

POPULAR COMMUNICATIONS

OCTOBER 1996

In this issue:

- **The ACARS Downlink—
The Exciting World of Decoding
Aircraft Transmissions**
- **Alice Brannigan's
"This Was Radio"**
- **Product Spotlight:
Ramsey Electronics'
Transmitter Kits**

**NEW COLUMNS:
Computer Corner—
The Marriage of
Computers and Radios**

**AND . . .
The Radio Connection—
Making Old Radios
New Again!**

On the cover:
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International
Airport, FL.

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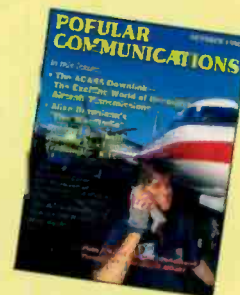
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ON THE COVER: Gina Knight directs an American Eagle aircraft to take off position at the Key West International Airport, FL. Photo by Larry Mulvehill, WB2ZPI.



FEATURES

The Pirate Radio Explosion

The past year has seen a virtual "gold rush" of pirate stations to the airwaves. Find out the causes of the explosion.

By Pat Murphy

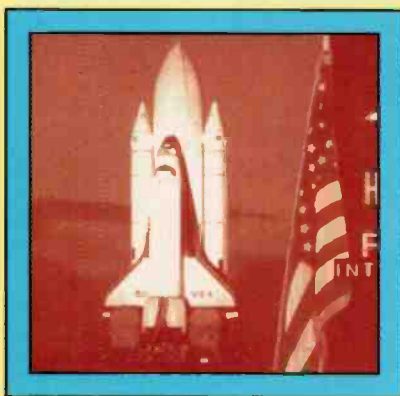
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This Was Radio

Celebrating the 70th anniversary of the oldest continuously operated religious broadcaster in the U.S.

By Alice Brannigan

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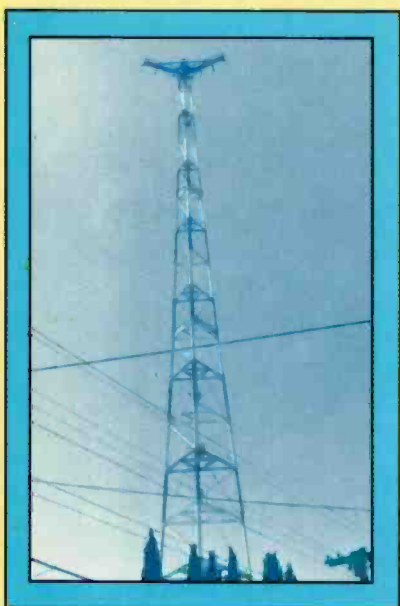
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Tuning In

AN EDITORIAL

BY HAROLD ORT, N2RLL, SSB-596

The Times They Are A Changin'

One of the most interesting aspects of our radio hobby is that it is ever-changing. That's what keeps it alive and well. New equipment is coming out all the time. Computers and related software are helping us stay on top of stations and frequencies and even control our receivers; micro-miniature technology allows us to hold hundreds of frequencies in the palm of our hand; CB walkie-talkies are shirt-pocket size and include NOAA weather reception and the incredible frequency counter takes the scanner user into the 21st Century by detecting, memorizing and even tuning a radio to a radio transmission! If you're asleep at the switch during what's unquestionably the most exciting time in the history of our hobby, it's time to toss out the Sominex and pinch yourself!

To remain static in a time that begs for new, exciting possibilities is like having dozens of radios without antennas and no operating manuals or frequency guides. Sure, with a little practice through plenty of trial and error, and by using an old coat hanger, you could certainly make them work, but you'd probably be missing out on some neat features that are hiding from view.

Over the next few months *Popular Communications* will be undergoing some changes, and we'll be having fun in the process. Fun. That is what our hobby is all about, isn't it? First, we hope you enjoy our new look. You'll see new columns, including the bi-monthly "The Computer Corner" by Bill Cole and John McColman; and "The ACARS Downlink" by Bob Evans. Bill Price's humor rounds out each issue with his "Loose Connection" page. If you like what you're reading, please let us know. If you think we're missing something, let us know that, too.

To give you a voice in these changes, beginning this month we'll be asking you a few questions to help us plan future issues. Best of all, there's no need to lick a stamp or seal an envelope. Simply use the postage-paid Reader Service Card to answer our survey questions—and while you're at it, why not use the card to get information about advertised products. Remember, *Popular Communications* is

YOUR magazine! You have a vote in its editorial direction.

As your new editor, I look forward to the opportunity to give you what you want in a communications magazine—exciting new features, plenty of reader involvement, a staff of expert writers who are the best on the block, and perhaps most importantly, a chance to be heard. I can be reached at our Hicksville, NY address or via e-mail at <popularcom@aol.com>.

Following in the footsteps of my good friends and colleagues, Tom Kneitel and Chuck Gysi affords me the experience of a lifetime, building on their formula for success in writing and communications monitoring. No one tells a story—communications or otherwise quite like Tom, and I'm sure that Chuck probably leaves a scanner on his nightstand—just in case. As you may already know, Tom remains the Senior Editor and Chuck will be a regular writer for *Pop'Comm*; both will be lending their communications expertise to our magazine every month.

My radio experience includes a couple of years as a broadcaster, and more than 30 years monitoring the spectrum from A to Z. I have an extensive background in writing, public and community relations, having served for 20 years in Army Public Affairs, with numerous assignments including Berlin, Stuttgart, New York City, and Saudi Arabia, retiring six years ago as a Master Sergeant.

Of course the radio shack is full of gear—old and new, jumper cables, meters and old PL-259s. My favorite receivers are all of them (and always the one I don't yet own!) especially the Drake R-8, PRO-2006, PRO-43, AR-1000 and a portable Sangean ATS-800. Just recently I've hooked up the R-8 to a computer program called FirstRate. It does everything imaginable, and then some with that top-notch receiver! And as both an active CBer and ham, I'm getting a real-world understanding about each other's feelings and concerns—more about that topic in another issue.

So let's go for it. Let us know what you're hearing. Have you logged some new stations? Did that long-awaited QSL finally arrive? Got an idea for an article? Send in your loggings, photos of your shack and article ideas today! ■

POPULAR COMMUNICATIONS

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Pop'Comm P.O.

LETTERS TO THE EDITOR

Each month we select representative reader letters for our Pop'Comm P.O. 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 Pop'Comm P.O. Address letters to: Harold Ort, N2RLL, SSB-596, Editor, *Popular Communications*, 76 N. Broadway, Hicksville, NY 11801-2909, or send e-mail via the Internet to <popular-com@aol.com>.

More Than Entertainment

Dear Editor:

I'm heartsick. Right now as I write this letter, all theories are still being considered by the experts regarding the destruction of TWA Flight 800 off the coast of Long Island. By the time this is published, readers may all know what caused the explosion. What I do know is that in my heart, it really doesn't matter. Over 200 people are dead. I have grieved for them and their families since I heard about the accident—not on my television—but on my AOR scanner.

When I purchased my scanner and entered into this hobby of radio, I saw it as a form of entertainment. I know now that it is more than that.

Last night after work, before any news stations had made any reports, and before I had any ideas what had happened, I scanned the GMRS frequencies, trying to figure out how to get on GMRS in the New York area. At around 10:09 p.m. New York time I heard the following conversation on 462.575 MHz from my listening post from New York's Upper East Side. The operators sounded like they were on land. They regular "Joes" from the Island. It didn't sound like an official or governmental conversation. They mentioned the "crash of a plane bound to Paris from New York." Unit 59 single 9 was talking. Then they started talking about something personally sensitive, and decided to switch over "to the local." (I hope that experienced GMRS operators can tell me what that means).

Then, after a little more scanning, I heard a remote news crew-sounding

broadcast on GMRS Channel 10, 472.625 MHz, that I'm still trying to figure out: "News copy . . . TWA jet from JFK to Paris . . . There's been a jet crash 10 miles south of Long Island . . . a plane from JFK. There are no signs of survivors. Two hundred forty nine people may have been on board . . . every available aircraft is being used to assist. At 2030 New York time, an explosion was heard. Lifecraft were seen. Steve Sapp, a petty officer gave a report. Cutter craft are there, choppers, DEM, ESU and FDNY . . . witness Arlene Daly said she saw a big orange fireball, and said 'Oh my God, it was an airplane!' Copy?"

I sure copied. And will never be the same. I then heard one air team that sounded like it was headed to the scene.

KJTT3

KJTT3:

Thanks for sharing your feelings about this incident. Certainly you're not alone in your shock and disbelief that it could happen in the first place.

While I wasn't personally able to hear any direct U.S. Coast Guard comms, media frequencies were full of activity. I've also been told about lots of comms on 381.8, 123.1, 287.5, 123.025, 123.075 and 282.8 MHz (all AM). Coast Guard frequencies 156.05 and 156.525 were also very busy.

Calling All Radio Clubs!

Dear Editor:

I am a radio hobbyist whose interests include scanning, SW, MW DXing and listening to ham radio and others. I would like to know if you can give me names and addresses of some reputable radio clubs, including the subjects they cover. Thanks for your help from a proud *Popular Communications* subscriber.

Ryan, Long Island

Ryan:

From time to time we'll be running club updates from the Association of North American Radio Clubs; what topics they cover, dues, publication names, etc. But remember there are many other radio clubs out there that deserve honor-

able mentions in *Pop'Comm*. Anyone who's interested in getting a list of ANARC clubs should write to ANARC, 2216 Burkey Drive, Wyomissing, PA 19610 USA.

Other club presidents are invited to send us information about their organizations. We'll publish 'em as we get 'em.

Undercover Alice?

Dear Editor:

I just picked up a copy of *Pop'Comm* at my local newsstand. All the columns were very informative, but I'm not clear on one topic: Alice Brannigan. Someone told me she is much older than she looks, and that same person also told me she has an inside track to what's really going on inside several government organizations. Can you help me with a clear answer to my question?

Darryl, Little Rock

Darryl:

What question? If I told you Alice once worked as an "executive" secretary in a mansion in Little Rock, I'll bet you think you'd know who she worked for, right? One thing's for sure, Darryl, she's got *your* number!

Being Neighborly

Dear Editor:

My cousin lives in Santiago, Cuba, and is a very active SWL. So far as I know, *Pop'Comm* has never mentioned that there are SWL's in Cuba. I regularly send my cousin copies of your magazine, which he tells me he enjoys and shares with his friends.

P.A.,
Florida

Dear P.A.:

Other than your cousin, the only other SWL activity in Cuba we know about is the huge electronic spy station outside Havana. It was built in 1974 by the what is now the former USSR. The facility was built to eavesdrop on communications traffic in this country. Last year, Cuba and Russia signed an agreement to ensure the continued operation of the facility.

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The Pirate Radio Explosion

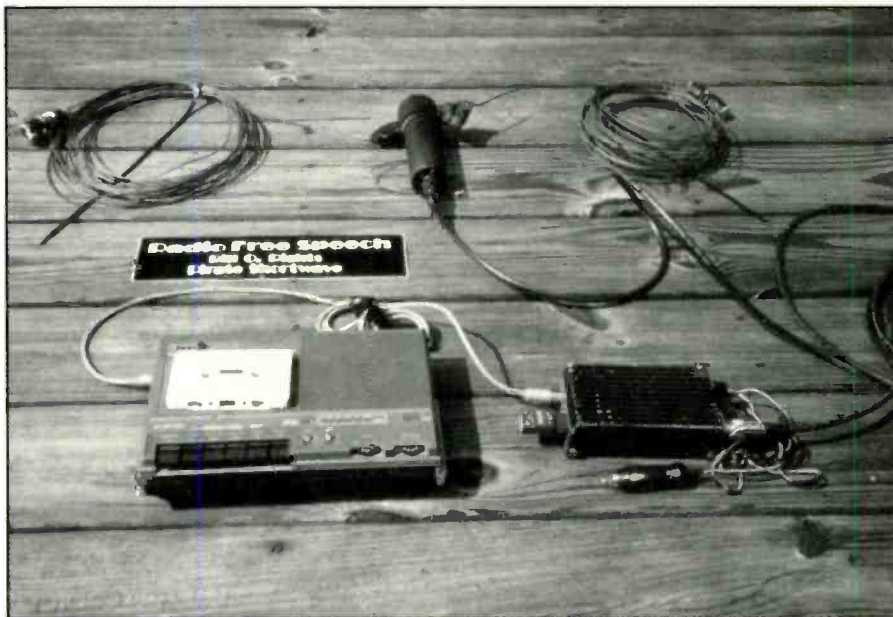
They're back and bigger than ever . . .

BY PAT MURPHY

Never in recent history have there been so many unlicensed or pirate broadcasters on the HF bands as there are now. It's a fact supported by checking the logs of veteran pirate DXers who send those logs to the ACE, NASWA, Pirate Pages and of course the Pirates Den. During the late 1980s one could spend months waiting for a pirate broadcast and never hear anything, except static. You need only tune into 6955 kHz in AM or SSB on any weekend day or night and you can hear any number of different pirate radio broadcasts. As a shortwave listener who has spent a lot of time chasing pirate broadcasts for over a decade, I can tell you, it has been a pleasant surprise in the last year to hear so many new and innovative broadcasters take to the airwaves. One can't help but wonder why it's happening.

What the Heck Is Going On?

There are several factors responsible for this explosion of unlicensed and pirate radio transmissions in the past year. First and foremost is the federal government downsizing within the Commerce Department. The FCC falls under their jurisdiction, which has not only had staff and budget cuts, but had its priorities redirected by Congress. The Telecommunications Bill of 1996 has Washington bureaucrats scrambling to deal with the onslaught of technologies at much higher frequencies than the antiquated HF bands. FCC field offices closed down all over the country in June. Now complaints of interference are being handled by a toll free number that is answered in the Laurel, Maryland monitoring station. Don't expect a speedy dispatch of Federal Agents to answer a plea of "Help" from anyone experiencing interference. The FCC has adopted the policy of "The blame for interference is on the person receiving the interference". The FCC bulletin CIB-10 goes on to state that most



Here is the set up of Radio Free Speech. Station Manager Bill O. Rights calls this his "station in a suitcase" Transmitter—tape recorder for pre-recorded shows, power cords, power supply, plug in crystals and HF dipole with coax all rolled up into one little package. Rights says, "I've set up on the tops of mountains in national parks where we threw up the dipole in a tree and would do a broadcast and be gone, all in 35 minutes". "It takes maybe 10 minutes to set it up and two minutes to take down. I love it." Pirate Pete at WRV agree's, "Its allowed us a pirate operators to be a lot harder to locate. In fact, I've got numerous sites for my set up. Now you see us, now you don't".

interference "is caused by the design or construction of the Consumer Electronic product and not by the radio operator, or is a technical problem, not a law enforcement problem". CIB-10 then invites consumers to file a complaint, with the manufacturer, not the FCC. Adding additional pressure to the regulatory body is a plan in front of Congress that would move the office of the FCC to the Executive Branch (under the White House) and reduce the staff to 250 people. Keep in mind this plan has not been acted upon, but is still being considered, and if it were to be implemented, would be an additional factor that would encourage the Free Radio enthusiast to practice their on air craft.

Another significant fact is the innovative technology of pirate broadcasters in developing new and smaller portable

transmitters. Over the past year we had a virtual "gold rush" to the airwaves as a direct result of this kind of technology. Developed by veteran pirate broadcaster the "Radio Animal", is a 10-watt, AM, crystal-controlled "Grenade" transmitter. "Animal" told me in a recent interview that "the grenade transmitter has been the product of a long process covering years of pirate broadcasting. I wanted a transmitter that was small, portable and solid state. Pirates were using technology from the '50s and '60s; used stuff they'd find at hamfests. I wanted to use

"Over the past year we had a virtual "gold rush" to the airwaves"

Radio Free Speech

Bill O. Rights Pirate Shortwave

Bill O. Rights' pirate bumper sticker.

"So all you people who have said, 'I can never hear a pirate when I tune in,' now is the time to try again"

modern technology for the high tech receivers that listeners are using".

The Radio Animal had his detractors when he first tried this new type of transmitter. He said; "What's so funny is that when I developed the 10-watt Grenade, people told me that no one would hear it". It's interesting to note that in the most recent "Pirate Radio Directory 8th Edition" (Tiare Publications) out of the top five stations with the most heard transmissions, four of them were using Animal's Grenade 10-watt transmitter. Animal told me, "I just wanted to contribute to the pirate scene to make it better" There is no question he has accomplished his goal and also revolutionized pirate radio.

Paul Art of "Voice of the Rock" said, "you can haul this unit which weighs next to nothing, out on a raft to an island, bring some batteries and a tape recorder and be heard for thousands of miles. You'll be virtually unreachable by FCC agents, who aren't going to hunt for an island to find the operator". Not to mention the fact, that by the time the FCC could dispatch someone, the transmissions would have been long over and done with, and the pirate broadcaster leaving no trace.

Heard Worldwide!

Stations using the "Grenade" are reporting that DXers are hearing them all across North America and even in England, Germany and Scotland. In recent reports to WREC—Radio Free East Coast, P.J. Spanks says, "I've received reception reports from England and Scotland using the 10-watt Grenade". Spanks also points out that the "Audio cir-

cuitry is fabulous, and its hard to send a bad signal". Radio Free Speech's, Bill O. Rights got reports from Canada, USA, Germany and Scotland for a May broadcast with the same unit. In fact, the only transmitter that Rights has used this year has been the "Grenade" transmitter. Pirate Pete at WRV, the Radio Virus says, "the Grenade makes it possible to have

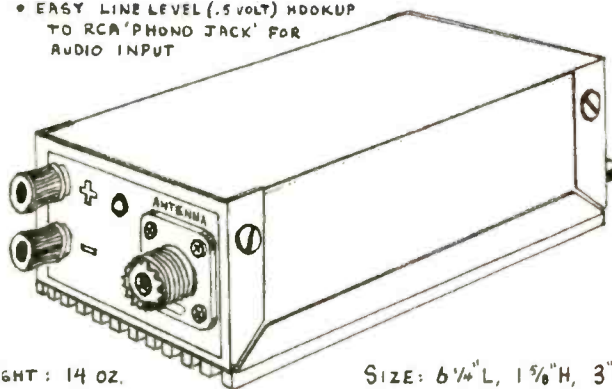
five or six different transmitter locations, because all I have to do is hike into the woods, hook up the antenna and a battery pack and we're on the air".

NAPRS, the North American Pirate Relay Service has had similar success with their "Grenade" as has Animal's own station, WKND, when he did a marathon from the woods. The signal was heard all over North America. In interviewing the station operators, it's obvious they are more than happy with the results of this little power house transmitter that allows them mobility and some degree of anonymity by being away from homes, buildings and people. Hams have long known they can reach long distances using the low power QRP transmitters using CW, but thousands of miles using 10 watts in the AM mode is unheard

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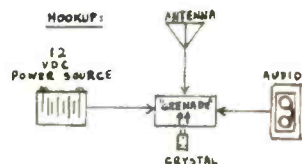
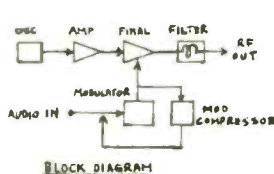
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A look at the "Grenade" transmitter.

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The Station Nobody Wants To Catch

TO: Pat Murphy
 DATE: 10/28/1995
 UTC: 14:45 TO 14:58
 FREQ: 6955 kHz USB

Sincerely,
 Pete The Pirate

WREC

"We've Been Rockin' The East Coast Since March of '93"

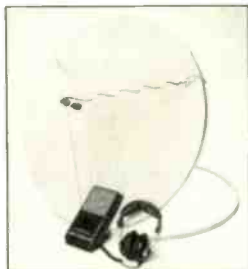
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P.J. Sparx - Station Op

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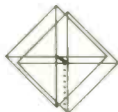
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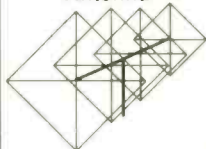
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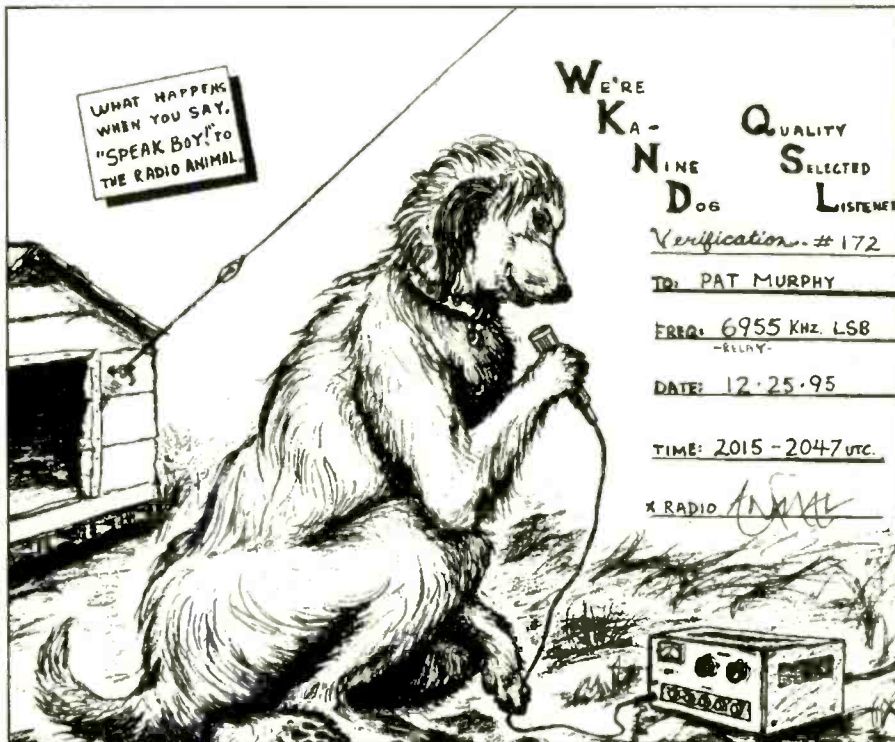
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 -RLNY-
 DATE: 12-25-95
 TIME: 2015-2047 UTC
 A RADIO [Signature]

of in these modern times of 500 kW short-wave transmitters.

Since doing a "Pirate Broadcast" is illegal, it appears the pirates have employed this new technology to go mobile with their activities and in the true pirate spirit, taken advantage of a financial and dis-organizational problem with their real or imagined oppressors. This has made listening to pirates not only easier for the DXer, but the selection of station formats far more diverse.

At least two significant factors that have contributed to the explosion of pirate broadcasts during the last year have been the compact technology of transmitters like the "Grenade." and the FCC downsizing and reduction of staff. It has made the past year one of the most active and fascinating for those of us who spend our

"This is an interesting and exciting time for DXers chasing pirate signals"

weekends searching the airwaves for what used to be elusive signals that we affectionately call "Pirate" radio broadcasts. So all you people who have said "I can never hear a pirate when I tune in." now is the time to try again. If you can't hear one now, you need a new radio, antenna or both. Only time will tell where this trend takes us, but one thing is for sure: This is an interesting and exciting time for DXers chasing pirate signals. Good DX to you from Pat Murphy—Deep in the Dismal Swamps of Virginia. ■

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This Was Radio

Readers Supply The Answers

BY ALICE BRANNIGAN

Reader Ken Evans, of Quinby, S.C., dropped us a letter about the three huge abandoned radio towers standing at the closed U.S. Navy communications facility near San Diego, Calif.

Ken recalled how the three self-supporting towers closely resembled the photos we once ran here showing the U.S. Navy's old radio towers at Cavite, Philippines. Ken was in the U.S. Navy during the 1970s and remembers when the San Diego site, known as Chollas Heights, was still in service. He visited the facility at the time and saw several HF transmitters as well as a 50 kW low frequency transmitter that fed the antenna system supported by the three towers. The towers are held together by rivets, and they sit upon glass insulators. Ken was told that when the towers were erected, they were erected using mule power.

Recently, Ken visited friends in San Diego. He thought it would be a good idea to snap some photos of this station and share them with you. The Chollas Heights facility is located just west of the intersection of San Diego's College Avenue exit of the Helix Freeway. Of course, everything is behind a chain-link fence, but you can still get a view of this gigantic station while looking in from outside.

Our records show that this station was known as NPL, and was in spark service least as early as 1919, and probably before that. In 1919, NPL was listed as a high-power station sending out undamped spark signals. It operated on 23, 31, and 125 kHz. In addition to its official communications with naval vessels, in 1919 NPL also handled commercial marine traffic, sent out time signals, weather reports, and press summaries.

NPL was later used only for official naval CW and RTTY traffic, serving for decades. It was continually being upgraded technologically to be an important part of the U.S. Navy's extensive global HF communications network. As satellite communications grew in importance, the Navy phased out much its HF network and eventually discontinued HF opera-



Ken Evans sent us this photo of the tripod base of one of the old U.S. Navy station towers in San Diego.

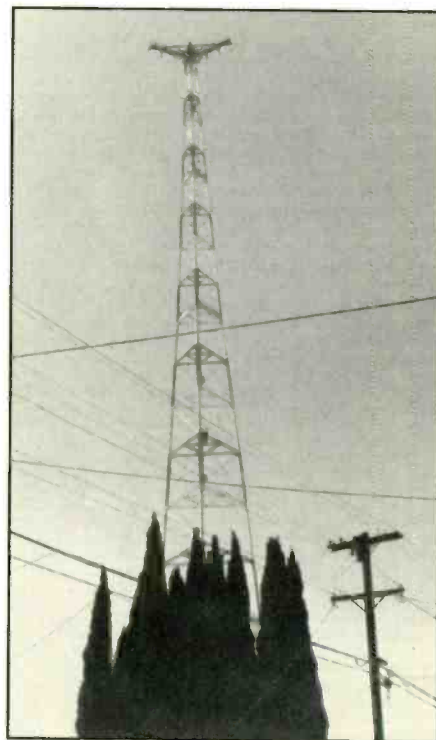
tions at most of its costly old former wireless stations. About two years ago, we ran a similar story about a similar station in the National Capital area.

While some have been razed, several of these picturesque and historic relics of the early years of wireless have been mercifully spared, at least for now. See them while you can. Ken Evans has thoughtfully helped us do so.

Happy Birthday!

Which station is the oldest continuously operated religious broadcaster in the United States? The first station to receive a license that is still in operation is Chicago's WMBI, operated by the Moody Bible Institute. You read about WMBI here a while back. But WMBI is not the answer to the question. There's a catch.

According to reader David L. Williamson, of Lapeer, Mich., the correct answer is WMPC, originally licensed to the Methodist Protestant Church, Lapeer, Mich. WMPC first tested on December 2, 1926, followed by its inaugural broad-



Another view of the old naval wireless tower at San Diego.

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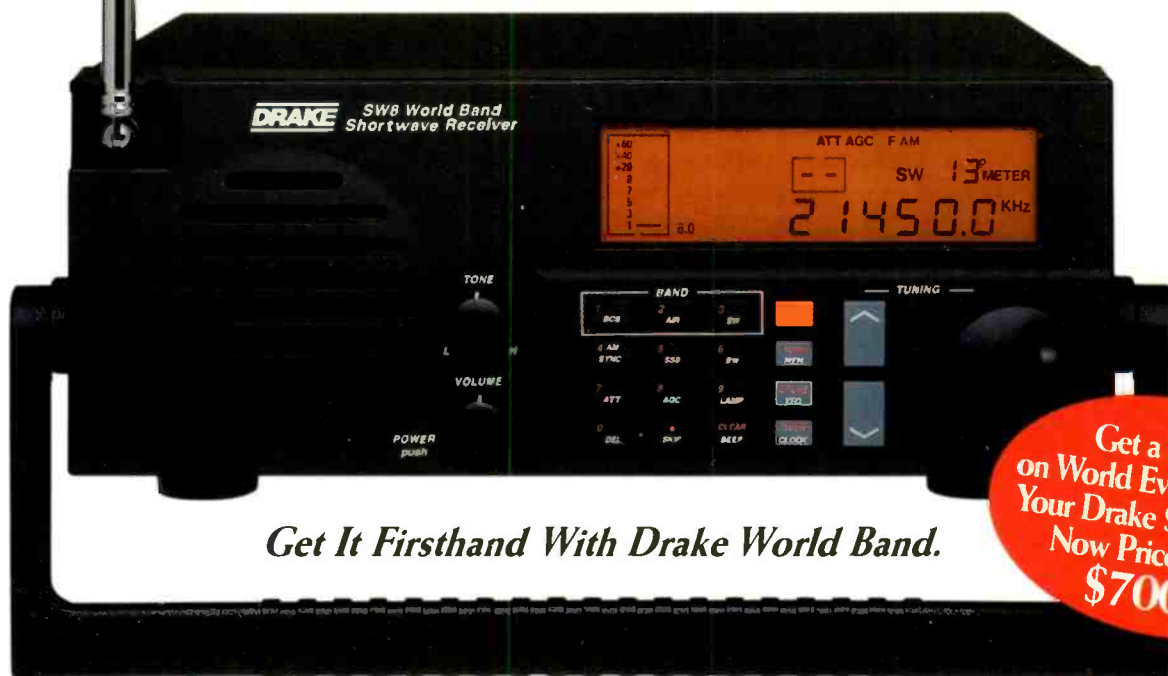
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This long shot of the San Diego installation shows all three towers.

cast a few days later on December 6. Yes, WMBI did begin earlier, but (though remaining licensed), went dark for a time during the Great Depression. WMPC has never gone off the air, making it America's oldest continuously operated religious station. December marks WMPC's 70th anniversary of uninterrupted broadcasting. This is a milestone worthy of note here.

WMPC is not a mighty powerhouse station operating on a clear channel from a population hub. It's a home town station running medium power on crowded 1230 kHz. It is probably one of the few

stations of its age to still be owned and operated by the same organization that first put it on the air. It may be the only station to go 70 years with just two station managers. WMPC has no commercials, it is wholly supported by voluntary contributions. In the dynamic world of modern broadcasting, WMPC represents a true small town station, not only addressing its community's spiritual needs, but also broadcasting local, state, and national news from AP, UPI and the stations own news staff. In addition, WMPC broadcasts local football and basketball games.

WMPC was created when Rev. Frank S. Hemingway heard a friend's radio, back in 1926. It occurred to him that radio would be a good way to bring religious services to persons who were homebound for one reason or another. Hemingway attempted to interest residents in nearby cities to establish a religious radio station, but neither encouragement nor finances were forthcoming. Hemingway decided that his own community, Lapeer, was a suitable site for such a station since it surrounded by several large industrial cities, including Flint, Pontiac, and Saginaw.

Hemingway purchased a radio handbook containing circuits. With the help of friends, he built a battery-powered set that could transmit with 5 to 50 watts as well as receive. It used a carbon mic. He ran this set at 30 watts on about 1538 kHz.

The antenna was a cage type using bicycle rims to hold the wires in place. It was stretched between the dome of his church and a pole more than 100 feet away. The first tests revealed that the transmitting frequency was quite unstable since it wasn't crystal controlled. Nor-

"In 1919, NPL was listed as a high-power station sending out undamped spark signals"

mal street activity near the antenna, such as passing cars, tended to affect the operation of the station to the degree that reception was degraded.

The transmitter was housed inside the dome of the Methodist Gospel Church, with the mic installed in the pulpit. A second mic was downstairs in the Bible Study Room. Remotes could be broadcast from the high school auditorium.

You'd think that the arrival of WMPC would have been openly welcomed by the entire congregation. Not so. In those early years of broadcasting, some were opposed to the idea of a radio station being brought into a house of worship. They said that radio was "not of the Lord." One member said she prayed all night that the new station would never go on the air, but that at 5 a.m. she had a dream in which she was directed by Heaven to send Rev. Hemingway a contribution for the station. She became a strong supporter of WMPC. Nevertheless, Hemingway tried to keep the radio hardware out of sight as much as he could.

When WMPC opened for regular programming on December 6, 1926, it operated for two or three hours a day for six days a week. Since radio receivers at that time couldn't tune in 1538 kHz, Rev. Hemingway's brother-in-law, Hollis Hayes, was hired to go to people's homes and make changes in their receivers so that the station could be received. He was WMPC's Chief Engineer from 1930 until he retired in 1971.

Around 1930, WMPC finally became crystal controlled, thanks to the installation made by Frank D. Fallon, founder of station WFDF, Flint, Mich. That wasn't enough to get WMPC a new lease on life because in 1931 the government began reorganizing the band. Frequencies became scarce. Late in December, a group petitioned the FRC to kick WMPC off the



From 1935 to 1967, WMPC used this Doolittle and Faulkner 250 watt transmitter. The station has it on display.

"WMPC has never gone off the air, making it America's the oldest continuously operated religious station"

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WMPC's record lathe once used for cutting electrical transcription discs.

air so that they could take over its spot on the dial. They claimed WMPC was failing to meet minimum federal requirements for meeting the "public interest, convenience, and necessity."

Rev. Hemingway needed to go to Washington to fight for his station. One problem was the legal matter, the other

was his lack of funds to make the trip. He appealed to friends of the station for prayers and funds. He got both. When he got to Washington, he made certain the **FRC** was satisfied with WMPC's operations. The agency then rejected the attempt by others to take over the WMPC air time.

"The transmitter was housed inside the dome of the Methodist Gospel Church, with the mic installed in the pulpit"

In the spring of 1935, to meet Federal requirements, WMPC installed a new antenna. This was a 160 foot Blaw-Knox vertical radiator used with a ground system consisting of 6,000 feet of buried copper wire radials. At that time, a new higher power transmitter was also installed to increase the station's coverage. Since the



Part of the WMPC museum, located at the station, and open for tours.

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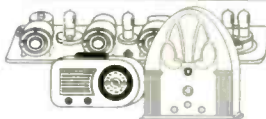
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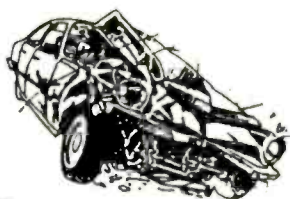
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"Rev. Hemingway needed to go to Washington to fight for his station"

station went on with 30 watts, it had gone up to 100 watts, then (in 1935) to 250 watts.

In 1961, Rev. Hemingway suffered a stroke which left him partially incapacitated, at least for a time. This was a cause for great concern from his parishioners. Among those concerns was the awareness that Rev. Hemingway was the manager of WMPC, voice of the Liberty Street Gospel Church (formerly known as the Methodist Protestant Church). In 1964, Rev. Hemingway resigned as pastor of the congregation and was replaced by young Rev. Arnold L. Bracy. Mr. Hemingway continued his duties as station manager until July of 1965 while the Board of Trustees decided upon who would become his successor at WMPC.

One consideration was that the new manager would need to operate the station in order to satisfy all technical requirements as well as seeing that it continued to be operated in the public interest, need, and necessity. Local business people and officials were included in the decision process. After prayer and searching, Rev. Arnold Bracy was appointed as WMPC's manager.

Under his leadership, Saturdays were added to the WMPC operating schedule. In 1969 the station's power was increased to 1 kW. Today, the church (now 155 years old) has become known as Calvary Bible Church of Lapeer, at 923 South Main. WMPC operates 24-hours per day. Programming is inter-denominational. The church has kept much of its antique radio apparatus on display.

David Williams, who furnished us with information about WMPC trained with the USAF in 1962 as a Heavy Ground Radio Repairman. He is a member of the Calvary Bible Church. His wife, Leona, worked in the office there for a number of years. His information about this station, along with the photos he furnished, is excellent. Let's hope WMPC goes for another 70 years, and more!

As you can see, our readers are right on the ball with wonderful information to share. This type of input is what this section of *PopComm* is all about. Why not send us photos, anecdotes, picture postcards, old time QSL cards, station listings, news clippings, or anything else to do with early radio and wireless. See you on the road to Radioville! ■

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The ACARS Downlink



The Exciting World of Decoding ACARS Transmissions

Welcome to the inaugural bi-monthly column of ACARS Downlink. ACARS is the acronym for Aircraft Communications Addressing and Reporting System. This system is an air/ground network which enables aircraft to function as mobile computer terminals linked to a ground-based command and control management system. Information collected from sensors onboard ACARS-equipped aircraft is automatically transferred by VHF radio link to ACARS ground facilities. It is then relayed via the ground stations to a central computer processor where the data is converted into inter-airline operational messages through the ARINC ESS Electronic Switching System.

Satellites, as well as HF links, also carry ACARS traffic but currently, monitoring traffic in these modes is beyond the scope of the hobbyist. Maybe someday in the future, this type of monitoring will be possible.

Growing by Leaps and Bounds

VHF ACARS monitoring is fast becoming a rapidly growing hobby, probably due to four factors. First, it is a natural extension to the hobby for those who are currently monitoring aeronautical voice traffic. Second, because of its frequency allocation, all traffic takes place in North America on one of four frequencies. Third, and most important of all, several low-priced decoders are now available that make this facet of the hobby affordable. And finally fourth, aero monitors probably already own a handheld scanner capable of receiving the ACARS frequencies in the aircraft AM band (118.0 to 136.0 MHz).

ACARS Background

During peak traffic periods, more than 1,000 commercial flights may be found in the skies over North America. Air Traffic Control Centers operated by the FAA in the United States and the MTC in

Canada are entrusted with the gargantuan task of air traffic command and control management. No less onerous an undertaking is the myriad of voice contacts between flight deck crews and ground controllers/flight operations managers that keep the airborne fleet flying safely and efficiently.

Much of the voice contact traffic in the past was devoted to describing routine aircraft maneuvers such as push back from the gate, take off, landing and gate arrival at the destination. Added to this were messages on aircraft performance, fuel consumption, position reports, etc.

Voice contacts generally require that the message receiver repeat the message content in its entirety so that the sender can confirm successful transmission. As flight engineers were eliminated from the flight decks of many aircraft, the reporting part of their job now fell to the pilots and co-pilots. Indeed, the need existed to find a method to handle these routine air/ground communications and reduce the manpower involved.

The ACARS solution was developed and implemented for the aviation industry by ARINC (Aeronautical Radio Inc.) in the mid 1970s. The system was designed to cut down on flight crew work load by utilizing computers on-board aircraft and at ground facilities to exchange routine reports and messages. However, it took nearly two decades for computer technology and equipment cost effectiveness to catch up with the reality.

While not every airline carrier is ACARS-equipped, nor is every aircraft in a carrier's fleet outfitted with the system, for those carriers who do have it, the number of aircraft utilizing the system is growing significantly.

Millions of Messages

Over 8 million ACARS messages are currently processed in any given month.

Three major elements comprise the ACARS Network:

1. The Airborne Subsystem (onboard the aircraft), which consists of the

Management Unit (MU) and Control units (CU).

2. The ARINC Ground System, consisting of the ACARS VHF Remote Networks, the ACARS Front-End Processor System (AFEPS) and the ARINC Electronic Switching System.

3. The Air Carrier C2 (Command and Control) and Management Subsystems which include ground-based flight operations, maintenance centers, dispatch offices, etc., of the various airline carriers who are ACARS-equipped.

Note: The MU, however, can provide interfaces for additional sub-system elements with which the aircraft may be equipped, at the airline's option.

Two such sub-system elements include the following:

1. An Uplink Message Hard-copy Printer in the cockpit.

2. An Optional Auxiliary Terminal (OAT). This unit may take the form of a CRT/Keyboard device (Video Display Terminal) that may be located in the passenger cabin or mounted on the electronics rack which provides interfaces for other sources and sinks of data on the aircraft. One of these source/sink devices may itself be a display/keyboard terminal and either type of OAT may also be capable of supplying data to the hard-copy printer.

Radio Frequency Usage and Environment

ACARS was initially intended to be used in a line-of-sight VHF band radio environment. Since its inception, both HF (shortwave) and satellite transmission have been used experimentally. Depending on VHF propagation conditions, line-of-sight for high altitude aircraft can be as much as 350 miles or more. Obviously, you don't have to live near an airport to copy ACARS comms.

ACARS transmissions can be found on the following AM frequencies:

131.550 MHz—The initial implementation and primary channel for ACARS in the United States and Canada.



130.025 MHz—Secondary ACARS channel for busy areas of the U.S.

129.125 MHz—Tertiary ACARS channel for some busy areas of the U.S.

131.475 MHz—The proprietary company channel for Air Canada.

131.725 MHz—The primary channel used for ACARS in Europe.

What Can You Monitor?

For most ACARS monitors (except those living within close proximity to a major airport), transmissions from the aircraft's Airborne Subsystem are audible only when the aircraft is actually airborne. Generally these transmissions fall into one of three broad categories:

1. ACARS traffic occurring immediately after departure.
2. ACARS traffic from high altitude flights crossing a Center's Flight Information Region.
3. ACARS traffic from aircraft on approach to land.

By monitoring the approach and departure VHF voice frequencies for your local airport and comparing them to the ACARS traffic you are receiving, you will soon learn two things:

1. What airline carriers and type of aircraft are ACARS-equipped.
2. What message formats/content are used for approach and departure.

You must have two VHF scanners (receivers) to accomplish this. You may also wish to scan to your local Air Traffic Control Center's voice frequencies for aircraft flying through their zone.

You may also optionally scan the frequencies of distant ATC VHF facilities. For example, from my location in Toronto, ACARS transmissions have been monitored from flights departing from and arriving at New York, Chicago, Cleveland, Detroit, Buffalo, Rochester, etc.

Scanning the New York ATC voice fre-

quencies often turns up an aircraft that appeared on the ACARS net. The general rule of thumb regarding distant ACARS transmissions is that if VHF voice transmissions can be heard from your location, you will also be able to receive ACARS traffic from the same location. I live in close proximity to the busiest international airport in Canada, and have observed that nearly 50 percent of the monitored traffic has been from distant aircraft. This is great news for ACARS monitors who do not live anywhere near a major airport.

ACARS transmissions from aircraft on the ground will not generally be audible unless you live within sight of a major airport. The same holds true for ground-based ACARS stations.

What Equipment Do You Need?

To monitor ACARS transmissions you need a VHF scanner/receiver capable of tuning the AM Aircraft band (118.00 MHz to 136.00 MHz). A suitable VHF antenna is also required. While table-top scanner/receivers are preferred, they certainly are not necessary.

ACARS decoding and the concept of "scanning" are mutually exclusive. Because ACARS transmissions are split-second in nature, the squelch control on your radio must be turned *completely* off, otherwise the transmission will be half over before the squelch circuit opens.

There are seven commercial products available to decode ACARS transmissions, ranging in price from \$99 to \$1500.

Base Station Units

1. The Universal M-400 Decoder is a self-contained reader that features a two line, 40 character LCD display. The M-

400 also copies other VHF pager modes as well several of the popular radioteletype modes found in the shortwave bands. The M-400 also has a Centronics parallel printer port.

2. The Universal M-1200 is a decoder card that fits inside a PC-type computer. It then displays to the computer's monitor and print. It also supports a number of HF radioteletype modes as well.

3. The new Universal M-8000v5 is a top-of-the-line free-standing dedicated decoder that does not require a computer. It displays to a VGA monitor and also has a parallel printer port. The M-8000v5 receives ACARS plus a plethora of HF and VHF digital protocols.

4. The Hoka Code-3 series, in addition to providing a myriad of other modes, also features ACARS as well as optional SEL-CAL decoding.

Portable Units

These units require no power source and can be connected to a laptop (notebook) computer for use at airports and other locations.

1. The Lowe Airmaster was the first external computer interface designed to be an inexpensive alternative for the ACARS-only listener. Connection is via the PC's serial port. Version 2 is current, with Version 3 to be released soon.

2. AEA also makes a decoder similar to the AirMaster.

3. Universal's portable unit, the ACT-1, an ACARS-only external computer interface, is similar in design and operation to the Lowe and AEA models.

ACARS Message Content

Having monitored about 100,000 aircraft messages in the last three years (5,000 pages of hard copy), these are the

major types of downlink messages you can expect to copy:

- ACARS link tests
- Departure and arrival Reports
- Out, Off, On and In Reports
- Fuel uplift, burn/consumption reports
- Aircraft weight and loading information
- Flight route weather information
- Flight plan routings
- Position reports with weather
- Aircraft maintenance status and faults
- Engine performance data
- Inflight medical emergencies
- Company ops messages/chit-chat

Decoding ACARS Messages

ACARS transmissions employ a 7-bit ICAO coding scheme with an eighth bit odd parity transmitted in short bursts at 2400 baud. The sound is similar to packet, but the duration is much shorter (typically under a second). An extensive error checking system known as Block Check Sequencing (BCS) is utilized to ensure the integrity at both ends of the link.

Not all ACARS messages contain visible text. Some are composed of special control characters only, which trigger special actions in the receiving processor. ARINC-defined message types often contain mandatory fixed-format text fields followed by optional "free talk" as required. Text message length may not exceed 220 characters.

Label Q0 is used as a Link Test message initiated by either the pilot or the control unit. The ground then replies with any traffic they may have in the queue for the aircraft:

.N323AA Q05
0404AA0038

.N323AA Address Field: Aircraft Registration Mark, American Airlines Boeing 767

Q0 Message Label: Q0—ACARS Link Test

5 Downlink Block Identifier (optional)
0404 Message Sequence Number: 4 minutes and 4 seconds past the hour

AA0038 Flight Number: American Airlines #38

The Address field identifies the aircraft with which the ground station is communicating. For uplink (ground-to-air) messages it will be either the aircraft's official registration mark or the flight number of the service operating the aircraft. For downlinked (air-to-ground) messages it always must be the aircraft's official registration mark.

By international agreement, the official registration marks are coded according to the country of origin using a one or two letter ICAO prefix. The single letter "N" is the prefix for all aircraft registered in the United States. Other prefixes include "C" for Canada, "G" for Great Britain and "HB" for Switzerland.

American registered aircraft may also contain a unique carrier suffix that forms an integral part of the official registration. For example N176UA is Boeing 747-400 owned and operated by United Airlines while N176DN is a Boeing 767 owned and operated by Delta Airlines.

For ACARS purposes, the Address field must be seven characters long and is always right-justified. If the aircraft's registration mark is less than seven characters, it must be left-filled with periods. The following are examples of addresses:

N1825TU
.N123UA
...N1901
...N409
.C-FDCA
.F-GHGF
.HB-IGC

ACARS message types are identified by a unique two-character Message Label. ARINC has defined two major types of labels: 1) System Essential and 2) Service-related. Labels are utilized in both downlink (air-to-ground) and uplink (ground-to-air) messages. In addition, you will find that many carriers have also defined their own labels for company operations purposes.

The optional Downlink Block Identifier is a single character located after the label. Its function is to enable the ground-based processor to detect duplicate messages or message blocks. The Airborne Sub-system changes the bit pattern transmitted in this character position each time a general response or new message or new message block is downlinked to the ground.

The Downlink Block Identifier consists

of a single character in the range of "0" to "9". Since ACARS allows for up to five retries at downlinking an unsuccessful transmitted message, you will often copy the same message. The clue that it has been retransmitted lies in the fact that the Message Sequence Number and the Downlink Block Identifier continue to have the same values as the first time the message was originally downlinked.

For most downlink messages, the Message Sequence Number is a four digit number that represents the time in minutes and seconds that the message was originally downlinked. This time is obtained from the GMT clock in the MU.

The six-character Flight Number field is comprised of a two-character airline identity code followed by a four-character alpha/numeric flight number. The two-character airline code conforms to the IATA two-character Airline Designator.

If the Flight Number is less than four characters in length, it generally will be right-justified and left-filled with leading zeroes, as in:

AC1030
BA0294
UA0038
AA0006

Flight Numbers for Northwest Airlines appear to be an exception to the ARINC standard. They will often leave a leading space (blank) before a three-digit flight number—for example:

NW 201.

Business jets normally utilize a generic flight number of GS0001.

Well that's it for this month. In the December issue, we'll examine some of the typical traffic that will show up in your downlinks. If you're new to ACARS monitoring or have questions, or have copied some interesting comms, send us a copy. Send your letters and copies to me at: ACARS Downlink, *Popular Communications*, 76 North Broadway, Hicksville, NY 11801.

Until December—Happy Landings! ■



Digital Satellite TV?

Should I own or not?

What does it really cost?

Can I get my local stations?

Will it work on my set?

Can I use it with two TVs?

Do I still need an antenna?

What else do I need?

Can I block channels?

What if I need help?

What does the red button do?

What about surround sound?

Should I disconnect my cable?

How big is it?



Any more questions?

If you're a little fuzzy about digital satellite TV, we can clear things up. Whether you choose to own the equipment or lease, we're the only nationwide retailer that offers RCA®-brand DSS, with DIRECTV® and USSB™ programming—or PRIMESTAR® service and programming—all under one roof. We've got the systems, we've got the accessories, we've got the answers. For a store near you, call 1-800-THE-SHACK™.

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RadioShackSM
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We've got answers.[®]



Popular Communications Reader Survey— October 1996

We're changing *your* magazine; the look, the content and coverage. But we need your help. Why? Because **YOU** and your radio activities will help us shape the future direction of *Pop'Comm*.

Each month we'll be asking you a few questions. **Circle the appropriate numbers on the postage-paid Reader Service**

Card to answer them, (Remember, you can Circle more than one number in each category) and drop it in the mail. And while you're at it, include your name and address, so if your card is chosen in our random monthly drawing, you could win a free one year subscription to *Popular Communications* (or a free one year subscription extension).

About Yourself:

1. If your are:

- MaleCircle no. 30
Female.....Circle no. 31
SingleCircle no. 32
Married.....Circle no. 33

2. If your age is:

- Under 18.....Circle no. 34
18-24.....Circle no. 35
25-34.....Circle no. 36
35-44.....Circle no. 37
45-54.....Circle no. 38
55-64.....Circle no. 39
65-74.....Circle no. 40
75 or overCircle no. 41

About Your Communications Experience:

3. If you've been a monitoring hobbyist:

- Less than a year.....Circle no. 42
1-2 yearsCircle no. 43
3-5 yearsCircle no. 44
6-10 yearsCircle no. 45

- 11-25 yearsCircle no. 46
over 25 yearsCircle no. 47

4. I'm mainly interested in:

- Scanning police, fire and medical frequencies ..Circle no. 48
Scanning aircraft frequenciesCircle no. 49
Scanning military frequenciesCircle no. 50
Scanning government frequenciesCircle no. 51
Scanning satellite frequencies.....Circle no. 52
Scanning other communications.....Circle no. 53

5. Mostly, I use my scanner:

- At home (fixed base location).....Circle no. 54
On the road (mobile set-up)Circle no. 55
Portable (handheld).....Circle no. 56

6. My shortwave and other monitoring includes:

- Utility stations.....Circle no. 57
Listening to international broadcastersCircle no. 58
DXing distant stations.....Circle no. 59
Pirate radioCircle no. 60
Broadcast (AM/FM) stationsCircle no. 61
Amateur stationsCircle no. 62
RTTY/digital communications.....Circle no. 63

Thanks for your participation. Next month we'll have more questions, and another chance for you to win a free subscription to *Popular Communications*. ■

Scanning The Globe

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

A Look at Those Mega-Receivers

One of the most exciting recent developments in scanning has been the introduction of the "mega-receiver." These super-scanners cover the radio spectrum from shortwave to microwave, often with a thousand or more memory channels.

The Japanese company AOR (which stands for Authority on Radio, by the way) jumped into the lead in this category several years ago with the introduction of the AR3000, and its worthy successor, the AR3000A.

Remarkably tiny given all that it will do, the AR3000A offers all-mode (AM, NFM, WFM, SSB & CW) reception of frequencies from 100 kHz to 2036 MHz with 400 programmable memory channels. The AR3000A scans at a respectable 50 channels per second and channel lock-out is provided, as are four priority channels.

AOR's next entry into this new generation of receivers was the AR-8000. This highly-capable high-tech handheld scanner covers the frequency range of 500 kHz to 1900 MHz with 1,000 programmable memory channels.

While shortwave performance is understandably compromised with the stock

"VHF/UHF performance of the AR-8000 is dynamite"

rubber ducky antenna, the little radio will still receive the major international broadcasters such as the BBC and the VOA. Connect it to a "real" external shortwave antenna and you can even receive military High Frequency (HF) communications thanks to the radio's single-sideband reception ability.

VHF/UHF performance of the AR8000 is dynamite. Its triple conversion circuitry coupled with excellent front-end design nearly eliminates image and intermod problems, despite a NFM receive sensitivity of just .35 microvolts over much of the VHF/UHF range.

Like the AR3000A, the AR8000 also offers computer control capability. Many AR-8000 owners have discovered that reception of the "forbidden" 800 MHz



The ICOM IC-R8500 is ICOM's latest entry into the wideband all-mode receiver world. (Courtesy ICOM America, Inc.)

cellular telephone frequencies can be permanently restored using Computer Aided Technologies' ScanCat Gold scanner control software and an interface cable.

AOR took another leap forward last year with the introduction of the AR-5000. This tabletop receiver covers frequencies from 10 kHz (yes, 10!) all the way up to 2600 MHz with 1,000 programmable memory channels.

Unfortunately, the AR5000 met with some unusual delays and only received FCC type approval this April.

Keith Mahle, assistant manager at EDCO, the AOR distributor for the United States, said large commercial and government orders for the AR5000, plus waiting lists at many dealers, will absorb the first shipments of radios and that it may be a couple of months before dealers will receive enough radios to keep a stock on hand.

Still to come from AOR is the AR7000, introduced in April at the Dayton Hamvention. The AR7000 won't be submitted to the FCC for approval until at least September, Mahle said. "They want to hear from their customers before settling on a final prototype," he said.

Whatever changes are made in the design, two things are certain. The radio will feature digital signal processing and a 3.5 inch color LCD display screen. The prototype AR7000 shown at Dayton featured 1,500 programmable memory channels, 100 kHz to 2 GHz coverage,

frequency spectrum display and NTSC/PAL video outputs.

The video output allows you to hook the radio up to a VCR and record up to six hours of monitoring for later playback. You'll be able to listen to all you missed, see what memory channels the transmissions were received on, and spot activity on adjacent frequencies with the spectrum display.

ICOM's New Receiver

While AOR may have gotten the jump on the rest of the industry, it hasn't been the only company working on a next-generation scanner. Also introduced this year at Dayton was the ICOM IC-R8500.

The ICOM IC-R8500 covers frequencies from 100 kHz to 1999.99 MHz in 10 Hz tuning steps with all-mode reception. Also included are Automatic Gain Control, 1,000 memory channels, S-meter, noise blanker for AM and SSB, and three antenna connectors.

Antenna selection is channel-selectable, meaning you can hook up VHF, UHF and SW antennas and the radio will automatically select the proper antenna for the frequency in use.

With this new radio, ICOM's engineers have found a way to eliminate just the cellular telephone frequencies instead of blocking everything in the 800 to 900 MHz range as in their other receivers marketed in the U.S.

EDCO...Always bringing you the latest products

LOWE HF250



The Lowe HF250 is set to become the new world standard for mid-priced receivers. Building on the worldwide success of Lowe's HF225 and HF150 models, the new HF250 combines Lowe's traditional high standards for performance and quality of construction together with the advanced facilities and control features required by today's discerning listener.

MONITORING ACARS with the new LOWE "AIRMASTER"

The monitoring of air band communications is a hobby that has become more and more popular over the last 10 years. In common with the rest of the communications field, there are far reaching changes in process in this area to cater to the requirements of air traffic control in the next century. ACARS is a very specialized data mode, and only decoders that have been specially designed for it will function. Until now, the only decoders that will work have been fairly expensive devices, as they use dedicated hardware to handle the decoding.



EMOTO Rotators

Reliability and High Performance. EMOTO has established a reputation, with Amateur Radio Operators around the world, as the premier manufacturer of reliable rotators. Over 45 years of experience in design and manufacturing stand behind every EMOTO rotator product.

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1200FXX

Gd²100kgm²

Preferred choice of many DX'ers. Control large stacked HF and V/UHF arrays. Solid state controller has inertia control circuit, variable speed, preset and computer compatible. The 1200FXX is known as the T²X killer.



LOWE HF150

Lowe, an outstanding U.K. manufacturer of shortwave receivers, created an easy to operate, compact, receiver, with the features of the "Big Guys." From the longest of Long Wave to the top limits of the Short Wave spectrum, the HF-140 is designed to give you everything you needed in a real radio receiver. There has quite literally never before been a receiver like the HF-150, because only now have technology and engineering been combined in such an



effective package.

This innovation at its very best.



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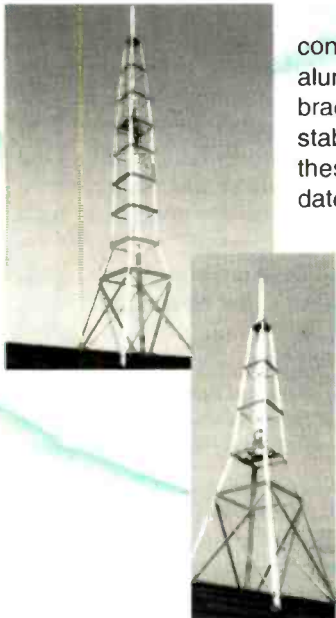
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The **SOUND FEEDER** Model SF100 Mobile Audio Connector is the most practical and convenient way to connect your portable compact disc player or cassette player to your car's existing FM radio speaker system. By simply plugging the **SOUND FEEDER** into your cigarette lighter,

connecting the audio input wire to your portable player, and setting it to the desired station, you can begin to enjoy the amplified **STEREO** sound of your portable music source without the bother of dangerous (and often illegal) headphones. As an added feature, the **SOUND FEEDER** also contains a specially designed DC-to-DC converter which will provide 3V, 4.5V, 6V, or 9V DC power from the car cigarette lighter to most (but not all) models of portable players. The **SOUND FEEDER's** combination of stereo sound, easy installation, portability, and power supply feature make it the ideal accessory for every vehicle owner.



Roof Towers



Create Roof Towers are constructed of high quality aluminum with galvanized steel bracing for additional support and stability. Available in three sizes, these towers will easily accommodate your antenna requirements, and will support VHF antennas, HF tri-banders, and Oscar systems. Rotators mount securely inside the tower on a furnished rotor shelf. While figures listed below are for Create Roof Towers in a properly installed, un-guyed condition, we do recommend guying for safety reasons.

A New Range of Low-Cost Antennas

Scanning Aerials: To improve your reception...

Watson Scanning Aerials have been designed to bring you the very best reception possible. High quality engineering and ergonomic design ensure that Watson Scanning Aerials are the natural replacement for those seeking to extend their receiver's range.

All models cover 25MHz-1900MHz and are fitted with BNC connectors.



WATSON

WINRADIO



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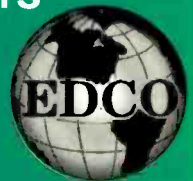
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CIRCLE 131 ON READER SERVICE CARD



One other radio from ICOM deserves mention here as perhaps the granddaddy of all the mega-receivers—the IC-R9000.

The IC-R9000 offers shortwave to microwave reception with a built-in spectrum display, programmable memory channels and many other features we now take for granted. However, while a few R-9000s made their way into the shacks of a handful of well-heeled hobbyists, the \$5,000 price tag put the IC-R9000 out of the reach of most of us. While still in production, the IC-R9000 is not for sale to private individuals in the U.S. since it still receives the full 800 to 900 MHz range.

None of these new receivers comes cheaply. The AR8000 is the most affordable, selling for around \$575. The AR-3000A sells for around \$1,200, and according to EDCO, the AR7000 will be a few hundred dollars more. Topping the list are AOR's AR5000 and ICOM's R-8500, both of which will sell for about \$2,000 once dealers get them in stock.

It's a lot of money, no doubt, but you'll get a lot of radio for the bucks.

Reader Mail

Roger Bolwig of Canada has been playing with his new RadioShack frequency counter and he sent along a list of frequencies in his area.

Ontario Provincial Police, 141.365 (PL 107.2 Hz) and 141.665 (PL 107.2 Hz); Ambulance, 150.755; Airport, 123.000 (standard unicom); VE3 RMI, 147.270 MHz (excellent 2m repeater); and VE3 TOP, 147.000 MHz. Ontario police also use a simplex frequency of 140.970 MHz and a mutual aid frequency of 142.770 MHz to talk with any police department in Ontario.

Roger's "shack" includes a Uniden Bearcat 590XLT scanner with optional CTCSS board installed, an all-band VHF/UHF Ventura receiver, a Sangean 803A SW radio, a RadioShack frequency counter and a few 2-meter ham radios.

Roger also said *Pop'Comm* readers can E-mail him at Robo@cancon.net for a lengthy list of Royal Canadian Mounted Police frequencies.

In our July column I recounted several of the most interesting incidents I've monitored over the years. From our *Popular Communications* magazine-requested input from readers on some of their most "memorable" scanning adventures, here's one from Ken Windyka of Springfield, Mass.

"While stationed at a rural Strategic Air Command base in Michigan in the



The AR5000 is a high-performance wideband all-mode receiver that covers 10 kHz to 2600 MHz. Housed in a metal cabinet, it is powered by an external 12 Vdc power unit, but may be operated from any regulated supply or battery capable of providing 12 to 16 Vdc at 1 amp. (Courtesy AOR).

late 1970s, I became interested in scanning and purchased the Bearcat Model 101, a 16-channel programmable scanner (which I still have, but don't use) from a local electronics store. Since I had the additional duty as the hospital squadron's Disaster Preparedness/Emergency Planning Officer, I had no problem in getting a complete list of all base frequencies (primarily high VHF band), including law enforcement, security, medical, fire/crash and the commander's nets.

"It was a hot August Saturday, a severe weather/tornado watch had been issued by the National Weather Service and I had turned on the scanner to monitor NOAA's weather site in Alpena (about 50 miles away) and also to scan the various county sheriff's departments/state police radio systems (low band VHF base stations monitored in a 70-mile radius with a portable antenna on the scanner) to get a jump on any impending severe weather (we lived in the base housing area in a fourplex townhouse with a cellar).

"Around 2 p.m. the wing commander received a priority call over the radio (commander's net) from the base weather detachment. The technician on duty advised the commander that radar indicated that a tornado might be approaching the base from the southwest approximately 25 miles away. I told my wife that we needed to get ready to go down to the cellar. I was awaiting the base siren warning system to be activated, but I also knew that some of the sirens were out of order."

"The wing commander initiated a radio/telephone interface conference call to various unit commanders and also to

the control tower. He asked the controllers if they could see a funnel cloud.

"The airmen in the tower were quite excited and responded that there were very low, black clouds with lightning, but they couldn't see a funnel cloud. They also asked for permission to evacuate the tower if they spotted a funnel cloud and were granted permission to leave their posts.

"Eventually the weather unit advised the wing commander that the danger had passed and life at this rural SAC base continued on with most of the residents unaware of what "almost" happened. As a post script to this story, in the next weekly county newspaper it was reported that a very large dump truck located in an 'isolated' quarry about 19 miles south of the base was found on Monday tipped over—officials suspected that a tornado may have caused the damage."

Ken says that today's he's retired from the Air Force and that he continues to be very active in scanning, using RadioShack Pro-46 and Uniden 200XLT handhelds for portable and mobile use, a Radio Shack Pro-2004 for home use, and that he still has his old Bearcat 101 and 220 models which are stored and no longer in use.

Ed Clark of Riverside, Calif., says unexpectedly hearing the shuttle on his Pro-51 handheld scanner is one of his most memorable scanning events. "Like you, I have my Pro-51 with me constantly. Some say it's my baby bottle."

"I had no idea (the shuttle) transmitted by ham band back to earth. This led me on a Web search to find all the frequencies I could relating to the space program," he said.

Ed, the shuttle has carried amateur radio equipment for several years now, and most of the astronauts are licensed hams. Were you hearing SAREX (Shuttle Amateur Radio EXperiment) communications with hams here on Earth, or were you listening to the shuttle audio being re-broadcast by a local ham club in your area?

Ed said his second unexpected "find" was hearing the Blue Angels while he was at a shopping center and they were flying at March Air Force Base in California.

"I'd brought my Pro-51 just in case they were in the air, and as luck would have it, their flight time had been postponed by one hour, so I listened from start to finish," he said.

Reader Ryan McCarthy wrote to ask which external scanner antenna I would recommend to receive 25 MHz to 1300 MHz range.

Ryan, if you want to cover the entire range, be aware that some compromise in performance is unavoidable. However, wideband discones do a pretty good job of covering the entire range. Wideband discones are available from several companies, including RadioShack and Grove Enterprises. Valor and Diamond brand

Featuring advanced operating features, including 1,000 memory channels divided into 20 banks and computer control. (Courtesy AOR). →

antennas seem to be particularly well made. Good luck, and let me what you decide, and how well it works for you.

Keep On Writing!

Keep all of those cards and letters coming folks. Reading about all of the neat ways in which many of you are practicing your scanning hobby makes this job fun! And don't forget to include some photographs of your monitoring post or interesting uses of VHF/UHF communications systems.

Send your letters to J. T. Ward, "Scanning The Globe," c/o *Popular Communications*, 76 North Broadway, Hicksville, NY 11801. GENIE on-line subscribers may contact me directly by addressing their e-mail to JTWard. If you're using America Online the address is JTWard99. Via the Internet send E-mail to <JTWard@genie.com> or <JTWard99@AOL.com>. ■



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FOCUS ON FREE RADIO BROADCASTING

Catching Hot Pirate Action Near 6950 kHz!

We're loaded for bear again this month. Dick Pearce in Vermont says his logs represent his best month for pirates ever and that's saying something!

KDED was heard by Kenny Love in South Carolina on 6950 at 0358 to 0420 and again from 0605 to 0639 playing a listener's tape and various rock songs.

WRAY was heard by Pat Muphy in Virginia on 6955 at 1428-1457 close with host "Link" who said the format was "all Link Wray" all the time. "All rise for the national anthem" and then played "Dixie."

Murphy also heard **Radio One** on 6950 at 0200 to 0230 sign off with oldies. Pat says it was a '60s-sounding station with DJ "Bob-a-loo."

Defiance 90 was picked up by D.H. Miller II in New York on 6954.8 USB from 0039 with a spoof on the Pledge of Allegiance, talk of the Yankee "Swazticka," anti-government music and promoting the anarchist view. Address given was P.O. Box 109, Blue Ridge Summit, PA 17214.

Radio Two, 6951 at 2314-2324 with '50s oldies hosted by "Yabba Dabba Doo. Mentioned a four-bedroom house and said his studio was also known as "the junk room." He gave P.O. Box 28413, Providence, RI 02908 as the address. (Miller, NY) Pearce logged this at 0000. "We may not be number one, but we're gonna have some fun."

Radio One, 6951 with '50s music at 0212; "Radio One, just for fun." He'd gotten 75 records for \$14 at a church bazaar. Wellsville address. Dean thinks it may have been Radio Two."

Montana Audio Relay Service was heard by Pat Murphy on 6955 at 0033 to 0049 sign off, with Spike Jones numbers, talked about "the home of the Freeman and the Unabomber." And "Montana, home of Sitting Bull." Also heard the previous day at 0130-0139.

WTNT, 6955 from 2135 to 2214 close. "For a trip to Hawaii call 555-5555, area code 555. You're listening to dynamite rock-n-roll." Then lost in QRM. (Murphy)



RFS, 6955 at 2140 with talk about not needing a big federal government and a sketch about citizen week. Said he was running 10 watts. (Dick Pearce, Vermont)

Omega Radio, 6950.75 at 2145 with the third segment in a three-part series from the Cornerstone Festival in Illinois last summer, saying it was hard-core

material of Christian heavy metal; interviews with the groups White Cross and Crash Dog and offered tapes. Address given as Box 88, Moline, IL 49335. (Pearce, IL) (That would not be the correct zip code. Ed)

Free Hope Experience, 6954.5 at 1911. Very weak, says Pearce, who could

only make out a song with the repetitive phrase "I like it," and letters FHX in CW announced in ITU phonetics. Christopher White in Massachusetts heard them at 0526 with a repeated ID and a signal that was weak and cutting in and out. Pearce heard them at 0102 with Major Spook and a UFO theme, "we're back with another Section 301 violation, so sit back and grab your beverage of choice."

Radio Free Speech was heard by Murphy on 6955 at 0008-0019 close with host "Bill O. Rights," doing a bumper sticker contest, funny commercials, close with alternative national anthem. The same program was repeated several times over the next couple of days, says Pat. Pearce caught them at 0012 with "The Trucker's Tabernacle" program, dedicated to "truckers under heavy medication."

Pearce had **Primitive Radio** on 6955 USB at 2329 with Holden Caulfield reading some "modified" Shakespeare bits, as well as other readings including from Moby Dick and A Comedy of Errors. This was an NAPRS relay.

The Voice of Juliet, 6955 airing at 2351 with songs "Fever" and "Violet." The program "is dedicated to all my sisters out there. My brothers, I love you all dearly but, my sisters, to survive in this world you gotta learn how to kick some butt." (Pearce)

Starshine Radio, 6955 at 2317 with '50s oldies, announcer singing along. Address was given as P.O. Box 220342, 42373 Wuppertal, Germany. Internet address given as starshine@SRF.JOY.SE. (Miller, NY)

Radio Marlboro International (?), 6953.5 USB heard at 2353 with a country song, and "We Are Strangers" by a German band. Gave an address in Germany only partly copied, also one in Ontario and also the Wellsville Address. (Miller) (This was likely Radio Marabu; see below. Ed)

KOLD, 6955 USB at 0029 with their Pirate Radio Insanity III show starring Spike Jones, hosted by Alto Batista. Claims to be the only free radio station with an all big band/swing format. (William Cooper, NY)

Outlaw Radio, 6955 at 2015-2042 with long instrumental intro and sign on, with YL "We have a new Outlaw Radio QSL but you have to be naked when you write your report." (Murphy)

Friday Radio, 6955 USB heard at 2255; a "horrendously" long, shouted "It's Friday!" message, and various songs, some of which may have been parodies. (Pearce)

KAOS, 6955 USB at 0106 to 0116 with a Cheech and Chong song, ID "This is K-A-O-S." (Murphy)

Radio Titanic International, 6955 at 1140 to 1158 close with "weekend update program"—a repeat of a previous broadcast. (Murphy)

WREC, 6950 at 0025 in the middle of QRM, in an apparent repeat of their third anniversary program. (Pearce)

Radio Garbonzo, 6955 USB at 0504, "all the way with P.J. Garbonzo," Wellsville QSL address. (Love, SC)

Radio USA, 6954.9 airing at 0133 under FHX, with CHU time pips and some DX tips from the "Radio USA Monitoring Service, how to hear Radio Nepal." (Pearce)

WLIS, 6955 USB at 0145-0208; "Hi, this is Charles Wolf." Said he could smell a phony QSL report a mile away. Mentions of ACE, PIPA, GQ, National Inquirer, and Radio Zambia. (Murphy)

UATWR, 6955 USB at 2336. Tough copy, some familiar Owsley comments and a few familiar songs. (Pearce)

Radio Marabu, 6955 at 2352 with a variety of European bands and descriptive comment by the host who said the program was directed to North America and gave addresses in Wellsville, Wuppertal (Germany) and Merlin (Ontario). I'm sure it had to be a relay, because it was 10 over S-9. (Pearce)

WMON, 6955 in AM-USB-AM at 2323. Pearce says he believes the ID is correct; he heard it only once as he was tuning in. One long, 14 minute spacy song with the word "music" chanted over and over. Changed to USB for a couple of minutes at one point. (Pearce)

Pearce also had a number of unidentified there just isn't room to include. Thanks very much to all who sent logs this time. It was a super showing. Let's keep it rolling! See you next month! Ed

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Clandestine Communiqué

TUNING IN TO ANTI-GOVERNMENT RADIO

DXing The Voice of Tibet via FEBA

If you follow world news very much you can probably name any number of countries or areas that should have clandestine broadcasting activity but do not. One of those is now a "have." Even better, it's something many should be able to pick up in North America. The **Voice of Tibet** is now broadcasting to Tibet and to Tibetans in exile in Asia, via the facilities of FEBA—the Far East Broadcasting Association in the Seychelles. The 15 minute program is on the air Monday through Friday at 1145 on the usual FEBA frequency of 15.445. FEBA's regular programs precede and follow the Tibetan program. The Voice of Tibet is supported by Worldview International (the same organization that supports the Democratic Voice of Burma, broadcast via Radio Norway), The Norwegian Tibet Committee and the Norwegian Human Rights House. A Voice of Tibet representative said that the program would report on politics, religion, human rights and cultural subjects, but would not be used as a "political mouthpiece" for Tibet's exiled leader. Apparently the broadcasts will continue for at least a couple of years. Let us know if you hear this one!

The U.S. government's **Radio Marti** has been making news. The government has spent two years investigating charges of influence-peddling, violations of journalistic standards and questionable programming content, according to a story in *U.S. News and World Report*. The magazine said it had obtained documents indicating that Jorge Mas Canosa, head of the Cuban-American National Foundation (CANF) had, among other things, pushed to have certain people hired and removed and get news coverage of himself and CANF. The magazine said the investigation by the US Information Agency's Inspector General is currently on hold since that office has been merged into the State Department. Further, neither political party is anxious to ruffle the CANF leader or his large following in the midst of an election year, by pushing to have the investigation reopened, according to the magazine. It is well known that Mas wants to be President of a Castro-free Cuba.

Radio Marti has received authorization

LA VOZ DE LA FUNDACION
QSL VERIFICATION

To: Gerry L. Dexter.

This is to confirm your reception of our transmission dated: 17 January 1990
Time: 0142 UTC (8:42pm EST)
Frequency: 7315 khz.
with 100,000 Watts.
Relayed by WHRI (World Harvest Radio)
Noblesville, Indiana, USA.

J. Mas Canosa

Jorge Mas Canosa, head of the Cuban American National Foundation and its La Voz de Fundacion program is thought by many to be influencing programming and personnel decisions at Radio Marti.

to move its headquarters from Washington, D.C. to Miami, with the entire Office of Cuba Broadcasting (the station's parent body) to follow. The move is said to have been something the CANF head has long been pushing for a long time. The move involves only offices, studios and programming; the transmitting arrangements are not affected. One of the places you can hear the CANF's program "La Voz de Fundacion," is via WRMI in Miami on 9955 Monday through Saturday from 1000 to 1300.

There have been no reports in several months concerning the Colombian clandestine **Radio Patria Libre**, the station of the ELN—the Colombian National Liberation Army. If we had any doubts that these weren't very nice guys they were dispelled by a *U.S. News and World Report* item that reported that the ELN is now receiving direct and regular support from Iran, coordinated by Colombian and Venezuelan members of Hezbollah. The support is said to be in the form of arms and explosives supplied in exchange for cash and drugs. There was no mention of radio equipment, even though it seems he

ELN station is inactive and may be in need of a transmitter.

The New Star Broadcasting Station has surfaced once again, heard in Europe at 2200 sign on, on 9725, in parallel to the more often reported 8300. This, of course, is a far less likely time for us here in North America. There is an apparent broadcast at 1600 which might be possible to receive during the winter months.

The Tamil program or service that we mentioned a few months ago (on 6035) is now said to be produced by the Elaam People's Democratic Party, which is an ally of the Sri Lanka government against the Liberation Tigers of Tamil Elaam (LTTE). This is on the air via a government-owned 12.5 kW transmitter at Puttalam (the same site as Trans World Radio) and carries the EPDP's programming from 1315 to 1430.

The Voice of Palestine/Voice of the Palestine Islamic Revolution is being aired via the Voice of the Islamic Republic of Iran (VOIRI) on 7230 between 2030 and 2128, after which VOIRI resumes programming. The channel is a busy one and currently may also be hosting the

likes of Radio Yugoslavia, Radio Oman and perhaps others, so it will take some digging to pick it out.

What may be a new clandestine, calling itself the Voice of the **Iraqi Communist Workers Party** is now operating on 4000, saying it broadcasts for the citizens of Sulaymaniyah (in Iraqi Kurdistan). The station was noted in operation between 1630 and 1730, although there may be other broadcast periods beyond this. Apparently the content is more focused on promoting communism than it is anti-Saddam Hussein.

We received a most interesting letter from Earnest R. Oney, W4UXE, in regard to the item about the Kurdish clandestine reported on a couple of months ago. Earnest thinks the name might more likely be Deme Meda that he says would be better Kurdish, although he notes that a dialect difference may be the reason for the other spelling(s). He calls attention to the use of the word "Meda" and comments that, while some scholars believe that the Kurds may be descendants of the Medes, so far as he can determine, the Kurds have never referred to themselves as anything but Kurds. Why then, asks Earnest, would a clandestine call itself the "Voice of the Medes" when that is a designation probably unfamiliar to any but the educated and probably westernized Kurds. As to the location, Earnest notes that, some years back, Kurdish clandestines operated from Baku and Yerevan in what was then the USSR. "Purely as speculation," he says, "Yerevan, under Armenian control now, would be a logical location, and Armenia would have good reason to target the Turkish Kurds who are in rebellion against Ankara."

Fascinating! Earnest. Do we have any readers who can shed any light on this question? Let's hear from you.

The above is one of the things that makes clandestine radio so interesting: mystery. There are mysteries involved with most of the clandestines we report on: Who's really behind the station? Where is the transmitter? What's the address? Can the station be QSL'd? Who's jamming them and from where—or why isn't it being jammed? Fascinating stuff for those who love the game of nations, political intrigue and the like.

That covers things for this time. Please remember that your informational input for this column is always welcome. That includes your loggings of clandestine stations, QSL information, and information on the stations themselves, their backers, locations, schedules and whathaveyou. We appreciate your interest and support!

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FREQUENCY (MHZ)	RELATIVE GAIN (dB)	RELATIVE POWER GAIN (%)
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27.015	1.30	35
27.065	1.45	40
27.115	1.60	45
27.165	1.50	41
27.215	1.50	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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CB Scene

27 MHz COMMUNICATIONS ACTIVITIES

CB Down Under . . . Waay Down Under

If you thought this column was about CBing in Australia or New Zealand, you're in for a bit of a surprise. In October, 1995, a group of cavers—folks who explore underground caverns and the like—discovered that CB radio can be very useful for exploring the many lava tubes at Lava Beds National Monument in California.

According to an article posted on the Internet and attributed to Bonnie Crystal, a group of cavers conducted an experiment in communication between a team on the surface and a group actually *down under* (that kind of down under!) in Sentinel Cave, which is a lava tube. The group underground used a mobile CB powered by 10 D batteries. The type of antenna was not specified.

The team on the surface used a walkie talkie and a hand-held direction finder antenna. Throughout the experiment, they were able to maintain "excellent quality" communications throughout the cave and at distances up to about 5/8 mile.

In addition, the surface team was able to successfully locate the underground team through volcanic rock more than 20 feet thick with the direction finding antenna. The exact location of the underground group was verified by pounding on rocks on the surface, the sound of which was heard as coming from the ceiling of the cave, and at one point, the two groups were actually able to establish voice contact.

This just proves once again why CB is one super-terrific radio service. There are no fees, no license (although all U.S. CBers are licensed by rule making), and no tests. Even better, the equipment is relatively inexpensive.

Incidentally, if you're cruising the channels and run into a group that appears to be talking about cave exploration, ask them if they belong to the NSS. That's the National Speleological Society, the premier society for cave explorers in the U.S. You just might find yourself in the middle of a real interesting conversation.

Goodies from the Mailbag

A very nice note arrived a while back. It was unsigned and ended with the fol-

lowing: "The above questions may sound foolish, therefore, I do not want to leave my name."

Let me go on the record right now: *There's no such thing as a dumb question.* The only dumb question, really, is the one you're afraid to ask because of what folks might think.

When I'm not writing this column, I make my living writing about science and technology. There's no way that I could know even a little bit about all the different subjects that I have to cover. As a result, you could say that I put bread on the table by asking dumb—or foolish—questions. So ask what you want to know, and if I am able, and space permits, I'll give you the best answer I can.

Anyhow, among the questions asked by "Mr. Anonymous" was: Why doesn't somebody manufacture a CB handheld with single sideband capability? (Daren Huber of Indianapolis, Indiana, also wrote to ask the same question.) I can only guess that the manufacturers doubt whether enough people would buy an SSB walkie talkie to make it worthwhile to manufacture them. Perhaps they think that operators of walkie talkies want them to be as simple as possible to operate. I'd love to see SSB handhelds made available, but I bet they would be expensive.

Antenna Polarization

My anonymous correspondent also asked, "How important is antenna polarization for short-range CB communications?" The short answer: *very important.* Now, I know there is a formula I could look up and give you the exact answer in S units or dBs, but I think a real-world, personal example might be more useful.

But first a little background for people who might not understand antenna polarization. It's easy. If your antenna sticks straight up in the air, it is said to be vertically polarized. If your antenna lies flat, parallel to the horizon, it is horizontally polarized. The radio waves that come off your antenna when you transmit will be polarized the same way as your antenna. Like the stripes on your shirt, the radio waves from your antenna will either run



Trevor Fletcher of Edmonton, Alberta, uses this QSL card for his single-sideband contacts.

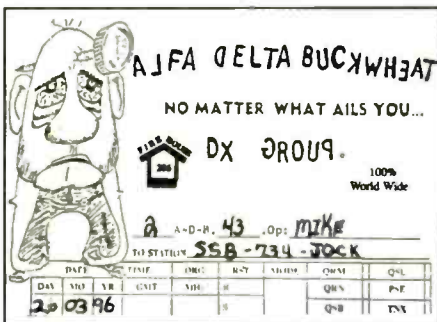
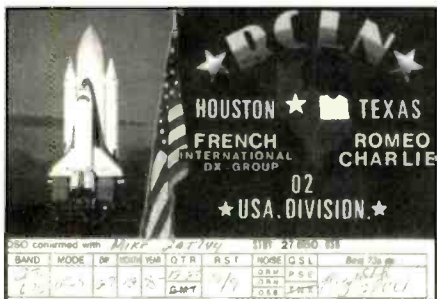
up and down (vertically polarized) or side to side (horizontal polarization).

Now, for *short-range* communication, your antenna will *best receive* radio waves that are polarized in the *same* direction as your antenna. For long-range (skip) communication, the situation gets confusing. That's because with radio signals bouncing off the ionosphere, the polarization of a radio signal can change, so a signal that is transmitted vertically polarized is received best a thousand miles away on a horizontal antenna.

But let's get back to *local* communications. A few years ago, I got infatuated with the idea of a beam antenna, so I took down my trusty vertical omnidirectional antenna and replaced it with a horizontal 3-element beam. For communications with cars and trucks at short range, it was a disaster. Even though the beam was supposed to boost the power of my signal, because the polarity of my horizontal beam and the vertical antennas on the vehicles did not match, my signal was actually *weaker* than with my vertical antenna. The bottom line: If you're interested in short-range communications with maximum effectiveness, make sure your antenna is polarized the same as the station with which you are talking.

How to Boost the Power of Your Signal

Mark Jamito wrote from Manila, Philippines to say he's hooked on CB Scene in *Pop Comm*. He's using a Cobra 19 plus



Mike from West Plains, Missouri, sent in these terrific cards. The Alpha Delta Buckwheat card is his.



Peter Strank, 2145 Gale Rd., Eaton Rapids, MI 48827, sent a nice letter announcing that he and his friends have formed their own Ch. 9 monitoring club called HEART. That stands for Highway Emergency Assistance Radio Team. So far, they have five members, and lots more are welcome. If you'd like to help out, contact Peter directly. He also has free scanner frequency lists for scanner users traveling through the area. Send him a Self-Addressed, Stamped Envelope if you would like one.

David Nanna of Brighton, MI, sent in a clipping from The Detroit News, entitled "Talk is cheap when you have a CB—Citizens band radios enjoy resurgence." It was a long story on the front page of the MetroLife section and very positive about CB. Thanks, David!

The Big Secret

You want to know what I think is the very best thing about CB radio? It's got nothing to do with radios, antennas, or polarity. It's all the great people that are out there to talk with on CB. And it's one of the things that makes writing this column such a pleasure.

Well, that's it until next time. Next time, we'll dip into the mail bag for some of your cards and letters—and shack photos! Please keep them coming to me here at *Pop'Comm*

with a dipole antenna and is having problems with jammers. He wants to know, "Can you give me some tips on how to make my radio "powerful?"

There are two great ways to get a more powerful signal, Mark. First, if time, space and money allow it, put up a beam antenna on a rotator and make sure that it is vertically polarized if you are mainly interested in local communications. Depending upon how many elements your beam has, you'll see a significant increase in signal strength. My personal set-up is a horizontal 3-element beam mounted on a TV rotator, with a vertical omnidirectional antenna mounted above it, but you'll find that many Cbers have put up beam antennas that have both vertical and horizontal elements.

A second alternative is to purchase a CB radio with single sideband capabilities. SSB essentially triples your transmitter power and opens up a whole new world of CB communications.

Cornbinder Strikes Again

Trevor Fletcher wrote in from Edmonton, Alberta, to say he had traveled recently to Saskatoon and caught the Pow City Communication Net on Ch. 13 at 10 p.m. on Tuesday night. Trevor, who goes by the handle "Cornbinder," says he was really impressed with how well organized

this network is. Members sign in with their license numbers, then there's a chance for visitors to check in, followed by club announcements and a buy and sell time. It was so neat and orderly, Trevor thought for a moment he had been transported back in time to the 1970s!



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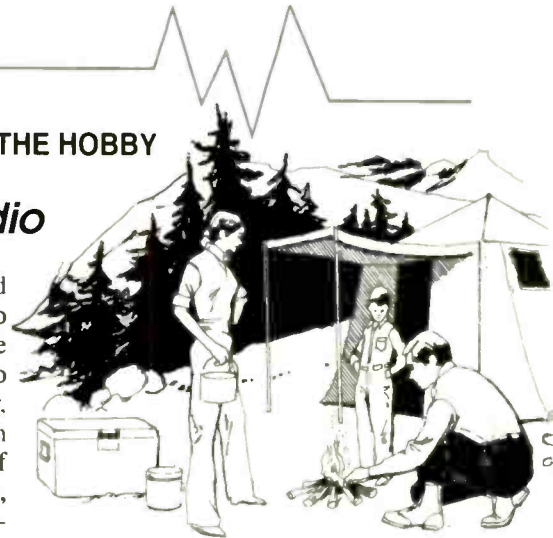
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Radio Resources

INTERESTING THOUGHTS AND IDEAS FOR ENJOYING THE HOBBY

Update on Family Radio



Several months back, this column brought you the news that the Federal Communications Commission was about to approve the new Family Radio Service. The new service, according to the FCC, will soon allow unlicensed radio users to communicate with friends and family on what was initially known as the Class A Citizens Band and has been known more recently as the General Mobile Radio Service, GMRS.

The battle between GMRS radio users and those who were pushing the FCC to approve the new Family Radio Service has been long and hard. GMRS users are licensed and have set up repeaters and other costly communications equipment in the UHF band. Many are notification groups, public safety buffs, and light business users. Once Tandy, Motorola, Cobra, and other manufacturers rallied behind the Family Radio Service establishment, the GMRS users were whipped. The FCC is easily influenced by Motorola and other large radio manufacturers. Tandy reportedly was so sure that the service would be approved that they have ordered, and have on hand, a considerable number of UHF handhelds with the proposed frequencies.

At present, there are several thousand licensed GMRS repeaters in operation. These repeaters operate on 462.550, 462.575, 462.600, 462.650, 462.675, and 462.700 MHz. Some of the strongest opposition to Family Radio came from those such as REACT. The GMRS frequency of 462.675 MHz is licensed and used as an emergency and traveler assistance channel. Although the Family Radio Service will not authorize the use of the GMRS repeaters, the GMRS users are soundly convinced that the unlicensed users will quickly spread their unlicensed and unpoliced use to the regular GMRS channels and to the wide area repeaters. They could be right.

With budget cuts and the closing of many FCC monitoring stations, FCC enforcement personnel are not there like they used to be. The Commission has stated that it does very little enforcement of the 27 MHz CB band. Family Radio will

be established as an unlicensed band, and little or no enforcement is expected, so say the GMRS users. They expect to see unlicensed and illegal operations to quickly spread out of the low power, direct communications channels. With much movement to 800 MHz by many of the present UHF band users, mobile, base, and handheld UHF radios are inexpensive and easily available to anyone. There is already considerable activity on the GMRS band in many areas of the country. The conflicts between old business users and new hobby or family-related users is already apparent. The Family Radio Service users, being an unlicensed group, will probably bring considerably more problems to the band.

Following the normal FCC hearings and rule proposal meetings, the Commission stated that there was "overwhelming support for the establishment of FRS." The FCC has said that they expect the new FRS to be used by family, friends, hunters, campers, and others who could benefit from and enjoy access to two-way radio communications. The GMRS license holders have told the Commission and anyone else who would listen that they expect the frequencies to be used by businesses and other unruly "CB-style" users who will quickly bring irresponsible communications to FRS, and in turn, to the GMRS repeaters and licensed operators. Time will tell if their fears are valid.

The Requirements To Use FRS

To use a UHF FRS two-way radio, you need not be of legal age. You cannot represent a foreign government. The operator is not required to apply for any FCC license, and need not be the holder of any FCC license. The radio operator is responsible for his communications, and shall share the UHF channel with other users. There is no provision for channel assignment or private use of a frequency.

If the FRS operator complies with the established FRS rules, the operator can use his radio from anywhere within the juris-

dition of the Federal Communications Commission. Allowed FRS communications are voice only, and should be of a two-way communications nature, except for initial one-way calling to establish communications. The FRS rules allow for emergency communications, one-way calling, traveler assistance, and brief tests to insure proper equipment operations.

Only FCC type accepted FRS radios may be used under the Commission's rules. Present GMRS users are already asking just who will be devoting any time to enforcing this FRS rule. No internal modification to the FRS two-way radio is allowed. Also, nothing may be attached to any FRS type accepted radio that has not been certified by the FCC as part of the FRS radio. The Commission has clearly stated that they will not tolerate any modifications or attachments to FRS type accepted equipment.

Family Radio Service channels are:
 462.5625 MHz; 462.5875 MHz;
 462.6125 MHz; 462.6375 MHz;
 462.6625 MHz; 462.6875 MHz;
 462.7125 MHz; 467.5625 MHz;
 467.5875 MHz; 467.6125 MHz;
 467.6375 MHz; 467.6625 MHz;
 467.6875 MHz; and 467.7125 MHz

The FCC seemingly refused to use technical standards and restrictions to restrict the connection of external packet data devices and repeater controllers. In a strange application of words, the FRS operator is prohibited by FRS rules, although unlicensed, in the use of any such device or attachment. Also, in another interesting twist, the FRS manufacturers are not required to inform the buyers of FRS radios of such rules. It seems to the reader of the FRS rules that

(Continued on page 42)

Tap into secret Shortwave Signals

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Super Active Antenna

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

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

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

3x2x4 in. 12 VDC or 110 VAC with MFJ-1312, \$12.95.

Indoor Active Antenna MFJ-1020B \$79.95

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

Tuned circuitry minimizes intermod, improves selectivity, reduces noise outside tuned band. Use as preselector with external antenna. Covers 0.3-30 MHz. Has Tune, Band, Gain, On/Off/Bypass Controls. Detachable telescoping whip, 5x2x6 in. Use 9 volt battery, 9-18 VDC or 110 VAC with MFJ-1312, \$12.95.

Compact Active Antenna

MFJ-1022 \$39.95

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

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

Detachable 20 in. telescoping antenna. 9 volt battery or 110 VAC with MFJ-1312B, \$12.95. 3 1/2x1 1/4x4 in.

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

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

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

Printer Monitors 24 Hours a Day

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

Printer cable, MFJ-5412, \$9.95.

MFJ MessageSaver™

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

High Performance Modem

MFJ's high performance *phaseslock loop* modem consistently gives you solid copy -- even with weak signals buried in noise. New threshold control minimizes noise interference -- greatly

improves copy on CW and other modes.

Easy to use, tune and read

It's easy to use -- just push a button to select modes and features from a menu.

It's easy to tune -- a precision tuning indicator makes tuning your receiver easy for best copy.

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

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

Use 12 VDC or use 110 VAC with MFJ-1312B AC adapter, \$12.95. 5 1/2x2 1/2x5 1/4 inches.

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You get MFJ's famous one year *No Matter What™* unconditional guarantee. That means we will repair or replace your MFJ MultiReader™ (at our option) *no matter what* for a full year.

Try it for 30 Days

Order an MFJ-462B MultiReader™ from MFJ and try it in your own setup -- compare it to any other product on the market regardless of price.

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

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

Receive Color News Photos, Weather Maps, RTTY, ASCII, Morse Code

MFJ-1214PC \$149.95

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

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

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

Super Hi-Q Loop™ Antenna

The Super Hi-Q MFJ-1782 Loop™ is a \$269.95 professional quality remotely tuned 10-30 MHz high-Q antenna.

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

High-Q Passive Preselector

MFJ-956 \$39.95

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 \$19.95

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 \$99.95

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-1312, \$12.95.

Dual Tunable Audio Filter

MFJ-752C \$99.95

Two separately tunable filters let you peak desired signals and notch out interference at the same time. You can peak, notch, low or high pass signals to eliminate heterodynes and interference. Plugs between radio and speaker or phones. 10x2x6 in.

Easy Up Antennas Book

How to build MFJ-38 \$16.95

and put up inexpensive, fully tested wire antennas using readily available parts that'll bring signals in like you've never heard before.

Covers receiving antennas from 100 KHz to almost 1000 KHz. Includes antennas for long, medium and shortwave, utility, marine and VHF/UHF services.

MFJ 12/24 Hour LCD Clocks

MFJ-107B \$9.95 MFJ-108B \$19.95 MFJ-105B \$19.95

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

MFJ Antenna Switches

MFJ-1704 \$59.95 MFJ-1702B \$21.95

MFJ-1704 heavy duty antenna switch lets you select 4 antennas or ground them for static and lightning protection. Unused antennas automatically grounded. Replaceable lightning surge protection device. Good to 500 MHz. 60 dB isolation at 30 MHz. MFJ-1702B for 2 antennas.

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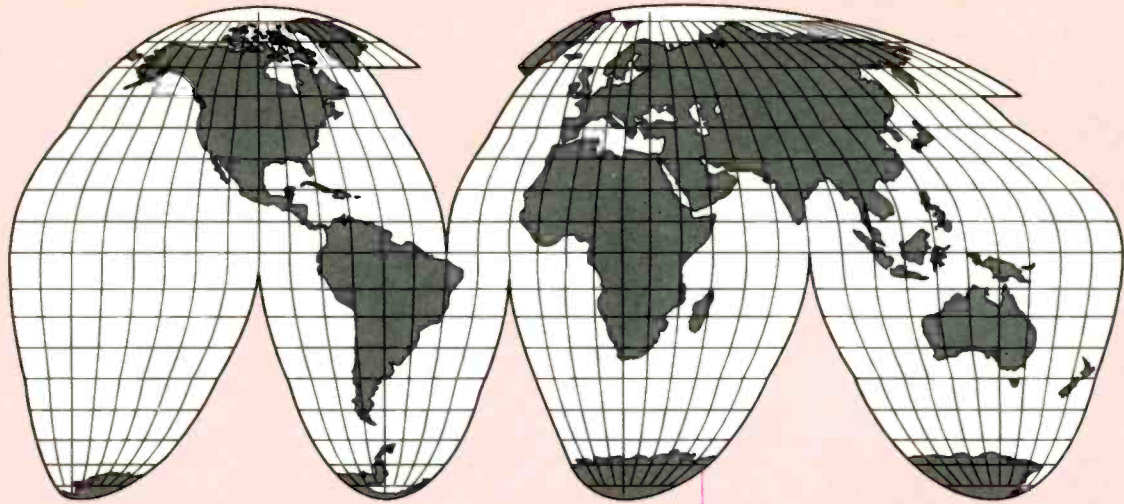
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POP'COMM'S World Band Tuning Tips

October—1996

This listing is designed to help you hear more shortwave broadcasting stations. The list includes a variety of stations including international broadcasters beaming programs to North America, others to other parts of the world, as well as local and regional shortwave stations. Many of the transmissions listed here are not in English. Your ability to receive these stations will depend on time of day, time of year, your geographic location, highly variable propagation conditions and the receiving equipment used.

AA, FF, SS, GG, etc. are abbreviations for languages (Arabic, French, Spanish, German). Times given are in UTC, which is five hours ahead of EST, i.e. 0000 UT equals 7pm EST, 6pm CST, 4pm PST.

Freq.	Station/Country	UTC	Notes	Freq.	Station/Country	UTC	Notes
3205	Radio Sandaun, Papua New Guinea	1200	Pidgin	4914v	R. Cora, Peru	0900	SS
3210	Radio Exterior de Espana via Costa Rica	0300	SS	4915	GBC, Ghana	0600	
3230	Radio Oranje, South Africa	0400	EE	4920	R. Quito, Ecuador	0200	SS
3300	Radio Cultural, Guatemala	1030	SS	4930	R. Internacional, Honduras	0200	SS
3325	R. Bougainville, Papua New Guinea	1200	Pidgin	4940	R. Amazonas, Venezuela	0300	SS
3340	R. Uganda	0300	sign on	4945	R. Illimani, Bolivia	0330	SS
3356	R. Botswana	0430		4955	R. Nacional, Colombia	0400	SS
3365	Radio Milne Bay, Papua New Guinea	1100	Pidgin	4970	R. Rumbos, Venezuela	0300	SS
3380	Radio Chortis, Guatemala	1100	vern	4985	R. Brazil Central, Brazil	0200	PP
3925	R. Tampa, Japan	0800	JJ	4990	Radio Nigeria, Lagos	0500	
4610	Rep. of Iraq Radio	0211	AA	4996	R. Andina, Peru	0500	SS
4702	R. Eco, Bolivia	0130	SS	5010	R. Garoua, Cameroon	0500	FF
4755	Radio Educacao Rural, Brazil	0200	PP	5020v	La Voix du Sahel, Niger	0700	FF
4760	All India Radio, Port Blair, Andaman Is.	1100		5030	Adventist World Radio, Costa Rica	1000	SS
4770	R. Nigeria, Kaduna	0430	s/on	5035	R. Aparecida, Brazil	0145	PP
4779V	R. Oriental, Ecuador	1030	SS	5047	RTT, Togo	0630	FF
4783	Radio TV Malienne, Mali	0700	FF	5077v	Caracol, Colombia	0300	SS
4800	R. Lesotho	0200	s/on	5890	R. Marti, USA	0730	SS
4815	Radio Burkina, Burkina Faso	0500	FF	5900	HCJB, Ecuador	1030	
4815	Radio Guatapuri, Colombia	0200	SS	5915	Radio Ukraine	0000	
4835	RTVM Mauritania	0700	FF	5920	Croatian Radio	0800	
4845	R. Fides, Bolivia	0430	SS	5925	R. Canada Int'l	2100	
4860	All India Radio, Delhi	1300		5930	R. Prague, Czech Rep.	0200	
4870	ORTB, Benin	0600	FF	5955	Channel Africa, S. Africa	0400	
4880	R. Nacional Espejo, Ecuador	0230	SS	5960	R. Canada Int'l	0030	
4890	NBC, Papua New Guinea	1000	Pidgin	5965	R. Oranje, South Africa	0441	s/on
4905	Ecos del Orinoco, Colombia	0400	SS	5965	R. Havana Cuba	0030	SS

Freq.	Station/Country	UTC	Notes	Freq.	Station/Country	UTC	Notes
5975	BBC via Antigua	0400		9635	R. Portugal Int'l	2230	
5975	RAI, Italy	0430		9650	R. Korea, S. Korea via Canada	1130	
5981	Union Radio/AWR, Guatemala	0300		9675	R. Cancao Nova, Brazil	0030	PP
5985	R. Vlandaaen, Belgium	0630		9690	China Radio Int'l via Spain	0300	
5995	R. Canada Int'l	2000		9700	R. New Zealand Int'l	0900	
6005	RAI, Italy	0100	II	9705	R. Mexico Int'l	1400	SS
6010	R. America, Peru	0600	SS	9734v	R. Nacional, Paraguay	0230	SS
6015	R. Austria Int'l via Canada	0630		9770	UAE Radio, Abu Dhabi	2200	
6020	R. Netherlands via Bonaire	0000		9830	R. Havana Cuba	2200	SS
6035	VOA Relay, Sao Tome	2100		9860	R. Australia	1100	
6050	VOIRI, Iran	0027	s/on, EE	9900	R. Cairo, Egypt	2246	AA s/off
6065	R. Sweden	0030		9910	All India Radio	2100	
6070	CFRX relay CFRB, Canada	0700		9955	WRMI, Florida	2100	
6095	R. Portugal	0200		9965	V of Armenia	2030	
6100	R. New Zealand	0759	s/on	10058	V of Vietnam	1400	VV
6115	R. Union, Peru	0330	SS	11570	R. Pakistan	1700	
6120	R. Japan via Canada	1130		11600	AWR via Slovakia	1830	AA
6135	Swiss Radio Int'l	0100		11610	FEBC, Philippines	1030	
6145	Deutsche Welle, Germany	0100		11660	R. Australia	1430	
6150	R. Record, Brazil	2200	PP	11710	RAE, Argentina	0200	
6165	R. Netherlands	0430		11720	R. Norway	1400	NN
6165	Swiss Radio Int'l	0715		11735	R. Finland Int'l	1230	
6175	Faro del Caribe, Costa Rica	1100	SS	11760	R. Havana Cuba	2145	
6185	R. Educacion, Mexico	0500	SS/EE	11780	BSKSA, Saudi Arabia	1600	AA
6205	RFPI, Costa Rica	0330	USB	11815	Polish Radio	1300	
6215	Trans World Radio, Monaco	0700		11840	Radio Norway	1400	NN
6280	Voice of Hope, Lebanon	0300		11870	FEBA, Seychelles	1515	
6725	R. Satelite, Peru	0300	SS	11885	Radio Japan	0300	
7105	R. Bosnia-Hercegovina	0200	vern	11895	R. Japan via Fr. Guiana	1400	
7110	R. Ethiopia	0300	Amharic	11900	Channel Africa, S. Africa	0500	
7115	Trans World Radio, Monaco	0900		11905	R. Thailand	0030	
7115	R. Sweden	0300		11915	R. Gaucha, Brazil	2300	PP
7165	Croatian Radio	0100		11945	R. Canada Int'l	2200	
7170	R. Tirana, Albania	0230		11965	R. Record, Brazil	2200	PP
7180	R. Denmark via Norway	0730		11970	R. Jordan	1730	AA
7185	Channel Africa	0457	sign on/PP	11990	R. Kuwait	1800	
7200	Yakutsk Radio, Russia	0330	RR	11995	FEBC, Philippines	1300	
7205	V of Russia	2330		12005	HCJB, Ecuador	1200	
7230	Voice of Russia	0400		12077	Kol Israel	1400	
7250	V of Vietnam, via Russia	0100		12085	Radio Damascus, Syria	2000	
7285	RTVM, Mali	0800		13625	R. France Int'l via Fr. Guiana	1200	
7290	R. Sweden	0145		13635	Swiss Radio Int'l	1200	II
7325	BBC	0300		13645	Radio Finland	1030	
7330	R. Atlantika, Russia	1200	RR	13730	R. Austria Int'l	1130	
7410	All India Radio	1330		13790	R. Bulgaria	1200	
7465	V of Israel	0500		13800	Radio Norway	1200	
7480	R. Bulgaria	0500		15115	R. New Zealand Int'l	0200	
7520	R. Moldova Int'l	0430		15130	R. Pyongyang, N. Korea	0000	
8000	V of Sudan (clandestine)	1900	AA	15165	R. Tahiti	0300	FF/TT
9275	Rikisutvarpid, Iceland	2315	Icelandic	15240	Swiss Radio Int'l	1300	
9355	Monitor Radio—KHBI, No. Marinas	1400		15260	VOIRI, Iran	1200	
9395	Voice of Greece	2300		15265	Radiobras, Brazil	1800	
9405	R. Prague, Czech Republic	2300		15275	Radio Canada/CBC	1930	
9425	Voice of Greece	0600	Greek	15325	R. Canada Int'l;	1430	
9445	Voice of Turkey	0400		15345	RAE, Argentina	0000	SS
9475	R. Cairo, Egypt	0200		15395	UAE Radio, Dubai	1330	
9505	R. Havana Cuba	2230		15400	BBC via Ascension	1630	
9510	R. Romania Int'l	0630		15445	FEBA, Seychelles	1430	
9510	R. Australia	1200		15530	R. Australia	1100	
9520	Channel Africa, S. Africa	0430		15650	V of Greece	1430	
9530	KSDA, Guam	1030	CC/EE	17560	R. France Int'l	1430	
9540	Radio Exterior Espana	0030		17605	CPBS, China	0100	CC
9548	R. Bangladesh	1230		17630	Africa No. One, Gabon	1230	
9550	R. Havana Cuba	2100		17745	R. Romania Int'l;	1300	
9570	Radio New Zealand Int'l	0500		17770	UAE Radio, Abu Dhabi	0200v	s/on
9585	Qatar Broadcasting Service	0242	s/on	17860	Deutsche Welle, Germany	1900	GG
9590	R. Norway	1300	NN	17870	R. Exterior Espana via Costa Rica	1630	SS
9590	BBC via WYFR	1500		19374	VOA(USB feeder)	1930	
9605	UAE Radio, Abu Dhabi	2230		21455	HCJB, Ecuador	1700	
9615	KNLS, Alaska	0900		21520	RAI, Italy	1320	s/on Sun
9625	R. Fides, Bolivia	0300	SS	21605	UAE Radio, Dubai	1000	

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the FCC intends to do little monitoring of the FRS frequencies or enforcement of the rules regarding attachments to the FRS radios. The FCC contends that the FRS, with low power radios (restricted to .5 watts, F3E, FM) will not be an interference problem.

FRS radios must also have antennas attached *permanently* and there will be no external RF antenna connector. This will seemingly prohibit an FRS handheld radio from having an external, high gain antenna attached, therefore, greatly extending the range of such a radio. It will also prohibit the connection of a higher power amplifier.

Although the initial efforts of Tandy Corporation's RadioShack 1994 petition has proven to be successful and the FRS established, the final story on this FM, UHF, low-power, unpoliced, "family" concept radio service has yet to be written. The Family Radio Service radios should be on sale at local radio dealer stores in plenty of time for the Christmas buying season. GMRS license holders are braced for the "illegals" to show up on their long range repeaters with CB-like "handles" instead of FCC-issued call signs that normally identify the radio user. And the Family Radio Service

radio sales are expected to be brisk and widespread.

Tandy will be selling thousands of the new handhelds through their RadioShack stores. Radio Shack is expected to carry two models of the new type accepted FRS radios in their stores in early 1997, if not before. Motorola, Cobra, and Uniden are also stating that they expect vigorous interest in the new portables, and expect that sales will be quite active though their dealers. If the service catches on, as expected, the radio publication industry will certainly follow through. Family Radio Service magazines will soon follow to satisfy interests of the new FRS radio users.

We will continue to follow the developing story surrounding this new and exciting radio service. If used properly, FRS can bring dependable, inexpensive two-way radio communications to millions of unlicensed users. If the CB type chaos gets a foot hold on FRS, and illegal, high power operations become routine, it will be interesting to follow the actions of the FCC to police another unlicensed monster. At least, you now have an idea of what FRS is all about. Why not consider taking part in this exciting new radio service!

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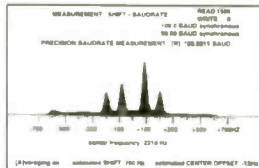
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- ARQ-E/ARQ1000 Duplex
- ARQ-N-ARQ1000 Duplex Variant
- ARQ-E3-CCIR519 Variant
- POL-ARQ 100 Baud Duplex ARQ
- TDM242/ARQ-M2/4-242
- TDM342/ARQ-M2/4
- FEC-A FEC100A/FEC101
- FEC-S * FEC1000 Simplex
- Sports info 300 baud ASCII
- Hellsreiber-Synch/Asynch *
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REVIEW OF NEW, INTERESTING AND USEFUL PRODUCTS

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mation up to five characters into each memory bank, and eight in each memory channel for quick reference.

For more information, contact your local ICOM dealer or ICOM America, Inc. 2380 116th Avenue, NE, Bellevue, WA 98004 or call 206-454-8155, or circle number 111 on the reader service card.

New Code3 GOLD VHF and Shortwave Decoder from Computer Aided Technologies

Computer Aided Technologies, the producers of Code3, have introduced their new Code3 GOLD. This new VHF and shortwave decoder "uses the very best of software DSP filtering and detection technology, and the very latest surface-mount miniaturized electronics for the hardware interface."

All of the interface's power requirements are supplied from the user's PC using the serial port. Code3 software is offered without copy protection, allowing you to install it on as

many PCs as you like.

The Code3 GOLD requires any modern IBM PC clone with a 386DX40 (or better) processor although a 486 is highly recommended; an MSDOS 3.2 or later, with at least 512K free DOS memory and a spare serial port (COM's 1 to 4 supported); both VGA and SVGA up to 1024X768 (ET4000) are supported with up to 256 grey scales. Needs only 2MByte of free disk space. For those who MUST run Windows, Code3 GOLD runs in Windows 3.1x DOS box, but not currently in a Win95 DOS Box.

Systems supplied as standard include ACARS, POCSAG, DTMF, PACKET, BAUDOT, ASCII, SITOR, NAVTEX, PACTOR, FAX, and SSTV. Optional systems allow the user to catch virtually all the action on shortwave, adding nearly every decodable system.

For information on the Code3 GOLD contact Computer Aided Technologies at P.O. Box 18285, Shreveport, LA 71138, or circle number 112 on the reader service card, or call 318-687-2555; FAX 318-686-0449. Internet users can contact the company at <scancat@scancat.com>; or on the World Wide Web at <<http://www.scancat.com>>.

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The Ham Column

BY KIRK KLEINSCHMIDT, NTØZ
AMERICAN RADIO RELAY LEAGUE

GETTING STARTED AS A RADIO AMATEUR

Boost Your CW Success Rate

With fall rapidly approaching, the distractions of a long, hot summer are starting to fade. And propagation on the HF bands—thanks to the earth's tilted axis and an accommodating sun—is starting to pick up.

For beginners, HF operating, excluding 10-meter SSB and a few other minor exceptions, means CW; Morse code, bugs, keys, paddles, keyers. Fun! Although practice makes perfect, getting the benefits of expert advice can reduce the time it takes you to perfect your Morse code skills.

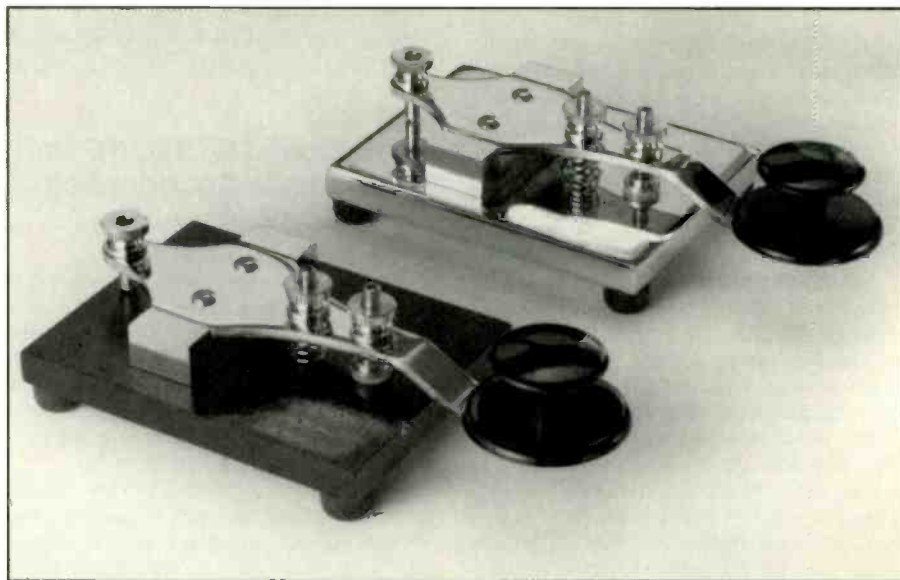
This month's column focuses on getting more replies to your CW calls. Much of the information was gleaned from expert code-meister, Al Brogdon, K3KMO, who likes CW so much he operates Morse code from his van while driving down the freeway! Just like Bo, Al knows code!

First, let's talk about calling CQ. In fact, let's forget about calling CQ for the time being. Instead, until your confidence and proficiency are up, you should look for a big, fat CQ call from someone else—someone with a good fist who is sending at a speed that's comfy for you to copy.

Having replied to the CQ, you're halfway home. If there were no other hams, you'd be the only game in town! But what happens if others respond, too? The last half of your challenge is to be the caller the CQer responds to. It's not just about having a strong signal. It's about timing and knowing exactly where, when and how to transmit.

Where To Transmit

Where to transmit is almost always *exactly on the same frequency as the station calling CQ*. This is called zero beating, because the audio tone produced in each receiver is at the same pitch. Most stations tune only one to two kHz when listening for replies to their CQs, so if you're too far away, the CQer won't hear you. If you're right on frequency from the get go, the CQer will hear you right in the center of his receiver's passband. And chances are good that he'll hear you in-



stead of some other caller who is slightly off frequency. Some DX stations prefer off-frequency replies to their CQs to manage the sheer volume of callers, but that's another story entirely.

When To Transmit

Now that we know where to call, it's time to talk about when to call. This is pretty simple. As soon as the CQing station finishes calling and signs K, immediately start your reply. If you hesitate, another station might jump in. If you transmit first, the other station may wait, not wanting the competition. As long as you're on frequency, the CQer will start copying the first reply he hears, which is hopefully yours.

Here's an old-timer's trick that still works today. Many ops use full break-in (QSK) while they're calling CQ. That is, they can hear their receiver between the dits and dahs they're sending. If you send something to get their attention—a string of dits, perhaps, or a break signal, BT—the QSK CQer usually stops to hear what's going on. Quickly, just after the CQer pauses, give the op a quick call (his call sign DE your call sign AR) and you've snagged him! Who knows, there

might have been a half dozen ops waiting to reply to the same CQ! Don't abuse this tactic—be discreet. If the CQer isn't QSK, you'll just interfere with his call—and that's a real breach of manners.

How To Transmit

How to send CW is more complex than where and when to send. Let's break it down into simpler parts:

- Make sure your signal is clean and strong. Don't overdrive your rig or do anything foolish. And don't run out and buy a big linear amplifier. Always keep your rig tuned and adjusted properly and put up the best antenna system you can manage.
- Your Morse code should be crisp and accurate. Nobody wants to answer calls from sloppy senders! Practice sending code off the air until yours sounds like that sent by W1AW on its

"Propagation on the HF bands—thanks to the earth's tilted axis and an accommodating sun—is starting to pick up"

"Getting the benefits of expert advice can reduce the time it takes you to perfect your Morse code skills"

many code practice runs (the schedule is published monthly in *QST*, or check out the ARRL Web page at <WIAW@arrl.org>). Have a friend who is a good CW op listen to your code. Work toward excellence! This one point makes all the difference when conditions are less than ideal.

- Send at the same speed the CQing op is using. He's sending at a speed that's comfortable for him, and he'll want your reply to be in the same ballpark.
- Learn to adjust the length of your reply. If the CQing op sounds savvy (good fist, strong signal), a short reply will usually do the trick (his call sign once and your call sign once or twice). If conditions are poor or if the sending op sounds less sure of himself, send both call signs two or three times. Experience will help you to get the feel for this technique.

Other CW Tips

- Learn from your on-air experiences. Carefully see what works and what doesn't, always demonstrating good behavior. And . . .
- Learn to copy code in your head without having to write it down. This makes Morse code more fun and less work.
- Don't just copy what the other op is sending. Learn to anticipate, within reason, what he or she is thinking and try to understand what the op is hearing on the other end of the radio path. That kind of approach will help you become a successful CW op who has successful contacts.

Keep your photos, letters and column suggestions coming to me at ARRL, Department PCN, 225 Main St, Newington, CT 06111.

See you next month. ■

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The Radio Connection

A LOOK BEHIND THE DIALS

Old Radios, WinDraft Software and Grounds

Welcome to The Radio Connection! I am honored to be here with you. I guess most of you are wondering who I am, and what this monthly column is going to be about. It will deal with radio communications, but it will be unlike anything you have seen in the old *Popular Communications* magazine. This is going to be technical column—in other words we are going to take a good hard look at what is going behind your radio's dial.

I am here to help you learn about radio theory gain and "hands-on" experience in working with communications electronics. I want to bring you back in time, to a time when radio experimenters built and designed their own receiving sets, or at least understood how they worked. We are going to be getting some dirt under our finger nails!

Hopefully our association will be a long and enjoyable one, because there are many things I want to write about and share with you—things like building your own simple shortwave receiver, or building a better shortwave or scanner antenna for your listening post! And there are other subjects that need to be discussed, such as how to get rid of that RF interference your computer may be causing to your shortwave or VHF radios.

Peter Who?

I'm the Senior Technical Editor for *Communications Quarterly* magazine, a sister publication of *Popular Communications*. I have been writing for various technical publications since 1970. My wife Nancy and I live with our 13-year old son Tom in a small farming community in a beautiful and rural area of north central Connecticut.

When I was a young lad my favorite pastime was scrounging the neighborhood for old radios. I was fascinated by anything electrical or electronic, and those poor relics that happened to fall into my hands were soon disemboweled in my secret basement laboratory. But, this was in the 1950s, a time when television was

"You haven't really listened to shortwave radio unless you have heard one of these sets play"

the rage and a time when interest in radio was fading. Most folks were buying television. To make room for those massive sets, radios were discarded by the droves—radios made in the halcyon days of radio, from the 1920s through the '40s.

Sigh. I shudder to think of what was tossed into the local landfills. Sets with names like Atwater Kent, Majestic, Midwest. Those old sets came in all kinds of sizes and shapes. Some were shaped with rounded arched tops and looked like Gothic cathedral churches. Others resembled tombstones, taller than wider and with flat tops. And, there were those large consoles, and chairside sets, and small table top sets as well.

The Bug Strikes

About 10 years ago, for whatever reason, I thought it might be fun to play around with an old Zenith console. I remember playing with one as a kid, and that big black Zenith dial with the famous "Long Distance" legend. I remember the names of the strange foreign stations and countries marked on that ancient dial, and how the unforgettable sound that its massive 14-inch electrodynamic speaker filled a room. You haven't really listened to shortwave radio unless you have heard one of these sets play. I had to have one!

Alas, finding one was a challenge! I finally found one in the hands of a radio restorer and dealer. I paid a princely sum for a large Zenith shutter dial console—something you could find on any street on trash pickup day 30 or 40 years ago! Strange how time changes things—what was once trash was magically transformed into a desired and costly collectible! I brought the set home, figuring it



would be a handsome showpiece for our new family room addition.

I started becoming a tag and estate sale junkie, and was known at every antique shop for miles around. I think my wife finally cracked around the time I dragged home console number three. I was never sure if it was the console alone, or the fact that a large Philco tombstone got stacked atop of it, with a bronze duck knickknack finishing off the pyramid.

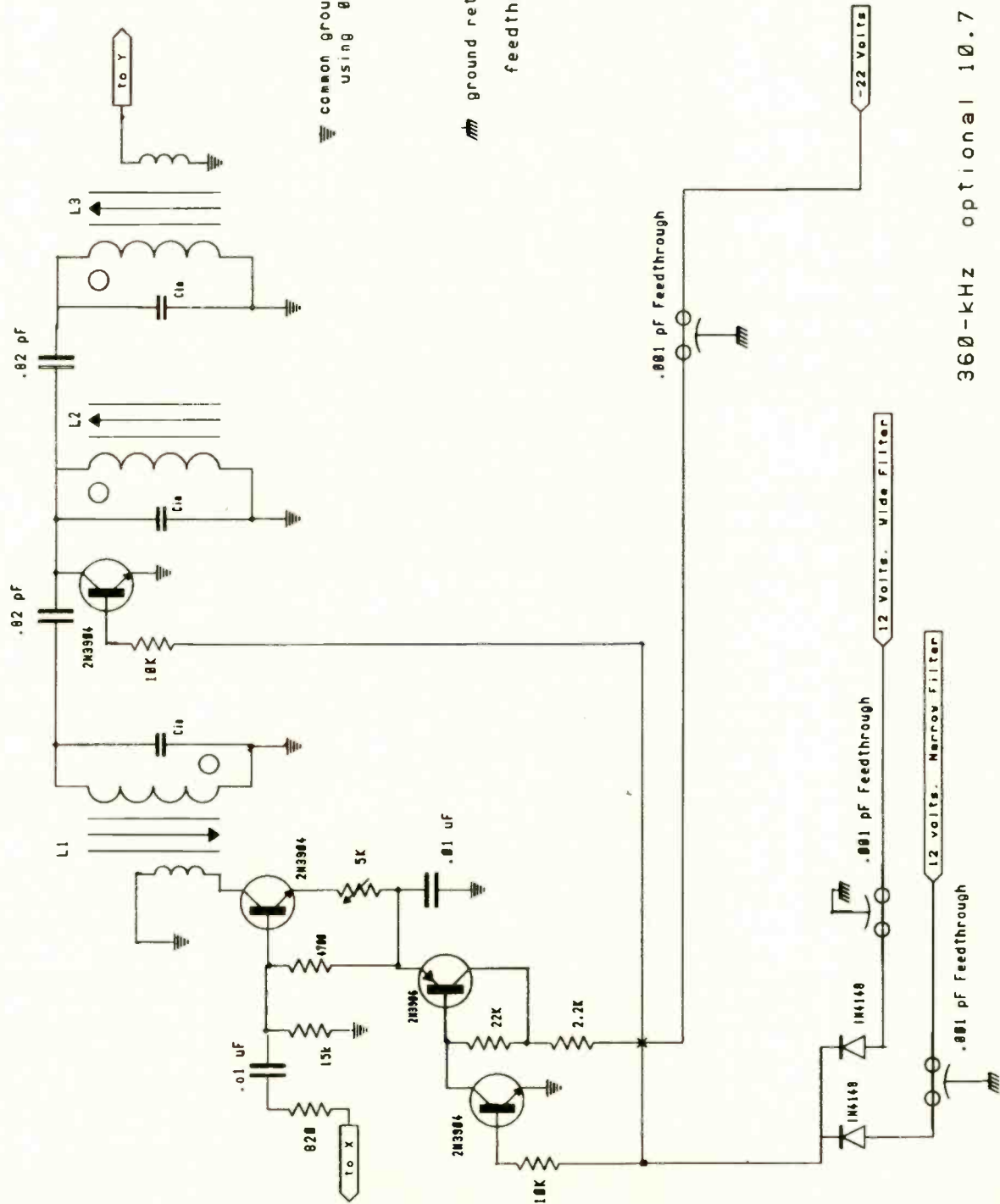
But seriously, I am going to introduce you to some late 1937 radios whose performance seriously rivals many of the so-called general purpose communications receivers made many years later!

Let's take a moment, though, and go modern . . .

Making Professional Schematics

With computers becoming a fixture in most of our shacks, I thought it might be neat to take a look at some new programs that may be of interest to our more technical readers. If you have ever needed a transistor or other part in a hurry, you probably are familiar with NTE Electronics and the rather extensive line

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Figure 1.

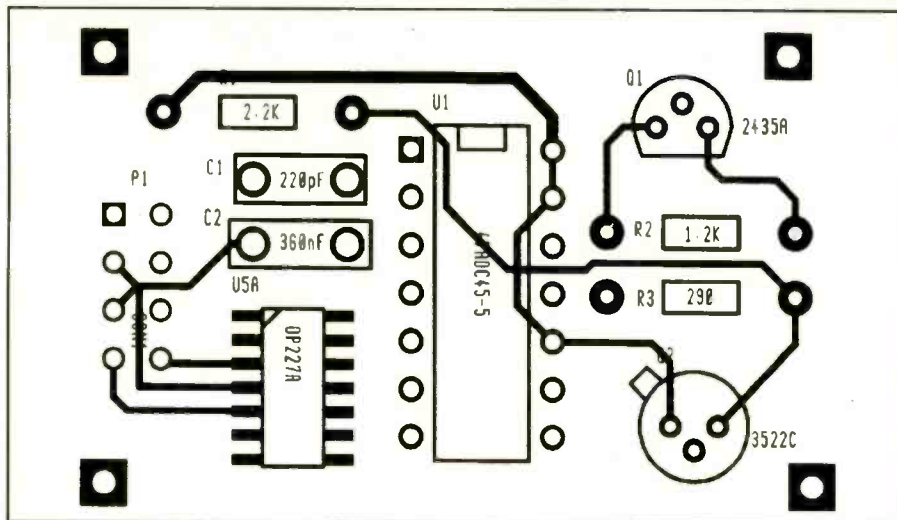


Figure 2.

"Strange how time changes things—what was once trash was magically transformed into a desired and costly collectable!"

of NTE replacement components carried by most large electronics emporium. Several months ago I was surprised to find some software mixed in with the plastic bags that normally contain NTE's line of general replacement diodes, transistors or ICs!

These two programs are WinDraft and WinBoard. What will they do for you? Well, if you have a 486DX or better computer, and you are running Windows 3.1, Windows 95 or Windows NT for an operating system, these programs will allow you make professional schematics and PC board layouts at home! Windows 3.1 users will need WIN32s to run the 32-bit application WinDraft software. This program can be down-loaded from IVEX. I am using a 486DX80 system with 8 megs of memory (the minimum recommended!) I also use an inexpensive printer, the Epson Color Stylus IIs. This printer is being discounted for under \$200 by some distributors, yet it will do 720 by 720 dpi (dots per inch) in color or monochrome!

Figures 1 and 2 show a simple schematic and PC board layout that I made after playing with the programs for a few days. I have been using the WinDraft program to produce the schematics I use in this column. The price for WinDraft or WinBoard is \$29.95. This

software is produced by IVEX Design International; the \$29.95 price includes registration for 220 pins. A bargain! The pin count is roughly equivalent to the number of leads on a device. You can upgrade the programs to have more "pin" capacity as you need. But, 220 pins will be more than enough for most of us hobbyists! Now, for some more good news. You can download this software from IVEX as shareware at no cost! They are available directly from the IVEX BBS or through their Internet WEB site. The shareware versions are limited to 100 pins, enough for simple schematics or board layouts.

Letters Department

We have received quite an interesting letter from Quarter-Watt, a reader in Croydon, PA.

Dear Editor:

I was reading an article about grounding and it was very informative, but not everyone lives in a house! I happen to live in an apartment on the third floor. I don't think the apartment manager would take too well to me sinking an 8-foot ground rod and running No. 10 ground wire three stories up to my apartment for my antenna, which is not supposed to be there.

So, I was left with a dilemma of getting a good ground. Then someone told me about making a "Rice-Pot,"—or so that is what they call it! They say a lot of ham operators use them. It is some sort of super ground inductor. I was skeptical at first, but it didn't take a lot to make one—all I needed was a covered one-gallon plastic bucket, a piece of No. 6 copper

wire wound into coil of about eight or 10 turns, some rock salt and antifreeze.

The coil is set so it is centered in the bucket, which is then filled with rock salt and finally antifreeze. One end of the coil wire goes through a hole in the bucket's cover, where I use a wire to connect the coil to my antenna ground.

The match on my antenna wasn't bad to begin with—about 1.7:1, and I was getting out, although I wanted better coverage. With the "Rice-Pot" installed, I checked my SWR again. I thought I had broken my meter or the radio! I recalibrated the SWR meter again. I couldn't believe it! A flat match, the meter didn't even wiggle!

I called for a radio check, and one of my friends responded, and reported that I sounded great, my signal had gone up, with modulation that is "out of this world! Crisp, clear, and "right there!"

As I write, 10 of my friends are out looking for buckets, rock salt, and antifreeze. I was wondering if this is illegal? I looked in the FCC regs but didn't find anything about something like the "Rice-Pot." It worked for me, but I am not sure if my station is 100 percent legal using this device. If it is, it is out of here!

Quarter Watt, KBA-5295

Dear Quarter Watt:

Hey, thanks for writing to us, and let me commend you on wanting to run legally! Let me put your fears at rest. There is nothing illegal about using the "Rice-Pot" as far as FCC rules are concerned.

Before getting into the "Rice-Pot" there is something that must be made clear concerning grounds. As radio operators, we are concerned with two kinds of grounds. One kind of ground is used for lightning protection, the other is used for RF (radio frequency) grounding. You can have a ground that is perfectly suited for RF grounding, but not lightning protection. Or you can have a grounding system that works well for lightning, but not RF! Or, you can have a ground system that works well for both. I am afraid you are confusing apples and oranges regarding your ground system.

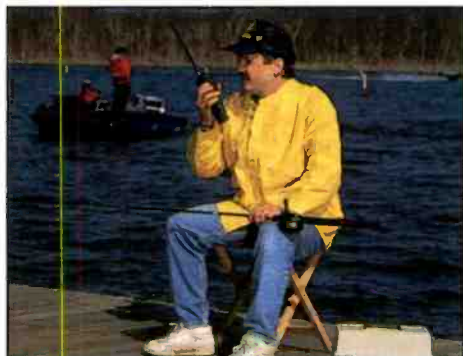
Let me explain the purpose and needs for both kinds of grounding first.

RF Grounds

CB operators normally use balanced antenna systems. Whether our antenna is quad, Yagi (beam) or groundplane design, they are self-contained and do not require external RF "grounds" to handle



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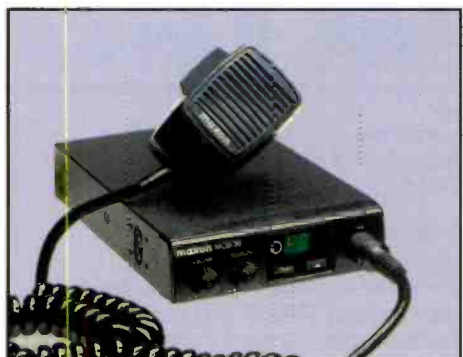
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RF currents. Who would need an RF ground? Well, mostly radio amateurs. Some amateur radio vertical antennas use an RF ground system composed of many wire radials laid beneath, on, or above the earth surface around the vertical radiating element. These radials perform the same duty as those drooping radials used on CB groundplanes. Some amateurs use "long wire" antennas with antenna tuners;

again they must ground counterpoise wires to complete the antenna system, otherwise, they would end up with RF energy on their radios, mics, and even the house electrical wiring! And, without an efficient RF grounding system, their RF energy would be wasted in the form of heat and not effectively radiated power. Some hams even believe that by pound- ing several ground rods into the soil they

"There is nothing illegal about using the "Rice-Pot" as far as FCC rules are concerned"

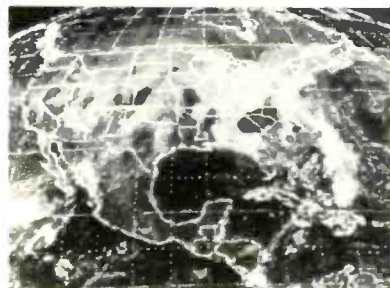
are making a good "RF" ground. It may work as far as keeping RF out of the shack, but alas, most of their RF energy is wasted keeping earthworms warm.

Some hams using unbalanced antenna systems living in apartments use what is called an "artificial ground." This can be a random length of wire dropped out of a window. A special "antenna" tuner is used to "tune" this radial so that it acts like a good RF ground return for the antenna system.

Lightning grounds

The operator with several ground radials laid on or beneath the soil in conjunction with ground rods has a fairly good

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lightning ground scheme as well. The poor fellow using the artificial ground tuner has no lightning protection built into his antenna system!

Now in your case, Quarter-Watt, where you live on the third floor of an apartment, what can you do for adequate lightning grounding? Alas, not much! At a minimum, your coaxial cable should be run to ground level, with a coaxial lightning arrestor in place, and attached to a ground rod that is close to the ground rod used by the electrical service entrance. After this, it can be run back up the building into the shack. After entering the shack, I would further ground the coax to the nearest cold water pipe, and also use an AC line arrestor that could be grounded to the same point. I would also make sure the water pipe was continuous copper to the cellar where it was also properly grounded. I am afraid that to be safe and "legal" as far as your lightning ground goes, you must abide by the National Electrical Codes and your local building codes. You really should talk to your local building inspector and landlord regarding your grounding needs.

What about running No. 10 wire from the antenna on the rooftop, down three stories to a ground rod? It would give you minimal protection. Remember that lightning always seeks the path of least resistance. Would it rather travel down a length of No. 10 wire, or the heavy coaxial shield braid of your coax? I'd put my money on the coax cable, especially if you are using RG-8 or RG-213! Once it enters your apartment, it would continue to seek the path of least resistance to ground, most likely through your equipment to the AC power lines. Or (heaven forbid) through you to the nearest water pipes or telephone line.

Now, regarding your observations concerning the "Rice-Pot" and your SWR. If you are using a small beam or groundplane, nothing you do for grounding at the shack end should affect or change the SWR. Nothing! When you are using coaxial cable, the RF currents should be confined to the INSIDE of the braid shield, and on the outer surface of the coax center conductor.

If adding a ground to your radio affects the SWR, then something is terribly wrong with your antenna system. Either the antenna is located directly over your head in very close proximity to your station, so you are in the antenna's radiation field; or you have a bad shield connection on your PL-259 coaxial connector. This would cause the coaxial cable to act like



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a radiator, or like you were "partially" running a long wire antenna system! Since the RF field beneath a properly working groundplane would be minimal, I suspect you have a connector problem.

Why? Well, if your friends were being honest when reporting that your audio was now "crisp," it would indicate to me that before adding the "Rice-Pot" you had RF problems in your shack. RF getting back into the microphone can cause muddy sounding audio. If you had a bad coax connection, the addition of the counterpoise ground could affect your RF radiation pattern and give a stronger signal in some directions. Also, as I mentioned before, if your SWR changes when adding a "ground" to your CB base unit, there is something terribly amiss! (Note that for mobiles, the car body is part of the antenna. Anything touching the car

body, or the car's proximity to nearby objects can cause SWR changes.)

Now, as for your "Rice-Pot." I am afraid I know of no radio amateurs who use such a device. If it works for you in reducing your SWR, it, and its attached lead to your set's ground terminal, are acting like an RF counterpoise. Chances are that the metal mass of the "Rice-Pot" metal components are acting like a capacitive "top-hat" load for the ground wire, and just happening to cause a resonance in the CB band. I'm afraid there is no technical merit to the "Rice-Pot."

In the coming months, we'll be restoring some old radios, and learning some basic electronics in the process. I welcome your ideas and suggestions. Write to me at The Radio Connection, c/o Popular Communications magazine, 76 North Broadway, Hicksville, NY 11801. ■

Product Spotlight

POP'COMM REVIEWS PRODUCTS OF INTEREST

Ramsey Electronics' FM Stereo Transmitters

Ramsey Electronics FM-10A and FM-25 FM Stereo Transmitters

Price: FM-10A Kit \$34.95 (case \$14.95), FM-25 Kit \$129.95.

Available from: Ramsey Electronics, Inc., 793 Canning Parkway, Victor, New York 14564. Phone 1-800-446-2295.

I don't think there is anybody in the radio hobby who hasn't had the urge to be a broadcaster. Sooner or later we all try to scratch the broadcasting itch. Some people become amateur radio operators. While this is not "broadcasting" in the traditional sense, it is at least transmitting. A daring few will hoist the "Jolly Roger" and become pirate broadcasters bent on appearing in my colleague Edward Teach's column, the "Pirate's Den." If you go to school, study hard, eat all your vegetables and have a bit of luck, you may land a job at a commercial radio station someday. But for most radio hobbyists, this is just the ultimate dream.

There is a way you can become a genuine broadcaster within certain limits established by the Federal Communications Commission. The legal route to broadcasting without a need for a license or a great deal of cash is called "Part 15." The short version of what this means is that it is legal to set up a broadcast station within the boundaries of the standard FM broadcast band without a license, provided that the transmitter produces a signal of no greater than 250 microvolts per meter measured at three meters from the antenna. In practical terms this allows you to produce a signal that will essentially cover a distance of up to about a quarter mile under good conditions. OK, you're not going to set the radio world on its ear with this power level but you can transmit, broadcast and have a lot of fun for very little money.

Experimenting with Kits

The Ramsey Electronics, Inc. series of kits remain a great way to experiment with and learn about the world of electronics.



A look at the Ramsey Stereo FM Transmitter. Assembly is easy and straightforward. You'll have plenty of fun building and using these transmitters.

They're inexpensive electronic kits for hobbyists, that are similar to those abandoned a number of years ago by companies such as Heathkit. Each Ramsey kit comes with detailed, easy-to-follow directions that take the user from start to finish with no stress. Further, the manuals supplied with kits I have built from this organization also take the time to teach you a little bit about the circuit you are building and how it works along the way. Additional instruction is included for the first-time kit builder, making this series great for people just starting out in the electronics hobby. For these reasons, along with their history of excellent technical support, I chose a couple of Ramsey "Part 15" transmitters for review.

Your First Station

Probably the most inexpensive route to your first radio station is the Ramsey FM-10A. For less than the cost of a good dinner, you get a true stereo FM transmitter with audio quality that can rival commercial excitors. The FM-10A is an extremely versatile, single IC transmitter that is

capable of being tuned anywhere in the 88-108 MHz standard FM broadcast band. The unit has a diode voltage regulator circuit that can accept DC power from any source from 1.5 through 15 volts. The board includes connections for a standard 9 V battery or for connection to an appropriate external power supply by way of a 2.5 mm phone jack. This transmitter has two "line-level" inputs that allow it to easily be connected to most tape decks, audio CD players or home entertainment systems. This is accomplished through a pair of standard "RCA" jacks.

The circuit utilizes a custom FM stereo transmitter chip that can be adjusted in a number of ways through its supportive components. For example, input level can be adjusted by way of a pair of miniature potentiometers. There is also a potentiometer for adjusting the stereo balance characteristics. The transmitter's pre-emphasis characteristics (a technique used in FM transmitting circuits to improve the signal to noise ratio) can be adjusted for 75 μ S for use in the United States or to 50 μ S for European operation. The RF amplifier consists of a 2SC2498 NPN VHF transistor that connects to either the supplied internal "whip" antenna or to an external antenna of your choice. The only external control for the unit is a simple push-button on-off switch. The optional case finishes off the unit in great style.

The FM-10A kit comes in what is known as a "bag-o-parts" format. The first task with any kit is to read the manual and examine the parts list for completeness. Ramsey kits are well known for their quality control in this area, so I wasn't surprised to discover that everything was as it should be. The kit assembly requires just basic tools: a soldering iron, rosin core solder, needle-nose pliers and diagonal cutters. Since this circuit requires soldering on the integrated circuit level, your soldering iron should have a needle point and the solder of choice should be very thin. If you are, like me, fast rounding the corner to middle age, I would also recommend some sort of magnifying lens. Soldering those

teeny IC pads can be tough to get right if you can't focus on them. Assembly time is estimated at about three and a half hours for a beginner working his or her way through the units 125 solder connections. This makes it a perfect kit for a quiet evening at home.

Assembling the Unit

I found assembly to be straight forward. Just follow the manual and you can't go wrong. You have to make a couple of choices as you build this kit. First, there is the preference for the pre-emphasis setting as mentioned above. For most of us, the standard United States setting works just fine. Also at one point in the construction process you need to pick a component based upon the portion of the FM broadcast band you want the unit to cover. This means you have to give a bit of thought as to the operating frequency you expect to use. The manual goes into detail on both of these issues, helping the kit builder to make informed choices. I opted for setting the unit to tune the lower (88-93 MHz) portion of the band because

there were several clear frequencies in my area in this frequency range.

The Big Test

I "smoke tested" the unit with a 9V battery. Final adjustment is quite simple. I connected an audio CD player to the inputs of the FM-10A by way of a pair of patch cords. I put one of my favorite "Clannad" CD's in the player and tuned the player, the transmitter and a portable FM receiver, set to a clear frequency. All that was required was a few turns of adjustment to the L1 inductor and I could hear Maire Brennan's vocal's loud and clear. I fiddled with the line level and balance adjustments a bit just because they

were there. This is all that is required to get things going as they should be. Just to be curious, I also sniffed the signal with a frequency counter and a field strength meter. I found the unit to be within the spirit and law of Part 15.

Now for the next test. I took the unit and the CD player up to the highest portion of my house and then I went for a walk around my neighborhood with the FM receiver. I discovered that the signal was strong and clear as I took a walk around the block. As I used the unit for a few days, the only modification I made was to make an additional hole in the FM-10A case. This allowed me to make further adjustments to the L1 inductor without the need to remove the case's top. This

Part 15 on the Internet

Both the FM-10A and FM-25 are hot topics of discussion on the Internet. You can share information about these units with fellow users in areas such as rec.radio.pirate and on World Wide Web sites such as <<http://www.clandjop.com/~jcruzan/pirate.html>>. A listing of the FCC Part 15 rules can be found at <<http://www.missouri.edu/~173/fm10/part15.faq.html>>. Don't forget to check into www.fcc.gov to get the latest information on Part 15 broadcasting.

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was done simply as a matter of convenience for my tests and is not required for normal use.

The FM-25

With the FM-10A completed and working as expected, I turned my attention to its "big brother" the FM-25. This unit performs the same Part 15 chores as the FM-10A with a number of significant advanced features. First, it is sold as a full kit, including case and power supply. The transmitter's frequency is maintained by a drift-free synthesis circuit that is managed by a microcontroller IC. This makes for quick and easy frequency programming without the need for periodic tweaking and tuning of an inductor.

The most basic aspects of the circuit are similar in scope to the FM-10A. The FM-25 includes an additional 2SC2498 transistor in the RF amplification stage. The manual indicates that this unit can be adjusted to higher power levels, but this

would put its use outside the scope of Part 15. Don't worry, keeping things Part 15 legal is designed into the circuit. If you follow the manual's directions you can't go off course. The frequency controller portion of the circuit is the work of two ICs. The first is the microcontroller which is set by a series of DIP switches. This chip's information is then sent to a Phased Locked Loop (PLL) IC to finish up the job of generating a stable frequency for the FM transmitter IC. Operational voltage control is managed by a 78L05 voltage regulator. The kit came with a revision that added four small ceramic capacitors to the power circuit to reduce AC hum from the unit's wall-mount power supply.

Easy Assembly, Too

Assembling this unit was no more complicated than the FM-10A. The same basic tools are all that is required. The unit's many additional parts requiring

265 solder connections just made the project a several night affair. The manual suggests a beginner can pull this kit together on about nine and a half hours. Because of the FM-25's advanced frequency synthesis circuit, final set up was nearly a no-brainer. All that was required for me was to set the dip switches to a desired clear frequency and make my audio adjustments. The FM-25's overall performance and coverage area allowed me to entertain my entire block. I was a bit tempted to "unstrap" the RF stage and see how far the unit could really go, but I opted to stay within the boundaries of Part 15. I guess you won't find my "Clannad" collection listed in The Pirate's Den any time soon.

The Many Uses of These Marvels

Applications for both the FM-10A and the FM-25 abound. The most practical use would be to set the unit up to allow you to retransmit music from your home entertainment system. When properly adjusted, the sound quality of either of these units will rival that of commercial broadcasters. The reason for this is that many commercial stations increase their modulation and add compression to their signals. Since you are not competing for ratings, you can leave your signal clean and often much better than any commercial signal on the band. In this way you could work around the house and yard carrying your music wherever you go by way of lightweight "jogger" ear phones. Now any radio hobbyist will immediately see additional uses. You can also work around the house and yard with those same jogger phones while listening in on your shortwave receiver, scanner, or amateur receiver. You can even plug the output of one hobby receiver into one channel and another into the other channel.

You could, for example monitor a program on shortwave while keeping your other ear checking your local public service frequencies on your scanner. Another use my wife suggested was camping. It was easy enough to set either unit up with a standard cigarette lighter plug and have it retransmit our vehicle's tape system to other parts of our campsite. Once you get either unit set up for your personal use, it would be easy to construct a simple "ground plane" vertical antenna that would allow for best coverage. The supplied manuals give a lot of additional information on antenna options. ■

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Listening Post

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

What's the next best thing to having a new shortwave country take to the air? The return of a country which used to be on shortwave, of course! And that's our reason to celebrate this month. We mentioned it as a possibility not long ago and now it's a reality: the Guyana Broadcasting Corporation is back on shortwave! The transmitter, reported initially to be a 10 kW unit, is apparently being run at 5 kW. The station is on the air 24 hours a day, using 3290, probably from 2100 to 0900 on 3290 and 5950 from 0900 to 2100. Both channels are prone to interference, so it's likely that logging this one won't be on the same comfort level as, say, hearing Radio Netherlands via Bonaire, but a little digging and persistence should bring it to your DX logbook eventually. Reception reports go to Broadcasting House, 44 High Street, Werk-en-rust, Georgetown, Guyana.


Shortwave Demise

With that celebration over, we must report another shortwave passing and a very special station, at that. CKFX, Vancouver (6080) has left shortwave, probably for good. For decades, CKFX ran a teeny 10 watt transmitter used for relaying the programming of its sister medium wave station CKWX. The old transmitter is no longer useable and station management does not believe the cost of a new one is economically justifiable. You have to wonder if they considered converting an old ham rig, which could have been done for practically nothing. Maybe someone should put them in touch with an HCJB engineer!

Another private Canadian shortwaver, CHNX-6130, which normally runs 500 watts is currently using just 40. So if you like low power targets, here's a "limited time offer."

Newcomers

Radio Pueblo, Santo Domingo, Dominican Republic, is now active on 5012, slightly variable, being heard up till 0300 sign off. Reception reports go to Sr. Dario



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23rd January, 1970

Thank you very much for your recent letter.

Regular broadcast on Radio Biafra ceased on the 12th/13th January and make shift broadcasts continued until the 13th/14th January.

On the 12th January General Effiong of Biafra made an appeal for disengagement of troops and for surrender terms to be worked out. The people of Biafra faced by decimation from starvation and military operations decided to opt to stop fighting in order to save the remaining millions.

From the 12th onwards therefore the administration at home fell apart as people started fleeing into the bush. I assume only technical personnel continued to man Radio Biafra. In similar circumstances in the past, in the absence of programme staff, music would be played continuously, as actually happened.

However the transmission monitored here was on the 41 meter band 7.301 MHz (we had lost contact with the 49 meters transmission on the 12th).

From 14th January 1970 Radio Biafra closed down as Biafra Radio after a clear run of 30 months under the most difficult conditions in technical logistics and personnel terms. The Spirit of Biafra lives on.

P. C. CHIGBO
Special Representative

Here's a very rare QSL from Radio Biafra, the station operated by the breakaway Nigerian province of Biafra some 27 years ago. The Nigeria-Biafran war made it impossible to mail reports to the station but a few lucky DX'ers, Stan Schmidt received QSLs via Biafra's representative in the Ivory Coast.

Vadia, Radio Pueblo, Apto. 1099, Santo Domingo, Dominican Republic.

Another new voice belongs to Emisora Ciudad de Montevideo, Uruguay, which is operating on variable 9650. So far, they've just been airing test broadcasts, and at very poor times for reception in North America, i.e. in the 1500-1600 area, although they are apparently on the air until 2300 or later at times, which

would provide us with a better shot. The address is Canelones 2061, 11200 Montevideo, Uruguay.

Another Step in the Right Direction

Our friends at Radio Denmark must be pleased with response to their monthly



internacional
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RÁDIO PORTUGAL

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

English language broadcasts, which began the first of the year. They've added a second and are now on in English on the first and third Sundays of each month. We urge you to write and encourage the folks at this fine shortwave station: Radio Denmark, Radiohouse, DK-1999 Fred-eriksberg C., Denmark.

Africans

Radio Garoua, Cameroon, has been very spotty on **5010** of late—active on some evenings, not so on others. You might make a few checks of **4000** for the possible return of the Cameroon station at Bafoussam. Sign on should be at **0430**.

Radio Centrafrique, **5035**, Central African Republic, is currently inactive. We don't know why or for how long or whether it might even be a permanent shutdown, but we'll guess it's just a temporary technical problem.

Reports have it that new transmitters have been installed at the **Voice of Nigeria** and should be coming on the air soon, perhaps are active by now. If so, we

should see some new frequencies in play, besides the standard **7255**.

Radio Cote d'Ivoire has reactivated its **7215** frequency and running to **0000** close, then resuming again sometime around **0600**. The use of the station's **4940** frequency seems very spotty. This station is surely in the running for the top trophy in the category of "longest continually difficult to QSL."

RADIO COPAN, Honduras, says the tests they ran on **7460** weren't all that successful and so they aren't quite sure what their next step will be. They may go back to using **15675**, or activate another frequency in the **41** meter band, or even try **60** meters.

LIBERIA—The renewed fighting in the on-going Liberian civil war has again taken its toll on **ELWA**, which was evacuated after fighting around the compound and then the looting of the property. The Sudan Interior Mission, parent organization of **ELWA**, says it fears the station will be destroyed again. If that happens we find it hard to believe **ELWA** will be rebuilt a second time.

ZAMBIA—Watch for stronger signals from **Zambian Radio**. The installation of two new **100 kw** transmitters should now be complete; one broadcasting the **Radio One** service, the other airing **Radio Two**. New antennas are also being installed so hopefully we'll be enjoying better reception of this station.

CHINA RADIO INT'L—says part of its on going modernization and expansion plan includes the installation of new, high power shortwave transmitters to improve reception in the U.S., Europe and Africa. They expect improved technical quality once they begin using studios in the new **CRI** broadcast center, scheduled for completion by the end of the year.

NIX ON PARAGUAY—We've seen a report that **AWR** won't be coming on the air with a shortwave station in **Paraguay** after all, due to problems in transferring the necessary funds into **Paraguay**. Instead, **AWR** will put a shortwave station on the air from **Juliaca, Peru**, which could be the first of several stations at that location.

CAPITAL KAPUT—**Capital Radio**, which broadcast from the South African "country" of **Transkei**, and which has been inactive for some time, is no more. A storm put the transmitters out of commission late in **1994** and replacement parts couldn't be obtained due to the sanctions then being imposed on **South Africa**. **Transkei** has since been incorporated back into **South Africa**. The **South African** government now owns what's left of the facility and plans to sell it.

TIME FOR—JAZZ! the man used to say, in that deep, friendly voice, right after the first few notes of **Duke's "Take the 'A' Train."** He was one of those special per-



Radio Canada International's transmitter control room located in Sackville, NB. (Thanks Gary Hubert, Ontario)



Here's a vintage card from RCI. L. Mark Lussky of Pennsylvania received this in 1965!



Another 30 year old QSL from Mark Lussky, this one's from Radio Budapest, even then using their longtime frequency of 9833.

sonalities whose presence on the air helped give shortwave it's unique flavor. Now he is gone. We mourn the passing of the Voice of America's Willis Conover, who hosted "Music USA" and the "Voice of America Jazz Hour" for so many years. Surely, by his broadcasts he achieved as much as any diplomat in contributing to the eventual end of the cold war. In the darkest days of that period Eastern European music lovers made hundreds, if not thousands, of illegal tapes of his program and exchanged them in secret. He MC'd a series of jazz concerts in Eastern Europe on at least one occasion and found himself mobbed by fans, receiving standing ovations; a bigger star than the musicians he introduced. Thank you, Mr. Conover, for bringing us all of that superb music!

INPUT PLEASE! Your shortwave monitoring logs are always very welcome! Please remember to list them by *country*, double or triple space between

each and include your last name and state abbreviation after each item. We are also interested in receiving such things as spare QSLs and shack photos we can use as illustrations, as well as information about station QSL policies, addresses, station schedules, brochures and anything else you think would be of interest. Please check your logs to make sure you haven't forgotten to include the time and frequency; this month a number of logs had to be discarded for that reason. Your participation is always much appreciated!

Here are this month's logs. All times are in UTC which is five hours ahead of EST, i.e. 0000 UTC equals 7 pm EST, 6 pm CST, 4 pm PST. Abbreviations such as AA, SS, PP, RR, etc., indicate the language of the broadcast (Arabic, Spanish, Portuguese, Russian).

ALBANIA—Radio Tirana, 7160 at 0227. (Miller, WA)

AUSTRALIA—Radio Australia, (Bran-

don site) on 9660 at 0706 and from the Shepparton site at 0712 on 9860. (Miller, WA) 11880 at 0408 with news. (Wilden, IN)

AUSTRIA—Radio Austria Int'l, 6155 at 0300 and 0515. (Miller, WA) 9870 at 0327 in GG. (Foss, AK)

BOLIVIA—Radio Illimani, 4945 at 0319 in SS with a man talking, ID. (Jeffery, NY)

Radio Norte, 4939 at 0031 in SS with music. (Jeffery, NY)

BRAZIL—Radio Anhanguera, Goiania, 11830 in PP at 2323. (Miller, WA)

Radio Clube do Para, 4885 in PP at 0307 with talk, music. (Jeffery, NY)

Radiobras on 15265 at 1807 in EE with news, features and music. (Jeffery, NY) (To Europe. Editor)

Radio Gaucha, 11915 at 0016 in PP with talk, commercials and music. (Jeffery, NY)

BULGARIA—Radio Bulgaria on 7115 at 0300 in Bulgarian; 11720 in EE at 1944. (Miller, WA)

CANADA—CBC Northern Service, 9625 at 2300. (Miller, WA)

Radio Canada Int'l, 9535 at 0045. (Miller,

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WA) 9755 in EE at 2350, FF at 0056. (Wilden, IN)

11855 at 1225 with "As It Happens." (Northrop, MO) 13688 at 2159 to Europe and Africa. (Hallenbeck, ME)

CKZU, Vancouver, 6160 at 0351 with live folk music "one road to heaven but many roads to hell." (Foss, AK)

CHAD—Radiodiffusion Nationale Tchadienne, 4904 at 0504 in FF with music, commentary. (Jeffery, NY)

CHILE—Radio Esperanza, Temuco, 6090 in SS at 0523. (Miller, WA)

CHINA—China Radio Int'l, 9730 at 0400 with news. (Wallesen, IL)

COLOMBIA—Radio Nacional, 4955 in SS at 0439. (Miller, WA)

Caracol Bogota, 5075 in SS at 0443.

(Miller, WA)

COSTA RICA—Adventist World Radio, 5030 in SS at 0441 and 6150 in SS at 0546. (Miller, WA)

Radio For Peace Int'l, 7385 at 0259. Frequencies for China and Taiwan. (Hallenbeck, ME)

Radio Reloj, 6005 at 2356 with jazz, announcements in SS. (Wilden, IN)

CROATIA—Hrvatski Radio/Croatian Radio, Zagreb, 11635 at 2037 in Croat. (Miller, WA)

CUBA—Radio Havana, 6000 at 0331. (Wilden, IN) 11760 at 1215 in SS and 11875 in SS at 1220 about Central American issues. (Northrop, MO) 15140 in SS at 0235. (Hallenbeck, ME)

Radio Rebelde, 5025 at 0549 in SS. (Miller, WA)

DENMARK—Radio Denmark via Norway, 11840 at 1225 with ID in Danish. (Northrop, MO)

At 1506 during one of their English broadcasts. (Miller, WA)

ECUADOR—Radio Centinela del Sur, 4770 at 0236 in SS. (Jeffery, NY)

Radio Popular, 4800 in SS at 0246. (Jeffery, NY)

Radio Quito in SS at 0426 on 4919. (Miller, WA)

HCJB, 5865 in GG at 0427. (Miller, WA) 9745 at 0113 with "Saludos Amigos" program. (Wilden, IN) 11900 at 1225 in SS with ID and 12005 at 1215 in SS with ID. (Northrop, MO)

ENGLAND—BBC, 5875 at 2354, lesson in how to die (!), followed by English/ Spanish lesson. (Wilden, IN) 6175 at 0504. (Miller, WA) 9915 at 0300 going into SS from EE; 12095 at 1404 with news. (Hallenbeck, ME) 11750 at 1225 with "Britain Today" and 12095 at 2218 with news. (Northrop, MO)

FINLAND—Radio Finland Int'l, on 11900 at 1230 with ID and news. (Northrop, MO)

FRANCE—Radio France Int'l, 5920 at 0500 in SS. (Miller, WA) 11670 in FF at 1220 and 13605 at 1315 in EE. (Northrop, MO)

GHANA—GBC, 4915 at 2335 in EE with music, African news. (Jeffery, NY)

GERMANY—Voice of Germany, 5960 at 0503, 6045 at 0521, 6085 at 0522, all in EE, and 6110 in GG at 0536. (Miller, WA) 6131 at 0239 to Asia. (Hallenbeck, ME) 9690 via Antigua in GG at 0709, (Foss, AK) 13790 at 1944 with "Hits From Germany." (Wilden, IN)

GREECE—Voice of Greece, 7450 at 0343 with news in EE read by a woman. (Wilden, IN)

9420 at 00332 in EE. (Miller, WA)

GUAM—Adventist World Radio, 9370 at 1416 in unidentified language. (Miller, WA) KTWR/Trans World Radio in Vietnamese on 9430 at 1422. (Miller, WA) 11655 at 0911 in CC. (Foss, AK)

GUATEMALA—Radio Cultural Coatan, San Sebastian, 4799 in SS at 0203. (Miller, WA)

INDIA—All India Radio, 9950 at 1715 in

EE, 10330 in Hindi at 1706 and 11620 in EE at 2148. (Miller, WA)

INDONESIA—Radio Republik Indonesia, Jakarta, 9680 at 1522 in II. (Miller, WA)

IRELAND—Radio Telefis Eireann via WWCR on 5065 at 1000 and at 1930 on 12160, also via WWCR. (Hallenbeck, ME)

ISRAEL—Kol Israel, 9435 at 0325 in Hebrew and 11605 at 1839 in RR. (Miller, WA)

ITALY—RAI, 11795 at 0204 and 11800 at 2252 in Italian. (Miller, WA)

IVORY COAST—Radio Cote D'Ivoire, 4940 at 0957 in FF with a man talking, music, ID. (Jeffery, NY)

JAPAN—Radio Japan, 6110 in JJ at 0611; 9580 in EE at 1755 and 11715// 11760 in EE at 0430 in RR. (Miller, WA)

KIRIBATI—Radio Kiribati, 9825 at 0702 in EE but barely audible. (Miller, WA) (This one is now signing on as early as 0500. Editor)

LESOTHO—Radio Lesotho, 4800 at 0316 in SeSotho, with man talking, organ music, singing. Apparently a religious program. (Jeffery, NY) 0428 in unidentified language. (Miller, WA)

MADAGASCAR—Radio Madagasikara, 5010 at 0300 with music and man announcer in Malagasy. (Klingman, NY)

MALAYSIA—RTM, Sarawak, 4835 at 0715 with traditional music, man in unidentified language. (Klingman, NY) (Must have been some very unusual propagation; that's extremely early, even in the Midwest. Ed.)

MEXICO—Radio Mexico International, 9705 at 1500 in SS with ID, woman announcer, into EE with flute music and man announcer. (Jeffery, NY)

Radio Mil, 6010 in SS at 0507. (Miller, WA)

Radio Educacion, 6185 in SS at (what hour, Mike? Presume it was sometime in the evening? Editor)

NETHERLANDS—Radio Netherlands, 9845 at 0043. (Miller, WA) 9895 at 0130 with news in German. (Wilden, IN)

NETHERLANDS ANTILLES—Radio Netherlands relay, Bonaire, 6165 at 0600 in Dutch. (Miller, WA)

NEW ZEALAND—Radio New Zealand Int'l, 6100 at 1325, 9570 at 0704 and 15115 at 0455. (Miller, WA) 9570 at 0715. (Foss, AK)

NORTHERN MARIANAS—FEBC/KFBS, Saipan, 9465 and 9670 in RR at 1426. (Miller, WA)

NORTH KOREA—Radio Pyongyang, 11335 at 1200 in SS with news, Korean music. (Northrop, MO)

OMAN—Radio Oman, 9735 at 2155 with music and AA. Good signal. (Klingman, NY)

PAKISTAN—Radio Pakistan, 11570 in unidentified language at 1737. (Miller, WA)

PALAU—KHBN, Koror, 9965 at 0714 in CC. (Miller, WA)

PAPUA NEW GUINEA—NBC, Port Moresby, 4890 at 0931 in EE with news and music. Into unidentified language at 1005. (Jeffery, NY)

PARAGUAY—Radio Nacional, 9735 at 0500 in SS. (Miller, WA)

PERU—Radio Union, Lima, 6115 in SS at 0539. (Miller, WA)

Radio Cora, Lima, 4914 in SS at 0536. (Miller, WA)

Radio La Oroya, La Oroya, 4905 at 0435 in SS. (Miller, WA)

Radio Tropical, Tarapoto, 4935 at 0004 in SS with ID, music. (Jeffery, NY)

Radio Atlantida, Iquitos, 4790 at 0244 in SS with talk, several IDs. (Jeffery, NY)

PHILIPPINES—FEBC Radio Int'l, 9400 in CC at 1419. (Miller, WA)

Radio Veritas Asia, 9520 in unidentified language at 1412. (Miller, WA)

Radio Philipinas, on 11720 at 1906 and 11890 at 1923 in Tagalog. (Miller, WA)

POLAND—Polish Radio Warsaw, 11815 at 1210 in EE with various news features and ID. (Jeffery, NY)

PORTUGAL—Radio Portugal Int'l, 9570 at 0248 with mailbag, ID at 0259. (Foss, AK)

ROMANIA—Radio Romania, 9690 at 2116 with "Society Today." (Wilden, IN) 2136 in EE. (Miller, WA)

RUSSIA—Magadan Radio, Yakutsk on 7320 in RR at 0642. (Miller, WA)

Radio Tikhy Okean, Nikolayevsk Amure, 9735 in RR at 1800. (Miller, WA)

Voice of Russia, 7240 at 0002 with news focusing on Eastern Europe items. 11675 at 1924 with a program on tourism and com-

merce in Russia. 15400 at 1502 with news. (Wilden, IN) 9845 at 0329. (Foss, AK)

SAO TOME—VOA relay, 6035 at 2124 with "New Horizons," VOA Washington address and sign off at 2130. (Jeffery, NY)

SAUDI ARABIA—BSKSA, 9730 at 1744 in AA. (Miller, WA)

SEYCHELLES—FEBA, 9865 in EE at 1640. (Miller, WA)

SOUTH AFRICA—Channel Africa, 7155 in EE at 0518, 7185 in PP at 0518 and 9650 in Swahili at 1506. (Miller, WA)

SPAIN—Radio Exterior de Espana, 6055 at 2359 with IS and news in Spanish. (Wilden, IN)

SRI LANKA—Sri Lankan Broadcasting Corp., 9645 at 1505 in EE. (Miller, WA)

SWAZILAND—Trans World Radio, 4775 at 0430 in GG. (Miller, WA)

SWEDEN—Radio Sweden, 6045 at 0503 and 11650 at 1457, both in Swedish. (Miller, WA)

SWITZERLAND—Swiss Radio Int'l, 9905 at 0314 in EE to close at 0315. (Miller, WA)

TAIWAN—Voice of Free China, 5920 at 0500 in SS. (Miller, WA) (via WYFR, editor) 5950 (via WYFR) at 0703. (Hallenbeck, ME)

THAILAND—Radio Thailand, 9690 in Thai at 1802. (Miller, WA)

TUNISIA—RTV Tunisienne, 9735 in AA at 2122. Weak. (Klingman, NY)

TURKEY—Voice of Turkey, 11725 at 2250 in TT. (Miller, WA)

UNITED ARAB EMIRATES—UAE Radio, Abu Dhabi at 2300 on 9770 with news. (Wilden, IN)

VANUATU—Radio Vanuatu, 7260 at 0636 in Pidgin English. (Miller, WA)

VATICAN—Vatican Radio, 5880 at 0458 in FF, off at 0500. (Miller, WA)

VENEZUELA—Radio Tachira, 4830 at 0223 in SS with echo effects, SS ballads and love songs. (Klingman, NY)

YUGOSLAVIA—Radio Yugoslavia, 7115 at 0003 with news; off at 0026. (Wilden, IN)

7130 in EE at 0451. (Miller, WA)

And that's the end of what turned out to be a rather short story this month! Unfortunately a number of items had to be discarded since they didn't include time or frequency. Nonetheless, here's a tip of the hat and a whopping big thank you to those who did come through:

Sue Wilden, Columbus, IN; Mark Northrop, Gladstone, MO; Marty Foss, Talkeeta, AK;

Richard Klingman, Mt. Upton, NY; Dave Jeffery, Niagara Falls, NY; Elmer W. Wallesen, LaGrange Park, IL; and Michael J. Miller, Issaquah, WA. Thanks to each of you!

Until next month, good listening! ■



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The Computer Corner

RECEIVER AND SCANNER CONTROL, SOFTWARE AND THE INTERNET

As a new *Pop'Comm* columnist, I need to introduce myself. You can see from the URL sidebar that I was introduced to the mystery of radio via the crystal set. When I was 15 my father increased my interest in radio with a Christmas gift of a Heathkit shortwave receiver. While serving in the U.S. Army, one of my many duties was as a Radio Telephone Operator. In the early 1970s I became acquainted with VHF/UHF monitoring. My first true scanner was a Bearcat III. I still have it and it works perfectly.

In the early 1980s I developed an interest in computers. My first acquisition was a Commodore VIC-20. By 1985 I had graduated to the Commodore 64/128 series computer and was writing a column called The Computer Corner in *FRENDX*, the monthly bulletin of the NASWA. It was during this period of time that I met my co-editor, John McColman, who was the Sysop of the Old Dominion DXers BBS. Taking inspiration from John's BBS, I wrote the program code for a radio-oriented BBS operating on the Commodore 64/128 series computers. My software was adopted by Bill Krause, Sysop of the original ANARC BBS. I also wrote numerous shortwave-related utility programs for the Commodore 64/128 series computers.

By the late 1980s I had become the user of a PC compatible computer and was reinfected by the scanner bug. I have edited several columns for *NorthEast Scanning News*. With the demise of NESN, I became associated with the All Ohio Scanner Club and write antenna related articles for the club bulletin, *American Scannergram*.

I've hit "the big 5-0," am married, and have two teenage daughters. (ARGH!!!!) My wife tolerates my computers and radios. My daughters love my computers, but can do without the radios. I bring to this column a hobbyists and a hardware junkie's perspective. My current computer and radio passions include the Internet, LINUX, public service monitoring, decoding digital radio modes with a Universal M-1000, WEFAX and NOAA APT satellite monitoring.

Bill Cole

On The Flip Side

As Bill's co-editor, let me introduce myself. I have been involved in the radio hobby since the mid '60s, first as a shortwave listener, then a scanner listener, CBER, and ham. I have written for several club organizations and currently serve on the Executive Board of the Association for North American Radio Clubs (ANARC).

My computer interest comes from a 10-year stint in the US Navy as a data systems technician and later a programmer in the civilian world. I'm currently employed as a software engineer for a company that develops SCADA instrumentation for the manufacturing industry. SCADA stands for supervisory control and data acquisition. I have used personal computers as an adjunct to my radio hobby for over 10 years, dating back to a Commodore VIC-20 in the early '80s.

I am 44, married with a teen-aged daughter and the radio kitties, Coco-Nut, Coffee, Bear and Zoe. My wife and daughter enjoy their personal computer for word processing and playing games, but they don't have much interest in the radios except when there is some "really neat stuff" on the scanner. I enjoy listening to fire departments, aircraft and the federal government on my scanners, and aircraft and domestic broadcasters on my shortwave receivers.

Bill will generally focus on the hardware side and I will concentrate on software. We bring many similar interests (the Internet, data bases, etc.) which we will try to share with you in each column.

John McColman

Booting Up

Why a bi-monthly column on computers in a radio magazine? Computers are a great extension to many hobbies. Some folks, especially the gadget-freak types, enjoy the challenge of computers. Others want a means of efficiently doing many of the tasks of the hobby. In our hobby, whether it is writing a QSL report, logging or decoding some of the digital modes, computers can provide a lot of

support. Our goal for the column is to provide a look at the many ways a computer can be used to aid us in the pursuit of our hobby, making it more efficient and enjoyable. We won't forget that the hobby is RADIO: scanning, shortwave listening, or what-have-you.

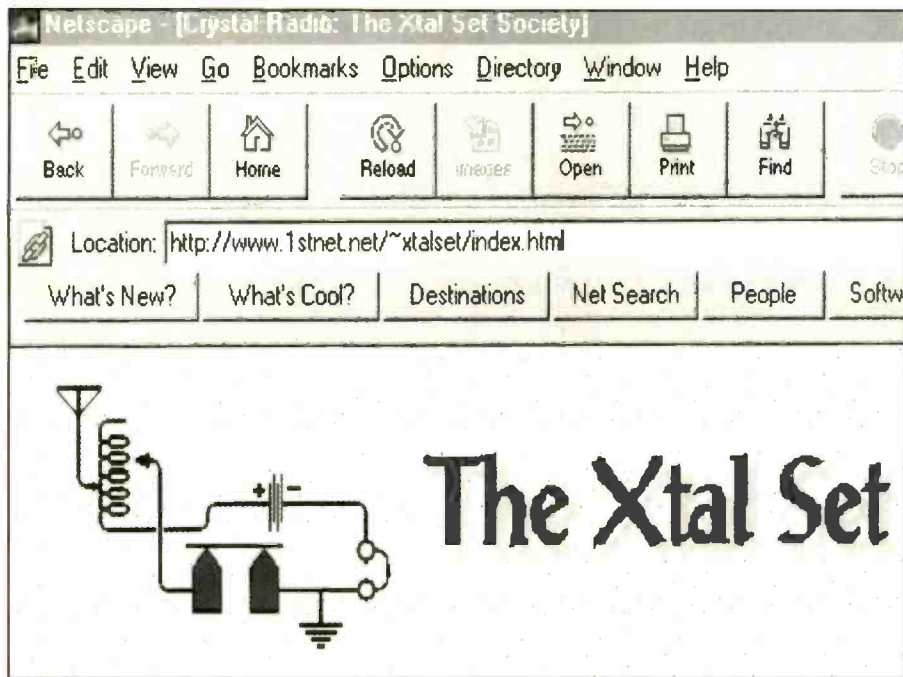
We would like to hear from the readers, too! Please write us care of *Popular Communications* and tell us what you would like to see here or perhaps share your experiences with us. While we do look forward to your letters, personal replies are not possible. We will address your questions through the column if we feel they are of broad interest, but we cannot offer help with specific hardware or software. We suggest you contact your vendor or the manufacturer. A great resource for help is a local computer user's group. Check with your local library or computer dealer for information about a user's group in your locality.

You can contact us via electronic mail at <jmccolman@richmond.infi.net or cole@net2.intserv.com>

Don't Throw That Old Computer Away!

So you've just set up your new Pentium processed PC. Now what happens to that 286, 386 or 486 system you've used for the past several years? Even if the system is dead, don't throw it away. There are lots of ways to recycle your old PC.

Let's look at the worst case scenario. You replaced your computer system because a major component failed. An ISA (Industry Standard Architecture) PC is built from standard components. Although one failed, those remaining still have life and are interchangeable. Even a PC that is not ISA may have some interchangeable parts. You could take out an ad in your local shopper's paper to advertise your system as good for parts. You might also know a hobbyist who could put the parts to good use. Conversely, you might know a hobbyist with the parts and knowledge to put life back in your old PC. Even though it's slow by today's standards, there are plenty of uses for that older system.



If your old system is operational, you might want to dedicate it. Hams into packet and similar activities don't need any further explanation. I monitor digital modes with a Universal M-1000 as well

as WEFAX and NOAA APT using PC GOES WEFAX. I have an old 486 running DOS 6.22 that I have dedicated to this equipment. Another use for a dedicated PC is to run an alternate operating

system. LINUX is a PC based UNIX compatible operating system.

LINUX has a good deal of HAM related software available and is a good candidate for a dedicated PC. If you're a masochist and your old system has a modem, large hard drive capacity and a CD ROM, you might consider running a radio-related BBS. The possibilities for the use of a second computer in relation to radio are too numerous to list here.

There is one more use for that old PC if it's in operating condition. Donate it. Do you know a youngster who is just entering the radio hobby? How about a community organization like a church group or the community food bank for the homeless? Donating to a youngster gives the satisfaction of knowing that you've helped someone move along in the hobby. Donating to a private-non-profit organization may even be tax deductible.

Percon's SPECTRUM CD-ROM

By John McColman

Back when I started listening to a scanner, the one reference book widely available was Police Call. Of course, this was

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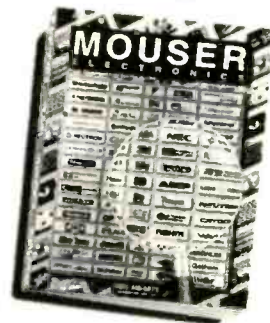
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URL of the Month

BY BILL COLE

My introduction to radio came in the early 1950s when my father built me a crystal set. Many evenings I fell asleep listening to the local AM station. If I was persistent in my tuning, I could often DX the AM station in Pleasantville, NJ some 40 miles from my home. The zenith of my crystal set listening came with the reception of a broadcast from a Canadian station.

That crystal set is more than 40 years old and is still in perfect working order. Because of my nostalgia and on its own merits I have selected The Xtal Set Society as the URL of the month for October 1996. In each column, we will focus on the URL of the Month, a choice that we made as a must-visit site for those who "surf the web."

What is an URL? URL is the abbreviation for Uniform Resource Location, which is geek-speak for the World Wide Web address. An URL is nothing more than the 'pointer' for your web browser to locate the web page (or site). Every URL will begin with http: although some may begin with ftp:. These are types of web sites; an ftp site deals with files that you can 'download'. The abbreviation ftp stands for file transfer protocol. An http site is the more common web site with video, audio or other forms of hypertext. HTTP stands for hypertext transfer protocol. The URL for John's web page is: <<http://www.infi.net/~jmcolma/index.html>>

According to the site, The Xtal Set Society, founded in 1991, is dedicated to once again building and experimenting with radio electronics. The society currently reports having over 430 active members. The membership builds their own crystal sets, and some even design their own and submit articles about their projects for publication in their bi-monthly newsletter, a benefit of membership. The newsletter is packed full of projects and information about crystal radios, mostly dealing with design and electronics issues.

The Xtal Set Society also sells a selection of books. What are the topics? Crystal sets of course! Volumes containing past issues of the society's newsletter, a crystal set handbook; and the history, fundamentals & design of crystal sets are available.

If you enjoy tinkering and building projects then The Xtal Set Society may be just what the doctor ordered. Visit the URL of the month at <<http://www.1stnet.net/~xtalset/>> and tell them *Pop'Comm* sent you.

before RadioShack started carrying them. I remember buying my Police Call from an outfit in New Jersey. Also, there were the many publications of CRB, including AirScan and the "Top Secret" Registry of US Government Radio Frequencies. All of these were great for information covering public safety, aviation or federal monitoring, but I was interested in more, especially utilities and business users.

First, I tried the microfiche of the FCC data base, which was OK, but I had to go to the library to use a 'fiche reader. Finally, I purchased my own 'fiche reader, but it still required hours of copying by hand information I wanted. This was tedious and tough on the eyes. Next, I discovered an outfit that sold floppy diskettes extracts from the FCC files by state. Costing over \$300 for Virginia, this was convenient, but very expensive.

Finally, a few years ago, Percon developed an inexpensive CD-ROM version of the FCC data base that included every licensee in the FCC records. Finally, a convenient, inexpensive means of getting current FCC data. The Percon Spectrum CD-ROM is issued twice a year with information that is typically only four weeks old when the CD-ROMS are mastered. The entire US data base fits on one CD-ROM and contains all of the high-interest fields: licensee, frequency, call-sign, radio service category, transmitter class, city, county and state, latitude, longitude and number of transmitters.

While this is fairly raw material (no CTCSS tones, no remarks), it provides a great beginning to help users find active frequencies, especially for that elusive business. The program makes it easy to spot holes in the spectrum that might be used for new stations. It's also a great way to search for those new licenses. Percon also includes programs for searching the data base for both DOS and Windows. Relatively simple to use, these programs will not perform real detailed queries (or searches). They do, however, export records to an xbase (or dBase) format, which is a universal format read by most data base programs, including Alpha Five and Microsoft Access.

The Percon Spectrum CD-ROM sells for an amazing \$29.95 plus shipping and handling. It is available from several sources, including Scanner Master Books at 1-800-722-6701 and from PerCon Corporation, 4906 Maple Springs, Ellery Rd., Bemus Point, NY 14712. Phone: (716) 386-6015 or FAX to (716) 386-6013. This is definitely one to get! ■



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Broadcast DXing

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

The Telecom Act: Less is More and More is Less

Lengthening license terms, increasing the number of stations that can be held by a single owner and allowing broadcasters to modify their facilities without first seeking FCC approval are all part of a move toward broadcast deregulation in Washington, D.C., following passage earlier this year of the Telecommunications Act of 1996. Some eight months after President Clinton signed the Telecom Act into law, its effects are beginning to be felt in the industry as the FCC changes its own rules to conform to the new regulations and broadcasters scramble to take advantage of the relaxed rules.

Longer License Terms

In what it calls a move to "reduce the burden" of periodic license renewals on both broadcasters and itself, the FCC has proposed lengthening the license terms of radio and TV stations to eight years, the maximum allowed by the Telecom Act. Under current rules, radio stations must renew every seven years, and TV stations every five. The license terms of experimental broadcast stations would remain unchanged at one year.

The license renewal procedure was first changed this spring when the Commission adopted a portion of the Telecom Act eliminating comparative renewal hearings in favor of renewing licenses as long as statutory standards are met. The hearings had increasingly been viewed by broadcasters and the FCC as onerous and occasionally frivolous, such as when a party would challenge a renewal simply to get paid off by the station in exchange for dropping the protest. Now, if a renewal is deemed to be in the public interest, and if there are no challenges or competing applications, the license will be renewed.

The efforts by legislators and the FCC to streamline the licensing process highlight the gradual, but profound change in Washington's attitude toward how broadcast licenses are tied to public service.



Road music? Lincoln, Nebraska's KFGC houses its remote broadcast facilities in a giant boom box. (Courtesy Jon Heckman, KBORXF, Lincoln)

Prior to 1983, when terms were extended to their current length, broadcasters were required to produce significant evidence of how they had served the public interest in the previous three years. The '80s era of deregulation reduced that documentation to a large postcard; a simple checklist that asks the station to acknowledge whether the required paperwork—such as reports detailing station employment and ownership—has been filed with the FCC.

But not everyone is happy with the relaxed licensing rules. Citizens groups, for example, who have often used petitions to deny as a means for getting their point across to broadcasters, are questioning whether the changes will further diminish the relationship between the privilege of a license and the responsibility to serve the public interest.

Other Changes

License renewals aren't the only area affected by the Telecom Act. Under another FCC proposal, FM stations would be allowed to make certain modifications to their facilities without first

seeking a construction permit. Currently, stations must file an application for a construction permit, and once the facilities are modified, an application for a license for the modified facilities must be filed.

But under a provision in the Telecom Act, the FCC now has the authority to allow broadcasters to make certain changes without prior authorization, as long as an application for modification of license is filed within 10 days of the change. Proposed rules include allowing commercial FM stations to increase their effective radiated power (ERP) to the maximum allowed for their station class. FM and TV stations could also replace a directional antenna with another directional antenna, as well as change vertically polarized ERP and the radiation center height of the antenna.

Also revised following the Telecom Act were radio ownership rules, which limited ownership to no more than 20 AM and 20 FM stations nationwide, or 23 each if the stations were controlled by a small business or minority. With the caps eliminated, several media companies—many flush with cash after the industry posted its 43rd consecutive month of revenue

Seeking Permits to Construct New FM Stations (frequencies in MHz)

AL	Selma	105.1	
AR	Gould	102.5	
AZ	Sedona	105.1	(KFLX booster)
CA	Hollister	90.7	
CA	Lenwood	104.5	
CA	Livermore	95.7	(KPIX booster)
CO	Grand Junction	97.1	
CO	La Junta	106.5	
CO	Pueblo	88.1	42 kW
CO	Westminster	88.1	
FL	Key Largo	90.9	45 kW
FL	Murdock	98.9	
HI	Lihue-Kauai	98.1	
IA	Lamont	97.9	
IL	Casey	91.5	
IL	Charleston	91.3	600 watts
IL	Ramsey	88.3	25 kW
IL	Salem	91.3	900 watts
IN	Vincennes	89.9	
KS	Colby	97.9	
MI	Hancock	98.7	
MI	Leroy Twp.	88.1	2.5 kW
MO	Cuba	107.3	
MO	Marble Hill	97.3	
MO	Vandalia	104.3	
MS	Dekalb	105.7	
MS	Hattiesburg	89.3	1 kW
MT	Big Sky	104.5	
MT	Conrad	93.7	
MT	Deer Lodge	96.5	
NC	Oak Ridge	90.9	1.8 kW
ND	Beulah	97.9	
NE	Bridgeport	101.3	
NE	Hastings	90.1	1.5 kW
NV	Hawthorne	89.5	320 watts
NV	Reno	89.5	5 kW
NY	Schuyler Falls	90.9	3 kW

OH	Athens	95.9	
OH	Willard	96.9	
OR	Eagle Point	92.9	
OR	Newport	92.7	
PA	Barnesboro	93.5	
PA	Brookville	103.3	
TX	Hereford	109.5	
TX	Pittsburg	96.9	
TX	Sanger	89.7	
TX	Shamrock	92.7	
TX	Snyder	97.1	
UT	Brigham City	100.7	
UT	Park City	99.5	(KUTQ-FM booster)
VA	Leesburg	107.7	(WREY booster)
WA	Chehalis	88.9	
WA	South Bend	105.7	
WA	Sunnyside	88.1	250 watts
WY	Diamondville	105.3	

New Shortwave Calls Issued

KJES	Vado, MN
KSDA	Agat, GU

New FM Call Letters Issued

KAQD	Abilene, TX
KCVT	Silver Lake, TX
KCVW	Kingman, KS
KHWZ	Ludlow, CA
KKQY	Hill City, KS
KMRJ	Rancho Mirage, CA
KPRW	Perham, MN
KQHQ	Burns, OR
KRAZ	Calistoga, CA
KVAG	Rugby, ND
KWRR	Ethete, WY
KZAM	Ganado, TX

gains—quickly began negotiating mega-mergers before President Clinton's signature on the Telecom Act was even dry. Clear Channel Communications, Inc., for example, is seeking to cement its position as the largest group owner in the U.S. by acquiring control of Hefel Broadcasting Corp. If approved by the FCC and Federal Trade Commission, the stock sale would give Clear Channel control of an unprecedented 112 radio stations.

Local radio ownership rules were also changed. Previously, in a market with 14 or fewer stations, a single entity couldn't own more than three commercial stations. That cap has been raised to allow ownership, operation or control of up to five commercial stations. In markets with 15 or more stations, ownership was limited

to two AM and two FM commercial stations, as long as the combined audience share of the stations wasn't more than 25 percent of the market. Now, in markets with between 15 and 29 stations, a single party can have up to six commercial stations, so long as not more than four of them are in the same service (AM or FM). In Fort Wayne, Indiana, for example, Federated Media is set to purchase WBYR-FM, according to a Fort Wayne News-Sentinel article sent by Gene Stutzman of North Webster, Indiana. If approved by the FCC, the sale would bring to five the number of stations in the market owned by Federated, including WOWO-AM.

Two new market categories and accompanying ownership caps were also creat-

ed. Markets with between 30 and 44 stations can have up to seven commercial stations with a single owner, while in markets with 45 or more commercial stations, ownership is limited to eight stations.

For DXers, the Telecom Act will mean a marked increase in the number of stations changing hands in the coming months. What long-term effects could result, however, is anyone's guess. As group owners acquire more stations, they may merge operations of their stations in a single market as a cost-cutting move. For example, Westinghouse, which bought CBS last year, is moving KFVB-AM into a CBS-owned building that already is home to KNX-AM—even though the two all-news stations are direct competitors, and will remain that

WAPU	Mount Vernon, IL
WAPU	Colfax, IL
WAPV	N. Myrtle Beach, SC
WAQA	St. Johnsbury, VT
WAQB	Brighton, NY
WBDL	Reedsburg, WI
WBJW	Albion, IL
WBSJ	Portland, IN
WHRS	Cookeville, TN
WJLW	Allouez, WI
WRVD	Syracuse, NY
WTSG	Carlinville, IL

KROW	KHOP
KRXX	KJJZ
KSIV-FM	KSLH
KSNN	KZEZ
KSYG	KSYG-FM
KTHR	KAHP
WABY-FM	WEMX
WALI	WONO
WAXB	WVYB
WFSN	WEEJ
WGBE	WAOX
WJCC	WMKK
WMKK	WHHY-FM
WMRD	WCNX
WNMX	WIST-FM
WNDR	WUPN
WPGM	WRQR
WPTE	WJQI-FM
WSFR	WHKW-FM
WSMZ	WTJY
WTCT	WNND
WUMX	WLJL
WYOS	WJLW

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Kodiak, AK
St. Louis, MO
St. George, UT
Little Rock, AR
Grants, NM
Ravena, NY
Walterboro, SC
Patterson, NY
Port Charlotte, FL
Bryan, OH
Montgomery, AL
Montgomery, AL
Middletown, CT
Waxhaw, NC
Mexico, NY
Farmville, NC
Virginia Beach, VA
Corydon, IN
Johnstown, OH
Fuquay-Varina, NC
Charlottesville, VA
Chenango Bridge, NY

Pending FM Call Letter Changes

New	Old	
KQMX	KCLI	Clinton, OK
WKHB	WLLS-FM	Hartford, KY
WZCH	WABT	Dundee, IL
WZCO	WWJY	Crown Point, IN

Changed FM Call Letters

New	Old	
KCVW	KCPL	Kingman, KS
KDKR	KDTR	Decatur, TX
KDOT	KHIT-FM	Reno, NV
KFGI	KVBK-FM	Brainerd, MN
KFGX	KKDL	Deer Lakes, MN
KGHD-FM	KGHD	Hoquaim, WA
KHOP	KROW	Mariposa, CA
KJDY-FM	KAJC	Canyon City, OR
KMEN	KFTH	Marion, AR
KNEL-FM	KIXV	Brady, TX
KOAZ	KTWC	Glendale, AZ
KOCY	KHOX	Hoxie, AR
KRMR	KRAZ	Ketchum, ID

Changed AM Call Letters

New	Old	
KGHO	KCPL	Olympia, WA
KLTW	KTAN	Sierra Vista, CA
KRNN	KRAL	N. Little Rock, AR
KRRA	KGRB	W. Covina, CA
KWPA	KTSJ	Pomona, CA
KXPA	KPPC	Pasadena, CA
KYBC	KVRD	Cottonwood, AZ
KYPA	KGFI	Los Angeles, CA
WAHH	WBMS	Wilmington, NC
WJAK	WQCR	Jackson, TN
WMRD	WCNX	Middletown, CT
WPWT	WZMC	Colonial Hts., TN

way. A similar move is planned for KCBS-AM and KPIX-AM/FM. Such consolidations free up cash for groups to purchase still more stations and, perhaps, develop and adopt new technology, like digital audio.

Down and Out

Gone are the days when owning a radio station was referred to as a license to print money. Just ask the staff of WREM-AM. The Houlton, Maine station is off-air again, and this time it looks like it's for good. A format change to rock 'n' roll, long hours by volunteers and even automation apparently weren't enough to keep the 3.7 kW daytime-only station afloat. "The support from the advertising

community just wasn't there," station engineer Tom Barner explained in a Bangor Daily News article sent in by Don Hallenbeck of Pittsfield, Maine. "I couldn't sink any more money into that operation myself. We did the best we could, (but) we simply got tired of it."

Last year was a rocky one for WREM. The station was abruptly taken off the air by Allan Weiner, a representative of the station's owner, following accusations of unpaid bills, mismanagement and theft. Although an interim lease was quickly negotiated and the station resumed broadcasting the next day, it signalled the beginning of the end for WREM. As we reported in May, the station was investigated by officials from the U.S. Immigration and Naturalization Service

for its use of Canadian volunteers. Then in February new management took over.

In the end, it was unpaid bills that forced the staff to pull the plug in early April. The local utility company "was going to come by and yank the meter off anyway, because we hadn't paid the bills," Barner said.

At press time, the fate of WREM was in the hands of Weiner. One possible scenario, according to Barner, has the station becoming a repeater for WEGP, a talk station in nearby Presque Isle.

Double-Dipping?

The National Religious Broadcasters Music Licensing Committee (NRBMLC) has joined forces with the National

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Granted Permits to Construct New FM Stations

AL	Pine Hill	96.7	2.5 kW	
AL	Wetumpka	97.9	3 kW	
GA	Brunswick	90.7	1.5 kW	
GA	Dahlonega	104.3	3 kW	
IN	Winimac	100.1	6 kW	
NC	New Bern	91.9	1 kW	
NY	Grand Gorge	105.3	340 watts	
SC	Murrells Inlet	88.3	500 watts	
SD	Rapid City	95.9	63 watts	(KZZI booster)
SD	Spearfish	95.9	63 watts	(KZZI booster)

Granted Permit to Construct New AM Station

NV	Elko	1340 kHz	1 kW
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Canceled

(New)	Hackettstown, NJ	1580	2 kW/170 watts
KCDI	Oro Valley, CA	97.5 MHz	3 kW
KFMK	Winton, CA	98.7 MHz	3 kW
KNZS	Montecito, CA	880 kHz	
WBNF	Marianna, FL	94.1 MHz	3 kW
WBLX	Jacksonville	1160 kHz	Synchronous transmitter

Seeking Modified AM Facilities

WMMB	Melborune, FL	1240 kHz	Seeks freq. change
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Changed AM Facilities

KLYC	McMinnville, OR	1260 kHz	Increased to 1 kW
WADS	Ansonia, CT	690 kHz	Increased to 3.5 kW/200 watts

Seeking Changed FM Facilities

WDXE-FM	Lawrenceburg, TN	95.9 MHz	Seeks move to 106.7 MHz
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Changed FM Facilities

WWHS-FM	Hampton-Sydney, VA	92.1 MHz	changed freq.
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Restaurant Association and the National Retail Federation lobbies to back a bill in Congress that would eliminate some music licensing fees. Currently, businesses—such as bars, restaurants, department stores and dentists offices—that play the radio as background music, are expected to pay fees to the music licensing organizations ASCAP and BMI, which then pay the royalties to songwriters, composers and publishers. The Fairness in Musical Licensing Act would end that requirement, as well as exempt broadcasts and recordings of religious

services. Religious broadcasters stand to save a substantial amount of money because, according to the NRBMLC, much of their revenue is gobbled up by the fees. And since most religious stations operate on a shoestring budget, controlling overhead can mean the difference between survival and going dark. ASCAP and BMI, however, aren't persuaded. As one BMI official told the industry newspaper *Radio World*, "I can't see what they'd get out of (changing the law) except to make more money."

Business lobbies offer the argument



New wine in old bottles? The WKTU calls are back in the Big Apple 11 years after WXRK shed them. But will they help the former WYNY's ratings? (Courtesy Chris Huber, Long Valley, New Jersey)

that since broadcasters already pay music licensing organizations to use music, requiring businesses to pay too, amounts to "double-dipping." The royalty collectors, however, see it differently. In its bi-monthly newsletter, *ASCAP Playback*, ASCAP countered, "Business owners must pay to use your copyrighted music. That's only fair. They play your music because it adds value to their businesses." Elimination of licensing fees, ASCAP told its members, would allow businesses to "profit at the expense of your creative efforts and those of all ASCAP members across the country." At press time, the bill was stalled in committee, and its chances of passage looked dicey.

In Brief

Call it urban renewal. Some two months after dropping country music and its WYNY call, New York City's WKTU has seen its audience share go from 1.9 to 3.4 under a new format of disc—er, that is, urban rhythmic dance music. "New Yorkers have been crying out for a mass-appeal radio station that feels good," WKTU's general manager told *Broadcasting & Cable* magazine. Across town, WPAT-FM has seen its share grow to 3.3 from 2.3 after its new owner revamped it with Spanish-language programming aimed at the growing Hispanic population in the New York metro area.

In the offbeat world of The X-Files,



Power to the people—1.5 kW, to be exact. KZUM serves Lincoln, Nebraska, not only through its programming, but also by supporting community activities such as "The Hip Hop Luv Jam" dance benefit. (Courtesy Jon Heckman, KBORXF, Lincoln)

down is often up. So it was no surprise when the cult-hit TV series chose the top end of the AM band as part of its takeover of the "underground airwaves." Fox TV this spring promoted its sci-fi show with a billboard, equipped with a 100 mW transmitter, at a busy intersection on Hollywood's Sunset Boulevard. Motorists were told "The truth is out there. Turn to 1610 AM on your radio . . . NOW," where they could hear continually-looped soundbites, music and "hidden messages," reports *Broadcasting & Cable*. "We thought there

was something very 'X-Filian' about taking over underground airwaves not regulated by the FCC to spread the show's messages of 'the truth is out there' and 'trust no one,'" a Fox official told the magazine.

Thanks

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BY DON SCHIMMEL



YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

Globe Wireless Helps Put Vessels in the Pacific Ocean in Touch Via E-Mail Systems

Globe Wireless has acquired the former VOA Dixon Relay Station which is located eight miles southeast of Dixon, California. The site will now be used to connect vessels in the Pacific Ocean with land-based electronic mail systems, including the Internet.

"The history of the Dixon Relay Station goes back more than 50 years. Construction began for the radio transmitting facility at the 640 Dixon site in 1943. The VOA used the Dixon location starting in 1944 to broadcast information and entertainment to shortwave radio listeners in Asia and the Pacific. Until 1963, the National Broadcasting Company (NBC) operated the site under contract to the U.S. government. Transmissions from the Dixon Relay Station ceased in 1983.

The VOA used three Collins 150 kW transmitters and two General Electric 100 kW transmitters when the facility was operational. Still remaining on the site are two massive dipole curtain arrays and 10

rhombic antennas, most still in operating condition. Skeltons of the GE and Collins transmitters also remain.

Globe Wireless plans to install transmitters and antennas for its maritime public coast stations KFS at the new site. The current KFS transmitter location in Palo Alto, California will be phased out of operation over the next few years.

According to company officials, Globe Wireless may also relocate the transmitters for public coast station KPH to the new Dixon location. Transfer of that station's license to Globe Wireless from MCI International is pending FCC approval. The MCI station currently transmits from Bolinas, California.

Aeronautical Radio, Inc. (ARINC) will sub-lease space at the Dixon site from Globe Wireless. ARINC is installing transmitters to communicate with the flight crews of aircraft flying over the Pacific Ocean and South America. Be sure to check out the four photos in this col-

umn that show views of the former VOA Dixon site.

HF Node in Australia

Another announcement from Globe Wireless indicates they will have an HF radio node on the Australian continent. Coastal station VIP, Perth Radio, will enhance the coverage of the Global Radio Network in the Indian Ocean and Far East.

Globe says, "The radio service will be provided and operated by Telstra under an arrangement with Globe Wireless. Telstra will also cooperate with Globe Wireless to market the recently introduced GlobeEmail service in Australia. Using GlobeEmail, ships at sea are now able to easily communicate with shore-based electronic mail networks, including the Internet. A date link from Perth, Australia to the Globe Wireless Traffic Delivery Center in Half Moon Bay, California will allow the exchange of messages and supporting communications."

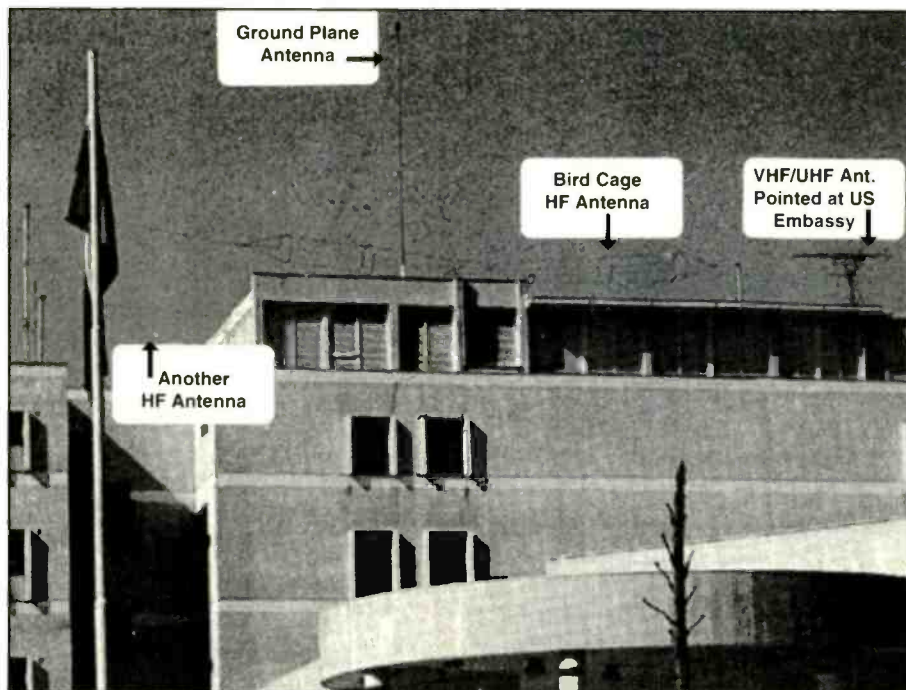
Military News

The list of U.S. Naval Battle Force Changes for 1995 shows another busy year. There were 33 commissionings, 31 decommissionings, five ships transferred to the Military Sealift Command, six ships transferred to the Naval Reserve Force, seven ships/craft transferred to foreign countries and 21 ships were disposed of for scrapping. This information comes from the May 1996 *Proceedings*.

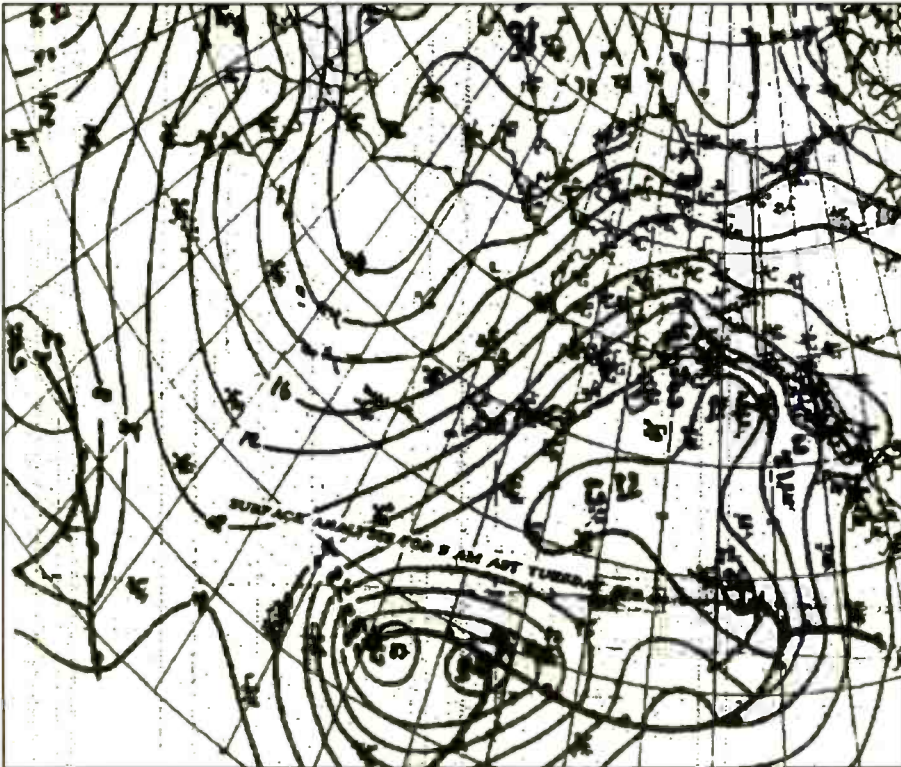
Some readers may have noticed the military exercise activity during this past May 9-19. This was a joint U.S./UK exercise conducted against the fictitious country of Korona. Ed Rausch, NJ forwarded a *USA Today* item which described the exercise.

Here are some new acronyms and designators which might be seen in U.S. military service communications:

AAAV Advanced Amphibious Assault Vehicle



A look at the Russian Embassy, Cyprus. Photo taken by Louis Wheeler, CA.



Ronald Tull, Yukon, Canada copied this wx chart from NOJ, Alaska on 8459 kHz using a DX-440 receiver. His HF antennas are a multi-band Slinky dipole and an inverted V dipole.

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)

ignators in traffic, monitors have also seen references to NATO operations in the Yugoslavia region. Deny Flight is responsible for all air operations over the former Yugoslavia. Sharp Guard is responsible for monitoring and enforcing compliance with UN sanctions that prevent all unauthorized shipping from entering the territorial waters of the Federal Republic of Yugoslavia and all arms from entering the former Yugoslavia. The last one was a joint NATO/Western European Union (WEU) operation, under the overall operational control of the Commander of Combined Task Force 440.

The U.S. operation, Joint Task Force Provide Promise had three missions:

- Providing humanitarian food and supplies to citizens and refugees of Bosnia-Herzegovina through air lift
- Furnishing a medical treatment facility for UN Peace Forces
- Overseeing the U.S. soldiers patrolling and monitoring activity along the border of Serbia and the former Yugoslav Republic of Macedonia.

In addition, the JTF was responsible for tracking all U.S. military forces deployed in the former Yugoslavia, regardless of their status in the UN or with NATO. Under JTFPP was a subordinate operation in the former Yugoslav Republic of Macedonia, called Task Force Able Sentry. TFAS monitors and reports non-UN troop movements along the Serbian-Macedonian border. The source for this information was the June 1996 U.S. Naval Institute's *Proceedings*.

According to the SSB Utility column in the April issue of UK Shortwave Magazine, the UK Search and Rescue system has been consolidated. The Plymouth and Edinburg sites were closed, and SAR operations have moved to RAF Kinloss in Morayshire. The new name is Air Rescue

- ALMDS** Airborne Laser Mine Detection System
- JASSM** Joint Air-to-Surface Standoff Missile
- JPATS** Joint Primary Aircraft Training System

Alphabet soup designators are also used by the United Nations. Here are a few examples:

- UNHCR** UN High Commissioner for Refugees
- UNCRO** UN Confidence Restoration Operation in Croatia
- UNPROFOR** UN Protection Force in Bosnia-Herzegovina
- UNPREDEP** UN Preventive Deployment Force in the former Yugoslav Republic of Macedonia

UNPF UN Peace Forces In addition to observing the above des-



Entrance to the former VOA Dixon Relay Station. The main building is visible in the background to the right of the sign. The sign will soon be replaced.

Coordination Centre Kinloss (ARCCK), callsign "Kinloss Rescue."

The multi-mode transmissions on 16303 kHz continue to be heard. While some of the traffic exhibits definite U.S. Navy procedures, much of it also displays procedures of non-U.S. services. Tom Sevart, KS recently advised us that he is convinced the transmissions are all from just one station which is simulating the operations of a network. Tom also noted the similarity between this activity and the IMSS station he copied this past December on 16172 kHz at 2154, RTTY 57/425. This latter traffic was previously described in our June '96 column.

This month's loggings are:

**UTE Loggings
SSB/CW/RTTY/SITOR/etc.
All times in UTC**

120.9: U/i stn at 2325 w/75 baud transmission. (AB)

122.3: OUA, Danish Navy Stevns in CW at 2320. (AB)

242: Beacon EFK, Newport, VT, 242m, hrd 0633 (AH)

245: Beacon JYL, Sylvania, GA at 0240; Beacon GTP, Thomasville, GA at 0342. (WP)

251: Beacon FW, Fort Wayne, IN at 2244. (RH1)

257: Beacon CEU, Clemson, SC at 0226. (WP)

263: Beacon YGK, Kingston, Ont., Canada at 0338. (WP)

266: Beacon ADU, Audobon, IA at 0442. (RH1)

269: Beacon UDE, Delta Station, Man., Canada at 0427. (RH1)

272: Beacon PIM, Pine Mountain, GA at 0257. (WP)

278: Beacon BST, Belfast, ME at 0645, 229m. (AH)

281: Beacon AJW, Alexandria, MN at 0758; Beacon DEQ, DeQueen, AR at 0435. (RH1)

284: Beacon SCD, Sylacauga, AL at 0239. (WP)

294: Beacon ZIP, Zipsaquirá, Columbia at 0839, 2529m. (AH)

326: Beacon UOT, Union, SC at 0242. (WP)

332: Beacon FIS, Key West, FL at 0919, 1320m. (AH)

338: Beacon TN, Youngstown, OH at 0326. (RH1)

343: Beacon TGO, Good's Lake Narrows, Man., Canada at 0903. (RH1)

344: Beacon CL, Cleveland, OH at 0300. (WP)

349: Beacon APG, Aberdeen, MD at 0810, 288m; Beacon K, Santiago, Cuba at 0844, 1513m; Beacon SF, Sanford, ME at 0657, 133m. (AH); Beacon LE, Raleigh/Durham, NC at 0130. (WP)

350: Beacon NY, Enderby, BC, Canada at 0812; Beacon CZB, Casey, IL at 0241. (RH1)



Rear side view of main building of the former VOA station. The tower on the building was apparently a security feature. Note the high voltage enclosures behind small tree, right of center.

351: Beacon LI, Little Rock, AR hrd at 0300. (WP)

353: Beacon LWT, Lewistown, MT at 0837. (RH1)

363: Beacon RNB, Millville (Muni-Rainbow), NJ at 1350. (Ed)

367: Beacon FVX, Farmville, VA at 0901, 478m. (AH)

371: Beacon GW, Kuujjuarapik, PQ, Canada at 0734, 993m. (AH)

379: Beacon BRA, Ashville, NC hrd at 0325. (WP)

388: Beacon RNW, Chockowinity, NC at 0330. (WP)

395: Beacon YL, Lynn Lake, Man., Canada at 0733, 1687m. (AH)

398: Beacon, IRA, Rutland, VT at 0737, 171m; Beacon TGQ, Elizabethton, NC at 0922, 623m. (AH)

400: Beacon LKR, Lancaster, SC hrd at 0200. (RH1)

405: Beacon AKT, Appleton, WI at 0448 890m; Beacon BVI, Boa Vista, Brazil at 0852, 3138m; Beacon UTX, Jupiter, FL at 0952, 1134m. (AH)

406: Beacon YLJ, Meadow Lake, Sask., Canada at 0825. (RH1)

407: Beacon OX, Ocean City (Municipal—New Landy), MD at 0042. (Ed)

415: Beacon ASJ, Ahoskie, NC at 0900, 481m. (AH)

417: Beacon HHG, Huntington, IN hrd at 0250. (WP)

420: Beacon GAS, Galipolis, OH at 1010, 606m. (AH)

426: Beacon FTP, Ft. Payne, AL at 1013, 923m. (AH)

429: Beacon IKY, Springfield, KY at 0952, 790m. (AH)

444.5: PCH, Scheveningen Radio in CW at 0847 w/tfc list. (AB)

515: Beacon OS, Columbus, OH hrd at 0420. (WP)

518: Beacon GCT, Guthrie Center, IA at 1009, 1198m. (AH)

524: Beacon AJG, Mt. Carmel, IL at 1018, 890m. (AH)

530: Highway Advisory Station WNRZ656, Delaware Dept. of Trans. w/info re routes to use for travel to beach areas. hrd 1355. (Ed.)

1630.7: Swedish Navy Hyper-Fix stns Horvink, Simrishamn, Utlangan at 1340 w/pulse xsms. (AB)

2182: VCO, CCG Sydney, NS, Canada at 0235 w/security annemt re gale warning. At 0329, VCG, Riviere-au-Renard w/ann re Gale warning. At 0415, NMB, USCG Group Charleston, SC w/pan-pan re two flares sighted off coast of GA., req vsls in area keep sharp lookout. All USB. (RB)

2477: LYIL, MV Ostankino in SITOR-A, 100 baud at 2259 w/kg Goteborg Radio. (AB)

2549: U/i (German MOI??) in ARQ-E, 96 baud at 2023. Idling all night. (AB)

2749: VCN, CCG Cap-aux-Meules, Canada at 0634 in USB w/security annemt, wx.gale wrng in FF/EE. (RB)

2841: EBA, Spanish Navy Madrid in CW at 0045 w/Navarea 3 messages. (AB)

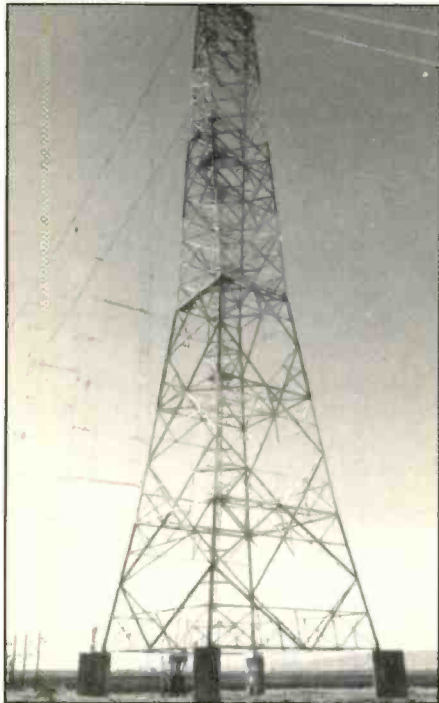
3029.7: German CG Neustadt in SITOR-A, 100b at 1706. Wrkg BG21, Bredstedt w/position report. (AB)

3195.2: SLHFM "R" in CW at 2125. Russian Naval channel mrkr. (AB)

3272.92: MOI Dusseldorf in ARQ-E, 96b hrd at 2130 w/ t/c to police Hamburg (PHVNW). (AB)

3455: New York (CAR_B MWARA) at 0445 in USB w/kg Speedbird 265 rptg level 330; EL AI 1878 w/ATC advisory unable higher due to t/c; CFG? 932 w/selcal ck CM-QR 767 D-ABUE: Speedbird flt w/selcal BD-AG, 747 G-BDXE. (RB)

3840: YHF, Mossad best in USB hrd at 1903. (AB)



One of the three, 340-foot tall supporting towers for the two dipole curtain arrays at the Dixon site. A portion of one array is visible left of the tower.

3940: Hong Kong Telecom at 1015 w/Tubular Bells IS wx for South China Sea Yacht Race. Wx best began at 1030. 1996 was probably last yr for S. China Sea Yacht Race. When Hong Kong returns to Chinese control in 1997, the race probably won't be held. (ER)

4011: NNNONBL, Naval Sub Base, Groton, CT at 0020 in USB w/Armed Forces Day QSO's. (ER)

4179.5: 9HXH4, MV Aleksandr Sibiriyakov in SITOR-A, 100b heard at 2215 w/m.sgs. (AB)

4195: "Swedish Rhapsody" numbers stn in USB at 1800 w/IS sig & 5F grps in GG. (AB)

4300: KEJ, Globe Wireless, Kahalelani, HI at 0515 in SITOR-B w/stn info, tfc list, also at 0715 on new channel 501. (RB)

4396: DAJ, Norddeich, Germany at 0445 in USB w/voice nkr in EE w/sound of ticking clock. Note Norddeich sounds like Nordine in EE. (RB)

4448: Test of u/i Emergency comms netowrk. AAA9CE is net control. AAA9R45X and AAA9M3VI hrd. 9Ce mentions AAA9ED as "director". (FD) My refs do not have callsign ids. (Ed.)

4500: AFA2TR, NCS, USAF MARS, Virginia info net at 0242 in USB wkg AFA2RD, Fairfax, VA w/cck in. (RB)

4560: HMCS Kingston (MCV700) at 2238 in USB wkg Halifax Military w/request for "in-clear" RTTY xmsn due to problems w/crypto gear. This is new mines-countermeasures vsl used by reserves mostly for patrol duty. (RB)

4580: Three note—oddy nbrs stn

(Hungarian Intel?) in AM at 2005. Three-note rising scale IS sig & 5F grps in GG. (AB)

4660: Jammer sig, hops to 4672 and back. Hrd 1915. Stays on each freq between 1.5 and 7 mins. Active all night, every night. (AB)

5474.5: CSY, Santa Maria Air, Azores at 0818 in 50/850 RTTY, w/posn relay for flt AEL 710 on circuit MSA. (RB)

5535: Speedbird 012 to London Radio w/request for medical assistance w/sick passenger. Hrd at 0012. (FD)

5541: Reach 11 to Stockholm Radio advising of one hour, 35 min. delay. Used three-tone selcal. Hrd 0027. (FD)

5541.8: ZOE?, u/i, believed RSA wx stn on Tristan Da Cunha or Gaugh Is. Hrd at 1550 in ARQ-M2. 96/770. (RH2)

5547: Aeroflot 180 enroute to Nwk, reporting in to San Francisco at 0155. (FD)

5598: New York Radio wkg various flights, incl American 56. Hrd LSB at 0326. (SW)

5630: SYN2, Mossad best in USB hrd at 1859. (AB)

5680: Rescue 137 in USB at 1620 w/Kinloss Rescue. Enroute Nottingham. (AB)

5696: USCG 1503 (HC-130H) wkg CMASLANT Chesapeake at 0125 reporting fire in No. 2 engine. USCG 1503: advises enroute to Kinston, NC for emergency landing. At 0139, USCG 1503 advised Chesapeake on deck at Seymour-Johnson at 0141. (CM)

5844: U/i tracking net in USB at 1937. Leader is P9Q. Others hrd are 4SF, 09F, B1W. EE w/FF accent. Track reports. (AB)

6265: 7TJC, LNG/LPG carrier Mourad Diduvche hrd at 0735 in SITOR-A wkg 7TK24, Boufarik Radio w/tlx re ETA Rade Arzew. (RB)

6267.5: KRGC, US flagged catamaran tug Francis Hammer at 0553 in SITOR-A w/BBXX wx obs, login 11117 KRGC. (RB)

6434.4: Royal Navy at 1509 in RTTY 100b w/Fleet bcsts. (AB)

6460: UFZ, Vladivostok, Russia in 50b RTTY w/msg in RR at 1101. (TY)

6496: HCS, Halifax in USB at 0213 w/wx FAX. (SW)

6550: PBK, Dutch Kustwacht (Coast Guard), Ijmuiden, Holland at 0518 id'ing as "Coast Guard Center in EE wkg Coast Guard 03 adv u/i callsign is on UHF only. At 0526 Coast Guard 03, Dutch Kustwacht a/c, att work PBK, no joy. Both in USB. (RB)

6559: Sprinbok 281 to Johannesburg at 0210 w/request to change flt lvl. (FD)

6604: New York Radio w/automated wx info in USB at 2210. (SW)

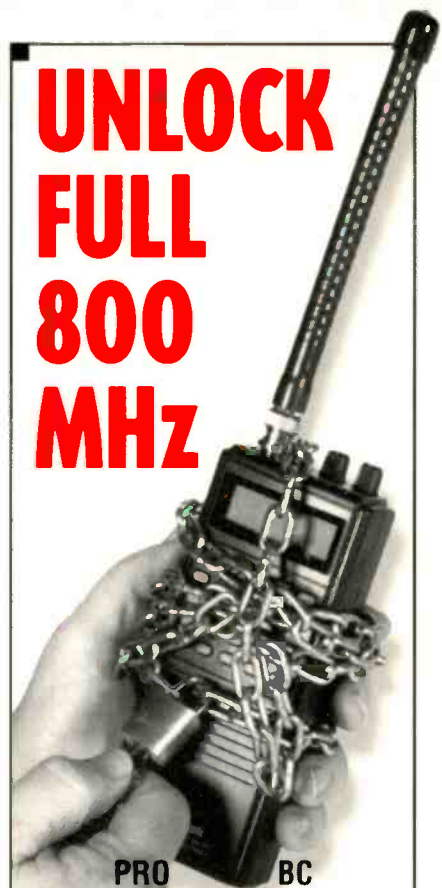
6628: U/i xmsn w/mention of Charlie Foxtrot Lima & flt lvl 370. USB at 2211. (SW)

6649: Panama Radio at 0530 in USB wkg Japan Air 64 w/0530 posrep at FL 370, 0609 est. (RB)

6660: SYN2 (Mossad) best in USB hrd at 1901. (AB)

6683: SAM 376, USAF Special Air Mission a/c at 0536 in USB wkg Andrews VIP w/pp Andrews meteo, wx Budapest 0735, pp State Op's re landing clearance. (RB)

UNLOCK FULL 800 MHz



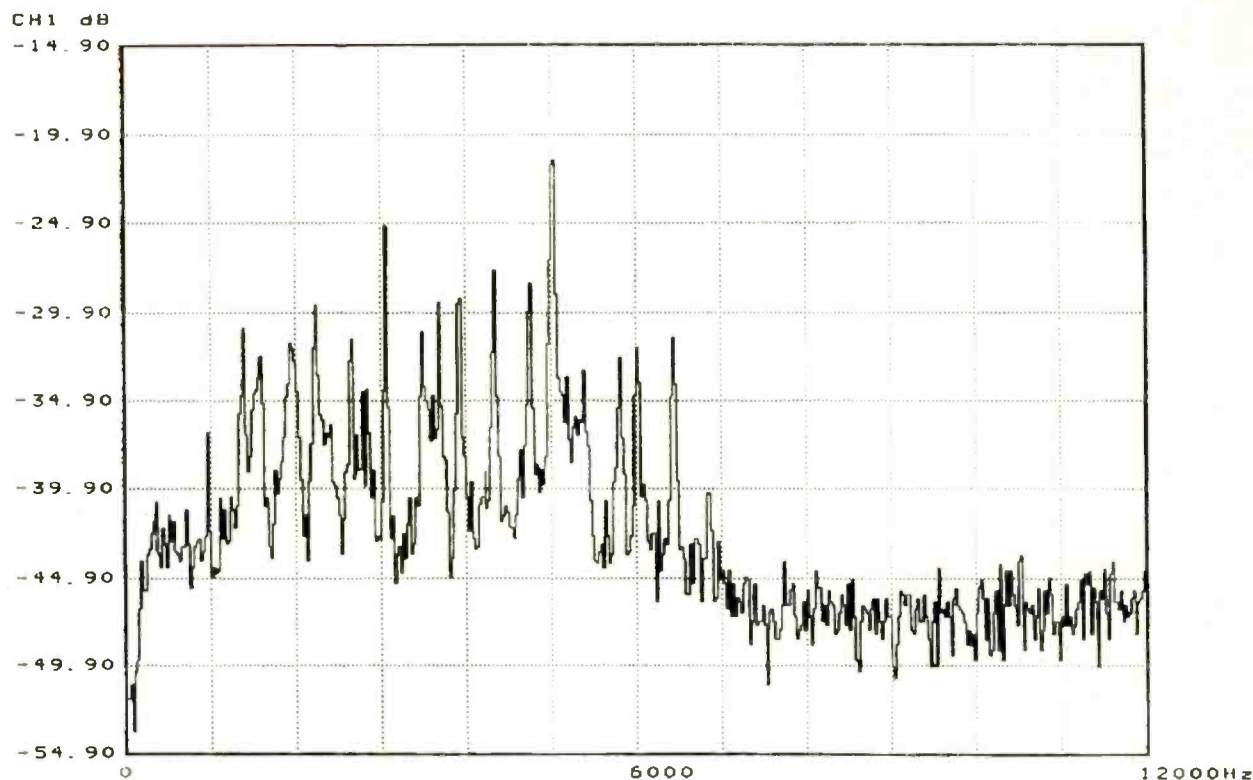
PRO	BC
23	200
26	205
29	220
34	700
37	760
39	855
43	860
46	890
51	2500
2004	3000
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SPECTRUM ANALYZER CH 1



Kevin Tubbs, VT copied this signal and provided the analysis. The signal was on 9403 kHz, USB, VFT-f15a.

6779: DRAT, FGS Emden (F-210) hrd at 0020 in USB, German Navy Frigate, concluding RTTY run w/DHJ59, Wilhelmshaven Naval. (RB)

6780: Extremely powerful carrier from 6775 to 6785 kHz. Then female voice w/5F grps. Ends 0225. Never heard again this frequency. (FD)

6978.7: RFTJF, French Forces, Port Bouet, Ivory Coast at 0235 in ARQ-E in 48/425 idling. (RB)

7535: SESEF (Ships Electronic Systems Facility) Norfolk, hrd following: NYKN, USS Yorktown (CG-48) at 1549 w/test of HF xmtrs. At 1615, NBRK, USS Arleigh Burke (DDG-51) w/URT-23 HF rx cks. At 1655, NIEY, USS Bold (R-AGOS-12) clg/wkg SESES re req they go green and into ANDVT. Primary mode is USB. (RB)

7586: RFVITT, French Forces, Dzaoudei, Mayotte Island in 96 baud ARQ-E idling at 1510. (TY)

7720: Extremely loud jammer heard at 1608. (AB)

7784: KAWN w/aviation wx (various formats) in RTTY, 75b at 0108. (SW)

7831.7: 5ST, ASENCNA Antananarivo (FMMI) at 0452 in ARQ-E3, 48/397 w/Metar codes, miles off freq! (RH2)

7918: FYH (Mossad) bcst in USB hrd at 1600. (AB)

8080: USN, Norfolk, VA at 0126 w/wx FAX. (SW)

8142: OLX, MOI Prague in USB at 1600 w/msg to 288. (AB)

8367.6: COLD, F/V Pargo at 2201 in CW, Cuban tuna trawler clg CLA, Havana for sev mins no joy. (RB)

8383: SZMK, M/V Chios Beauty, Greek flagged bulk carrier at 2316 in SITOR-A w/kg SVU for tfc. QRU. (RB)

8412: NMF, COMMSTA Boston, MA at 0152 in FEC mode w/maritime info & notices to fishermen. (SW)

8412.5: UWGP, Ukrainian refrigerated carrier TR Vilgelm Pik (Wilhelm Pieck) at 2340 in 50/170 RTTY w/long list of parts needed from Chief Engineer & Master KMD Teterin to Murmansk Radio. (RB)

8494.9: SLHFM "S" at 1923. (AB)

8495: SLHFM "C" at 1923. (AB); SLHFM "F" at 1223. (TY)

8646: FUJ, French Naval, Noumea, New Caledonia in 75b RTTY w/testing RYs at 0755. (TY)

8677.5: UGC, St. Petersburg, Russia at 1539 in SITOR-B 100b w/nx. (AB)

8819: Amtran 5038 to Rainbow Radio reporting No. 2 and 3 left spoilers jammed four to five inches high. Rainbow contacts Philadelphia who advises 5038 to continue to Philly for repairs. Hrd at 1554. (FD)

8918: HPIYC on ground at Santa Maria at 0000 w/Panamanian national requiring immediate medevac for poisonous snake bite. Sigs lost at 0036 due to electrical storm. (FD)

8992: AAIE, USAV Churubusco (LCU-2013) at 2239 in USB w/kg MacDill GHFS w/pp AAC2, Harbormaster, Ft. Eustis, VA re posn/status report. (RB)

9379: 3BZ, Plaisance, Mauritius at 0509 in ARQ-E3 48/849 w/aero tfc. (RH2)

10215: HZN48, Jeddah Meteo, Saudi Arabia in 100b RTTY w/wx coded tfc hrd at 1416. (TY)

10423.5: YMA20, Ankara Meteo, Turkey in 50b RTTY w/RV & ID test tapes hrd at 1315. (RY)

10555: AXI34, Darwin meteo at 1939 w/FAX 120/576 w/poor chart. (RH2)

10600: XVN37, Hanoi, Vietnam in 50b RTTY w/nx in EE at 1510. (TY)

10872: SLHFM "F" & "K" at 0955. (TY)

11080: YKP28, Damascus, Syria in 50b RTTY w/nx in AA at 1430. (TY)

11270: Russian Man number stn in USBS heard at 0820. Msg for 615. Msg 81563, 00000. (AB)

12480.5: AQPM, M/V Delta Peace, Pakistani grain bulk carrier, at 1621 in SITOR-A w/tlx re est cargo discharge time of 48 hrs, login 29519. (RB)

12569: YLFR, TSM Milgravis, at 1533 in

50/170 RTTY admin tfc to Riga Flote Egorovu from Master KM Smirnov, also sends tfc to Riga from TLFB, LM-7552, RTMS Aitsynayams. (RB)

12603: Lincolnshire Poacher nbr stn in USBS at 1900. Msg id 05933. 5F grps// 9251 & 7337 kHz. (AB)

13017: TCBR, Yavuz Sultan, Turkish cargo ship in 75b RTTY rptng "DETCBR TO 78, 11 QSL" at 1050. (TY)

13965: AAZ, Fort Huachuca, AZ in USB at 0030 w/Armed Forces Day split freq QSO's w/hams. (ER)

14441.5: NNNOCOW, USS Trenton (LPD-14) at 1529 in USB wkg NNN0JHR, private shore stn in S. Texas, advises too weak for pp trf. (RB)

14487: YL/EE in USB rptng 5F grps at 1210. (TY)

14639.7: KPL, Vientiane, Laos in 50b RTTY w/nx in EE at 0950. (TY)

14912.5: SOO291, PAP, Warsaw, Poland in SITOR-B w/Polish nx and tfc list hrd at 1350. (TY)

14890: Russian Man nbr stn in USBS at 0800 w/msg for 615. Msg 89513, 82403. (AB)

15682: Lincolnshire Poacher nbr stn in Am at 1600 w/msg id 04899, 5F grps in EE. (AB)

15855: SNN299, MFA Warsaw, Poland at 1144 in POL-ARQ 100/132, unable to decode.

15970.5: KKN50, MFA Washington in CW at 1211 w/mkr id. (RH2)

16014.4: RFFIC, FF Paris w/5L grps to RFVICPL (French ship Champlain at Reunion). ARQ-E3 100/397 at 1055. (RH2)

16120: MFA Berne w/5L grps in SITOR-A at 1229. (RH2)

16149.7: U/i w/Piccolo, at 1107, unable to decode. (RH2)

16796.1: UCBZ, Sovship RTMS Atoll at 0840 in RTTY 50/170 w/fish catch report to Novorossisk. (RH2)

16802.6: EMET, Sovship Eugeny Polkov at 1250 in RTTY 50/170 w/Kerch. (RH2)

16808: SPA81, Gdynia Radio, P91 and at 1450 in SITOR-B w/tfc list. At 1510, wkg M/S Ocean Trader in SITOR-A w/Polish telex traf. (RB)

16810.5: FFT81, St. Lys hrd at 1308 in SITOR-B w/gale warning—force 8 NW of Corsica. (RH2)

16824.1: FM Montemar/Montevidео to Master CV Angela/V2WG via Portishead. Hrd at 1015 in SITOR-A. (RH2)

16930.4: 9MR, Malaysian Naval, Johor Baharu, Malaysia in 50b RTTY w/5L grps at 0245. (TY)

17074.4: LGX, Rogaland Radio Norway at 1400 in CW w/tfc list. (AB)

17139.1: U/i at 0815 in RTTY 96/856, crypto, good sig. (RH2)

17499: YL/EE musical numbers stn (Lincolnshire Poacher) rptng 5F grps at 1020 in USB. (TY)

17590.4: HZN49, Jeddah meteo at 1100 in RTTY 100/821 w/World NOTAMS in EE. Very interesting. (RH2)

8280 Sheldon Road
Post Office Box 777
Channelview, Texas 77530
Telephone 713 452 8888



March 29, 1995

Dear Mr. Jackson:

Thank you for your letter reporting the reception of information broadcast over our low-power AM radio station at 1620 KHz. This station, WPAM 217, is licensed to the Channelview (Texas) Volunteer Fire Department and is owned and operated by Lyondell Petrochemical Company and ARCO Chemical Company, both of whom operate chemical facilities in Channelview, Texas, just east of Houston.

The system is a 10 watt low-power AM station manufactured by Information System Specialists (ISS) of Zeeland, MI. We utilize a 15-foot omni-directional antenna. Our signal range is generally 2.5 miles.

The station went into service in 1993 as part a Community Alert System developed by Lyondell and ARCO Chemical for neighbors living near the two company's chemical plants. I have enclosed a flier we produced for our neighbors to introduce them to the system. To give you a brief overview of our operating philosophy, should a major emergency occur at one of our plants requiring action by the public, sirens would sound alerting residents to tune a radio to 1620 AM for information from either company. By providing prompt information through these broadcasts, we hope to reduce some of the concern of our neighbors might have should an emergency situation arise. At other times, the station re-transmits weather reports from the National Weather Service.

We also use the station for information about abnormal operations at our facility (such as flaring from our 550-foot flare stacks, unusual noise, odors, etc.). Perhaps you heard one of these messages as well as our station ID. The complete text of the station ID message, broadcast every 1/2 hour, is as follows:

You are listening to Alert Radio 1620 AM, WPAM 217, the Channelview Area Community Alert System of ARCO Chemical Company and Lyondell Petrochemical Company. Alert Radio 1620 is licensed to the Channelview Fire Department and broadcasts on an assigned frequency of 1620 kilohertz AM from 17617 Wallisville Road in Channelview. Alert Radio 1620 is provided as a community service to area residents by Lyondell and ARCO Chemical to provide public information in the event of non-routine plant operations. At other times, this station will retransmit local reports from the National Weather Service.

Gary Jackson, CA received this very informative QSL letter in response to his reception report of WPAM217.

18046.7: Portugese Embassy, Kinshasa at 1536 in SITOR-A w/urgent tfc/pp for MFA Lisbon. (RH2)

18324.9: CLP44, Cuban Embassy, Harare at 1520 in RTTY 50/195 w/tfc in SS to "Enconomico Minrex". (RH2)

18966.7: RFHJ, French Forces, Papeete, Tahiti at 1900 in ARQ-E3 96/425 idling on circuit HJL. (RB)

19053.4: U/i at 1320 in RTTY 75/823, crypto, often hrd, any clues chaps? (RH2)

19747.7: 6VU79, Dakar Meteo at 1308 in RTTY 50/369 w/wx codes. (RH2)

19980: 9BC33, IRNA, Teheran, Iran in 50b RTTY w/nx in EE at 1037. (TY)

20083.2: ISX20, ASA Rome at 1506 in RTTY 50/244 w/nx in EE. (RH2)

20179.8: RFFA, MOD Paris at 1503 in ARQ-E3 100/369, idling. (RH2)

20286.5: SOV288, PAP Warsaw at 1500 in SITOR-B w/nx in Polish. (RH2)

20304.7: Egy Emb, Kinshasa at 1259 in SITOR-A w/tfc in AA for MFA Cairo. (RH2)

22399: A9M, Halmal, Bahrain in SITOR free sig CW ID at 1257. (TY)

22461: FUJ, French Naval, Noumea, New Caledonia in 75b RTTY w/RYS and ID at 0625. (TY)

Here are the contributors for this month: AB—Ary Boender, Netherlands; RB—Richard Baker, OH; Ed.—Don Schimmel, in Delaware; FD—Fred Dodge, NY; AH—Al Hemmalin, RI; RH1—Russ Hill, MI; RH2—Robert Hall, South Africa; CM—Charlie McAtee, WV; WP—Walt Petersen, FL; ER—Ed Rausch, NJ; SW—Sue Wilden, IN; TY—Takashi Yamaguchi, Japan. Our thanks to all. ■

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The Loose Connection

RADIO COMMUNICATIONS HUMOR

Turn Your Head and Quack

The funniest thing I could find this month is, unfortunately, true. It's also wackier than anything Dave Barry has found since he set his underwear on fire, and I'm not going to pass up my shot at a Pulitzer Prize.

An \$8.95 magazine that says right on the cover that it's a "scientific quarterly review" ran an article by a health care professional who is experimenting with a therapeutic device he reportedly made from (eat your heart out, Dave—I'm not making this up) a CB radio and a 140 watt linear amplifier.

The scientist-author radiated 140 watts of RF energy for two or three minutes in a closed auditorium and reported that some (but not all) people from the audience reported relief of pain. We assume that having pain was not a prerequisite to attend the presentation. Our experimenter used an argon-filled quartz tube in place of an antenna. It's still a wonder he didn't burn the fluid in his own eyeballs while he tried to cure the audience of things they didn't even know they had.

It sometimes takes me three or four tries to diagnose a burned out light bulb, but I could spot the flaws in this article from the wing seat of a 727 approaching Heathrow on instruments. The man's biggest breakthrough was that he used an antenna tuner to achieve a low SWR, thereby allowing more power to reach the "plasma tube."

The article said many electronic therapeutic devices using the "phenomena of resonance" have been developed since 1920, and many were found to be quite effective against a variety of complaints. (The author didn't say *who* found them effective against *what* complaints, or *why* the machines were no longer available if they really were "quite effective," but it sounds to me like that pesky old FDA is up to no good again.)

It bothered me that no article in the entire issue ever once used the term "double-blind-study," but in the interest of promoting amateur medical experimentation with high levels of RF radiation, the magazine does offer plans for the author's gadget, "... so you can construct your own device and experiment with it." The plans sell for \$25. The author also mentions a 12 V version of the device to treat people in poverty-stricken areas with no electric-

ity, going on to imply that many people can be sort of "gang-treated" by folks like you and me in times and places where medical professionals are scarce. I no longer question the need for the FDA.

Some of the author's scientific wizardry leaked out when he described the first such device, made in 1920, as a "very weak transmitter using a two-tube transistor circuit" (yes—you read that right). If the publishers of the "scientific quarterly review" wanted to save the man some embarrassment, they could have at least reminded him that the transistor was invented some 28 years *later*—assuming they knew that. Meanwhile, the real scientific community is still out on the harmful effects of far less RF energy than this guy's using to turn an auditorium into a 27 MHz radar range to simmer his audience, whether they need it or not.

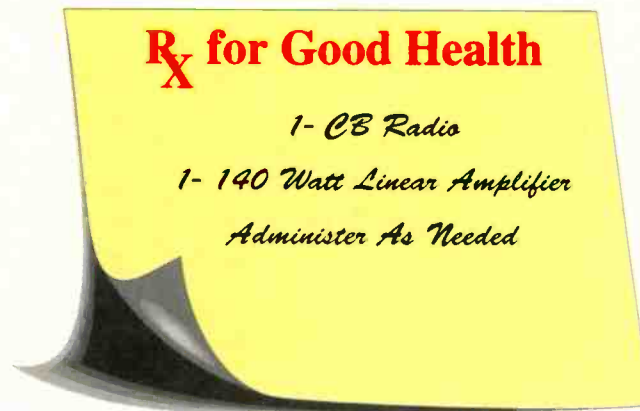
I wonder if the author's linear amplifier is type-accepted by the FCC, or if 140 watt CB linear amplifiers are available for bona-fide or pseudo-medical research. When the author thought that wider bandwidth was necessary to use the harmonics present in the square-wave modulation (which he's sure is the healthiest kind) he used the scientific technique of overmodulation to get the wider bandwidth. Really. Overmodulation. Are you manufacturers reading this? Crank up that audio and heal! (In all my years of reading Pop'Comm, I never remember reading about anyone turning a CB radio into a bio-medical device.)

What's this? A memo from our Editor, Harold "Snake Oil" Ort, suggesting that

I begin researching a few articles on "Holistic CB Operation," "Sharpen Your Antenna (and your RF Acupuncture Skills)," and "Keep Your Standing New-Wave Ratio Low." I've really got to call Dr. Safety just in case anyone tries removing bunions with a loop of RG-8 and some Bag Balm. Dr. Safety and I spend all that time warning our readers that amplifiers can radiate dangerous amounts of RF energy and then some bonehead tries to cook himself and his audience in a "gang-heal" for diseases they didn't even know they had! I've certainly used up more than my share of exclamation points this month!

Dr. Safety reminds you that even in light of the great conspiracies underway to suppress the therapeutic value of overmodulated CB radio waves, *you must not be tempted to give yourselves an RF burn (or worse) in the name of scientific experimentation.* I know that we've seen warning labels on damned near everything, but I now expect 1996 will be the year in which the disclaimer, "Not a Therapeutic Device" first appears on CB radios.

Just to hedge my bet, I'm heading for New England where my friend Norm has a brand new Kilowatt AM ham transmitter I can borrow. I'm gonna rent Madison Square Garden, fire that puppy into a bank of florescent lights and offer a "gang-healing" for whatever ails my audience. I figure at \$200 a head I can pack the house with desperate people, and as a no-charge bonus, the folks in the first 50 rows will get a tan like Richard Dreyfus got in *Close Encounters*. ■



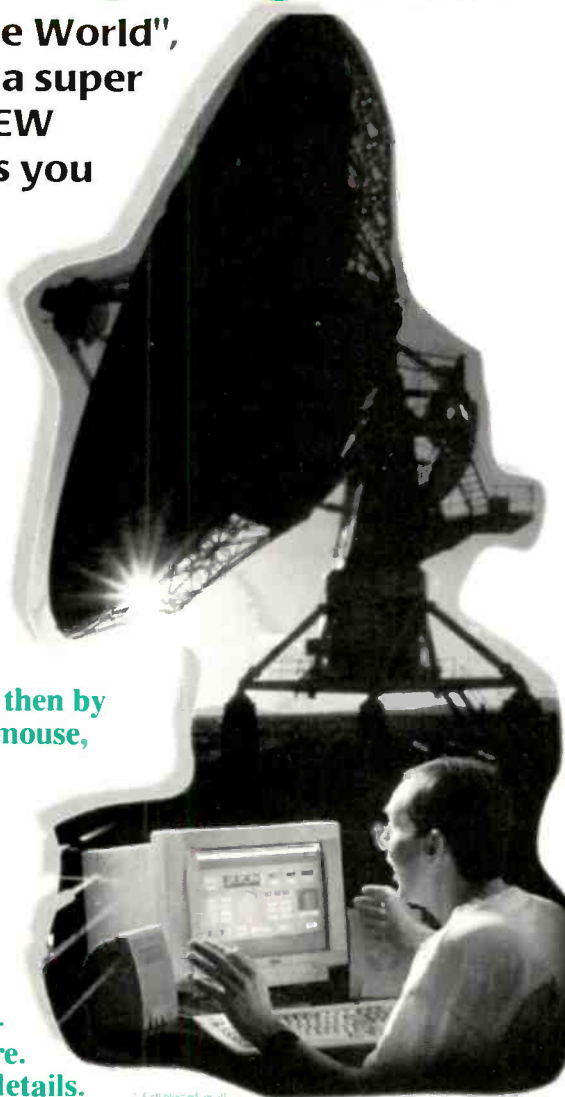
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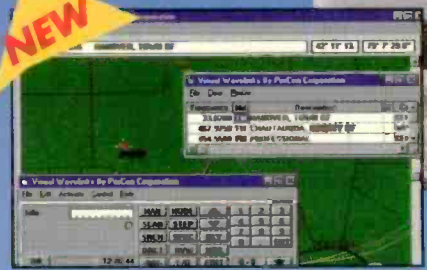
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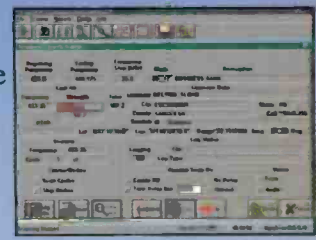
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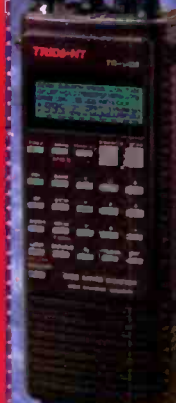
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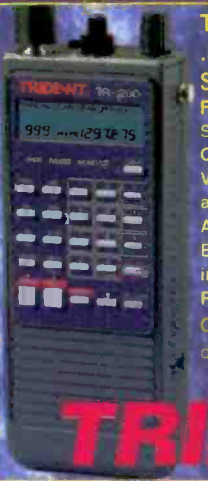
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scantastic!

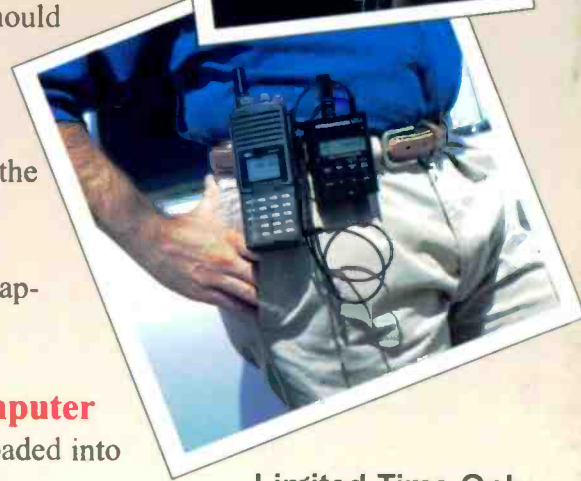
with a **scout** frequency recorder, **nothing** transmits unknown.

You're driving down the road, you see 2-way communications taking place. **Now What?** Using your scanner you would have to take an educated guess as to what frequency to start scanning, and chances are you would never be able to capture the signal in time. **Problem Solved.** With the Scout just turn it on and frequencies from 10MHz-1.4GHz are captured in less than ten milliseconds, and record up to 400 frequencies in memory. Recorded frequencies are not duplicated, as the Scout will keep track of the number of hits per frequency.



Why Do I Need A Scout?

An intelligent question that every scanner owner should ask themselves. At the Races, a Sporting Event, Air Show, Ham Fest, Crime Scene, Etc. The Scout will capture unknown signals off the air so you can manually program them into your scanner. Or, use the Reaction Tune® function. The Scout automatically tunes your AR8000/AR2700 or ICOM R7000/7100/9000 to the frequency it captures in less than ten milliseconds.



U.S. Patent No. 5,471,402

Store Frequencies In Your Computer

All the Scout memories can be downloaded into your PC using the optional Optoelectronics OptoLinx and checked against the Spectrum FCC database. Now you can keep track of all the activity along your scanning journey.

With The Scout Frequency Recorder, Nothing Transmits Unknown.



DB32

Limited Time Only

\$449

Includes, Scout, DB32 antenna
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