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### Specifications

Frequency Range	100kHz - 2036MHz* (Cell Blocked)
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Frequency Resolution	50Hz increments from 50Hz - 999.95kHz (All Modes)
Frequency Stability	+5 ppm from -10oC to +50oC
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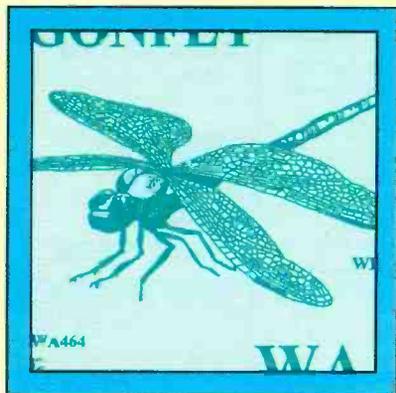
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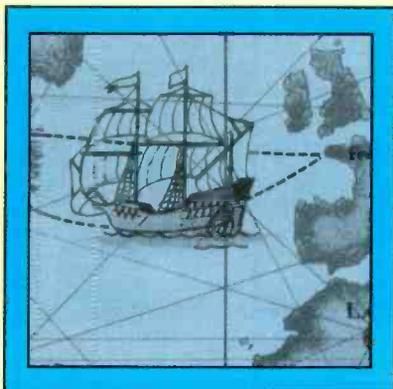
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MAY 1996

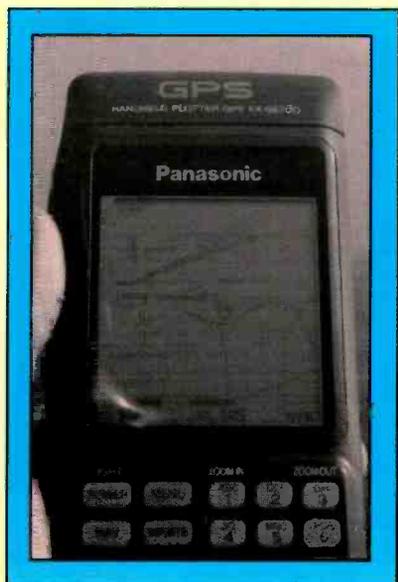
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**This month's cover:** The transmitter site of WCIX, Channel 6, in Miami, Fla., shows the effects of Hurricane Andrew a few years ago after its 1,840-foot antenna was destroyed in the storm. Photo by Larry Mulvehill, WB2ZPI.

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A publication of



CQ Communications, Inc.  
76 North Broadway  
Hicksville, NY 11801-2953 USA

Offices: 76 North Broadway, Hicksville, NY 11801. Telephone (516) 681-2922. FAX (516) 681-2926. Popular Communications (ISSN-073-3315) is published monthly by CQ Communications, Inc. Second class postage paid at Hicksville, NY and additional offices. Subscription prices (payable in U.S. dollars): Domestic—one year \$22.95, two years \$41.00, three years \$60.00. Canada/Mexico—one year \$32.95, two years \$61.00, three years \$96.00. Foreign—one year \$34.95, two years \$65.00, three years \$96.00. Foreign Air Mail—one year \$82.95, two years \$161.00, three years \$240.00.

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Printed in the United States of America.

Postmaster: Please send change of address to Popular Communications, 76 North Broadway, Hicksville, NY 11801.

BY CHUCK GYSI, N2DUP

# Thoughtwaves

## AN EDITORIAL

### What Good Is An Analog Scanner?

A few months ago, we published an article about the city of Cleveland and how it has advanced forward a digital radio communications system for its municipality. The concern among radio hobbyists and others there is that the system cloaks what once were almost expected public radio communications.

It was about a decade and a half ago when Motorola started pitching something called Digital Voice Protection, a system to make radio communications totally private to outsiders, perhaps sometimes described as "eavesdropping" scanner listeners. During the time that DVP has been on the market, I've consistently heard tales about individuals who supposedly have cracked the complexities of DVP coding. But it will never happen. It's not as simple as the descramblers that are used to decode voice-inversion scrambling.

However, the digital radio signals that are on the air now are different than encrypted signals. They are digital, as opposed to more spectrum-intensive analog signals. In addition, they use a transmission mode that is not compatible with analog two-way radios or receivers.

It wasn't too many years ago when many cities and states started installing 800-MHz trunked radio systems. As each system gets installed, residents of these locales complain it is impossible to separate police calls from dog catcher calls and fire calls from trash truck chatter. The trunked radio systems lump all city or locale users on the same radio system. One minute you may be hearing a police chase on a given frequency in the system, whereas, in another few seconds you may hear street crews patching a pothole. Frequencies are in constant reuse in a busy trunked system.

I remember when the New Jersey State Police went to a statewide trunked 800-MHz system when it moved off of VHF low band some years ago. I once lived in a rural town in New Jersey that wasn't big enough to support its own police force, so it relied on the state police for patrols and emergency service. Normally, if I had monitored 44.66 MHz, I could have heard any state police activity in my community, as well as neighboring areas.

However, when the trunked system was implemented, I had to monitor at least five channels at the time (more channels nowadays, as the system expanded) to keep up

on what was going on with state police activity. But because the system covered a large region, I could not only hear if troopers where in my community, I could hear them all over the state on this statewide system. Through strategically placed repeater sites, I could hear troopers anywhere within the region. This offered an advantage over the former VHF low-band channels, but at the same time, it seemed to be information overload!

Now, digital trunking systems are being pushed left and right to cities, counties and states as they examine new radio systems. The digital systems are more spectrum efficient and offer an advantage over routine analog radio systems that have been in place for years. The manufacturers of these digital radio systems also aren't forgetting to tell potential clients that the digital signals cannot be tuned in on conventional scanners or communications receivers.

These digital signals are becoming a rapid source of frustration for many.

In many densely populated areas of the United States, digital cellular systems have been put in place alongside analog cellular systems. The digital cellular systems allow better frequency usage within its band. And as the digital cellular systems go into place, you'll be seeing more digital two-way and trunked systems, too.

The 1996 Summer Olympic Games in Atlanta will utilize an almost-total digital communications system to link Games personnel, as well as news media from around the world. Past Olympics Games have just used unused UHF-TV spectrum for radio communications.

And while these new digital trunked systems take to the air, they utilize a standard protocol for public-safety users for the most part. In other words, their radios may be digital, but they will be able to talk to other digital radios in the future, too, without worrying whether radios will be compatible. That brings us to a point.

If the digital trunking protocol is available for each two-way radio maker to use in the radios they manufacture, why aren't scanner manufacturers jumping on this information and looking at including it in scanners that will be introduced to buyers later this year or early next year? Why aren't scanner makers looking at develop-

(Continued on page 83)



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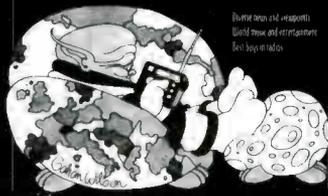
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# Mailbag

## 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 and to edit to conform to style. All letters submitted must be signed and show a return mailing address or valid e-mail address. Upon request, we will withhold a sender's name if the letter is used in Mailbag. Address letters to: Chuck Gysi, N2DUP, Editor, *Popular Communications*, 76 N. Broadway, Hicksville, NY 11801-2909, or send e-mail via the Internet to POPCOMM@aol.com.

### Likes New Look

Found your page on the web and wanted to compliment you on your new look for the magazine. It is really nice, pleasant to look at and easy to read. I have been a reader for about five or six years now and have gotten some really good information out of POP'COMM!

Keep up the good work.

Keith Miller, KB5FCI  
Norman, Okla.  
(via the Internet)

### Interest Loss?

This is regarding the letter in the January issue about loss of interest in amateur radio because of an interest in computers. It is my opinion there probably are two reasons for this: First, computers are the "new girl" in town. Second, you are communicating about a wide diverse area of subjects.

I listen to shortwave and hear the amateur radio operators, but I don't listen to them as a rule. Amateur radio enthusiasts seem to talk about only one thing: their equipment.

I realize it is a group of experimenters, and I think some of, if not most of, the hams are doing some unbelievable things. Why not enjoy the fun side? Is it not possible to have discussion groups or one-on-one discussions about things other than technology?

It won't be far in the future when people online will be doing nothing except talking about their computers. So then, are we not back to square one?

We always do this with our hobbies. We use it to escape our "real world," then be-

come so involved and take it so serious that it becomes what we tried to escape.

People who are as innovative as ham radio enthusiasts should have the ability to keep their hobby alive.

Terry Jones  
Plankinton, S.D.

### How'd That Go?

Regarding letters to the editor from Owen Moriarty, December 1995, and M.J. Molnar, February:

During the 1940s, in the "prehistoric" days of vacuum tubes, my physics professor was demonstrating the generation of Canal Rays (or positive rays) discovered by Goldstein *Modern College Physics*, H. White, D. Van Nostrand and Co., New York, N.Y., pages 567-568). In this tube, electrons are replaced by positively charged particles (protons), which show their presence by flashes on a fluorescent screen.

During the demonstration, I inquired about the effect of substituting protons for electrons in vacuum tubes. In response, he assigned three of us the task of researching this possibility. Of the several possibilities we postulated, one was "inverse waves," the same as your NegaHertz waves. Further experimentation was impossible because of the extreme difficulty in obtaining a proton stream of sufficient density for use in a "vacuum tube."

At the time, we had no idea how far ahead of the times we were. Today, in the PNP transistor, positive charges called "holes" do control the operation of the device. In actuality, their effect is exactly opposite to those of the negative charges (current). When considering hole movement, the RIGHT-hand law of magnetism becomes the LEFT-hand law. When flowing through a conductor, the charges produce opposite magnetic forces. In a generator, the effect would produce sine waves of opposite polarity at any specific point in time—the exact description given by you to Mr. Moriarty of NegaHertz. You were closer to the truth than you knew.

The question is: What would the effect be if we were to substitute positrons (positively charged electrons) for the electrons in a vacuum tube? Positrons were unknown when I was in college.

Ralph C. Craig, AJ8R  
Tipp City, Ohio

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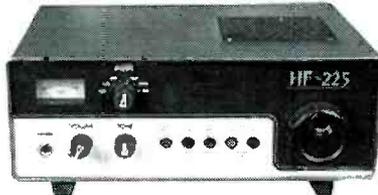
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CIRCLE 132 ON READER SERVICE CARD

# Army Taps "Classic Radio" Expertise For Broadcast Test

## Vintage AM Hams Help Military Station

BY PAUL S. COURSON, WA3VJB

A group of Maryland amateur radio operators can take credit for helping the U.S. Army prepare a portable AM broadcast station for deployment in Bosnia. The five hams are all active in the "classic radio" specialty of the hobby involving the use of AM on the shortwave amateur bands.

The Pentagon's Army Broadcast Service (ABS) set up a 5,000-watt station on a frequency of 1670 kHz the first week of February to make sure the modular studio-transmitter system was tested and fully operational before shipment overseas for the benefit of American troops.

This was only the second frequency activated for extended programming in the new "expanded" AM broadcast band, which now goes to 1710 kHz. Late last year, the first authorized station began operating as WJDM from Elizabeth, N.J.

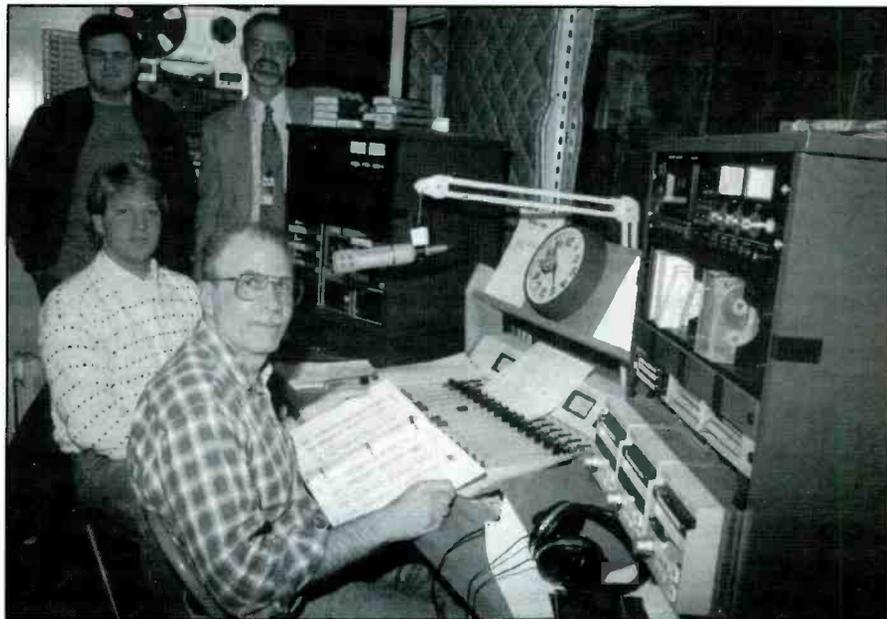
The military station, described as a "tactical" transportable system by civilian manager Don Brown, was established on some cleared land at Fort Meade, Md., outside Baltimore. It began testing Monday morning, Feb. 5, and concluded Thursday afternoon, Feb. 8.

### How Hams Helped

I contacted the military in pursuit of a story after discovering the test transmissions. An official was impressed at hearing about the homebrew and experimental use of AM on the shortwave ham bands, and mentioned a need for some volunteers to help out.

First in line was Fred Cresce, KC4MOP, a prominent AM-er on 75 meters with a longstanding desire to spin some records and "play radio" as he does in conversation with other vintage radio enthusiasts. Steve Ickes, WB3HUZ, works near the site of the experimental station and brought expertise with high-fidelity techniques. Ken Moffett, N3EAR, offered analytical monitoring experience, and I have a background that includes a career in broadcasting.

Also along for the test was Dennis DuVall, WA3YXN, who lives about a mile from the test site and later offered his mon-



A team that can say it was part of history. Clockwise from bottom, pictured are Fred Cresce, KC4MOP, Steve ICKES, WB3HUZ, Ken Moffett, N3EAR and Paul Courson, WA3VJB.

itoring impressions. As the group came in to help, what followed was a dream of many "hi-fi" hams: A four-hour experience on the air playing music, taking telephoned reception reports, and making the most out of audio and carrier for the "test" that the military wanted carried out!

The group suggested to military technicians some ways to adjust and improve the audio quality of the station, while also offering advice on antenna logistics and propagation issues. Their experience translated well from what they do routinely on the ham bands. In fact, it was pointed out during the "show" that hams on AM could be found just up the street at 1885 kHz—not far from 1670.

### Listener Response

A number of callers thought the station was a bootleg or "pirate" operator. Military organizers were using a logo "K-Truck: Kilo Tango Romeo Kilo" to convey the idea

the station was operating out of truck-mounted modules. It turns out the call letters KTRK are assigned to a television station in Houston. To avoid any confusion, "K-Truck" later became simply "ABS Radio."

A guy waiting in line at a car wash was among the callers who discovered the station on 1670, and he reported the signal was quite strong in the Pittsburgh area. Another listener said reception was good at Rochester, Minn.—quite a haul daytime when AM broadcast band signals don't typically reach that far.

Fred, the ham-turned-deejay, ran the program as "Fred Flinstone" playing an eclectic mix of listener requests accompanied by their reception reports from locations that included California, the Midwest, and at least four monitoring stations of the Federal Communications Commission. Steve handled the phones and delivered up-to-the-minute signal analysis with Fred.

Clearly this was a non-commercial out-

let staffed with air personalities who weren't the usual "boss jocks" you'd hear on a regular station. That made many listeners wonder whether they indeed had discovered an illegal broadcaster of some kind. But it was all quite legitimate and loads of fun.

## Technical Discussion

Project official Don Brown said the idea of a portable AM station is an extension of low-powered FM broadcast trucks used during Operation Desert Storm. Those short-range stations helped make American troops feel more at home as they served in the war against Iraq. Brown says the AM station will have greater range and a better signal in the Bosnian region.

One module at the Fort Meade site held two transmitters and an audio rack, plus heating, air conditioning and air filtration. The transmitter type was a Harris model 5FA, a 5,000-watt, frequency-agile unit capable of instantly tuning to any frequency between 530 and 1705 kHz. It was powered from a trailer-mounted generator parked nearby. An identical backup transmitter provides redundancy.

The second module held the studio, which consisted of a standard audio mixing console, and the usual radio station assortment of tape machines, speakers, patch bays and monitors. The studio racks also included a Kenwood shortwave receiver model R2000, used to pick up the transmitted "air signal" to ascertain the system was running well.

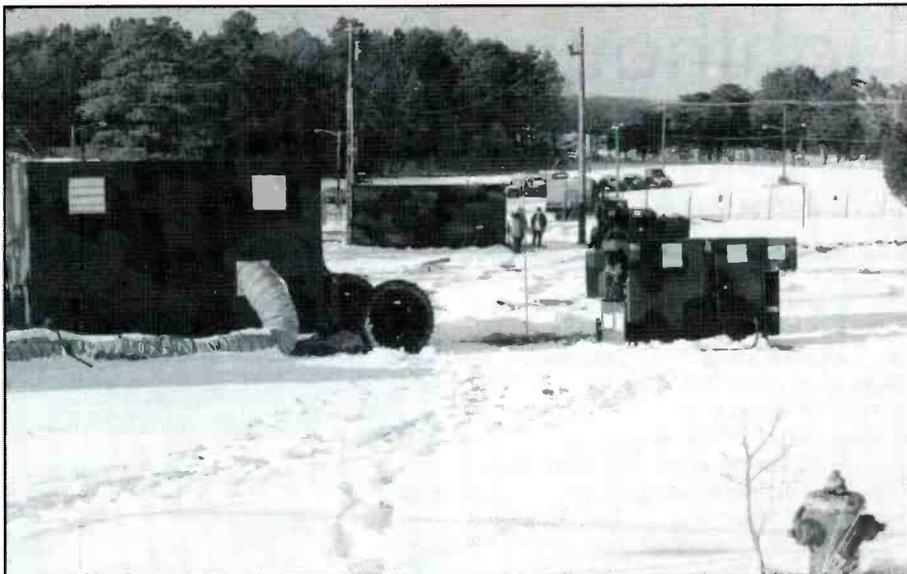
Bolted up to the second module was another studio-type unit. This contained a simple work desk at which a guest and a presenter could sit and offer a program. In this case, the console side of the studio would have a control operator who could view the "talent" through an acoustically-isolated window.

The antenna consisted of a trailer-mounted telescoping mast that could be extended to 150 feet or whatever height most closely matched the frequency/wavelength of operation. It included a "capacity hat" of radials at the top, and 120 ground radials that Army specialists had placed at the base like spokes from a wagon wheel. Reception reports affirmed the system performed as designed.

## Communications Alert

Word of the test transmissions spread like wildfire. The National Radio Club had organized a monitoring effort. Computer networks catering to radio buffs posted bulletins. The amateur hobby's AM Radio Network spread the word with an on-air interview with Don Brown. And ham radio's American Radio Relay League sent messages over its station, W1AW.

The widespread visibility of the test transmissions among listeners generated a



Here are the truck-mounted modules for the Army's portable AM station. Left: the transmitter unit with self-contained HVAC and generator. Center (rear-most, next to pole): a camouflaged studio building. Right (next to transmitter unit): a generator.

tremendous telephone response as the station phone number was announced. The ham group got more than 40 calls during the short time they were actually on the air. And since ABS actively solicited written reception reports on the promise of verification (QSL) cards, there will be paperwork proof that the mission was a success.

## Historical Broadcast

Not since the pioneering days of AM radio has there been a "test transmission" like the four-day experiment at Fort Meade. Certainly a newly-licensed station will conduct some engineering broadcasts. But for those lucky enough to tune in to this unique station, you may have heard something that may never be repeated.

A number of factors make this project a likely one-time affair. First, the FCC is moving ahead trying to resolve the assignment of stations to the channels in the expanded AM broadcast band. For now, there just happened to be a place for the ABS station to test. Happily, many car radios in later-model vehicles are already capable of tuning the expanded band—as listeners called to testify.

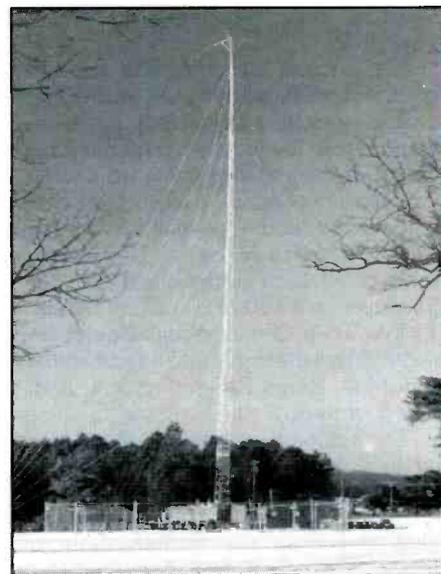
So once the band is filled, there won't be a place to just park a transmitter and beam a signal out to the masses. Secondly, the military is generally sensitive at avoiding the use of frequencies where interference could be a problem. That means broadcast-type transmissions are rare to begin with.

But finally, how many times has the military simply opened its doors to mainstream broadcasting? To allow civilians—no matter how responsible and technically adept the hams might be—on military facil-

ities was an extraordinary public relations move for which the Army is to be praised.

Then again, the common ground existing here may encourage other projects. Amateur radio has a famous national contest called "Field Day" designed to test emergency preparedness under conditions very similar to the Fort Meade project. And since AM is a well-regarded specialty in the hobby, interest in the activity translated well to the communications goals of ABS.

So perhaps the best advice is to scan the dial and *stay tuned!* ■



Telescoping broadcast tower, trailer mounted. Army specialists buried 120 ground radials under the snow to help the signal.

# Lighthouse Radio

## A Beacon Of Hope In Hurricane Luis

BY WINSTON SEENEY, VE3WFS

**H**urricane Luis hit Antigua like a fist. It swept across the island for 36 hours. Trees were stripped of leaves, palm trees smashed across the roads and homes were destroyed.

Each small home was a shelter for a frightened family. When the power failed and the telephone system died, families were isolated from one another. Alone and afraid, people huddled around portable radios, listening for words of hope and encouragement.

The despair was heightened when each of the stations across the islands were beaten into silence.

When all the voices of the Leewards were gone, Caribbean Radio Lighthouse became the voice of hope for the beleaguered islands.

As the hurricane raged, the station struggled desperately to stay on the air. Its voice was kept alive by three weary staff members.

Charmaine Laville, a former Nevis Islander and a tourist hospitality employee, lost her new home. In spite of this, she remembered the reassurance that "the lighthouse" provided.

"We kept it tuned all the time—until it went out," she said. "It told us what was happening on the neighborhood islands. People who had families on other islands called in. They were happy to know we were well."

In the hours preceding the storm, the station carefully plotted Luis' journey, with grease pens on a large map. Early information from the weather center in Miami, Fla., told them to expect big trouble.

Caribbean Radio Lighthouse is—by modern standards—a small station. It sits along the valley highway, 10 kilometers south of St. John's—the island's capital. It transmits on 1160 kHz with an output of 10 kW. Their Canadian-built Nautel transmitter drives the signal into a quarter-wave, series-fed, Ringo Ranger vertical, atop a 212-foot tower.

The station was created 20 years ago by three American families. Its initial start-up funds came from Baptist International Missions Inc. (BIMI) and from private donations. Its mission was to share the gospel of Jesus Christ with Antiguans, and across the West Indies.

### Widely Heard

The station has a potential listening



*Caribbean Radio Lighthouse kept the residents of Antigua aware of conditions during Hurricane Luis.*

audience of 1.5 million English-speaking listeners and a million French-speaking listeners. It broadcasts exclusively in English.

The lack of any broadcast rating services on the islands means that their number of listeners is unknown. Waite reported, though, that as many as 12,000 people have on one occasion requested radio Bible study literature. The station provides a blend of taped evangelism and music.

A large world map is prominently displayed on a wall of the station, speckled with colored pins. Each pin represents a letter and reception report the station has received.

The pins march up the east and west coasts of North America. They arc across the North Atlantic into Scandinavia, and over the roof of the Pacific down into Japan and Australasia.

Waite said that listeners have to work hard for their "lighthouse" confirmation. It's not good enough to write that you heard a hymn or two sandwiched beneath the volley of overriding stations. The identification must be consistent with the station's log and of a reasonable time length. The QSL is recorded on the back of a postcard bearing a picture of the station.

But when Luis struck, QSL cards were the last thing on the station's mind. The staff focused on its emergency contingency plans. The usual format of half-hour prerecorded gospel messages was set aside, and replaced by a tightly compacted format of

information, interspersed with music and messages of hope and encouragement.

Weather reports came from the island's meteorological office at the airport, and from the National Hurricane Center in Miami.

Denise Stewart, an employee of Sunset Cove Resort on Runaway Bay, said, "I listened to Lighthouse Radio until about 3 o'clock. It gave us encouragement, telling us not to give up and to keep ourselves together and not get frightened."

The tall, soft-spoken Waite also is a licensed ham. His callsign is KD4JVR. Because of this, he understands better than most people the importance of two-way communication during hurricanes—both from outside and inside the islands.

Even the Antiguan amateur community was silenced by the storm. Like everyone else, Antigua's hams had to struggle for their own survival. Coax cables, radio towers and antennas were twisted and destroyed by 150-mph winds.

The storm played no favorites. It even silenced Mickey Matthews' station, V2AR, the island's minister of communications.

Murray Epstein, VE2AUU, who operates from Laval, Quebec, Canada, was one of several net controllers anchoring the emergency hurricane net from outside the island.

Epstein is forthright in his praise for the station's work. He reflected "Lighthouse Radio stepped in, when the island's airport

antenna system went down. They helped bring in seven aircraft and two ships between Antigua and St. Martins. This was done on 2 meters."

## 2-Meter Link

The station's 2-meter link with the meteorological office at the airport was vital. This office covers the entire Leeward Island chain. They replayed critical weather information from their own 2-meter transmitters into the mediumwave service.

Local authorities waived the island's amateur communications policies and gave Waite and the station permission to use the island's 2-meter repeater during times of disaster.

This permission was critical because Waite's U.S. technician class license prevents him from having an Antiguan ham license. The demands of his long day at the station rob him of the time required to upgrade his qualifications, a frustrating Catch-22 situation for a communications specialist. It is one that, ironically, works to the disadvantage of Antiguanians.

Waite's wife, Barb, told of the anxiety Waite experienced during the hurricane. Waite was caught away from the station, at home, when the hurricane began. He was so fearful for his staff, that during a lull in the storm he drove to the station in his Mitsubishi jeep.

Waite sat white-knuckled, within sight of the station, separated by a wall of violent sea water that spilled across the valley and over the highway.

The station took a pounding. The upper vertical was contorted and the phone links failed during the height of the storm.

The staff struggled to get the system back. Within two hours, they managed to repair the damaged link becoming the island's national disaster office on the air.

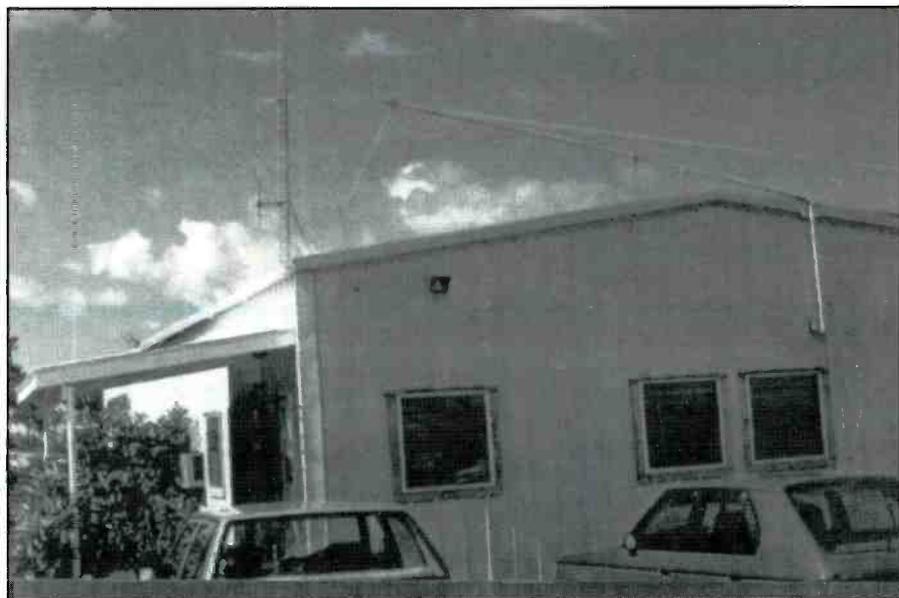
Water and wind sprayed through vents in the walls of the transmitter room. Then, after the hurricane tore the shingles off the roof, water began streaming down through the cracks in the ceiling boards. The staff struggled for four hours to keep the transmitter dry, before it eventually choked out.

They fought back tenaciously to restore their service. "We got back on the air four hours after the storm," Waite reported. During this time, they simulcast Prime Minister Bird's State of the Nation report. This came off their FM link.

They also relayed public service information from the Public Disaster Office.

## Getting Back On The Air

As the island emerged in confusion from its tangle of uprooted trees, ripped homes and damaged lines, the staff worked around the clock to maintain their radio voice. Their problems were compounded when Hurricane Marilyn followed hard on Luis' heels. Even though Marilyn lacked Luis' punch, the staff was unable to keep the



Side view of station—notice the antenna damage.

transmitter dry enough to continue service.

The station went off the air for two more days. Tired staff members took the transmitter apart and used vacuum cleaner hoses and hair dryers to dry it out.

Regrettably, the spray contained an abundance of salt water.

When the water dried out, a fine residue of salt remained. This has caused ongoing problems with the transmitter arcing.

In the days and weeks that followed as islanders patched their lives together, the people began to realize how much "the lighthouse" had meant to them. Waite and his staff received messages of appreciation

from government officials and from the Antiguan Broadcasting System.

"People were surprised to see a Christian station is as active as we are," he said.

Looking back at the experience, Curt Waite, the station's manager, reflected, "This was the first time we ever had a captive audience."

For now—it's business as usual—a return to long hours of dedicated, hard work.

Through it all, Waite's dreams remain intact. He continues to carry his wish list for the station in his hip pocket: a ham shack, an upgraded computer and an Antiguan amateur radio license. ■



Casualties caused by the hurricane.

# Radio Remembered

## Broadcasters That Survived Adversities

BY ALICE BRANNIGAN

Johnstown, Pa., is located in a valley 75 miles east of Pittsburgh. In 1889, the dam of the South Fork Reservoir, about 12 miles east of the city, burst during heavy rains. The flood that resulted killed more than 2,000 persons and destroyed property worth more than \$10 million. The Johnstown Flood became the well-known yardstick against which to compare subsequent American floods.

Johnstown dusted itself off and rebuilt, and that's where our story begins. In early 1925, Johnstown Automobile Co. opened a broadcasting station with studios, a transmitter and an antenna at its showroom,

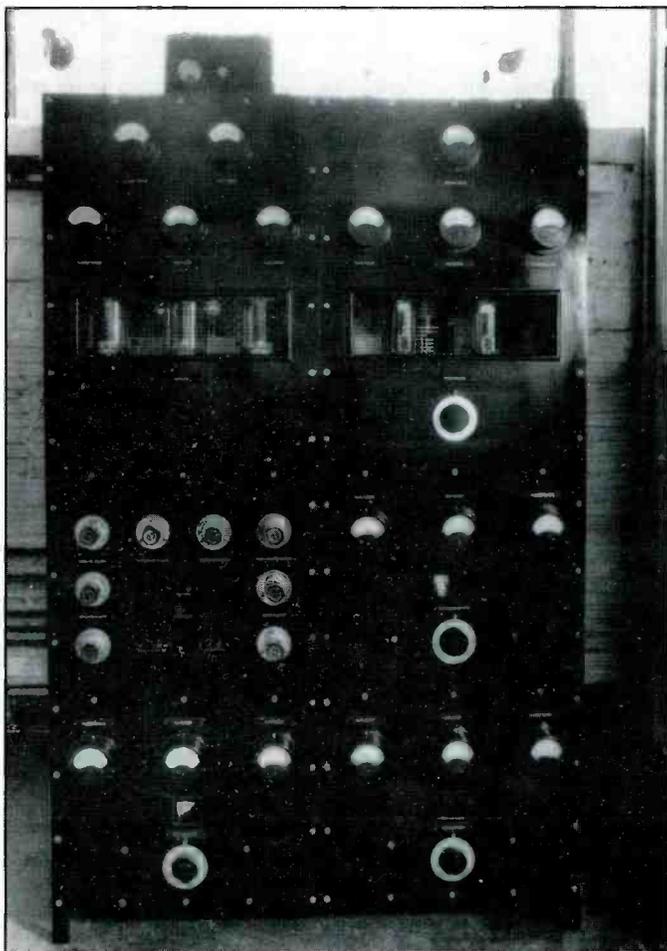
101 Main St. In early April, station WHBP went on the air running 100 watts on 1170 kHz. The station thrived, increasing its power to 250 watts in 1927, when it switched to 1310 kHz. In early 1928, daytime power was increased to 500 watts.

When the newly formed Federal Radio Commission reorganized the broadcasting service in late 1928, WHBP was forced to cut its power back to 100 watts and share time with WFBG, Altoona, Pa. Soon after, WHBP changed its call letters to WJAC, incorporating the licensee's initials. It called itself "The Voice of The Friendly City."

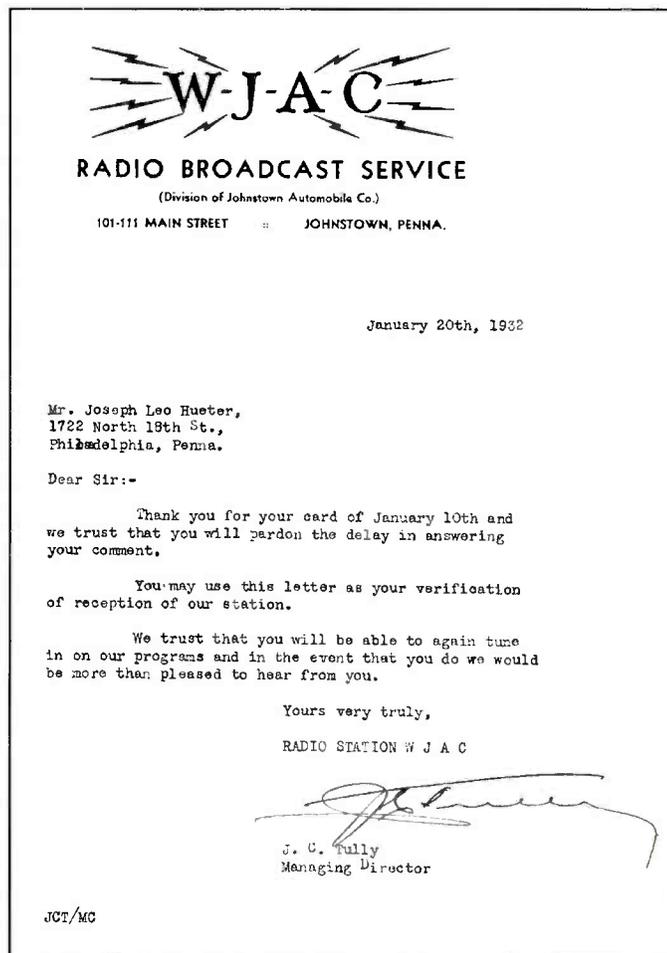
In 1933, WJAC was sold to the Johns-

town Tribune. The studios were moved to the Tribune Annex building on Locust Street, but the transmitter remained at its original Main Street site. In March 1936, another flood swept over Johnstown, taking 25 lives and causing \$10 million damage. (A flood-control system was built in 1937.) WJAC managed to survive.

The second Johnstown Flood swamped the old 100-watt transmitter and it had to be replaced. WJAC also had to change its transmitter-antenna site. The new site was to be the Tribune Building, 429 Locust St. The 1937 transmitter would run 250 watts during the day; 100 watts at night. The



WJAC's composite 100-watt transmitter used until 1937. Photo taken about 1928. (National Archives photo provided by Broadcast Pro-File, Hollywood, Calif.)



WJAC letter veri from 1932 came between the arrival of the new call letters and the second Johnstown Flood. (Collection of the late Joe Hueter in the POP'COMM archives.)

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ALGIERS, ALGERIA, NORTH AFRICA

# THE VOICE OF AMERICA IN NORTH AFRICA

We are pleased to confirm your report of reception

of our station on \_\_\_\_\_ m., \_\_\_\_\_ kc.,

\_\_\_\_\_ 19 \_\_\_\_\_, at \_\_\_\_\_ hours, G.M.T.

Rare VOA Algeria veri has been seen by only a few DXers because the station existed so briefly. (Courtesy John R. Hall, W5ETK.)

new antenna was a 179-foot, self-supporting vertical on the roof.

WJAC continued to split time on 1310 kHz with WFBG, but in late 1939 was authorized to operate full time with 250 watts on 1370 kHz. In March 1941, a complete reorganization of the broadcast band resulted from the NARBA Treaty. Frequency reallocations affected many stations, and WJAC was ordered to shift to 1400 kHz.

In 1947, WJAC moved its studios into new quarters at 329 Main St., which had been renamed the WJAC Building. In early 1962, the station obtained permission to increase its power to 10 kW and move its frequency to 850 kHz, also to change its transmitting site to a new location where a directional array could be installed. The FCC later granted permission for WJAC to relocate its studios to the transmitting site beyond the city limits of Johnstown—on

Hickory Lane in the Berkley Hills area of Upper Yoder Township.

The station's studios were moved in 1987, WJAC and its sister FM station, WKYE, were sold to Winston Radio, a subsidiary of Media News Group). In early 1993, Winston Radio Inc. was turned over to a trustee. Later in 1993, Winston Radio Inc. was transferred from the trustee to its new owner, Michael F. Brosig Sr. for more than \$2 million.

WJAC survived the Johnstown Flood to become Pennsylvania's 22nd oldest continuously licensed AM broadcaster. It operates with an "adult standards" format, running 10 kW into a directional antenna on 850 kHz.

Highlights of WJAC's history were furnished to us by Broadcast Pro-File, P.O. Box 982, Hollywood, CA 90078-0982.



The AFHQ "Hippo" 50-kW mediumwave transmitter was on the ground floor of the center farm building near Port d'Esu, Algiers. (Courtesy John R. Hall, W5ETK.)

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lular blocked, not restorable).



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# NRD-535D

*"Best Communications Receiver"*

World Radio TV Handbook 1992



*"Unsurpassed DX Performance"*

Passport to World Band Radio 1992

**S**etting the industry standard once again for shortwave receivers, the NRD-535D is the most advanced HF communications receiver ever designed for the serious DXer and shortwave listener. Its unparalleled performance in all modes makes it the ultimate receiver for diversified monitoring applications.

Designed for DXers by DXers! The NRD-535D (shown above with optional NVA-319 speaker) strikes the perfect balance between form and function with its professional-grade design and critically acclaimed ergonomics. The NRD-535D is the recipient of the prestigious World Radio TV Handbook Industry Award for "Best Communications Receiver."

**JRC** *Japan Radio Co., Ltd.*

Japan Radio Company, Ltd., New York Branch Office - 430 Park Avenue (2nd Floor) New York, NY 10022, USA Tel: (212) 355-180 / Fax: (212) 319-5227

Japan Radio Company, Ltd. - Akasaka Twin Tower (Main), 17-22, Akasaka 2-chome, Minato-ku, Tokyo 107, JAPAN Tel: (03) 3584-8836 / Fax: (03) 3584-8878

- Phase-lock ECSS system for selectable-sideband AM reception.
- Maximum IF bandwidth flexibility! The Variable Bandwidth Control (BWC) adjusts the wide and intermediate IF filter bandwidths from 5.5 to 2.0 kHz and 2.0 to 0.5 kHz—continuously.
- Stock fixed-width IF filters include a 5.5 kHz (wide), a 2.0 kHz (intermediate), and a 1.0 kHz (narrow). Optional JRC filters include 2.4 kHz, 300 Hz, and 500 Hz crystal type.
- All mode 100 kHz - 30 MHz coverage. Tuning accuracy to 1 Hz, using JRC's advanced Direct Digital Synthesis (DDS) PLL system and a high-precision magnetic rotary encoder. The tuning is so smooth you will swear it's analog! An optional high-stability crystal oscillator kit is also available for  $\pm 0.5$  ppm stability.
- A superior front-end variable double tuning circuit is continuously controlled by the CPU to vary with the receive frequency automatically. The result: Outstanding 106 dB Dynamic Range and +20 dBm Third-Order Intercept Point.
- Memory capacity of 200 channels, each storing frequency, mode, filter, AGC and ATT settings. Scan and sweep functions built in. All memory channels are tunable, making "MEM to VFO" switching unnecessary.
- A state-of-the-art RS-232C computer interface is built into every NRD-535D receiver.
- Fully modular design, featuring plug-in circuit boards and high-quality surface-mount components. No other manufacturer can offer such professional-quality design and construction at so affordable a price.



OWI headquarters in Algeria during World War II was in the Maison d'Agriculture, Boulevard Boudin, Algiers. (Courtesy John R. Hall, W5ETK.)

Their historical report about WJAC is more detailed than we have the space available to print here. Broadcast Pro-File is a professional service that researches the histories of past and present American AM/FM/TV broadcasters. Many stations use their reports. They charge nominal fees for their services. One dollar gets you a catalog.

### The Voice of America in North Africa

Too much water wasn't so good, but neither is too little water. Not if you're trying to operate a high-powered station in the North African desert.

Late in 1942, during World War II, Allied Forces liberated the city of Algiers in North Africa. Soon after, the U.S. government's Office of War Information (OWI) and U.S. Army Signal Corps established a powerful shortwave broadcast station near there. OWI white propaganda broadcasts, together with press telegraphy and other data were beamed toward Europe. White propaganda stations are those operated from correctly announced locations by or on behalf of the nations whose aims and political allegiances they support.

During World War II, propaganda stations were in many nations, including the United States, United Kingdom, China, Australia, Germany, Japan, Italy, Sweden, Spain, U.S.S.R., Romania, as well as occupied nations such as France, Poland, the Philippines and elsewhere. In overrun nations, occupying forces usually put existing radio facilities to their own use.

Until the end of the war, the Algiers station was identified as AFHQ, Allied Forces Headquarters. Scheduled broadcasts were 2115-2330 UTC on 8960 kHz, and 2245-1330 on 16025 kHz. Two 50-kW shortwave transmitters had been located south of Algiers at El Arba. A 50-kW mediumwave transmitter was operated as United Nations Radio on 995 and 1200 kHz from a rural site a few miles east of Algiers.

In addition to its own programming, AFHQ was widely reported by North American DXers as it sent war dispatches to news services in New York. It also relayed broadcasts from American military stations in Italy.

Like everything in a war zone, the equipment was given coded names, like Siamese, for the RCA 50-kW shortwave rig. It was so named because it had two identical 50-kW amplifiers that enabled it to switch frequencies within a minute or two. There



NBC INTERNATIONAL STATION

# W N B I

16.8 METERS  
19.8 METERS  
25.23 METERS  
31.02 METERS  
49.1 METERS

17.780 KILOCYCLES  
15.150 KILOCYCLES  
11.890 KILOCYCLES  
9.670 KILOCYCLES  
6.100 KILOCYCLES

THE NATIONAL BROADCASTING COMPANY  
IS PLEASED TO EXTEND VERIFICATION OF  
RECEPTION TO

Shortwave broadcasts from the United States during World War II went out over private stations like those of NBC, CBS, Crosley, World Wide Broadcasting, Westinghouse and General Electric. The VOA didn't exist until after the war ended. (Courtesy Tom Kneitel, K2AES.)

## SURVEILLANCE

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- 3-VOLT FM XMTR, up to 300 ft indoors, 1500 ft. outdoors
- PHONE XMTR, range to 500 ft., uses phone-line power
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# Product Parade

REVIEW OF NEW, INTERESTING AND USEFUL PRODUCTS

## New release of Probe Scanner Software

Version 2.0 of Probe software—developed exclusively for Optoelectronics' OptoScan 456 and 535 computer-to-scanner interfaces with RadioShack's Pro-2005, 2006, 2035 and 2042 scanners—has been released by DataFile Inc. More than 70 new features and enhancements have been added to Probe.

Probe's new version comes with a new feature to computer-controlled scanning called SmartScan, which allows the scanning enthusiast to follow fast-breaking action. When a transmission is detected on a key frequency, a specified bank of frequencies, called a SmartBank, automatically is activated to focus on the action in that bank for a specified amount of dwell time. For each key frequency, you can choose whether the SmartBank will be scanned exclusively, or will be added to the existing banks already being scanned. The length of time spent in each mode can be tailored to your own situation.

As an example, if you designate the air emergency frequency, 121.500 MHz, as a key frequency and it becomes active, your scanner can exclusively scan only those frequencies related to the air emergency frequency, like the local tower, ground control, rescue squad and airport security, or you can include them with the other frequencies being scanned in the non-exclusive mode. Once the action settles down, normal scanning is resumed.

Many computer-control scanning enthusiasts have discovered a dedicated computer is a must for their hobby. Probe software works on virtually any DOS-based computer for this reason. Probe Version 2.0 features increased scanning speed over previous versions of up to 37 percent on older computers. For example, AT/12-MHz computers, which are increasingly cheaper and easier to find in the second-hand market, can be used with Probe and can attain scanning speeds of 50-plus frequencies per second without additional requirements of extra memory, graphics cards or fancy operating systems.

Some of the new features and enhancements include new and improved tools for frequency management and superior CTCSS and digital tone control. Utilities for importing PerCon FCC data files and creating search files have been enhanced. Manual tuning now provides tone and signal strength readout.

Export of frequency and log files to three

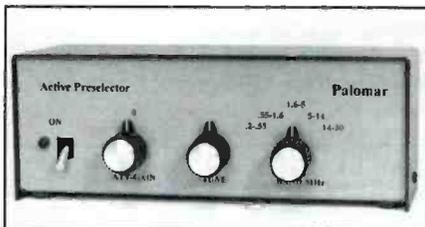
different formats of ASCII text files has been added. Probe also includes revised and expanded documentation. Additional features include immediate scanning with a single keystroke without having to wait on loading frequencies. 19200 baud is now supported for maximum performance with the OptoScan 535.

Probe has a true database engine using the dBASE format, providing large capacity frequency management of up to 4,000 groups of 99 banks, with each bank containing up to 1,000 frequencies. Banks are quickly and easily activated or deactivated directly from the scanning screen. Because Probe's frequency data structure was modeled directly from the FCC databases, it is able to make the best use of it and is able to provide the most on-screen frequency data in an easy-to-read format.

Probe version 2.0 is available for \$129.95 plus \$7.95 shipping. Check, money order, MasterCard and Visa accepted. Write to: DataFile Inc., P.O. Box 20111, St. Louis, MO 63123, or e-mail to [datafile@genie.com](mailto:datafile@genie.com).

## Active Preselector From Palomar

Palomar Engineers has come out with a new preselector for SWLs and mediumwave DXers. The Model P-508 covers 200 kHz to 30 MHz in five bands.



Palomar Engineers' preselector for SWLs and mediumwave DXers covers 200 kHz to 30 MHz.

The P-508's high Q tuned circuits reduce cross-modulation and receiver overload from strong out-of-band signals. A new FET-bipolar amplifier tolerates higher signal levels without overload to operate in today's high signal-density environment. It also features continuous control of gain and attenuation.

The antenna connector is an SO-239, while the unit operates on 12 volts DC.

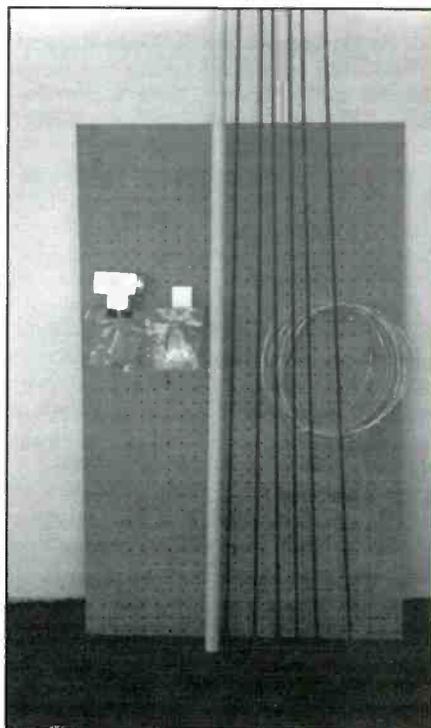
Model P-508 is priced at \$99.95, plus \$6 shipping. A model PS-90 AC adapter

is available for \$9.95. For information, write: Palomar Engineers, P.O. Box 462222, Escondido, CA 92029; phone (619) 747-3343; fax (619) 747-3346.

## Two New VHF/UHF Antenna Kits

Cubex Antenna Co. has introduced two new VHF/UHF quad antenna experimenter kits. The kits are designed to contain all the parts necessary for the home experimenter to create that "special antenna" for their application.

Each kit contains a fiberglass boom (4



Cubex Antenna Co. has come out with two new VHF/UHF quad antenna experimenter kits.

feet by 1 inch, or 8 feet by 1.25 inches), quarter-inch fiberglass spreader arms, copper-tinned antenna wire, antenna wire notches, insulated feed block, PVC or aluminum boom mast coupler plate and miscellaneous SS hardware.

The antenna kit sells for \$29.95, plus \$6 shipping, for the 4-foot kit and \$69.95, plus \$12 shipping, for the 8-foot kit. Write: Cubex Antenna Co., 2761 Saturn St., Unit E, Brea, CA 92621; call (714) 577-9009; fax (714) 577-9124.

## NIR-10 Firmware Revision; NIR-12 Software Kit

JPS Communications Inc. has announced that revision 4.0 firmware is now available for the NIR-10 Noise and Interference Reduction Unit.

The new firmware provides improved NIR (spectral subtraction) and dynamic peaking ("peak") noise-reduction modes. The NIR upgrade also features an "auto" mode when the NIR control is turned fully clockwise. This provides an automatic adjustment of the noise reduction for best intelligibility based on the measured signal-to-noise ratio of the incoming audio signal.



JPS introduces Revision Firmware for the JPS NIR-12 Noise and Interference Reduction Unit.

The "peak" function noise-reduction level can be continually varied now—using the NIR control—to give the most effective noise reduction in that mode. The notch filter has been changed slightly to eliminate the nasal quality sometimes given to "musical" voices.

Also available from JPS Communications is the SDK-12, a low-cost software development kit for use with the NIR-12 Dual DSP Noise-Interference Remover and Filter Unit. Using the supplied software, users may upload their own programs via a PC to run on the NIR-12 DSPs without the need to program EPROMs.

The kit consists of an interface module that plugs into the NIR-12 and interfaces via an RS-232 connector with an IBM-compatible PC serial port via a user-supplied nine-pin-to-nine-pin cable with DB-9 connectors; a disk containing the necessary software for DOS to allow the user to address the dual DSP chips and the AIC chip; and an instruction manual.

The kit is intended for use by those already somewhat familiar with DSP software development and with software development in general.

For further information, contact JPS Communications Inc., P.O. Box 97757, Raleigh, NC 27624; phone (919) 790-1011.

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CIRCLE 79 ON READER SERVICE CARD

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- To answer these questions and provide you with maximum assurance for the safety of your equipment, we submitted our designs to Underwriters Laboratories Inc. for the complete testing listing process.

- Although UL Listing is not presently required in this market it IS a requirement of ALPHA DELTA to continue providing you with products of maximum quality.

- The UL testing & listing process is not simple by any means. It takes literally months of testing with significant expense to the applicant. The test areas included:

- Breakdown Voltage
- Impulse Voltage
- Pressure/Temperature cycling
- Dielectric test
- Water Spray
- Corrosion

- After this extensive process there was still no guarantee that the designs would be approved for the product listing. We were pleased that these stringent tests required no design changes whatsoever, and we were granted full listing.

UL may mean product safety to you but to ALPHA DELTA it means our loyalty to you in providing "World Class" products to our valued customers.

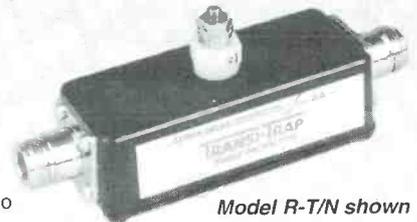
UL listed Transi-Trap® Protectors:

- (low power models are most sensitive and best receivers and transceivers)
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- (also Model R-T/NW, Weatherproof, for our commercial, Government, customers - Call for quotes.)

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Model R-T shown



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- **Range:** .5 - 1900MHz\*
- **Modes:** AM/NFM/WFM/USB/LSB/CW
- **Stepsize:** 50Mz to 999.995kHz
- **Sensitivity(μV):** 30 to 1000MHz  
SSB .25 AM 1.0 NFM .35 WFM 1.0
- **Filters:** (kHz) SSB 4 AM/NFM 12 WFM 180
- **Memories:** 50 ch. x 20 banks= 1000 total
- **Size/Wt.:** 6.1 x 2.8 x 1.6 inch. 20 oz. batt. incl.

\* Cell blocked for all, but Approved agencies.

- Ferrite Rod antenna below 2MHz
- Only portable scanner on U.S. market to have true SSB, both LSB & USB.
- Others attempt SSB using a BFO, but are difficult to tune and produce poor SSB audio.
- 4 level alpha numeric LCD read out frequency, mode, signal strength, band scope spectral display, battery low, remote and more.
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- Clone your memory banks with a friend, load 1000 memory channels in seconds.



## SSE PSU101

Adjustable Desk Charger/ Power Supply 12VDC Version

This quality, custom-designed combination desk charger and regulated power supply unit is perfect for convenient 'Base Station' use of your handheld scanner at home or office!!

- Securely holds scanner in proper position
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## SSE PSU101T

Desk Charger/Power Supply 9VDC Version

- 9 volt version for popular REALISTIC (RADIO SHACK) handheld scanners and others that require a 9 volt DC supply
- All the same quality & features of the PSU101 12 volt version above!

For: REALISTIC- TANDY- RADIO SHACK PRO34/PRO37/PRO43 and others.

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AOR AR1000XLT/AR1500/AR2000

YUPITERU MVT7000/MVT7100

UNIDEN BEARCAT BC50XL/BC55XLT/BC70XL/TBC100XLT/BC200XL/TBC205XLT

ALINCO DJX1

ICOM ICR1 Handheld

REALISTIC-TANDY-RADIO SHACK

PRO35/PRO38/PRO41

## Computer Interface for the AR8000 & AR2700



Unlike some of the European devices sold today, this unit is smaller, lighter, and makes no power demands on your receiver. With the extra shielding and smaller size there is less chance of additional interference leaking into your radio.

The AR8000INF is also the only interface that is upgradeable for use with the optional Tape recorder controller due first quarter '95.

- ▲ Low Power, powered by your serial port
- ▲ No Drain on the batteries in the radio
- ▲ Light weight, perfect for Laptop use
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## AR 3000A

Compact, professional quality, wide range monitor receiver



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**NEW**

## NEW AR7030

" Superior By Design "



For many years AOR has pressed forward the frontiers of performance and design bringing notable advancements and setting new industry benchmarks for receiver technologies.

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**Jim**  
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## "The New Star" AR 2700... Out of this world Wideband Scanner

The new AR 2700 from AOR is another break-through for general coverage scanners at an affordable price.

### • FEATURES •



**Wide frequency range:** 500kHz to 1,300MHz with various step size: 5, 6.25, 9, 10, 12.5, 20, 25, 30, 50, & 100kHz (wide FM only).

**Auto Mode tuning:** Comprehensive band plan has been pre-programmed to simplify the operation. The AR 2700 will automatically select the appropriate mode and channel step.

**Great flexibility in programming:** for Scan and Search mode: Delay, Pause and Priority intervals can be set to a specific value. Program search, Manual search, Bank link, Delay, Pause, Pass, Scan, Bank delete, Priority are provided.

**High Capacity:** 500 channels into 10 banks and 10 search banks.

**Optional Digital Voice Recording:** 20 seconds of digitized recorded conversation and playback through the use of the RU-2700 option.

**Computer control port** may be connected via an optional adaptor to a computer for remote control of the AR 2700.



## AR5000 CYBERSCAN...

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Never before has there been so much in such a small package. Hear naval submarine command and control at 21.4kHz, push a button and copy GOES WX Satellite 1691MHz.



### AR5000 Specifications

Frequency Range: .....10kHz - 2,600MHz  
 Receiving Mode: .....FM, AM, LSB, USB, CW, Special  
 I.F. Bandwidth: .....3kHz, 6kHz, 15kHz, 40kHz, 110kHz, 220kHz, 0.5kHz (Opt.)  
 Triple Conversion: .....I.F. 622.2, 10.7 & .455MHz  
 Frequency Stability: .....±1ppm (0 to 50C) ext OSC jack  
 Antenna Impedance: .....50-Ohm (N, BNC)  
 Programmable Step: .....1Hz to 999.999kHz  
 Search/Scan Speed: .....50 steps/second (less than 100kHz steps)  
 Power Supply: .....DC 12V, (<1A) 120VAC adaptor incl.

## Adjustable SSE BHA3 (C)



### Universal base stand for handheld scanners and transceivers



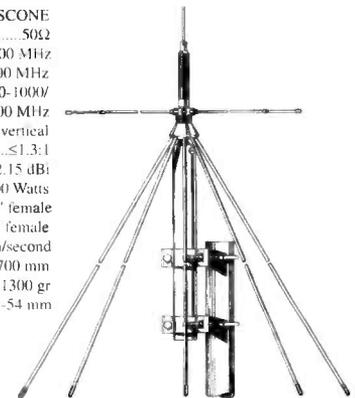
- Heavy chrome base for extra stability, even with heavy handhelds.
- Adjustable front support stop which adjusts to fit all popular handheld scanners and transceivers.
- Convenient rear panel BNC connector for external antenna attachment - Use a short jumper to your radio and remove stress of large external antenna cable from your handheld's connector.
- Deluxe felt-lined radio tray that won't hurt your handheld's finish. BHA3 C comes with cable.

## SIRIO SD1300 U/N

Wide-band disccone antenna working on 25-1300 MHz in reception and on many amateur frequencies in transmission (6m, 2m, 1 1/4m, 70cm, 33cm, 23cm). It is made of stainless steel, chromed brass and anodized aluminium to guarantee the best efficiency and performance. Easy to fit, it can be suitable for the installation everywhere. The vertical whip can be removed whenever the 25-50 MHz frequency is not required. Two versions are available: SD1300 U with UHF-female connection, and SD1300 N with 'N' female connection.

#### Technical Data

Type: .....VHF-UHF wide-band DISCONE  
 Impedance: .....50Ω  
 Frequency range: .....Rx 25-1300 MHz  
 VHF Tx Band: .....49-51/120-180/215-300 MHz  
 UHF Tx Band: .....415-465/610-650/710-1000/  
 .....1130-1300 MHz  
 Polarization: .....vertical  
 S.W.R. at freq. res.: .....≤1.3:1  
 Gain: .....0 dBd - 2.15 dBi  
 Max Power: .....VHF 300 Watts, UHF 200 Watts  
 Connection: .....SD 1300 U - "UHF" female  
 .....SD 1300 N - "N" female  
 Wind resistance: .....40m/second  
 Length (approx): .....1700 mm  
 Weight (approx): .....1300 gr  
 Mounting mast: .....ø 25-54 mm



## NEVADA ANT423 Mag Mount Mobile

Complete and ready to go, magnetic mount, ultra wideband mobile scanner antenna. Super wideband performance with excellent reception from 100kHz to over 1000MHz.

- Flat black and chrome custom finish, looks great on today's cars.
- Compact, only 18 inches overall, yet really pulls in the signals
- Extra heavy duty magnet mount with thick, full coverage rubber boot to protect your cars finish.
- 16 feet of RG58/U coax cable complete with attached BNC...Ready for direct connection to your favorite scanner!



## Jim M-51

PROFESSIONAL SERIES  
 Frequency Range:

### Specifications:

A band 225MHz-1300MHz  
 B band 108MHz-174MHz  
 C band 24MHz-1500MHz  
 0 to +20dB (24-1000MHz)  
 3V (batt. UM-4 x 2)  
 12V (external DC)



## Jim M-75

PROFESSIONAL SERIES  
 Frequency Range:

### Specifications:

A band 225MHz - 1500MHz  
 B band 108MHz - 185MHz  
 C band 24MHz - 2150MHz  
 -10 - +20dB fully adjustable  
 9V battery PP3-006P etc.



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# Selected English Language Broadcasts

Spring 1996

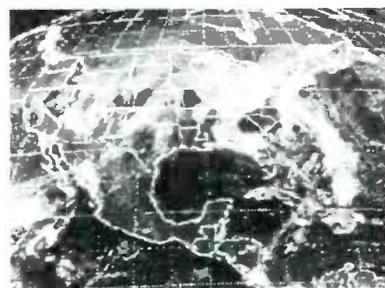
BY GERRY L. DEXTER

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 at making 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 parenthesis indicate an English start time that many minutes past the hour. All times are in UTC.

Time	Station	Frequency	Time	Station	Frequency
0000	(30) Radio Thailand	11905	0300	RAE, Argentina	11710
	(30) HCJB, Ecuador	9745		Croatian Radio	5895, 7370, 11635, 13830
	Radio Exterior Espana, Spain	9540		Radio Cairo, Egypt	9475, 9900
	Radio Bulgaria	7480, 9700		(50) Vatican Radio	7305, 9605
	Voice of Russia	7105, 7125, 7180		Radio Sweden	9695
	China Radio International	9710, 11715		Radio Romania International	5990, 6155, 9510, 9570, 11940
	Monitor Radio, USA	7535, 9430		Voice of Free China, Taiwan	5950, 9680, 11740, 15345
	(30) Radio Netherlands	6020, 6185		(30) Radio Portugal International	6095, 9570
	Radio Vlaanderen Intern'l, Belgium	5900, 9925			
	AWR, Costa Rica	5030, 6150, 7375, 9725, 13750			
	Radio Prague, Czech Republic	5930, 6200, 7345			
	Radio Pyongyang, North Korea	11335, 13760, 15130			
	(30) VOIRI, Iran	7180, 7260, 9022			
(50) RAI, Italy	6005, 9645, 11800				
0100	Radio Yugoslavia	6195, 7100	0400	Voz Evangelica, Honduras	4820
	Radio Ukraine International	5915, 6010, 6055, 7205		Deutsche Welle, Germany	6045, 6085, 6120, 9535, 9650
	Deutsche Welle, Germany	5960, 6040, 6085, 6145, 9555, 9640, 9670		Channel Africa, South Africa	5955, 9585
	(Sun) Radio Norway	7465		Faro del Caribe, Costa Rica	5055
	Radio Slovakia International	5930, 7300, 9440		Radio Cultural, Guatemala	3300
	(30) Radio Austria International	9655		Radio Japan	5960, 9605, 11840, 11885, 11895, 11960
	Voice of Vietnam	5940		(30) UAE Radio, Dubai	11945, 13675, 15400, 17890
	(40) Vatican Radio	6095, 7305		(40) Voice of Greece	6245, 7448, 9420
	(30) Voice of Greece	6245, 7448, 9420		China Radio International	9690, 9710, 11715
	Radio Havana Cuba	6000, 9820, 9830		(30) Radio Budapest, Hungary	5965, 9850, 11870
	BBC	5975, 6175, 6180, 6195, 7325, 9590, 9915, 11750, 11955, 15360		(30) Radio Moldova International	7500
	Radio Japan	9605, 11840, 11860, 11890, 11910, 17810, 17845			
	Radio Korea, South Korea	11810, 15575			
Swiss Radio International	6135, 9885				
Voice of America	5995, 7405, 9455, 9775, 13740				
0200	Radio Budapest, Hungary	6190, 9850, 11870	0500	Radio Lesotho	4800
	Radio New Zealand International	15115		Swiss Radio International	6135, 9535, 9885
	Voice of Russia	5920, 7105, 7270, 7345, 9580, 12030, 12050		Kol Israel	5885, 17545
	(30) Radio Austria International	9655, 9870, 13730		Voice of Nigeria	7255
			(M-F) Radio New Zealand Intern'l	11900	
			HCJB, Ecuador	9745	

Time	Station	Frequency
	Radio Exterior Espana, Spain	9540
	(30) Radio Austria International	6015, 6155, 13730
	Channel Africa, South Africa	7185, 11900
	China Radio International	9730
	Deutsche Welle, Germany	5960, 6045, 6120, 6185
<b>0600</b>	Voice of Russia	5905, 5920, 5930, 7175, 7270, 7330, 7345, 9825
	(30) Radio Austria International	6015
	BBC	6005, 7160, 9410, 9600
	Voice of Mediterranean, Malta	9765
	Voice of America	6040, 9630
	GBC, Ghana	4915
	Radio Kiribati	9825
<b>0700</b>	(30) R. Vlaanderen Int'l, Belgium	5985, 9925
	(03) Croatian Radio	5920, 7370, 9830, 13830
	Voice of Free China, Taiwan	5950
	HCJB, Ecuador	5900, 6050
	(40) Trans World Radio, Monaco	7110
	Monitor Radio, USA	7535
	(30) Radio Netherlands	9700, 9720
	Radio Australia	9580, 9660, 11880, 13605, 15240, 15245, 15365, 15415, 15530, 17715, 21725
	Solomon Is. Broadcasting Serv.	5020, 9545
<b>0800</b>	(M-F) Radio New Zealand Intern'l	9700
	KNLS, Alaska	6150
	Radio Korea, South Korea	7550
	King of Hope, Lebanon	6280
<b>0900</b>	CKZN, Canada	6160
	(30) FEBC, Philippines	11635
	Deutsche Welle, Germany	9565, 11725, 15145, 15410, 17780, 17820
	CFRX, Canada	6070
	(10) Radio Vlaanderen International	9960, 12000
	BBC	9410, 15070, 15280, 15575
	AWR, Guam	9530
	Radio Japan	11850
	(10) Radio Ulaanbaatar, Mongolia	9960, 12000
<b>1000</b>	Radio Vlaanderen Intern'l, Belgium	6035, 15510, 17595
	Radio Australia	7240, 9510, 9580, 9860, 13605, 21725
	All India Radio	15050, 15180, 17387, 17895
	Voice of Vietnam	7250, 9840, 15010
	(30) Radio Korea, South Korea	11715
	UAE Radio, Dubai	13675, 15395, 17825
<b>1100</b>	AWR, Costa Rica	5030, 6150, 9725, 13750
	HCJB, Ecuador	12005, (30) 15115
	NBC, Papua New Guinea	4890
	Radio Singapore	9530
	(30) Radio Sweden	13740, 15120, 15240
	(30) VOIRI, Iran	11745, 11790, 11875, 11930, 17750
	Radio Bulgaria	15635, 17625
	Voice of Vietnam	9840, 15010
	Radio Pakistan	15470, 17895
<b>1200</b>	Radio Jordan	11940
	(30) Radio Finland	11735, 15400
	Radio Tashkent, Uzbek	5975, 6025, 9715
	Radio Australia	9560, 9580, 9615, 11800, 15530
	Radiobras, Brazil	15445
	Voice of People of Kampuchea	11938
	Radio France International	9805, 11600, 11615,

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PC HF Fax Plus is a simple, yet comprehensive HF system that receives Fax, RTTY, CW, and AMTOR on an IBM PC or compatible. It includes an FSK demodulator, advanced signal processing software, tutorial audio cassette, and complete reference manual. Just plug the demodulator into a serial port, install the software and get text and vivid images on your PC.

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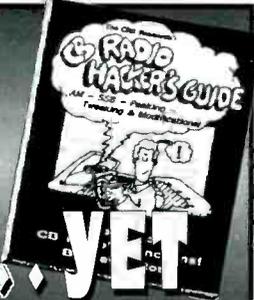
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Time	Station	Frequency	
		13625, 15155, 15195, 15325, 15530	
	(30) Radio Bangladesh	7185, 9650	Voice of Ethiopia
	Polish Radio	9515, 11815	Radio France International
	(30) Radio Sweden	11650, 15240	
	(1st Sun., :40) Radio Denmark	9590, 11840, 15605	(15) Radio Pakistan
			Vatican Radio
<b>1300</b>	(30) Radio Finland International	11735, 15400	
	Radio Pyongyang, North Korea	9630, 9640, 11740, 13670	<b>1700</b> Radio France International
	(Sun) Radio Norway	7315, 9590, 15605	HCJB, Ecuador
	Monitor Radio, USA	6095, 9455	WRMI, Florida
	Radio Tashkent, Uzbek	5975, 6025, 9715	Radio Pakistan
	KNLS, Alaska	7365	Radio Prague, Czech Republic
	(30) UAE Radio, Dubai	13675, 15395, 17825, 21605	(30) Radio Romania
	(30) All India Radio	13732, 15120	11830, 15340, 15385, 17805
<b>1400</b>	SLBC, Sri Lanka	9720	
	(Sun) Radio Norway	11840	
	China Radio International	7405	
	RTM, Morocco	17595	
	Radio France International	7110, 12030, 17560	
	Voice of Mediterranean	11925	
	(35) Voice of Greece	9420, 15650	
<b>1500</b>	Radio Jordan	11940	
	(Sun) Radio Norway	9520, 11730	
	TWR, Guam	11580	
	FEBA, Seychelles	9810, 11870	
	(30) VOIRI, Iran	11875, 15260, 17750	
	Swiss Radio International	12075, 13635, 15545	
	Radio Japan	7240, 95335, 9695, 15355	
<b>1600</b>	Channel Africa, South Africa	7115, 9530	
	Radio Australia	5995, 6060, 6080, 6090,	

		9580, 9615, 11660, 11695, 11800
		9560
		6175, 9485, 11615, 11700, 12015, 15210, 15530
		9485, 9785, 11570, 11745, 13590, 15555
		9645, 11645
		9485, 11615
		15490
		9955
		7485, 11570
		15640
		11830, 15340, 15385, 17805
		15265
		11715, 15160
		11990
		9650, 9950, 11620, 11935, 15075
		15520
		17815
		9780
		13750, 15460
		7260, 9022
		15345
		9700, 11720
		9410, 11955, 15070, 15400, 17830
		12085, 15095
		7465, 7465, 9435, 9845, 13750
		11715, 15160
		6205
		7510, 9355, 9370, 21640
		11855, 17725, 17755
		15375
		6120
		11705
		12085, 15095
		9665
		9955 (part)
		9705, 9910, 9950, 11715, 13750, 15145, 15225
		5905, 5940, 6010, 6020, 6055, 6080, 6130, 7135, 7205, 7240, 9620
		7105, 9700
		5895, 7370, 11635, 13830
		6180, 11960
		5810, 9985
		9605, 9770, 11885
		5945, 6155, 9870
		7250, 5910
		7500
		11735
		7280, 9560, 9655
		5940, 7105, 7125, 7180
		7360
		6020, 6165, 9845
		9700, 11720
		11700, 13670
		7250, 9840, 15010

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- Search by ANY increment.
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- New improved online help

Note: Std. COPYCAT Does Not Support Radio Interface

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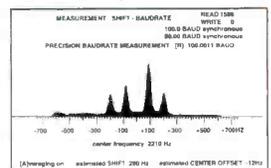
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- ARQ-E/ARQ1000 Duplex
- ARQ-N-ARQ1000 Duplex Variant
- ARQ-E3-CCIR519 Variant
- POL-ARQ 100 Baud Duplex ARQ
- TDM242/ARQ-M2/4-242
- TDM342/ARQ-M2/4
- FEC-A FEC100A/FEC101
- FEC-S + FEC1000 Simplex
- Sports info 300 baud ASCII
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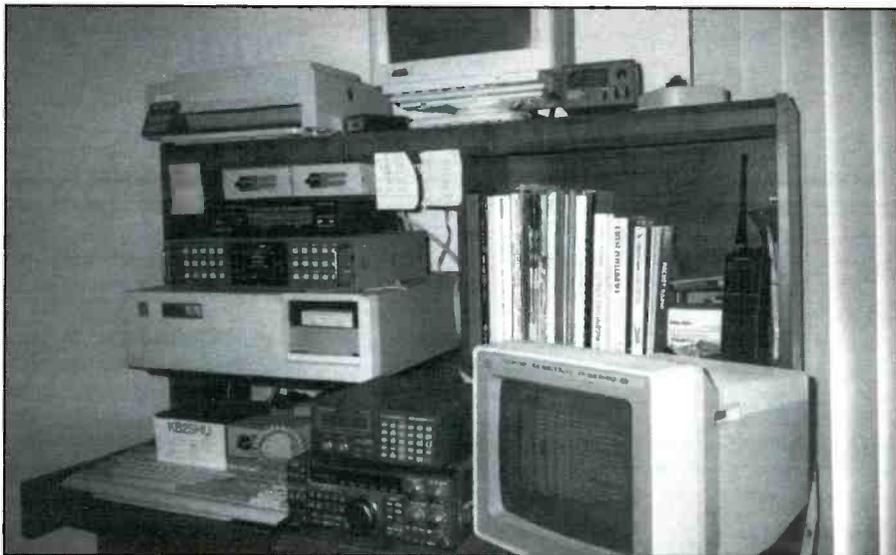
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# How I Got Started



**P**opular Communications invites readers to submit in about 150 words how they got started in the communications hobby. They preferably should be typewritten, or otherwise easily readable. If possible, your photo should be included.

Each month we will select one entry and publish it here. You need submit your entry only once; we'll keep it on file. All submissions become the property of *Popular Communications*, and none can be acknowledged or returned. Entries will be selected for use taking into consideration if the story they relate is especially interesting, unusual, or even humorous. We reserve the right to edit all material for length and grammar, and to improve style.

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

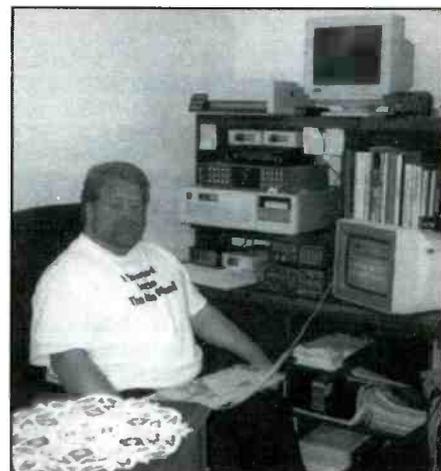
Address all entries to: How I Got Started, *Popular Communications*, 76 N. Broadway, Hicksville, NY 11801-2909, or e-mail to [POPCOMM@aol.com](mailto:POPCOMM@aol.com).

## Our May Winner

This month, winner Paul Delaney writes from Sayville, N.Y. Here's how Paul got started:

"I had many influences during the early 1960s. I recall being 5 years old, fascinated by the sounds emerging from my father's old Hallicrafters shortwave radio. My older brother, John, showed an interest in the hobby as he used to repair the old radio by replacing the string that operated the tuning section! Even our next-door neighbor was a ham operator.

"During the 1960s, my father also became involved in CB radio, hosting vari-



*More than 30 years of hobbying experience seems to have made Paul Delaney's shack very extensive! Here he is in the comfort of his Long Island, N.Y., home!*

ous discussion groups on the air (try that today on CB!). His call was KQD0108. We often operated the radio together (Lafayette Comstat 19) and I was allowed to talk once in awhile.

"Many years went by and my interest in radio faded a bit until 1986, when a friend loaned me his scanner one night. The radio bug had bitten me again! I went from scanning to shortwave listening, to RTTY monitoring, to ham operator (KB2SHU). Now I operate mainly on packet, but I also enjoy monitoring slow-scan television pictures.

"As amateur radio moves into the digital age, I must pause and reflect on the good old days of radio, and Dad's old shortwave that started it all for me."

# CQ Books

## McCoy on Antennas, by Lew McCoy, W1ICP

This is truly a unique antenna book that's a must for every amateur. Unlike many technical publications, Lew presents his invaluable information in a casual, non-intimidating way for anyone! **Order No. MCCOY.....\$15.95**

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This volume is filled with over 500 pages of ham radio facts, figures and information. CQ's almanac is a resource you'll refer to over and over again. If it's ham radio, it's in The Source! **Order No. BALM96.....\$19.95**

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This is an excellent video introduction to ham radio. CQ's experts show how to select equipment and antennas, which bands to use, how to use repeater stations, the importance of grounding and the basics of soldering.

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# Books You'll Like

BY R.L. SLATTERY

## Tuning In On The Real "Star Wars"

HAARP is the acronym for High-frequency Active Aural Research Project, a sinister new ground-based "Star Wars" technology now being tested in the remote bush country of Alaska. Maybe you saw HAARP briefly shown on a recent Fox Network Sightings program, or CBC-TV.

HAARP blasts out billions of watts of pulsed extremely low frequency (ELF) radio energy from antennas located near Gakona, Alaska. This energy is beamed into the upper atmosphere. On one level, HAARP explores uses of the airwaves, but the project has exotic military goals, according to a heavily researched new book.

*Angels Don't Play This HAARP*, by Dr. Nick Begich and Jeanne Manning, reveals that this skybuster is not about the Northern Lights, but will turn on lights never intended to be manipulated. HAARP's first task is to electronically bombard the electrojet, a river of electricity that flows thousands of miles through the sky and down into the polar icecap.

Presumably, the electrojet will become an artificial antenna for sending ELF signals raining down upon the earth. This can be used for communications with submarines, but that's not all. This book reveals HAARP's covert agenda and hidden potentials. This is not mere speculation, but is based upon secret meetings, 12 U.S. patents and official documents. The basic concept dates back to Tesla's inventions.



HAARP exists and already has begun experimental transmissions.

This is unlike any other ELF system ever built. The skyward-pulsed HAARP signals are controllable, at times covering the 1-20 Hz range. These frequencies include those that predominate human brain waves. HAARP's staggering power levels can be varied between 1 billion and 100 billion watts.

HAARP can manipulate the environment to disrupt human mental processes. It can zap the earth's upper atmosphere, ionosphere and geomagnetic field. HAARP can jam global communications systems.

The military insists that HAARP is safe, however, the book's authors point out and explain many serious concerns, using careful research involving hundreds of source documents. The book contains more than 350 footnotes detailing the source of each significant fact. There are 13 diagrams taken from relevant government records, scientific presentations and U.S. patents.

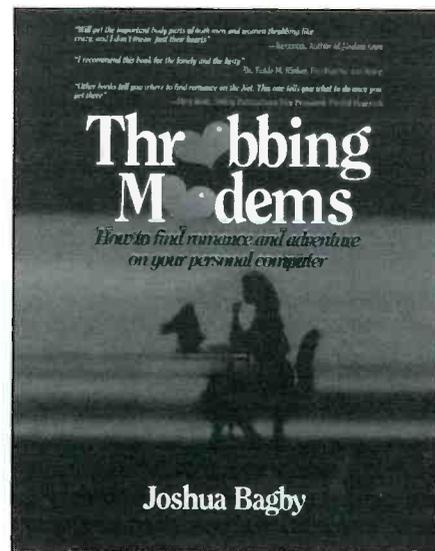
Nagging questions linger. Could these manmade disturbances trigger destructive weather patterns? As the HAARP radiation bounces back to earth, what will it do to our health? What effect will it have on salmon and other migratory species that rely upon naturally occurring geomagnetic fields for direction? What ramifications could there be from powerful ELF beacons beamed from Earth into deep space?

This is a completely intriguing 233-page book brimming over with facts, frequencies and other dazzling ELF information I have never found elsewhere. Did you think radio mostly meant SWBC, utes, scanners, hamming and AM/FM DXing? Now step up and meet the dark and eerie side of radio, which I suspect you will never forget. The book is written in plain language that everyone can understand; you don't need to be a technician.

*Angels Don't Play This HAARP* is \$14.95, plus \$5 shipping (\$6 to Canada) from CRB Research Books Inc., P.O. Box 56, Commack, NY 11725-0056. Residents of New York state should include \$1.65 tax. VISA/MasterCard accepted. Toll-free phone orders: (800) 656-0056. Canada/AK/HI orders: (516) 543-9169.

## They Met On The Net

There was a time when the best way to meet members of the opposite sex who shared your communications interests was by searching them out on ham and CB bands. Now, add a computer and modem



to the list, then look online for your significant other.

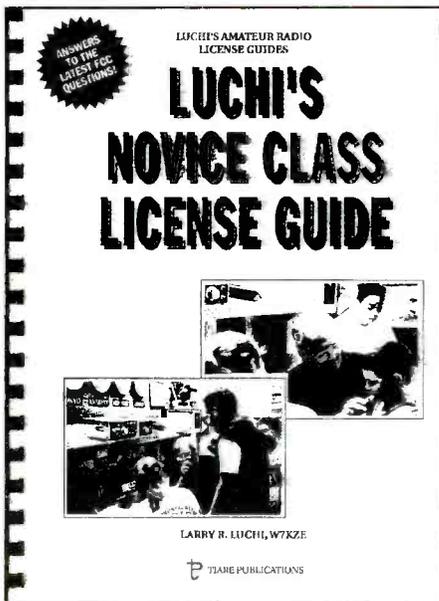
Joshua Bagby's new 288-page book, *Throbbing Modems, How to Find Romance and Adventure Online* is a very practical guide to meeting new friends online. In step-by-step fashion, filled with actual examples, you'll learn how to locate what you're seeking from chit-chat, to a casual friendship, to a lifetime partner. Bagby not only shows you where to go in cyberspace, but exactly what to do once you get there.

There are several possible meeting places out there, including the Internet, national online services and local BBSes. Each has its pluses and minuses when it comes to meeting new friends. If you do it wrong, you could be flamed right out of town, never to return. Have no fear, Bagby advises how to handle yourself in cyberspace, even as a complete novice. Learn how to attract the most lively people, and be someone others find interesting. Learn how to spot any problems early, as well as problem people, and how to deal with them.

Do cyberspace friendships ever turn into successful face-to-face reality? Not always, but often they do. Bagby tells about that, too.

All the bases are covered here. Anyone who still can't find new friends in cyberspace after reading Bagby's engagingly written book ought to double check to see whether their modem still is working.

*Throbbing Modems* is \$17.95. It comes from Index Publishing, 3368 Governor Drive, Suite 273F, San Diego, CA 92122. Phone: (619) 281-2957.



## Hamming It Up

Time was when getting an amateur license was a grueling ordeal. It meant writing out answers in full, then hand-drawing the schematics under the watchful proctoring of steely-eyed FCC examiners weaned on lemons.

These days, the written exam is a matter of multiple-choice questions, and the exams are administered by volunteer hams. Best of all, now the FCC selects its exam questions for each "element" from basic question pools, then permits those pool questions and answers to be released to the public for study purposes.

A prospective ham doesn't know which pool questions will be selected for use on the his or her exam, so all of them must be studied. Nevertheless, it's still a piece of cake compared to the way it was. Presently it is easier than ever to get a ham ticket, and now it is even possible to get started (optionally) without learning code.

Making all this a cinch has been something long accomplished by Larry R. Luchi, W7KZE, an electronics teacher. He has helped thousands of beginners put ham tickets on their shack walls, then opened the doors for them to other categories of ham licenses offering additional operating privileges.

Now, Larry has authored four guides so that people can achieve these goals without attending classes. These are *Luchi's Novice Class License Guide*, priced at \$19.95; *Luchi's No-Code Tech Class License Guide*, \$22.95; *Luchi's General Class License Guide*, \$19.95; and *Luchi's Advanced Class License Guide*, \$22.95.

These guides take you through all the questions and applicable answers, math and theory needed to get a certain grade of license. Luchi explains and clarifies those correct answers. Each chapter contains a

sample FCC test, along with the multiple-choice answers to give the prospective ham a chance to self-test. Each guide is established as a nine-week study program.

One nice thing is that Luchi doesn't casually toss awesome math formulas on the table and expect you to deal with them cold. He realizes that most beginners take one look at a formula, close the book, and then decide to take up stamp collecting.

Luchi is very gentle about leading you very gently and painlessly through each one.

This is quite a good series in every respect. It is well organized, and easy to understand.

Order from Tiare Publications., P.O. Box 493, Lake Geneva, WI 53147. Add \$3 shipping for the first book, and \$1 for each additional. VISA/MasterCard accepted. Toll-free phone orders: (800) 420-0579.



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In tests conducted by Lockheed Corporation, one of the world's largest Aerospace Companies, at their Rye Canyon Laboratory and Antenna Test Range, the Wilson 1000 was found to have 58% more power gain than the K40 Electronics Company, K40 CB Antenna. This means that the Wilson 1000 gives you 58% more gain on both transmit and receive. Now you can instantly increase your operating range by using a Wilson 1000.

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New Design**

The Wilson 1000 higher gain performance is a result of new design developments that bring you the most powerful CB base loaded antenna available.

### Why Wilson 1000 Performs Better

Many CB antennas lose more than 50% of the power put into them. The power is wasted as heat loss in the plastic inside the coil form and not radiated as radio waves.

We have designed a new coil form which suspends the coil in air and still retains the rigidity needed for support. This new design eliminates 95% of the dielectric losses. We feel that this new design is so unique that we have filed a patent application on it.

In addition, we use 10 Ga. silver plated wire to reduce resistive losses to a minimum.

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.

### The Best You Can Buy

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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Subject: Comparative Gain Testing of Citizen's Band Antennas  
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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 (%)
27.965	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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## Long-Range Radio Advantage: Digital Signal Processing

**E**mergency communications over long-range medium and high frequencies using single sideband or various data modes may be enhanced in clarity through the use of digital signal processing. Existing commercial and ham radio SSB/digital equipment may accept a retrofit DSP receiver audio network. Newer ham sets and selected commercial high-frequency SSB equipment now may incorporate digital signal processing, for receive as well as transmit.

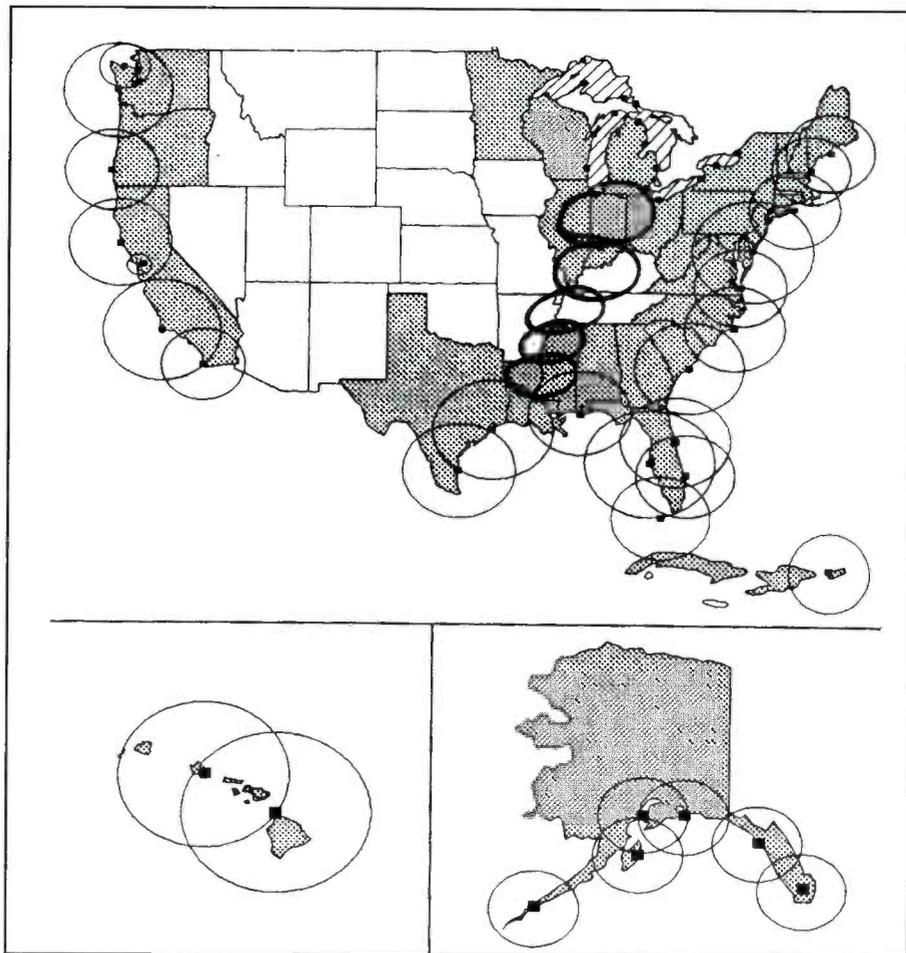
Digital signal processing may take analog audio output from a worldwide transceiver and digitize the wave form to create a datastream that is computer-selected tailored to enhancing recovered audio, while decreasing random noise. The "computer" is the DSP network built into the add-on box, or built directly into the transceiver.

A process called "sampling" assigns computer values to the incoming analog wave form, with user presets to enhance the useful analog signal while canceling the constant stream of noise impulses that usually ride along with a recovered SSB received signal. For DSP transmission, outgoing modulation of audio and digital information may be enhanced by selectively eliminating components of the signal that may be unnecessary to the other station, which also results in frequency-conservative narrow bandwidth.

### Good Voice Benefits

We recently tested a Kenwood amateur radio TR-870 digital signal processing transceiver on ham bands along with the SG-2000 Power Talk transceiver with the special Adaptive Digital Signal P Head, with built-in noise subtraction along with tone suppression notch filters. Both transceivers with built-in digital signal processing work just as well as external receive digital signal processors available as an after-market installation.

The SGC 2000 ADSP most easily explains how DSP works on an incoming single-sideband voice signal. We tuned in a distant high-frequency American Red Cross net where net control was barely audible through background noise, an annoying heterodyne, and a nearby off-channel data transmission. Step 1 is to knock out the heterodyne tone, and the notch filter does this nicely. Any notch filter can kill a single tone when properly adjusted, but



U.S.A. differential GPS beacon coverage.

only the more advanced digital signal processor filter could suppress up to five tones simultaneously. Both the Kenwood and SGC locked onto the steady tones, and instantly attenuated them by at least 40dB down. No manual notch tuning was required with DSP.

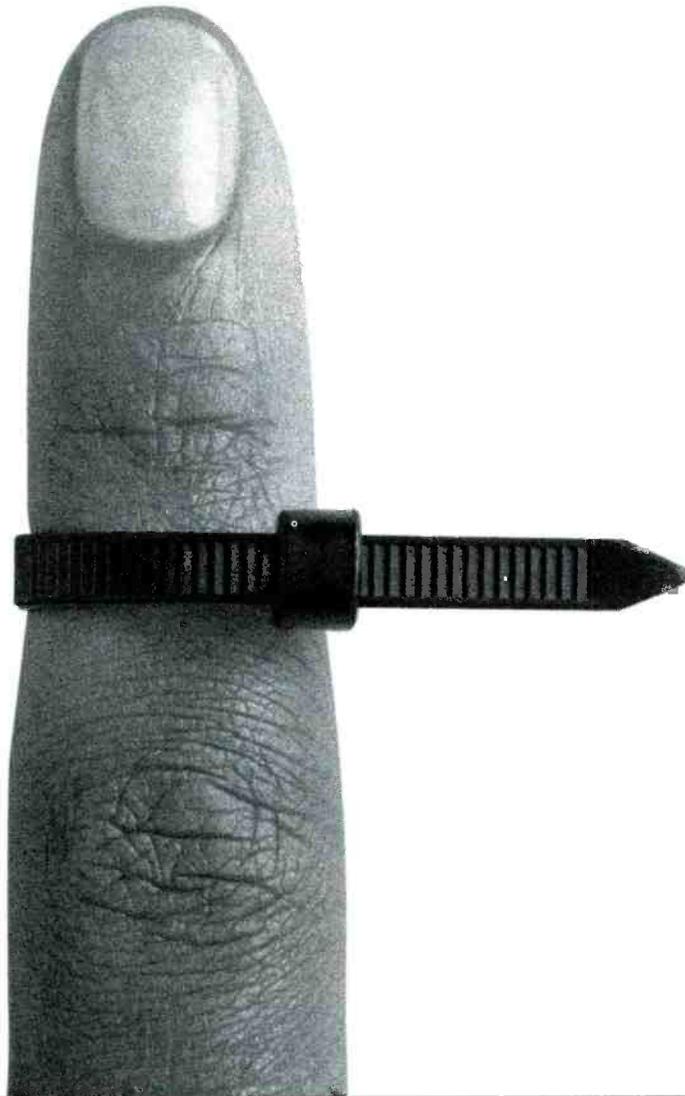
To reduce unwanted reception either above or below your desired receive and transmit frequency, we adjust the band-pass filters on the SGC ADSP front panel. A small adjustment knob allows you to set the low-frequency filter to around 200 Hz, the high-frequency filter to around 3100 Hz, and the center frequency pass-band for best incoming audio recovery. This leads to recovered audio that sounds a bit brassy and without lows and highs, but it dramati-

cally cuts down on adjacent frequency interference from other stations.

And now on to background noise reduction—the SGC ADSP system calls it "spectral noise subtraction," and the digital circuit analyzes desired audio and undesired background hash and automatically selectively reduces the roar to give you the effect of tuning in an SSB station punching through a squelch circuit. While this circuit doesn't necessarily pull in recovered audio better than what was originally coming through, it dramatically decreases the fatigue of having to put up with background hash in between each syllable when the operator pauses slowly in a transmission.

On both the Kenwood as well as SGC and other add-on DSP systems, you could

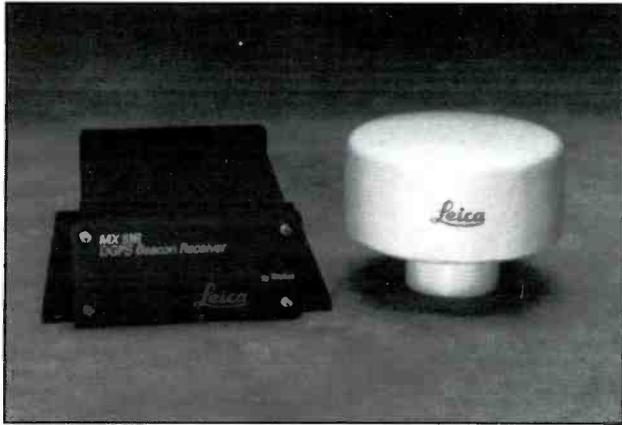
# Just a reminder.



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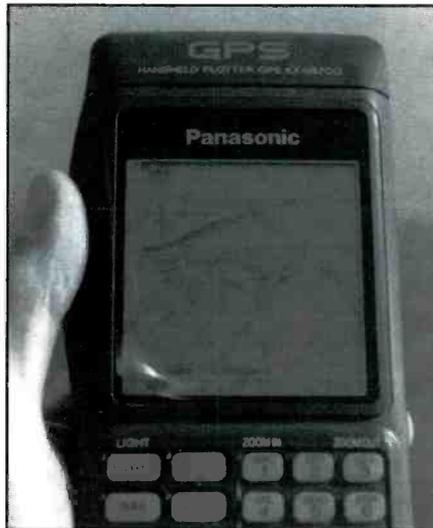
Leica H-plane differential black box receiver and compact no-whip antenna.



The Magellan GPS Sensor, a DGPS-ready 10-channel GPS receiver, provides GPS position and navigation information to existing fish finders, radars, plotters, autopilots and other marine electronics devices. (Courtesy of Magna)



Raytheon differential receiver for beacon band GPS correction signals.



Even handheld GPS sets can take differential GPS corrections for a 10-time improvement in position accuracy.

hear a remarkable change in recovered single-sideband audio and a fair increase in intelligibility once all of the DSP options have been switched on.

### Data Super-Performer

But where digital signal processing over high frequency really shines is in its ability to zero in on incoming data signals, stripping away interference dramatically better than what you can do in recovering voice. The SGC ADSP features preset processing for the following emissions:

- AMTOR data bandwidth filter on 2175 Hz, +/-150 Hz
- SITOR data bandwidth filter on 1700 Hz, +/-150 Hz
- PACTOR data bandwidth filter on 2175 Hz, +/-200 Hz
- ALE data bandwidth filter on 1725 Hz, +/-1125 Hz

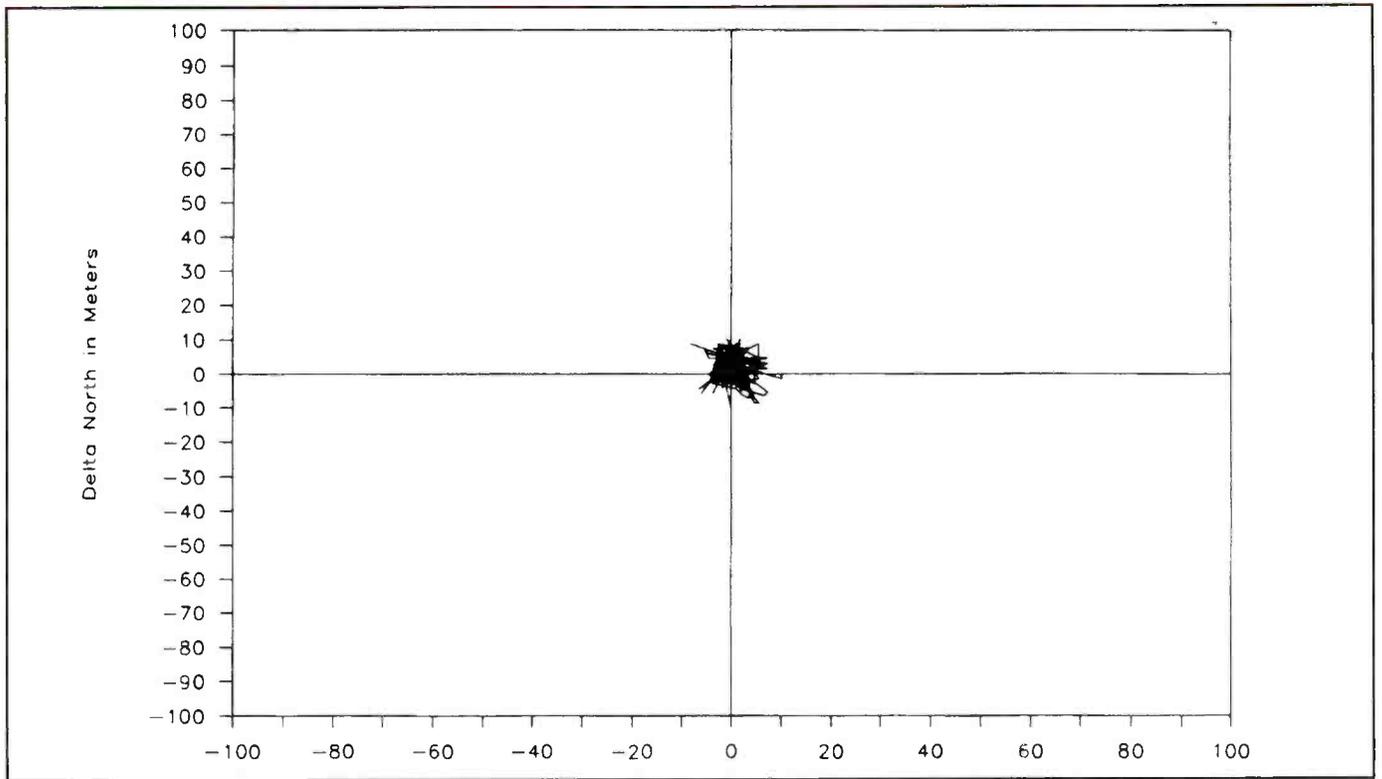
In the data mode, there is a 130-millisecond delay of the filter response to ensure a proper handshake in ARQ modes and other data protocols because of increased switching time between transmit and receive. Therefore, a second, very short, delay filter—about 2 milliseconds—is selected with a shade factor of 1.15:1, with extremely steep skirts to reject interference from adjacent frequencies.

You may also preset and memorize specific data filters for other modes, such as long-range weather facsimile reception and CW. In the CW and weather facsimile modes, you can just about dial in the specific tone you want, and dial out everything else—so what you get is sharp reception with a minimum of interference caused by any other tones not specifically dialed in.

But don't expect an expensive DSP transceiver or DSP add-on unit to pull out signals that aren't really strong enough to be recovered in the first place; it won't happen. DSP is not necessarily a signal enhancer, but rather a selective filter to pull out noise, heterodynes (annoying tones),



GPS receivers tested with white (center) differential antenna system aboard fish and game patrol boat.



Static position trace with low frequency. Differential correction applied. (Courtesy of Leica)

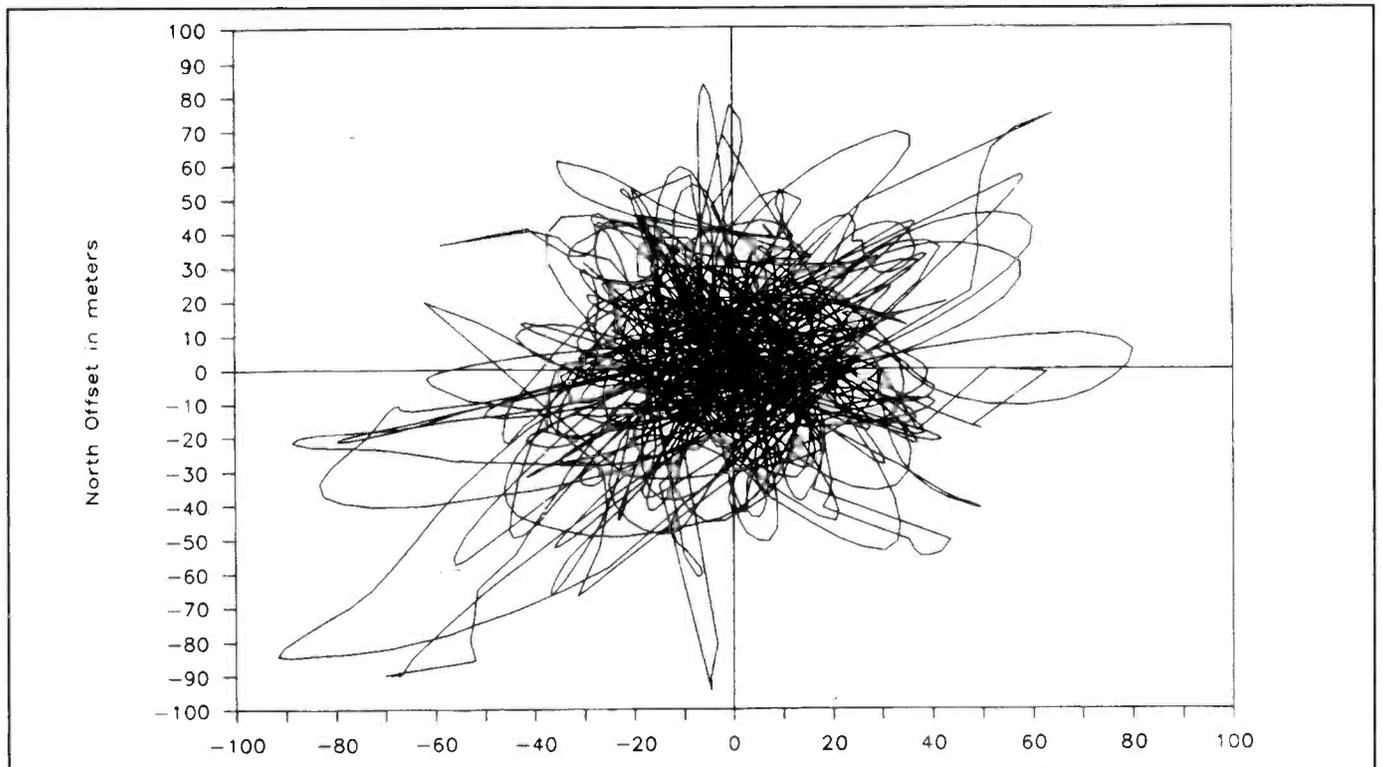
and adjacent channel signals from cluttering up the reception you want.

On voice, expect that intelligibility increases, but you're going to lose the full fidelity of the natural-sounding voice. Audio

will sound pinched. For the digital modes, DSP will absolutely profound you with how it can lock onto the incoming digital signal of your choice, and knock down interference that normally might be riding along

with the signal to upset your computer copy.

For additional technical information about digital signal processors, plus stand-alone ADSP equipment, write SGC, P.O. Box 3526, Bellevue, WA 98009. ■



Static position trace without differential correction. (Courtesy of Leica)

# Clandestine Communique

WHAT'S NEW WITH THE CLANDESTINES

## Anti-Sudanese Station Changes Frequency—Again

The anti-Sudanese government station, Voice of the Sudan—Voice of the National Democratic Alliance has appeared on 8000 kHz with a sign-on at 1715. This frequency replaces 9000, at least for the moment.

This station has a history of jumping around, as does Radio Omdurman (Republic of Sudan Radio), the government station that often causes confusion by using the same frequency or one very close by. It's not clear whether this 1715 UTC transmission is in addition to the usual 1300-1500 broadcast or whether that has been replaced by this new time slot.

Another broadcast is reported from 0300-0600. In addition to the 9000 kHz frequency, these stations have hung out in the 9024 area, as well as 9200, so it might be a good idea to check all the possibilities. The government station is likely to be the more easily heard of the two.

### New Star

The rarely reported New Star Broadcasting Station has been heard on 8300 at 1503 to close at 1603. The first few minutes of the broadcast consist of four-digit number groups, followed by Chinese music and then talk in Chinese. This station has long been one of the more mysterious on the air, if only because it's a half-numbers station, half-broadcasting station. It is believed to be directed to mainland China, and to operate from Taiwan. Other frequencies used in the past include 9725, 11430 and 15388. Broadcasts occur periodically between 2200 and 1600. Transmissions may not even be on a daily basis.

### Zaire

Something calling itself the Voice of Democracy, or Radio Democracy or Radio Rutomorango is on the air, apparently from Zaire. The broadcasts are believed to be the work of extremist Hutus, programming against the Tutsi tribe, and the government of Burundi. At this point, we don't know what mode the station is using—shortwave, mediumwave or FM, but it is causing quite a stir in the affected area.

### Palestine Islamic

The Voice of Palestine Islamic Revolution was noted at 0400 sign-on at 5995//9670 (the latter a better signal). Another broadcast is at 2020 on 7230. A third is broadcast at 1900-1930 on 7230 and 15230. The 0400 period offers the best opportunity for most of us. All the broadcasts are in Arabic and are believed to come from transmitters in Iran.

### Burma

The most recent schedule of the Democratic Voice of Burma shows the broadcasts airing in Burmese at 1100-1130 on 15170 and 1430-1500 on 11850, via Radio Norway transmitters. This "station" issues a nice QSL card. Reports should go to: Democratic Voice of Burma, P.O. Box 6720, St. Olavs Plass, N-0130 Oslo, Norway.

### Myanmar

We've seen reports to the effect that the Karen minority in



Radio Freedom was a shortwave clandestine opposed to the apartheid policies of the former South African government.

Myanmar has resumed shortwave broadcasts. (After years of operation, their former facility finally was destroyed by the government.) The new broadcasts are reported on 6355.5 between 1030-1230 and 0030-0230, with brief talks in the Karen language and lots of music. We are unsure if it's still active, but the Karens had their own amateur radio station on the air years ago as well.

### Iran

The Voice of the Communist Party of Iran is on the air from 0300-0400, 1430-1530 and 1700-1800 on a frequency varying between 3888 and 3895. It's also on 3945 between 0230-0315 and 1430-1515, as well as 4190-4195 variable from 0225 to 0400, 1526-1613 and 1726-1818 (those oddball times are believed to be correct). East coast listeners with good equipment, persistence and good luck eventually may hear one of the evening transmissions (the 0200/0300 period).

## Mogadishu

Radio Mogadishu—"The Voice the Somali Peace Processing" (probably Peace Process?)—now is using 6711, with an English broadcast from 1830-1900 close. Radio Mogadishu—the "Voice of the Somali Republic"—is using 6822 to close at 1800. Radio Free Somalia is on 7215 from 1000 to close at 1200 or 1215 and 3920 from 1600-1700 or 1715.

## South Korea

Radio Echo of Hope in South Korea has adjusted its schedule and now airs its "morning" broadcast at 2000-2300 on 3985. The other South Korean-based clandestine, Voice of the People, airs from 2000-2200 on 3912. North American-based clandestine hunters will have much better luck trying these around 1100 or 1200. North Korea has a clandestine of its own, broadcasting to the South. It's the Voice of National Salvation. Try this one on 4120 or a couple of kilohertz lower at around your local sunrise. All broadcasts are in Korean. All three stations fall into the "black" category, and actually are operated by one government while pretending to broadcast on behalf of anti-government elements inside the targeted country.

## Iraq

The Higher Council for the Salvation of Iraq is a new Iraqi opposition group organized by defectors who got out of Iraq last year. The group says it plans to set up a radio station broadcasting against the Iraqi government "soon."

## Write In

That covers things for this time. Your clandestine station loggings and any other information on the subject—station schedules, addresses and so on—are always sought and always welcome. Until next month, good hunting!



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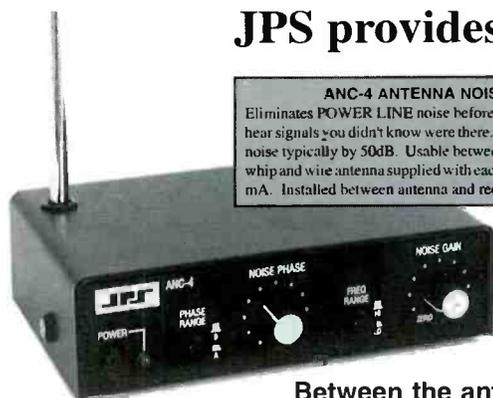
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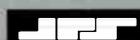
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### VHF/UHF Antennas You Can Make With Twin-Lead—Part 1

The VHF/UHF scanner bands became very popular a few years back, resulting in a proliferation of receivers and antennas available to the radio hobbyist. Prior to that time, few antenna items were on the market, and often they were a little more than modified ham radio band antennas.

Receivers that folks could afford in those days came in three flavors: yucky, awful and fair-to-middling. Despite the lack of things available on the market, we made do with a little ingenuity of our own. If you are tired of being sacked by high-cost antennas, or low-cost antennas that don't work, then take a look at some of the things monitor receiver owners did "once upon a time" (and that still work just fine). Let's take a look at simple, cheap, but effective antennas that can be built using scraps of twin-lead transmission line.

#### Twin-Lead

All forms of twin-lead basically are parallel conductor transmission line such as shown in Fig. 1. The basic "raw-down-to-the-basics" form of parallel transmission line also is the oldest form: open line feeder (Fig. 1A). This type of transmission line will have a characteristic impedance between 300 ohms and 1,000 ohms, depending on the spacing between the conductors ( $S$ ) the diameter of the conductors ( $d$ ) and the dielectric nature of the material between the conductors. The equations for calculating the characteristic impedance can be found in most antenna books, including mine and the ARRL book. The insulating spreaders are used to keep the conductors apart, and are spaced every foot or so along the line. Commercial parallel line, still available both new and as surplus, comes in characteristic impedances of 400, 450, 500, 600 and 800 ohms (other impedances can be homebrewed).

The type of cable normally considered "twin-lead" in popular jargon are the two types shown in Figs. 1B and 1C. Both forms of twin-lead have the same type of parallel conductors as in Fig. 1A, but replace the insulating spreaders with an insulating jacket that both encircles the conductors (insulating them) and keeping the spread distance equal all along the line.

The smaller variety of twin-lead shown in Fig. 1B is 300-ohm television twin-lead. It is about a half-inch wide, and comes in a variety of colors (brownish, clear and white are common). I suspect colors are

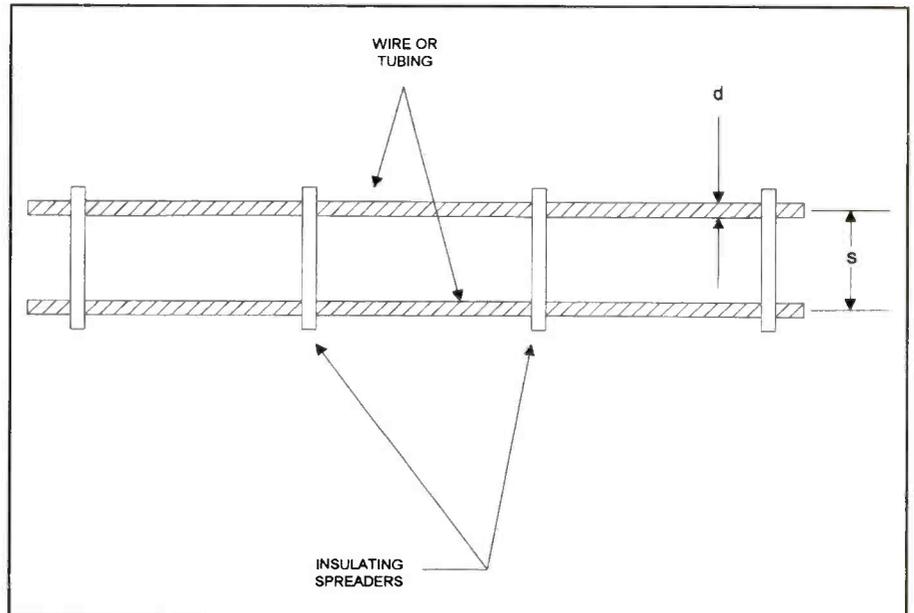


Fig. 1A. Open-wire parallel transmission line.

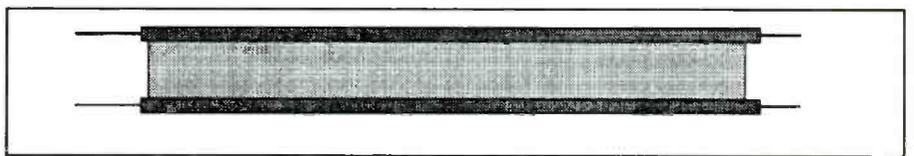


Fig. 1B. 300-ohm twin-lead.

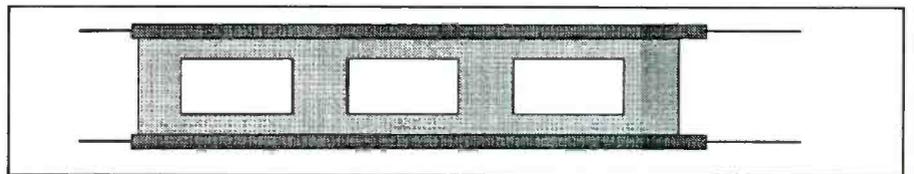


Fig 1C. 450-ohm twin-lead.

available because this type of cable once was the most widely used TV antenna transmission line in America. Coaxial cable was rare, and 300-ohm twin-lead was everywhere (despite the fact that we knew coax worked better, except was lossier). Today, the standard for both TV antennas (where such are still used) and cable TV is coaxial cable. But 300-ohm twin-lead still is available in electronic stores and by mail order.

The twin-lead shown in Fig. 1C is 450-ohm line. This line is about twice as wide as 300-ohm line, and is a lot stiffer to work with. Most 450-ohm twin-lead (all that I've

seen) is made with a series of rectangular holes cut into the dielectric. These holes reduce the loss of the cable. They sometimes also are seen on 300-ohm twin-lead, but not very often. If there are no structural reasons to use the solid forms, then opt for the holes to get that few tenths of a dB extra signal strength.

#### VHF/UHF Folded Dipoles

The half-wavelength folded dipole twin-lead antenna (Fig. 2) is, perhaps, the most popular form of twin-lead antenna. Many,

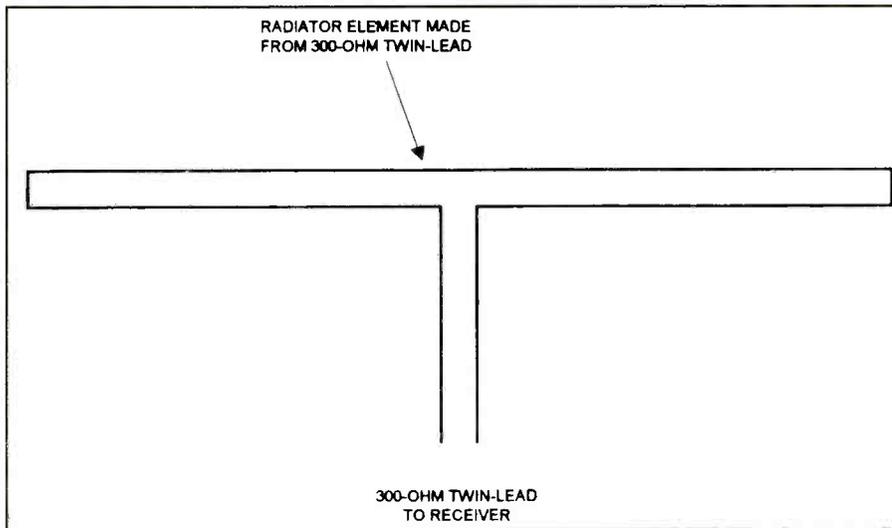


Fig. 2. Half-wavelength folded dipole.

maybe most, reasonable quality FM stereo broadcast receivers come with this type of antenna packed in the box.

Many years ago, when one of my brothers lived in Baltimore, Md., he wanted to use his FM stereo receiver to listen to stations broadcasting from our hometown in northern Virginia, not far from Washington, D.C. He could receive the station on the wire dangling off the back of the receiver, but it was a poor excuse for an anten-

na and produced a noisy, nearly unlistenable signal (stereo is supposed to be for "hi-fi" reception, after all). Bonnie and I visited him one Sunday, and he asked what could be done. I made a drawing of a 56-inch, 300-ohm twin-lead folded dipole, similar to Fig. 2. We didn't have time to do anything about it that day, but he went to RadioShack and bought about 10 times too much twin-lead (minimum they would sell), and made the antenna I had drawn for him.

He was thrilled with the reception: it was "5-by-9" all the way.

The basic twin-lead folded dipole is made with a single piece of 300-ohm twin-lead, with one of the conductors cut in the exact middle. The overall length of the antenna is found from:  $L \text{ inches} = 5,500/F \text{ MHz}$

The FM broadcast band folded dipole normally is quoted at being 56 inches long. This number is for the direct center of the band, or about 98.2 MHz. Fortunately, for my brother's case, this was very near the frequency he wanted to receive. You can optimize the reception for one end of the band or the other by plugging in the right frequency. Also, bands other than 88-108 MHz are easily accommodated. For 450 MHz, for example, a 12-inch antenna works well.

The feedline for the folded dipole normally is another piece of 300-ohm transmission line. However, that's not strictly necessary. If you want to use coaxial cable, then there are some things you can do. One is to build a coaxial cable balun, or (and probably best) one can buy a commercial balun transformer for the same purpose. TV-style balun transformers rated for both VHF and UHF will work nicely on most frequencies throughout those bands, including the scanner bands. Unless there are some really bad suck-outs in the frequency response, you should have no problems. Be sure to either get one rated for outdoor use, or buy an

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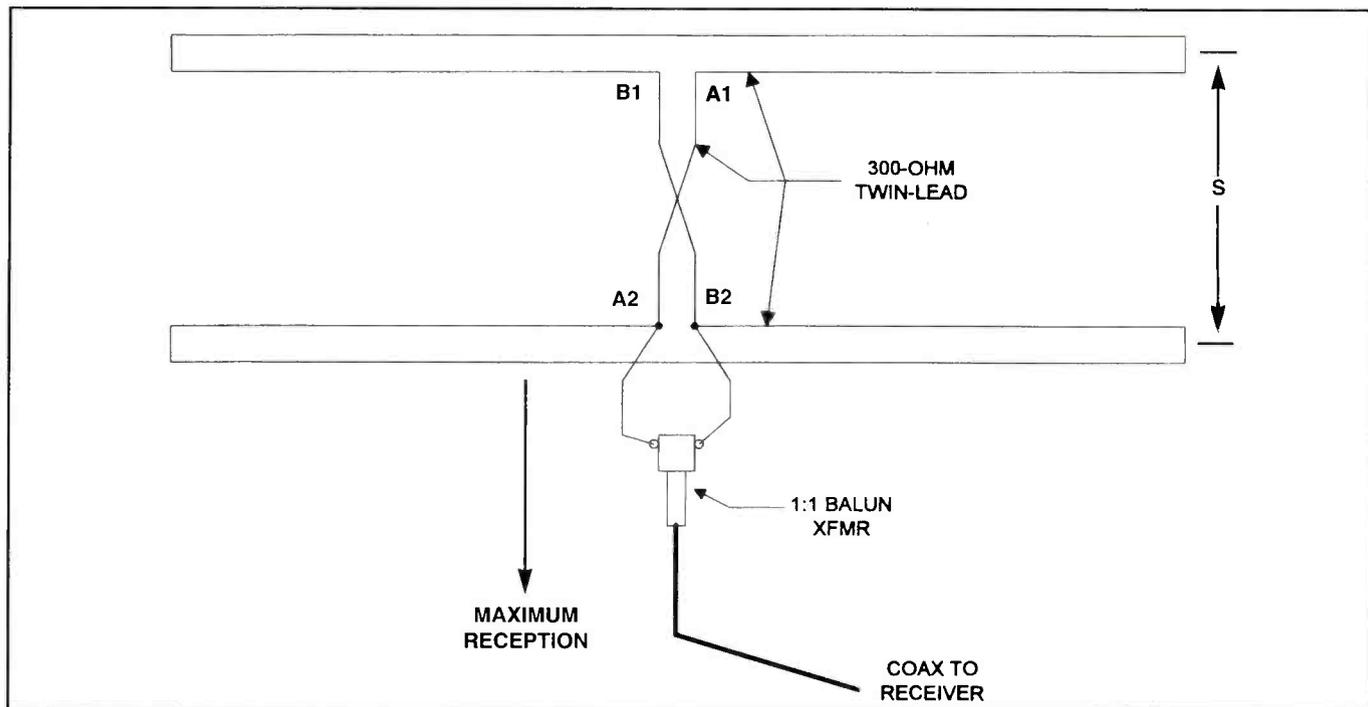


Fig. 3. ZL-Special antenna.

indoor model and weatherproof it yourself (RTV silicone seal works nicely, as does bathtub caulk, but both are messy...I prefer to get an outdoor type).

The folded dipole is like any other dipole in that it has a figure-8 azimuthal pattern. The maximum reception direction is broadside to the antenna, and there are deep nulls off the ends. This pattern can be used to advantage when the problem is co-channel or adjacent channel interference. Unless your receiver site is located on or near the line between the desired and undesired stations, then you can position the null of the antenna on the undesired station, even though the desired station isn't in the antenna's maxima. The idea is not absolute signal strength, but to improve the ratio of the desired signal over the undesired signal. This is the same concept as

signal-to-noise ratio (SNR), but with an undesired real signal rather than noise.

### Folded-Dipole Beams

Fig. 3 shows a special type of beam built using 300-ohm twin-lead folded dipoles (this is a view from above, by the way). The form seen here is sometimes called the ZL-Special because a New Zealand ham operator (with a "ZL" callsign) originated the design. The ZL-Special beam antenna uses spacing (S) of one-eighth wavelength ( $S \text{ inches} = 1475/F_{\text{MHz}}$ ).

This antenna is a bit difficult to analyze theoretically, and as a result, it has seen its share of controversy over the years. At some frequencies, it appears to have about 3 dB gain (although some people claim up to 5 or 7 dB, which is highly unlikely), and

a pretty decent front-to-back ratio. At other frequencies, not too removed from resonance, it appears to be slightly lossy compared with a folded dipole, but still retains a significant front-to-back ratio. If interference suppression is what you need, then front-to-back ratio is what you need.

Note that the two folded dipoles are connected together at their feedpoints by a length of 300-ohm twin-lead used as a phasing harness. This feedline should be 135 electrical degrees long (huh!) when the spacing is 1/8-wavelength. This length is obtained by  $L \text{ inches} = 4,430/F_{\text{MHz}}$ . The length of the twin-lead phasing harness is longer than the spacing, so let it droop.

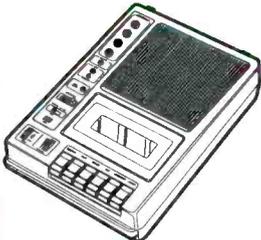
The important thing to note about the phasing harness is that it is twisted once as it passes from one element to the other. When the antenna of Fig. 3 has 1/8-wavelength spacing between the elements, and 135-degree phasing is used, you can use a 1:1 balun transformer and coaxial cable to feed this antenna.

The connection point of the transmission line determines the direction of maximum reception. It always will be toward the direction of the element with the feedline attached. Direction can be reversed by connecting the 1:1 balun and coax to the feedpoint of the other element. Both elements are of the same length.

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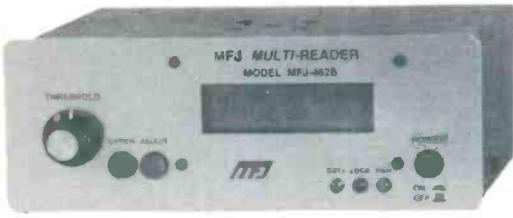


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It's very quiet and has a very narrow bandwidth that reduces receiver overloading and out-of-band interference.

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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 25-1300 MHz. Highest 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

MFJ-959B **\$89.95**

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, \$12.95.

## High-Gain Preselector

MFJ-1045C **\$69.95**

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, \$12.95.

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MFJ-107B **\$9.95**



MFJ-108B **\$19.95**



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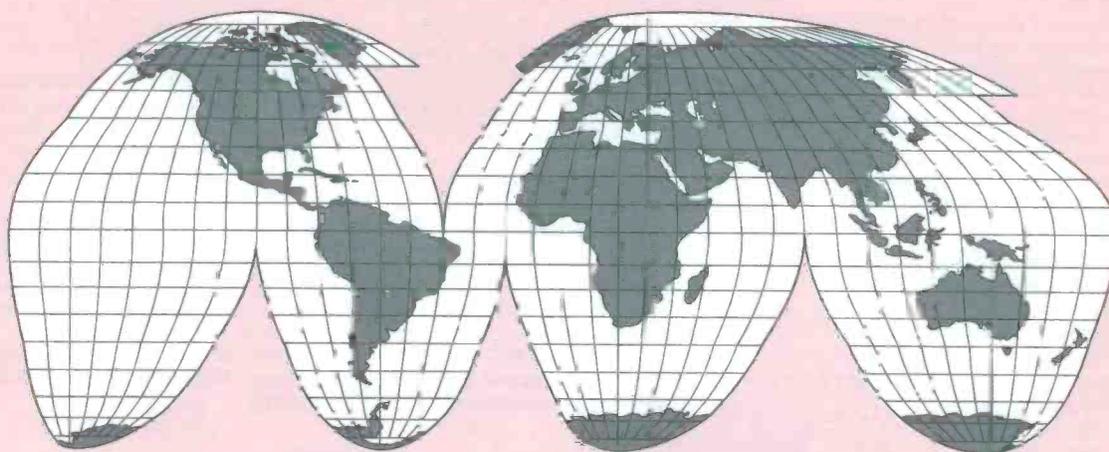
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# POP'COMM's World Band Tuning Tips

May 1996



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, PP, etc., are abbreviations for English, French, Portuguese, 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
2360	Radio Maya de Barillas, Guatemala	1100	SS/local	4920	Radio Quito, Ecuador	0200	SS
3200	Trans World Radio, Swaziland	0400	GG	4930	Radio Internacional, Honduras	0200	SS
3280	La Voz del Napo, Ecuador	1000	SS	4934	Radio Tropical, Peru	0400	SS
3290	Namibian Broadcasting Corp.	0400		4955	Radio Nacional, Colombia	0300	SS
3300	Radio Cultural, Guatemala	0300		4960	HRET, Honduras	0230	SS
3306	ZBC Radio 2, Zimbabwe	0400	vern	4980	Ecos del Torbes, Venezuela	0200	SS
3325	Radio Liberal, Brazil	0400	PP	5010	Radio Cameroon, Gabon	0500	irreg.
3366	GBC, Ghana	0600		5030	Adventist World Radio, Costa Rica	0200	
3380	Radio Chortis, Guatemala	0300	SS	5045	Radio Cultura do Para, Brazil	0230	PP
3925	Radio Tampa, Japan	1000	JJ	5055	TIFC, Costa Rica	0400	
3955	Channel Africa, South Africa	0330		5075	Caracol, Colombia	0400	SS
4005	Vatican Radio	0500	FF/EE	5882	Vatican Radio	0745	
4550	Radio Tropico, Bolivia	0100	SS	5895	Croatian Radio	0400	
4615	Republic of Iraq Radio	0150	s/on AA	5900	Radio Vlaanderen Int'l, Belgium	0000	
4725	Radio Myanmar (Burma)	1200	Burmese	5940	Radio Vilnius, Lithuania	0000	EE Sa/Mon
4753	RRI Ujang Pandang, Indonesia	1200	II	5940	Voice of Vietnam, via Russia	0100	
4770	Radio Nigeria, Kaduna	0500		5950	Voice of Free China, via WYFR	0700	
4780	Radio Oriental, Ecuador	1000	SS	5960	Radio Canada Int'l	2300	
4785	Ecos del Combeima, Colombia	0200	SS	6015	Radio Austria Int'l, via Canada	0530	
4790	Radio Atlantida, Peru	0300	SS	6015	Radio Mira, Colombia	0200	SS
4820	Radio Botswana	0255		6019	Radio Victoria, Peru	0430	SS
4820	La Voz Evangelica, Honduras	0300		6025	Radio Amanecer, Dominican Republic	0300	SS
4830	Radio Tachira, Venezuela	0200	SS	6035	Deutsche Welle, Germany	0230	
4835	Radio Tezulutlan, Guatemala	0200	SS/local	6050	HCJB, Ecuador	0700	
4860	All India Radio, Delhi	1300		6080	Radio Australia	0800	Pidgin EE
4870	ORTB, Benin	0530	FF	6089	Radio Nigeria, Kaduna	0430	
4885	Radio Clube do Para, Brazil	0300	PP	6100	Radio New Zealand	0800	
4890	NBC, Papua New Guinea	1200		6105	Radio Universidad, Costa Rica	0100	SS
4910	Zambia National Broadcasting System	0300		6110	Radio Japan, via Canada	1100	
4915	Radio Cora, Peru	0330	SS	6115	La Voz del Llano, Colombia	0430	SS

Freq	Country/Station	UTC	Notes	Freq	Country/Station	UTC	Notes
612C	Radio Canada Int'l	0200		11735	Radio Oriental, Uruguay	0100	SS
613E	Swiss Radio Int'l	0100		11785	Radio Nacional, Colombia	0000	SS
614C	Radio Tirana, Albania	0230		11790	Radio Japan	0100	
615C	VOIRI, Iran	0030		11800	RAI, Italy	0050	
616E	Swiss Radio Int'l	0700		11805	Radio Globo, Brazil	2300	PP
619C	Radio Budapest, Hungary	0200		11835	Sri Lanka Broadcasting Corp.	1100	
6546	La Voz de Cutervo, Peru	0300	SS	11840	Radio Portugal Int'l	0130	
6575	Radio Pyongyang, North Korea	1200		11850	Radio Norway	1600	
7105	Voice of Russia	0030		11870	Radio Yugoslavia	0430	
7115	Radio Yugoslavia	0100		11885	UAE Radio, Abu Dhabi	2300	
7115	Radio Sweden	0230		11890	Radio Oman	1300	AA
7147	Republic of Iraq Radio	0158	s/on AA	11895	Radio Japan, via French Guiana	0300	
717C	Radio Senegal	0558/0658	s/on	11900	Radio Finland Int'l	1530	
7185	Radio Bangladesh	1230		11905	Radio Thailand	0030	
7200	Radio Afghanistan	0130		11915	Radio Gaucha, Brazil	0900	PP
7205	Radio Ukraine	0400		11925	Voice of the Mediterranean, Malta	1400	
7210	Qatar Broadcasting Station	2100	AA	11965	BSKSA, Saudi Arabia	1700	AA
7255	Voice of Nigeria	0500		11995	FEBC, Philippines	1500	
7260	Radio Vanuatu	0800		12020	Voice of Vietnam	2330	
7290	Radio Tanzania, via South Africa	0300		12085	Radio Damascus, Syria	2030	
7335	CHU, Canada	0200	tire sigs	13635	Swiss Radio Int'l, via French Guiana	0030	
7405	China Radio Int'l	1500		13670	Radio Vlaanderen Int'l, Belgium	1300	
7418	Kol Israel	2000		13675	UAE Radio, Dubai	1630	
7480	Radio Bulgaria	0000		13680	Republic of Iraq Radio	1500	AA
9020	VOIRI, Iran	1930		13730	Radio Austria Int'l	1130	
9420	Voice of Greece	0130		13745	Radio Australia	2230	
9445	Voice of Turkey	2330	TT	13765	Vatican Radio	2000	GG
9475	Radio Cairo, Egypt	0200		15084	VOIRI, Iran	2000	
9495	Abkhazskoye Radic, Georgia	0400	loca	15095	Radio Damascus, Syria	2030	
9525	Polish Radio Warsaw	1300		15115	Radio New Zealand	0000	
9540	Radio Espana Exterior, Spain	0100		15150	Radio Canada Int'l	2100	
9555	Radio Veritas, Philippines	1330	Hirci	15170	Radio Jordan	1100	
9560	Radio Norway	0100		15180	Voice of Russia	0300	
9560	Voice of Peace, Ethiopia	0430		15200	Radio Portugal	1900	FF
9570	Radio Portugal	0230		15210	Radio France Int'l	1700	FF
9570	Radio Romania Int'	0200		15240	Channel Africa	1600	
9580	Africa Number One, Gabon	1900	FF	15240	Radio Sweden	1330	
9585	Channel Africa, South Africa	0400		15244	La Voix du Zaire	1800	
9590	Radio Norway Int'l	1300	NN/EE	15265	Radiobras, Brazil	1700	
9590	Radio Netherlands, via Bonaire	0400		15270	Radio Intercontinenta, Armenia	1730	EE/GG
9620	Radio Ukraine Int'l	2200		15315	Radio Netherlands, via Bonaire	1830	
9630	Radio Aparecida, Brazil	2300	PP	15345	RTV Moroccan, Morocco	1800	AA
9650	Radio Bangladesh	1230		15350	Voice of Turkey	1330	s/on TT
9680	RRI, Jakarta, Indonesia	1500	I	15400	Radio Finland Int'l	1330	
9690	China Radio Int'l, via Spain	0300		15405	Radio France Int'l	1400	
9695	Voice of UAE, Abu Dhabi	2200		15435	UAE Radio, Dubai	0500	
9700	Radio New Zealand Int'l	1100		15445	Radiobras, Brazil	1330	SS
9715	Radio Tashkent, Uzbekistan	1200		15460	Adventist World Radic, Costa Rica	2200	
9725	Adventist World Radio, Costa Rica	2300		15475	Africa Number One, Gabon	2100	FF
9735	Radio Oman	1600	AA	15505	Radio Kuwait	1700	AA
9750	Radio Japan	1400		15520	Radio Bangladesh	1230	
9755	Radio Canada Int'l	0000		15530	Radio Australia	1200	
9770	Voice of UAE, Abu Dhabi	2300		15540	HCJB, Ecuador	1700	
9780	Republic of Yemen Radic	1800		15575	Radio Korea, South Korea	0030	
9805	Radio France Int'l	1200		15590	Vatican Radio	1345	
9820	Radio Havana Cuba	0100	USB	15630	Voice of Greece	1430	GG
9835	Radio Sweden	1230	s/on	15640	Kol Israel	1515	
9850	Radio Budapest, Hungary	0330		15665	Monitor Radio, USA	1800	
9855	Radio Kuwait	0500	AA	15675	Radio Pakistan	1400	
9870	Radio Austria Int'l	0130		17500	RTT, Tunisia	1330	AA
9900	Radio Cairo, Egypt	2300		17525	Voice of Greece	1330	GG/EE
9910	All India Radio, Bangalore	1300		17595	Radio Cairo, Egypt	1230	
9940	Vatican Radio	1600		17605	Radio Netherlands	1830	
11570	Radio Pakistan	1600		17625	Radio Bulgaria	1200	
11605	Radio Bulgaria	1230		17630	Africa Number One, Gabon	1430	FF
11615	Radio France Int'l	1600		17670	Swiss Radio Int'l	1500	
11620	All India Radio	2200		17740	Radio Finland Int'l	1430	
11640	Vatican Radio	1600		17800	Deutsche Welle	1600	
11650	Radio Sweden Int'l	1330		17815	RTVM Morocco	1800	EE/Sun
11670	Radio France Int'l, via French Guiana	0130	SS	17820	Radio Canada Int'l	1300	
11710	RAE, Argentina	0200	EE	17825	UAE Radio, Dubai	1300	
11715	China Radio Int'l, via Mali	0300		17870	RAI, Italy	1730	II
11730	Trans World Radio, via South Africa	0600		17900	Radio Portugal	2000	PP
11734	Radio Tanzania, Zanzibar	1930	Swahili	21605	UAE Radio, Dubai	1600	AA

### Air Show Provides Exciting Listening

Well, April's showers should be ending by now and May's flowers are well on their way as another spring is upon us. And with the thawing of America comes the year's most important season (no, not summer!)—air show season, of course.

Some of the most exciting radio chatter that you're likely to tune in can be found at the many air shows held across the country.

From the Blue Angels and Thunderbirds to the security and EMS crews (and including the hot dog vendors), dozens of groups at a typical air show use radio communications to coordinate their activities.

The largest air show in North America is the United States Air & Trade Show, held in July every other year in Dayton, Ohio. (On "off" years, the Dayton Air Show is held without the trade show.) Many POP'COMM readers already are familiar with Dayton because of the annual Ham-Venture each May.

What really makes the USATS different from other air shows is the trade show.

While most air shows include a few aircraft on static display and some souvenir vendors, at Dayton a 130,000-square-foot exhibition hall is crammed with more than 300 exhibits by major aviation and electronics manufacturers.

Outside the exhibit hall, nearly 200 military, corporate and commercial aircraft are lined up on the pavement. Many of them are open for inspection and crew members are available to answer questions.

Unlike many trade shows which are closed to the public, all exhibits at the USATS—which runs Thursday through Sunday—are open to the public on the weekend. The first two days are reserved for industry professionals and the media.

There's plenty of aviation monitoring in Dayton even when the air show has closed for the day.

Dayton International Airport, site of the USATS, hosts flights from many major airlines, several commuter airlines and also serves as a hub for Emery Air Freight, one of the nation's largest air cargo handlers.

Wright-Patterson Air Force Base, just a few miles away, is the center for Air Force purchasing and is a major research and development facility. The base also is home to C-141 Starlifter jet transport aircraft of the 907th Airlift Group (U.S. Air Force Reserve) and an Ohio National Guard F-16 fighter wing.

For the aviation history buff, a side trip to the U.S. Air Force Museum, located on

the grounds of Wright-Patterson AFB, is time well spent.

More than 250 aircraft and more than 14,000 other items are on display in the museum's two large main buildings and the annex hangar.

One of the best spots to monitor aircraft landing and taking off at Wright-Patterson Air Force Base is from the Wright Brothers Memorial, located high on a hill overlooking the base's main runway. Landing aircraft pass directly overhead, only a few hundred feet above the crest of the hill.

For more information on the USATS, write to: United States Air & Trade Show, Dayton International Airport, Dayton, Ohio 45377-0460. You also can request information by calling (800) 848-3699. See you there!

If you decide to make the trip to Dayton for the 1996 USATS on July 20 and 21, you'll want to have a good handheld scanner programmed with the following frequency pairs for air show officials:

461.1625/466.1625  
461.0875/466.0875  
461.4625/466.4625  
461.8875/466.8875  
462.1125/467.1125

Most fire and EMS communications during the USATS are on the Ohio statewide mutual aid frequency of 154.280 with 155.160 used as backup.

Law enforcement during the air show is the responsibility of the airport police department, with assistance from Wright-Patterson Air Force Base security forces, the Montgomery County Sheriff's Office, the Ohio State Patrol and several commercial security firms.

Airport police and fire units use the city's 800-MHz trunked system. Other agencies that can be monitored include Wright-Patterson AFB security on 173.4375 or 173.5375; the Montgomery County Sheriff on 155.670 or 155.415; the Ohio State Patrol on 44.74 or 45.10; and the Vandalia Police Department on 854.9875.

Although exact frequencies for USATS won't be assigned until mid-July, the following are frequencies commonly used across the country for air show control. Common air show control frequencies are: 123.400, 122.900, 123.450, 122.850 and 122.775. Other aviation frequencies in use in Dayton include:

•Dayton International Airport: tower, 119.900/257.800; approach control, 118.000/327.100, 126.500/324.500,

118.850/294.500, 124.650/316.700 and 134.450.

•Wright-Patterson AFB: tower, 236.600, 289.600, 115.200 and 126.900; weather station, 344.600; pilot to dispatcher, 372.200/122.850; and command post, 397.000.

### Shore Freqs

Luc Lecuyer wants to find the frequencies used for police, fire and EMS in the Atlantic City, Wildwood and Cape May, N.J., areas, because his family will be camping there this year.

Luc, have you tried the old standby, the *Police Call Plus* frequency guide, available from RadioShack? Your local store can order the correct edition for the areas where you're planning to vacation.

*Monitor America* from Scanner Master is another good frequency reference, especially for larger metropolitan areas. In addition, Scanner Master's Greater Philadelphia directory covers the area you are interested in. Call them at (800) SCAN-701.

Every avid scanner listener should build up a library of reference books to support their hobby. Grove Enterprises, Scanner Master and CRB Research Books (see their ads in this issue) are three mail-order companies that carry a good selection of scanner-related books and accessories.

### Aero Web

Online aviation buffs with access to the World Wide Web have a new resource for finding the frequencies in use at airports—large and small—across the country.

Gregory Lay of Clearwater, Fla., checked out the new web page and says, "it's really cool!"

"You can search out airports either by name or geographically, and it shows names, addresses, phone numbers, latitude/longitude, runways and frequencies. This is great for aero fans for traveling, or going to air shows," Greg writes.

The web page address for all this great info is: <http://www.cc.gatech.edu/db1/fly/airport-info.html>

Thanks for the tip, Greg.

### It's In The Mail

Bill Dunn of Official Scanner Guides suggests that scanner listeners in Massachusetts check out three Internet e-mail mailing lists that have been established for the counties of Middlesex, Essex and Plymouth.

The addresses are:

•For Middlesex County—send mail to:  
Scan-msex-request@nomad.n-reading  
.ma.us

•For Essex County—send mail to: Scan-  
essex-request@nomand.n-reading.ma.us

•For Plymouth County—send mail to:  
Scan-plym-request@nomad.n-reading  
.ma.us

In each case, include the word "sub-  
scribe" (without quotes) in the body of the  
e-mail message.

### It's Odd

Ron Bruckman of Radio Monitors  
Newsletter Maryland writes that one of his  
readers has discovered U.S. Coast Guard  
traffic on some unusual frequencies. They  
put out a nice little local newsletter for  
Maryland listeners (all spectrum).

"The U.S. Coast Guard, we believe out  
of Annapolis, Md., but perhaps nation-  
wide, is transmitting maritime traffic (emer-  
gency type traffic) on 416.620 MHz in the  
wideband FM mode, but you'll hear nothing  
but garbled sounds, like single sideband  
on AM. By taking a jumper from the record  
jack of an Icom R7100 and running it to  
the antenna input of an Icom R72 receiver  
and tuning to 40 or 48 kHz USB you'll  
hear traffic that you normally will not copy  
all along the east coast loud and clear.

"We first thought 40 kHz was designat-  
ed to 156.800 MHz (VHF marine emer-  
gency/calling Channel 16) traffic, and 48  
kHz was designated to 157.100 MHz  
(Coast Guard Channel 22A). But it's not  
so. It seems like all Coast Guard traffic is  
heard on both frequencies at different  
times. By using a standard scanner and pro-  
gramming all Coast Guard VHF maritime  
frequencies, I was able to follow the traffic  
on those two 40- and 48-kHz frequencies."

Ron wants to know whether these are  
satellite-type comms, multiplex transmis-  
sions, or what? He says that 416.620 MHz  
was used about a year ago by the Coast  
Guard for giving out NOAA-type weather  
broadcasts, transmitting at the time from  
Curtis Bay, Md.

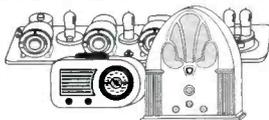
Ron, I monitored that frequency for  
nearly two weeks in Tampa Bay, and while  
the VHF channels were plenty busy with  
Coast Guard traffic, I heard nothing on  
416.620 MHz. Perhaps some of our read-  
ers will have better luck.

### Write In

OK, folks, that's a wrap! Keep those  
cards, letters and pictures coming.

Send your letters to J.T. Ward, Scan-  
ning VHF/UHF, *Popular Communica-*  
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# Telephones Enroute

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

## Everybody Loves A Clone

Remember Ma Bell's old scam? You had a phone number that entitled you to one telephone. Then they could levy extra line charges (as opposed to equipment rental) for each extension phone you had. They can't get away with that any longer. Now you pay for a phone number and a service line to be connected outside your home. Beyond that connection point, there are no additional line charges for you to hook up any and all equipment you want, including phones, an answering machine, Caller ID box, fax, modem, etc.

Many cellphone users are interested in having the ability to utilize one single mobile identification number (MIN), popularly called a cellphone number, that will

work with more than one instrument. This is more convenient, easier to use, and less costly for those who have two cars equipped with cellphones, a car and a boat, a car and a portable, a portable and a spare, or other similar situations.

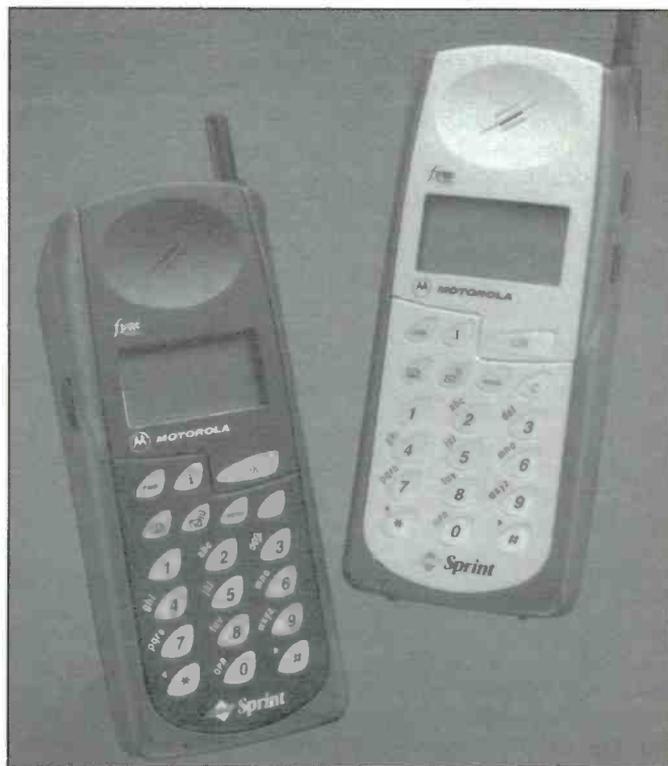
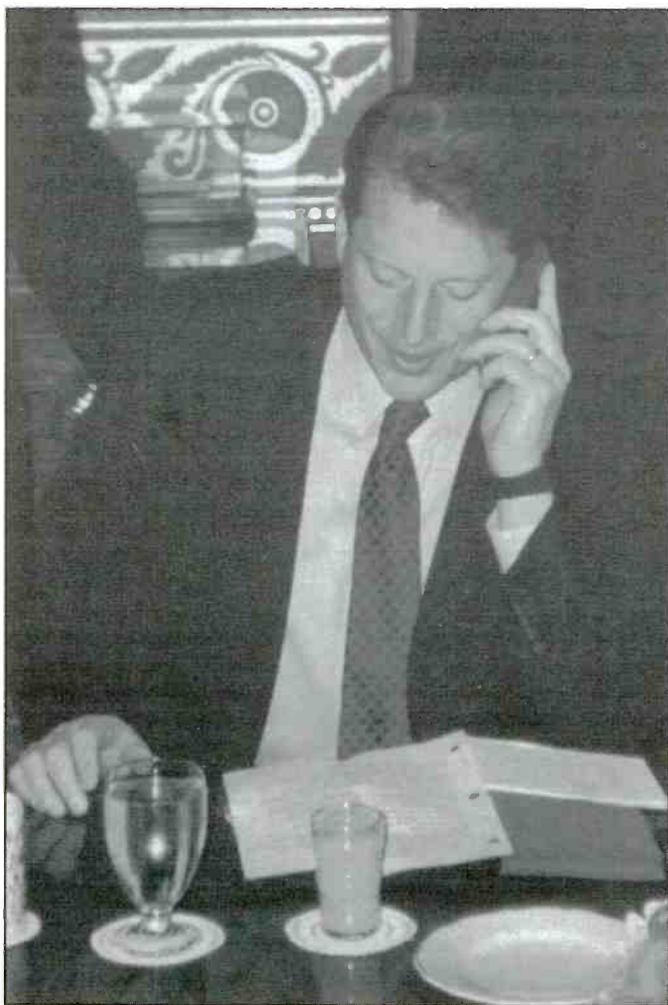
It's therefore infuriating to see that cellular service suppliers are permitted to keep Ma Bell's old scam going. They maintain that if you have a cellphone assigned one of their phone numbers, you aren't allowed to have a second cellphone cloned to the same number. Similarly, many paging companies don't allow cloned beepers.

One cellular service supplier rep told me there are potential system problems if both cellphones with a same number attempt to answer the same call or try to place calls

simultaneously. He also claimed that two cellular instruments can't be issued the same electronic serial number (ESN). Why? They aren't handguns. These sound like minor things that could be worked out. I'm thinking the true objection is actually more along the lines of reduced income.

Each of the two cellphones would have to pay for the air time it used plus any toll charges, but the second phone would get away without paying a separate monthly service fee. Moreover, if customers got their cellphones privately cloned, then the service supplier might not get to collect its initial ripoff activation fee.

In fact, many thousands of illegally cloned second cellphones already are operating. They are owned by paying custom-



▲ The first close look at the Motorola Sprint digital PCS handheld units.

◀ No official record of the first momentous words spoken over the nation's premier operating broadband PCS system. Someone claims Vice President Al Gore answered and said, "What? No, this isn't the number to call for Fox Multiplex show times." (Just kidding, folks!)

ers wanting two same-number cellphones. Those offering private cloning services advertise in various newsletters, creating a new industry. Could this happen without being noticed by the cellular industry? I don't think so.

Recently, a federal grand jury in Lexington, Ky., handed up a four-count criminal indictment of D.B. Yates, of that city. He was charged with possession and use of so-called Copy Cat Black Box cellular cloning equipment.

The indictment claimed that a U.S. Secret Service agent brought Yates two cellphones, including one with a legitimately issued number. The agent asked to have the second phone cloned to the first. Yates is alleged to have cloned the phone, and explained that air time charges would accrue for use of the second phone, but that there would not be an activation fee or monthly service fee.

Yates' attorney was seeking to get the indictment dismissed. He pointed out that while it was illegal for someone to counterfeit a cellphone number for the purposes of getting a "free ride" at someone else's expense, there was no law prohibiting what Yates had done. The judge said he would research the matter and issue a ruling at a later date.

The cellular industry got the Electronic Communications Privacy Act passed because they convinced Congress that the public wouldn't accept cellphones unless the public was assured that the devices were as private and convenient as hardwired phones. Seems only logical that the industry should be expected to match hardwired phone service in every way, including allowing additional instruments to operate under one issued number without extra service fees.

Chew on this: Cellular service suppliers have a federally granted duopoly in each area. Primarily as a sales gimmick, the cellular industry proposed an absurd "don't listen in" comms privacy law, then convinced Congress to enact it. The DEA stated that cellphones are important tools used by drug dealers, yet the FCC doesn't hassle licensees providing those primary comms to the drug trade. Unlike other two-way licensees, cellular suppliers don't face FCC fines regarding obscene language usage.

Washington's special favors have made the cellular industry a guaranteed money-making machine. Has Washington done this for your industry? Despite the sluggish national economy, cellular thrives and has enormous growth potential. If any industry has nothing to squawk about, cellular is that industry.

Nobody faults these people for seeking to earn a fair profit, but why is it absolutely necessary for them to gouge their customers at each and every turn? Refusing to

permit legally cloned second phones gives the appearance of being unreasonable, illogical and just plain chintzy.

Readers are invited to write to this column to share their views about whether the industry should allow customers to have cloned second cellphones without additional service fees.

Thanks to my fellow POP'COMM staffer, Ted Lisle, for the information about D.B. Yates.

### **Ears to You**

Anthony W. of Knoxville, Tenn., writes that he's nervous. Tony likes the convenience of his 46-/49-MHz cordless phone, but realizes that many persons in a wide area might be monitoring his conversations. What to do?

Only a comms person probably would ask such a good question. That's because Tony's concerns are shared by very few members of the general public. No matter how many times the public has been told cordless calls are not secure, and can be monitored across an entire neighborhood, that message doesn't sink in.

The 46-/49-MHz cordless phone base-

to-handset range often is touted at 1,200 feet, which is nearly a quarter-mile. That's great news for recreational eavesdroppers, but far more range than cordless phone users actually require. There is a remedy.

My suggestion is to reduce the range of the base unit as much as possible. All the base unit needs to do is provide adequate coverage to the most distant point in an office, home, yard, or apartment where the handset is used. Surprisingly, this is most likely a distance of no more than 100 to 200 feet. When a base unit's signal is localized, it reduces the potential for calls being intercepted by others.

Start with the base unit's telescoping whip fully extended, and in a vertical position. Experiment with scrunching down the whip a few inches at a time. Find the shortest length it will still provide adequate coverage from the most distant point you expect to ever use the handset. If the handset normally is used close to the base unit, the whip may be able to be fully collapsed. If decent results are possible with the fully collapsed whip oriented in a horizontal position, that's even better.

## **Timestep**

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## Clipper Trip

Speaking of eavesdropping, a note from a reader in Texas reports there is unconfirmed buzz about the feds having told U.S. phone companies to have equipment online by 1998 that will allow fed agents to monitor up to 1.5 million telephonic comms simultaneously.

This supposedly will be done without probable cause and warrant, and will include recording of comms by voice, computer, and fax, also collation of telephone numbers and BBSs contacted. Computerized scans of comms can be made to detect key words, such as bomb, or counterfeit. You might think twice before saying something like, "How does your new Formica kitchen counter fit?"

## PCS Goes Online

Recently, the nation's first broadband Personal Communications Service (PCS) system became fully operational. It was launched in the Washington-Baltimore area by American Personal Communications (APC). The service, Sprint Spectrum, uses fully digital Motorola handhelds.

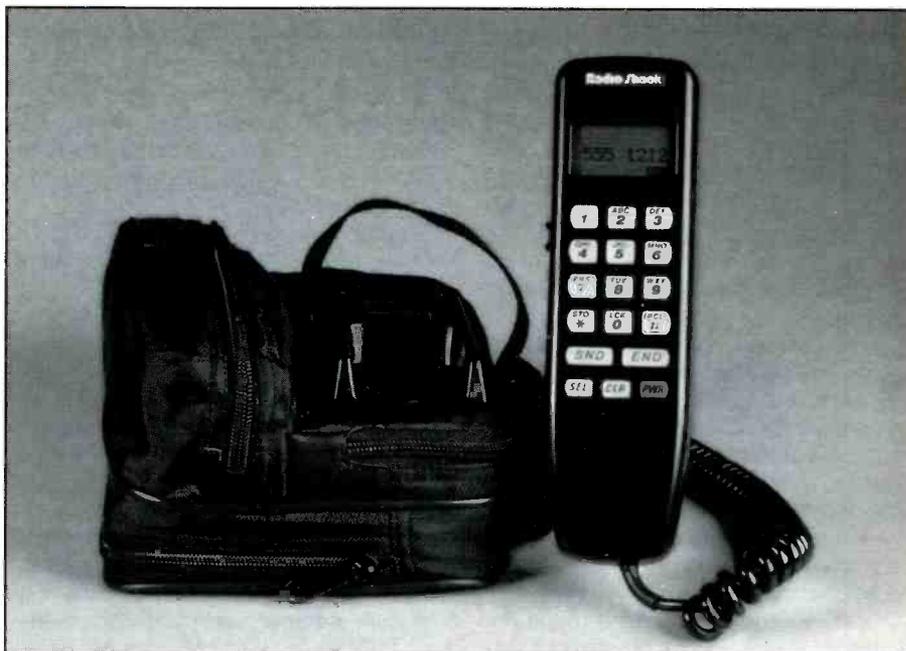
The initial call was between Vice President Al Gore at the White House and Baltimore Mayor Kurt Schmoke. After the call, the first PCS phone used in actual service was sent to Motorola's Museum in Schaumburg, Ill.

The Motorola PCS handhelds are lightweight, palm-sized and combine a portable telephone, text pager and answering machine in a single device. PCS also offers potentials for portable fax machines and other imaging devices, cordless phones and pagers with two-way data capabilities. The FCC has allocated the 1850-1990 MHz band for broadband PCS services, with the subbands 1850-1885 MHz and 1930-1965 MHz earmarked for use in 51 major metro areas. Minicell sites having limited range will handle the comms.

PCS is a service that will more-or-less be competing against cellphones, costing subscribers some 20 percent less to use. Despite its economical aspects, it's doubtful that PCS will pose a serious threat to cellular. That's because cellphones have been around for more than a dozen years and will have gobbled up close to 15 percent of American market by the time PCS is fully up and running on a national scale.

Components used for PCS and cellular networks are similar, as are many of the standards. While cellular systems now include a mix of some using analog technology and others employing digital technology, all PCS systems are digital. PCS digital standards are the same used for cellular.

In North America, these digital methods include one or another version (or combination) of the following standards: code di-



*The RadioShack CT-1055 transportable is a lot of phone, and being offered at a greatly reduced price.*

vision multiple access (CDMA), or time division multiple access (TDMA).

Cox Communications, the PCS licensee for southern California and southern Nevada, announced that it has selected the CDMA standard. After testing its cable-based system since 1992, Cox decided that CDMA "has proven to be more compatible with cable infrastructure."

## Cellular Packet

Cellular Digital Packet Data (CDPD) is something you'll be hearing more about as it continues to grow in popularity. CDPD consists of various specialized data services using cellular facilities. Services include things ranging from credit card transactions to police headquarters' transmission of a suspect's arrest record to detectives equipped with laptop computers.

CDPD can monitor and control devices such as alarm systems, traffic lights, meters and vending machines.

It has been popular with security officers at malls and college campuses. They make their rounds, then check in via CDPD every 15 minutes using the proper codes. Their approximate location is always known at any given moment.

Cellular service suppliers seeking to expand their usefulness have been willing to work with new users in customizing CDPD software to suit individual applications. Bell Atlantic NYNEX Mobile Airbridge Packet Cellular Digital Packet Data technology has been the most popular system used. Their service is presently available in Washington, Baltimore, Pittsburgh, Philadelphia,

New Jersey, Connecticut, Charlotte and Phoenix. Bell Atlantic NYNEX Mobile is headquartered in Bedminster, N.J.

This information was generously furnished by Murray Associates of New Jersey—leaders in electronic eavesdropping detection, counterespionage consulting and privacy protection. Murray Associates' phone number is (800) 835-0811.

## It's In The Bag

RadioShack's CT-1055 cellphone is a transportable unit, which means it may be powered from your vehicle or from its own battery pack. Transportables, also known as bag phones, are more powerful than handhelds and run as much power as a standard cellular mobile unit.

This one comes with an AC charger, vehicle charger, antenna and DC power cord. Everything fits right into the soft carrying case. Once-popular bag phones now have been eclipsed by handhelds. As a result, the CT-1055 was selling in 1995 for \$150, but now it is reduced by 80 percent to about \$30! It would make a fine low-cost second unit. Gee, if second-unit cloning was allowed...

Information about new cellular, PCS, paging and other personal communication products and services always is welcome. In addition, we seek reader comments and news clippings relating to these topics. Please be sure to indicate "For Telephones Enroute" in the address of all items sent to this column.

By the way, an e-mail to K2AES@aol.com reaches me directly and quickly.

# The Ham Column

BY KIRK KLEINSCHMIDT, NTØZ  
AMERICAN RADIO RELAY LEAGUE HQ

## GETTING STARTED AS A RADIO AMATEUR

Mention amateur radio nets to John Q. Public and he'll probably conjure up the popular TV news image of hams frantically—and cryptically—passing emergency traffic during one natural disaster or another. Typically, the hams and their rigs are in the foreground, while in the background a tide surges or a fire races down a nearby canyon wall.

Because these scenes are shown time and time again, every amateur radio operator and most non-hams know that ham operators pass emergency traffic and often remain on the air when almost every other communications service is knocked out.

Amateur radio is a service. Maintaining and training for emergency operation is a big part of what we do and how we justify our existence to the world's many governments in this spectrum-hungry era.

But there's more to ham radio nets than passing traffic and preparing for emergencies. Putting public service issues aside for a moment, let's shift our focus to simply having fun talking with other hams who have gathered on a frequency for some mutual purpose, be it fun, education, conversation, awards-chasing or to support hams who are mobile (on land or over water).

These "just-for-fun" and "wide-coverage" nets number in the hundreds, yet they're often overlooked by hams who would have a lot of fun by participating!

What kinds of nets am I talking about? How about the Good Sam RV network (7284 kHz, Tuesdays-Saturdays, 0200 UTC); the Northwest QRP Ragchew Net (3561 kHz, Saturdays, 1530 UTC); or the CQ All Schools Net (14303 kHz, Tuesdays and Thursdays, 1730 UTC)?

Checking into these nets is a great way to meet people—especially people who share interests similar to your own. You can make new friends; work lots of DX stations, states and counties; give school kids their first contacts; learn about everything from old radios to new computers—you name it! And remember: SWLs are welcome, too, although the conversations are a bit one-sided!

Ham radio nets foster camaraderie and a sense of community. You might even meet your future spouse on a ham radio fun net. It's happened more than once—and it will happen again. You could be next!

Because new nets pop up here and there, and established nets sometimes change their times and frequencies seasonally, and because of varying propagation conditions, keeping track of them and

figuring out when "what net meets where" could be a real chore. But thanks to *The ARRL Net Directory*, a comprehensive guide to amateur radio nets, finding your favorite nets is easy.

The directory, published every other year, lists times and frequencies for hundreds of traffic and fun nets in the United States and Canada (with some international coverage). The 50-page listing is available from the American Radio Relay League for \$3; send to ARRL, 225 Main St., Newington, CT 06111, or call (800) 32-NEWHAM.

When your copy arrives, try out any and all nets that catch your eye. In the meantime, this month's column previews a small part of what you'll find.

### Mobile/Maritime Service Nets

Hams have a long tradition of keeping an eye out for travelers in campers, cars, trucks or sailboats. Try these nets: Waterway Radio and Cruising Club (East Coast-Caribbean, 7268 kHz, daily, 1245 UTC); Maritime Mobile Service Net (worldwide, 14300 kHz, daily, 1700-0300 UTC); Ten Meter Maritime Mobile Net (worldwide, 28380 kHz, 1200-1800 UTC).

Let me also include some of the many nets that support RVers and other travelers: The Good Sam RV Radio Network (7284 kHz, Tuesdays-Saturdays, 0200 UTC, and 14240 kHz, Sundays, 1900 UTC); and the Family Motor Coach Association Amateur Radio Net (14263 kHz, daily, 1900 UTC).

### Ragchew Nets

Ragchewing is what hamming is all about, right? Judging by the number of ragchew nets listed, there's no disputing it! Here are just a few: Bearfoot Net (New England, 3936 kHz, daily, 0000 UTC); Country Cousins (3972.5, daily, 0230 UTC, and 3970 kHz, daily, 0500 UTC); and the Clamdiggers (14250 kHz, daily, 1530 and 2230 UTC).

### Radio/Technical Nets

A lot of technical expertise and arcane radio wisdom is floating around out there in ham radio land, and when experts and enthusiasts gather to discuss or horse-trade their favorite specialties, fun—and information—is at hand. Want to see what I mean? Try these nets on for size: Drake,

Tube and Antique Radio Net (3865 kHz, Saturdays, 0000 UTC); Oldtime Radio Collectors and Traders Society (7238 kHz, Sundays, 1300 UTC); and the Icom Users Net (14317 kHz, Sundays 1700-1900 UTC).

### Awards-Chasing and DX Nets

These nets tend to ebb and flow with the 11-year sunspot cycle. When propagation is hot, these nets seem to be everywhere. When it's not—pretty much like right now—they're more sporadic and infrequent.

Although some long-time paper-chasing nets are not listed in the current net directory (most notably the 3905 Century Club Net), some awards-chasing and nets with DX potential are listed: OM International Sideband Society (daily on many frequencies—3940 kHz at 0200 UTC, 7262.5 kHz at 0100 UTC, 14290 kHz at 1800 UTC); the 20-Meter Mobile Emergency and County Hunters Net (14336 kHz, daily when band is open); and the California/Hawaii Net (14305 kHz, daily, 0100-0300 UTC).

### QRP Nets

Running low power has been popular since the dawn of amateur radio, and believe it or not, there are dozens of nets for low-power enthusiasts. Try these: QRP Amateur Radio Club International (7030 kHz, Wednesdays at 0100 UTC, 7040 kHz, Saturdays at 1700 UTC, 14060 kHz, Sundays at 2300 UTC, 28332 kHz, Sundays at 1900 UTC); VE QRP (14060 kHz, Sundays, 1900 UTC); Northwest QRP Club (10123 kHz, Tuesdays, 0200 UTC); and the OK QRP Group (7060 kHz, Sundays, 1330 UTC).

### Special-Interest Nets

All hams have at least one thing in common—the fact that they're hams. But they also have diverse and individual interests that often find a way into ham radio and onto the airwaves. If a particular net is about "your thing," participation can be rewarding and educational.

Here's a small sampling: Tin Can Sailors Net (7260 kHz, Wednesdays, 1400, 1500 and 1700 UTC); Ayn Rand Admirers Net (14272.5 kHz, first Monday and last Wednesday of every month, 0030

(Continued on page 83)

## Russian Satellite Television Systems

Russia has satellite television and cable networks, but you won't find a TVRO in anyone's living room or a dish in the back yard. The Russians launched their first TV satellite in 1965, and it was the world's first. Today they operate three multisatellite systems that provide centralized TV and radio programming to almost the entire country. Three networks distribute television programming; Orbita, Moskva and Ekran. The Moskva and Orbita systems also provide telephone, data and facsimile services to its users.

### Central TV—All Russian Radio

Television and radio programming used on Russian satellites originates at the Central TV and All Russian Radio studios in Moscow. As you might expect in such a security-conscious country, all media is highly centralized and tightly controlled, giving the government a monopoly on news and information.

Central TV provides four channels or services. First Channel, as it is known, broadcasts 14 hours a day and provides coverage of international affairs, political, economic and cultural events. Second Channel programming consists of science, news, documentaries, sports and children's programs. The Moscow Channel covers events directly affecting the capital. The Educational Channel broadcasts lessons primarily for school-age children or anyone who wishes to continue their education.

### Molniya Satellites

The original satellite, Molniya 1, was placed in a highly elliptical orbit. Initially, it was believed to be a failed mission because of its unusual flight path. This orbit was designed to provide several hours of TV coverage twice a day, to most of Russia's populated areas, including the remote northern and far eastern sections. This type of orbit is called the Molniya Orbit. The charts show the orbit and ground track. At perigee (the point where the spacecraft is closest to the earth), the Molniya satellites maintain an altitude of about 630 km. The satellite reaches apogee (the point satellites are visible in the United States) twice during each orbit at 40,000 km above the earth's surface.

"MOLNIYA 3"			
Orbit:	Molniya	TV - downlink	uplink
Inclination:	64°	3.65 - 3.69 Ghz	5.99 - 6.15 Ghz
Period:	718 minutes	3.75 - 3.79 "	
Apogee:	40,000 km	3.85 - 3.89 "	
Perigee:	630 km		
RF output:	40 watts	Distribution:	Orbita System - 125 Regional Ground stations and over 1,000 district stations throughout the USSR.

"EKRAN"			
Orbit:	Geo-stationary	TV - downlink	uplink
Position:	99° E	700 - 725 Mhz	6.2 Ghz
Altitude:	35,780 km	RF output:	200 watts
Distribution:	Direct broadcast to over 3,000 stations and the Soviet Merchant and Naval Fleets.		

"GORIZONT"			
Orbit:	Geo-stationary	TV - downlink	uplink
Altitude:	35,780 km	3.65 - 3.69 Ghz	6.2 Ghz
Position:	14°W / 40°E / 53°E	3.70 - 3.74 "	
	90°E / 140°E / 349°E	3.75 - 3.79 "	fascimile/data transponders
		3.80 - 3.84 "	14 / 11 Ghz
RF output:	15 watts	3.85 - 3.90 "	1.6 / 1.5 Ghz

In 1985, three new Molniya (third-generation) satellites were launched. This brings the total number of spacecraft in this series to eight. Each is spaced at 90 degrees apart in orbit; four satellites spaced 90 degrees apart can provide 24-hour-a-day service to viewers.

The two earlier models of the Molniya are the 1 and 2. The second model was discontinued in the 1970s for unknown reasons, but the first model has continued service. Eight Molniya 1 satellites are in orbit, each spaced 45 degrees apart. The military has exclusive use of this series.

The "hotline" between Washington, D.C., and Moscow was first carried by a

Molniya 1, and now has a Molniya 3 satellite. The hotline consists of two voice and two encoded teletype channels. A second identical circuit carried on American Intelsat spacecraft, provides a backup circuit and confirms the message. Both satellites operate simultaneously.

### Orbita System

Programming from Central TV is sent to the Orbita ground station in Moscow via microwave links and cable. It is sent to the satellite in the 6-GHz range and rebroadcast in the 4-GHz range. Then, 125 Orbita ground stations distribute the program-

# Scanners/CB/Weather Stations

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Bearcat 700A-U information mobile .....	\$144.95
Bearcat 560XLA-U base/mobile .....	\$76.95
Bearcat 220XLT-U handheld/SPECIAL .....	\$207.95
Bearcat 178XLT-U base with weather alert .....	\$124.95
Sportcat 150-U handheld with 800 MHz .....	\$158.95
Bearcat 148XLT-U base with weather alert .....	\$83.95
Bearcat 120XLT-U handheld .....	\$129.95
Bearcat 80XLT-U handheld with 800 MHz .....	\$144.95
Bearcat BC17-U information mobile .....	\$168.95

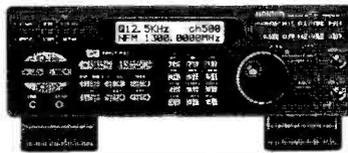
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The Weather Monitor II (7440) comes complete with anemometer with 40 feet of cable, external temperature sensor with 25 feet of cable, junction box with 8 feet of cable, AC-power adapter, detailed instruction booklet and one year limited factory warranty.



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WTA10G-U Speaker/microphone for Maxon GMRS210+3 .....	\$18.95
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Cobra 148FGTL-U CB with frequency counter .....	\$209.95
Cobra 29LTDWX-U CB with weather alert .....	\$114.95
Cobra HH40-U CB 40 channel handheld transceiver .....	\$99.95
Ranger KC12950-U 25 watt 10 meter transceiver .....	\$239.95
Uniden GMR100-U GMRS handheld transceiver .....	\$144.95
Uniden WASHINGTON-U SSB CB Base († \$25.00 shipping) .....	\$199.95
Uniden GRANTXL-U SSB CB Mobile .....	\$139.95
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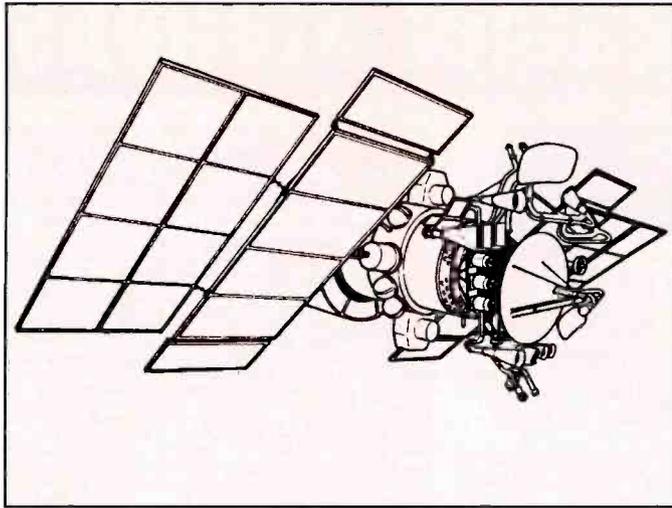
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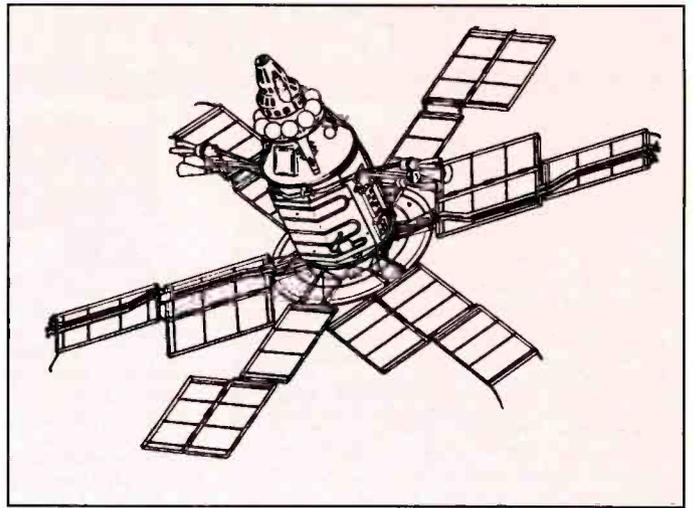
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*The Gorizont satellite.*



*The Molniya 3 satellite.*

ming via cable to local listeners and microwave link to send the signal to district TV centers (local television stations). More than 1,000 rural collectives also receive signals from the Orbita network.

### **Ekran Satellites**

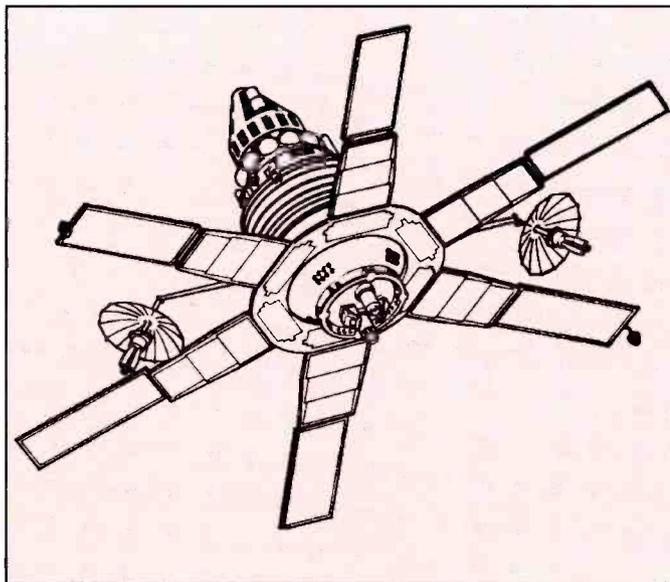
The Ekran satellite system is unique in the technology it employs. The Ekran is a geostationary satellite designed to provide TV and telecommunications services to remote collectives, and the Russian naval and merchant fleets. Three Ekrans are located

at 99 degrees east, according to the Stationar positions plan for geostationary satellites.

An unusually high RF output power, 200 watts, is used in order to allow the receiving equipment to be kept simple and inexpensive. The satellite also carries a 96-element helical antenna array with 28dB gain. The downlink frequency of 700-725 MHz was chosen for the same reasons, reliability and low-cost equipment.

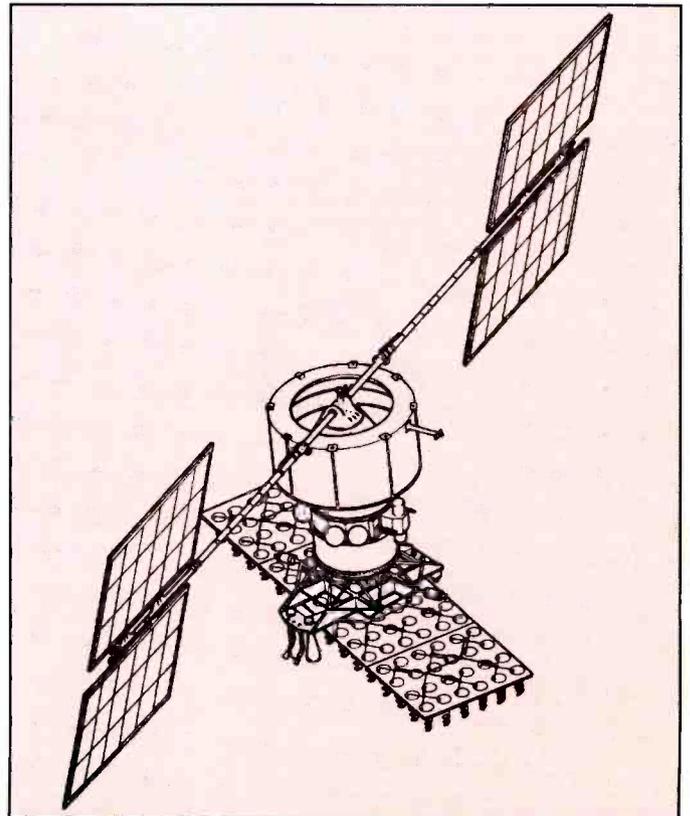
Unlike other Russian satellite systems, Ekran is a direct broadcast satellite that does not require a major Orbita-type receiver

and distributing station. Only a Yagi antenna and a simple Ekran receiver are needed to get this service. The government produces three models of Ekran equipment for the TV viewer, or more accurately, the collective. The smallest Ekran-K satellite receiver directly connects to a standard television set and can be connected to up to eight television receivers. The Ekran-K, as seen in the accompanying photo, fits into a briefcase. The Ekran KR10 is most often used on the community or collective level as it can power a small cable TV system for up to seven miles. These stations



↑ *The Molniya 1 satellite.*

*The Ekran satellite.* →





The Ekran-K receiver.

often are set up in a post office or community center. A third model, the Ekran KRP, is used by area TV stations for setting up cable networks and relaying Central TV's programming.

The Ekran control station in Moscow transmits a 10-kW signal through a 12-meter, 54dB-gain dish antenna to the spacecraft in the 6.2 GHz frequency range. The Ekran system broadcasts up to 16 hours of programming a day.

### Gorizont Satellites

Twenty-two years ago, the first Gorizont television satellite was launched. There are nine geostationary satellites in this series that use standard 6-/4-GHz transponders with an RF output of either 15 or 40 watts. The Gorizont spacecraft also carry telephone and facsimile transponders that use 14/11 GHz and 1.6/1.5 GHz. This system is the latest effort to provide continuous, dependable and uniform TV, radio and telecommunications services to all citizens.

The ground distribution system for the Gorizont is known as Moskva. It consists of more than 325 ground stations and their associated cable networks.

Two of the Gorizont satellites are also used by Interkosmos. This is an Eastern Bloc equivalent of Intelsat, which was formed in 1971 and has 14 member states.

### Stateside Viewing

The only Russian television signals that can be seen in the United States are Molniya 3 transmissions. Because of its elliptical orbit, the video can be tuned in with some practice. The Molniya 3s will reach apogee over northern Canada.

Try your hand at tuning in Molniya by turning your beam north. Russian TV uses the international standard TV transmission of 625 lines/25 frames per second. This allows you to get a video signal without color or audio information, as the Russian system is not compatible with ours. The Molniya 3 transmissions can be found just below Channel 9 on your standard TVRO tuner.

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## Grundig Yacht Boy 400 Receiver

With summer right around the corner, many radio listeners take their hobby with them as they travel on vacations. Less bound to the seasons are those business people who travel with the job but still enjoy the hobby wherever their work takes them. You'd be surprised how many people's listening post resides in a briefcase and not a basement.

There are many portable shortwave receivers to choose from. However, the list of receivers that deliver serious performance at a reasonable cost can be counted on one hand. Among the best in the current portable class is the Grundig Yacht Boy 400. This feature-laden receiver delivers overall performance on par with receivers that can cost more than \$100 more.

I had the opportunity to put a Yacht Boy 400 through a period of "real world" testing recently, logging travel miles while I logged shortwave stations. We'll talk more about that, but first here is my impression of the unit's operational layout.

### Good Size

The first issue of concern to anyone who travels is overall size and weight. If you've been through any airports recently, the trend is to cram your needs for the entire trip into your "carry-on" luggage. One bag that fits into the overhead assures quick boarding on arrival and a quicker exit upon landing, avoiding the tedious luggage handling aspects of the airport experience.

The receiver, in its padded travel case, measures 8.25 by 5 by 1.75 inches. Weight with case and batteries is in the neighborhood of 20 ounces. All in all, it takes up no more space or weight than the average hardback best seller. This receiver is diminutive enough to add to any trip without forcing too many sacrifices. You also can factor in that this receiver has features that will allow it to do double duty as your travel clock.

At first glance, this small receiver's 30 buttons, two knobs, four switches and three jacks might seem a little confusing. The multifunction LCD digital display's 16 features also appears puzzling. Relax, things are not nearly as confusing as they may seem at first. Even the novice user has nothing to fear in this area. The excellent manual (written in English, French and Spanish) eliminates serious confusion, allowing the user to realize that all of these



### Grundig Yacht Boy 400

Suggested List Price: \$269.95

Typical Street Price: \$199.95

Available from: Grundig, Lextronix Inc., 3520 Haven Ave., Redwood City, CA 94063; or call (800) 872-2228

controls are just further evidence of the many features that are packed into this little package.

Being a typical hobbyist, I bullied along for a few minutes, attempting to get things running without cracking the manual's cover. It was easy enough to figure out how to tune in a few stations, but this "no-manual" approach did not take full advantage of this receiver's many features. It didn't take me long to realize that I would benefit from settling back with the manual. So I opened the book and took a guided tour through the many controls and their uses. Within an hour, I had a handle on all of the receiver's functions. I had set the clocks and I had programmed in most of my favorite stations. This left me with nothing to do but listen, which is what you want to spend your time doing anyway, right?

### Tuning In

The Yacht Boy 400's dual-conversion, phased-locked-loop circuit allows you to listen to quite a bit. Frequency coverage is relatively complete for a portable. Actually, its coverage rivals that of better desktop receivers. Longwave is covered from 144-353 kHz. Mediumwave is covered from 520-1710 kHz (you will note this takes in the whole of the newly extended AM broadcast band).

Shortwave picks up where mediumwave leaves off at 1710 kHz and goes up

through 30 MHz, giving complete coverage of the HF broadcast, amateur and utility frequencies of interest to most hobbyists. The standard FM broadcast band is covered from 87.5-108 MHz and the receiver is capable of tuning in stereo FM broadcasts (FM stereo broadcasts are indicated on the digital display). FM stereo sound can be enjoyed by using appropriate headphones.

Unlike some manufacturers, Grundig remembers that a good portion of what is fun to listen to in the shortwave spectrum is in the single sideband (SSB) mode. The Yacht Boy 400 allows users to enjoy this mode of operation. This is accomplished by throwing the SSB switch to the "on" position and then using the fine-tuning control to resolve the signal. This works very well, especially when listening to the ham bands. The fine-tuning control has a tactile notch when centered so it is easy to return to AM tuning without needing to fiddle with the control to get it centered.

If you are a mediumwave DXer who enjoys trying to track down stations outside the United States, you will be pleased to know that the Yacht Boy 400 is capable of tuning across the AM broadcast band in either 9-kHz (international) or 10-kHz (North American) steps.

The receiver benefits from two bandwidth positions (wide/narrow) as well as a DX/local attenuation switch to reduce problems with strong signals. I found the narrow bandwidth position to be sufficiently sharp without an uncomfortable reduction in intelligence. I left the receiver's attenuation control in the DX position exclusively, never encountering any detectable local overloading.

### Memories

Traveling means almost constant change. Moving from one location to another will bring about different listening opportunities. The Yacht Boy 400 has 40 memory storage positions. This is a reasonable number for such a portable, but I'm sure nobody would complain if the next-generation Yacht Boy 400 came with more. The receiver has superior memory management controls, including features that allow you to call up individual memory positions.

The "store" control allows you to enter frequencies in the various memory locations. This control has a built-in safeguard

to prevent the user from accidentally overwriting a currently occupied memory position. If a memory location already contains a frequency, the display will flash for five seconds. If you still decide you want to override the current frequency you simply enter the memory position and tap the store control twice instead of once.

Unique and useful is the "free" control. Tapping this button will indicate the unit's empty memory positions in order. Entering a memory position and tapping the control twice will free that specific memory location for future use. I found this control very useful when traveling because it allowed me to make rapid memory changes to suit my current location. The bit of extra thought associated with the memory management controls on the part of the Grundig people has saved me a good deal of reprogramming during my travels.

## Usage

The receiver's headphone jack is another example of well-thought engineering. It is designed to work with either monaural or stereo headphones. This allowed me to make use of standard "jogger" radio headphones to listen to FM stereo. If I wanted to dig out a really weak signal, it was no problem to hook up my communications headphones to the same jack. Headphone impedance is 32 ohms. The unit comes packed with a lightweight set of "earplug" stereo earphones that can be fitted into the receiver's travel case.

Don't let this talk about headphones throw you. The Yacht Boy 400 has superior audio for its size. The internal speaker works well and the unit includes a tone control. This is often considered a luxury on even more expensive receivers.

The receiver operates fine on its internal six 1.5-volt AA-size batteries. When the batteries get weak the digital display prompts you with a flashing "batt.check" prompt. A jack for external power is included. The Yacht Boy 400 needs 9 volts DC. The manual explains the appropriate choice of coaxial plug input as well as tip and shield polarity. Rounding out the jacks is a socket for connecting the receiver to an external antenna. Speaking of antennas, built in to the unit is a 36-inch telescopic whip for FM and shortwave reception. Mediumwave and longwave are covered with an internal ferrite-rod antenna. A novel, wind-up cased external antenna is included. This works very well when traveling and it takes up minimal space.

## Features

Station tuning can be accomplished several ways. The user can select the particular range (LW, MW, SW). Once this is done, the user has the option of selecting the tun-

ing "step" rate. From this point, the user can conduct a frequency search by either manually tuning up and down the range or using the "auto-tuning" function. There also is the option of entering individual frequencies directly with the keypad.

Serious shortwave hobbyists will welcome the tuning feature that allows the user to enter and search a group of frequencies by the "meter band." This function works for all common shortwave broadcast and amateur radio frequency segments. If broadcasters think in terms like the 31-, 49- and 75-meter bands, why shouldn't receivers tune according to this method? In the earlier days of analog receivers, changing "meter" segments was a common function of the band switch. It is nice to see this function returned to a modern digital receiver.

The Yacht Boy 400 lacks a traditional tuning "knob" but this more traditional feature is not missed thanks to the many different ways frequencies can be managed and massaged with the unit's buttons. Tuning individual stations is further enhanced by the digital bar-style tuning meter that is part of the larger digital display.

Because this receiver was specifically designed with the traveler in mind, its clock functions go well beyond what you might find on other less-well-thought-out units. The receiver allows for two time settings (Time I and Time II). These clocks can be set independently. The suggested practice is to enter local time in the first position and UTC in the second. Once your times are entered you have access to a full-function personal alarm clock with wake-up, snooze and sleep functions. The receiver's volume and its alarm tone are sufficient to wake up all but the most sedated sleepers. Throughout my travels I used these features with full confidence. This is a big help when you're staying in a hotel that charges extra for wake-up calls.

Traveling with this receiver was a pleasure. I was able to enjoy the shortwave and mediumwave aspects of the hobby from locations all over the country. In the course of these travels I came to appreciate the receiver's overall versatility and its small size.

The receiver comes equipped with a well-placed "lock" button that assures that you do not lose any of your programming because of the travails of traveling. This lock button is located in an indented position on the keypad surface of the receiver. Still, I would recommend you make use of the receiver's travel case as extra assurance against inadvertent unlocking of the controls by an errant piece of baggage.

After traveling far and wide with this receiver, I can safely say you also will need to travel far and wide to find a better traveling companion than the Grundig Yacht Boy 400. If you're planning any trips this summer, you may want to consider adding this receiver to your list of essentials.

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## The New AM Band

Just in case you're very new to the radio hobby, I'd like to alert you to something exciting that's going on. Recently, the Federal Communications Commission opted to extend the standard AM broadcast band from 1600 kHz up through 1700 kHz. This band segment is now becoming active.

The relative lack of congestion at this time makes for great long-distance reception. Already up and running in this band segment is WJDM, Elizabeth, N.J., operating on 1660 kHz. During February, the Army Broadcasting Service tested a mobile AM broadcast station under the call sign of KTRK on 1670 kHz.

Many broadcasters are looking to stake their claim to portions of this extended band, so finding a receiver that covers this new segment is essential to anyone hoping to be part of this action.

Things could get crowded fairly fast, too, as construction permits are granted by the government. This new band segment may hold several "once-in-a-lifetime" opportunities to log distant states that normally are lost in the clutter of the traditional AM band. The Grundig Yacht Boy 400 covers this segment.

# Broadcast DXing

BY TIM KRIDEL

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

## The Sky's The Limit

Imagine being able to tune in your favorite radio show in your home and car, no matter where in the United States you live and travel. Imagine dozens of formats, from music to sports to ethnic programs. Imagine enjoying that programming in CD-quality digital audio, and without reception gremlins such as multipath distortion and adjacent channel interference. And imagine it all being available as soon as 1998.

If the developers of satellite-delivered digital audio radio service (DARS) have their way, that fantasy will become reality. They propose a nationwide service—similar to TV's DirecTV and Primestar—that would provide programming to listeners with a new generation of receivers capable of receiving the S-band broadcasts. CD Radio Inc., one of the four DARS developers, proposes a lineup of 30 channels of commercial-free music and another 20 channels of news and talk programming.

Keep dreaming, counters the National Association of Broadcasters. The radio and TV industry group dismisses promises by DARS developers of a plethora of niche programming as "simply pie-in-the-sky given marketplace realities."

The NAB also is concerned about the impact the proposed service would have on terrestrial broadcasters and the communities they serve, predicting death from above for terrestrial broadcasters—in particular "small-market stations and large-market stations serving niche and Spanish-language audiences"—because direct satellite broadcasts would duplicate programming and take away audiences and advertisers. AM stations, the NAB said, would suffer because "most AM stations are in much more precarious financial condition than FM stations."

Supporters counter that DARS is a national service, with its revenue coming from national advertising, listener subscriptions or a combination of the two, and as such wouldn't affect local advertisers and local programming. The FCC, while optimistic that DARS could serve small, remote and underserved communities, remains concerned about how conventional broadcasters would be affected.

The debate over territory—local vs. national, satellite vs. terrestrial—echoes questions first raised nearly a decade ago when home satellite TV systems became popular and DBS TV services such as Primestar



Gone but not forgotten is "Apple Valley Radio," KAVR-AM. They're now KIXW, sister station of KZXY-FM. (Courtesy Steve Berk, Houston, Texas.)

and DirecTV still were on the drawing board. Laws passed in 1988 and 1994 prohibited satellite-service providers from offering network programming or "feeds" to owners and subscribers who already could receive the same programming from their local affiliates. Whether similar protection will be offered to terrestrial radio broadcasters remains uncertain.

DARS got off to a promising start in January 1995, when the FCC allotted 50 MHz of the S band, from 2310 to 2360 MHz, for the service. Both sides are awaiting the commission's report and order, which was due out sometime in the first half of this year. Once it's adopted, licenses can be issued—but exactly how and to whom is another major hurdle. An auction is believed to be the route the FCC will take, given FCC Chairman Reed Hundt's proclivity for the lucrative sales.

That possibility raised some eyebrows among the DARS developers, all of whom

have significant financial stakes riding on the outcome. David Margolese, head of Satellite CD Radio, which already has committed to build three satellites, hoped the commission wouldn't "ignore five-and-a-half years worth of effort and expense." Primosphere owner Clifford Burnstein told the industry newspaper *Radio World* that his company would take legal action to block an auction. For now, Primosphere was taking a wait-and-see stance. "Why would I move ahead without a license?" Burnstein said. "I may be dumb to the point where I've invested all this money...but I'm not even dumber to start to spend significant money to build a satellite when Reed Hundt is...saying he thinks the spectrum is going to be auctioned off."

### Talent on Loan

Radio stations live and die by ratings, so it's no surprise when one format is abrupt-



Boston's WKLB-FM first took to the air in 1959. They currently run 13 kW. (Courtesy Bob Gilbert, Portland, Maine.)

ly dumped for another, only to be chucked when ratings—and revenues—don't rise. Other stations, enjoying success with a particular format but seeking more, will bring in big-name talent to spice up their programming, especially in the critical morning drive time. For station owners, it's an attractive bargain—they can save the hundreds of thousands of dollars required to hire a big-league host, and small- and medium-market stations can get a slick, large-market sound at a fraction of the cost.

In St. Louis, where formats and hosts often change faster than the Blues roster, venerable rocker KSHE-FM signed the *Bob & Tom Show* for morning drive time. The syndicated duo, based at Indianapolis' WFBQ, made their debut Jan. 2. Most listeners may not even notice that Bob and Tom actually are some 250 miles away because the show will be interspersed with segments by regular KSHE personalities. That trick—known as “localizing”—is a common practice in the industry, allowing affiliates to maintain the illusion that the programming originates locally.

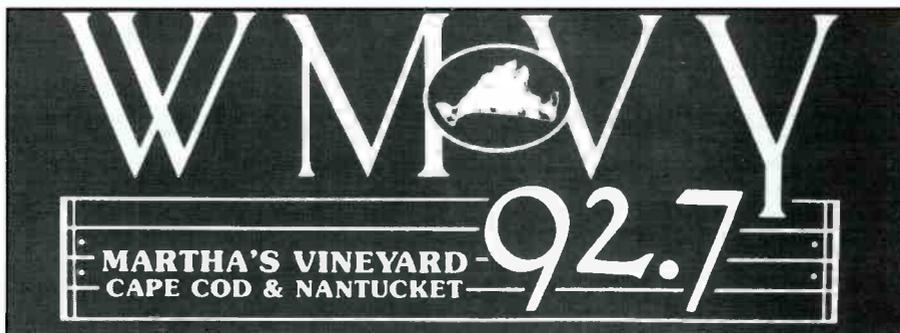
The competition is even more fierce in Chicago, the nation's third-largest radio market, where the right host means big ratings. WGN-AM commands the lion's share of listeners in the Windy City, thanks in large part to morning man Bob Collins. He's reigned at the top spot in Arbitron ratings for the past few years. His rival at WLUP-FM, Jonathon Brandmeier, took the station from 17th to seventh in a matter of months after moving back to the 6-10 a.m. shift. But one of the biggest surprises is how little impact Howard Stern is making for his latest Chicago affiliate, WJJD-AM. The shock jock was ousted from rival WCKG-FM in September 1995 and was picked up by WJJD, but, at last check, had done little to raise the station from its morning rating of 21st.

Not to be outdone, WLS-FM has dropped talk for country, according to a Sun-Times snippet sent in by Elmer Wallensen of La Grange Park, Ill. The station rang in 1996 by revamping itself as “Chicago's Young Country,” a switch that pits it against the market's only other country outlet, WUSN-FM.

### **Trials and Tribulations**

Charges of mismanagement and unpaid bills led to a power struggle last fall at a Monticello, Maine, station, according to a *Bangor Daily News* article sent in by Don Hallenbeck of Pittsfield, Maine. At 5:45 a.m. on Oct. 10, 1995, Alan Weiner, acting as a representative of WREM-AM's owner, “showed up and told us that he was taking control of the station,” general manager Ralph Dhuy said. Weiner “shut it down and took us off the air. We had no clue at all that he was going to do something like this.”

Weiner's takeover was prompted by



Tisbury, Mass., is the city of license for WMVY-FM. The 3-kW rocker first signed on in 1983. (Courtesy Bob Gilbert, Portland, Maine.)

what he claimed were unpaid bills, as well as threats of violence and stolen property by station employees. At the time, WREM was operated under a local marketing agreement by Daylight Broadcasting, but Weiner still owned some of the equipment, including the transmitter. Weiner said that he had terminated the contract with Daylight at midnight on Oct. 10.

Later that day, Weiner and Dhuy met to work out a 90-day lease to keep the station on the air until an agreement could be reached. The following morning, WREM was back to its regular programming of rock 'n' roll. Dhuy said afterward that Weiner backed down because he couldn't

substantiate his allegations. “The whole thing was fabricated to renegotiate the lease,” Dhuy said. “I hope we'll get back on track and put all this stuff behind us.”

This wasn't the first fracas for Weiner. He made headlines in the summer of 1987 when he masterminded Radio New York International, an illegal station that broadcast from a ship anchored five miles off Long Island's South Shore. Weiner also had his license for a legal station in Presque Isle, Maine, revoked in April 1985 for broadcasting on unassigned frequencies.

As for WREM, it isn't out of the woods yet. The ink on the new lease was barely dry when officials from the U.S. Immigra-



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AK	Houston	96.3 MHz	6 kW
AK	Kasilof	106.9 MHz	6 kW
AK	St. Johns	95.7 MHz	100kW
AR	Des Arc	91.7 MHz	100 kW
AS	Pago Pago	93.1 MHz	500 watts
AZ	Pinetop	106.7 MHz	55.4 kW
CA	Livermore	95.7 MHz	91 w. (KPDX-FM booster)
CA	Hollister	90.7 MHz	1.4 kW
CA	Merced	94.1 MHz	
CA	Susanville	96.3 MHz	
CA	Yuba City	91.3 MHz	140 watts
FL	Key Largo	90.9 MHz	44.5 kW
GA	Pearson	101.9 MHz	6 kW
GU	Agana	102.9 MHz	
IA	Parkersburg	98.9 MHz	6 kW
IL	Breese	97.5 MHz	6 kW
IL	Taylorville	94.3 MHz	6 kW
IN	Chandler	93.5 MHz	2.2 kW
KS	Plainville	96.7 MHz	5 kW
LA	De Ridder	92.1 MHz	12.2 kW
MD	Princess Anne	88.3 MHz	50 kW
MI	Frankenmuth	93.7 MHz	6 kW
MI	Leroy Twp.	88.1 MHz	2.5 kW
MO	LaMonte	97.1 MHz	25 kW
MO	Macon	99.9 MHz	4.4 kW
MO	St. Joseph	91.1 MHz	50 kW
MO	Scott City	93.9 MHz	6 kW
MO	Miner	107.1 MHz	6 kW
MS	Houston	88.7 MHz	3 kW
MS	Pontotoc	91.5 MHz	4 kW
MT	Billings	96.3 MHz	
MT	Ennis	98.7 MHz	50 kW
NC	Biltmore Forest	96.5 MHz	280 watts
NC	Fairbluff	105.3 MHz	6 kW
NC	Oak Ridge	90.9 MHz	1 kW
NE	Hastings	90.1 MHz	1.5 kW
NV	Reno	89.7 MHz	13 kW
NY	Jeffersonville	102.1 MHz	6 kW
NY	Schuyler Falls	90.9 MHz	3 kW
OH	Wauseon	96.9 MHz	
OR	Depoe Bay	105.5 MHz	6 kW
OR	Merrill	105.7 MHz	
OR	Seaside	98.1 MHz	600 watts
PA	Mansfield	92.3 MHz	800 watts
PA	Martinsburg	92.7 MHz	500 watts
TN	Minor Hill	89.7 MHz	3.5 kW
TX	Bells	92.9 MHz	4.1 kW
TX	Gregory	104.5 MHz	
TX	Lincoln	99.3 MHz	10 kW
TX	Stamford	92.1 MHz	50 kW
TX	Waco	94.5 MHz	3.2 kW
VA	Bristol	90.7 MHz	120 watts
VA	Emporia	99.5 MHz	
VA	Exmore	106.1 MHz	25 kW
VA	Leesburg	107.2 MHz	41 w. (WRCY booster)
WI	Neillsville	92.7 MHz	6 kW

## Granted Permits to Construct New FM Stations

AK	Houston	92.1 MHz	6 kW
MN	Hermantown	92.1 MHz	780 watts
MS	Centreville	89.7 MHz	70 kW

tion and Naturalization Service came calling. Because of its shoestring budget, the station relied on volunteer labor to offset the cost of operations. Because the station is located near the Canadian border, most of those unpaid staffers were Canadians. The INS objected to the use of Canadians because they were taking jobs away from U.S. citizens—even though the positions were unpaid.

The options, according to Dhuy, are either automation or no station at all. He told the Daily News that he's had difficulty finding qualified people in the area, let alone those who are willing to work unpaid. And if Canadians are barred from volunteering, "there might not be an American radio station," he said.

At last check, Dhuy and the INS were reviewing the options, including whether the law applies only to full-time employees at a business with a payroll.

## Splitsville

In a sale that ranks as one of radio's biggest, Paterson, N.J.'s WPAT-AM/FM were sold for \$103 million in November 1995. The deal separates the two stations, with the AM and FM sides each going to different owners.

The Spanish Broadcasting System paid \$83.5 million for the 5.37-kW station on 93.1 MHz. WPAT-FM was expected to debut a Hispanic format sometime in February, a move that underscores the size of the Hispanic audience in the New York metropolitan area. WJDM-AM, in nearby Elizabeth, N.J., added Hispanic programming last year in a similar attempt to reach the underserved audience.

WPAT-AM went to Heftel Broadcasting Corp. for \$19.5 million, where it will join WADO-AM, a Spanish-language news-talk outlet in New York City. Although at press time the new format for the 5-kW, 24-hour station had yet to be announced, some amount of Hispanic programming was expected.

## In Brief

•In business, success hinges on how you sell your product. For the talk-show hosts at Granite City, Ill.'s WGNU-AM, that meant hawking ads to support their shows—and themselves. The station's director of operations, John Minicky, used an internal memo to inform them that, "Regretfully, ...we no longer will be able to pay you an hourly fee. Fifteen dollars an hour isn't that much for an individual, but the total for us comes to \$3,000 to \$4,000 a month, which considering our revenues (or lack of same), is too big a burden." However, Minicky offered, hosts could finance their shows by selling commercial time, which the station would provide. By the way, he

NM	Taos	99.9 MHz	10 kW
OH	Thompson	89.1 MHz	11 kW
WA	Wenatchee	89.9 MHz	6 kW

### Canceled

KCEB	Casper, WY	91.1 MHz	
KDBX	Banks, OR	107.5 MHz	2 kW
KLRK	Vandalia, MO	100.1 MHz	
KTRN	Silverton, CO	103.7 MHz	26 kW

### Applied to Change FM Frequency

KRCB-FM	Santa Rosa, CA	91.1 MHz	Seeks 91.3 MHz.
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### Applied to Change AM Facilities

KCLE	Cleburne, TX	1120 kHz	Seeks 1140 kHz.
KJSA	Mineral Wells, TX	1140 kHz	Seeks 1120 kHz.
WBIV	Natick, MA	1060 kHz	Seeks increase to 50 kW.
WREN	Topeka, KS	1250 kHz	Seeks move to Kansas City, MO; 15/3.5 kW.
WXLW	Indianapolis, IN	950 kHz	Seeks night increase to 250 watts.

### Changed AM Facilities

KBLE	Seattle, WA	1050 kHz	Reduced nights to 440 watts.
KYCR	Golden Valley, MN	1570 kHz	Moved to St. Louis Pk., 3 kW/230 watts.
WAMV	Amherst, VA	1420 kHz	Reduced nights to 17 watts.

### Changed AM Call Letters

New	Was	
KBVI	KBKS	Boulder, CO
KHLT	KRJK	Hallettsville, TX
KIRS	KHIT	Sun Valley, NV
KNRC	KRCV	Reno, NV
KVCS	KASR	Perry, OK
WETR	WWMO	Eden, NC
WIBM	WCXI	Jackson, MI
WIMZ	WEZK	Knoxville, TN
WITK	WRBN	Warner-Robins, GA
WJCI	WBAN	Rantoul, IL
WLQR	WWWM	Toledo, OH
WOHZ	WBBD	Wheeling, WV
WPSP	WLAZ	Royal Palm Beach, FL
WQTK	WIBB	Macon, GA
WRBF	WAOP	Kendall, FL
WTHV	WWRQ	Hahira, GA

### New FM Call Letters Issued

KAOB	Devi's Lake, ND
KAOC	Cavalier, ND
KAOD	Babbitt, MN
KAOG	Jonesboro, AR
KAOH	Lompoc, CA
KBRW-FM	Barrow, AK
KLVK	Dimmitt, TX
KIKL	Kalispell, MT
KWCC	Muscatine, IA
WAOQ	Brantly, AL
WAOT	Kingstree, SC
WAOU	Tawas City, MI
WAOX	Bryan, OH

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WAQY Saucier, MS  
 WAPC Anderson, IN  
 WRGP Homestead, FL  
 WWGO Neogo, IL  
 WZJZ Richwood, OH

### Changed FM Call Letters

New	Was	
KDGS	KDLE	Andover, KS
KGGL	KDXT	Missoula, MT
KJJJ	KZKE	Seligman, AZ
KMRT-FM	KCKK	Granbury, TX
KSTB	KTKX	Crystal Beach, TX
KVCS-FM	KASH-FM	Perry, OK
WANG	WETR	Chenango Bridge, NY
WBNC-FM	WMLY	Conway, NH
WCCZ	WAIL	Pinckneyville, IL
WCLB-FM	WOVV	Ft. Pierce, FL
WCQR-FM	WPGB	Kingsport, TN
WEBX	WKTW	Tuscola, IL
WJBQ	WAAE	Fisher, WV
WLLM	WECQ	Clyde, NY
WLRO	WNKQ-FM	Richmond, KY
WOAZ	WSSH-FM	Lowell, MA
WQQB	WLTM	Rantoul, IL
WSKS	WKDY	Rome, NY
WSRG	WFNL	Sturgeon Bay, WI
WSTG	WZEA	Hampton, NH
WVVV	WMOG-FM	Lowell, MA
WXNU	WQNF	Valley Station, KY
WYJS	WLTD	Pickens, MS

added, "Please do NOT discuss these arrangements over the air." Instead, someone promptly leaked the memo to Jerry Berger, gossip columnist for the *St. Louis Post-Dispatch*.

•If you live in or near Maine, you might be interested in *Maine Radio News*, a potpourri of news about radio stations in the Pine Tree State. Compiled from trade magazines and area newspapers, the bulletin is put out by Bob Gilbert, 144 Harris Ave., Portland, Maine 04103-1531. No price or publishing schedule is mentioned, but a large self-addressed, stamped envelope or a dollar or two probably would get you a sample copy. Bob checks in to correct a December 1995 item about the format and call-letter history of Bath, Maine's WKRH. The former WJTO-FM signed on in 1971 on 95.3 MHz, Bob says, and in 1976 swapped frequencies to become WIGY at 105.9 MHz. The station then went classic rock as WKRH in February 1991, after nearly a year of silence. That format and calls were scrapped in April 1995 following its sale, with Christian talk and information debuting a few weeks later on the new WBCI.

•What's going in your area? Let us know by sending in newspaper clippings about local stations. Station and shack photos, bumper stickers and QSLs also are welcome, as are questions and comments. ■

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### Plenty Of Pirates To Log Out There

Another good pile of loggings is on hand this month, so let's get right on 'em.

Radio Free Speech was heard by Pat Murphy in Virginia on 6955 at 1415 to 1509 close and 1854 to 1916 close. The first featured listener letters, a commentary by Earl about redneck music and a commercial for the ACE.

WRV, 6955 at 0600 to 0640 sign-off, with rock music, a "Newt" spoof. "WRV, the station nobody wants to get." (Murphy)

Issac Kelly in Texas had a number of logs of Free Hope Experience: 6957 USB at 0537 with a test and report about a UFO signaling the station, 6955 USB at 0100 sign-on to 0115 closing, with music and talk by "Captain Jack." Also 0207 to 0225 close, followed by a return at 0254, and 0655 to 0712 close, including "Bob, if you can hear this Free Radio Experience, Godspeed."

Kelly also had several logs of Up Against the Wall Radio on 6955 USB at 2000-2024, then 2024-2110. Also, 0136 sign-on to 0200 sign-off and 2236 sign-on to 2300 sign-off. Basil Shelley in California had this one on 6955.1 USB at 0245-0316 with Major Spoox "broadcasting from a hilltop deep in the back woods of central North America."

Radio Doomsday was heard by Kelly on 6957 USB at 0650 to 0725 close. *The Lord Loves the Little Pirates* and other religious parodies by "Nemesis." "We don't have a carrier and we don't care."

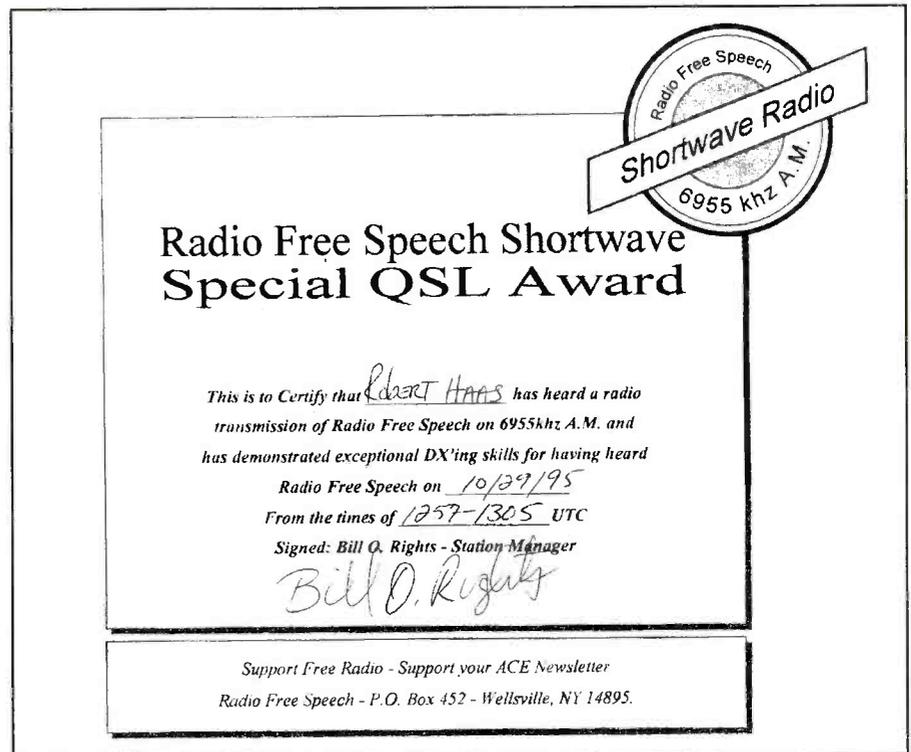
KNBS was heard by Murphy on 6955 at 1918 to 1949 close, featuring Phil Musik, funky blues, political comments. "KNBS or, if you're north of the border, CNBS."

The Purple Pumpkin, 6958 USB, was "back and better than ever" and "broadcasting from nowhere," Shelley reports.

Radio Barnyard, 6955 at 2333 sign-on to 2352 close with country music, *Achy-Breaky* parody, talk by "Captain Cowpatty," and barnyard noises at sign-off. (Kelley, CA)

KOLD, was heard by Kelly on 6957 USB from 0111 sign-on, saying their last program had generated a lot of mail; soon lost in static.

Dick Pearce in Vermont had Radio Amazonia via NARPS on 6954.5 at 1700 with a variety of music, German language songs, "special high-quality German beer



Free Speech Radio sent this nicely done QSL to Robert Haas.

can QSL" for reports in German, although English also is acceptable.

Another Pearce log was The Assylum, on 6955 USB at 2115. Dick says this was his fourth log of this catch, and he still can't make out anything more than the ID. There's too much reverb and other sound effects used, not to mention a weak signal.

Caribbean Sound System was heard by Pearce with its *Whole Lotta Love* closing theme at 1730 on 6955.

RCBN, tentative 6954.9 USB at 1920, very weak but with many mentions of "Bob," various shouting and maybe a mention of "Radio Bob."

Free Air Radio, tentative ID, noted by Pearce on 6954.9 LSB about 1930. An odd one that Dick reports was discovered later on the tape he had made of RCBN, after RCBN went off. It was very faint but there was no background noise. Mentioned "major funding for Free Air is provided by the—company," then a yodeling song and nothing more.

Howard Radio, 6955 USB at 0440-

0458 close with weird steel guitar and man repeating "Howard Radio" over and over, Murphy says.

WPN (World Party Network) heard by Shelley on 6954 USB with lots of clever music. Heard 0310-0324 close with a short story about a WPN investigator and QSL info.

KDED, 6955 USB at 0215-0255 close and 0038-0118 close with Grateful Dead and other groups. "Been off the air for a while; glad to be back. Send postcard. No postcard, no QSL." This one is now using the Providence mail drop, Shelley says.

WAOJ ("anti-O.J.") on 6955 USB at 2120, bringing up many points about O.J. and the trial and playing bits of music as answers or points of relevance. (Pearce) To 2144 close. Will QSL reports to the ACE and Pirate Pages. "If you have the slightest sympathy for O.J., you won't want this QSL."

Pirate Radio Insanity, 6955 USB at 0046 just at closing with "Pirate Radio

(Continued on page 83)

## 27 MHz COMMUNICATIONS ACTIVITIES

### A Tale of Two Clippings

There's an old Chinese curse that says: "May you live in interesting times." There is heavy emphasis on "interesting." Judging from two clippings sent in by alert readers, CBers in the United States may well be living in interesting times.

The first comes from Ray, SSB-668-B, of Plainfield, Wis. It was accompanied by a brief note that said, "Thought you might be interested! FCC on vacation?"

The story, from the Dec. 12, 1995, *Milwaukee Journal Sentinel*, is headlined, "Judge orders CB fan to cut power to 5 watts." It relates how one Johnny Williams had been running a 100-watt amplifier to boost his CB transmissions and was interfering with his neighbors' TV and radio reception for more than a year.

The neighbors sought legal help, and a circuit judge ordered Williams to dismantle his roof-mounted 20-foot antennas and to reduce power to 5 watts. The story says that Williams had been accused of "piping obscene messages and insults into the homes of his neighbors." Williams apparently considered talking on the CB radio a harmless hobby.

The second clipping, sent in by Ralph Craig of Tipp City, Ohio, is from the *Dayton (Ohio) Daily News* of Dec. 11, 1995. In an accompanying letter, Craig says, "As a longtime subscriber to your magazine, I believe that this case should be carefully watched as it could have serious ramifications on the CB and ham radio hobbies."

The story carries the headline: "CB user ends up in jail." In part, reporter Susan Vinella's copy says:

"For three months, Moraine resident Mike Price said his neighbor Steven Holbrook's voice boomed through his television set disrupting the picture whenever Holbrook talked on his CB radio. One Saturday night, when Holbrook's voice again came through the TV again, Price turned on a tape recorder and called the police.

"After hearing a tape recording of Holbrook's CB conversation—which Price said contained expletives and threats against him—police arrested Holbrook... on a third-degree felony charge of disrupting public services. The charge, which does not allow for bond, has a maximum penalty of 10 years in jail and a \$5,000 fine...

"Holbrook's wife, Lori, said she doesn't understand how her husband's hobby could land him in jail." She is quoted as



Members of the Biohazard Radio Group get this great certificate.

saying, "everything we were doing here is legal, and they took my husband to jail on a third-degree felony."

When I read these two clippings, arriving within a few days of each other, I had mixed reactions.

First, I was delighted that the judge ordered the CBer from Wisconsin to reduce his transmitter power to close to the legal limit. (Incidentally, judge, if you want to be strictly legal, the actual limit called for by FCC rules is 4 watts.) Not only are linear amplifiers against FCC rules, but it's been my observation—shared by many who have written to this column—that most CBers who run amplifiers don't know the first thing about running them properly. As a result, they generate incredible amounts of splatter on adjacent channels as well as huge amounts of TV interference. If you run "heat" and get in trouble as a result, you had it coming.

Second, I have no sympathy for operators who use CB airwaves as a venue for threats against others. Although obscene

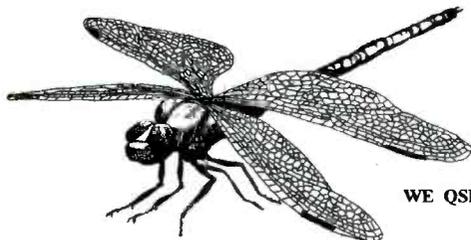
language is a violation of the FCC rules that can really spoil CBing for other operators, making threats against others very often can be a far more serious matter. If, in fact, the CBer in Dayton was making threats to others that violate local, state or federal laws, he richly deserves prosecution.

But there is a third aspect to these stories. Suppose for a moment, that the Dayton CBer's wife was correct when she said, "Everything we were doing here is legal." Suppose her husband was running legal power and was not threatening others or transmitting obscenities—then you've got a far different problem: the rights and privileges of a legal CBer vs. the rights and privileges of people who want to watch TV and listen to radio. And, just for fun, throw in the fact that some TV and radio manufacturers don't include filters that reject CB transmissions in order to keep costs down. What then?

If you find yourself in such a situation—you find that your legal CB station is interfering with your neighbors' TVs or ster-

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eos, a number of things can be done.

First and foremost, approach the problem in a spirit of friendly cooperation. Even if your neighbors aren't your most favorite people in the world, try to work together to solve the problem. If you take the attitude of, "My station is legal and proper, your TV is screwed up; it's your problem," your neighbors are likely to get stiff-necked as well, and they may decide to bring in the authorities (local police, the FCC, or others) whether or not you are operating properly.

Next, determine whether your station is

causing the problem. A buddy of mine was accused of bleeding through a neighbor's stereo. He called the neighbor on the phone to make sure the problem was occurring, then he told the neighbor he would come right over. When my buddy arrived, the problem still was happening. Obviously, my buddy couldn't be on the CB and visiting the neighbor at the same time. The neighbor realized he still had a problem, but it wasn't with my friend.

Finally, many technical solutions can be applied. A high-pass filter connected to

your CB can reduce stereo bleed and TV interference. Grounding your station can help. Toroids can be applied to phone lines and stereo speaker wires. By all means, contact your local CB shop, if you have one, for help. A local ham club also can be a source of assistance as well. Last, but certainly not least, the American Radio Relay League, the nation's premier amateur radio organization located in Newington, Conn., has a wealth of information about solving TV and stereo interference problems. CBers can join as associate members.

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Remember, cooperation is the key to solving interference problems. Once, my neighbor, a ham, was interfering with my VCR. On another occasion, my CB was getting into another neighbor's cordless phone. In both cases, a spirit of friendly cooperation saw us through to a solution. My special thanks to Ray and Ralph for sending in their clippings with those interesting stories. Thanks also to Rick Rawlinson of Cleveland, Ohio, who sent in a wire service version of the Dayton story. I would never have known about these stories without you guys!

### From the Mailbag

Mark Redfox, SSB-90-M sent in a photo showing his neat shack and several QSL cards. It turns out that Mark makes his living as a commercial artist, and he designed these striking cards for his wife and himself. If you would like Mark to custom design a card for you, write to him at: 814 Columbia #32, Seattle, WA 98104.

Benjamin Ware Sr., 4846 Mockingbird Court North, Columbus, Ohio, 43229, is looking for a manual for a Realistic Navajo TRC-458. He'll pay postage. Can anyone help him out? If so, please contact him directly.

Mike Carver and Dan Neuman decided to honor me with membership in the Biohazard Radio Group and an impressive cer-



Mark Redfox is shown in his shack about to enjoy his favorite radio publication.

tificate. They are a fairly new radio club in Northern California, and most members come from the local area, although they have a few out-of-state members as well. They hold a weekly talk net every Sunday at 8 p.m. Pacific Time on Channel 39. Interested in membership? Contact Mike Carver at 14545 Colter Way, Magalia, CA 95954. Thanks guys, and good luck with the club.

**Quick Tip:** It is illegal to use marine VHF radio to maintain contact between your boat and the car that is towing your boat trailer. People have actually been fined for doing just that. But it is perfectly legal to use CB for this purpose. And you don't have to pay a license fee, either!

Until next time, keep those cards and letters—and shack photos!—coming to me here at POP'COMM. ■

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# Washington Pulse

## FCC ACTIONS AFFECTING COMMUNICATIONS

### **FCC Proposes To Allocate 13.75-14 GHz Band To Fixed-Satellite Service**

The FCC has proposed to amend Part 2 of its rules to allocate the 13.75-14 GHz frequency band to the Fixed-Satellite Service (FSS) on a co-primary basis for Earth-to-space (uplink) transmissions and to make conforming revisions to the associated service rules in Part 25.

The FSS is a radiocommunication service between earth stations at a specified fixed point or any fixed point within specified areas and one or more satellites. In some cases, this service includes satellite-to-satellite links, which also may be operated in the intersatellite service. The FSS also may include feeder links for other space radiocommunication services. The adoption of this proposal would accommodate growing demand for FSS services and would provide satellite operators with increased flexibility in the design of their systems.

In addition, the FCC proposed to adopt domestically the international footnotes that specify the spectrum-sharing criteria between incumbent services and the FSS as contained in the U.S. proposals for the 1995 World Radiocommunication Conference (WRC-95).

The FCC noted that WRC-95 recently has concluded and that it adopted most of the U.S. proposals. The FCC is reviewing the decisions made at WRC-95 and will consider the international footnotes adopted for the 13.75-14 GHz band later in the proceeding. The FCC also proposed to adopt a U.S. footnote that would require that all FSS applications requesting the use of any frequency in the 13.75-13.8 GHz band segment be coordinated in order to minimize harmful interference to the federal government's Tracking and Data Relay Satellite System. This action would be consistent with the international allocation for this band made at the 1992 World Administrative Radio Conference, and would provide incumbent operations in this band with adequate interference protection from FSS uplinks.

### **FCC'S 60th Annual Report Available**

The commission's 60th annual report for fiscal year 1994 is available from the U.S. Government Printing Office.

The price is \$9.50 per paperback copy. The stock number is 004-000-00500-7.

Phone orders will be accepted by calling the reference desk at (202) 512-1800. Faxes should be sent to (202) 512-2250.

Phone and fax orders may be charged to MasterCard or Visa. Written requests should be addressed to Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. Checks and money orders should be made payable to the Superintendent of Documents.

### **FCC Affirms Secondary Allocation of 219-220 MHz For Amateur Service**

The FCC affirmed the secondary allocation of the 219-220 MHz band for use by the amateur radio service, granting in part and denying in part a Petition for Reconsideration filed by Orion Telecom (Orion), a licensee in the Automated Maritime Telecommunications Systems (AMTS).

Orion argued that the FCC should rescind its decision to allocate the 219-220 MHz band to the amateur radio service because the 80-km exclusion distance between AMTS and amateur operations is insufficient to protect primary AMTS operations from harmful amateur interference.

Orion asserted that a 925-km (575-mile) exclusion distance is necessary to protect AMTS operations. Orion further asserted that such an exclusion distance would render the 219-220 MHz band unusable for the amateur radio service because this exclusion distance around every AMTS operation effectively would exclude amateur operations from urban areas where they are predominantly concentrated. Orion also stated that in the event the allocation is not rescinded, that the FCC should amend its rules to provide better protection for AMTS operations.

Orion specifically requested the commission to:

- Modify the rules specifically to protect AMTS remote receivers.

- Require all amateur operations in the 219-220 MHz band to use interference-avoidance techniques.

- Amend the rules to correspond specifically with the text of the report and order concerning the immediate resolution of any interference by amateurs to AMTS licensees.

- Require type acceptance of all amateur equipment used in the 219-220 MHz band.

- Require the amateur notification provided AMTS licensees to include the technical specifics of the proposed amateur operation.

- Require that the maximum permissible power of amateur operations in the 219-220 MHz band be limited according to the percentage of the channel over which the

signal is spread to prevent high-powered narrowband signals.

The FCC denied the above requests. Nevertheless, the FCC took note of Orion's expressed concern that the amateur rules do not adequately specify the frequency range of AMTS operations and, thus, database searches conducted by amateurs could miss some AMTS coast stations. Accordingly, the FCC amended the rules to indicate that AMTS operations specifically use the 217-218 MHz and 219-220 MHz bands.

### **FCC Announces Consumer Protection Branch**

FCC Chairman Reed Hundt and Common Carrier Bureau Chief Regina Keeney have announced the newly named Consumer Protection Branch. This office, which now handles 50,000 telephone and written complaints and inquiries from consumers each year, is part of the bureau's Enforcement Division and previously was known as the Informal Complaints and Public Inquiries Branch.

Hundt said: "The FCC is the 'Triple A' of the Information Highway and just like that organization, our mission is to provide information to help consumers choose their routes and to help them with problems once they are on the road. The branch's new name presents this mission statement clearly and concisely. The slamming actions announced today also should serve notice to consumers and the industry that the FCC is committed to vigorously enforcing the rules of the road."

"We're taking every step possible to be more accessible to consumers and carriers," Keeney said. "In the last six months, we've increased our complaint caseload processing by nearly 50 percent. We are improving and streamlining telephone access to the branch, improving our consumer and carrier literature, and increasing our reach through non-traditional means, including the Internet and targeted communities of interest such as senior citizens."

Each year, the Consumer Protection Branch receives about 25,000 written consumer complaints about interstate telephone service along with 30,000 phone calls, hundreds of additional complaints referred to the agency by members of Congress and e-mail inquiries. The Consumer Protection Branch investigates each individual complaint and also opens investigations into patterns of abuse by particular companies and in certain areas.

John Muleta, chief of the Enforcement Division, described the name change as one of the many steps the branch is taking to reflect its role in the new era of competitive telecommunication services. "The name change is important because it gives consumers an easy point of reference about whom to contact with their concerns," Muleta said. "Remember that increased competition in telecommunications means consumers will have more choices.

However, having more choices also means consumers will need more information to make the right decisions. The branch can provide consumers with the information they need and its new name should help consumers find us faster."

Consumer Protection Branch activities include the following:

- **Common Carrier's Scorecard report:** The new Common Carrier Scorecard, released in the fall of 1995, provides the public with information about the number and nature of complaints received by the Consumer Protection Branch and the level of complaints generated by carriers. The Scorecard also provides consumers with advice about avoiding the problems described in the report.

- **Slamming:** Information the Consumer Protection Branch collected from consumer complaints and carrier responses regarding the unauthorized change of long distance service, "slamming," was instrumental in leading to the changes in FCC rules governing the marketing of long-distance services. These changes were adopted in June and took effect in September.

A team of Consumer Protection Branch and the Formal Complaints Branch staff members is responsible for investigating consumer slamming complaints alleging egregious behavior on the part of carriers or their agents. This work so far has led to a series of notices of apparent liability to be issued against the responsible carriers. In addition, the branch's public education campaign has alerted consumers to the problem of slamming and the need to monitor phone bills and promotional material.

- **Operator Services Providers:** The Consumer Protection Branch's consumer complaint data in this area is helping the commission formulate new policies and rules regarding OSP services. In addition, the branch's data has helped the Enforcement Division to investigate the rate practices of several OSP carriers by identifying those carriers that have generated high levels of consumer complaints and whose rates appear to be excessive. These investigations have resulted in a few of the carriers voluntarily improving their marketing and pricing programs. The branch also has embarked on an aggressive public education campaign and has reminded OSP consumers to stop, look and listen before using a public phone.

- **Public Information:** In addition to the slamming and OSP campaigns, the Con-

sumer Protection Branch has begun re-vamping all consumer educational materials. About 12,000 to 15,000 pieces of consumer information material are distributed each year, including information sent to consumers who file complaints with the agency. These materials cover topics ranging from toll fraud to the Subscriber Line Charge to ISDN.

## **Consolidation Of Common Carrier, Paging Services Proposed**

The Federal Communications Commission has adopted a notice of proposed rulemaking that initiates changes to the regulation and licensing of the paging industry. These changes are designed to promote continued growth and preserve vigorous paging competition. The main issues addressed in the notice are: (1) whether to adopt geographic licensing for paging services to replace the site-by-site licensing currently used; (2) what type of competitive bidding procedures should be implemented to resolve mutually exclusive paging licenses; and (3) what type of licensing procedures will be in effect during the pendency of this rulemaking.

The commission is proposing to convert to geographic area licensing for paging channels regulated under Parts 22 and 90 of the commission's rules, except for channels that already have been licensed on a nationwide exclusive basis. The notice seeks comment on whether private carrier paging channels currently licensed on a non-exclusive basis should be converted to exclusive geographic area licenses. The notice also seeks comment on the appropriate size of geographic service areas, the appropriate level of protection for incumbent paging systems previously licensed on a site-specific basis, whether minimum coverage requirements should be imposed, and whether channel aggregation limits should be adopted. The notice tentatively concludes that incumbent licensees that do not ultimately become geographic area licensees may continue operating under existing authorizations.

The commission proposes to adopt competitive bidding procedures to resolve mutually exclusive applications. The notice seeks comment on the competitive bidding method most appropriate for paging services, and on the type of designated entity rules that should be incorporated into these competitive bidding procedures.

The commission also is proposing interim licensing procedures to be used during the pendency of this rulemaking. These interim licensing procedures include the following:

- The commission is suspending acceptance of new applications for paging channels as of the adoption date of this notice. However, incumbent licensees may add

sites to existing systems or modify existing sites without prior commission approval or notification, provided that such additions or modifications do not expand the interference contour of the incumbent's existing system. Additionally, the notice seeks comment on whether incumbents should be allowed to file new applications that would expand or modify their existing systems beyond their existing interference contours with such new sites receiving only secondary authorizations.

- The commission will process under its current rules non-mutually exclusive applications filed as of the adoption date of this notice for which the relevant period for filing competing applications has expired as of the adoption date of this notice.

- The commission will not process, but will hold in abeyance until the conclusion of this proceeding, mutually exclusive pending applications.

- As a result of the commission's intent to implement new paging rules, it will postpone consideration of requests for conditional and permanent exclusivity in the 929-MHz band that are pending before the commission.

- Common carrier and private carrier paging licensees who have obtained nationwide exclusivity on a paging channel may file applications for additional sites without restrictions, as no other applicant may apply for such channels and such additions will not affect the spectrum availability to others.

## **Statistics Of Common Carriers Released By FCC**

Each year since 1939, the FCC has published Statistics of Communications Common Carriers, the most widely used reference work by academics, consultants and other researchers in the field of telecommunications. This publication includes a wealth of data on telecommunications costs, revenues, prices and usage. The latest edition for 1994-1995 is available now from the U.S. Government Printing Office; and for the first time, the entire publication is available electronically.

The 361-page volume is divided into eight sections: Part 1 contains general information on industry structure; Part 2 contains financial and operating data relating to telephone carriers; Part 3 contains data relating to COMSAT Corp. and telegraph carriers; Part 4 contains data on international communications; Part 5 contains information on rates for long-distance telecommunications services; Part 6 contains historical financial data on the communications industry; Part 7 contains historical rate tables for AT&T, MCI and Sprint; and Part 8 contains data on industry trends.

In Part 2, the statistics book contains several new tables for the local telephone companies on a state-by-state basis as well as data separated between state and inter-

state jurisdictions. These tables include revenues, operating expenses, taxes, plant, other investments and reserves.

The publication sells for \$23 (stock No. 004-000-00501-5) and may be purchased from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9328, by calling the order and inquiry desk at (202) 512-1800, or by faxing the order to (202) 512-2250.

The statistics book is available for reference in the Common Carrier Bureau's public reference room on the fifth floor of 1919 M Street, N.W. Tables can be downloaded from the FCC-State Link computer bulletin board system at (202) 418-0241 (BBS directory name SOCC). The FCC-State Link also can be reached by using a gateway feature available through the National Technical Information Service's FedWorld system. FedWorld can be reached via direct dial access at (703) 321-3339, via Internet telnet access at fedworld.gov, or via the World Wide Web at <http://www.fedworld.gov>.

## FCC Affirms Creation Of Emergency Medical Radio Service

The FCC affirmed the action taken in the report and order (FCC No. 93-32) in the proceeding establishing the Emergency Medical Radio Service (EMRS) as a new Public Safety Radio Service under Subpart B of Part 90 of the commission's rules.

The commission affirmed the reassignment of certain 453-MHz frequencies primarily used for emergency medical communications from the Special Emergency Radio Service (SERS) to the EMRS. The FCC stated that it has the authority to change spectrum allocations by rule-making procedures without first providing a hearing to licensees previously assigned the relevant frequencies. In addressing the frequency reallocation issue, the commission found that the needs of the medical community warranted priority. Further, the re-assigned frequencies were chosen to minimize disruption to the remaining non-EMRS-SERS entities. As these frequencies are in the same band as the 460-MHz MED channels, they are compatible with existing multichannel mobile equipment already used for emergency medical communication. This compatibility will promote system expansion, thus serving the needs of the public safety community.

The FCC also granted a request by ProNet Inc. to permanently grandfather its medical paging system operating on 453.125 MHz in the Chicago metropolitan area pursuant to provisions in the report and order. The commission stated that although ProNet was required to meet only one criterion, it met all the established criteria to justify grant of the waiver request. First, it appeared that ProNet's system is intensely utilized and migration to another channel would involve significant cost and

disruption to current medical paging operations. Permanently grandfathering the petitioner's paging system would prevent interruption of these important public safety communications. Second, because there is no reasonable alternative for ProNet's medical paging system in the Chicago area, relocation of its system would not serve the public interest. Third, as MED channel capacity continues to be available in metropolitan Chicago, it appears there is adequate spectrum for emergency medical transmissions in Chicago.

Finally, the FCC permitted licensees eligible to operate radio facilities as medical services, rescue organizations, disaster-relief organizations and beach patrols to use 220-MHz narrowband channels 161-170 to enable them—while conducting safety-of-life communications—to communicate with one another. These four SERS service categories need frequencies for mutual aid purposes. Permitting those licensed in these categories to use channels 161-170 in the 220-222 MHz band will serve the public interest by enhancing interoperability between many types of emergency providers in safety-of-life situations.

## Geographic Licensing, Competitive Bidding Rules For SMR

The commission has adopted final service and competitive bidding rules for the

10-MHz block of contiguous 800-MHz Specialized Mobile Radio (SMR) spectrum.

SMR is a flexible wireless service that may be used for dispatch, mobile telephone and data services. In recent years, SMRs have increased system capacity by aggregating channels across broad geographic areas and implementing spectrum-efficient technologies. As a result, the SMR service has come to be viewed as a viable competitor to cellular and personal communications services.

The rules adopted by the commission will streamline our regulatory scheme and expedite service to the public. The commission's decision also furthers the congressionally mandated goal of regulatory symmetry between 800-MHz SMR licensees and other competing commercial mobile radio service providers.

In addition, the commission adopted proposals for service and competitive bidding rules for the remaining 800-MHz SMR spectrum, including the general category channels (Channel Nos. 1-150, corresponding to frequencies 806-809.750/ 851-854.750 MHz). The commission's final and proposed rules for the 800-MHz SMR service will expedite service and allow 800-MHz SMR operators to respond quickly to changing consumer demands. By this action, the commission proposes and adopts several measures specifically aimed at expanding and enhancing the role of small businesses in the 800-MHz SMR service.



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## WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

### Will Radio Canada Remain On The Air?

An old friend is in trouble, maybe dying, perhaps gone already. Late last year, a decision was made to close down Radio Canada International, but a large protest from listeners worldwide may have stayed the decision.

At this writing we don't know how things will turn out. The Canadian Broadcasting Corp. has been funding RCI, most recently to the tune of \$16.5 million annually. When the government laid a drastic funding cut on CBC itself, CBC announced it no longer could afford to fund RCI.

RCI, which celebrated its 50th year of service last year, programs some 240 hours of shortwave broadcasts each week,

heard by an estimated five million people around the world. RCI also airs broadcasts of the Canadian Forces Network for members of the Canadian military serving abroad.

The closure also would mean ending operations at the Sackville, New Brunswick, transmitter site that serves as a relay for stations such as Radio Japan, Austrian Radio, the BBC, Radio Portugal, Deutsche Welle, Radio Korea and China Radio International. Let's hope that a miracle has occurred and that RCI continues!

*(Editor's note: As of deadline time, there is a movement afoot within Canada's government to restore funding. For*

*up-to-date information, call the Coalition to Restore Full RCI Funding at 514-844-2262, or send e-mail to rci@cam.org.)*

### Croatian Radio

Croatian Radio has added a large new curtain-type antenna and has two others on order. That should translate into better reception for us.

### Hong Kong

The BBC plans to tear down its Hong Kong relay station sometime this year, so as not to let it fall into the hands of the

### RADIO KOREA INTERNATIONAL'S BROADCASTING TIME & FREQUENCIES

( 방송시간표 )

( Effective November 1, 1995 )

FREQ	KST UTC	( Effective November 1, 1995 )																										
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1170KHz																					K	R	J	C				
3970KHz					E		G	◀ EUR(W) Ⓢ																				
5975KHz		E	K	E	R	K	C	K	◀								ND ▶	J	K	R	J	C	J					
6090KHz					F	◀ EUR(S) Ⓢ																						
6135KHz																												
6145KHz																				Ⓢ NAM(E) ▶	N							
6150KHz	R	◀ EUR																										
6480KHz			E	A	S	E	S	◀ EUR																				
7105KHz																				K	◀ EUR(W) Ⓢ							
7120KHz		R	◀ EUR(N) Ⓢ																									
7205KHz																NAM ▶	E	K										
7275KHz		A	F	E	◀	K	C	I	◀ ND	K	E	K	◀ ND							ND ▶	J	K	R	J				
7285KHz																							E	C	◀ CHI			
7550KHz			K	A	G	◀ EUR											EUR ▶	K	E		S	◀ SAM						
9515KHz		E	A	F	A	◀ ME/AF																			◀ SEA			
9570KHz																												
9640KHz							K	C	I	◀ SEA													ND ▶	N	C	E	I	K
9650KHz																							Ⓢ NAM ▶	N	E			
9870KHz		E	A	F	A	S	◀ ME/AF																					
11715KHz																												
11725KHz																												
11810KHz																												
13670KHz																												
15575KHz	R	E	K	A	S	E																						

**LEGEND**

- K Korean / 한국어
- C Chinese (Mandarin) / 중국어
- F French / 프랑스어
- G German / 독일어
- J Japanese / 일본어
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- N Korean News Service / 한국어뉴스
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- KS Korean Service / 국내 제1라디오 중계

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- ME Middle East / 중동지역
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- SAM South America / 남아메리카지역
- ND Non Direction / 전방향
- CHI / 중국지역
- NAM North America / 북미지역
- AF Africa / 아프리카지역
- SEA South East Asia / 동남아시아지역
- AUS Australia / 호주지역

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Chinese when they take over the colony in 1997. The BBC fears the facility might be used to jam its own broadcasts. The BBC will fill the gap with its new relay site now being completed in Thailand.

## Italy

There may be new shortwave stations active here in the months ahead. The government has adopted a new law that allows non-commercial stations to be licensed on shortwave. Stay tuned, as they say.

## Testing, Testing

The Voice of America has begun tests of its new relay station on Sao Tome and, by now, probably is in regular use. Frequencies involved are: 4785, 4860, 4950, 4985, 5965, 6120, 7105, 7115, 7140, 7275, 7295, 9505, 9555, 9570, 9590, 9615, 9650, 9660, 9680, 9770, 11705, 11750, 11775, 11910, 11915, 11970, 13680, 13710, 13740, 13770, 15115, 15170, 15195, 15235, 15260, 15435, 17705, 17740, 17750, 17805, 21570 and 21695 at various times throughout the day. The site has four 100-kW shortwave transmitters.

## Welcome Back!

As we announced sometime back, Radio Denmark has now resumed broadcasts in English, albeit minimally. Look for them on the first Sunday of each month, about 40 minutes into the program.

## On the Air

Listening Post reporter Marie Lamb of Brewerton, N.Y., is host of a new shortwave DX program, *DXing With Cumbre*, currently aired over WHRI on Fridays at 2330 on 5745, Saturdays at 0600 on 5760 and 7315 and 2330 on 9495 and Sundays at 0430 on 5760. It's also on WHRI's sister station, KWHR, Hawaii, on Saturdays at 0500 and 1200 and Sundays at 1300 (or 1400) all on 9930 and Mondays at 0330 on 17510. Congratulations, Marie, and good luck with the show!

## Loggings

Wanted—your listening logs every month! List them by country, with your last name and state abbreviation after each.

Please double space between items (at a minimum); the logs are cut into strips for sorting and it saves a lot of aggravation if we don't have to navigate too-narrow spaces. Also wanted are spare QSLs, station literature and photographs, and photos of you in your shack for use as illustrations. QSL information such as station addresses, QSL policies and the like also are welcome, as is anything you care to send having to do with shortwave broadcasting. Thanks!

Here are the logs. All times are UTC, which is five hours ahead of EST, i.e. 0000 UTC=7 p.m. EST, 6 p.m. CST, etc. The broadcast language is indicated by abbreviations such as AA=Arabic, SS=Spanish, etc. If no indication is given, the broadcast is assumed to have been in English.

**ALASKA**—KNLS, 6150 at 1157. QRM'd by other sign-ons at 1200. (Williams, TX) 7365 at 1257 with ID. IS. (Maywoods DX Team. KY)

**ALBANIA**—Radio Tirana, 7160 with news at 0230. (Mullican, TX) 7270 at 1950. (Pellicciari, CT) 0028 in presumed Albanian. (Williams, TX)

**ANGOLA**—Radio Nacional, 9534 at 2053 with Radio Nacional ID in EE by woman at 2100. (Maywoods, KY)

**ANTIGUA**—Deutsche Welle relay. 11715//11765 at 1430 in GG. (Williams, TX)

BBC relay, 15220 to Africa at 0115, 17840//21660 (Ascension Island) at 1629. (Williams, TX)

**ARGENTINA**—RAE. 11710 at 0027 and 0239 with soccer in SS. (Williams, TX) 0210 in SS. (Mullican, TX) 0245 with Tangos. 15345 at 1945 with tangos, ballads, rhumbas, pops. (Maywoods, KY) 15345 in FF at 2141. (Stanley, AZ)

**ARMENIA**—Voice of Russia relay. 21745 at 1632 in EE. Poor. (Williams, TX)

**ASCENSION ISLAND**—RAI, Italy relay. 6110 at 0144 and 11765 at 0224 in II. (Williams, TX)

BBC relay, 5970 at 0111, 1765 at 2359 and into SS, 15225 at 1603 to South Africa. 21660 at 1629. (Williams, TX)

**AUSTRALIA**—Radio Australia. 5995 at 1315. (Northrup, MO) 9580//9860 at 0800. (Pellicciari, CT) 9860 at 1223. (Williams, TX) 9615 at 1607, 11695 at 1900, 11880 at 1800, 17795 at 2257 and 17860 at 0030. (Stanley, AZ)

**AUSTRIA**—Radio Austria International. 6015 (via Canada) at 0630. (Pellicciari, CT) 9655 at 0014 in GG. 13730 in GG at 1239. (Williams, TX) 9870 at 0230. (Stanley, AZ) 15450, tentative. at 1325. (Northrup, AZ)

**BELGIUM**—Radio Vlaanderen International, 13670 at 1400 with ID, IS. (Maywoods, KY) 17690 at 1433 to Africa, unID language. (Williams, TX)

**BENIN**—Radiodiffusion du Benin, 4870 at 2250 with piccolo, xylophone, marimbas, drums, etc. ID in FF. (Maywoods, KY)

**BOLIVIA**—Radio Illimani, 6025 at 2350 back on this frequency at 0000 with ID, SS. "Mucho QRM." (Maywoods, KY)

**BOTSWANA**—Voice of America relay, 7340 at 0316 with. (Williams, TX)



*Radio Cairo's nice circular sticker in red, gold and black was sent by Eric Cisar of Mississippi.*

**BRAZIL**—Radiodifusora Amazonas. 4805 in PP at 1116 with sports, ID. (Maywoods, KY)

Radio Educacao Rural, 4755 at 0145 in PP, ID 0201. (Maywoods, KY)

Radio Nacional/Radiobras, 6180 at 0800 in PP. Cow-mooing sound effects with time announcements. (Pellicciari, CT) 11780 at 2050 in SS. (Stanley, AZ) 15445 at 1255 with ID 1258 and into songs in Portuguese. (Maywoods, KY) 15445 at 1252 with '40s pops. (Williams, TX)

Radio Clube, Dourados. 3374.8 at 0420 in PP. (Maywoods, KY)

Radio Brazil Central, 4985 at 0700 in PP. (Pellicciari, CT) Parallel 11815 at 0600. (Paszkiwicz, WI) At 1830 in PP. (Klingman, NY)

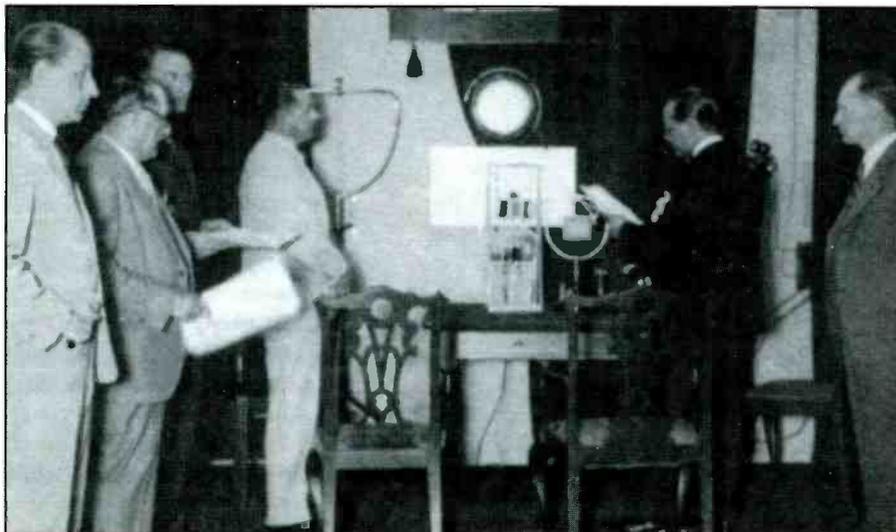
Radio Anhanguera, 11830 at 2355 in PP. (Williams, TX)

Radio Juratel/Radio Bandeirantes, 11925 at 2347 in PP. (Williams, TX)

Radio Ribeirao Preto, 3205 at 0700 with vocals, announcements, jingle IDs, time checks. (Paszkiwicz, WI)

**BULGARIA**—Radio Bulgaria. 7335//9700 at 1958 with IS, ID, news at 2000. CHU on top on 7335. (Pellicciari, CT) 9700 at 0216 in presumed Bulgarian. (Williams, TX)

**BURKINA FASO**—Radio Burkina. 4815 at 0621 with non-traditional music. FF ID by woman at 0703. (Maywoods, KY)



*A recent schedule from Radio Budapest shows this photo of the station's main studio as it was back in 1928!*

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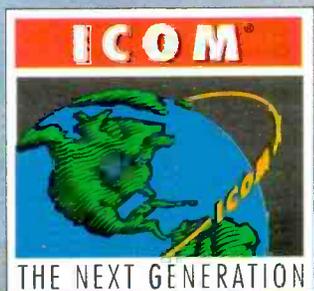
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Radio Canada International's programs have kept listeners worldwide informed and entertained for more than 50 years.

**CAMEROON**—RTV Cameroon, Douala, 4795 at 2202 in FF. (Maywoods, KY)

**CANADA**—Radio Canada International, 6150//9760 at 0600, into FF at 0630. (Pellicciari, CT) 9755 at 0007, 15325 at 1608, in RR. (Williams, TX)

CFRX relay of CFRB mediumwave. 6070 at 1520. (Northrup, MO) 1145 with mention of CFRX. (Williams, TX)

CKZ2N, St. John's, 6160 at 2215 with ID at 2230 during news. (Maywoods, KY)

Deutsche Welle relay, 13790 at 1411 in GG. (Williams, TX)

CHU time station, 3330 at 0052 and 7335 at 0233. (Williams, TX)

Radio Japan relay, 5965 at 1151, 5960 at 0218, 6120 at 1150. (Williams, TX)

**CHAD**—Radio Nationale, 4904.5 at 0412 and 0510 in FF. (Maywoods, KY)

**CHINA**—Central People's Broadcasting Station, Beijing, 11610 at 0555 with pop/rock. ID in CC at 0600. (Foss, AK)

China Radio International, 9690 (Spain) at 0215 in CC. (Williams, TX) 11715 via Mali at 0220. (Mullican, TX) 0003. (Wilden, IN) 15110 at 2000. (Stanley, AZ)

**COLOMBIA**—Caracol, 5075 in SS at 2300. (Pellicciari, CT) 0504. (Jeffery, NY) 0718. (Mullican, TX) 0821. (Foss, AK) 1139. (Williams, TX)

Radio Nacional, 4955 at 2300 in SS with IS, ID. (Pellicciari, CT) 0135 in SS. (Mullican, TX)

La Voz del Rio Aruca, 4895 at 1120 in SS. Many mentions of "ah-rah-OO-kah." (Maywoods, KY)

**CONGO**—Radio TV Congolaise, 5985 at 2115 in FF, with ID at 2118. (Maywoods, KY)

**COSTA RICA**—Radio For Peace International, 7385 at 0829. (Pellicciari, CT) 15050 at 1954. (Mullican, TX)

Radio Reloj, 4831.7 at 0355 in SS, ID 0400. (Maywoods, KY)

Faro del Caribe, 5054 at 0920 in SS. (Mullican, TX) 5055 at 0114 in SS. (Williams, TX)

Adventist World Radio, 5030 at 0220 in SS. (Foss, AK) 1105 with *Onward Christian Soldiers*, IS; 6150 at 1151 in EE. (Williams, TX) 0200 in SS. (Stanley, AZ)

**CROATIA**—Croatian Radio, 5895 at 0050 with news in EE. (Maywoods, KY)

**CUBA**—Radio Havana Cuba, 5965 at 0110, 6180 at 0152, 11760 at 1229. (Williams, TX) 6000//9820 at 0100. (Pellicciari, CT) 9550 at 0001 in SS. (Wilden, IN)

Radio Rebelde, 5025 at 0415 with sports event. (Mullican, TX) 1043 in SS. (Williams, TX)

**CYPRUS**—BBC relay, 15575 at 1415. EE to Mideast and west Asia. (Williams, TX)

**CZECH REPUBLIC**—Radio Prague, 7345 at 0240 in Czech to North America. (Williams, TX)

**ECUADOR**—Radio Quito, 4919 at 0020 in SS with comments by man and several mentions of "Radio Quito." (Maywoods, KY) 0800 with ID in SS at 0804. (Foss, AK) 4920 at 1057. (Williams, TX)

La Voz de Upano 5040, at 0001 with SS ID. Also presumed at 1101 but varying between 5038 and 5042. (Williams, TX)

Radio Jesus del Gran Poder, 5049 at 1113 with Andean music, SS talk. (Williams, TX)

Radio Buen Pastor, 4830 at 0008 with religion, SS. (Williams, TX)

HCJB, 5900 at 1120 in SS, 9415 at 1208, 11960 at 1234, 12005 at 1235, 15115 at 1242. (Williams, TX) 15140 in SS at 1840. (Barton, AZ)

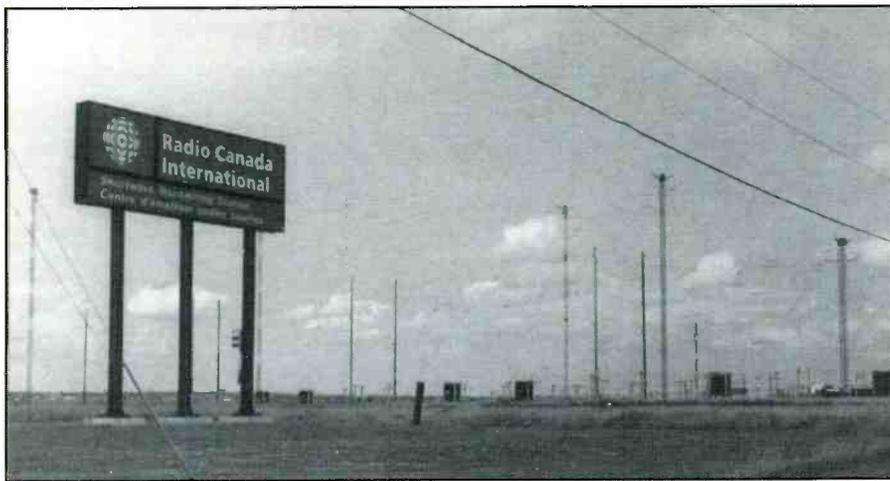
**EGYPT**—Radio Cairo, 9850 at 0000, lost by 0025. (Stanley, AZ) 11560 at 1408 in unID language. 12050 at 1358. (Williams, TX)

**ENGLAND**—BBC, 5875//6110 in SS at 0030. Also 5975//6175//7325 at 0100. (Pellicciari, CT) 5965 at 1230 and 15070 at 1320. (Northrup, MO) 9825 at 0005 in SS, 2050 at 11750. (Wilden, IN)

**FRANCE**—Radio France International, 5920 at 0104 in SS, 9800 at 0006 in FF, 13640 at 1238 in

### 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



RCI's transmitter site at Sackville, New Brunswick, may have been closed down by now. Hopes are alive that it still will be on the air.

FF, 1500//15315 in FF at 1253, 15530 in EE at 1255, into FF. (Williams, TX) 15200 at 2200 in Italian. (Stanley, AZ) 15515 at 1325 in FF, 17860 at 1300 in SS. (Northrup, MO)

**FRENCH GUIANA**—Radio France International relay, 9800 at 0032 and 11670 at 1229 in FF. 13625 in EE at 1237, 21465 at 1437 in FF. (Williams, TX)  
Radio Japan Relay, 11895 at 0233 in JJ. (Williams, TX)

Swiss Radio International relay, 9905 at 0220 in FF. (Williams, TX)

China Radio International relay, 13685 at 0235 in CC. (Maywoods, KY)

**GABON**—Africa Number One, 9580 at 2257 in FF. (Stanley, AZ) 15475 at 1624 with football. (Maywoods, KY) 17630 at 1537 in FF. (Klingman, NY)  
Radio Japan relay, 11865 at 2100. (Stanley, AZ) 21700 at 1632 in JJ. (Williams, TX)

**GERMANY**—Deutsche Welle, 5960, via Canada, at 0100. Also 6040//6085//6145//9670 at 0100. (Pellicciari, CT) 6045 at 0213 in SS, 6075 at 0042 in GG, 6100 at 0040 in GG, 6145 at 0111, 15275 at 1250 in GG. (Williams, TX) 11760 at 1956, IS, march music at 2000 and into German. (Wilden, IN)

**GHANA**—Ghana Broadcasting Corp., 3366 at 0546 with religious songs in EE. (Maywoods, KY)

**GREECE**—Voice of Greece, 6260 at 2103, 7448 at 0115 in Greek. (Maywoods, KY) 9420 in Greek at 0023. (Williams, TX)

VOA relay, 15255 at 1606. (Williams, TX)

**GUAM**—Trans World Radio/KTWR, 9475 at 1721 and 9815 in unID language at 2133. (Stanley, AZ)

**GUATEMALA**—Radio Maya, 3324.8 at 1135 in SS. (Maywoods, KY) 1049 in SS. (Williams, TX)

Radio Tezulutlan, 3370 at 1120 in local language. (Williams, TX) 4836 at 2315 in SS. (Pellicciari, CT) 0035 in SS with ID at 0041. (Maywoods, KY)

La Voz de Nahuala, 3360 at 1117 in SS. (Williams, TX)

Radio Cultural, 3300 in SS at 1054. (Barton, AZ)

Radio Chortis, 3380 in SS at 0236. (Williams, TX)

Radio K'ekchi, 4845 at 0011 in SS. (Williams, TX)

**HONDURAS**—La Voz de Evangelica, 4820 at 0006, ID in SS at 0058. (Williams, TX) 4819.8 at 0529 in SS. (Foss, AK)

Radio Buenas Nuevas, 4800, ID in SS at 0007. (Maywoods, KY)

Radio Internacional, 4930 at 0235, excited ID. (Maywoods, KY) 1310 in SS. (Williams, TX)

Radio Luz y Vida, 3250 at 0230 and 1130 in SS. (Williams, TX)

**HONG KONG**—BBC relay, 7180 at 1155. (Maywoods, KY) (Better chase this one if you don't have it yet. The BBC intends to tear it down before Hong Kong reverts back to China.—Ed.)

**HUNGARY**—Radio Budapest, 9850 at 0200 with IS, ID, news. (Stanley, AZ)

**ICELAND**—INBS, 11402 in SSB at 2302 with ID

and woman announcer in Icelandic. (Maywoods, KY)

**INDIA**—All India Radio, Bangalore, 9910 at 1540 to 1545 close with sports news. (Paszkievicz, WI) 1530 with news. (Maywoods, KY)

**INDONESIA**—Radio Republik Indonesia, Jakarta, 9680 at 1135 in II with music, mentions of Jakarta. (Maywoods, KY) 1212 and 1544. (Williams, TX)

RRI, Jambi, 4926.95, very weak at 1050, in II. (Maywoods, KY)

RRI Ujung Pandang, 4753.28 at 1100 in II. (Maywoods, KY) Pops at 1327. (Barton, AZ)

**IRAN**—VOIRI, 9022 at 0030 with IS, ID, national anthem, AA "chants," EE with reports. (Stanley, AZ) 9735 at 1343 in possible Farsi. (Williams, TX)

**ISRAEL**—Kol Israel, 7465 at 0500 with news. Lost to WEWN co-channel sign on at 0505. (Jeffery, NY)

Reshet Bet service, 7498 at 0120 with ID, studio banter, folk songs and local pops. (Maywoods, KY) (Presume in Hebrew.—Ed.)

**ITALY**—RAI, 6005 at 0050 with news in EE. (Pellicciari, CT)

9645 at 0050. (Stanley, AZ) 0209 in II. (Williams, TX)

**JAPAN**—Radio Japan, 7280 at 1700 with news, JJ lesson. (Stanley, AZ) 9535 at 1540. (Williams, TX) 11715 at 0439 in RR, 11815 at 0435 in CC, 11885 at 0432 in JJ. (Foss, AK)

Radio Tampa, 3945 at 0737 with pop/soul. (Foss, AK) 9595 at 1350 in JJ with possible commercial. (Williams, TX)

Radio Canada International relay, 6150 at 1200, QRMing KNLS. (Williams, TX)

**KAZAKHSTAN**—Voice of Russia relay, 15230 at 1247 in unID language. (Williams, TX)

**KUWAIT**—Radio Kuwait, 11990 at 1800 in EE with ID, pops. (Stanley, AZ)

**LESOTHO**—Radio Lesotho, 4800 at 0314 with choral songs. Some splash from the Ecuadorian. (Maywoods, KY)

**LIBYA**—Radio Jamahiriya, 15235 at 1249 in AA. (Williams, TX)

15415 at 1637 in AA. Splash from WRNO on 15420. (Maywoods, KY)

**MADAGASCAR**—Radio Netherlands relay, 9605 at 1942. (Stanley, AZ) 1948. (Jeffery, NY) 11655 in DD at 0026. (Williams, TX)

**MALI**—Radio TV Maliene, 5995 at 2330 with drama in FF. (Maywoods, KY)

China Radio International relay, 9710 at 0012 in EE, 0218 in CC, 11715 at 1250, 15130 at 1601, 11875 in SS at 2350. (Williams, TX)

**MEXICO**—Radio Educacion, 6185 at 0820 in SS. (Pellicciari, CT) 1135 in SS and EE. (Barton, AZ)

Radio Mexico International, 9705 in SS at 1550. (Williams, TX)

Radio Mil, 6010 at 0044 with pops and SS. (Williams, TX)

**MOLDOVA**—Radio Dniester International, 6205

at 2130 in EE with news features, report on deployment of Russian troops in Mongolia. (Stanley, AZ) 2137 with interview, music, press review, station address. (Jeffery, NY)

Voice of Russia relay, 7125 at 0100. (Maywoods, KY) 15430 at 1422 in RR. (Williams, TX)

**MONGOLIA**—Radio Ulaanbator, tentative, 12085 at 1130. (Maywoods, KY)

**MOROCCO**—RTV Marocaine, 15345 at 1611 in AA. (Williams, TX)

VOA relay, 15410 at 1614. (Williams, TX)

**NAMIBIA**—Namibian Broadcasting Corp., 3289.95 at 2122. Poor. (Maywoods, KY) 3290 at 0346 with man/woman announcers, only held for 40 seconds. (Williams, TX)

**NEPAL**—Radio Nepal, 5005 at 1243 with beautiful flute music, local or regional song. Faded. (Maywoods, KY)

**NETHERLANDS**—Radio Netherlands, 6020 at 0136. (Williams, TX)

6020//6165 (Bonaire) at 2330, 9605//11665 (Madagascar) at 2000. (Pellicciari, CT)

**NETHERLANDS ANTILLES**—Radio Netherlands relay, 6165 (//6020) at 0050. (Mullican, TX) 6165 at 0035. (Williams, TX)

**NEW ZEALAND**—ZLXA, Radio Reading Service, 0730-0740 with accented male reading, short bit of music at 0740. Poor. (Paszkievicz, WI)

Radio New Zealand, 11735 at 2000 with ID, news. (Stanley, AZ)

**NIGER**—La Voix du Sahel, 5019 at 0541 with ID and news at 0546, FF. (Maywoods, KY)

**NIGERIA**—Voice of Nigeria, 3326 at 0530, preaching. (Maywoods, KY)

**NORTH KOREA**—Chagong Provincial Station, 3959.8 at 0734 in Korean. (Foss, AK)

Radio Pyongyang, 33320 at 0740 in KK. (Foss, AK) 11700 at 2330 in EE. (Klingman, NY) 11700 and 13650 at 2300. (Stanley, AZ) 11700 at 0014 in SS, 13650 in SS at 0022, 13760 at 0020 in EE, 15130 in EE at 0030. (Williams, TX)

**NORTHERN MARIANAS**—Monitor Radio, 9355 at 2026. (Barton, AZ) 1205. Also 9495 at 1537 in CC. (Williams, TX)

**NORWAY**—Radio Norway International, 7480 at 0304 in NN, 11840 at 1400 with ID, news in EE. (Williams, TX)

**OMAN**—Radio Oman, 9735 in AA at 1600, about wiped out by Deutsche Welle. (Maywoods, KY)

BBC relay, presumed, 9580 at 1542. Poor. (Williams, TX)

**PAPUA NEW GUINEA**—Radio East New Britain, 3385 at 0740 in unID language. (Foss, AK)

Radio Sanduan, 3205 at 0753 with South Seas music. (Foss, AK)

Radio West New Britain, 3235 at 0748 with children's chorus. (Foss, AK)

Radio Central, 3290 at 1153 with talk, time check. (Maywoods, KY)

Radio Manus, 1156 in Pidgin with music, news, ID. (Maywoods, KY)

**PAKISTAN**—Radio Pakistan, 11570 at 1830 in Urdu with strings, commentary. (Maywoods, KY)

**PARAGUAY**—Radio Nacional, 9735 at 0009 and 1219 in SS. (Williams, TX)

Radio Encarnacion, 11939.2 at 0210 in SS. Very low modulation, YL program host. (Maywoods, KY)

**PERU**—Radio Cora, 4914, presumed at 1058 with SS talk, ballads. (Williams, TX) 0435 in SS. (Maywoods, KY)

Radio Eco, presumed, 5100 (nominal 5097v) at 1117 in SS. (Williams, TX)

Radio Horizonte, 5018 at 0137, woman in SS. (Williams, TX)

Radio Melodia, 5996 at 0332 in SS. Mentions of Peru and of having more contact with Spain. (Williams, TX)

Radio Atlantida, 4790 at 0242 in SS with ID. Anthem at 0300. (Maywoods, KY)

Radio Chanchamayo, 4895 at 1130 with sports program, Andean music, mentions of Radio Chancha. (Maywoods, KY)

Radio Villarica, 4896.5 at 1120 with Andean music, SS. (Maywoods, KY)

**PHILIPPINES**—VOA relay, 6110 at 1131. (Williams, TX)

Radio Veritas Asia, 9505 at 2314 in unID language. (Williams, TX)

**PORTUGAL**—Radio Portugal, 11745 at 1624 in PP, 15200 at 1243 in PP. (Williams, KY)

Deutsche Welle relay, 9640 at 0210 in SS. (Williams, TX)

Radio Canada relay, 15325 at 1425 in FF. (Williams, TX)

**ROMANIA**—Radio Romania International, 9570 at 0021 in SS and Romanian, 15340 at 1610 in AA to Africa. (Williams, TX)

**RUSSIA**—Voice of Russia, 5905//7175//7345//9825//9850 and 12050 at 0345. Also 7270 (Petropavlovsk-Kamchatka) at that time, 5940 at 2157. (Mulligan, TX) 7105 at 0032. (Wilden, IN) 6145 (Khabarovsk) at 1328 in CC, 9715 (Volgograd) at 0011. (Williams, TX) 7105//7125//7180 at 0100. (Pellicciari, CT) 7180 at 0000. (Stanley, AZ) 7270 at 0335. (Barton, AZ)

Krasnoyarsk Radio, 5290 at 0217 in RR. (Foss, AK)

Buryat Radio, 4860 at 0723 in possible RR. (Foss, AK)

**SAUDI ARABIA**—BSKSA, 9555//9870 in AA at 1815. (Pellicciari, CT) 15060 in AA at 1455 with prayer. (Barton, AZ)

**SEYCHELLES**—Far East Broadcasting Association (FEBA), 9810 at 1458. (Maywoods, KY)

BBC relay, 15420 at 1616 in unID language. Into EE at 1620. (Williams, TX)

**SIERRA LEONE**—Sierra Leone Broadcasting Service, 3316 at 2220 with news, station jingle. (Maywoods, KY)

**SINGAPORE**—BBC relay, 6195 at 1155, 9740 at 1556. (Williams, TX) 9740 at 1752. (Stanley, AZ)

**SOUTH AFRICA**—Channel Africa, 9585 at 0400 in EE with ID, news, African features. (Stanley, AZ) 11900 at 0457 with IS, ID, news. (Jeffery, NY)

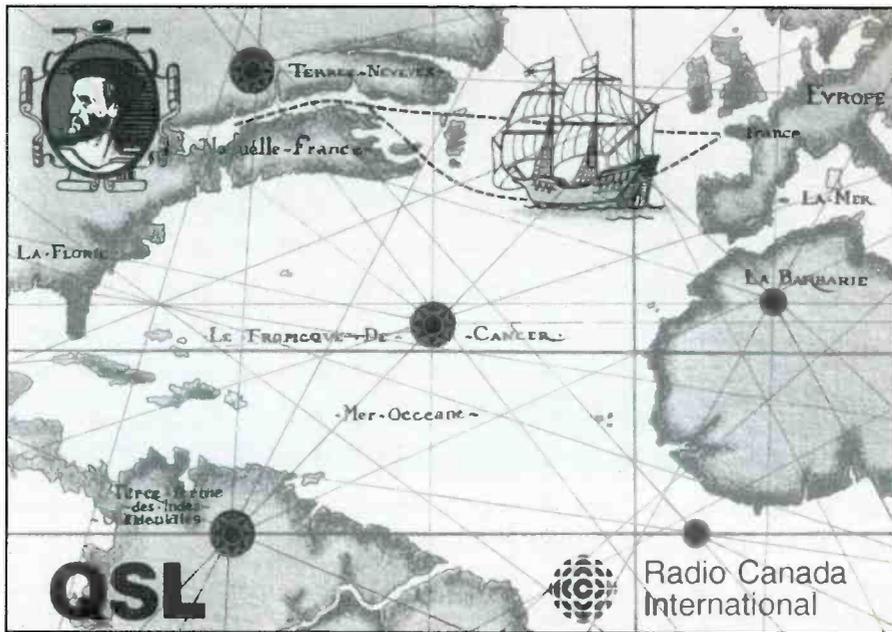
**SOUTH KOREA**—Radio Korea International, 7205 at 0605 with news. (Barton, AZ) 15575 at 0025 in presumed Korean. (Williams, TX)

**SPAIN**—Radio Exterior Espana, 5970 in SS at 1315, 17845 at 1305 in SS. (Northrup, MO) 0111 in SS, 9540 at 1210 in EE, 9620//9630 at 0208 in SS. (Williams, TX) 9540 at 0006 with news. (Wilden, IN) 0525 with DXer's Corner. (Pellicciari, CT)

**SURINAME**—Radio Apinote, 4990.9 with ID 0358, drums, anthem and off 0402. (Maywoods, KY)

**SWEDEN**—Radio Sweden, 6065 at 0300 with ID, times, frequencies; 7115 at 0251 with commentary; 9850 at 0030 with ID, news. (Stanley, AZ)

**SWITZERLAND**—Swiss Radio International, 6135 at 0037 in GG, 0148 in SS. (Williams, TX)



A new QSL card was issued every year by RCI. This one is from 1984 and commemorates the 450th anniversary of the discovery of Canada.

**TAIWAN**—Voice of Free China, 7130 at 1158 in unID language. (Williams, TX)

Broadcasting Corp. of China, 15270 in CC at 2306. (Jeffery, NY)

**THAILAND**—Radio Thailand, 11905 at 0030 in EE with Newshour. Started strong but gone by 0049. (Jeffery, NY)

VOA relay, 7235 at 1333 in unID language. (Williams, TX)

**TOGO**—Radio Lome, 5047 at 0525 with Dixieland, ID in FF at 0530. (Maywoods, KY)

Radio Kara, 3222, tentative, 0530. Very weak. (Klingman, NY) 0542 with man in FF. (Maywoods, KY)

**TUNISIA**—RTV Tunisienne, 7475 at 0408 in AA with announcer, vocals in AA. (Maywoods, KY)

**TURKEY**—Voice of Turkey, 9445 at 2024 with ID in EE at 2027, alternating with IS. (Maywoods, KY) 9460 at 2354, Mideast music, Turkish. (Williams, TX)

**UGANDA**—Radio Uganda, 4976 at 2038, vocals, electric guitar, cowbells. (Maywoods, KY)

**UKRAINE**—Radio Ukraine International, 7205 at 0100. (Stanley, AZ) 9870 at 1533 in UU. (Jeffery, NY) 11590 at 1407 in UU. (Williams, TX)

**VATICAN**—Vatican Radio, 6095 at 0142 in SS, 6245 at 0103 in II, 9605 at 0206 in SS. (Williams, TX) 7305 at 0258 with interviews. Off 0314, back at 0316 in Italian. (Stanley, AZ)

**VENEZUELA**—Ecos del Torbes, 4980 at 0000 in SS with ID, music. (Pellicciari, CT) 1100 with ID, mention of San Cristobal, frequency info, SS news. Also at 0015 with soccer. (Williams, TX) 0008. (Jeffery, NY) 0220 with ID. (Maywoods, KY)

Radio Tachira, 4830 at 0335 in SS. (Maywoods, KY)

**VIETNAM**—Voice of Vietnam, presumed, 5925 in VV. (Williams, TX) (via Russia. — Ed.) 9839.7 at 1230 in VV. (Maywoods, KY)

**YEMEN**—Republic of Yemen Radio, 9780 at 1805 in EE with music, news. Annoying background hum. (Jeffery, NY) 1758 ID and into EE at 1800. (Maywoods, KY)

**YUGOSLAVIA**—Radio Yugoslavia, 7115 at 0031 in unID language. (Williams, TX)

**ZANZIBAR** (Tanzania)—Radio Tanzania (Zanzibar site) with "Dar es Salaam" ID at 1957 on 11734.4. Frequency varies day to day. (Maywoods, KY)

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CIRCLE 63 ON READER SERVICE CARD

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CIRCLE 69 ON READER SERVICE CARD

That's the lot! Let's give a snappy salute to the following contributors this month:

Sheryl Paszkiewicz, Manitowoc, WI; Steve Williams, Corpus Christi, TX; Sue Wilden, Columbus, IN; Dave Jeffery, Niagara Falls, NY; Trevor Stanley, Flagstaff, AZ; Richard Klingman, Mount Upton, NY; Marty Foss, Wasilla, AK; Cliff Mulligan, KC5AEA, Fort Worth, TX; Mark Northrup, Gladstone, MO; Steve Pellicciari, Norwalk, CT; and the Maywoods DX Team: Edward C. Shaw, Jerry Johnson, Chuck Everman, Dr. Joel Roitman, James McClure and Loy W. Lee—DXpeditioning at Eastern Kentucky University's Maywoods facility. Thanks to each of you. ■

# Communications Confidential

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

## Where's The Abandoned Comms Facility?

It seems apparent that a mystery has given birth to another mystery. The abandoned communications facility described in the June 1994 and 1995 Communications Confidential columns may very well not be located in the indicated area.

A clarification request to the contributor of the material has not been answered and an attempt to find the site has failed. We asked for precise directions to the location so additional details possibly could lead to the identification of the exact purpose of the installation.

We are contemplating another attempt in the near future; hopefully, it will turn up valid details.

### Readers Write

First-time contributor Takashi Yamaguchi of Japan joins us this month. He says, "I am a member of AUDX (Association of Utility DXers), the most active listeners club in Japan. I have been actively decoding RTTY and reading *POP'COMM* for about two years. My rig is an ANRITSU RG-55A and a JRC-NRD-72. My RTTY decoder is a WAVECOM W-4010."

Referring to the January 1996 issue, Jacques d'Avignon of Ontario, Canada, indicates that the unidentified antenna on Page 82 is a "conical antenna." He added, "Check Page 49 in *The Amateur's Radio Vertical Antenna Handbook*, by Capt. Paul H. Lee. It is a very unusual antenna mostly seen on ships for VHF/UHF. Check Page 50 to see what it looks like for HF. I have seen such an antenna at a coastal station. The loop is a DF loop."

Tom Sevart of Kansas informs us, "I have been encountering a kind of thumping, pulse-type signal that can be heard occasionally from about 12200 to 12250 kHz. The signal has a wide bandwidth and usually is heard in the late afternoon to early evening here in the Midwest (see spectrum analysis chart).

"I've intercepted a CW net passing 5F groups using sloppy, hand-sent CW. The stations used 3F callsigns and the stations used "si" as an acknowledgment. This type of activity sounded familiar to me, so I checked my logbooks and found I heard them on July 29, 1994, on 4106 kHz using callsigns KDG and JHQ, and sending 5F groups."

Tom, I checked back in some logs I retained and discovered items matching the type you copied. In addition to the 5F

DRAH  
**BRANDENBURG**  
(F-215)



---

**THIS WILL VERIFY RECEPTION OF:  
GERMAN NAVY FRIGATE BRANDENBURG (F-215), DRAH**

ON: 6779.0 KHZ USB AT: 2320 Z DATE: 3 DEC 1995

TRANSMITTER/POWER: \_\_\_\_\_ 1000 Watt \_\_\_\_\_

TYPE ANTENNA: \_\_\_\_\_ Stab \_\_\_\_\_

\*SHIPS LOCATION: \_\_\_\_\_ N/A \_\_\_\_\_ **Fregatte „Brandenburg“**

VERIFYING OFFICIAL AND STAMP: \_\_\_\_\_ Postfach 2022  
Opdenhoffstraße 24  
26384 Wilhelmshaven

\*IF CLASSIFIED, MARK N/A

*Rick Baker of Ohio shares his PFC with POP'COMM readers.*

groups, I also copied 5L groups including A-Z and figures 2, 3 and 8, plus the Spanish Nyeh (Morse code equivalent of MW).

While there have been references in chatter to MGR, Marina de Guerra Revolucionaria (Cuban Revolutionary Navy), it is not clear whether activity is the Cuban navy or border guard. I note in the old logs a frequency of 4105.8 used at night and in the 6-7 MHz range for daytime use.

There also was a second net having many of the same characteristics that operated in the 2.7-3.3-MHz range at night, and in the 5-6-MHz range during the day. I plan to check whether the second net still is in operation.

Tom also reports finding a new frequency for the Russian MFA KAC link, 2050 sked. The link is now using 14373 kHz as the secondary frequency.

For JM, KY: Transmission on 20732.2 kHz is the Russian MFA link to station GMN (unlocated), RTTY 75/500 at 1645. Transmission on 16228.2 kHz is the link to YBU (unlocated), RTTY 75/500 at 1400.

We heard from several readers who are "beacon aficionados." Perry Crabill Jr. of Virginia writes, "The enclosed report also includes a group of un-IDs; CJ-240, W-272, KEG-365, PGR-389, 3B-391, ADK-403, ECX-410 and OG-418. I've written to Ken Stryker about these. I may have gotten the ID for the one on 403 kHz wrong; the keying was sort of spasmodic. Incidentally, my total at the end 1995 was 1,164 non-directional beacons (NDBs) heard,

even after eliminating a number of questionable un-IDs."

Al Hemmalin indicated the Colombians and Venezuelans came through with regularity. "300 kHz, ABL, was consistent and usually was the first South American to come through. I got my first Greenland beacon, 382, SF, Sondrestrom Air Force Base."

Walt Petersen of Florida says, "I've copied PPA on 450 kHz several times on different days. The only PPA I can find in the beacon list is one on 290 kHz, Teodoro Sampaio, Brazil. This PPA on 450 kHz seems to be 'in' when the Caribbean is 'in.' I also copy UEK on 453 kHz and CYV on 526 kHz. Both are unknown to me."

Walt, I am watching Ken Stryker's column in the *LOWDOWN* (monthly newsletter of the Longwave Club of America) for ID of these unidentified beacons.

Jon Van Allen, radio officer aboard the M/V President Monroe (APL container-ship) has some first-class equipment available for his monitoring. The receiver used for HF is an ITT Mackay Marine 3030A, and the ITT Mackay Marine 4005A ADF was used for longwave beacons. "I call the 4005A my 'RF hound,' it loves to sniff out beacons."

**UTE Loggings  
SSB/CW/RTTY/SITOR/etc.  
All Times in UTC**

194: Beacon TUK, Nantucket, MA, at 0314. (RH)  
203: Beacon NSI, San Nicholas Island, CA, at 1950. (DT)

## Thunderbirds

■ **March 16-17** — The Thunderbirds, the Air Force's flight demonstration team, will perform at Robins.

■ **March 23-24** — Punta Gorda, Fla.

■ **March 30-31** — Mesa, Ariz.

■ **April 13-14** — MacDill Air Force Base, Fla.

■ **April 20-21** — Wilmington, N.C.

■ **April 27** — Shaw Air Force Base, S.C.

■ **April 28** — Barksdale.

■ **May 4-5** — Lafayette, La.

■ **May 11** — Mountain Home Air Force Base, Utah.

■ **May 12** — Malmstrom Air Force Base, Mont.

■ **May 18-19** — McConnell Air Force Base, Kan.

■ **May 25-26** — Durango, Colo.

■ **May 29** — Air Force Academy, Colo.

■ **June 1-2** — London, Ontario, Canada.

■ **June 8** — Latrobe, Pa.

■ **July 19** — Opening ceremonies of the Olympic Games in Atlanta.

■ **July 24** — Cheyenne, Wyo.

■ **July 27-28** — Kansas City, Mo.

■ **Aug. 3-4** — Westover Air Reserve Base, Mass.

■ **Aug. 17** — Kingsport, Tenn.

■ **Aug. 18** — Little Rock Air Force Base, Ark.

■ **Aug. 24-25** — Redmond, Ore.

■ **Aug. 31-Sept. 2** — Jackson, Miss.

■ **Sept. 7-8** — Rockford, Ill.

■ **Sept. 14** — Everett, Wash.

■ **Sept. 15** — Fairchild Air Force Base, Wash.

■ **Sept. 21-22** — McGuire.

■ **Sept. 28-29** — Horseheads, N.Y.

■ **Oct. 5** — Kirtland.

■ **Oct. 6** — Cannon Air Force Base, N.M.

■ **Oct. 12-13** — Fort Worth, Texas.

■ **Oct. 19** — Altus.

■ **Oct. 20** — Vance.

■ **Oct. 26-27** — Travis Air Force Base, Calif.

■ **Nov. 2-3** — Lake Charles, La.

■ **Nov. 9** — Homestead Air Reserve Base, Fla.

■ **Nov. 10** — Pope Air Force Base, N.C.

Courtesy of Norm Pihale of Minnesota, here is the 1996 schedule for the USAF Thunderbirds.

216: Beacon ME, Matane, Quebec, Canada, at 0202; Beacon YFA, Fort Albany, Ontario, Canada, at 0324. (RHI)

227: Beacon SJY, San Jacinto, CA, at 0310. (DT)  
230: Beacon HSB, Harrisburg, IL, at 0216; Beacon YBM, St. Bruno de Guiges, Quebec, Canada, at 0212; Beacon ZUC, Ignace, Ontario, Canada, at 0411. (RHI)

233: Beacon UM, Churchill Falls, Newfoundland, Canada, at 0644. 400 Hz. (PC)

239: Beacon HKF, Middletown, OH, at 0124. (RHI)

242: Beacon YMY, Ear Falls, Ontario, Canada, at 0807. (RHI)



# HMS CARLSKRONE

## SKFQ

To Radio AA4JN: This confirms reception of radio transmissions as indicated below

Date: 21 Jan 1994 Time (UTC): 2307 Freq: 12430.5 khz Mode: SITOR-A

Approx. location: WESTERN AUSTRALIA Homeport: SACUSSAP

Vessel type: MARINE Hull Number: M 12

Remarks:

(Signature/Title)

Here is a PFC used by Jim Navary, Virginia.

248: Beacon FRT, Spartansburg, SC, at 0144; Beacon GGI, Grinnell, IA, at 0809; Beacon KZ, Toronto, Ontario, Canada, at 0420. (RHI)

250: Beacon UAC, Poste Monagnais, Quebec, Canada, at 0632, 400 Hz. (PC)

257: Beacon GTB, Fort Drum, NY, at 0511. DSB. New freq. ex-512 kHz. (PC); Beacon YR, Goose Bay, Newfoundland, Canada, at 0643. 959 miles. (AH)

260: Beacon JH, Jackson, MS, at 0204. (RHI)

278: Beacon XSD, Tonopah Range, NV, at 1300. (DT); Beacon FKR, Frankfort, IN, at 0223; Beacon XWY, West Union, IA, at 0109. (RHI)

280: Beacon QX, Gander, Newfoundland, Canada, at 0253. (RHI)

286: Beacon A, Sault Ste. Marie, Ontario, Canada, (Gros Cap LS) hrd at 0116. (RHI)

290: Beacon YNP, Managua, Nicaragua, at 0250. (WP); Beacon YZS, Chesterfield Inlet, North West Territories, Canada, at 0746, 1,645 miles. (AH)

294: Beacon BMC, Brigham City, UT, at 0910. (DT); Beacon ZIP, Zipaquira, Colombia, at 0241. (RHI)

312: Beacon SN, Saipan, at 0145. (JVA)

317: Beacon YP, Yap Island, Micronesia, at 0140. (JVA)

323: Beacon OUK, Calhoun, GA, at 1101, 890 miles. (AH)

328: Beacon BLO, Belknap, NH, at 0554. DSB. (PC)

329: Beacon BUY, Burlington, NC, at 0953, 581 miles. (AH)

330: Beacon SJ, San Juan, Puerto Rico, at 0631. DSB. (PC)

332: Beacon GRO, hrd at 0150. DF readings and signal strength indicate QTH is Rota, north of Guam. (JVA) The DOD Flight Information Publication for the Pacific area confirms Rota as location. (— Ed.)

335: Beacon HP, Heathpoint, Quebec, Canada, at 0310. Long dash after call. (WP); Beacon CNC, Charlton, IA, at 0653. New freq. ex-209 kHz. (PC)

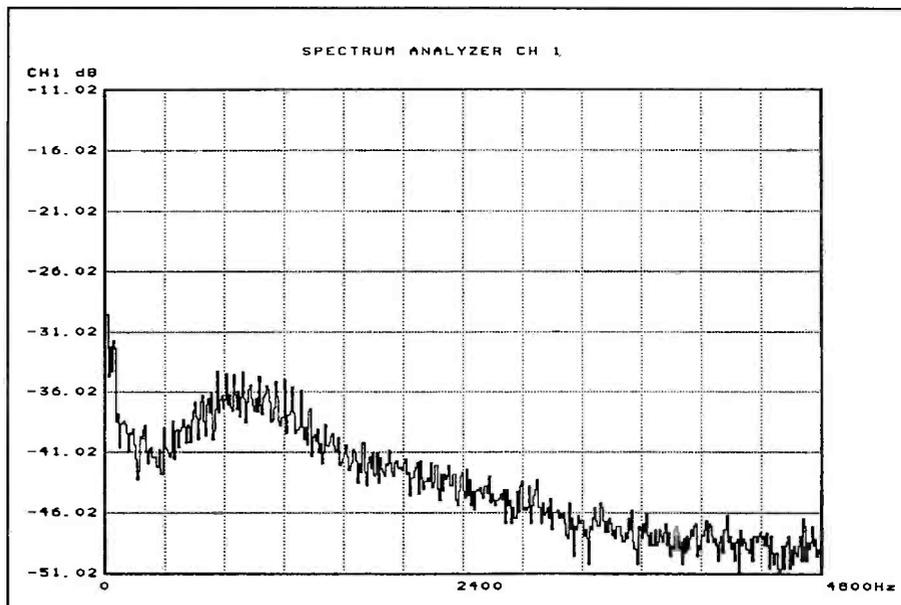
338: Beacon MRK, Rayville, LA, at 0352; Beacon VTA, Vinton, IA, at 0227; Beacon ZEM, East Main River, Quebec, Canada, at 0159. (RHI)

340: Beacon BOG, Bogota, Colombia, at 0712. DSB 1000 Hz, new freq. ex-388 kHz. (PC)

341: Beacon T, Toronto, Ontario, Canada, at 0850, 452 miles. (AH)

342: Beacon MTN, Baltimore, MD, at 0707, 309 miles. (AH)

347: Beacon AJR, Cornelia, GA, at 1006, 824 miles; Beacon ANQ, Angola, IN, at 0900, 712 miles. (AH); Beacon YG, Charlottetown, Prince Edward Island, Canada, at 0435. (WP)

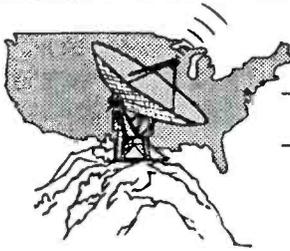


Tom Severt of Kansas copied this pulse signal on 12215 kHz. It was a wideband signal that covered 12175 to 12234 kHz. Kevin Tubbs of Vermont provided the signal analysis.

**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)

- 353: Beacon LAG, Lago Agrio, Ecuador, at 1043, 2,887 miles. (AH)
- 354: Beacon Z, Sept-Iles, Quebec, Canada, at 0335. (RH1)
- 358: Beacon OG, Ogdensburg, NY, at 1038, 299 miles. (AH)
- 359: Beacon GYG, Camp Grayling, MI, at 2352; Beacon UES, Waukesha, WI, at 0214. (RH1); Beacon BO, Boise Airport, ID, at 0525. Hrd nightly. (DT)
- 360: Beacon KIN, Kingston, Jamaica, at 0240. (WP)
- 362: Beacon C7, Geraldton, Ontario, Canada, at 0240. Long dash follows call. (WP)
- 366: Beacon HXM, Hazelton, PA, at 0731, 247 miles. (AH); Beacon YMW, Maniwaki, Quebec, Canada, at 0235. (WP)
- 368: Beacon SX, Cranbrook, British Columbia, Canada, at 0655. (DT)
- 371: Beacon RYV, Watertown, WI, at 0156. (RH1)
- 375: Beacon SAT, Santos AB, Brazil. (Letter T is quite long). Hrd at 0230. (WP)
- 382: Beacon MLR, Millersburg, OH, at 0717, 555 miles; Beacon SF, Sondrestrom Air Force Base, Greenland, at 0810, 1,918 miles. (AH)
- 385: Beacon AJA, Guam, at 0135. (JVA)
- 387: Beacon PV, Providencials, British West Indies (Turks and Caicos Islands) at 0230. (WP)
- 389: Beacon PVC, Provincetown, MA, at 0539. DSB. (PC)
- 390: Beacon VP, Kuujuaq, Quebec, Canada, at 1055, 1,147 miles. (AH)
- 391: Beacon 3B, u/i (Canadian?, poss ex-300 kHz, Brockville, Ontario, Canada?) Hrd at 0619. (RH1)
- 396: Beacon JJO, Mountain City, TN, at 0633. Spurious sidebands. (PC)
- 397: Beacon BWK, Bunkie, LA, at 0547. New freq, ex-206 kHz. (PC)
- 400: Beacon ENS E, Ensenada, BCN, Mexico, at 2030. Backup equipment in use; Beacon QQ, Comox Canadian Forces Base, British Columbia, Canada, at 0455. (DT); Beacon AIHQ, Wahoo, NE, at 0620. (PC); Beacon CI, Sault Ste. Marie, MI, at 0329; Beacon FGX, Flemingsburg, KY, at 0340; Beacon PTD, Potsdam, NY, at 0125. (RH1)
- 402: Beacon C, Camaguay, Cuba, at 0255. (WP)
- 405: Beacon TNT, Tegucigalpa, Honduras, at 0517, 1000 Hz. (PC)
- 407: Beacon AD, Dallas, TX, at 0506. DSB. (PC)
- 408: Beacon JDM, Colby, KS, at 0722. (PC)
- 410: Beacon BA, Columbus, IN, at 0831, 778 miles; Beacon ECB, El Cabo, Colombia at 1004, 2,028 miles; Beacon JU, West Jefferson, NC, at 0536, 643 miles. (AH); Beacon HER, Santa Domingo, Dominican Republic, at 0555, 1000 Hz; Beacon EGQ, Emmetsburg, IA, at 0734. (PC)
- 413: Beacon MC, McComb, MS, at 0616, 400 Hz; 1000 Hz in guide. (PC)
- 414: Beacon BC, Baie Comeau, Quebec, Canada, at 0205. Long dash follows call. (WP)
- 428: Beacon SYW, Greenville, TX, at 0640. New freq, ex-224 kHz. (PC)
- 518: NMG, USCG CommSta New Orleans, LA, at 0716 NavTex Code "G" w/bcst Notice to Mariners msgs. At 0720, VAU, Canadian Coast Guard, Yarmouth, Gander, NavTex Code "U" w/Environment Canada Marine Forecasts in EE. At 0735, Yarmouth



**US COAST GUARD CHINCOTEAUGE VA  
VERIFICATION OF RECEPTION**

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

DATE: 15 APR 92 FREQ: 2670 KHZ MODE: USB  
 XMTR.: \_\_\_\_\_ ANTNA: VERTICAL  
 POWER: 100 WATTS LOCATION: 37° 56' N 75° 23' W  
 REMARKS: Good luck, 73's ED

U. S. Coast Guard Group  
(Station Seal) Sea Shore  
Chincoteague, VA 23336

*Michael A. Doherty, RM3 USCG*  
SIGNED

*PFC used by Ed Rausch of New Jersey for his verification from a U.S. Coast Guard station.*

w/NavTex Code "V" w/Situation Maritime Pour les Provinces FF wx. At 0800, NMA, USCG, Miami, FL, removed from NMN. Altho NMA still shown as source code for NavTex Code "A", CommSta Miami closed a few years back. NavTex info to 0820. At 1030, VBA, CCG, Thunder Bay, Ontario, Canada, NavTex Code "P" w/Environment Canada Great Lakes Marine Forecast. All in Sitor-B mode. (RB2)

524: Beacon HEH, Newark, OH, at 0820, 593 miles. (AH)

530: Beacon F9, Chatham, New Brunswick, Canada, at 1019, 476 miles. (AH)

2182: NMN13, USCG Group Cape Hatteras, NC, at 0434 in USB w/Pan-Pan announcement of 121.5 MHz EPIRB activation. Requested any vessel in vicinity of position to keep sharp lookout. (RB2)

2998: Tokyo ATC Japan, contacted various aircraft in USB at 1148 in EE. (TY)

3458: Beijing Volmet, rptng wx in very distorted USB at 1458 in EE. (TY)

4106: U/i stn in CW at 0420 passing 5F grps w/cut zeros to two other stns on same freq. Stns signed down at about 0440. At 0455, same stns came back up using callsigns JHQ (control), XCJ and KDG (out

stations) were giving time checks, then signed down. Next night at 0335 on 4036 kHz. hrd callsigns YAZ (control), MWA and FNY (out stations). (TS)

4178.5: KDBG, M/V President Lincoln, at 0742 in Sitor-A w/SVC + Tlx to KPH. (RB2)

4509: CAP stn NE0021 wkng IA0043 in 300-baud packet at 0521. (TS)

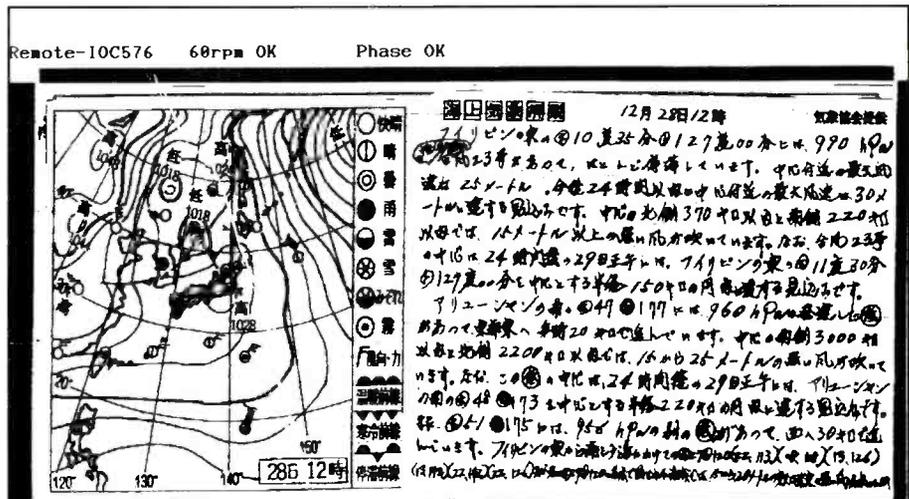
4767: Warble jammer at 0333 in USB. (RK)

4768: "Cherry Picker" spy nbns stn hrd here at 2000. Same YL/EE as "Lincolnshire Poacher" but different tune. Heavy jamming on freq, possibly from Red China, as this nbns stn appears be in Singapore. (RK)

4779: Swedish Rhapsody stn hrd at 2100. Weak, but could hr YL/RR. (RK)

5207: MT3TFC wkg MA3USA, Fort Meade, MD, in 300-baud packet at 1133. This is Army MARS activity. (TS)

5696: "Slingshot" (USCG base, Miami, FL) wkg Pinball 1050 (USCG powered buidlers) re subjects in speedboat who were "dropping grenades overboard." Also involved was Helo 453 (DEA Blackhawk). Suspects beached boat on small cay and were taken into custody by DEA agents. Hrd fm 2100-2150 in USB. (RK)



*Jon Van Allen, aboard ship in the Pacific, copied this fax from Japanese WEFAX station JJC on 12745.5 kHz at 0630 UTC. This surface analysis chart was transmitted at an unusual 60 rpm. Note: The CFL shows JJC on this frequency with nx at 0100 and 1330 and Meteo at 0605, 1035 and 2220. 60+120/576 fax. (Ed.)*

## WOO-OCEAN GATE RADIO



**TRANSMITTER:** SSB USB 10 KW  
Output 3-30 MHz Remotely  
Controlled

**RECEIVERS:** Racal-5-30MHz  
Remotely Controlled

**ANTENNAE:** Rhombic, Log Periodic  
& Omnidirectional.

**CONTROL OFFICE:** Manahawkin,  
N.J. contains touch sensitive  
CRT's & world maps, remote  
receiver & transmitter controllers.

To: HIROSHI SAITO

CHIBA  
JAA

Thank you for your report  
of Apr 12-91 regarding your  
reception of our SSB radio-telephone  
transmission on 13083 MHz,  
Chan.        at 1029 GMT! We  
are enclosing some information about  
our high seas radio-telephone  
systems. We wish you continued  
success in the radio field.

Richard Koelt  
Station Manager

*This QSL is from the collection of Hiroshi Saito, Japan.*

**5835:** YL/EE rptng 372 in AM at 0102. At 0105, 851 851 851 46 46 and into 5F groups. Signed down w/00000. (TS)

**6263:** 3FJH3, TKH Frines at 0731 in Sitor-A. Frines is a Russian general cargo vessel out of Kholmisk (KHLM/MMF) w/tlx to crew dept SASCO, Kholmisk, another flagged-out Russian w/login 26617 FRINES. (RB2)

**6344:** WLO, Mobile, AL, in FEC at 0935 w/best stating they no longer are able to provide WX FAX from NOAA. (TS)

**6694:** KKN, Vancouver Military, British Columbia, Canada, at 2343 wkg MF692, re ability to respond to overturned vsl. Immediate pp Victoria RCC re same, confirms has enough fuel to fly to that position and return Comox. At 0017, MF692 released from this tasking to RTB Comox because other a/c being closer. At 2345, CGAE, HMCS Regina (FFH-334), Canadian "City"-class frigate, wkg MF692 re same SAR. At 0004, wkg Rescue 33 (helo, later also called SPEAR 33) w/ETA to overturned vsl. advised M/V Langwood also would be on scene assisting. At 0036, Rescue 33 on location "hoisting" survivor to the M/V Langwood. All in USB. (RB2)

**6767:** 5F CW cut nbr stn (1-0=ANDUWRIGMT) at 0412 w/5F msg. (TS)

**6826:** YL/SS w/5F grps for 47870 at 0304. // on 8136 kHz but much weaker signal. (RK)

**6887:** CW stn at 0524 rptng 785 785 785 000. (TS)

**6993:** "973 Foxrot" w/pp to Andrews Air Force Base. This apparently a/c carrying presidential press corps, as a reporter ID'd only as "Mac" seemed to be talking to Dan Rather. Was relaying story re jailed CC dissident and was trying to put a sympathetic spin on it. Faded at 1823. First hrd at 1810. (RK)

**7039:** SLHFHM "G" at 1307. (TY)

**7535:** SESEF Norfolk w/equipment tests: Blackhawk, re commissioned MHC-58 at 1610. At 1647, NMIT?. USS Mitscher (DDG-57). At 1658, "In Port Submarine", adv stand by til done w/Mitscher. At 1744, NPBA, USS Defender (MCM-2). At 2016, NICK, USS Nicholson (DD-982) w/req to "go green." Primary mode is USB. (RB2)

**7637.4:** U/i in 75-baud 5L groups at 0916. (TY) If shift was 500 Hz, poss RR Diplomatic?? (— Ed.)

**7685:** RBV75, Moscow Meteo in 50 baud w/coded wx. (TY)

**7727:** 5F stn in CW ends w/AR SK x3 at 1014. (RB1)

**7949:** U/i TROTTER? in Sitor-A w/abbreviated EE and msg in unknown language at 0929. (TY)

**8014:** YL/EE in AM w/3-2F grps at 1349. (TS)

**8125:** Short RTTY bursts foil by YL/EE "This is the KDX50 net." Then announced meeting cancellation and opr gave a 214 area code (Dallas, TX) phone nbr. Hrd at 1636 in USB. (RK)

**8294:** ADMW, USAV Malvern Hill (LCU-2025)

at 0651 clg/wkg ADMP, USAV Five Forks (LCU-2018) w/relay to RAIDER of position NAS Alameda, CA, next stop Port Hueneme, CA. At 2126, WTB6639, Buster Thompson, 110-foot offshore crew boat 25 miles from SW Pass, Mississippi River, wkg vsl Beluga, located on Okeechobee Waterway, La Belle, FL, for rdo cks. Both in USB mode. (RB2)

**8297:** AAEB, USAV Chickasaw Bayou (LCU-2012) at 2337 in USB wkg AAEA, USAV Chickahominy (LCU-2011). (RB2)

**8393:** BOAC, Chinese vsl M/V Pu He at 1644 in Sitor-A wkg XSQ, Guangzhou, Peoples Republic of China, w/QRU for tlc. (RB2)

**8401.5:** 3EUT9, TR Kil'dinskij Proliv at 0012 in 50/170 RTTY w/crew TGs. Is ex-UWQS. (RB2)

**8440:** VCS, Halifax CG Radio, Nova Scotia, Canada, at 1647 in CW w/QSX mkr. (RK)

**8495:** SLHFHM "C" at 1312. (TY)

**8646:** FUJ, Noumea French Naval, New Caledonia, in 75-baud w/RYS at 1411. (TY)

**8828:** Auckland Volmet in USB at 0722 w/wx. (TS)

**8968:** Offutt Air Force Base w/SKYKING best. Rptd by Albrook, Andrews, McCellan and Elmendorf. Hrd at 2158 in USB. (RK)

**9024:** Live YL/SS in AA at 0201 rptng "Atencion 61602" and into 5F grps. Msg ended at 0208 and another msg sent. (TS)

**9153:** YL/SS in AM at 1505 w/5F grps until 1514. This stn usually not hrd here during local daylight hrs—but becoming more common. (RB1)

**10564.3:** "12" wkg other u/i stns in USB at 0113 passing 4F grps. Informal net, stns used both SS and EE, and profanity. (TS)

**11072:** YL/EE in AM rptng 6387 3142 2919 5052 5438 from 0030 to 0040. (RB1)

**11175:** Hickham clg Reach 365 for rdo ck. At 0630 Hickham cld Reach 365 again, no response. (JVA)

**11214:** U.S. and Canadian stns including Dark Star, Trenton Military and Raymond 24 in USB w/rdo cks at 1518. (RB1)

**11244:** CLAYBIRD at 1822 in USB wkg Offutt GHFS w/pp OVERDRIVE at STRATCOM for comms test. (RB2)

**11342:** Honolulu ATC w/pp American 670 to company verifying crew rotation for Flight 383. Then QSY back to 8843 kHz primary. (JVA)

**11524:** YL/SS in AM w/5F grps at 1504. (RB1)

**11538:** German Embassy, Athens in ARQ-E 96/170 at 1200, idling for two hours! (TH2)

**11659:** YL/SS in AM rptng 010 and 1-0 count at 0100. At 0110, 10 tones and 3/2F grps. Unusual for SS counting stn as they usually send 4F grps. (TS)

**12562:** UGNX, TH Komsomolets Litvy, at 2041 in 50/170 RTTY w/EE tlx to Victory Shipping to confirm point of entry to Amazon River. Vsl uses abbreviation KSM for Komsomolets. (RB2)

**12601.1:** ZSC, Capetown, Republic of South

Africa, in Sitor-A at 0845, Freightmarine w/S.A. Aguilhas. (RH2)

**13391:** CLPI, Havana, Cuba, Cuban MFA, in RTTY 50/850 wkg CW stn on 13911 kHz w/Cuban diplo tlc. (TS)

**13563:** 3MA22, CNA Taipei, Taiwan, in 50-baud w/EE nx at 0203. (TY)

**14421:** YL/EE in AM passing 3/2F grps at 1736. (RB1)

**14441.5:** NNN0CQG, USS Enterprise (CVN-65) at 1645 clg ASSMS. At 1746, NNN0GUB, USS Arthur W. Radford (DD-968), attempts work private shore stn NNN0HLQ in Texas, no joy. At 1800, NNN0CWY, USS Carl Vinson (CVN-70), clg ASSMS, no joy. At 1814, NNN0CXG, USS O'Bannon (DD-987), clg ASSMS, NNN0HLQ (TX) answers, QSY to 14474 kHz for pp tlc. At 2020, NNN0GBS, USCGC Durable (WMEC-628), clg ASSMS. At 2101, NNN0NXL, USS Ashland (LSD-48), attempts work NNN0MPN, Marine Corps Base Camp Pendleton, CA, no joy, MPN clg any afloat unit. At 2115, NNN0CZJ, USS Arkansas (CGN-41) clg ASSMS, no joy. All NAVMARCORMARS in USB. (RB2)

**14825.7:** RFHJ, French Forces Peapeete, French Polynesia in 100-baud ARQ-E3. Idling at 0400. (TY)

**14934.5:** NNN0MDL, u/i Navy MARS stn in ARQ at 2240 wkg NNN0PCP, MARS stn on board USS Bronstein (FF-1037). (TS)

**14936.5:** NNN0MBO, USN MARS Bahrain in Sitor-A w/brief EE msg at 0420. (TY)

**15016:** SHARK 02 wkg LOBO via Albrook. Left location WST at 1312, arrived TRO at 0130; SMY at 1130. Hrd at 1632 in USB. (RK)

**15034:** Trenton Military, CANFORCE stn in USB at 1427 w/airbase wx. (TS)

**16101.1:** HBD61, Swiss Embassy, Cairo, in Sitor-A at 1107 w/5L grps to MFA Berne. (RH2)

**16120:** HBD20, MFA Berne, in Sitor-A at 1116 w/5L grps. (RH2)

**16136.2:** BZR66, XNA Beijing, Peoples Republic of China, in RTTY 75/367 at 1125 w/nx in EE. (RH2)

**16261.9:** RFTJD, "FM CENTRANS LIBREVILLE TO RFFZEC CENTNAT. ORLEANS." ARQ-E3 192/370 at 1601 w/FF tlc. (RH2)

**16414:** YL rptng Kilo Whisky fm 1430-1450, then into GG 5F grps. (RK)

**16806.6:** USCG Guam in Sitor-B at 0941 w/Nav-Area XII warnings and Iraq embargo info/warnings. (RH2)

**18319.8:** OMZ MFA Prague in RTTY 96/408 at 0851 w/5L grps and tlc in Czech. (RH2)

**18411.7:** MFA Jakarta, Indonesia, in SI-FEC 96-baud w/msg in Dutch at 0410, 5L grps at 0437, and EE msg at 0530. (TY)

**18422.2:** CLP22, Cuban Embassy, Hanoi, in RTTY 75/490 at 1332 w/5L grps. (RH2)

**18498.8:** PCW6, Dutch Embassy, Jeddah in Sitor-A at 1337 w/sync tones only. (RH2)

**18648.6:** SPW, Warsaw in Sitor-B at 1355 w/tlc list. (RH2)

**19364.8:** U/i, maybe MFA Sofia in RTTY 75/521 at 1145 w/nx in Bulgarian, first time heard! (RH2)

**19365.1:** U/i, poss MFA Sofia in RTTY 72/477 at 1218 w/nx in RR. (RH2)

**20734:** 4UZ, UNO Geneva, in Pactor at 1441, unable decode. (RH2)

**22376:** NMO, USCG Honolulu, Hawaii, in Sitor-B w/navigation warnings at 0230 in EE. (TY)

**22387.6:** SVA, Athens, Greece, in Sitor-B at 1425 w/tlc list. (RH2)

**22646.5:** JOS, Nagasaki, Japan, in CW w/CQ mkr at 0432. Also hrd on 22659.5 kHz at 0220. (TY)

**22669.5:** JCS, Choshi, Japan, in GG w/CQ mkr at 0429. (TY)

Contributors this month were: RB1—Rick Barton, AZ; RB2—Rick Baker, OH; PC—Perry Crabill Jr., VA; AH—Al Hemmalin, RI; RH1—Russ Hill, MI; RH2—Robert Hall, South Africa; RK—Richard Klingman, NY; WP—Walt Petersen, FL; TS—Tom Sevart, KS; DT—Donald Tomkinson, GA; JVA—Jon Van Allen, aboard ship in the Pacific; TY—Takashi Yamaguchi, Japan. Thanks to all. ■

## Ham Column (from page 51)

UTC); Boy Scouts of America (14290 kHz, Sundays, 2030 UTC); Flying Boat Amateur Radio Society (14255 kHz, Sundays and Wednesdays, 2000 UTC); International Association of Airline Hams (14280 kHz, Sundays and Wednesdays, 1500-1800 UTC); International Nude Net (14265 kHz, Fridays, 0000 UTC); Retired GE Employees Net (14235 kHz, daily, 1330 UTC); International Police Association Net (14240 kHz, Sundays and Wednesdays, 1700 UTC); CQ All Schools Net (14303 kHz, Tuesdays and Thursdays, 1730 UTC); and U.S. Submarine Veterans (14234 kHz, Monday-Saturday, 1600 UTC).

## Net Notes

Many nets never make it into any listings, so the only way to find them is to listen around or ask other hams about the nets they participate in. Locally, many cities and regions have VHF/UHF nets. The bonus here is that you may be able to meet these "net friends" face to face.

Happy netting! Have fun and don't be afraid to join in. Keep your photos, letters and column suggestions coming to me at ARRL, Dept. PCN, 225 Main St., Newington, CT 06111. See you next month.

## Thoughtwaves (from page)

ing NEW digital radio receivers to tune in these newfangled radio signals? Perhaps the research and development arms of scanner manufacturers already are looking at making this digital technology available in receiver design soon. Sure, you may be able to receive digital signals initially on only one of these new receivers, but it would beat what many are doing.

You see, in some areas where digital trunked systems go on the air, there may be a radio tech going out on a limb and offering under the counter the ability to buy a new two-way radio programmed with most of the digital talk groups. Thus, one spends a fortune on one of these new two-way radios just to monitor police calls, for instance (of course the transmit function is disabled!).

I'd love to have the ability to monitor these digital trunking systems. Hopefully, the scanner makers will show us some vision and move receiver design into the 1990s soon. That's not to say that analog scanners should be abandoned. There always will be plenty of old wider-bandwidth two-way radios in use for a long time. Much like I own both Macs and PCs for computing purposes (what one doesn't do, the other does), scanner listeners may need the ability to monitor both digital and analog radio systems on separate receivers for a

## Pirates Den (from page 65)

Insanity, it's not at all what you expected." (Pearce)

KMCR—Magic Carpet Radio, 6955.1 with rock, IDs in both voice and Morse, various sound effects. (Shelly)

Revolutionary Voice of Plainville, 6955 with music and various sound effects. (Shelley)

WJTL, 6955 at 0720-0820 with fake on-air talk show, comments about censorship, FCCs *Seven Dirty Words*. (Shelley)

Radio Azteca, 6955 at 1710, describing his studio equipment and a top 10 something. Too weak. (Pearce)

WREC, 6956 at 1710, in between Radio China and a numbers station. Sounded like a repeat of their July 4 program. (Pearce)

Big Johnson Radio, 6955 USB at 2315-2350 close and 1400-1449 close with "E. Normous Johnson" and sexual comedy. (Murphy)

Key West Radio, 6955 USB at 0027-0041 close, with country music. QSL through the ACE and Free Radio Weekly. (Shelley)

We must quit here, again foregoing coverage of several unidentified stations. Keep those loggings and illustration materials coming my way every month!

time. It would be nice to see digital capability added to a typical analog-type scanner or receiver, but if we have to be picky, what the heck! Let's just hope that digital signals don't elude us forever.

Which makes me think of one thing: If surplus digital equipment starts hitting the amateur radio market in the not-too-far distant time period, where will we find the first digital 2-meter ham repeater and who will be the users on it? What are we waiting for?

Digital radio signals aren't something to overlook, pretend aren't there or ignore. The more scanner listeners sit back and find digital radio signals in the 800-MHz band, the more likely they will want to tune in and listen! But first, we need receivers. There is no reason these digital radio signals should remain cloaked forever.

From the day police broadcasts aired above the AM broadcast band, routine public safety communications almost always have been out in the open. If they hadn't been, we probably wouldn't have scanners today. The openness of public safety communications should continue as technology improves. Sure, there are good reasons for encryption at various times, but total cloaking is not in the interests of public safety servants or their constituents.

Let's hope digital signals aren't mysterious signals forever. 73, Chuck

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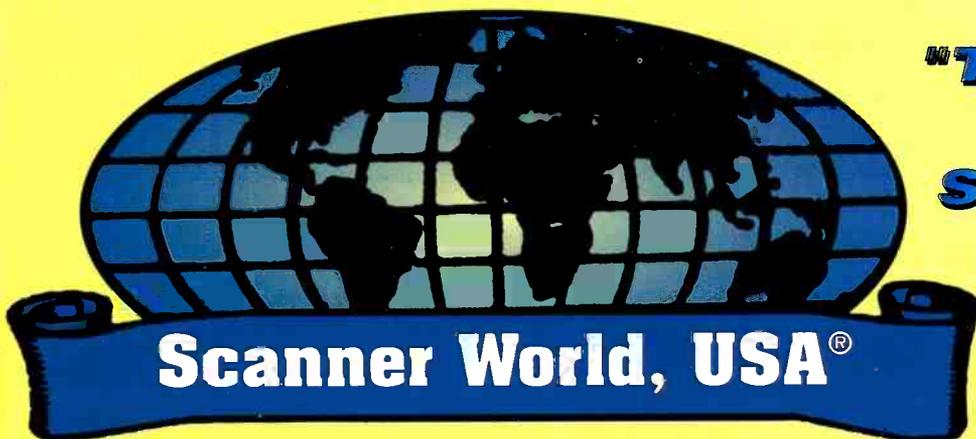
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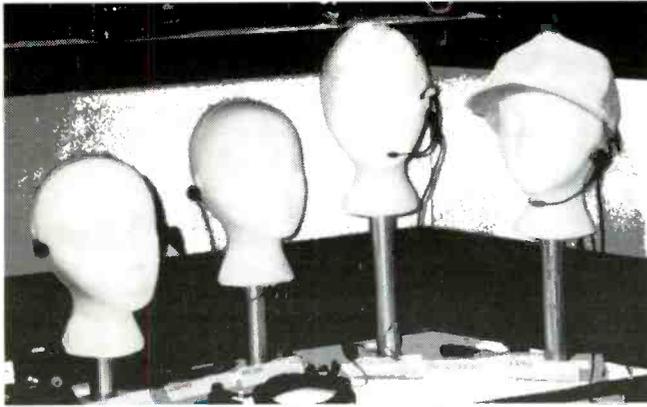
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Output Current	Max. (1)	40 A	30 A	5.2A
	Rating	32 A	24 A	4.2 A
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	Rating (2)	24 A	15 A	
Voltage Fluctuation	Less than 1% (with rated output)		Less than 2% (with rated output)	
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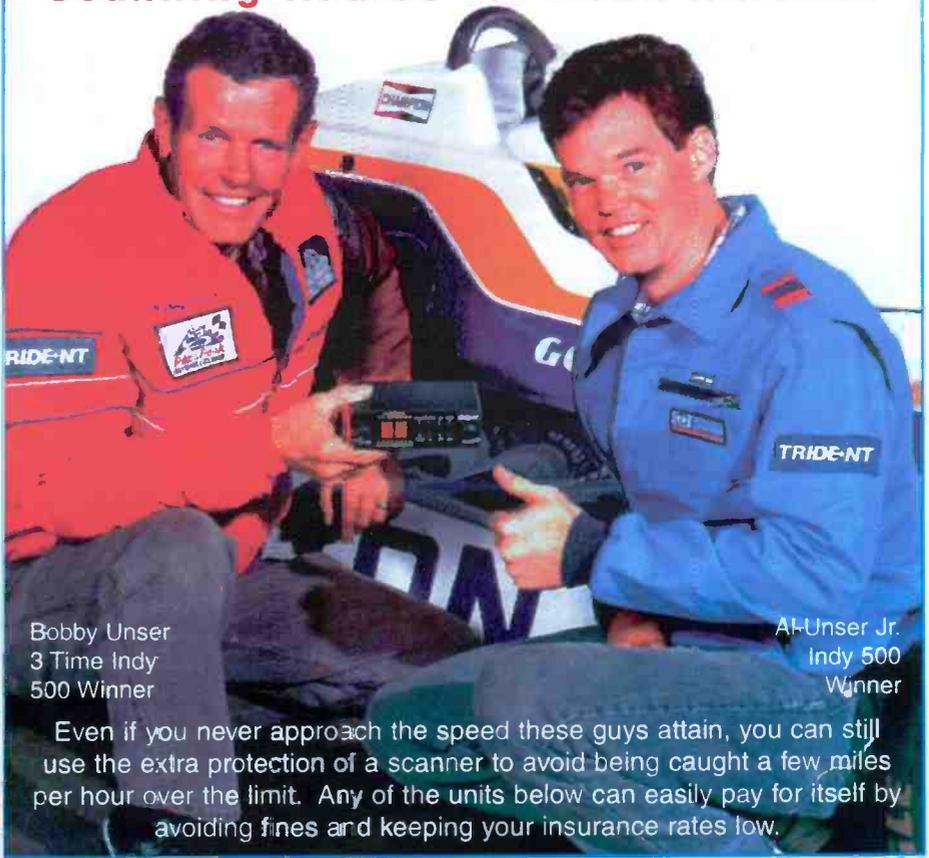
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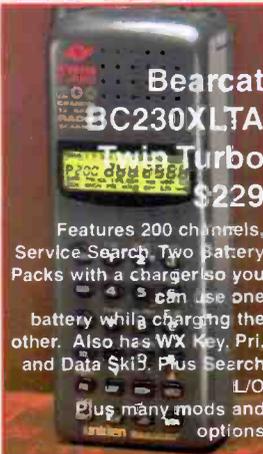
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**\$449**



**Scout® Reaction Tune®** brings you all the action. Whether it is police, fire, commercial or just everyday communications monitoring, the Scout will bring you closer to the action. The Scout will not only capture the frequency, but it automatically tunes the receiver to that frequency at the same time; (see receivers appl. below). Let the Scout Reaction Tune your way into the world of communications.

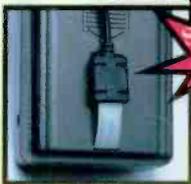
## FEATURES

- Records up to 400 unique frequencies in memory.
- Records up to 255 hits on each frequency in memory.
- 10MHz - 1.4GHz single frequency range.
- Records frequencies automatically with Patented Digital Auto Filter & Digital Auto Capture.
- Reaction Tune the AOR AR8000, AR2700, ICOM R7000, R7100, R9000, Radio Shack Pro 2005/2006 with OS456 installed, and the Radio Shack Pro 2035/2042 with OS535 installed.
- All frequencies are automatically saved until deleted.
- Interface to a PC with the optional **OPTOLINX** or **CX12AR** for data download.
- Custom 10 digit LCD display with automatic EL backlighting.
- 16 segment RF signal strength bargraph.
- Pager style vibrator for discreet recording. Distinctive beeper indicates frequency detection.
- Rapid charge NiCads with AC charger supplied; 2 hour recharge and 8-10 hour battery discharge.

## SPECS

**Frequency Range:** 10MHz - 1.4GHz  
**Input Amplifier:** 50 Ohm vswr <2:1  
**Sensitivity:** 1mV 30MHz - 900MHz  
**Maximum Input:** +15dBm, 50 milliwatts  
**Display:** 10 digit LCD with backlight

**Operating Time:** 8 - 10 hours  
**Power:** 2VDC 1 Amp wall plug adapter for rapid charging. 6VDC 130mA minimum operating power required. AC90 adapter supplied.



•Using the optional SAC8000 is a snap-Just plug and play. SAC8000 includes cable, back panel with slot, and velcro attachments.

**SAC8000 \$35**

**Factory Direct Order Line: 1-800-327-5912**

MADE  
IN  
USA

# OPTOELECTRONICS®

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