the ACARS signals. They sound like pinging noises. When you connect certain decoders to the speaker output of a scanner, the pings can be read out as ACARS texts. These decoders are relatively inexpensive, and include the Universal M-400, M-1200 and ACT-1.

Understanding ACARS, written by Ed Flynn, has been updated into its third edition. Ed's 92-page illustrated book is the guide to understanding and appreciating the various categories of ACARS messages that might be encountered. This new edition includes the latest codes, abbreviations, formats and other necessary information for intercepting ACARS traffic on hobby-level hardware.

Understanding ACARS, 3rd Edition, is \$9.95 from Universal Radio Inc., 6830 Americana Parkway, Reynoldsburg, OH 43068. Phone: 1 (800) 431-3939.

In Addition ...

Most of us who use and enjoy hobby



communications come to regard it as the center of the electronics solar system. Time for your annual reality check, as contained in the 125-page publication, *The U.S. Consumer Electronics Industry In Review, 1995 Edition*, published by the Electronic Industries Association (EIA). The detailed sales analysis of various segments of the industry discusses home computers, TVs, satellite TV, VCRs, camcorders, stereos, radar detectors, faxes, beepers, cellular phones and much more. It even stretches out to include things such as electronic watches, calculators, organizers, security, blank tape and home copiers.

Yet, the book fails to mention that any ham radios, VHF-UHF scanners and communications receivers are sold or in use. Yes, the EIA does mention that CB radios exist. Curiously, the EIA states that people buy CBs as a low-cost alternative to cellular phones. They observe that "many of the new customers are chatty teen-agers." The electronics market in the United States this year will top out at \$60 billion. It seems communications hobbyists can't be detected, even on the EIA's most sensitive instruments. This curious and informative book is worth a look.

While supplies last, copies will be available at no cost, however, it is important to note that to get one it will be necessary for you to furnish a self-addressed 6-inch-by-9-inch stamped (\$1.70 in U.S. postage) return envelope for them to mail it to you. Get a copy by contacting EIA/CEG's Communications Department, 2500 Wilson Blvd., Arlington, VA 22201-3834. Phone (703) 907-7674.

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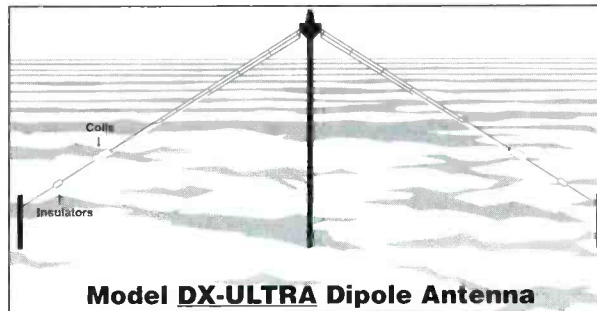
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- The DX-ULTRA is designed with a pair of ISO-RES inductors and parallel wire elements for maximum broadband, efficient performance - no lossy narrowband traps. The difference on your S-meter can be phenomenal!
- Our exclusive Model DELTA-C Center Insulator with the built-in Model SEP ARC-PLUG® Static Electricity Protector provides effective protection for your sensitive receiver components. Connectors accept either coax or balanced line.
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Alpha Delta Model DX-ULTRA, 80 ft. in length . . . \$119.95

If your space does not permit the full 80 ft. length of the DX-ULTRA, we suggest our Model DX-SWL 1/4 wave sloper (60 ft.) or our DX-SWL-S 1/4 wave sloper (40 ft.). These antennas have similar design philosophies.

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CIRCLE 53 ON READER SERVICE CARD

November 1995 / POPULAR COMMUNICATIONS / 33

GETTING STARTED AS A RADIO AMATEUR

VHF/UHF Contesting

Amateur radio contests test your ability to work the most stations in different geographical areas on the most bands during the contest period. Contests give you a chance to evaluate your equipment and antennas, and to compare your results with others.

Here's a whole wide world of operating that's open to every amateur with a technician or higher license. In most VHF/UHF contests, each contact is worth a certain number of points. Multiply your point total by the total number of different grid squares (multipliers) to calculate your final score. The only restrictions in these contests are that contacts through repeaters (and satellites) don't count, and the national 2-meter FM calling frequency, 146.52 MHz, is off-limits for ARRL contest QSOs. SSB and CW are the most popular contest modes, but you can have a lot of fun with FM, too. During the first hour or two of a VHF contest, contacts may come fast and furious. Then the pace slows, as operators prowl the bands looking for new stations.

VHF/UHF contests are open to any licensed amateur. VHF/UHF contests feature a variety of categories from which you can choose. For single operators, entry classes include all-band, single-band, QRP portable and "rovers" (those who operate mobile, moving to more than one grid square during a contest).

The ARRL and CQ magazine sponsor major VHF/UHF contests (see box), and specific rules, descriptions of the categories and entry forms are available free. You don't have to be a CQ subscriber or an ARRL member to participate, nor are you required to officially "enter" afterward (by submitting your log), although doing so helps the contest sponsors verify QSOs that others claim.

When to Be Where

VHF contests are held throughout the year, with emphasis on the warmer months to encourage hilltop operation during favorable weather. Outside of that, VHF/UHF contests are designed to take advantage of propagation enhancements that usually occur at certain times of the year. For instance, the ARRL June VHF QSO Party almost always occurs during periods of excellent sporadic-E propagation, giving you an opportunity to enjoy long-distance contacts on 6 and 2 meters. The first documented sporadic-E contact on the 222-MHz band was made during a June VHF QSO Party. As shown in Table 1, the major VHF contests are the ARRL January Sweepstakes (SS), ARRL June and September

Major VHF Contests

Contest	Bands	Time
Sweepstakes	50 MHz and up	Varies according to Super Bowl weekend
Spring Sprints	One per band	April/May
June VHF QSO Party	50 MHz and up	Second full weekend
CQ WPX-VHF	50 MHz and up	July
August UHF Contest	222 MHz and up	First full weekend
September VHF QSO Party	50 MHz and up	Second full weekend

VHF QSO Parties, the CQ WPX-VHF contest, ARRL August UHF Contest and the ARRL VHF/UHF Spring Sprints. Except for the sprints, these events each encompass many bands. The January sweeps and June and September QSO parties are popular, and each permits activity on SSB, CW and FM on all amateur frequencies above 50 MHz. The UHF contest is slightly different—only contacts on 222-MHz and higher bands are allowed for contest credit. The Spring Sprints are single-band, four-hour contests held over a period of several weeks. These short contests provide opportunities to test new locations or equipment.

You'll find lots of 6- and 2-meter activity during VHF contests. On SSB, most stations stay near the calling frequencies of 50.125, 50.20, 144.20, 222.10 and 432.10 MHz. On CW, look from 80 to 100 kHz above 50, 144, 222 and 432 MHz. There's plenty of fun contesting with FM, and not nearly enough FM operators participate—go for it!

Contest Operating

As in all amateur radio contests, there's a standard exchange of information between stations. In many cases, the exchange consists of your grid-square location and a signal report. You can hunt for stations to call or find a clear frequency and call CQ yourself.

Here's an example:

WS10 calls CQ to initiate contest contacts:

CQ CONTEST, CQ CONTEST FROM WS10, WHISKEY SIERRA ONE OSCAR, WS10

AA2Z responds, using phonetics so there's no confusion about his call sign:
WS10 FROM ALFA ALFA TWO ZULU.

WS10 responds, giving a signal report and his grid square:

AA2Z, YOU'RE 59 IN FN31 FROM WS10

AA2Z confirms receipt of WS10's information and sends his own:
WS10 FROM AA2Z. ROGER. YOU'RE 57 IN FN20, OVER

WS10 confirms AA2Z's report:
ROGER, THANKS FOR THE CONTACT

With the exchange made and confirmed, WS10 resumes calling CQ for the next contact:

CQ CONTEST, CQ CONTEST FROM WS10, WHISKEY SIERRA ONE OSCAR, WS10, QRZ?

What's Your Excuse?

Where were you during the last VHF contest? The ARRL UHF Contest in August? The September VHF QSO Party? The CQ WPX-VHF contest in July? Will you be ready for the VHF Sweepstakes? The standard answers are, "I'm not a contestant," "I don't have an all-mode rig for those bands" or "I don't have time to stay on the air all those hours." None of these answers are valid reasons to ignore the events. You may say, "The only ham radio activities I like are handling traffic and chatting with friends on the local repeater." It's funny how that's not much different from operating in a VHF contest.

"I'm Not a Contester"

Who is? Only a person who elects to participate in a contest. And even then, you aren't really "in the contest" unless you submit an entry log. If your main interest is rag-chewing, helping with public service activities, organizing emergency communication or handling traffic on the local repeater, you can have fun by trying your hand at a VHF contest. Making a contact is easy. Simply exchange your call sign and grid square. Unlike the big HF contests, an FM contest QSO can be more leisurely. There's

rarely any QRM to fight, and because there are fewer stations in range, there isn't the frantic pace HF contesters must maintain. By the way, some of the best contesters come from the ranks of traffic handlers, which makes sense because contest operation requires the ability to copy the other station accurately and efficiently.

"I Don't Have an SSB or CW Rig"

You don't need one. Most VHF/UHF contests let participants use FM. You just can't use repeaters. There aren't any special multipliers for working DX stations or having a 1,000-watt amplifier feeding a stacked array of yagis. Each FM simplex contact with a neighbor is worth just as many points as a CW contact with a station 1,000 miles away. That handheld 2-meter FM transceiver can net you enough points to make a strong showing in your ARRL section—if you go to the trouble of using it. How much trouble? Pick a simplex frequency (see below) and listen for—or call—"CQ contest."

"I Don't Have Time"

If you plan to be on the air at all over a contest weekend, you have time to join the fun. Simply exchange the necessary information and write it in a log. There's no minimum number of operating hours or contacts you have to make, no bonus points for staying awake all night, no special awards or certificates for climbing Pike's Peak or Mount McKinley, operating from a submarine or autogyro, or standing on your head. You can take a stab at the contest while sitting comfortably in your shack, living room or car for an hour or two.

Grab a snack, a mug of coffee, a couple of pencils and a log sheet. If you don't have a blank contest log, use a plain piece of paper. You can always copy the info onto a standard contest log afterward, if you decide to "officially" enter. Or boot up a contest logging program on your computer and let the silicon do the thinking. You can get software by mail order; download from local telephone BBSs, national online services or Internet sites; or ask for a copy from almost any contesteer you know.

"I Never Hear Anyone Using FM During Contests!"

Guess what: If you didn't hear them, perhaps it's because they didn't hear you! If no one else is calling "CQ Contest," you may as well do it. You'd be surprised at how many others might pop out of the woodwork to make a QSO. Recruit your friends and members of your club to join you to give each other contacts. This can lead to hundreds of "easy" points, and maybe a few of them will become regular contesters, too—and perhaps you can form the nucleus of your own

team. (Here's a thought: If you get 25 people you know to get on the air during the ARRL September VHF Sweepstakes and each of you works everyone else, you'll all be eligible for participation pins!) If you want to convince friends or club members to participate, ask them to call or listen on a particular frequency at the top of each hour from, say, 1 p.m. to 6 p.m. That way, they'll be more likely to find someone and make a contact or two, rather than randomly turning on the rig, hearing nothing and giving up. Try the following well-known frequencies: 52.525; 144.9-145.0, 146.49, 146.55, 146.58, 147.42, 147.45, 147.48, 147.51, 147.54, 147.57; 223.5; and 446.0 MHz. (Don't use the 2-meter national simplex frequency, 146.52 MHz, for calling or soliciting contacts.)

"What's In it for Me?"

Contests put a lot of hams on the air. The FM simplex frequencies that normally may be quiet most of the time will be fairly busy. You'll get a better idea of how effectively your station functions, what kind of range it's capable of spanning, how propagation and seasonal conditions affect it, and what stations you can hear.¹ You might get your call sign or your club's name into the contest results write-up in QST or CQ. In some areas with a smaller active ham population, your modest effort even could earn a certificate or plaque! You can make friends on the air who probably don't live too far away. You might discover a propagation opening and experience the thrill of working someone hundreds of miles away with your handheld transceiver. You'll hand out QSOs for points to other contest operators. (As a newcomer, you'll quickly learn how welcome you are, because your call sign will be very noticeable to regular local VHF contesters who may be frustrated by always hearing nothing but the same bunch of stations during every contest.) Most important, it's almost certain that you'll have fun.

Now enter the contest to tell me the most interesting experience you've had in amateur radio; prize winners get to have their words immortalized in this column! Send your mail to Brian Battles, Department PC, ARRL HQ, 225 Main St., Newington, CT 06111; e-mail bbattles@arrl.org.

¹I've been astonished by the possibilities of long-distance communication on 2-meter FM. For example, there was a band opening one evening a couple of years ago when I made simplex contacts from Connecticut with stations in Cape Hatteras and Maine, and I even was called by a station in Panama City, Fla., although I couldn't complete a two-way QSO with that station. I wasn't using an exotic rig, antenna, power amplifier or preamp: my trusty handheld transceiver (about 8 watts output) was feeding a 5/8-wavelength whip antenna on top of the chimney of a two-story house.—WS10

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CIRCLE 59 ON READER SERVICE CARD

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

If your shortwave antenna has never been tickled by signals from Malawi Broadcasting Corp., don't despair. The government there has decided to upgrade the national broadcasting facility, a move that will include more powerful transmitters, even though they have been using (or listed for) 100 kilowatts. No word on when the power increase will happen, but perhaps before this year's close. In the meantime, you can continue checking for the MBC, which signs on at 0255 on 3380//5995.

Still in Africa, there's a previously undiscovered station on the air from Sierra Leone. Radio Al-Koran is a Muslim station using 250 kilowatts on 9630, broadcasting in Arabic, French, English and several local languages. The schedule, unfortunately, runs from 1500 to 1900, times which aren't very helpful for reception in North America.

Radio Africa, broadcast via the national radio in Equatorial Guinea, isn't reported often, but it's being heard lately during the weekends on 15186 at hours such as 0815 and 1115, and until closing at 2255. This is a commercial religious operation, programmed through Pan American Broadcasting, a California concern located at 20410 Town Center Lane, Suite 200, Cupertino, CA 95014.

Denmark continues to make more shortwave news of a positive nature. A couple of months back, DXers were given a real challenge when the European DX Council marked its annual meeting by operating its own SWBC station from the conference in Denmark.

Radio station EDXC-95 operated a low-power transmitter over the period of the conference and provided the first shortwave transmissions from Denmark in a number of years. The word we get is that the broadcasts brought in about 70 recep-

tion reports. Apparently, the signals were inaudible in North America and were even quite weak in the United Kingdom.

Radio Denmark now is issuing QSLs for reception of the station's transmissions over Radio Norway's facilities. Enclose either one international reply coupon or a \$1 bill with your report to: Radio Denmark, Rosenorns Alle 22, DK-1999 Frederiksberg C, Denmark.

The Voice of Vietnam to North America in English via Russia is now aired at 0100 to 0230 on 7250, as part of an expansion of Russian transmitter usage. Other English broadcasts are aired at 0400-0600 on 5940, plus 1000, 1100, 1230, 1330, 1600, 1800, 1900, 2030 and 2330 on 7250, 9840 and 15010—the latter two probably are direct from Vietnam.

Philippines

A shortwave oddity from this country is medium-wave station DZMN (630 kHz), which reportedly is relayed on shortwave by "utility" station Bulan Coastal Radio. A segment of DZMN's Tagalog programming is being carried from 2300-2337 on 13170 upper sideband. It could be that this was or is a very temporary thing, used more as a frequency "marker" than an actual relay, but it won't hurt to check for this now and then. Sometimes these things come and go.

Uruguay

Uruguayan shortwave stations are rather difficult to hear and often aren't reported to the *Listening Post*. Here's a new one that may be active on shortwave before long: Emisora Ciudad de Montevideo, which has received permission to broadcast using 9650 and 15230.

Iding BBC Sites

Often as not the signals you hear from major shortwave broadcasters such as the BBC actually are transmitted from somewhere other than the home country. The BBC operates transmitters in, or has relay arrangements with, several countries and often we just can't be sure what's coming from where. In this case, though, you can get some help from a complete BBC World Service transmitter site frequency list. Write to: BBC World Service Transmitter Site Guide, P.O. Box 76, Bush House, Strand, London WC2B 4PH, England.

Information, Please

Your log reports are always welcome! We only ask that you list each station individually, by country, and include your last name and state abbreviation after each log. We also welcome station information, station and shack photos, copies of spare QSLs for illustrations, information about station QSL policies, requirements and so on. Your interest and input are appreciated!

Here are this month's logs. All times are in UTC, which is five hours ahead of EST (0000 UTC equals 7 p.m. EST, 6 p.m. CST, etc.). Broadcast language is assumed to be English unless specified otherwise (SS = Spanish, FF = French, GG = German, etc.).

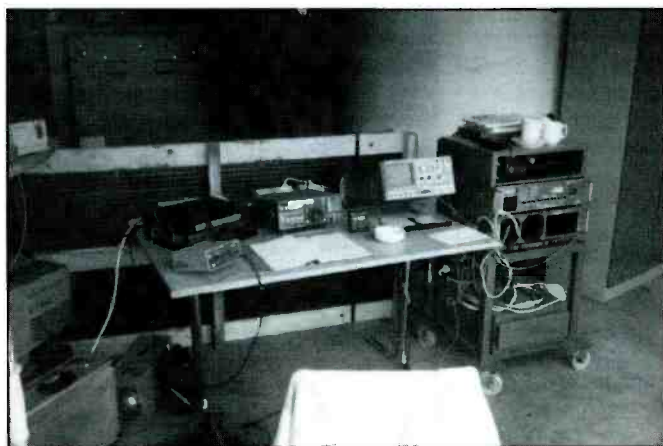
ALASKA—KNLS, 6150 at 1134 in RR and a bit in EE. (Williams, TX) 7365 at 1244 in CC, into EE at 1300 with IS and ID. (Pappas, SD) 9615 at 1000 with IS, ID, pops and talk. (Maywoods DX Team, KY)

ANTIGUA—BBC Relay, 5975 at 2244 and 6110 at 2248. (Williams, TX) 9460 at 0741 with "Jazz For the Asking."

Deutsche Welle relay, 11810 in SS at 0227, 15105 in SS at 0031, 15275 in GG at 1255 and 15410 at 0040. (Wms, TX)

ARGENTINA—RAE, 15345 in EE with ID, news and music at 1900. (Maywoods, KY) 0038 in SS. (Wms, TX)

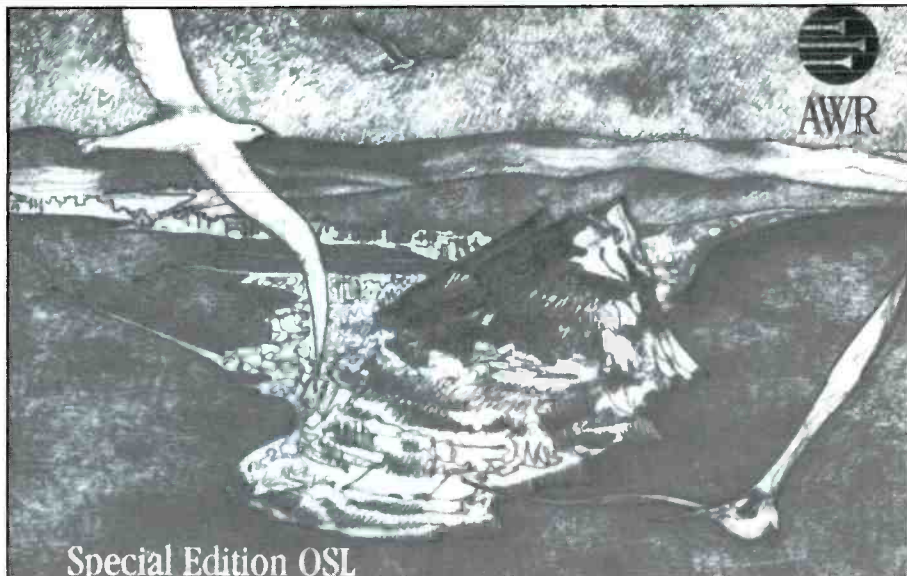
ARMENIA—Armenian Radio, 11920 at 2005 in Armenian with frequent mentions of Yerevan. (May-



Radio station EDXC-95 and its antenna, mounted on a smokestack. EDXC-95 operated with 40 and 200 watts from the heating plant at Rebild Bakker, Denmark, in June during the annual conference of the European DX Council. Many thanks to "The Kentucky Colonel," R.C. Watts of Louisville, Ky., for sending the pics!

Abbreviations Used in Listening Post

AA	Arabic
BC	Broadcasting
CC	Chinese
EE	English
FF	French
GG	German
ID	Identification
IS	Interval Signal
JJ	Japanese
mx	Music
NA	North America
nx	News
OM	Male
pgm	Program
PP	Portuguese
RR	Russian
rx	Religion/ious
SA	South America/n
SS	Spanish
UTC	Coordinated Universal Time (ex-GMT)
v	Frequency varies
w/	With
WX	Weather
YL	Female
//	Parallel Frequencies



Special Edition OSL

Adventist World Radio sent this special card for correct reports on a series of tests it ran for broadcasts to North Africa from a medium-wave transmitter on Gibraltar.

woods, KY) 15180 at 0251 with easy listening music. (Wms, TX)

ASCENSION ISLAND—BBC relay, 15190 at 1112. (Jeffery, NY) 17830 at 1315. (Wms, TX)

AUSTRALIA—Low-power Aussie domestic short-wave outlets—Alice Springs-2310, Tennant Creek-2325 and Katherine-2485—noted between 0926 and 1040, all with weak signals. (Maywoods, KY)

Radio Australia, 11800 at 1230 and 17795 at 0045. (Wms, TX) 15365 at 0538 with interview and talk. (Foss, AK)

AUSTRIA—Radio Austria Int'l, 9870 at 2340 with sports news in SS. 13730 at 0028 to North and South

America, IDs in GG, FF, SS. (Wms, TX)

BENIN—ORTB on 4870 at 0553 in FF with talk and vocals. (Maywoods, KY)

BOLIVIA—Radio Animas, presumed, 4991 at 1104 with excited announcer in SS. (Wms, TX)

BRAZIL—Radio Nacional Amazonia, 11780, 1410 in PP with talk, music, ID 1428. (Maywoods, KY)

Radio Cancao Nova, 9675 at 1013 in PP with religious talks, soft religious rock. (Maywoods, KY) 0004 and 1228 with ID, PP. (Wms, TX)

Radio Nacional, 15445 at 1305 with "The Brazilian Reporter." (Wms, TX)

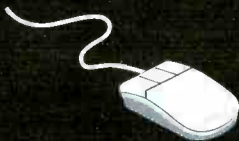
Radio Bandeirantes, 9645 at 2317 in PP, QRM from Faro del Caribe, Costa Rica. (Wms, TX)

Radio Marajoara, 4956 at 0136 in PP. (Wms, TX)

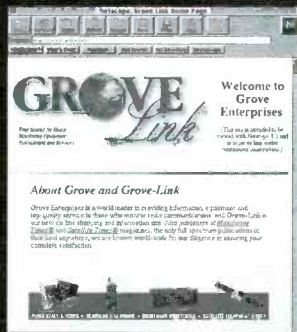
BULGARIA—Radio Bulgaria, 9700 at 0316 in FF. 9905 presumed, at 2345 in SS. 11660 in SS at 2355//11720. Also 11720 at 0224 in Bulgarian. (Wms, TX)

CANADA—Radio Monte Carlo, Monaco, via Sackville on 9755 at 0310, in AA. (Wms, TX) (Station and country counters score this not as Monaco but as Canada, since that's where the signal leaves the antenna.—Editor)

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Radio Korea via Sackville, 11715 at 1046 with letters, ID, sign-off at 1059. (Pappas, ND)

Radio Austria Int'l, via Canada, 6015 at 0530 with "Report From Austria." (Pappas, SD)

Radio Japan relay, 11705 at 1437 with "Media Roundup." (Pappas, SD)

Radio Canada Int'l, 5960 at 2241, 6120 at 0158 with IS, ID in EE/FF, 11845 at 0229 with IS and into RR, 13670 at 0027 with ID, news. (Wms, TX)

CHU time station, 7335 at 1148. (Wms, TX) (This station also uses 3330.—Ed.)

CHINA—China Radio Int'l, 7820 at 1144 in RR with vocals. (Barton, AZ)

CPBS, Xi'an, 1153 on 7504 in CC. (Wms, TX)

COLOMBIA—Caracol, 5075 at 0101 and 1110 in SS. (Wms, TX)

La Voz del Rio Arauca, presumed, 4985 at 1101 with two men in SS. (Wms, TX)

Armonias del Caqueta, 4915 at 1103 with music and talk in SS. (Wms, TX)

Radio Nacional de Colombia, 11785 in SS at 0006. (Wms, TX)

Radio Melodia, 6047 at 1130 in SS, two women with talk show. (Wms, TX)

COSTA RICA—Faro del Caribe, 5055 at 0059 and 1109 in SS, 9645 at 2316. (Wms, TX) 1303 in SS with religious talk. (Maywoods, KY)

Adventist World Radio, 5030 at 1107 with religious talk in SS, 9725 at 1212 with children's stories in EE. (Wms, TX)

Radio For Peace Int'l, 7385 at 0330 with ID. (Wms, TX)

Radio Exterior Espana relay, 11815 in SS at 0140. (Wms, TX) 17870 in SS at 1750. (Barton, AZ)

Radio Reloj, 4832 at 0923 in SS. (Foss, AK)

CROATIA—Croatian Radio, 5895 at 0148 in presumed Croatian. (Wms, TX) 0206 with news bulletin in EE. (Jeffery, NY) 7370 at 2357 in Croatian, EE ID at 0001 and five minutes of news in EE. (Pappas, SD)

CUBA—Radio Havana Cuba, 6180 at 2249 in EE, 11760 signing on at 0001, 15230 in SS at 0035. (Wms, TX) 11705 at 2145. (Jeffery, NY)

Radio Rebelde, 5025 at 0058 and 0402 with music in SS. (Wms, TX)

CZECH REPUBLIC—Radio Prague, 9485 at 2258 with EE ID and into presumed Czech. (Wms, TX)

ECUADOR—La Voz de Upano, 5040 at 1108 in SS, 6000 at 1124. (Wms, TX)

HCJB, 12005 at 1349//15115, 15540 USB at 1430. (Pappas, SD) 15140 at 0034 in SS. (Wms, TX)

EGYPT—Radio Cairo, 9700 at 1809 in AA. (Foss, AK)

ENGLAND—BBC, 9915 at 2346. Also at 0302. (Wms, TX)

EQUATORIAL GUINEA—Radio Africa, 15186 at 2001 with "Wonderful Words of Life," commercial for Radio Africa T-shirts, another religious program, followed by "Gospel Echos." (Jeffery, NY)

FINLAND—Radio Finland, 15400 at 1303 in Finnish. (Wms, TX)

FRANCE—Radio France Int'l, 9740 at 2332, 11670 at 1233. (Wms, TX) 11790 at 0553 in FF. (Foss, AK)

FRENCH GUIANA—China Radio Int'l relay, 11680 at 0400. (Jeffery, NY)

Swiss Radio Int'l relay, 11650 at 2354 in SS. (Wms, TX)

Radio Japan relay, 11895 at 0232, JJ. (Wms, TX)

RFI relay, 9800 at 0307, 9715 at 0234, 13640 at 1242, 15435 at 1305, all FF. In EE on 13625 at 1241, in SS on 15515 at 1325 and 17560 at 1212 and in CC at 0244 on 13685. (Wms, TX)

GABON—Radio France Int'l relay, 15325 in FF at 0100 with ID. (Wms, TX)

Africa Number One, 17630 at 1313 in FF. (Wms, TX) Also at 1410. (Maywoods, TX)

GERMANY—Deutsche Welle, 6145 at 2248, 9730 at 2326, 11785 at 0226, all in GG. In SS on 9615 at 2312. (Wms, TX) 15275 at 1848 in GG. (Foss, AK)

GHANA—Ghana Broadcasting Corp., 4915 at 0555 with talks, African vocals. (Maywoods, KY)

GREECE—VOA relay, 7205 at 0210. (Wms, TX) Voice of Greece, 6260 at 0340 with ID, frequency info, news.

9425 at 1856 with EE ID, music, into Greek. 17525 at 1326 in Greek to 1336 when EE news. (Jeffery, NY) 11645 in Greek at 0218. (Foss, AK)

GUAM—KSDA, 9650 in unidentified language at 1255. ID in EE at 1300. (Pappas, SD)



The end of the Soviet Union brought an end to Radio Station Peace and Progress, which makes for a historic QSL. (Thanks to Charles C. Scott)

GUATEMALA—Radio Tezulutlan, 4835 at 0132 in Indian language. (Wms, TX) 0302 with marimbas. (Maywoods, KY)

Radio Cultural, 3300 with religion in EE. (Wms, TX)

Radio Maya de Barillas, 3325 at 0129 in SS. (Wms, TX)

Radio K'ekchi, 4945 at 0154 in SS. (Wms, TX)

HAWAII—KWHR, 9930 with religious program at 0819. (Pappas, SD) 17510 at 0325 with religious program, ID. (Jeffery, NY)

HONDURAS—Radio Luz y Vida, 3250 at 0351 with religious programs in SS, Honduran national anthem and off at 0359. (Wms, TX)

La Voz Evangelica, 4820 at 0050 with religion in SS. (Wms, TX)

Radio Internacional, 4930 at 0345 with ID, SS ballads. (Wms, TX)

Radio HRET, 4960 at 0137 in SS. (Wms, TX)

HUNGARY—Radio Budapest, 9835 at 2359 in HH. Also on 11910 at 0015. (Wms, TX)

ICELAND—Reykjavik on 13680 USB with man and woman announcers at 2300. (Maywoods, KY)

INDIA—All India Radio, Bangalore, 9910 at 1543 with talks in presumed Hindi. (Maywoods, KY) 13750 at 1900 with "Press Review." (Foss, AK)

INDONESIA—Radio Republik Indonesia, Jakarta, presumed, 9680 at 1207 with talks in II, mentions of Australia, Singapore and Jakarta. (Wms, TX)

RRI Jambi, 4926.9, tentative, presumed II at 1050, IS on the hour. (Maywoods, KY)

RRI Irian Jaya, 4874.6 at 1030 in II. (Maywoods, KY)

RRI Ujung Pandang, 4753.5 at 1112 with news in II. (Maywoods, KY)

IRAN—VOIRI, 15084 at 2031 in AA. (Maywoods, KY)

ISRAEL—Reshet Bet home service, 17545 at 1310 in Hebrew with news discussion. IS. (Wms, TX)

ITALY—RAI on 9725 at 0313 with discussion on family. 11800 at 0007. Also 0227 with opera. (Wms, TX)

JAPAN—Radio Tampa, presumed, 3925 at 1058 in JJ. (Barton, AZ) 6055 at 1131 in JJ. (Wms, TX)

9595 at 0945 in JJ. (Maywoods, KY)



Here's a view of the completely automated studios of WHRI. The three computers on the left control on-air programming for WHRI transmitters one and two, and KWHR (Hawaii) transmitter three. Those on the left control the "audio vault."

Radio Japan, 6190 at 1140 in CC, 9680 at 0407 in JJ, 11840 in JJ at 0009. (Wms, TX) 11885 at 0552 with "Tokyo Pop In." (Foss, AK)

JORDAN—Radio Jordan, 11940 at 0237 in AA under Radio Romania. (Wms, TX) 15170 at 1101 and 15270 at 1504, both in EE. (Jeffery, NY)

KUWAIT—Radio Kuwait, 15495 at 0257 in AA. (Wms, TX)

LIBYA—Radio Jamahiriya, 15235 at 2140 in AA with man/woman back and forth in "pingpong" style. (Maywoods, KY) 0036, perhaps //15415 at 0041 in AA. And the same at 0121 and 0124. (Wms, TX)

MADAGASCAR—Radio Netherlands relay, 7310 at 0335 in DD. (Wms, TX)

MALAYSIA—Radio Malaysia, 4950 at 1105 in Chinese dialect. (Maywoods, KY)

MALI—China Radio Int'l relay, 11715 at 0233 in CC. (Wms, TX)

MEXICO—Radio Universidad, 9600 at 2310 in SS with symphonic music. (Wms, TX)

Radio Mexico Int'l, 9705 at 2322 with news in SS. (Wms, TX)

Radio Mil, 6010 at 0155 in SS. (Wms, TX)

Radio Educacion, 6185 at 1159, guitar trio, ballads in SS. (Wms, TX)

MOLDOVA—Voice of Russia relay, 11730 at 2237 with "Timelines." (Wms, TX)

MOROCCO—RTV Marocaine, 11920 in AA at 0234, 0347. (Foss, AK)

Radio Medi Un, 9575 at 2005 in AA with QRM. (Maywoods, KY)

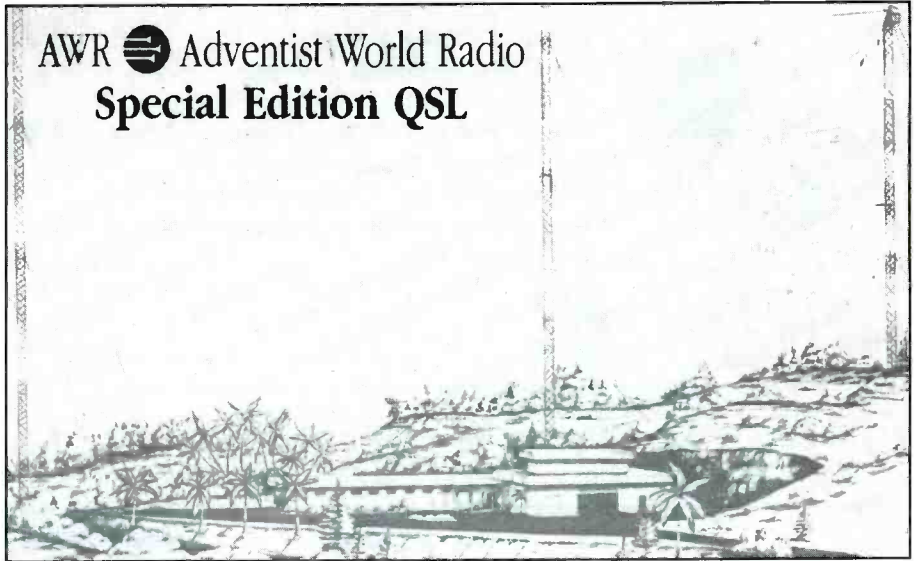
VOA relay, 6010 at 0400 with news. (Jeffery, NY)

NETHERLANDS—Radio Netherlands, 9860 in Dutch at 0305, 9890//11715 at 2344, 2357 in SS to Central and South America. (Wms, TX)

NETHERLANDS ANTILLES—Radio Netherlands relay, 9700 at 0735 with sports, news, "Media Network." (Pappas, SD) 15315 at 0037 in SS. (Wms, TX)

NEW ZEALAND—Radio New Zealand, 6100 at 0952. (Maywoods, KY) 0956 with ID at 1000. (Pappas, SD) 15115 at 0306 with "Afternoon Showcase" from National Radio. (Jeffery, NY) 0032 with news, easy listening music. (Wms, TX)

AWR Adventist World Radio Special Edition QSL



This one was issued by AWR for test broadcasts to Australia/Papua New Guinea from its transmitter site on Guam.

NORTH KOREA—Radio Pyongyang, 7200 at 1049 with anthem and sign-off. (Barton, AZ) 7580 in JJ at 1155, 9977 at 1220 in SS, perhaps parallel with 11335 at 1222. (Wms, TX)

PAKISTAN—Radio Pakistan, 11570 at 1702. (Maywoods, KY)

PAPUA NEW GUINEA—NBC Port Moresby, 4890 at 0844. (Foss, AK) 1026 in Pidgin. (Maywoods, KY)

Most of the PNG regionals were heard over one or two DX sessions between 1000-1100: 2410-Radio Enga, 3205-Radio Sanduan, 3220-Radio Marobe, 3235-Radio West New Britain, 3245-Radio Gulf, 3260-

Radio Madang, 3315-Radio Manus, 3325-Radio North Solomons, 3355-Radio Simbu, 3375-Radio West Highlands, Radio East New Britain-3385, 3905-Radio New Ireland. (Maywoods, KY)

PARAGUAY—Radio Nacional, 9735 at 1017 with vocals, concertino music. SS. (Maywoods, KY) 2328. (Wms, TX)

PERU—Radio Cora, 4914.5 at 0145 in SS. (Wms, TX)

PHILIPPINES—VOA relay, 9760 at 1214, 9770 at 2336, 11760 at 0002, 17820//17735 at 0044. (Wms, TX) 12040 at 15125 in CC. (Barton, AZ)

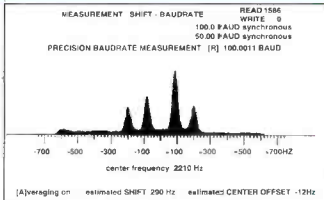
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CIRCLE 91 ON READER SERVICE CARD



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CIRCLE 79 ON READER SERVICE CARD

- Radio Veritas Asia, 9560 at 2127 in RR. (Jeffery, NY)
- PORTUGAL**—Deutsche Welle relay, 9535 at 0325 in EE, 13780 at 0116 in GG. (Wms, TX)
- Radio Portugal, 9570 in PP at 2304//9635. 15200 at 1251 in PP. (Wms, TX)
- RFE/RL relay, 7145 at 0055 in unidentified language. 11935 at 0017 in unidentified language. (Wms, TX)
- ROMANIA**—Radio Romania Int'l, 11940 at 1900 with frequency info, news, ID. (Jeffery, NY) 0235. (Wms, TX)
- RUSSIA**—Radio Vedo and Volgograd, 13710 at 0030, bell/chime IS and ID, news. (Maywoods, KY)
- Magadan Radio, 9530 at 1119 in RR with talk, rock. (Pappas, SD)
- Voice of Russia, 5475 at 0255 to North America, 11730 at 2359 with IS, frequencies for SS broadcasts. (Wms, TX) 9480 at 1931, 9665 at 0400, 11750 at 2230, all EE. (Jeffery, NY) 15425 at 0441. (Foss, AK)
- RWANDA**—Deutsche Welle relay, 21695 at 1317, presumed, in unidentified language. (Wms, TX)
- SAUDI ARABIA**—BSKSA, 9720 at 0316 in AA. (Wms, TX)
- SINGAPORE**—BBC relay, 9605 at 1204, 9740 at 2332 in CC or similar, 11750 at 1226 in EE, 15360 in CC at 1302. (Wms, TX)
- SLOVAKIA**—Radio Slovakia, 5930 at 0150 in presumed Slovak. (Wms, TX)
- SPAIN**—Radio Exterior Espana, 9540 at 2302, two men in FF, 9620 at 2312 in SS, 11945 at 0018 in SS. (Wms, TX)
- SWEDEN**—Radio Sweden, 9850 at 0306 in Swedish, 15250 at 1253. (Wms, TX)
- SWITZERLAND**—Swiss Radio Int'l, 9905 at 0303 and 9885 at 2338. (Wms, TX) 13635 at 1748 in GG. (Foss, AK)
- SYRIA**—Radio Damascus, 12095 at 0024 in SS to South America. (Wms, TX) 15095 at 2012 with local music. (Maywoods, TX)
- TAHITI**—Radio Tahiti, 15170 in FF at 0602. (Maywoods, TX)
- TAIWAN**—Voice of Free China, 9680 via WYFR at 0247. (Jeffery, NY) 11745 at 1225 in CC and 15270 in CC at 1255. (Wms, TX)
- Voice of Asia, 9280 in CC at 0905. (Barton, AZ)
- WYFR, via Taiwan, 5275 in CC/EE at 1112. (Wms, TX)
- Broadcasting Corp. of China, 15125 in CC at 1249. (Wms, TX)
- THAILAND**—VOA relay, 11785 at 1229 with news in CC. (Wms, TX)
- TUNISIA**—RTV Tunisienne, 15449 at 1630 in AA. (Maywoods, KY)
- TURKEY**—Voice of Turkey, 9445 at 2254, Turkish music. (Wms, TX)
- UKRAINE**—Radio Ukraine Int'l, 11780//11950 at 2032 in GG with talk, many IDs. Into EE at 2100. (Pappas, SD) 11950 at 0029 and 15180 at 0019. (Wms, TX)
- UNITED ARAB EMIRATES**—UAE Radio, Abu Dhabi, 7215 in AA at 0208, 11885 at 0013, 13605 in AA at 0026. (Wms, TX)
- UAE Radio, Dubai, 13605 at 1747. (Maywoods, KY) 13675 at 0243 and 15400 at 0254 in AA. (Wms, TX)
- VATICAN**—Vatican Radio, 7305 at 0336 and 9605 at 0323, both in SS. (Wms, TX)
- VENEZUELA**—Ecos del Torbes, 4980 at 0139 in SS. (Wms, TX)
- Radio Occidente, 9750 at 1025 in SS. (Maywoods, KY)
- YUGOSLAVIA**—Radio Yugoslavia, 9580 at 0431 with news, music, features. (Jeffery, NY) 11870 at 0012. (Wms, TX)

That's everything for this month. A rousing cheer to the following who came through for you this time:

Steve Williams, Corpus Christi, TX; Marty Foss, Wasilla, AK; Rick Barton, Phoenix, AZ; Dave Jeffery, Niagara Falls, NY; Marina Pappas, Huron, SD; the Maywoods DX Team (Ed Shaw, Loy Lee, Jerry Johnston, Chuck Everman, Dr. Joel Roitman and Jim McClure, all of Kentucky). Thanks to each of you!

Until next month, good listening! ■

PIRATES DEN

BY EDWARD TEACH

FOCUS ON FREE RADIO BROADCASTING

Despite the generally poor conditions currently being experienced on the short-wave bands, pirate radio activity seems to have slowed down only slightly.

Radio USA was logged by new "Pirates Den" reporter Tim Bowling of West Virginia on 6955 at 0140, playing rock music, commercial parodies and what seemed to be mentions of their 10th anniversary. They also explained they were an unlicensed station and that listeners were "aiding and abetting" the station by tuning in. They also claimed a police officer was there and began reading them their rights. They were off by 0156.

Tim also picked up Radio Doomsday on 6956 upper sideband, hosted by "Nemesis" who presented parodies, music and comedy skits that Tim notes were very well done. The skits included the "Rev. Red Slate" reading from the "book of modulation" plus a "commercial" for a Steven King movie, "The Station That Wouldn't QSL." Also public service announcements were aired for "Just Say No to Crime" and the United Way. They went off at 0200.

Skip Harwood in West Virginia reports Jolly Roger Radio Ireland, relayed by the North American Pirate Relay Service on 6955 lower sideband from 2302 to 2331, with Irish music and commercials for travel to Denmark and Ireland. They overdid the echo effects, says Skip, who monitored this from Toledo, Ohio. The station was heard again on 6955 with rock music while Skip was near Cleveland. Tim Bowling also had this one, giving a QSL address of Box 39, Waterford, Republic of Ireland, as well as P.O. Box 452, Wellsville, NY 14895.

WREC was logged by Dick Pearce in Vermont on 6957 lower sideband with a number of parodies and songs and a mention that they were "celebrating two continuous years of...whatever it is." George Roberts in Pennsylvania reports this one around 0015 on 6956 with a very overdone reverb effect and ID for "Radio East Coast," plus parody commercials and some phone calls.

Dick heard Up Against the Wall Radio on 6957.5 with host Owsley playing Clapton, the Beatles and Moody Blues, as well as a spoof of an Emergency Broadcast System test. Harwood had this one from Cleveland on 6957.2 USB with rock and a request for comments to P.O. Box 284317, Providence, RI 02908.

WRV was noted by Bowling on 6955 at 0509, but a local thunderstorm and its accompanying static crashes made it difficult for Tim to pick out very much. There was a mention of "Radio Violence" or "Radio Virus" and heavy metal numbers. The transmission began in upper sideband

but later switched to AM, with the host saying, "my radio likes the AM." The announcer gave the Wellsville address for reports and signed off at 0530.

Radio Fusion was heard by Harwood twice, once at 2302 on 6957 with rap music, giving the Providence, R.I., mail drop. Skip monitored this on Interstate 80 between Toldeo and Cleveland.

The station was picked up again while Skip was between Hagerstown, Md., and Martinsburg, W. Va., at 0115-0200 on 6957, again with rap and a very strong signal. Don Sebasky in North Carolina also reports this one, at 2315 with various rock-type vocals and a mention of Rhode Island.

Radio Pirana on 13590 was heard by Pearce at 2010, reading listener mail, including signal reports received on an earlier broadcast from the U.S.A., Mexico and South America. They also played "More Than a Woman" and some Spanish tunes. Dick notes that he hopes this was a direct broadcast and not a relay. I believe it was, Dick. I understand this station plans to relocate to somewhere in South America (from their current location in Germany). They'll take reports via the Wellsville address.

Another Pearce log was Down East Radio, heard at 2310 on 6954, but Dick says the signal was too weak to make out anything more than the station name.

I got one report this month for reception of Radio New York International. I think this ex-pirate is now on the air via one of the U.S. commercial/religious stations. Reporter Mike Thompson Sr. of Staten Island, N.Y., heard this on 7435 at 0445

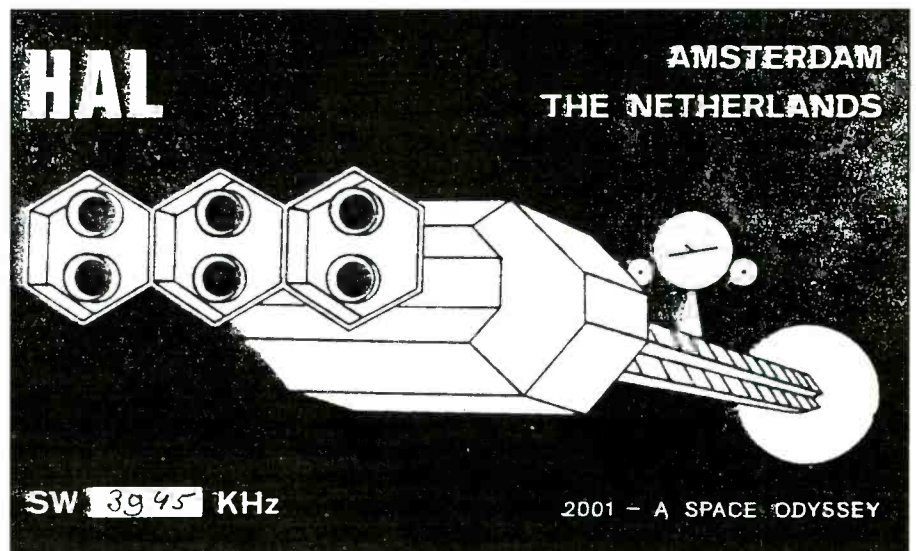


with host "Johnny Lightning" claiming to be broadcasting from "out at sea." They gave a phone number of (718) 633-3010.

A few quick unidentifieds: 6955 LSB at 0112 with calliope-like sounds playing religious music (Pearce); 6955 USB at 2140-2145 with rock oldies, heard while near Chicago (Harwood); 6955 at 0100-0145 with hard rock music, heard while near Chicago (Harwood).

That'll do it for this time. Keep sending in your pirate station loggings, along with any pirate radio news you run across, as well as QSL info, copies of or sample QSLs—even station photos—it's all very, very welcome here in the "Den."

See you next month!



Fabien Serve in France sends this QSL from HAL Radio in Amsterdam, Holland, operating on 3945. "Hal" is taken from the computer in the movie "2001, A Space Odyssey."

The Flying Scanner

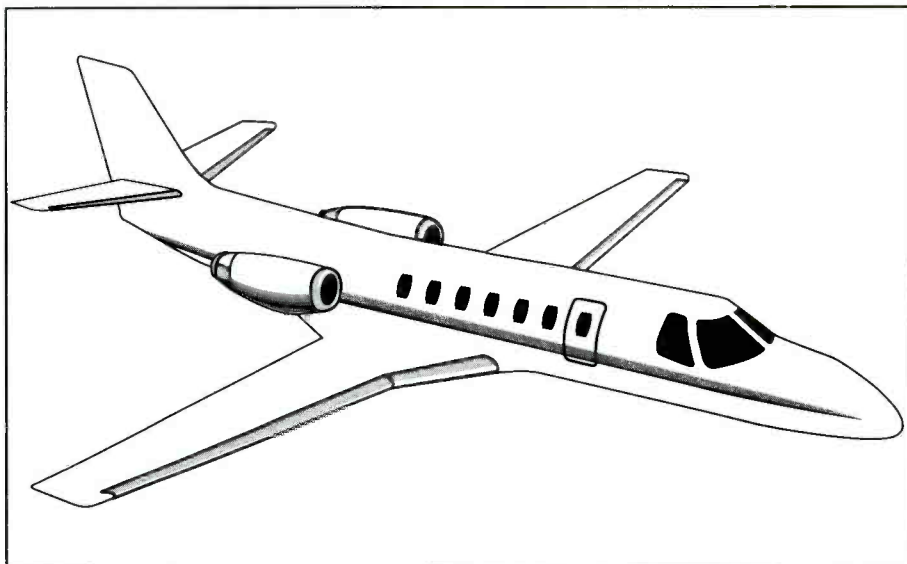
One of the most exciting and interesting things you can have is a handheld scanner with a 41,000-foot rubber duckie antenna! This is not quite as far-fetched as you might think.

Until just a few years ago, the commercial airlines had strict rules against the use of "portable electronic devices" on board planes. The extensive use of laptop computers by high-dollar business fliers has opened doors for computer users, and in doing so, drastically changed the prohibitive rules relating to the use of electronic devices on board commercial airliners.

The prohibition of electronic devices on board commercial airliners was brought about mainly by the midair collision between a DC-8 and a Constellation over New York City many years ago. Both airliners were in holding patterns awaiting further clearance by air traffic control. They were not in the same holding pattern, but they were flying at the same altitude. During the flight, something interfered with the VOR navigation receiver being used to keep one of planes in the assigned holding area. The false reading caused that plane to stray off course, and in doing so, it crossed the path of the other plane. A midair collision resulted, and one plane crashed, killing many of the passengers. The other, although damaged, made a successful landing.

The investigation revealed a young boy seated in the back of the plane was listening to a new portable FM transistor radio. The boy survived the crash and so did his radio. As the investigation progressed, it was discovered that the FM radio had enough superfluous emissions to cause the VOR navigation receiver to give a false position indication. This discovery caused immediate actions by both the FCC and the FAA.

The FAA made a hard-and-fast rule that "no portable electronic device" could be operated on board a commercial airliner in flight. The FCC response was to make new rules relating to superfluous emissions by electronic devices, therefore greatly expand the well-known type-acceptance specifications and related regulations.



Several decades have passed since this accident took place. The FAA has revised the regulations regarding portable electronic devices several times. The FCC also has changed the emissions rule to more tightly control the type-acceptance specifications. Electronic devices also have changed for the better over the years.

I remember boarding a Pan Am flight 10 years ago with a portable ham transceiver. As I passed the captain, I jokingly asked whether he would mind if I operated the walkie-talkie during the flight. His response was a stern: "No! You do know that operating that transmitter inside this 747 would cause all the oxygen masks to deploy, don't you?" I had to wonder about his logic and knowledge of electronics. As we talked briefly, I noticed a maintenance worker transmitting on his handheld radio. When I asked why the maintenance handheld didn't deploy the oxygen masks, the captain had no reasonable answer, and just said it was "policy," end of subject.

Things have changed, as I mentioned. And so have the Federal Air Regulations that deal with the problem of portable electronic devices on board commercial airliners. Here is the current Federal Air Regulation, as it now appears:

FAR 91.21 Portable Electronic Devices
(a.) Except as provided in paragraph (b.)

of this section, no person may operate, nor may any operator or pilot in command of an aircraft allow the operation of, any portable electronic device on any of the following U.S. registered civil aircraft:

(1) Aircraft operated by a holder of an air carrier operating certificate or an operating certificate; or

(2) Any other aircraft while it is operated under IFR (Instrument Flight Rules).

(b.) Paragraph (a.) of this section does not apply to:

(1) Portable voice recorders;

(2) Hearing aids;

(3) Heart pacemakers;

(4) Electric shavers; or

(5) Any other portable electronic device that the operator of the aircraft has determined will not cause interference with the navigation or communication system of the aircraft on which it is to be used.

(c.) In the case of an aircraft operated by a holder of an air carrier operating certificate or an operating certificate, the determination required by paragraph (b.)(5) of this section shall be made by that operator of the aircraft on which the particular device is to be used. In the case of other aircraft, the determination may be made by the pilot in command or the operator of the aircraft.

The major change in the FAA regulation comes in the legal wording of (b.)(5).

Tap into secret Shortwave Signals

Turn mysterious signals into exciting text messages with this new MFJ MultiReader™



MFJ-462B **Plug** this self-contained MFJ MultiReader™ into your shortwave receiver's earphone jack.

\$169⁹⁵ Then watch mysterious chirps, whistles and buzzing sounds of RTTY, ASCII, CW and AMTOR turn into exciting text messages as they scroll across your easy-to-read LCD display.

You'll read interesting commercial, military, diplomatic, weather, aeronautical, maritime and amateur traffic... traffic your friends can't read -- unless they have a decoder.

Eavesdrop on the World

Eavesdrop on the world's press agencies transmitting *unedited* late breaking news in English -- China News in Taiwan, Tanjung Press in Serbia, Iraqi News in Iraq -- all on RTTY.

Super Active Antenna

"World Radio TV Handbook" says MFJ-1024 is a "first rate easy-to-operate active antenna... quiet... excellent dynamic range... good gain... low noise... broad frequency coverage."

Mount it outdoors away from electrical noise for maximum signal, minimum noise. Covers 50 KHz to 30 MHz.

Receives strong, clear signals from all over the world. 20dB attenuator, gain control, ON LED. Switch two receivers and aux. or active antenna. 6x3x5 in. remote has 54 inch whip, 50 ft. coax. 3x2x4 in. 12 VDC or 110 VAC with

\$129⁹⁵ MFJ-1024 MFJ-1312, \$129.95.

Indoor Active Antenna

MFJ-1020B

\$79⁹⁵

Rival

outside long wires with this *tuned* indoor active antenna. "World Radio TV Handbook" says MFJ-1020 is a "fine value... fair price... best offering to date... performs very well indeed."

Tuned circuitry minimizes intermod. improves selectivity, reduces noise outside tuned band. Use as preselector with external antenna. Covers 0.3-30 MHz. Has Tune, Band, Gain, On/Off/Bypass Controls. Detachable telescoping whip. 3x2x6 in. Use 9 volt battery, 9-18 VDC or 110 VAC with MFJ-1312B, \$129.95.

Compact Active Antenna

MFJ-1022

\$39⁹⁵

Plug this new

compact MFJ all band active antenna into your general coverage receiver and you'll hear strong clear signals from all over the world from 300 KHz to 200 MHz -- including low, medium, shortwave and VHF bands.

Also improves scanner radio reception on VHF high and low bands.

Detachable 20 in. telescoping antenna. 9 volt battery or 110 VAC with MFJ-1312B, \$129.95. 3 1/8 x 1 1/4 x 4 in.

Copy RTTY weather stations from Antarctica, Mali, Congo and many others. Listen to military RTTY passing traffic from Panama, Cyprus, Peru, Capetown, London and others. Listen to hams, diplomatic, research, commercial and maritime RTTY.

Listen to maritime users, diplomats and amateurs send and receive error free messages using various forms of TOR (Telex-Over-Radio).

Monitor Morse code from hams, military, commercial, aeronautical, diplomatic, maritime -- from all over the world -- Australia, Russia, Hong Kong, Japan, Egypt, Norway, Israel, Africa.

Printer Monitors 24 Hours a Day

MFJ's exclusive *TelePrinterPort™* lets you monitor any station 24 hours a day by printing their transmissions to your Epson compatible printer.

Printer cable, MFJ-5412, \$9.95.

MFJ MessageSaver™

You can save several pages of text in 8K of memory for re-reading or later review.

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It's easy to read -- the 2 line 16 character LCD display with contrast adjustment is mounted on a sloped front panel for easy reading.

Copies most standard shifts and speeds. Has MFJ *AutoTrak™* Morse code speed tracking.

Use 12 VDC or use 110 VAC with MFJ-1312B AC adapter, \$12.95. 5 1/4 x 2 1/2 x 5 1/4 inches.

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Then if you're not completely satisfied, simply return it within 30 days for a prompt and courteous refund (less shipping).

Order today and try it -- you'll be glad you did.

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\$149⁹⁵

Use your

computer and radio to receive and display *brilliant full color* FAX news photos and incredible WeFAX weather maps with all 16 gray levels. Also RTTY, ASCII and Morse code.

Animate weather maps. Display 10 global pictures simultaneously. Zoom any part of picture or map. Frequency manager lists over 900 FAX stations. Automatic picture capture and save.

Includes interface, easy-to-use menu driven software, cables, power supply, comprehensive manual and Jump-Start™ guide. Requires 286 or better computer with VGA monitor.

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The Super Hi-Q MFJ-1782

Loop™ is a **\$269⁹⁵**

professional quality

remotely tuned 10-30

MHz high-Q antenna.

It's very quiet and has a very narrow

bandwidth that reduces receiver over-

loading and out-of-band interference.

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MFJ-956

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The

MFJ-956 is a

high-Q passive LC preselector that

lets you boost your favorite stations

while rejecting images, intermod and

other phantom signals. Covers 1.5-30

MHz. Has preselector bypass and

receiver grounded position. 2x3x4 in.

Mobile Scanner Ant.

Cellular MFJ-1824BB/BM

look-a-like. Covers **\$19⁹⁵**

25-1300 MHz. High-

est gain on 406-512 and

108-174 MHz, 19 in.

Magnet mount. MFJ-

1824BB has BNC/UHF

plug; MFJ-1824BM has

Motorola plug.

MFJ Antenna Matcher

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Matches your antenna to your receiver so you get maximum signal and minimum loss.

Preamp with gain control boosts weak stations 10 times. 20 dB attenuator prevents overload.

Pushbuttons let you select 2 antennas and 2 receivers. Cover 1.6-30 MHz. 9x2x6 inches. Use 9-18 VDC or 110 VAC with MFJ-1312, \$129.95.

High-Gain Preselector

MFJ-1045C

\$69⁹⁵

High-gain, high-Q receiver preselector covers 1.8-54 MHz. Boost weak signals 10 times with low noise dual gate MOSFET. Reject out-of-band signals and images with high-Q tuned circuits. Pushbuttons let you select 2 antennas and 2 receivers. Dual coax and phono connectors. Use 9-18VDC or 110 VAC with MFJ-1312B, \$129.95.

Dual Tunable Audio Filter

Two separately tun-

able filters let you peak desired signals and notch

out interference at the same time. You can peak, notch, low or high pass

signals to eliminate heterodynes and interference. Plugs between radio and speaker or phones. 10x2x6 in.

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How to build MFJ-38

and put up **\$16⁹⁵**

inexpensive, fully tested wire antennas using readily available

parts that'll bring signals in like you've never heard before.

Covers receiving antennas from 100 KHz to almost 1000 KHz.

Includes antennas for long, medium and shortwave, utility, marine and VHF/UHF services.

MFJ-107B

\$9⁹⁵

MFJ-108B

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MFJ-105B

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MFJ-108B, dual clock displays 24 UTC and 12 hour local time *simultaneously*. MFJ-107B, single clock shows you 24 hour UTC time. *3 star rated by Passport to World Band Radio!*

MFJ-105B, accurate 24 hour UTC quartz wall clock with large 10 inch face.

MFJ Antenna Switches

MFJ-1704

\$59⁹⁵

MFJ-1702B

\$21⁹⁵

MFJ-1704 heavy duty antenna switch lets you select 4 antennas or ground them for static and lightning protection. Unused antennas automatically grounded. Replaceable lightning surge protection device. Good to 500 MHz. 60 dB isolation at 30 MHz.

MFJ-1702B for 2 antennas.

World Band Radio Kit

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\$59⁹⁵ kit

MFJ-8100W

\$79⁹⁵ wired

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POP'COMM's World Band Tuning Tips

November 1995

This POP'COMM feature is designed to help you hear more shortwave stations. Each month this handy, pullout guide shows you when and where to tune to hear a wide variety of local and international broadcasters on the shortwave bands.

The list includes broadcasts in languages other than English. Most of the transmissions are not beamed to North America. Keep in mind that stations make frequent changes in their broadcasting times and frequencies.

Changes in propagation conditions may make some stations difficult or impossible to receive. Your equipment and receiving location also will have a bearing on what you are able to hear.

Note: EE, FF, SS, etc., are abbreviations for English, French, Spanish and so on. Some frequencies may vary slightly. All times are in UTC, which is five hours ahead of Eastern Standard Time (i.e., 0000 UTC equals 7 p.m. EST).

Freq.	Country/Station	UTC Notes	Freq.	Country/Station	UTC Notes
3222	R. Kara, Togo	0530 FF	5960	R. Japan via Canada	0100
3250	R. Luz y Vida, Honduras	0100 SS	5965	R. Budapest, Hungary	0330 EE s/on
3270	Namibia Broadcasting Service	0345	6000	R. Havana Cuba	0130
3280	La Voz del Napo, Ecuador	1000 SS	6010	R. Mil, Mexico	1000 SS
3300	R. Cultural, Guatemala	0300	6015	R. Austria Int'l, via Canada	0530
3305	R. Western, Papua New Guinea	1130	6020	R. Australia	0800
3325	R. Maya, Guatemala	1100 SS	6025	R. Amanecer, Dominican Rep.	0200 SS
3340	R. Altura, Peru	1030 SS	6050	HCJB, Ecuador	0200
3360	La Voz de Nahuala, Guatemala	1100	6060	R. Nacional, Argentina	0500 SS
3366	GBC, Ghana	0600	6070	CFRB/CFRX, Canada	24hr
3396	ZBC, Zimbabwe	0256 s/on	6095	Vatican Radio	0250
3925	R. Tampa, Japan	1000 JJ	6100	R. New Zealand	0800
3945	R. Vanuatu	1030 Pidgin/EE	6105	R. Cultura, Brazil	0900 PP
4299	R. Naylamp, Peru	0100 SS	6110	R. Japan, via Canada	0500
4409	R. Eco, Bolivia	0100 SS	6135	Swiss Radio Int'l	0100
4760	ELWA, Liberia	0600	6145	R. Tirana, Albania	0230
4765	R. Rural, Brazil	0230 PP	6170v	La Voz de la Selva, Colombia	0400 SS
4770	R. Nigeria, Kaduna	0430	6195	R. Sweden	0230
4777	RTV Gabonaise, Gabon	0530 FF	6250	R. Nacional Malabo, Eq. Guinea	0500 SS
4785	Ecos del Combeima, Colombia	0200 SS	6260	V of Greece	0130 GG/EE
4800	R. Lesotho	0300	6305	Voz del CID (clandestine)	0400 SS
4805	Radiodifusora Manaus	0100 PP	7105	R. Bosnia-Herzegovina	0100
4810	R. 2000, S. Africa	0200 EE/Afk	7200	Sudan Nat'l Broadcasting Corp.	0259 s/on
4820	La Voz Evangelica, Honduras	0300	7215	UAE Radio	2300
4835	R. Tezulutlan, Guatemala	1100 SS/vern	7255	R. Nigeria	0500
4840	R. Valera, Venezuela	0300 SS	7265	R. Yugoslavia	0430
4870	ORTB, Benin	0530 FF	7300	R. Slovakia Int'l	0100
4885	R. Club do Para, Brazil	0200 PP	7325	BBC, England	0130
4885	Ondas del Meta, Colombia	0300 SS	7335	Vatican Radio	0130
4890	NBC, Papua New Guinea	1100 EE	7345	R. Prague, Czech Rep.	0700
4890	R. France Int'l, via Gabon	0500 FF	7405	China Radio Int'l	1400
4904	Rdf. Nationale, Chad	0430 FF	7448	V of Greece	0130
4920	R. Quito, Ecuador	0200 SS	7465	Kol Israel	0500
4930	R. Internacional, Honduras	0200 SS	7475	RTT, Tunisia	0400 AA
4935	R. Tropical, Peru	0400 SS	9022	VOIRI, Iran	1930
4955	R. Marajoara, Brazil	0300 PP	9200	R. Omdurman, Sudan	1800
4990	R. Nigeria	0500	9375	Voice of Greece	0500 Greek
5010	Escuelas Radiofonicas, Ecuador	1000 SS	9400	RFPI, Costa Rica	0000
5025	R. Aparecida, Brazil	1000 PP	9440	R. Slovakia Int'l	0100
5030	AWR-Pan America, Costa Rica	0330 SS	9445	Voice of Turkey	2330 TT
5047	RTV Togolaise, Togo	0500 FF	9475	R. Cairo, Egypt	0200
5055	TIFC, Costa Rica	0400	9500	Trans World Radio, Swaziland	0600
5075	Caracol Colombia	0300 SS	9510	R. Australia	1300
5700	R. San Ignacio, Peru	0100 SS	9535	Swiss Radio Int'l	0500
5850	Monitor Radio, USA	0500	9540	R. Espana Exterior, Spain	0100
5930	R. Prague, Czech Rep (via Slovakia)	0230	9560	Voice of Peace/R. Amaharo, Ethiopia	0400 vern

Freq.	Country/Station	UTC	Notes	Freq.	Country/Station	UTC	Notes
9570	R. Portugal	0230		12065	V of Russia	1300	s/on
9570	R. New Zealand	0600		12085	R. Damascus, Syria	2030	
9580	R. Yugoslavia	0000		13625	R. France Int'l, via French Guiana	1200	
9580	Africa No. One, Gabon	1900	FF	13635	Swiss R. Int'l, via French Guiana	0030	
9590	R. Denmark, via Norway	1330		13670	R. Canada Int'l	2200	
9605	UAE Radio, Abu Dhabi	2300		13675	UAE Radio, Dubai	1630	
9605	Vatican Radio	0330	SS	13680v	R. Iraq Int'l	1200	AA, irreg.
9610	BBC relay, S. Africa	0230		13700	R. Netherlands	1900	
9645	RAI, Italy	0130	II	13750	AWR, Costa Rica	1200	s/on
9645	Faro del Caribe, Costa Rica	0500	SS	13760	R. Pyongyang, North Korea	0030	
9655	R. Austria Int'l	0130		13765	Vatican Radio	0630	
9670	R. Veritas, Philippines	1130	unid	13805	R. Denmark, via Norway	1530	DD
9675	Spanish National Radio	2200		13860	INBS, Iceland	2300	Icelandic
9675	R. Cancao Nova, Brazil	1100	PP	15009	V of Vietnam	1330	
9690	China Radio Int'l, via Spain	0300		15050	RFPI, Costa Rica	1600	
9695	Channel Africa, South Africa	0500		15084	VOIRI, Iran	2200	Farsi
9700	R. Bulgaria	0000		15095	R. Damascus, Syria	2030	
9710	China Radio Int'l, via Mali	0000		15120	All India Radio	1300	
9725	RAI, Italy	0100		15168v	R. Tahiti	0300	FF/TT
9735	R. Nacional, Paraguay	0100	SS	15170	R. Jordan	1100	
9745	HCJB, Ecuador	0730		15190	R. France Int'l	2300	SS
9750	R. Japan	1400		15235	V of Great Homeland, Libya	2000	AA
9755	R. Canada Int'l	0000		15240	R. Australia	0400	
9765	Voice of the Mediterranean, Malta	0600		15240	R. Sweden	1330	
9770	V of UAE, Abu Dhabi	2300		15265	Radiobras, Brazil	1700	
9805	Radio France Int'l	1200		15270	R. Jordan	1430	
9820	R. Havana Cuba	0100	USB	15305	R. Canada Int'l	2300	
9835	R. Budapest, Hungary	0100		15315	R. Netherlands, via Bonaire	1830	
9840	R. Kuwait	0500	AA	15345	RTV Morocaine, Morocco	1800	AA
9860	Swiss Radio Int'l, via French Guiana	0400		15365	R. France Int'l	1230	
9860	R. Sweden	1100	Swedish	15375	R. Oman	1200	AA
9870	R. Austria Int'l	0130		15400	R. Finland Int'l	1330	
9905	Swiss Radio Int'l, via French Guiana	0100		15405	R. France Int'l	1400	
9910	All India Radio	2200		15435	V of the Great Homeland, Libya	1645	s/on
9955	WRMI, Florida	0000		15445	Radiobras, Brazil	1200	
9960	Wings of Hope, Lebanon	1500		15475	R. Atlantika, Russia	1300	RR, Tu-Fr
11550	WYFR, Florida, via Taiwan	1300		15475	Africa Number One, Gabon	2100	FF
11580	R. Moldova Int'l	1400		15530	R. France Int'l	1230	
11615	HCJB, Ecuador	0700		15540	HCJB, Ecuador	0800	USB
11620	All India Radio	1900		15555	R. Pakistan	1600	
11650	R. Sweden	1200		15565	R. Australia	1200	
11670	Radio France Int'l, via Fr. Guiana	0130	SS	15570	Vatican Radio	1745	
11690	FEBC, Philippines	1200	VV	15575	R. Korea, S. Korea	0030	
11705	R. Havana Cuba	2100		15590	Vatican Radio	1345	
11710	RAE, Argentina	0200	EE	15640	Kol Israel	1515	
11715	China R. Int'l, via Mali	0300		15650	V of Greece	1400	GG/EE
11720	R. Bulgaria	2100		15665	Monitor Radio, USA	1800	
11740	All India Radio	1530	s/on	15675	R. Copan Int'l, Honduras	2300	SS
11745v	R. Tirana, Albania	0200		15770	All India Radio	1200	vern
11750	V. of Russia	2200		17490	HCJB, Ecuador	1000	USB
11755	R. Finland Int'l	1330		17500	RTT, Tunisia	1330	AA
11780	R. Ukraine Int'l	0030		17520	V of Greece	1430	GG/EE
11800	R. Australia	1300		17560	R. France Int'l	1500	
11805	R. Globo, Brazil	0100	PP	17605	R. Netherlands, via Bonaire	1830	
11830	Vatican Radio	2250		17620	R. France Int'l	1600	
11830	R. Veritas Asia, Philippines	1500		17630	Africa Number One, Gabon	1430	FF
11845	R. Canada Int'l	2200		17655	R. Ukraine Int'l	2330	
11865	BBC via Canada	1400		17670	Swiss Radio Int'l	1500	
11870	FEBA, Seychelles	1500		17740	R. Finland Int'l	1430	
11885	UAE Radio, Abu Dhabi	2300		17745	R. Algiers, Algeria	1930	
11890	R. Oman	1400	AA	17810	R. Japan	2300	
11895	R. Japan, via French Guiana	0300		17820	R. Canada Int'l	1300	
11905	R. Gaucha, Brazil	0000	PP	17825	UAE Radio	1300	
11925	V of Mediterranean, Malta	1400		17870	RAI, Italy	1730	II
11950	R. Havana Cuba	2300	USB	17895	Qatar Broadcasting Service	1400	AA
11990	R. Kuwait	1900	AA	17900	R. Portugal	2000	PP
11995	FEBC, Philippines	1330		17905	RFPI, Costa Rica	1900	USB
12005	RTV Tunisienne, Tunisia	1900	AA	21455	HCJB, Ecuador	1330	
12050	R. Cairo, Egypt	2300	AA				

This change, although slow in coming, allows each airline to test whatever electronic devices they desire. If, as a result of the interference test, the carrier finds there is no interference, then they can allow the operation of the selected device or devices on board their planes. Some airlines are quite restrictive in the electronics devices they allow. Others have taken the time to run extensive tests, and as a result, they allow the extensive use of electronics on board their flights.

Although editorial limitations do not allow me to mention the airlines by name, I can tell you the results of my personal research. One major carrier I checked, flying mostly 737s and DC-9 airplanes nationwide will not allow the operation of any electronic devices other than the ones mentioned above, spelled out in the FAR.

In checking another airline, a major international and domestic carrier based in the south, I found this interesting list in their on-board magazine:

"The following devices can be operated at anytime during taxi, take-off, in flight, and during landing: hearing aids, nerve simulators, electric shavers, permanent life-support devices, pacemakers, electric watches and pagers.

"These devices can be operated during the cruise portion of the flight: computers, VHF scanners, CD and tape players, electronic games, video cameras and video players, and electronic calculators.

"These devices cannot be operated at any time during any phase of the flight: cellular phones (must be turned completely off at all times); peripheral computer devices such as printers; any device that can radiate RF on a specific frequency (in other words, a crystal-controlled transmitter); commercial two-way radios; portable television sets; AM/FM portable radios; 49 MHz, ham or CB transceivers; and remote-control toys."

As you can see, there is a wide difference between airlines regarding your electronic device use. However, if you pick the right airline, you can use your VHF portable scanner in flight while at cruise! Listening to a scanner at 41,000 feet can be one of the most interesting monitoring sessions you can ever experience, believe me! You can monitor hundreds of police and fire calls from as far away as 400 miles. You also can follow the frequency selection being used by your flight, and follow the progress of your plane on VHF.

The poor cellular phone user seems to be restricted by all the airlines I checked. I suspect this is for three reasons. First, the airline probably would lose money if you used your phone in flight and not the on-board phones. Second, from high altitude, the cellular user would bring up many different cellular sites and service providers. And, third, the airline does not want you disturbing the other passengers with your incoming calls, hence the requirement that all cellular phones be turned completely off.

As you will note, the FM radio has remained on the totally restricted list. This is certainly a hold-over from the crash many years ago, and the legal risks if such operation were allowed even today.

In buying your next airline ticket, if you are a portable scanner user, I would suggest that you check around and perhaps travel with the southern-based carrier that has no objections to your portable scanner enjoyment in flight. I also would suggest a window seat somewhere other than over the wing, and of course, bring an earphone! Others around you might not enjoy 5,000 police calls during a one-hour flight at 41,000 feet! Oh, and never mind the movie headset! This is much more fun!

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The person whose entry is selected will receive a one-year gift subscription (or one-year subscription extension) to Popular Communications.

Address all entries to: How I Got Started, Popular Communications, 76 N. Broadway, Hicksville, NY 11801, or e-mail to POPCOMM@aol.com.



Sharon Cenna, KB8VXL, with her mentor/father-in-law, Al Cenna, NF3K. The two are busy in Al's ham shack as he "Elmers" Sharon with her first contacts on Christmas Day 1994.

Our November Winner

This month, Sharon Cenna, KB8VXL, from West Lake, Ohio, visits us with her tale of how she began shortwave listening:

"World War II movies always fascinated me as radiomen would send CW for help, or flash light signals on board the vessel's deck at night to other ships.

"This fascination with ham radio soon became a reality in my own family. It seems, previously unknown to me, I had a cousin who lived in Florida about 35 years ago who used to do clandestine work for the government from his shack at home.

"My interest in the hobby became stronger about 25 years ago when my husband gave a Yaesu receiver to his dad to enhance

his ham radio hobby. Well, Al got hooked, and through the years I have followed his progress to amateur extra!

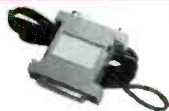
"About two years ago, I made up my mind to look into the hobby as well. Now I have my technician plus code ticket and I am studying for my general class license. The possibilities are endless!"

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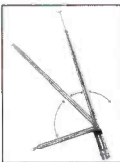


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SIMPLE ANTENNAS AND ACCESSORIES FOR SIGNAL IMPROVEMENT

More Long Wires...Including a Beam or Two

In the first installment of this three-part series, we looked at the basic resonant long-wire antenna. That type of antenna consists of a wire radiator element that is at least two wavelengths long, and optimally is five to seven wavelengths. This antenna exhibits gain over a dipole and can have considerable gain if the physical length is very, very long relative to the wavelength of the frequency being received. I can recall accidentally using an 80-meter ham radio dipole on 2 meters (144-148 MHz) with startling results: At 2 meters, the dipole was acting as a pair of very long long-wire antennas back-to-back.

A disadvantage of the standard resonant long wire looked at last month is that it is resonant; i.e., it works best at a fundamental frequency (determined by length) and its harmonics. Figure 1 shows a wideband, non-resonant long-wire antenna that solves this problem with little effect on the gain.

The far end of the antenna radiator element is terminated in a resistor (R1) that has a value equal to the impedance of the antenna (typically 400 to 800 ohms), which can be found using an impedance bridge.

V-Beam Antennas

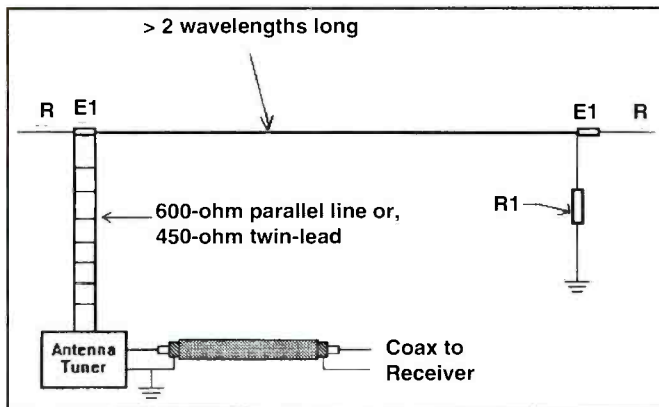
The V-beam antenna is a bidirectional radiator composed of two multiwavelength longwires installed at an angle with respect to each other. Figure 2 shows a V-beam viewed from above. Along each long wire, you would find the standard long-wire radiation pattern in the direction of the wire.

But when two antennas are radiating simultaneously into the same space, their patterns converge to form a new pattern because of the interference of the waves from each antenna. Figure 2 also shows the approximate bidirectional pattern to expect from two long wires arranged into

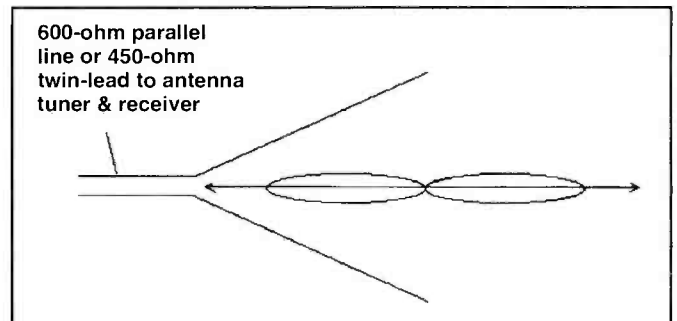
the V-beam configuration. The pattern becomes more bidirectional and narrower along an axis that bisects an angle between the two radiators as the antenna elements get longer.

The V-beam is fed from parallel transmission line and an antenna tuner. The 450-ohm twin-lead and 600-ohm parallel line are good matches to the V-beam, but it also is possible to feed the antenna through a 4:1 balun transformer to match with coaxial cable. This practice, however, limits the bands on which the device can operate. When fed with parallel line and an antenna tuner, the V-beam can accommodate a wide range of frequencies, similar to the single long wire discussed last time.

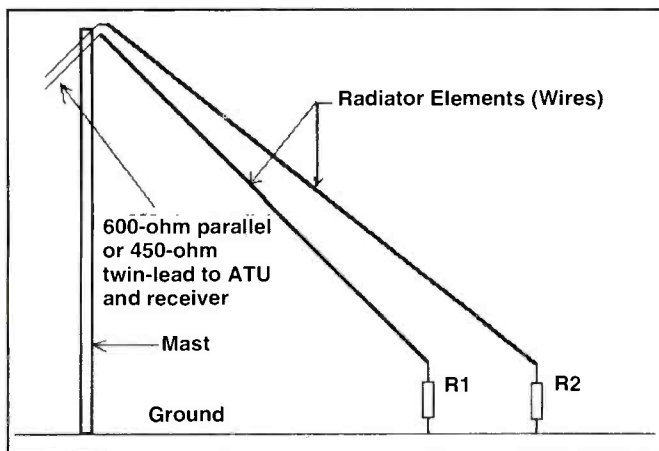
The same rules apply for the length of the V-beam as apply to the long wire: the longer the better (if gain and low angle of radiation are sought). In general, however, it has become standard practice in amateur



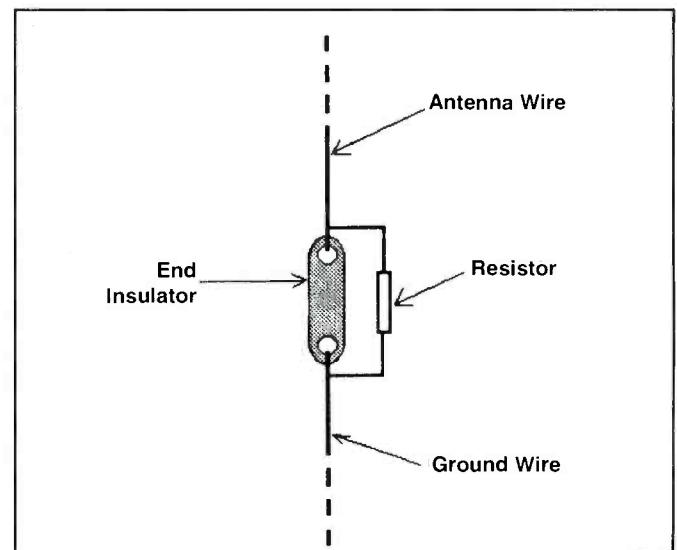
Non-resonant long-wire antenna.



V-beam antenna.



Inverted-V beam antenna.



Terminating resistor installation.

radio circles to use a V-beam length on the order of 330 to 450 feet for general coverage of the HF bands (excluding 160 meters). Gains vary from 11.5 dB at the upper end of 10 meters to little better than a dipole at 80 meters. The same lengths would apply to the shortwave bands, especially if the long-wire elements are the terminated forms shown earlier in Figure 1.

Inverted V-Beam Long-Wire Antenna

An antenna that bears some of the properties of the inverted-V and some of the properties of the long wire (especially directivity) is found in Figure 3. This antenna is a current-fed long wire that is supported at a convenient point from a wooden or other insulated mast. The main radiator is an odd integer (1, 3, 5, 7...) of quarter-wavelength. The secondary radiator is a quarter-wavelength long. The feedpoint between the two radiators is a good match to 300- or 450-ohm parallel line or twin-lead, so most constructors install a 4:1 impedance ratio broadbanded transformer such as a balun at the feedpoint. This transformer allows the antenna to be fed from a piece of standard 75-ohm coaxial cable.

The ends of the radiator elements are terminated in 270-ohm resistors (R1 and R2). For SWL purposes, ordinary 2-watt carbon composition or metal film resistors are used. The important attribute of the resistors is that they are non-inductive, hence the need to use carbon composition or metal film resistors rather than wire-wound resistors. For amateur radio transmitting use, high-power non-inductive resistors are required, but for receiver operators ordinary 2-watt resistors will do.

The resistors can be installed as in Figure 4. In this method, use glass, ceramic or synthetic (nylon) end insulators, although the longer types are not suitable. The antenna radiator element wire is connected to one end hole of the end insulator, while the ground wire (which should be kept very short) is connected to the other end hole. The resistor is bridged between the two wires and soldered in place.

The ground connection could be made to ordinary ground rods. The 8-foot varieties are considered best, however, even the small 3-foot and 4-foot types will suffice, especially in good conductive earth. The wire from the ground end of the insulator to the ground rod should be as short as possible (only a few inches), especially at higher frequencies.

Next Time

In the final installment of this three-part series, we will take a look at the rhombic antenna. That antenna has been called the most heavenly of all wire antennas, but that's only part of the story. You can write to me here at *Popular Communications* or via the Internet at CARRJJ@aol.com.



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SCANNING VHF/UHF

BY J. T. WARD

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

This is the first of what I hope will be many monthly Scanning VHF/UHF columns I'll be writing for Popular Communications. After 12 years of writing this column, Chuck Gysi has been appointed POP'COMM's editor, replacing Tom Kneitel; and I've been fortunate enough to be asked to take over Scanning VHF/UHF.

To start, let me introduce myself and tell you a bit about my scanning background. My first VHF receiver was a General Electric analog-tuned multiband portable radio that I used to monitor local police and fire calls. My "job" was to keep the stations tuned in while my best friend, Steve Arthur, drove as we sped from call to call in his parents' 1971 Pontiac Grandville.

Those were simpler days; we were teenagers in a small Ohio town, and we actually became friends with many of the local police officers and firefighters by chasing their calls. That's not something that's likely to happen today.

When I was 16, I parlayed my first-aid training as a Civil Air Patrol cadet into a volunteer position with a local ambulance squad. Now, instead of chasing calls, I was running them.

The ambulance squad gave me my first real experiences with two-way radio operations. We had a hodgepodge of VHF low band equipment and our base station frequently picked up skip from a veterinarian somewhere out west. At least I think he was out west, because he used to be called out frequently to treat coyotes that had been hit by cars!

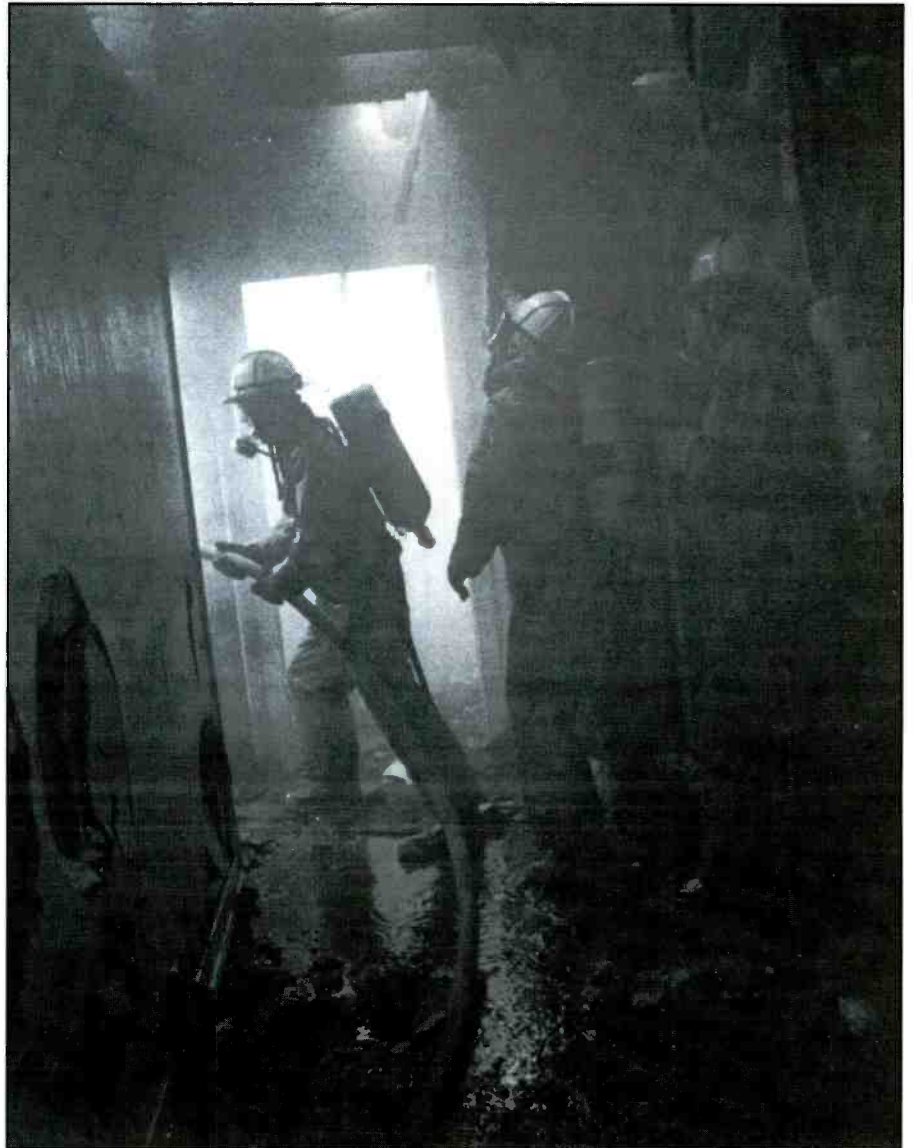
For the next 15 years, scanners became tools of the trade as I earned my EMT and paramedic ratings and worked full time for several EMS services in Ohio and Florida. With the scanners, I listened for calls both on duty and off. During that time I earned a private pilot's license, so aviation monitoring also became a pleasant pastime.

About 10 years ago I traded my paramedic's badge for a journalist's pen, and once again I found myself listening to a scanner, this time for news tips about house fires, car wrecks and all sorts of murder and mayhem.

Which leads me to this column.

I'm lucky enough to be able to combine my favorite hobby of monitoring with my current career as a free-lance writer.

Although it will be my name appearing at the top of the page, this column really belongs to you, POP'COMM's readers. Like Chuck, I'll depend on you to share your favorite frequencies and scanning tips



Why miss out on the action? Tune your scanner in to your area's local police and fire departments, and you can hear the excitement first-hand.

with your fellow readers. And hopefully, I'll be able to contribute an idea of my own now and then.

Scanners and Recorders

One question that pops up regularly is how to tape record the transmissions heard on scanners. Let me suggest a simple, relatively inexpensive way to link the two machines.

First, you'll need a voice-activated tape recorder with a remote microphone jack. I use the Micro-51 recorder from Radio Shack (\$59.99) because of its small size,

but others will work just as well.

If your scanner has a tape output jack like my Pro-2006, then all you need is an attenuating patch cord. These are available from Radio Shack with either eighth-inch phone plugs on each end, or with a phone plug on one end and an RCA phono plug on the other. The attenuating cord prevents the low hum or hiss present in some scanners from activating the VOX circuit in the recorder.

Connect one end of the patch cord to the tape output jack on your scanner and the other to the mic input on the recorder,

and presto, you're done. Each time your scanner stops on an active frequency, the VOX circuit in the recorder will automatically start the recorder running. A few seconds after the transmission stops, the recording will stop—thus saving tape.

If your scanner doesn't have a tape jack, then you'll need a Y adapter with an eighth-inch phone plug on one end and two eighth-inch phone jacks on the other. This also is available at Radio Shack. Plug the adapter into the external speaker or earphone jack on your scanner, then run the attenuating patch cord from one side of the adapter to the recorder.

Because using the external speaker or earphone jack disables the internal speaker on most scanners, you'll need to plug an external speaker into the remaining jack on the adapter so you can continue to monitor with the recorder attached. You may need additional adapters, depending upon the size of the speaker jack or earphone jack on your particular scanner. Once connected, it will work just as described.

Tampa Area Frequencies

Finally, to round out this month's column, let me offer a selection of my favorite

frequencies in the Tampa, Fla., area.

Hillsborough County: 154.130, Fire Department east; 154.175, Fire Department west; 154.250, Fire Department tactical; 153.830, Fire Department tactical; 153.920, medivac to ground; 155.220, Emergency Medical Service primary; 155.325, Emergency Medical Service Tac 2; 155.340, Emergency Medical Service Aeromed helicopter dispatch; 155.010, sheriff east patrol operations; 155.130, sheriff west patrol operations; 154.950, sheriff car-to-car simplex; 460.350, sheriff vice and narcotics.

Tampa: 154.430, Fire Department main dispatch; 154.220, Fire Department secondary dispatch; 154.280, Fire Department tactical; 453.700, police east dispatch; 453.550, police west dispatch; 453.850, police emergency; 453.800, police teletype; 453.875, police tactical east; 453.750, police tactical west; 458.850, police tactical Channel 8.

Military buffs will want to monitor MacDill Air Force Base: 123.700, tower; 294.700, tower; 173.5875, fire/crash rescue; 173.5625, medical; and 163.4875, base police.

Civilian aviation fans can listen to arrivals at Tampa International Airport on:

119.500, tower; 118.500, approach; 118.800, approach; 119.900, approach; and 120.650, approach.

Temple Terrace uses 154.385 for fire and 154.830 for police dispatching; the Florida Highway Patrol uses 154.680 for dispatch and 154.920 for car-to-car in Hillsborough County.

For action on the water, monitor 156.800 for marine emergency Channel 16; 157.050 and 157.100 for Coast Guard Group St. Petersburg; and 381.800 for Coast Guard Air Station Clearwater. Also try listening for the Florida Marine Patrol on 45.00 and the Florida Game and Freshwater Fish Commission on 151.160 and 151.385.

Write In

Next month, we'll get back to featuring your favorite frequencies and scanning tips. And, if you have any scanning questions, be sure to ask and I'll do my best to find an answer.

Send your letters to J.T. Ward, Scanning VHF/UHF, Popular Communications, 76 N. Broadway, Hicksville, NY 11801. GENIE online subscribers may contact me directly by addressing e-mail to JTWard, or you can write via the Internet at JTWard@genie.com.

SPECTRUM

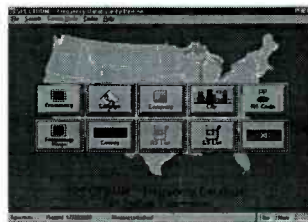
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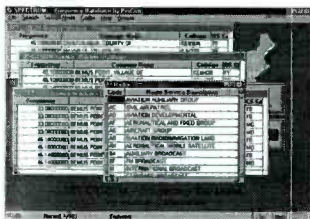
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TELEPHONES ENROUTE

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

The August issue's "Beaming In" editorial commented on the public's skewed perception of scanner hobbyists, based upon the way the mass media has been known to incorrectly report on the misuse of electronics by non-hobbyists.

An example of this appeared in an Allentown, Pa., *Morning Call* front-page story in June. It was sent to us by Norwood Wagner of Bethlehem, Pa. Beneath the headline, "Thieves find ways to duplicate cellular phone numbers," a lengthy story unfolded. It included statements such as, "Bandits using scanner equipment available at most electronics stores can capture the phone's mobile identification number and the electronic serial number needed to complete the call as they are simultaneously beamed across the airwaves." Most electronics stores? Did this imply hobby-type police scanners to readers?

It doesn't have to be this way. In another, more competently prepared story, readers got the straight facts. Last June, the Salem Police Department in Massachusetts raided a cellphone cloning factory, arrest-

ing a man and a woman. When the story ran in *The Salem Evening News* in June, it was explained, "Confiscated in the raid were \$20,000 worth of laptop computers, a full-size computer, cloning software, the machine allegedly used to steal the numbers... Further charges of stealing trade secrets and cloning of telecommunications devices are pending against the couple." Thanks for this clipping go to reader Officer Nelson Dionne of the Salem Police Department; he's AA1MO on the ham bands.

Still, the general perception is that hobbyists are stealing the numbers. So reports Allan G. Dunn, K1UCY, of Holbrook, Mass., in a note. Allan tells us that he has a cellphone and recently called his service supplier's customer service line to ask why they were advising subscribers that PINs were necessary. His ear melted while they babbled on endlessly about cellular fraud, and how numbers are stolen and being sold to the public in illegally cloned phones. Sure, numbers are cloned. No argument there. What aroused Allan's ire—big time—was their punch line. Possibly it never

occurred to them that cellular fraud results from the basic security inadequacies of all analog cellphone networks. No, they wouldn't know about that. Allan reported they pointed the bony finger of blame for cellular fraud away from themselves, and directly at people using "simple scanners."

Allan asks whether scanner hobbyists have the equipment necessary to intercept and clone the digital cellphone data links. No. But criminals do! He asks whether scanner owners have the equipment to burn PROMs with the stolen codes. No, he says, but criminals do. He asks whether scanner hobbyists have access to hundreds of used cellphones capable of being modified and resold. Again, Allan points out that criminals do. He asks whether scanner owners knowingly pay \$150 to \$200 for stolen cellphones to make a month's worth of free unlimited long-distance phone calls. He hopes they don't, but is certain that criminals do.

Readers wishing to contact Allan can write to him on the Internet at dunn-world.std.com if you want to exchange



The universal car kit CellBase turns a handheld cellphone into a hands-free mobile phone.



CellBase offers an optional headset for hands-free operation combined with privacy.



Motorola's Encore numeric pager operates in the new high-speed FLEX protocol.

ideas on this. He's brought up many valid points worthy of discussion.

From Digi-Tall to Digi-Small

Digital cellphones have been hyped as the future of cellular, but don't get too carried away with this digital thing. Trevor Fletcher of Edmonton, Alberta, lets us in on an instance when digital cellphone service turned out to be as useful as a screen door on a submarine. That's how functional it is to all cellphone subscribers of AGT Mobility across Alberta, except those directly in the cities of Edmonton and Calgary.

AGT decided to discontinue its digital cellphone service, preferring to continue serving its subscribers via analog, except for the two large dual-mode digital/analog cities. John Batiuk, AGT's digital marketing manager said, "The performance of digital itself and call quality that has been experienced by our customers has been disappointing."

Rogers Cantel, the largest national cellular service supplier, also seemed less than enthusiastic about digital's future in Canada. Rogers Cantel is prepared to continue offering digital service in major population centers, but a company spokesman said that digital service may not be available in rural areas.

In a *Canadian Press* report, a Canadian equipment dealer complained that because digital phones cost "twice as much" as standard (analog) phones, customers have not shown interest in the units. The unidentified dealer said, "The consumer does not want to pay the extra money to buy a phone that they use just like analog, except for people that really want security, or people that like new technologies or those who buy it as a toy."

This continues to prove what's been said here right along, that communications privacy is not the big *hoo-hah* equipment or service selling point the cellular industry has always considered it to be. How unfortunate that the illusory "privacy" sales factor managed to spawn the anti-hobbyist ECPA law, followed by the loss of cellular band coverage on currently manufactured hobby scanners.

Again we ask: Isn't it now time to end these misdirected, unnecessary and unfair restrictions against communications hobbyists? If not now, then when? If never, why not? Your valued opinions are always invited here at "Telephones Enroute."

Here's a Good Idea!

An innovative universal car kit called CellBase turns a handheld portable cellphone into a more versatile hands-free, safe mobile phone. The device uses a patented universal interface that enables a common base to be used with most common cellphones employing phone-specific CellBase Adapter Pockets.

CellBase consists of a common base unit and connector. An adapter pocket fits between the handheld phone and the connector. The result is a mobile phone that may be used while driving with both hands on the wheel. The result makes in-car cellphone use safer, easier and more secure.

Adapter pockets are available for the Motorola Flip Phone series, Motorola Ultra Classic series, Audiovox MiniVox Lite, Toshiba 9300, Nokia 121, AT&T 3810 and Technophone 415 models. They soon will be available for the Nokia 2120, AT&T 6650, Nokia 232, Ericsson DH338 and DH343, and NEC-100 series.

CellBase's capabilities include a hands-free speaker mode, a handheld privacy mode and an optional headset mode with a noise-canceling mic. There's an external antenna connection in all three modes. While in use, the cellphone is powered from the vehicle's battery, which also trickle-charges the cellphone's internal battery.

The list price of CellBase is \$249, including an adapter pocket, power cable and visor mic. The unit may be powered through the cigarette lighter or via hard-wired connection. CellBase may be used for digital as well as analog communications. The product is available through many cellular service carriers and accessory dealers, and from its manufacturer, Hello Direct Inc., 5884 Eden Park Place, San Jose, CA 95138-1859.

For a Hello Direct catalog, phone (800) 444-3556. Mention you read about it in *Popular Communications*.

It's Always Something

Just when we were settling down and getting comfortable with things, they went and changed. So it was with digital paging. Dominant protocols have long included POCSAG, with data transmitted at 512 bits per second, also 1200 bps and 2400 bps. Now Motorola is showing off its new FLEX digital paging technology.

Literature sent to us by Motorola states that FLEX is a protocol capable of operating at 1600, 3200 and 6400 bps. They wrote that recent tests indicated it's compatible with existing POCSAG-2400 protocol. That is, they tested FLEX in Wichita, Kan., finding it "mixes well with 2400 speed POCSAG, and provided solid 6400 bps paging operations out to 35 miles from the Motorola transmitter."

New FLEX numeric Encore pagers have been designed to work with this high-speed protocol. The advantages are battery life up to five times longer than other pagers, 16 numeric message slots, message time-stamping, readout of time of day and date, silent alerting, five selectable alerts, saves messages while changing battery, stores up to eight messages, built-in alarm clock, option to delete individual or all stored messages, and FLEX pagers operate from one AAA battery.

Motorola points out that FLEX offers

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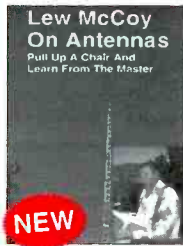
four to five times the capacity of POCSAG, eliminating excessive transmission delays. Paging companies can handle 600,000 beepers on a single frequency. FLEX means improved reliability, thus reducing signal fading and missed messages. POCSAG has a limit of two million addresses, while FLEX supports one billion.

FLEX comes from Motorola's Pan American Subscriber Paging Division, 1500 Gateway Blvd., Boynton Beach, FL 33426-8292.

"Telephones Enroute" is always pleased to hear from readers, service suppliers and product manufacturers relating to cellphones, pagers and all other personal communications services. Send along news releases, clippings, comments, insights, and just about anything other than Thanksgiving turkey leftovers. Be sure to indicate "Telephones Enroute Column" when addressing correspondence to this column.



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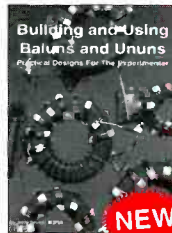
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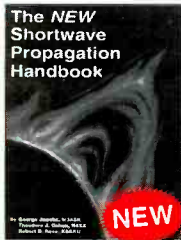


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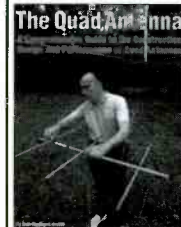
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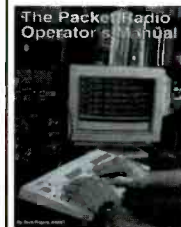


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27 MHz COMMUNICATIONS ACTIVITIES

No Trick: New Rig Is A Treat

Recently, the folks from Midland Communications in Kansas City, Mo., sent me a thick packet of data sheets describing their various radios. Among other things, I found out that they have some really interesting radios under development—I'll be sure to let you know about those when they get closer to reality.

As I paged through these data sheets I found one radio that really intrigued me, and Midland sent me one for evaluation. In production right now, the Model 77-285 Power Max II is a medium-sized mobile rig—about 8 inches deep, 6.5 inches wide and 2 inches thick. There is a bottom-firing speaker, and the microphone plugs into the front panel.

Several things, however, set this radio apart. To begin, its appearance: a jet black cabinet, jet-black knobs and even push buttons. "Midland CB Transceiver" is boldly printed in black on the top of the rig, and the front panel lettering is gold. (On the back of the transceiver are connectors for an antenna, an external speaker and the power cord.)

In the center of the 77-285 is an orange LCD that shows channel number and an unusual bar-graph-type signal-strength meter. This meter is so big and bold that it is fairly easy to get a signal strength reading at a glance while driving. By contrast, most mobile rigs have such tiny meters that attempting to read them while motoring is not an activity conducive with continued good health!

In addition, the sheer number of controls on this radio is unusual. There are the usual knobs for channel selection, squelch and volume, but then there is a series of 11 buttons that run along the face of the CB under the display. Each of these buttons, as well as the knobs, is encircled by a band of clear plastic that glows orange when the rig is turned on.

While a fundamental color scheme of black and orange sounds like this rig might have been designed by the Great Pumpkin, in practice it works quite well. The display is easy to read but not so bright that it interferes with vision when driving at night, and it is much easier to locate those black controls when they are set off by a glowing circle of orange! However, none of the control labels actually light up, so the operator must remember which button does what.

One button, labeled LOC, allows the operator to kick in an attenuator for local operation. There is a button each for instant selection of Channel 9 and Channel 19. Another labeled NB activates the noise blander. But then there are buttons with



The Midland Model 77-285 Power Max II offers the ability to monitor two channels at once.

names like SC, LCR and DW, plus buttons 1, 2, 3 and 4. Curious about what exactly they do, I plunged into the operator's manual to find out.

Buttons 1 through 4 are user-selectable memory channels, just like the ones on your car radio. So, if a CBer's favorite local channels happen to be Channel 7 and Channel 35, instead of spinning back and forth between the two, the operator can simply assign Channel 7 to button 1 and Channel 35 to button 2. Then presto! Either channel is instantly available at the press of a button. Ditto with buttons 3 and 4.

The manual further told me that the button labeled SC essentially functioned as another user-selectable memory. In regard to the LCR button, the manual said: "Last Channel Recall—If the unit is scanning and stops for a call but resumes scanning before you see what channel was on... simply depress the LCR button. It will show you the last channel the call came in on."

Whoa! What's this—scanning in a CB radio? I gave Midland a call. "Does this radio scan?" I asked. Eventually, I spoke with Keith Rickey of Midland, who said, "Originally the 77-285 was designed to scan, but

at the last minute there was a problem, and that feature was deleted."

Too bad. Many CBers I know think scanning would be a really useful capability to have, particularly when traveling through unfamiliar territory and there is a need to locate an active CB channel. Because scanning was deleted from this radio, that also means the LCR button doesn't really do anything.

Behind the DW button, however, lurks one of the most interesting functions I've seen on a CB in a long time. DW stands for Dual Watch, and quite simply it means that the 77-285 has the ability to listen to any two channels in the 40-channel range at once.

Here's how it works: first, turn the rig on and shut the squelch completely off. Very important: make sure the squelch is OFF. Next, select the channel you want to be your main channel... Channel 9, for example. Now, press the DW button (the DW symbol will appear in the display). This allows about five or six seconds to use the tuning knob to select the second channel you want to monitor... Channel 35 perhaps.

Next, turn the squelch knob until the

squelch activates, and the 77-285 will rapidly alternate between Channel 9 and Channel 35 until a signal breaks the squelch on either of the channels. The CB then will stay on the active channel until the signal drops, and the squelch reactivates. At that point, the 77-285 will resume alternating between the Dual Watch channels.

In all, this is a slick system that works very well for the CBER who wants to keep an ear on two channels at once.

A warning, however: The manual that arrived with the 77-285 I reviewed was wrong on setting the Dual Watch. It took several phone calls to the patient and helpful Keith Rickey to sort out the confusion. If you activate the squelch before pushing the DW button—as the manual suggests—you're going to have a terrible time trying to set the second channel for Dual Watch! Midland assures me, however, that revised operating manuals for the 77-285 are on the way.

Features are nice, but what really makes the difference is how a radio performs on the air. I hooked up the 77-285 to a power supply and performed A-B comparisons with a Cobra 2000. On receive, the audio from the 77-285 sounded good for a mobile rig. On transmit, both rigs showed about the same signal strength at my test partner's base station. No surprise there; both the Cobra 2000 and the 77-285 are putting out about 4 watts, the legal limit.

In addition, our on-the-air tests revealed that the element in the Midland microphone is such that it really pays to put the mike close to your mouth to get full modulation. In a mobile rig, this can be an advantage because this operating technique tends to pick up less background noise. CBERs who want to use the 77-285 at a base station, and who don't want to "swallow the mike," might want to consider a power mike.

The bottom line: the Midland Model 77-285 Power Max II is a neat mobile rig that does its job well. If you want the ability to listen to two channels at once, there's no other rig I'm aware of that fills the bill. Suggested retail price of the 77-285 is \$249.95. For additional information, contact Midland at (800) 669-4567, and tell 'em POP'COMM sent you.

Bleeping Beeps

Finally, there's something on my mind that I've been dying to ask the most important people in the world, the folks who read this column! Does anybody out there know of any legitimate uses for echo boxes and roger beeps? If you do, please let me know.

The reason for asking is that the other day I heard CBERs who sounded something like this: "He-he-he-hel-hel-lo-lo-lo-th-the-ther-er-er-ere. Wh-wh-wa-wa-whats-s-s-y-your-tw-tw-twen-enty-enty-enty? TWEEDE BRAP ZEET TWEET BOING!"

I couldn't help but observe that not only was this operator totally unintelligible—

even though he had an otherwise good signal—but then he had a roger beep that went on a lot longer than a lot of songs I know. Now, granted, once in a while I hear someone whose voice is improved by just the slightest touch of reverb, but most people sound just fine, being their own, natural selves. And I have never heard a situa-

tion in which I couldn't tell if the other operator had stopped talking. So, unless you're on a NASA space mission, why do you need a roger beep? If you've got any thoughts on this, I'd be glad to hear them.

Until the next time, I look forward to your cards and letters. Please write to me here at *Popular Communications*. ■



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In order to handle higher power for amateur use, we used the more efficient direct coupling method of matching, rather than the lossy capacitor coupling. With this method the Wilson 1000 will handle 3000 watts of power.

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So far you have read about why the Wilson 1000 performs better, but it is also one of the most rugged antennas you can buy. It is made from high impact thermoplastics with ultraviolet protection. The threaded body mount and coil threads are stainless steel; the whip is tapered 17-7 ph. stainless steel. All of these reasons are why it is the best CB antenna on the market today, and we guarantee to you that it will outperform any CB antenna (K40, Formula 1, you name it) or your money back!

*Inductively base loaded antennas
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Aug. 21, 1987

Wilson Antenna Company Inc.
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Subject: Comparative Gain Testing of Citizen's Band Antennas
Ref: Rye Canyon Antenna Lab File #870529

We have completed relative gain measurements of your model 1000 antenna using the K40 antenna as the reference. The test was conducted with the antennas mounted on a 16' ground plane with a separation of greater than 300' between the transmit and test antennas. The antennas were tuned by the standard VSWR method. The results of the test are tabulated below:

FREQUENCY (MHZ)	RELATIVE GAIN (dB)	RELATIVE POWER GAIN (%)
26.965	1.30	35
27.015	1.30	35
27.065	1.45	40
27.115	1.60	45
27.165	1.50	41
27.215	1.60	45
27.265	1.75	50
27.315	1.95	57
27.365	2.00	58
27.405	2.00	58

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POWER GAIN
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COMMUNICATIONS FOR SURVIVAL

Close Calls on Marine Channels

If you tune into the aeronautical channels, aircraft controllers in a tower keep the incoming and outgoing flow of aircraft in a safe and orderly manner. The same thing is now happening on marine VHF channels, and all major ports of the United States are covered by VTS, the vessel traffic system.

If you live anywhere near a major port or navigable river, Table 1 shows the frequencies to tune in.

Similar to aviation corridors near busy airports, large commercial marine vessels going into or coming out of ports and harbors will stay within traffic separation zones one and two miles wide within a vessel traffic information service area. The TSS (traffic separation scheme) is printed on all NOAA charts, and a quick glance at any marine chart clearly illustrates the specific inbound and outbound routes of big commercial ships. Like roadways, the big commercial ships will hug the right side of the traffic separation zone in order to give ample room for traffic steaming in the opposite direction.

A vessel traffic information system perched on a hill or building high above the port of entry or exit oversees the movements of these large ships. The movement of both commercial vessels and pleasure boats within 20 miles of the local breakwater are watched carefully through binoculars, computers, radars and GPS systems.

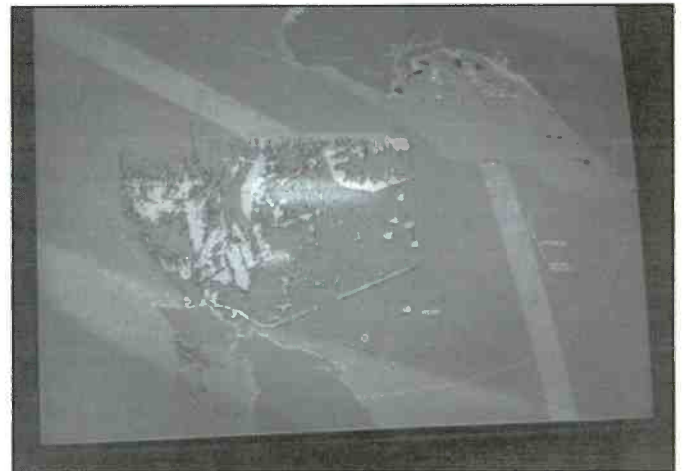
"Our vessel traffic information system differs from air traffic control because we never take control away from the master of the vessel," comments Capt. M.H. Aschemeyer, executive director of the Los Angeles-Long Beach Vessel Traffic Information Service. "We track all ships on sophisticated radar/computer systems, capable of showing a vessel's course and speed, her latitude and longitude, bearings and distances to other ships in her vicinity, and other vital data. We continually remind the captains to make passing arrangements with other ships in their vicinity, and we routinely broadcast incoming and outgoing ship position advisories on marine VHF."

Recreational boaters do not fall under the jurisdiction of the VTIS, and are asked to "passively" make use of the system by monitoring the local VHF-FM vessel traffic system channel. This way private vessels hear all the traffic activity within the shipping lanes, including broadcasts from a vessel traffic information service base station to all commercial traffic in the area.

Small boats transiting a designated sea lane are permitted to call the vessel traffic information service to seek specific information on the large commercial vessels that may be nearby. This also



Marine "traffic controller" watching the big ships on his radar, and transmitting traffic bulletins.



Tune in to marine VHF channels to hear the harbor area action.



Radar view, North up, on vessel traffic system plotting radar.



Vessel traffic system command center, overlooking harbor entrance.

W R T H
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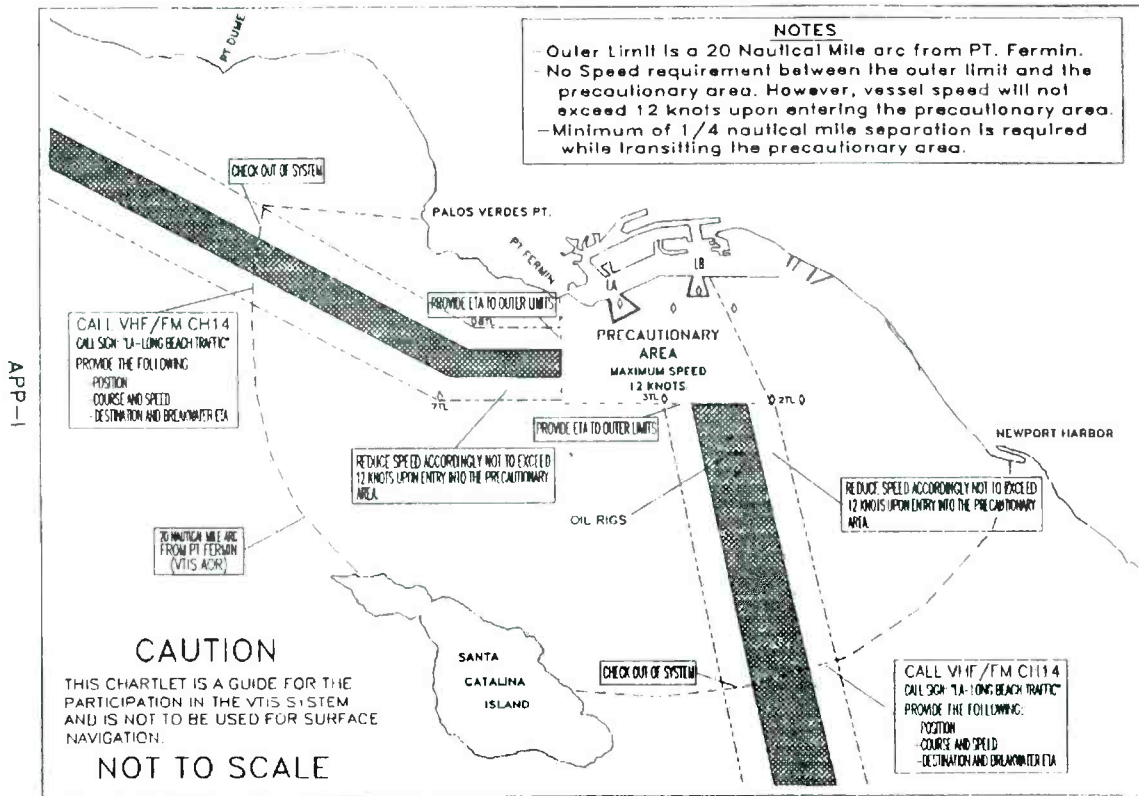


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VTIS LA-LONG BEACH



VTIS AREA OF RESPONSIBILITY (AOR), SAN PEDRO CHANNEL

This map can be used as a guide for the range of the VTIS system.

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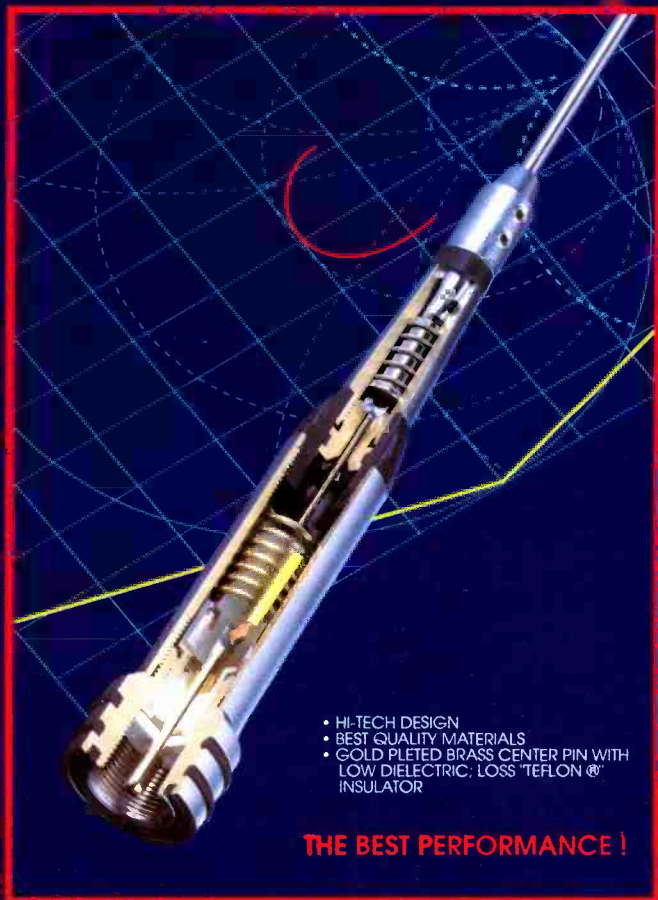
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Marine Channel	Frequency (MHz)	Channel Usage
1	156.050	Port operations ship-to-ship and ship-to-coast channels in vessel traffic service (VTS) areas of New Orleans, lower Mississippi River and Houston
3	156.150	(same)
63	156.175	(same)
5	156.250	(same)
6	156.300	Intership safety
12	156.600	Port operations ship-to-ship and ship-to-coast, available to all vessels in or near ports, locks or waterways
13	156.650	Navigational intership channel, 1-watt maximum power output, monitored by all incoming and outgoing commercial vessels for listening to determine the intention of other vessels
14	156.700	Port operations, vessel traffic information service, Los Angeles/Long Beach harbors
16	156.800	International distress and calling channel. This channel to be used in case of ship collisions.
22A	157.100	U.S. Coast Guard working channel
73	156.675	Port operations channels, ship to tugs
74	156.725	(same)

Table 1

applies to situations where a small private boat may find a large commercial ship bearing down on them, and needs the VTIS to resolve a close-quarters meeting into a safe passing.

The typical range of a base station VTIS system on marine VHF is a 20-mile arc surrounding the port of entry. However, those with an outside gain antenna can many times pick up VTIS hourly broadcasts up to 80 miles away when atmospheric conditions are just right.

"We encourage emergency communicators to listen to our broadcasts to stay current on the amount of traffic that may be entering or leaving a specific port during the day or night," comments a U.S. Coast Guard communicator at a Gulf of Mexico VTIS station.

"Emergency response personnel on land and at sea also might overhear the drama that sometimes occurs when two supertankers are getting confused about each other's intentions," comments a harbor master near Miami, Fla. A Russian skipper attempting to speak English to a Chinese captain usually will require the interpretation of the VTIS in order to sort out the situation."

Without an active VTIS system, ecological tragedies like the Exxon Valdez catastrophe in Alaska could repeat itself. Many large oil-carrying supertankers also are sending GPS position data via digital selective calling (DSC) on marine VHF Channel 70, 156.525 MHz, where they are constantly tracked by the VTIS system.

If you respond to harbor emergencies, scan VTIS for all the action.

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CLANDESTINE COMMUNIQUE

WHAT'S NEW WITH THE CLANDESTINES

The U.S. government's Radio Marti service to Cuba is being aired now over private station WHRI! The feds, having closed down the VOA's Bethany, Ohio, transmitter site, which carried much if not all of the Radio Marti service, is now buying air time for Radio Marti between 0200-0500 on 9495 (except Sundays and Mondays). The Cubans are jamming WHRI's Marti broadcasts, as well as those of the Cuban-American National Foundation—La Voz de Fundacion, which has had its schedule revised since the arrival of Marti. "Fundacion" is aired now at 0000-0200.

The Voice of Iraqi Kurdistan is tough to pick up in this hemisphere. The station, which is the voice of the Kurdistan Democratic Party, operates on variable 4183, carrying Kurdish from 0245-0330, followed by an hour of Arabic. Another Kurdish broadcast is aired from 0930-1100. A third daily broadcast begins with Arabic at 1445, followed by Kurdish from 1530-1700. The KDP opposes the Iraqi government. The radio station has been active since about 1980 and transmits from Salah al-Din. The 0245-0430 transmission is occasionally heard by DXers in the east and southeast U.S., but unless you get very lucky, you can plan on putting some real time and DX skills into logging this one!

There are any number of other Kurdish clandestines on the air, speaking on behalf of several different political parties and against Iraq, Iran and/or Turkey. Most operate with time/frequency combinations unfavorable for North American DXers.

The Voice of Rebellious Iraq says it is operating in the frequency range of 6360-6600 between 0230-0500 and 1500-1730, though this may not really be the case. European monitors have noted it between 6030-6070 from 1200-1430. The station is located in Iran and speaks for the Supreme Assembly of the Islamic Revolution in Iraq. It announces three addresses:

P.O. Box 36802, Damascus, Syria; P.O. Box 11365/738, Tehran, Iran, and P.O. Box 37155/146, Qom, Iran.

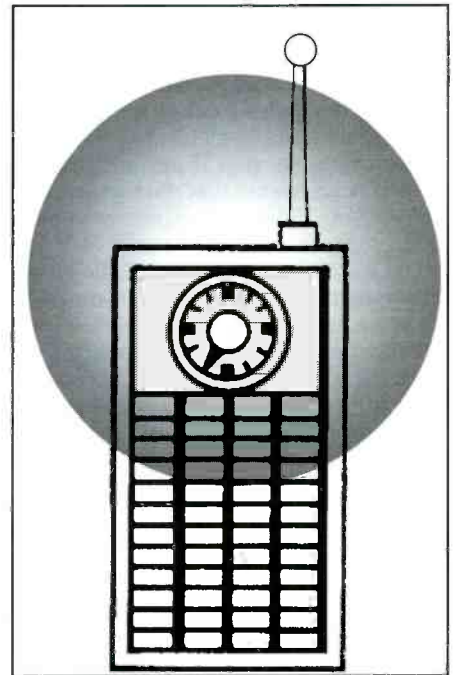
Another station connected with the Supreme Assembly is the Voice of the Islamic Revolution in Iraq. The "Information Unit" of the Supreme Assembly is said to produce the programming heard on this station. It was reported to be on the air from 1330-1530 in Arabic on 7215 and 9670, although we have not seen this one reported in some time. The station is believed to be located in Iran. These operations are just two of the many players in the Iran-Iraq propaganda game.

The Angolan opposition station operated by UNITA, A Voz do Galo Negro, recently was using 5890 between 0500 and 0600. This station apparently is on its way to becoming a fully legitimate broadcaster, in accordance with agreements UNITA has signed with the Angolan government.

The Democratic Voice of Burma, aired over Radio Norway's facilities, is now on from 0000-0100 on 7315, and 1400-1500 on 13800. Reception reports are confirmed with an attractive QSL card. The address is P.O. Box 6720, St. Olavs Plass, N-0130 Oslo, Norway.

Guatemalan clandestine Voz Popular has been noted tentatively on 6986 around 0040, before an abrupt sign-off at 0047. This station claims to operate from 0000-0045 Tuesdays and Fridays on 7 MHz. Unfortunately, they don't maintain a specific frequency and their signal is generally quite weak so they are hard to spot. If you go after this one you should sift through the range from 6950 to 7050, at a minimum.

The Voice of the Mojahed also uses the name "Voice of the Crusader" in its radio war against the Iranian government. It calls itself the "Voice of National Liberation Army of Iran" and broadcasts on behalf of the Mojahedin-e-Khalq (People's Mojahedin Organization of Iran). Programming is



in Farsi (Persian) and Kurdish and generally airs between 0200-0800 and 1400-1900. The station uses a long list of frequencies at various hours within the above time frames: 3557, 3780, 4670, 4700, 5090, 5740, 5870, 6005, 6270, 6520, 6560, 6780, 7000, 7180, 7470, 8840, 9060, 9240, 9640. The station is thought to broadcast from Iraq.

That covers things for this time. Here's the usual reminder that we always welcome your input. Clandestine hunting is one of the most challenging and intriguing aspects of shortwave listening and your logs of clandestine stations or programs are valued, as is information about station operating schedules, addresses, locations, who's behind them and so on. Whatever you can manage will be very welcome. Thanks!

Until next time, good hunting! ■

IRAN LIBERATION

News bulletin of the People's Mojahedin of Iran

In addition to broadcasting, the People's Mojahedin of Iran produces a newsletter opposing the Iranian government.

BROADCAST DX'ING

BY TIM KRIDEL

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

Shortwave Comes to Mediumwave:

New listening opportunities could open up for both the residents of Veracruz state in east-central Mexico and AM DXers in the Americas if one radio station gets its wish. After 30 years of continuous service, shortwave Radio Huayacocotla—XEJN—was shut down March 24 during an inspection by officials from Mexico's Secretariat for Communications and Transport in what a station news release describes as an "arbitrary action." The closure prompted a festival a few days later, where over 800 people gathered to demand that Radio Huaya be returned to the air, this time in the mediumwave band.

The station, licensed to Iberoamerican University, had broadcast on 2390 kHz with 800 watts, according to the 1995 *World Radio TV Handbook*, but for the past 10 years has petitioned the government for a slot in the AM band.

Speaking at the festival, the municipal president of Texcatepec, Eucario Guzman Gomez, said, "We cannot hear our own radio as clearly as we can stations from foreign countries...[We] urge the government to make available the necessary licenses so that we can hear the transmissions again in our own communities."

Supporters agree that not only would the change allow people to listen to "the only means of communication in the northern sierra of Veracruz" on "an ordinary radio," but that it would be "a gesture to demonstrate that freedom of expression and right to information are things that are respected in Mexico." No word yet on what fre-



Boulder, Colo.'s KBCO-FM also can be heard on 1190 kHz, where earlier this year they began 24-hour service with 110 watts at night. KBCO-AM runs 5 kW during the day. (Courtesy Patrick Griffith, Denver, Colo.)

quency they seek or how much power they might run, but if they keep us posted, we'll keep you posted.

If Radio Huaya does move to mediumwave, it would join several other shortwave broadcasters who made a similar switch earlier this year—in a manner of speaking. May 1 marked the start-up of a new over-

night service from the Canadian Broadcasting Corp., and at press time rebroadcasts of Radio Netherlands, the BBC, ABC Australia, Radio Sweden and Deutsche Welle were under way on network stations. The programming, from 0500 to 1000 UTC, comes via World Radio Network Ltd., a London-based 24-hour satellite ser-

Pending AM Call Letter Changes

Old	New	
WOPA	WLXX	Chicago, IL
WSCM	WDCS	Cobleskill, NY
WTOQ	WPVL	Platteville, WI

Changed AM Call Letters

New	Was	
KCNZ	KCFI	Cedar Falls, IA
KHDN	KKUL	Hardin, MT
KJET	KGHO	Hoquiam, WA
KKJL	KIID	San Luis Obispo, CA
KOKE	KVYK	Giddings, TX
KTNZ	KDJW	Amarillo, TX
WDAL	WLSQ	Dalton, GA
WNNI	WJJJ	Christiansburg, VA
WPNW	WICE	Pawtucket, RI
WWAR	WTTX	Appamattox, VA

Pending FM Call Letter Changes

Old	New	
KCYT	KCKK	Granbury, TX
KDZR	KHCK	Denton, TX
KOKN	KIXN	Hobbs, NM
WKPL	WPVL-FM	Platteville, WI
WSSU	WUIS	Springfield, IL

Changed FM Call letters

New	Was	
KATI	KZMO-FM	California, MO
KBIC	KARU	Raymondville, TX
KCTG	KTTG	Ozark, MO
KHTQ	KKCH	Hayden, ID
KIMN-FM	KMJI	Denver, CO
KJET-FM	KGHO-FM	Hoquiam, WA
KJOE	KLOH-FM	Slayton, MN
KNAQ	KAKH	Flagstaff, AZ
KNDA	KBIC	Alice, TX
KPAW	KIMN-FM	Ft. Collins, CO
KPZA	KOYT	Espanola, NM
KQOL	KRRI	Boulder City, NV
KRUP	KPVV	Dillingham, AK
KSPE-FM	KCQR	Ellwood, CA
KXIX	KXIQ	Bend, OR
KXSB	KTOT	Big Bear Lake, CA
WAZU	WAIX	Santa Claus, IN
WDGE	WUAE	Wakefield, RI
WKLB-FM	WCLB-FM	Framingham, MA
WKOL	WEXP-FM	Plattsburgh, NY
WPAW	WWDO	Vero Beach, FL
WRLB	WRRL-FM	Rainelle, WV
WVMJ	WVVV	Blacksburg, VA
WYYU	WAKP	Dalton, GA

vice that distributes programming from 20 international broadcasters for rebroadcast by affiliates in North America.

Why add AM and FM when the U.S. and Canada already are the target of numerous international shortwave broadcasts? According to publicity sent to prospective client stations, WRN maintains that international broadcasters want to go beyond a small segment of the audience—hobbyists—to gain a foothold in the mainstream audience. If so, the CBC network would seem to be a major step toward that end.

Irreconcilable Differences?: The ability of people in the U.S. and Canada to listen to AM and FM broadcasts from each other's country may be in jeopardy. In spite of the splash that USA Digital Radio made at the National Association of Broadcasters' April convention, a majority of Canadian broadcasters remain unmoved—so much so, in fact, that they may choose a competing, incompatible digital audio broadcast (DAB) system as their standard.

Their preference for the European-developed Eureka-147 system, along with the inclination of U.S. broadcasters toward the in-band, on-channel (IBOC) USA Digital system, could well mean that in the near future listeners along the common border would need separate radios to listen to broadcasts from each country. And the Canadian commitment to Eureka is strong, according to a June 14 article in *Radio*

WILD 107.7

NOW ALSO ON 99.1!

KBPI-FM runs the full legal limit of 100 kW. They're the sister station of another Denver powerhouse, KOA-AM. (Courtesy Patrick Griffith)

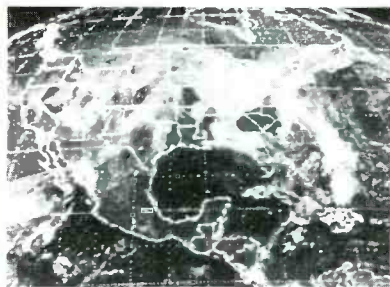
World. One engineer told the industry newspaper that although "there is room for both" Eureka and IBOC, "Eureka is a done deal for Canada. I mean, it is here. It already has become a standard. There are too many groups working toward that one common goal." They aren't alone either—nearly a year ago, the International Telecommunication Union endorsed Eureka for DAB, and the system has won strong support in much of Europe and Australia.

Canadian broadcasters aren't as impressed with USA Digital's IBOC system as their U.S. counterparts. "I was kind of disappointed with what I heard," said Steve Edwards, a vice president at Rogers Broadcasting, of USA Digital's demonstrations at NAB '95. He and other Canadian broadcasters cited signal dropouts on both AM

and FM during a bus ride in which listeners could compare analog to digital. They also were skeptical of the use of 1660 kHz as opposed to a channel in the standard AM band, since, in the words of Canadian Association of Broadcasters President Michel Tremblay, conducting the test in the expanded band avoided "any possibility for skywave and adjacent channel interference. So these are almost lab conditions to do a test, not real-life conditions." Edwards also said that in spite of a significant improvement, AM audio quality still was not equal to CD.

But the debate involves more than just the beauty in the ear of the beholder. Eureka's hardware is designed for operation in the L-band (1500 MHz), and the Canadian broadcast industry is as adamant about

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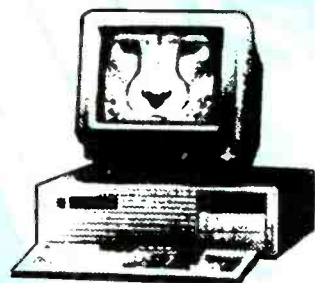
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AR	Pine Bluff	91.1 MHz	1 kW
AL	Pine Hill	96.7 MHz	2.5 kW
AL	Pritchard	89.1 MHz	40 kW
AR	Danville	105.5 MHz	
AZ	Yuma	91.9 MHz	25 kW
CA	Redding	91.1 MHz	700 watts
CA	Stockton	91.9 MHz	700 watts
CO	Estes Park	102.1 MHz	6 kW
CO	Pueblo	88.1 MHz	42 kW
FL	Bellevue	91.3 MHz	Low Power
FL	Flagler Beach	91.1 MHz	3 kW
FL	Lacrosse	99.5 MHz	
FL	Coal	91.5 MHz	200 watts
GA	Dahlonega	89.5 MHz	3 kW
IA	Forest City	91.9 MHz	100 watts
IA	Ottumwa	89.1 MHz	1 kW
ID	Coeur D'Alene	102.3 MHz	720 watts
IL	Albion	91.7 MHz	6 kW
IL	Farmington	96.5 MHz	
IL	Mount Vernon	90.5 MHz	25 kW
IN	Charlestown	104.3 MHz	3 kW
MI	Baraga	104.3 MHz	100 kW
MN	Pequot Lakes	100.1 MHz	3.9 kW
MO	Campbell	107.5 MHz	18.4 kW
MO	Portageville	91.5 MHz	9 kW
MS	Kosciusko	103.3 MHz	20.1 kW
NC	Beaufort	88.1 MHz	100 kW
NC	New Bern	91.9 MHz	1 kW
NC	Sunset Beach	88.9 MHz	6 kW
NM	Kirtland	102.9 MHz	100 kW
OH	Bryan	90.9 MHz	750 watts
OK	Norman	89.3 MHz	1 kW
PA	Hawley	99.5 MHz	4.2 kW
PA	McConnellsburg	103.7 MHz	500 watts
SC	Murrells Inlet	88.3 MHz	500 watts
UT	Park City (KBZN booster)	97.9 MHz	500 watts
VA	Ettrick	93.1 MHz	6 kW
VA	Fredericksburg	103.7 MHz	8 kW
WA	Friday Harbor	90.9 MHz	1.7 kW
WA	Dickeyville	101.1 MHz	6 kW

Changed FM Facilities

KTLO-FM	Mountain Home, AR	98.3 MHz	Moved to 97.9 MHz, 50 kW
KVCX	Gregory, SD	101.5 MHz	Became non-commercial
WDTL-FM	Cleveland, MS	92.9 MHz	Moved to 93.1 MHz, 50 kW

Canceled

KAKJ	Marianna, AR	105.3 MHz	6 kW
KYTN	Wrightsville, AR	107.7 MHz	3 kW
WAOJ	Vero Beach, FL	90.5 MHz	3 kW
WRHF	Farmington, NH	106.5 MHz	376 watts

Seeking to Modify AM Facilities

KKCM	Shakopee, MN	1530 kHz	Seeks night drop to 10 watts
KRGS	Rifle, CO	810 kHz	Seeks move to 690 kHz, 970/12.5 watts
WCER	Canton, OH	900 kHz	Seeks night drop to 75 watts
WJUG	Elmhurst, IL	1530 kHz	Seeks increase to 750 watts
WOCC	Corydon, IN	1550 kHz	Seeks move to 1030 kHz, 1 kW
WTCM	Traverse City, MI	580 kHz	Seeks increase to 15 kW/800 watts

Modified AM Facilities

KDOL	Henderson, NV	1280 kHz	Increased nights to 48 watts
KKXX	Paradise, CA	930 kHz	Reduced night power to 145 watts
KMRF	Marshfield, MO	1510 kHz	Increased power to 1 kW
KNZZ	Grand Junction, CO	1100 kHz	Reduced critical hours power to 36 kW
KOTD	Portsmouth, NE	1000 kHz	Moved to 1020 kHz, 1 kW daytime power
KZTU	Junction City, OR	650 kHz	Moved to 660 kHz
WAOC	St. Augustine, FL	1420 kHz	Reduced power to 2.18 kW/250 watts
WOTS	Kissimmee, FL	1220 kHz	Increased night power to 110 watts

Seeking Changed FM Frequencies

WGXM	Dayton, OH	97.3 MHz	Seeks 98.1 MHz
WKHR	Bainbridge, OH	88.3 MHz	Seeks 95.1 MHz, 1.1 kW
WKNS	Kinston, NC	90.5 MHz	Seeks 90.3 MHz, 7.8 kW
WPLS-FM	Greenville, SC	96.5 MHz	Seeks 96.7 MHz

Issued Permits to Construct New FM Stations

AK	Juneau	100.7 MHz	6 kW
CA	Petaluma (KZST booster)	100.1 MHz	1.1 kW
FL	Jupiter	105.5 MHz	3 kW
FL	Ormond by the Sea	95.7 MHz	3 kW
NC	Snow Hill	88.7 MHz	35 kW
NE	Gering	103.9 MHz	100 kW
PR	Culebra	106.5 MHz	6 kW

using DAB in the L-band as the U.S. is about IBOC and the present AM and FM bands. As a mid-May *Radio World* editorial reasoned, USA Digital's IBOC system "would least disrupt the current United

States station allocation structure." Although the battle isn't over, and a handful of competing systems to both Eureka and USA Digital are in the final stages of development, the signs still point to a day in the future when the U.S. and Canada would have a dichotomy in broadcasting as deep-seated as standard and metric.

Pricey Potty Mouths: Four thousand dollars is what the licensee of a Buffalo, N.Y., station will have to pay for an allegedly indecent broadcast. The FCC in early May issued a Notice of Apparent Liability for a Forfeiture to Rich Communications Corp. after a Sept. 1, 1993, broadcast of the "Norton and Stout Show" on WGRF-FM. At issue was a series of exchanges prompted by the hosts' inviting female listeners to call in with "the wildest...intimate story a girlfriend has confessed to you," in particular an account involving a man, a woman and a plunger, that was both unsanitary and unsavory. The commission charged that the

programming contained portions that were "indecent in that they contain language that describes sexual activities in patently offensive terms." Worse, since the program in question aired beginning at 9 a.m., "there was a reasonable risk that children may have been in the audience" at the time.

Desktop Broadcasting: The first "radio" station to program full time exclusively for the Internet has seen its audience skyrocket after incorporating new software, says the station's founder. Norman Hajjar, president of the company that developed Radio HK, said in a news release that with the use of RealAudio, "overnight, Radio HK has gone from an experiment to a viable and entirely new mass medium." Hajjar estimates that more than 20,000 listeners worldwide have accessed Radio HK in the three weeks following the adoption of RealAudio. The software allows users to download audio without the usual lengthy wait. Hajjar was bullish about what the

New FM Call Letters Issued

KALG	Chadron, NE
KAMF	Cannon Beach, OR
KAKX	Mendocino, CA
KAKZ	Juneau, CA
KHUL	El Rio, CA
KRNG	Fallon, NV
WAAE	L'Anse, MI
WABP	Coshocton, OH
WANF	Monterey, TN
WBRJ	Sterling, IL
WFPB	Falmouth, MA
WIGH	Lexington, TN
WJQR	St. Augustine Beach, FL
WJUC	Swanton, OH
WNDB-FM	Ormond-by-the-Sea, FL

WLPE 91.7 FM

Augusta, Ga.'s WLPE-FM is a member of the Good News Network, which includes WLPG, WLPT, WGPH, WPWB and WLPF. (Courtesy C. T. Barinowski, president of the Good News Network.)

Tony points out that many of the WRUF alumni have gone on to become big names in radio and TV, among them Red Barber. Another WRUF alumnus, Bob Leach, spent his entire radio career there, from a student in the 1940s to general manager, until his death in 1986. Tony, a board operator and producer at WRUF-AM, would like to hear from former WRUF staffers, as well as those who have logged the station. You can reach him at 1085 W. 33 Place, Hialeah, FL 33012-4925.

Also celebrating a milestone is the National Radio Club's DX Audio Service. Begun just over 10 years ago as a books-for-the-blind publication, the service has gone from essentially a spoken version of the NRC's *DX News* magazine to a production similar to that of a news-talk radio station, with features including book reviews, members' loggings and other medium-wave-related news and information. It's issued monthly on cassette tape on a subscription basis. For more information, send an SASE to Kenneth Chatterton, NRC Publications Manager, P.O. Box 164, Mannsville, NY 13661-0164.

In Brief: New York City's WNYC-AM/FM is expected to change hands in the near future, but how and to whom may be up to the courts. As we reported previously, the city had announced it would sell the city-owned non-commercial stations to the not-for-profit WNYC Foundation for \$20 mil-

advance portended: "We are at the dawn of desktop broadcasting. FCC licenses, three-ton transmitters and 200-foot antennas just aren't a requirement anymore. Broadcasting is about to become a 'Volks-medium' ... [and] in the next few years, any organization or person with a computer and a connection to the Internet can transmit their programming throughout the world." Only time will tell whether this is the future of radio, but desktop broadcasting does overcome issues of adjacent and co-channel interference, signal coverage and the prohibitively high cost of starting a station. Radio HK can be heard at <http://www.hkweb.com/radio>.

Happy Anniversary: Gainesville, Fla.'s WRUF-AM marked 70 years of continuous

service this past March. The station first took to the air in 1925 as WHBN in St. Petersburg, making it "Florida's fourth-oldest continuously licensed AM broadcast station," says *POP COMM* reader and WRUF staffer Tony Simon. Following its purchase by the state of Florida, the station was moved to Gainesville and in 1928 became WRUF. The 5-kW station is operated by the University of Florida and features a news-talk format, along with Gator football, basketball and baseball.

In spite of their being state-owned and university-operated, both WRUF and its sister station, WRUF-FM (Rock 104), are self-supporting commercial stations that receive no public funds. Except for its directors, the station is entirely student-run, and

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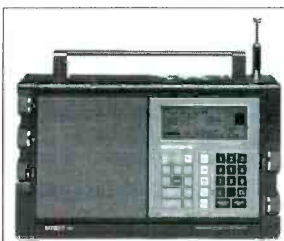
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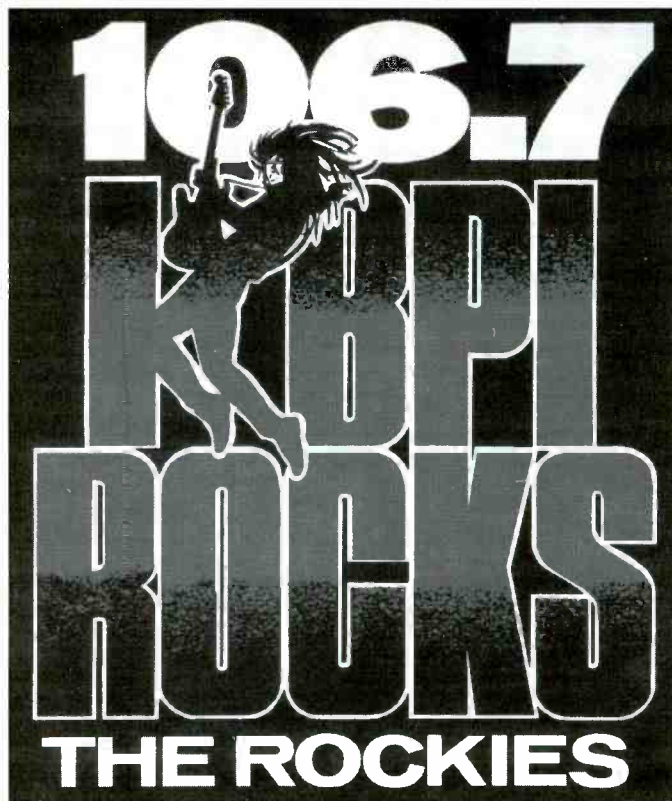
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The flip side of KBPI's bumper sticker advertises the station's Listening Centers at Denver area Blockbuster Music stores. (Courtesy Patrick Griffith)

lion, to be paid out over six years. But that sale is now on hold following a lawsuit by a group of investors who want the city to offer WNYC on the open market, where industry brokers estimate the stations could fetch between \$35 and \$40 million.

Last month we told you about WTKC, a travelers information station that had set up shop in the FM band. Just after we went to press, Craig Adams of Portland, Ore., and KKSJ-FM, checked in to report three

similar stations, all operated by the Greater Vancouver (Wash.) Chamber of Commerce in conjunction with the Washington State Department of Transportation, Clark County, the Clark County Fair Association and FM Marketing. Information about local lodging can be heard on 91.1 MHz, restaurants on 92.9 MHz, and fast food on 95.1 MHz. All three are in mono and operate 24 hours, with transmitters located at the Clark County Fairgrounds in Kozy Kamp,

eight miles north of Vancouver, Wash. Craig advises that "since it's nearly impossible to hear all three in their half-mile radius at 55 mph, pull over after" the 179th Street overpass on Interstate 5.

TV DXers may find IDing stations more difficult in the future if NBC has its way. The network announced at a mid-May affiliate meeting that beginning this fall its six network-owned stations would drop their call letters altogether and instead ID with "NBC," their channel number and the peacock logo, reports *Broadcasting & Cable*. Affiliates were urged to do the same, as well as increase the frequency that they display the peacock logo. The changes come after network research showed that the peacock is both the most recognized and most liked of the four major networks' logos.

Elsewhere in this column you'll find a bumper sticker for San Mateo, Calif.'s "Wild 107," sent to us by Mike Mistor, KD6FTE, of Soquel, Calif. Mike reports that the urban contemporary/dance station enjoys signal coverage from as far as 50 miles north of San Francisco to Sacramento in the east and Monterey Bay to the south. Their secret weapon is that they're actually two stations—KYLD, on 107.7 MHz in San Mateo, and KYLZ, on 99.1 MHz in Santa Cruz. KYLD runs 8.9 kW into an antenna on what Mike describes as "a small hill" in the Bay Area, while KYLZ simulcasts KYLD with 1.1 kW from atop a 3,000-foot mountain.

Thanks: News clippings about AM and FM stations, even your questions and comments, are always welcome. Send them to the column in care of *POP'COMM*. Until next month, 73.

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YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

Doug Evans, at an unidentified location, provides some interesting USAF MARS information. "I have noticed in the column loggings numerous listings for phone patch traffic on 6996 kHz. This frequency is the home of the USAF MARS Pacific Phone Patch Net. The net starts at 1000 UTC on Saturday and Sundays with net control being AFC6RI. The main participants are AGA80S (Osan Air Base, ROK) and AGA8KU (Kunsan Air Base, ROK) and affiliates from Kadena and Missawa Air Bases in Japan make frequent appearances on the net.

AFC6RI is located in the employee recreation area of the Rockwell International plant in Anaheim, Calif., and they have graciously donated their equipment and 800 line for the morale of troops overseas. Al and Dave are the principal operators there. For years, they have donated their spare time to run phone patches for troops and they do a top-rate job.

AGA80S is a Class A USAF MARS station, meaning that it has USAF radio operators on duty to pass traffic, MARSgrams and phone patches.

AGA8KU is a Class B USAF MARS station—all operators there are volunteers operating under the installation's MARS director. Having been an operator there at "The Kun," I know the operators are highly motivated and love their job. Most are hams and those that are not usually leave the ROK with a ham license. Phone patches there are transmitted using Harris Pacer Bounce transceivers through an 18-element heavyweight log periodic antenna at 1 kW. MARSgrams pass through the same equipment via HF packet. RTTY, AMTOR or voice. The volunteers at AGA8KU generally log 200 volunteer hours each during their tours of duty while "Keeping Wolf Pack Talking to the World."

AGA8KU also is the home of HL9KU, the Kunsan Amateur Radio Club. Member-

ship is open to any American stationed at Kunsan. The KARC provides study materials and cram sessions needed to pass the exam. In 1994, the KARC had a 100 percent pass rate on license exams. (The volunteer examiners were provided by HL9OS, the Osan Amateur Radio Club.) HL9KU members have a close relationship with the HL4s (local Korean hams) and often sponsor picnics, bowling parties and various get-togethers."

Tom Severt, KS, writes that he noted one of the Russian MFA broadcasts (possibly the one to JMS) signing down with "TTTT." Because that was one of the KGB procedures, he wondered what the connection was with the MFA broadcasts.

I have observed some operator mistakes that I believe indicated the MFA and agent broadcasts for the Western Hemisphere are relayed from the same Russian communications site in Cuba. It is likely that the wrong sign-down was used for the MFA broadcast.

Tom mentions the KGB is now called something else and wondered what it was. The Russian External Intelligence Service is now "Sluzhba Vneshnoi Razvedki" (SVR). It contains most of the former KGB spy staff and retains the classic espionage functions.

Stephen M. Haney, NY, asks about the *Coast Guard Radio* book written by Jim Pogue. As far as I know, the book is out of print. If you have not already done so, I suggest you get in touch with the publisher, Tiare Publications, P.O. Box 493, Lake Geneva, WI 53147.

Vince, N2JRS, wants information on the source of all-inclusive "Q" signal listing. I regret I do not know of one that is commercially available. Many countries have their own special meaning "Q" signals. The "QSF" you mentioned is used by the Russian MFA and seems to be concerned with communications schedules.

David Sabo, MD, advises: "I'm struggling with apartment listening and computer-generated RFI. There are nights when I'm pleasantly surprised with my catches. I had stuff pouring in one wet, rainy night a few weeks back. I was logging African aero stations I hadn't heard in ages."

Allan Dunn, MA, informs us: "I am a first-time submitter, but a long-time subscriber. I normally cannot hear many beacons from my home in Massachusetts because of a neighbor with a defective light dimmer.

"My loggings were made from either Surf City, N.J., (25 miles northeast of Atlantic City), using a DX-440 with the built-in loop antenna, or from Newport, R.I., (daytime) using the DX-440 and an AOR loop antenna.

"How much power does the beacon HL in Delaware on 298 kHz run? I get them from New Jersey, Rhode Island and Connecticut (the latter two daytimes)." Allan, according to the aero/marine *Beacon Guide* by Ken Stryker, the power output of beacon HL is 500 watts.

Barry Rowan, PA, uses a Sony SW-7600 with its internal antenna. He has been a POP'COMM subscriber for about eight years.

Al Hemmalin, RI, reports unusual reception of FIS on 332 kHz. The beacon was heard for the first time in June and he usually has no difficulty with Florida or Cuban beacons. It seems this beacon has been off for a year or so and just came back on. It has to be a long-time beacon as it is in the original listings in Stryker's *Beacon Guide*.

Tim Bowling, WV, asks about the KAWN messages he copied on 7786 kHz RTTY at 75/425. These were USAF weather transmissions.

Tim also questions the NAWS callsign he observed on 5097 kHz when he copied a list of frequencies transmitted by CHF,



These two photos are views of Otis Air National Guard base. Kevin Tubbs, VT, took these pictures.

To: David Sabo, Seoul, Republic of Korea

Rescue 1711

This confirms your reception of
United States Coast Guard Aircraft
"Rescue 1711"

on 3123, 5696, and 6964 USB/voice between 1454 and 1510 UTC on 16 April 1993.

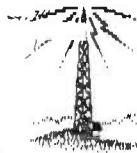
Aircraft Type: HC-130H HERCULES
Transmitter/Power: ARC-94/HF 400W PEAK/100W CARRIER
Antenna: LONG WIRE FROM FRONT FUSELAGE TO VERTICAL STABILIZER
Location: 22-31N 154-50W 11,000 FT ALTITUDE

(Signature/Official Stamp)

USCG AIR STATION
BARBERS POINT, HI 96862-5800

R. A. Pagelalunga LT, USCG
R. A. PAGELALUNGA

QSL



Here is a PFC used by David Sabo when he was stationed in South Korea.

Canadian Navy, Halifax. NAWS is the collective call sign for "Notice to all Allied War Ships."

Here is a humorous item from Tim's letter. Although it properly belongs in POP'COMM's "Scanning VHF/UHF" column, rather than delay it any further I am including it here.

A Virginia State Police trooper on 159.165 MHz reported at 10:40 p.m. (local time) that, "A white male on roller skates was pushing a shopping cart on the interstate." The trooper added: "Believe it or not." The subject pulled over and it was determined that he was a resident alien from Romania. He was advised to "get off the interstate or face being arrested."

I was unable to identify the signal on a tape submitted by Tim Bowling. It sounded like a conversation between two men in USB but not tuned in exactly correct. I wonder if this could have been USAF/NASA "Cape Radio" on 6937 kHz?

Eugene Lish, FL, forwarded an article from the *St. Petersburg* (Fla.) *Times* that outlines the communications activity at MacDill Air Force Base. Earlier this year, according to the article, a survey revealed that MacDill was one of the busiest Global High Frequency System (GHFS) sites, with

contacts running in excess of 3,000 per month.

In addition to MacDill, there are GHFS stations at other air bases in the U.S. as well as at several overseas locations.

MacDill also is a member of the MYSTIC STAR net, which is used by the president and vice president when they are on Air Force 1 and 2. Other VIPs also may use the MYSTIC STAR facilities.

The article concluded by pointing out that monitoring the described systems can be accomplished with inexpensive short-wave radios and that the conversations often are in the clear and very interesting.

From Sue Wilden, IN, we hear that she has installed the PC Telex and weather fax program on her computer, and has been having fairly good luck with it. "I am in search of ways to improve my signal. I will appreciate any suggestions from anyone with the same problems."

A letter from Rick Barton, AZ, states: "A couple of years ago, I ran across something very curious concerning the YL/SS 4F broadcasts reported in the column. The daily transmission on 6840 kHz at 0230 uses the same voice as other 4F and 3/2F YL/SS scheduled but not the same format. There is no call-up internal and the YL does

not announce 'Fin' at the end. There is no group count. The broadcast repeats a small number of groups over and over for exactly 10 minutes and then abruptly stops. The 6840 transmissions are simulcast on 9958 kHz.

"In addition, there are two related broadcasts on 7725 kHz daily at 1030 and on 16310 kHz daily at 1830. I have not been able to find any parallel frequencies for these schedules.

"Here's what I heard during one 24-hour period earlier this year: 0230-6813 3380 7516 5106; 1030-7516, 5106, 3017; 1830-7516, 5106, 3017; 0230-5106, 3017."

The late Dave White, who was a regular contributor to this column, and I copied a 0030 schedule of MCW cut number messages commencing in early 1990. About August 1990, there was a change in frequency and the broadcasters then were on 5264//6792 kHz. These messages were short three to five groups of cut numbers in the AUV4E6BDNT=1-0 system. Group length was four figures.

Sometime after hearing the above activity, we observed YL/SS 4F voice broadcasts that displayed many of the characteristics of the previously heard MCW transmissions. The messages were short, two to five groups generally, and they were repeated with the complete transmissions lasting exactly 10 minutes. Schedule time was 0230 UTC daily.

The voice broadcasts were in AM and started on the half-hour with 10 dashes followed by the YL/SS announcing the short messages (generally of two to four groups) with 4F per group. The only frequency heard at that time was 6840 kHz.

Former POP'COMM RTTY columnist Bob Margolis has a monthly publication of digital signals. For details, write him at 136 W. Woodland Road, Lake Forest, IL 60045.

UTE Loggings: SSB/CW/RTTY/SITOR/etc.

All Times in UTC

147.3 DDH47. Hamburg Meteo at 1155 in RTTY 50 baud w/RY's. (AB)

183: PLI, Lower, Toluca Lake. CA at 2250. (DT)

204: Beacon YFY, Iqualiut, NWT, Canada at 0813. 1537 miles. (AH): Beacon MD, Harrisburg Int'l Airport, Middletown, PA at 2030. (BR)

212: Beacon DCY, Washington, IN at 0527. (PC)

216: Beacon YFA. Ft. Albany, Ont., Canada at 0840. 884m. (AH); Beacon BID. Block Island. RI at 1630. (AD)

219: Beacon CX. Capitol City Airport, New Cumberland, PA at 2032. (BR)

220: Beacon IHM, Mansfield, MA at 1632. (AD)

224: Beacon VWD, West Dover, VT at 0630. 125m. (AH)

227: Beacon SJY, San Jacinto, CA at 1915. (DT); Beacon TAN, Tauton, MA at 1633. (AD)

233: Beacon CNH, Claremont, NH at 0607. 135m. (AH)

236: Beacon J, Toronto, Ont., Canada at 0554. 450m; Beacon OW, Ottawa, Ont., Canada at 0819. 339m. (AH)

243: Beacon FZK, Wausau, WI at 0650. (PC)

245: Beacon AN, North Island NAS. CA at 0745. (DT); Beacon NKT, Cherry Point, NC at 0559. 552m. (AH)

251: Beacon JZY, Macomb, IL at 0710. DSB. (PC)

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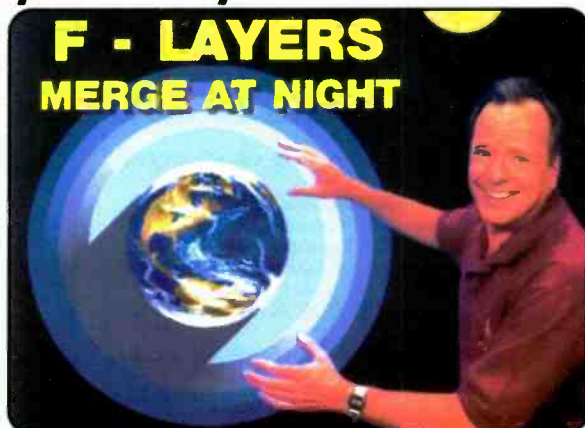


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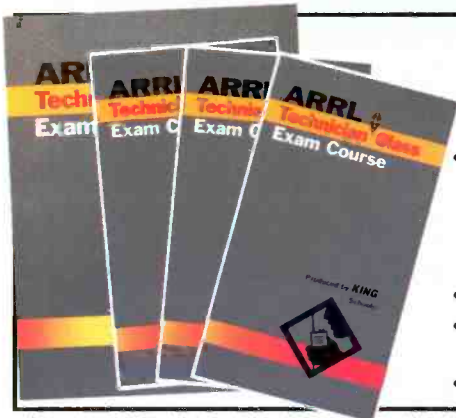
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Lynn Hanson, Japan, took these photos of the various antennas at Missawa Air Base, Japan, including some on the roof of the Japanese Northern Defense Headquarters. ➔

- 257:** Beacon YXR, Earleton, Ont., Canada at 0827. 596m. (AH)
260: Beacon XCB, Carlisle Barracks, Carlisle, PA at 2034. (BR)
263: Beacon MOQ, Hinesville, GA at 0445. DSB. (PC)
264: Beacon RLS, Westerly, RI, at 1638. (AD)
266: Beacon AGO, Magnolia, AR at 0510. (PC)
269: Beacon TOF, Topsfield, MA at 162. (AD)
281: Beacon ZSJ, San Salvador. (Wattling Island), Bahamas at 0645, 1223m. (AH)
285: Beacon EUD, York Airport, York, PA at 2036. (BR)
286: Beacon NS, Nantucket Shoals, MA at 1647. (AD)
289: Beacon MR, Marina Del Rey, CA. Back on the air but very weak. (DT)
292: Beacon DP, Dana Point, CA. Back on the air but very weak. (DT)
293: Beacon MP, Montauk Point, NY at 1654. (AD)
296: Beacon UVT, Victoria de las Tunas, Cuba at 0927, 1458m. (AH)
298: Beacon HL, Cape Henelopen, DE at 0106. (AD)
300: Beacon ABL, Ambalema, Columbia at 0626, 2562m. (AH)
302: Beacon L, Point Loma, CA off the air. (DT)
307: Beacon AV, Avalon, CA off the air. (DT)
311: Beacon CH, Chatham LS, MA at 0637, MCNT. (PC)
326: Beacon BHF, Freeport, Bahamas at 0111. (AD)
327: Beacon BZJ, Fort Indiantown Gap, near Bordnersville, PA at 2038. (BR)
329: Beacon CH, Charleston, SC at 0112 (AD); Beacon D, Carmanah Point, BC, Canada at 0742. (SF)
332: Beacon FIS, Key West, FL at 0935, 1320m. (AH)
333: Beacon STI, Mountain Home, ID at 0959. (SF)
338: Beacon HE, Sheboygan, WI at 0847, 851m. (AH)
344: Beacon O, Ottawa, Ont., Canada at 0706, 341m. (AH)
354: Beacon MKS, Moncks Corner, SC at 0616, 750m. (AH)
356: Beacon BXG, Waynesboro, GA at 0837, 830m; Beacon PB, West Palm Beach, FL at 0822, 1145m. (AH)
358: Beacon TKX, Kennet, MO at 0904, 1070m. (AH)
360: Beacon PN, Port Menier, PQ, Canada at 0117. (AD)
367: Beacon HA, Hao Atoll, French Polynesia at 1210. (DT)
368: Beacon ZP, Moresby Island, BC, Canada at 1030. (DT)
373: Beacon EP, Estevan Point, Vancouver Island, Canada at 1200. (DT)
382: TWEB LQ, Boston (Logan Int'l—Lyndy), MA at 1711. (AD)
387: Beacon PV, Turks and Caicos, BWI, at 0614, 1366m. (AH)
394: Beacon YB, North Bay, Ont., Canada at 0131. (AD); Beacon ENZ, Nogales, AZ at 0740. (DT)
400: Beacon ENSE, Ensenada, BC, Mexico at 0700 using backup xmitr. (DT)
406: Beacon FLR, Fall River, MA at 1718. (AD)
415: Beacon CBC, Cayman Brac, Cayman Island at 0141. (AD)
417: Beacon EVB, New Smyrna Beach, FL at 0912, 1019m. (AH)
426: Beacon FTP, Ft. Payne, AL at 0831, 923m; Beacon IZC, Montezuma, GA at 0428, 944m. (AH)
430: Beacon LML, Lomalinda, Colombia at 0810, 2644m; Beacon VA, Varadero, Cuba at 0901, 1412m. (AH)
518: ZSC, Capetown, S. Africa in SITOR B at





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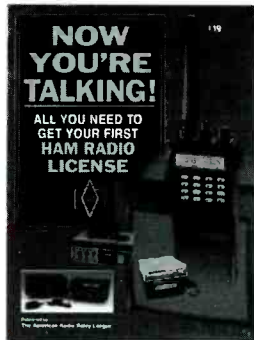
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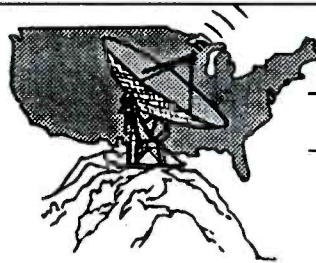
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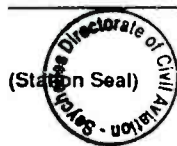


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VERIFICATION OF RECEPTION

TO: **EDWARD RAUSCH III**
17 VANDERBERG PLACE
CEDAR GROVE, NJ 07009 USA

DATE: 16/05/94 FREQ: 11300khz MODE: USB
 XMTR: T166 ANTNA: CNS Spiracone
 POWER: 1 WATTS LOCATION: St Louis Mahe
 REMARKS: Antenna Direction Omni-Directional



[Signature]
 SIGNED

Edward Rausch, NJ, shares his PFC with POP'COMM readers.

1230 w/NAVTEX NAVAREA warnings, etc. (RH)
521: Beacon INE, Missoula, MT at 1025. (DT)
526: Beacon RWE, Camp Roberts, CA at 1015. (DT)

530: TIS—WPEA856, Interstate 83, Exit 29, Harrisburg, PA at 2040 w/mssg reconstruction. (BR)
1500: TIS—Anaheim Highway Advisory Radio WPDY857. Hrd at 2200. (DT)

1610: TIS—WPEA856, near Camp Hill, PA at 2050. Same message reconstruction as carried on 530 kHz but not in sync. (BR)

1620: TIS—KLWD, Lakewood, CA at 2230. Hrd part of test message: "Lakewood Community Information Radio KPD527. (DT)

2442.7: DER, MOIBonn at 2350 in ARQ-E, 72b, w/mssg to Berlin. (AB)

2670: USCG Charleston Group, NMB, announces end of marine info bcst, at 0424 calls for any vessels who wish to report wx conditions. Apparently no takers. Signed off a few mins later. USB mode. (DS)

3016: Aeroflot 356 wkg New York radio in USB at 0706. Gave position & at 0701 gave Flight level 330, & estimated position 45N 60W for 0741. (DS)

3038: HELGE, Swedish Navy in 50b RTTY at 2300 w/tfc list. Another day hrd callsign HANNA. (AB)

3151: Mossad bcst in USB, mssg to PCD at 2230. (AB)

3194: SLHFM "R" at 2021 on new freq. (AB)

3208: SLHFM "P" at 2307. At 2312 went into high speed CW, marker silent and then into RTTY. Synchronization sequence at the beginning, then 50 baud PSEUDO# bitstream. After RTTY bcst went back to marker. (LD)

3264: REO, u/i DE RMP, Kaliningrad at 1720. Sends wx in Cyrillic & then silent until 1900 when SLHFM "P" came on the air for three minutes. (AB)

3303.7: UN 'Deny Flight' activity at 2056 in USB. Hrd RED CROWN w/M, K & J. Sitreps from MAGIC and OOR. (AB)

3314: HEP, Interpol Zurich, Switzerland at 2115 in CW w/VV DE HEP. (AB)

3451: Irish military stns 0A, 32, 97, 54 & 21 wkg each other. Sea area forecasts, routine messages and lots of chatter re bad propagation conditions, etc. SITOR-B 100 baud at 2312. (AB)

3807: Same RTTY system as on 3208 kHz. First bits inverted. Immediately after RTTY ceased, marker back up on frequency. (LD)

4003: Army MARS informal traffic net in USB at 0150. (TB)

4125: River Barge 'WR3558 Super America' coming from Cincinnati at 1830. USB mode. (TB)

4134: WST9756, R/V Seward Johnson, Harbor

Abbreviations Used For Intercepts

AM	Amplitude Modulation mode
BC	Broadcast
CW	Morse Code mode
EE	English
GG	German
ID	Identification/led/location
LSB	Lower Sideband mode
OM	Male operator
PP	Portuguese
SS	Spanish
tfc	Traffic
USB	Upper Sideband mode
w/	With
wx	Weather report/forecast
YL	Female operator
4F	4-figure coded groups (i.e. 5739)
5F	5-figure coded groups
5L	5-letter coded groups (i.e. IGRXJ)

Branch Foundation research vessel, wkg CommSta Boston, NMF, w/BBXXwx obs at 0537. At 0603 WAP4872 S/V Artemis, wkg CAMSLANT Chesapeake, NMN, reassistance due damaged steering gear. Sets up comm sched. USB mode. (RB)

4191: U/i in CW at 2245 sends 'K' for 15 mins, then couple of nbrs separated by '='. Each number repeated for 5 mins. =5094= =5454= =5859= =6818=. After each group "QSA NO QSX" was sent. (AB)

4260: TBA2, Navy Ankara, Turkey at 2228 in CW w/T13A VVV TBA2. (AB)

4302: SLHFM "C" in CW at 2153. (AB)

4314: LZW2, Varna, Bulgaria in CW at 2255 w/DE LZW. (AB)

4372: U.S. Navy Fleet Control. Conversation between JULET 5 KILO & GIANTKILLER in USB at 0430. (TB)

4470: YL/EE3/2F mssg in AM at 2325. (TS); 4X9 Alpha net discussing usability of freq now that counting station not using it. NNN0ASG, NNN0GAQ, NNN0GAP & others ck in to net. Also discussed DoD ID cards, regional meeting. USMC MARS net in USB at 2345. (ANON)

4577: USAF MARS traffic net at 0045. USB mode. (TB)

4637.5: Oil rig tfc in USB 0818. Was WYA287/Rowen Base, Fort Worth, contacting subordinate rigs for daily reports. Rigs contacted incl. The Texas;

WQZ8930, The Middleton; The Odessa; WYU8967, The Alaska; WYU8968, The Louisiana; WTXL, The Juneau; The Morgan City; and Rig-38. (DS)

4647: Three note oddity numbers station in AM at 1900 w/5F grps. (AB)

4724: AF-2 wkg MAINSAIL at 0545 in USB. (ANON)

4742: RAF Ascot 5385 & Ascot Z9U in USB at 1933 w/Architect. Ascot 5385 changed freq to 11247 kHz. (AB)

4780: YL with KILO FOXTROT ALPHA 2 from 0200-0220. (ER)

4960: NMN, CommSta Portsmouth, VA in USB at 0328 wkg MO2 w/SHARES exercise t/c. At 0400 wkg MO2 w/rdo ck. (TS)

5046: YL/EE in AM (strong sig) at 0109 repeats "334-334-334" foll by 1-0 counts til 0110, then 10 beeps, "count 128" and into 3/2F. //4470 kHz where it was even stronger. (DS)

5049.2: Portuguese police mssgs at 1955 in SITOR-B, 100 baud. (AB)

5297.2: U/i secure comms at 0521. Sounded like spread spectrum. SS oprs. (PS)

5301: YL/Czech in AM at 0417 w/5F grps. (PS)

5320: NDS, USCGC Dauntless (WMEC-524) at 0144 wkg Group Galveston (TX) w/pp to Flight Surgeon re medic on board. Odd to find a WMEC wkg a group for this type of t/c. Dauntless recommissioned just recently after extensive overhaul. At 0627. Q2Q, u/i. assumed USCGC. clg USCGC Group Mobile, no joy. Group Corpus Christi answers. Q2Q relays posn "using Group Mobile's code." USB mode. (RB)

5325: OTH radar at 0411. (TS)

5376.5: QST23, Oostende radio at 2006 in SITOR-B 100 baud w/tfc list.

5533: Scrambled speech in USB at 0314. Also on 5222, 5720, 5790, 6395 & 6662. (TS)

5599: Air traffic comms from New York radio in USB at 2100. (DN)

5680: At 0459, NRPM, USCGC Group Miami. At 0550, NMN70, USCG Eastern Shore Group, Chincoteague. VA and NMN80, Group Hampton Roads, VA clg distressed F/V MB-3 struck by large wave

and lost rudder, QSY from 4125 kHz while attempting maintain comms w/vessel. All in USB mode. (RB)

5696: USAF 2104 in USB at 0548 wkg CAM-SLANT, was told 5696 kHz was primary, 8983 kHz secondary, read "Lima Charlie." A/c 6012 wkg CAM-PAC, San Francisco, gives position. Advised to switch to 3122 kHz. Hrd on that freq. (ANON)

5748: YL passing 5F grps in Yiddish, each 2x. USB mode from 0114 to 0118. Definitely Yiddish vice German. Was using "FINEF" instead of "FUNF" for "five." (DS)

5754: RFFCGFA, French Forces, Exercise Boomarang. ARQ-E 72 Baud at 1530. (AB)

6200: WST9756, Oceanographic Research vessels Stewart Johnson and WTL4798, Edwin Link clg CAMSLANT Chesapeake at 1805 and 1811. (ER)

6345: WLO, Mobile, AL in USB at 0640 in FEC w/tfc list & Atlantic seas forecast. (SW)

6492: VAI, Vancouver CG Radio, BC, Canada at 0503 clg w/CQ/QSX marker. (SW)

6501: High Seas wx Honolulu in USB at 0611 w/automated wx for Pacific ocean.//8764 kHz. (ANON)

6550: Netherlands Coast Guard in USB at 0611 w/Navy 121 & Customs launch Zeevalk (PBWW). (AB)

6501: High Seas wx Honolulu in USB at 0611 w/automated wx for Pacific ocean.//8764 kHz. (ANON)

6602: New York Radio at 0048 w/aviation wx. (SW)

6645: Jean Michel Jarre numbers station. A new numbers activity xmtng 5F grps in EE. Xmsn ends with a Jean Michel Jarre tune. USB at 1905. (AB)

6683: SAM 681 (73-1681) USAF Special Air Mission C-9C at 2313 in USB wkg Andrews WIP pp, Andrews Meteo. (RB)

6691: Disjointed musical tones (sounded like broken woodwinds, very strange). Tones going strong from 0130-0205. USB mode. (ANON)

6693: Scrambled speech, sounded like speech inversion. SSB 0700-0711. (ANON)

6745: YL Opr rpts SYN2 in phonetics. Weak-medium sigs. USB at 2231. (DS)

6826: YL/SS in AM at 0300 starts out "044-99," then rpts "Atencion 044-99 until 0302. Follows with "129-044-99" until 0303, then into 5F grps. A repeat of the 8186 kHz 0200 best. Very strong & clean. (AM)

6840: Russian Man numbers station in USB at 2215. Mssg to 507 w/93 5F grps. (AB)

6857: Cut nbrs in LSB at 0505. Stn sent W/=E=E E CMGAD TIIID UTAIW NDNWR K TNDWN etc. Stopped at 0523 w/SK SK SK EIT. (TB)

6870: FAA Southern Region Net check-in of net participants led by KEV64. USB at 1320. (TB)

6873: VOA feeder in LSB at 0446. (TS)

6955: OTH radar bursts at 0500. (TS)

7527: SELSCAN tones noted in USB at 0114 on Customs Service "ZB" channel. (DS)

7528: Strong CW station w/rpts of "IDRWR" in CW from 0302-0304, then into 5L grps. Presumably cut numbers systems ANDUWRIGHT. (DS)

7535: Norfolk SESEF: NAWR, USS Arthur W. Radford (DD 968) at 1712 w/HF testing. NJAC, USS San Jacinto (CG-56) at 1812 w/HF xmtr tests. PCU Fitzgerald, pre-commissioned naval ship, w/HF rdo cks at 1751. All in USB mode. (RB)

7605: Mossad best, YL/EE rptng VLB2 in AM at 0146. (TB)

7640: SLHFM "V" in CW at 1820. (AB)

7657: SHARK-09 wkg 76A and 31C in USB at 2059. At 2105 SHARK-09 advised that he had no further tasking for 31C. U.S. Customs Service "FOX-TROT" channel. (DS)

7668.4: 8BY in CW at 0453 w/V mkr foll by 306/958/008/992/906. (PS)

7786: KAWN, USAF wx in RTTY 75/425 w/5F grps coded wx. KAWN wx also hrd on 12186 kHz but it not.//w/this freq. (TB)

7855: RCK24, Moscow Meteo at 1525 in RTTY, 50 baud w/synops. (AB)

7918: YL (weak) in USB at 0432 rpts "YHF" in phonetics. Another day at 0439, YL passing 5L grps. Announced "end of message" at 0441 foll by "MSG MSG GRP 30 GRP 30 TEXT TEXT." Started into different mssg w/group count 68 at 0446, then down by 0454. (DS)

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Trevor Fletcher, Alberta, Canada, took these photos of the Canadian Forces communications station located about nine miles north of Edmonton.

13375: Lincolnshire Poacher station. YL w/5F grps in USB at 1630-1645 and 1700-1745. (ER)

13341.8: MFA Cairo in SITOR-A at 1515 w/tfc in AA. (RH)

13440: Air Force 2 wkg Andrews AFB w/pp in USB at 0330. WATCHGUARD w/briefing for vice president re armed intruder on White House grounds: "Shots fired on the south lawn, the principal and his close family are in the residence and are fine. One officer was shot...happened 40 minutes ago...story broke two minutes ago." (SJ)

13636: SLHFM "C," Moscow and SLHFM "S," Arkhangelsk in CW at 1458. (AB)

14000: Mssg in 5L grps in USB at 1400 to FRANK YOUNG PETER. (AB)

1441.5: NNNOCCK, USS Wasp (LHD-1) at 1934 clg ASSMS w/beam heading E., for routine p/p t/c. At 1945, NNNOCYK, USNS Concord (T-AFS-5) attempts wrk NNNOKBD for QSY. NNNOCZY, USS Scott (DDG-995) at 2015 clg ASSMS w/beam heading of SE. At 2211 NNNOCVP, USS Monterey (CG-61) clg ASS,S w/beam heading of S. All in USB. mode. (RB)

14615: USAF GHFS station Ascension wkg REACH-143 (nil hrd) w/pp to Elmendorf Meteo. A/c wanted 2330 wx for Elmendorf. Moved up here from 11175 kHz, where Ascension was much stronger and clearer; A/c was audible down there, too. USB mode fm 2233-2238. (DS)

14681: MFA Bucharest at 1535 in ROU-FEC. 164 baud w/mssg to V5G, encrypted t/c. (AB)

14950: Six-tone SELCAL system for Russian MFA network. Hrd at 1434. (AB)

14975.5: P6Z, MFA Paris in FEC-A, 144/396, at 1617, idling. (RH)

15000: WVVH at 0300. Aloha and address at 0301. (SW)

15735.2: U/i RTTY stn 75/499 w/5L grps. Powerful, no c/s or signature. (RH) Wonder if this was RR MFA best? (Ed.)

16165.3: RFFA, MOD Paris in ARQ-M2, 200/400 at 1235, idling. (RH)

16170.2: YL/EE in AM at 1705 w/"528 0 0 0 0 0" then carrier down. (PS)

16304.2: OMZ, MFA Prague at 0830 in RTTY 100/388 w/nx in Czech. (RH)

16528: Sealand Atlantic KRLZ wkg Sealand Performance KRDP w/computer ops related to comms. USB at 1715. (ER)

16912: GYA, Royal Navy, London at 1218 w/FAX 120/576. Fairly good wx chart. (RH)

17432: Numbers stn in CW at 1400 w/"348 348 348 1" "0445 119" foll by 5F grps. Mssg ended w/3 short dashes 2x. (AB)

17976: USAF GHFS station McClellan in USB at 1025 w/EAM. (DS)

18064.1: SNN299, MFA Warsaw, Poland at 1255 in POL ARQ. 100/233. M7000 unable decode. (RH)

18303: YL/EE in USB at 1200 w/"58 38" rptd. (RH)

18506.7: DEPLU Jakarta in RTTY 50/328 at 1128 w/tfc in Indonesian for Cairo Embassy. (RH)

19361.1: USAF Air Weather Service Omaha in FAX 120/576 at 1325 w/good chart. First time seen! (RH)

19115: St. Petersburg. CIS in CW at 1310 w/fast Morse t/c. in RR. (RH)

Thanks to this month's contributors:

AB—Ary Boender, Netherlands; TB—Tim Bowling, WV; ANON—Anonymous, IL; RB—Richard Baker, OH, PC—Perry Crabill, Jr., VA; AD—Allan Dunn, RI and NJ; LD—Leif Dehio, Germany; SF—Stan Forsman, CA; AH—Al Hemmalin, RI; RH—Robert Hall, South Africa; SJ—Steve Johnson, PA; DN—Dan Neprily, Ontario, Canada; BR—Barry Rowan, PA; ER—Ed Rausch, NJ; DS—David Sabo, MD; PS—Paul Scalzo, Quebec, Canada; TS—Tom Severt, KS; DT—Donald Tomkinson, CA; SW—Sue Wilden, IN. ■

7967: OTH radar at 0437. (TS)

8070: OM/EE at 0524 in AM w/5F grps, each grp rptd. (TB)

8248: RIW, Russian navy, Khiva in CW at 1455, QSX 9168 kHz. (AB)

8388: NRCB, USCGC Eagle (WIX-327) at 0152 in SITOR-A wkg NMN, CAMSLANT Chesapeake w/UNCLASS telex re NYC Fleet Week appearance. Eagle is a active-duty three-masted "tall ship" training barque. (RB)

8396.5: 3FT4, M/T Zalgiris, tanker, at 2332 in RTTY 50/170 w/crew TG's. At 2352, 3FLJ3, TN Linkuva, in 50/170 w/long admin mssg fm ships Master. Both are flagged-out Russian vessels. (RB)

8475: FUF, French naval, Fort de France, Martinique in USB at 03400 in RTTY 75 baud w/mkr & RY's. (SW)

8495: SLHFM "C," Moscow, and SLHFM "S," Arkhangelsk in CW at 1459. (AB)

8515: WLO, Mobile, AL in FEC at 0441 w/wx for Gulf of Mexico. (SW)

8912: Scrambled voice in USB mode at 0114 on Customs Service "YC" channel. (DS)

8961: BLUE STAR in USB at 0515 wkg PELICAN 01 "in the green" w/data burst xmsns. (TS)

8987: Pitreavie Scotland RAF station MKL in CW w/callsign & presumed coded nbrs t/c at 0105. (ER)

9007: Rescue 340 wkg Trenton military w/SAR comms re 2 missing hikers 100 miles west of Mooseonee, Northern Ontario. Hikers had no safety equipment. 340 requested FM freq for Ontario Provincial Police (406.1375 MHz) and CB channel 9. Rescue 340 had four hours on-scene search time. (ER)

9023: DARKSTAR NOVEMBER at 1910 in USB wkg NORAD stn NORTHERN LIGHTS relaying on-scene & departure times for DRAGNET VICTOR. (RB)

9024: YL/SS in AM at 0815 rpts "Atencion 616-07" till 0816, then "07-55" five times and into 5F grps. Strong, clean sigs. (DS)

9130: Mossad bcst. YL/EE rptng EZI2 in AM at 2200. (TB)

9320: YL/GG w/5F grps at 2100. (ER)

9811.5: AEDT, Dredge Hurley, U.S. Army Corps of Engineers vessel, Memphis District at 1719 in LSB clg CQ on Armed Forces Day, then wkd amateur stations KA0ITA, N4IA. (RB)

10115: RFFH, Marseille, France in ARQ-E3 200/340 at 2128 w/tfc to RFFVAT. (PS)

10146.8: UR4LWA w/ZVKB2R in packet, 300 baud, at 1651. (RH)

10584: RTTY bcst 75/500 to KUL at 1425 w/RV's and 5L grps. (AB) Suspected Russian MFA. (Ed.)

11125.3: HZN, Jeddah Meteo at 1550 in RTTY 100/790 w/coded wx. (RH)

11175: Offutt AFB, NE w/EAM mssg. USB at 0300. 9TB; A/c 40570 in USB at 1840 wkg HILDA w/ETD 'Roosevelt Roads' at 1755, ETA Norfolk 2330 w/6 pax. (ANON) Roosevelt Roads is naval station located on eastern tip of Puerto Rico. (Ed.)

11244: SAM 60204 in USB at 2030 wkg MAIN-SAIL /rdo ck. (ANON)

11480: MFA Rome in ARQ-E 96 baud at 1458 w/5L grps. (AB)

11733.5: MFA Paris (RFGW) in FEC-A, 192 baud, at 0844 w/mssg to G8T. Mssg was in 5L grps. (AB)

12198.6: RTTY bcst, 75/500 at 1410 to KUL, 5L grps. (AB) Suspected Russian MFA t/c. (Ed.)

12210: YL (poss GG) in LSB at 0010 with 3/2F grps, each grp rptd. Off at 0020. (TB)

12572: U1AW, factory fishing trawler BMRT Mikhail Kvasnikov at 2104 in RTTY 50/170 w/crew TG's to Murmansk. Gave hull#/ID MB-0006. (RB)

12806: USN Diego Garcia w/FAX 120/576 at 1452. Fair chart. (RH)

13113: Canadian Coast Guard, Halifax, NS, in USB at 2335 w/ice & iceberg condition reports. (TB)

SATELLITE VIEW

INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

Update

Our first letter this month comes from Patrick Griffith of Colorado. Pat is an amateur radio operator, NONNK, and a member of the ARRL. It seems Pat has done his share of snooping around looking for secret and not-secret government communication installations. And even if you haven't been, Patrick, the photos you sent of the somewhat remote satellite communications station for the Primestar direct broadcast satellite service are very good. They could pass for a National Security Agency site to the untrained observer. I count at least 12 large dish antennas. Diversity repetition techniques? Pat says the site is just south of Denver. Thanks for the photos, Pat. We hope to hear from you again.

Next we hear from some readers about the series we did on weather satellites and setting up a weather satellite station. We continue to get a good response from many of you with questions and information you want to share about the series. The first two queries come from South Africa. I always enjoy hearing from readers, especially those international readers who write in.

Glenham Duffy of Durban, South Africa, says he appreciated our weather satellites articles and presently is building a station for wifax reception. Glenham ran into a problem when the local book store failed to receive the next-to-last installment in the series. Therefore, he's short by one issue. Don't worry, Glenham; we have one in the mail to you and you should have a complete set by now. Good luck with the station and be sure to send us an update or even some weather maps from your locale. Good to hear from you.

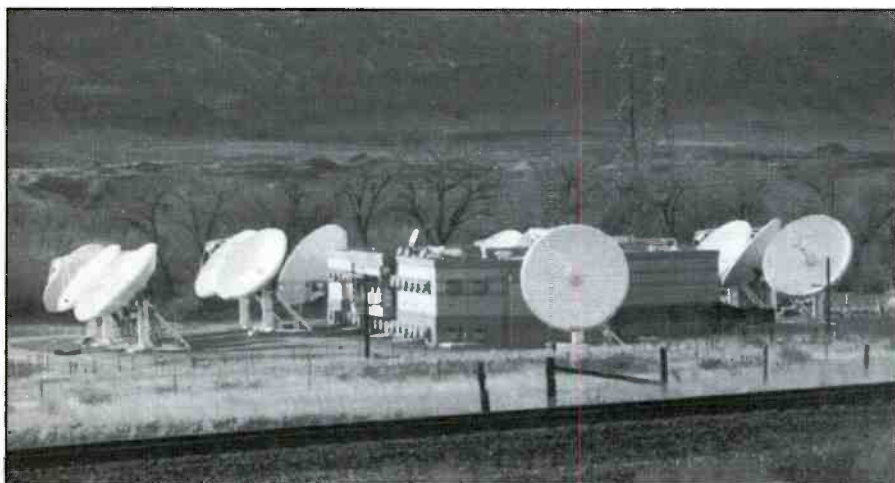
A second reader from South Africa, Robert Hall, writes from Capetown. Robert enclosed weather photos from a satellite transmitting in the amateur band on 145.450

MHz. These photos were intercepted with Prosat2 on a Kenwood RZ-1 receiver and an HP-520 printer. Great shots, Robert, and thanks for writing.

Next, Lowell Winans of Heathkit Educational Systems writes saying he enjoys POP'COMM and wants to know where he can get a copy of Thomas P. Harrington's book, *Satellite Radio*. Write directly to Universal Electronics Inc., Satellite Radio Guide, 4555 Groves Road, Suite 12, Columbus, OH 43232. Or you can phone (614) 866-4605 or fax (614) 866-1201. Tell them POP'COMM sent you. Good to hear from you, Lowell. Write again and let me know how that special project of yours is going.

Finally, we hear from Michael Steinberg of Accu-Weather Inc. He is senior vice president of Accu-Weather, and has a cost-effective alternative to setting up your own satellite receiving station for weather images. You can receive thousands of top-quality weather images from various weather satellites, and also can access the NEX-RAD doppler radar on your home computer and modem via telephone lines. And he saved the best part for last: Accu-Weather has special non-commercial subscription rates for people like hobbyists. Give them a call at (814) 237-0309 or fax at (814) 238-1339.

Before I leave, you must know that if you don't have a copy of Anthony Curtis' book, *Weather Radio*; then your library is not complete. This Tiare publication covers every aspect of weather, including local NOAA weather radio stations. It has an exhaustive list of frequencies for these services, too, along with great instructions and diagrams on setting up your own station for any of these services. It's a must! Write Tiare Publications, P.O. Box 493, Lake Geneva, WI 53147. See you next month. ■



Primestar ground station near Denver. (Courtesy of Patrick Griffith, NONNK.)

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WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS

Commission Adopts Schedule of Regulatory Fees

The FCC adopted a Schedule of Regulatory Fees for Fiscal Year (FY) 1995. Section 9 of the Communications Act requires the commission to assess and collect annual regulatory fees in order to recover the costs specified by Congress for its enforcement, policy and rulemaking, international activities, and user information services. For FY 1995, Congress determined that the FCC should recover \$116.4 million from entities that the FCC regulates.

This amount is 93 percent higher than the \$60.4 million the commission was required to recover in FY 1994. As a result, fees for many services are significantly higher than in FY 1994. The commission wants to ease the burden of compliance with the new fee requirement by revising its methodologies for assessing fees to better assure that fee payments are reasonably related to the benefits that regulatees derive from the commission's regulation.

Major FY 1995 changes to the regulatory fee schedule are as follows:

- Establishes a separate reduced fee for satellite television stations and for satellite television construction permits.
- Includes a fee for FM translators and boosters.
- Reduces fees for private wireless radio services.
- Changes the basis for mobile services from subscribers to per mobile or cellular unit.
- Establishes a separate reduced fee for one-way pagers.
- Expands the definition of common carriers to include resellers and other service providers.
- Eliminates the fee for receive-only earth stations.

The new fee schedule is now in effect.

Strategy for More Efficient Use of Spectrum Adopted

The commission adopted a regulatory strategy that seeks to promote more efficient use of the existing private land mobile radio (PLMR) spectrum allocations below 800 MHz. It also has asked for comments on how certain market-based incentives such as exclusivity with the right to lease excess capacity, spectrum user fees, and competitive bidding may be introduced into these PLMR bands to promote more efficient use of this spectrum.

The commission began this proceeding in 1992 to explore options to promote more effective and efficient use of the PLMR spectrum band. Although the im-

mediate problem was frequency congestion, the commission's broader objective was to develop a regulatory strategy to promote more efficient use of the existing spectrum allocations to satisfy future private land mobile telecommunications requirements. In order to achieve its objective of increasing the efficiency of the PLMR frequency bands, the commission has adopted the following changes:

- Established a narrowband (NB) channel plan based on current channel centers. Generally, channels will be listed every 7.5 kHz in the 150-174 MHz VHF band and every 6.25 kHz in the 421-430, 450-470 and 470-512 MHz UHF bands. Users will have the flexibility of aggregating up to the equivalent of 4 NB channels provided that spectrum-efficient technology is employed (e.g. four-TDMA in 25 kHz). This approach will enable users to employ the most spectrally-efficient technology available, while causing the least amount of disruption to their own and other existing operations. This channelization framework is flexible and technology-neutral.

- Adopted a transition plan in which users will not be required to replace existing systems; rather, the transition to narrowband equipment will be managed by type accepting only increasingly efficient equipment over the next 10 years. The dates for the type acceptance rules adopted are:

Aug. 1, 1996—New type-accepted equipment must be designed to operate on channels of 12.5 kHz or less or on 25-kHz channels if the narrowband efficiency standard is met (multimode equipment that operates on 25-kHz channels will be allowed if it also is capable of operating on 12.5-kHz and/or narrower channels).

Jan. 1, 2005—New type-accepted equipment must be designed to operate on channels of 6.25 kHz or less or on channels up to 25 kHz if the narrowband efficiency standard is met (multi-mode equipment that operates on 25-kHz and 12.5-kHz channels will be allowed if it is also capable of operating on 6.25-kHz or narrower channels).

This transition plan will provide users with flexibility to choose the equipment and a transition schedule that best fulfills their technical and financial objectives. It also provides manufacturers with incentives to develop and market narrowband equivalent technology.

- Provided the industry with three months to negotiate and submit a consensus consolidation proposal. Consolidation of the service groups will provide for more efficient allocation of the increased capacity created by the introduction of more efficient technology. The commission indicates that two to four broad categories, including one for public safety users, appears

responsible. If no acceptable consensus plan is submitted within the allotted time, the commission will devise and adopt a service consolidation plan based on the record.

- Imposed limits on allowable effective radiated power (ERP)/antenna height combinations of new stations based on the size of each station's service area. These new limits are based on the "safe harbor" tables submitted in this proceeding by the Land Mobile Communications Council. This action will reduce background noise and provide technical flexibility. Further, these new standards will increase channel re-use, thereby increasing spectrum efficiency.

A Further Notice of Proposed Rulemaking explores additional proposed methods to promote more efficient and effective use of the PLMR bands. By introducing market-based incentives into these bands more efficient spectrum use is encouraged while allowing users to make equipment choices that best address their needs by attaching an economic cost to inefficient use of the spectrum. Although the commission does not have statutory authority to implement user fees or competitive bidding in these bands, the commission seeks comment on the following:

- Introducing exclusivity on channels in the PLMR bands, and permitting the leasing of excess capacity on these exclusive channels. The commission stated that offering users the option of exclusivity with the right to lease excess capacity, the licensee agrees to convert to narrowband technology by a specific date to promote the use of more efficient technologies such as trunking and TDMA. In addition, affording users the opportunity to obtain exclusivity will enable them to benefit directly from the increased capacity that results from their conversion to more efficient technologies, thus encouraging more rapid transition to narrowband technology.

- Implementing a system of user fees in all PLMR bands to encourage licensees to make the most efficient and effective use of the spectrum. Under this approach, users would pay a fee based on the estimated value of the spectrum. The spectrum fee would be calculated based on the area and population covered, and the amount of spectrum used. This type of a user fee structure would attach an economic cost to inefficient spectrum use, thereby potentially motivating users to use the spectrum more efficiently. The commission proposes to exempt public safety users from any user fees.

- Introducing competitive bidding into all PLMR bands as an alternative to user fees. Specifically, the commission seeks comment on a proposal to create geographic overlay licenses and use competitive bidding as the assignment mechanism for these overlay licenses. As with the user fee

proposal, the commission proposes to exempt public safety users from any competitive bidding structure.

FCC Proposes Rules and Policies for Digital Audio Radio Satellite Service

The FCC announced the next step in its plan to make available to the American public a nationwide satellite Digital Audio Radio Service (DARS).

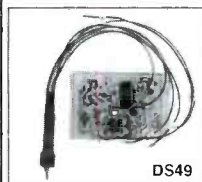
Satellite DARS will provide multiple channels of high-quality digital audio programming to homes and motor vehicles nationwide. Among other things, it has the potential to target niche audiences by offering foreign language programming, music formats not usually carried by radio stations, and programming geared to children or senior citizens.

The FCC began its efforts to initiate a DARS service in 1992, when it played a prominent role in securing an international allocation of spectrum for DARS use. Earlier this year, the FCC made a domestic allocation of the 2310-2360 MHz band for satellite DARS. The NPRM initiates the last phase before the commission can begin issuing licenses to DARS operators.

The commission requests comments on issues such as how many nationwide licenses should be awarded; how much spectrum each licensee should be assigned; how licensees should be selected if mutually exclusive applications are filed; how the service should be regulated; and whether licensees should be permitted to use some of their spectrum for non-DARS services. The licensing options include assigning all the spectrum to only the four current applicants for DARS service, licensing some of the spectrum now and holding some in reserve for future applicants, and opening up the spectrum to all interested parties. The commission also stated that DARS will both compete with and complement traditional local AM and FM radio services and requested comment on the impact of the DARS proposals upon these broadcasters and the listening public.

DARS may stimulate significant economic growth by creating jobs in various sectors. It could create jobs in industries involved in technological development and manufacture of spacecraft and receiver components, installation of receivers in vehicles, programming creation and origination, building and operation of satellite uplink facilities and construction and operation of satellite uplink facilities and construction and operation of customer service centers. These activities could require employees with various levels of expertise and training. Moreover, many of these economic opportunities could be available to non-licensees, including small businesses. Because the construction costs for the space station proposed in the pending applications range from \$320 million to more

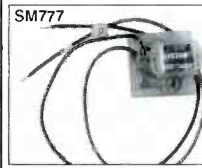
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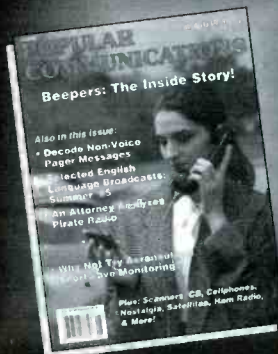
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an \$622 million, and the manufacturing costs for their proposed ground segment(s), including feeder link earth stations and the end user receivers, are expected to be millions of dollars more, DARS potentially could lead to substantial investment in the U.S. economy.

FCC Proposes to Permit Routine Use of Signal Boosters

TX RX Systems Inc. asked the commission to amend Parts 22, 90 and 94 of the rules and regulations to permit routine use of one-way or two-way signal boosters. This proposal would permit licensees to routinely use signal boosters in Part 22 common carrier paging operations, Part 90 land mobile radio and paging operations, and Part 94 multiple address system operations.

A signal booster is a device that receives an incoming signal, amplifies it and retransmits it on the same frequency. Such devices are used to improve communications in locations within the normal coverage area of a radio system where the signal is blocked or shielded because of natural terrain or man-made obstacles. For example, a signal booster may be used in locations such as valleys, tunnels, below-ground parking facilities, or inside cargo vessels and aircraft hangars.

Currently, under Part 90 Private Land Mobile Radio Service rules, signal boosters may be used only on 10 Business Radio Service frequency pairs in the 450-470 MHz bands for communications related to the servicing and supplying of aircraft at certain specified airports. Under Part 22 Public Mobile Service rules, a form of signal booster, generally called a cellular repeater, may be used by cellular licensees without separate licensing provided that the repeater does not extend the licensee's signal beyond the authorized cellular service area.

The commission has proposed to expand the use of the signal boosters to Part 22 common carrier paging operations at 931-932 MHz; to Part 90 land mobile radio operations in all Part 90 paging operations at 929-930 MHz; and to Part 94 multiple address system operations on the 928-960 MHz band. The commission proposed to define a signal booster as a device that automatically receives, amplifies and retransmits on a one-way or two-way basis, the signal received from base stations, mobile and portable units, with no change in frequency or authorized bandwidth.

The commission would classify boosters as either narrowband (Class A), in which case the booster amplifies only those discrete frequencies intended to be retransmitted, or broadband (Class B), where all signals within the passband of the signal booster filter are amplified. The commission further proposed that licensees may employ either Class A or Class B signal boosters as required, be responsible for eliminating any harmful interference that

the signal booster may cause to other licensees, and for ensuring that the basic authorized coverage area is not expanded.

Use of Shortened Emergency Attention Signal

The commission adopted a report and order replacing the Emergency Broadcast System (EBS) with the Emergency Alert System (EAS). Part of the phase-out of the EBS included a shortening of the existing EBS two-tone attention signal.

The report and order requires that all EBS two-tone decoders certified for use at broadcast stations be modified so that they are activated after receipt of three to four seconds of a two-tone signal. Broadcast stations may transmit from their EBS encoders a two-tone signal as short as eight seconds or as long as 25 seconds.

The commission has received questions about the hundreds of consumer-grade EBS decoders (many of these are not FCC-certified) used in homes, hospitals, etc., that require receipt of more than eight seconds of two-tone signal. Most of these decoders are used in the tornado belt and near nuclear power plants. The FCC encourages broadcast stations to continue to transmit the longer two-tone signal when they know that these consumer-grade decoders are in their coverage area and tuned to their broadcast frequency. As before, the commission encourages all broadcasters to transmit the two-tone signal prior to disseminating all emergency messages.

The commission has released a new EAS operating handbook and operator instruction cards. These documents include procedures for operating the old EBS equipment and the new EAS equipment with appropriate test script examples.

For further information, contact the EAS staff in the FCC Compliance and Information Bureau at (202) 418-1220.

WJG Maritel Corp. Files for Waiver of Maritime Rules to Permit Automated Public Coast Station Operations

WJG Maritel Corp. filed a request for waiver of Sections 80.153, 80.207, 80.371(c) and 80.453 of the commission's rules, 47 C.F.R. 80.153, 80.207, 80.307(c) and 80.453. Rules permit automated operations at 77 public coast stations along the East Coast, Gulf Coast and the Mississippi River.

Currently, public coast stations link marine VHF radios and the public switched telephone network via a marine operator. WJG requests that the maritime service rules be waived to permit an automated link, eliminating the need for a live operator, and making the logistics of ship-to-shore phone calls transparent to the end user. ■

Thoughtwaves

(from page 5)

what became so much a part of my life for a dozen years. I can honestly say that I have never had a task or job any longer in my life than the 12 years I wrote the scanner column for *POP'COMM*. The closest I've come are the nine years I spent on the staff of one newspaper in New Jersey. While I mentioned it briefly in my last scanner column in October, I'll reiterate it here: I could not have written that column for 12 years without the constant input and letters I received from our readers. The column was the readers' in so much as they practically wrote the column for me. I basically was the sculptor—the readers supplied the material to make it all happen. J.T. sees the column remaining the same, as you'll read this month. I ask that you support J.T. just the same as you have kept my mailbox filled with your letters, frequency lists and photos. In fact, if you are on the Internet, you can write to J.T. directly at this e-mail address: JTWard@genie.com.

How'm I Doing?

As former New York Mayor Ed Koch liked to ask his constituency, I'm doing like-

wise with our readers. I hope you like what you are reading in *POP'COMM* each month. I'm not planning on making any quickie changes and just because one person doesn't like something means that I will change it. However, I like to know what you think of things. If we're doing a good job, we like to hear that. But if we're not doing a good job, our skin is tough and we can take it. You can write to me at the magazine or via e-mail at POPCOMM@aol.com.

I've got a folder in my file drawer where I keep letters from readers who have good ideas. If I think you have a good idea, I'll file it away and take a look at it again somewhere down the road. It may help me decide on how to change something in the future. I read all the mail that comes across my desk, so don't be shy. And I'll warn you I'm a little better about answering my e-mail than the letters that come via the post office. But I'm working on that. We all have a little weakness somewhere.

We hope you have fun with all three issues of *POP'COMM* this month (don't forget our annual guide and CB guide).

73, Chuck

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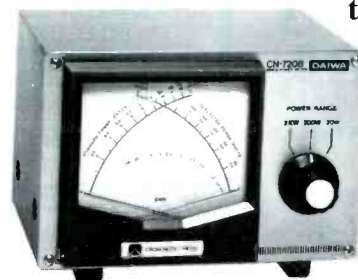
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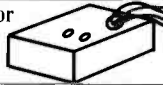
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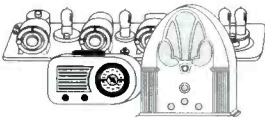
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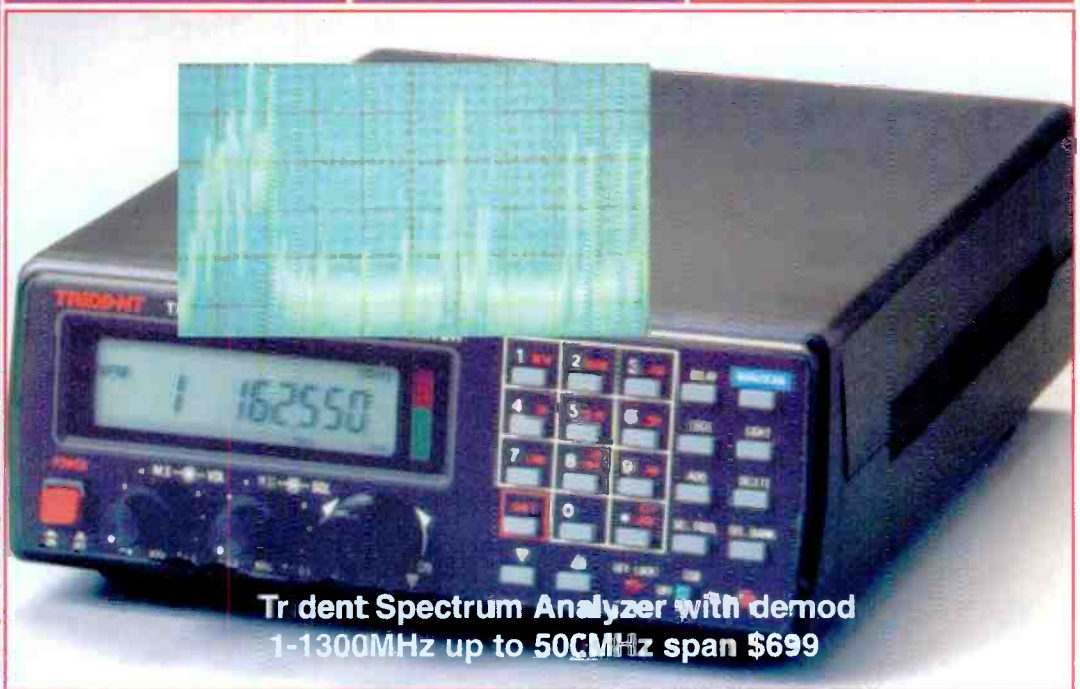
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