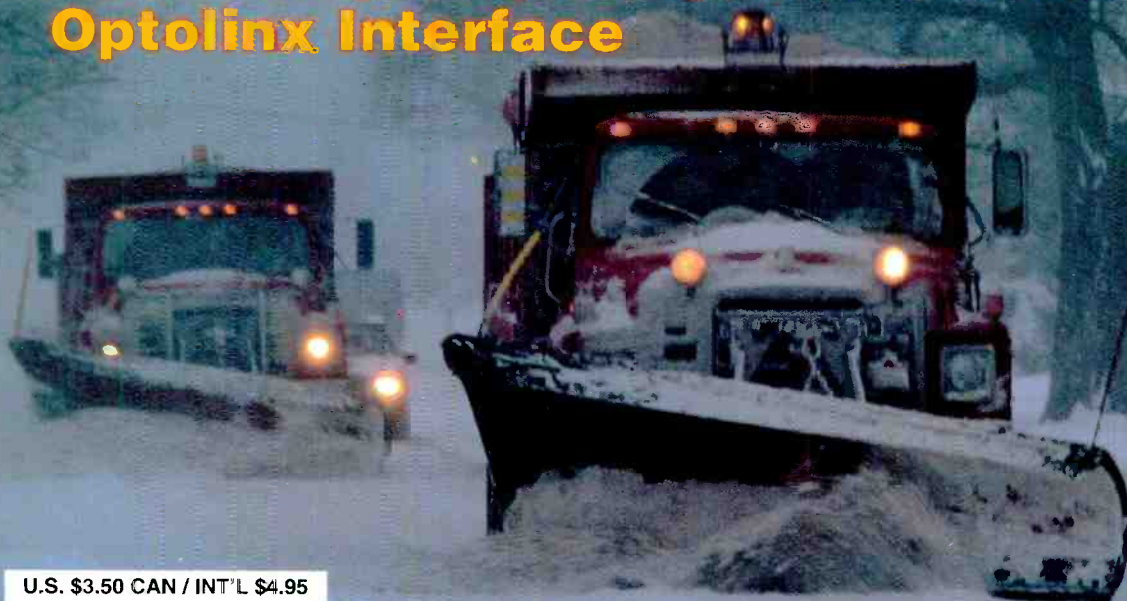


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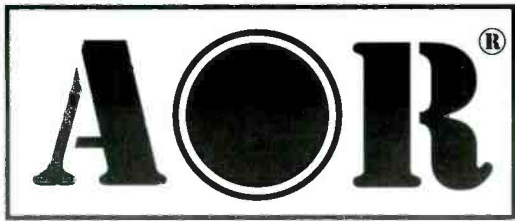
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POPULAR COMMUNICATIONS

JANUARY 1997

VOLUME 15, NUMBER 5



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ON THE COVER: Tune in to some interesting comms this winter. Listen for snow plows and road crews. Find out more about where to listen in Chuck Gysi's feature "Caught in a Snowstorm . . . In Your Shack!" on page 16.



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Ken offers some insight about what might be happening in CB radio as we leap forward into the next century.

By Ken Collier, KO6UX/SOCAL 2775

Caught in a Snowstorm . . . In Your Shack!

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This winter, from street maintenance to auto emergencies, you can tune in to some of the excitement outside from the warmth of your shack.

By Chuck Gysi, N2DUP

The Old CB Shack

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Learn what it takes to resuscitate an old Polycomm II . . . and stay tuned . . . as Don teaches you how to bring new life to yesterday's rigs in a new bi-monthly column.

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Tuning In

AN EDITORIAL

BY HAROLD ORT, N2RLL, SSB-596

Caught Between Hoboken and a Hard Place

Every once in a while we all get caught between a rock and a hard place. You recognize it when it happens; you put the check for the phone company in the electric company's envelope, and now both of their fingers are on the "off" switch.

Or maybe you've decided to put up an antenna and install a new CB or ham rig, when the neighbor across the street suddenly has squiggly lines on his TV. Hopefully you're operating to the letter of the FCC's rules—until it's proven otherwise—when you're confronted for causing the interference.

Now, we're all human, or so you'd think. Treat Ronnie Radio Operator like a dog and he'll likely bite. But, be courteous and respectful and you can remain friends as you both correct the problem—real or imagined.

The FCC's rules are pretty straight-forward: CBer or ham operators are to operate legally and resolve interference complaints without resorting to coax-cutting, kidnapping the operator's mother-in-law or worse yet, continuing to operate with impunity, thumbing your nose at your neighbors, the law, and other operators. Since you can't—or shouldn't—do these things, you look for alternatives; possibly locating and buying appropriate filters for your neighbors and installing a filter on your transceiver, if necessary. Hopefully you'll engage in an on-going dialogue with one goal in mind—to allow you to continue to operate your transceiver, and to give your neighbor the right to enjoy interference-free TV or music.

Let's face it though, consumer electronics shouldn't pick up RF signals in the first place, but all too often they do, and when they do, you might be between a rock and a hard place. If you're a ham operator and your spurious emissions are causing interference, the FCC can impose "quiet hours" on your station, not permitting you to operate between 8 and 10:30 p.m. daily and on Sunday from 10:30 a.m. to 1 p.m. local time. Thankfully this doesn't happen that often be-

cause most modern transceivers are well within the limits of spurious emissions set forth by the FCC.

For CBers, the FCC's CB Rule 23 says if your CB station is causing interference, "... you must follow instructions in the official FCC notice. (This notice may require you to have technical adjustments made to your equipment.) (b) You must comply with any restricted hours of CB station operation which may be included in the official notice." Of course this is assuming you're not operating a kilowatt on 11 meters, which we all know is illegal in the first place!

"You don't have to be Colombo or Perry Mason to see the holes in this one!"

Since all the mountains of rules and regulations governing our radio operation and the radio spectrum itself are federal, just how do cities and towns across America fit their two cents into the picture when a local resident is suspected of causing interference? They really don't—or more correctly, they *shouldn't*. Case in point: Last summer, a resident of Hoboken, New Jersey was sent a rather harsh letter from the city's zoning officer, that said, "An inspection on this date at the above referenced premises, confirms the use of an antenna and CB radio in your apartment that seems to be interfering with phone lines and TV reception in the area. You are hereby ordered to cease use of the CB upon receipt of this letter or furnish to this office a copy of any approvals that you have received from the FCC with regard to this problem. If you fail to respond to this notice within 30 days, a summons will be issued on a daily basis for violation of the zoning ordinance."

Whew! You don't have to be Colombo or Perry Mason to see the holes in this one! And after personally contacting the zoning officer, there's even more. The "inspection" was, according to him, the result of hiking up the fire escape "...

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

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we saw the coax going from the roof to the apartment and we could see the CB radio in the window where the coax came in . . ." he stated. He told me the operator in question was very indignant and didn't allow him into the apartment when they went to the door. While this may be, can anyone be certain the radio seen through the window was a CB transceiver?

And just how did the "inspection" "confirm the use of an antenna and CB radio?" Was the operator actually at the controls using the rig? What official was making a field measurement at the time for later use as evidence?


Has anyone told cities like Hoboken that a CBER doesn't NEED any "approvals . . . from the FCC." Federal licensing of

CB operation stopped many years ago. The zoning officer, probably not unlike many other city officials, said he didn't know that fact. He did say that " . . . if you're creating a problem in the area, I certainly feel that an initial letter might be less of a harsh step than calling in the FCC on the guy." I was still baffled. What was the basis for the letter? If this operator persisted (which, apparently he didn't) what hat trick would Hoboken pull? Something I'd never expect. The zoning officer faxed me a copy of Zoning Codes and said that he was able to, under Section 196-49 "Standards to be Enforced," see in part "A" where the operator was in violation. It reads (please brace yourself for this one, grab a cold one, sit down or lean comfortably against the wall) "No activity or use shall be permitted in any district, unless such activity or use complies with the following standards: A. Air, water and environmental pollution. No use shall emit heat, odor, vibration, noise or any other pollutant into the ground, water or air that exceeds the most stringent applicable state or federal regulation . . ." Not to worry, I explained that an RF signal doesn't cause pollution—neither air nor water! Congress has preempted any concur-

“ . . . I explained that an RF signal doesn't cause pollution—neither air nor water!”

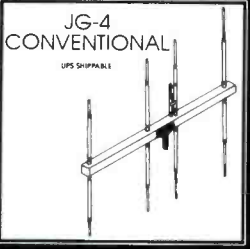
rent state or local regulation of radio interference pursuant to the provisions of the Communications Act [See 47 U.S.C. § 302 (a)]. Simply put, the federal law, according to the ARRL "provides explicitly that the Commission has exclusive authority to regulate radio frequency interference (RFI). In its Conference Report No. 97-765, Congress declared: The Conference Substitute is further intended to clarify the reservation of exclusive jurisdiction to the Federal Communications Commission over matters involving RFI. Such matters shall not be regulated by local or state law, nor shall radio transmitting be subject to local or state regulation as part of any effort to resolve an RFI complaint."

Pretty much to the point, I'd say, wouldn't you? Maybe we just enlightened a few local communities like Hoboken, so you won't be put between a rock and a hard place. At least Hoboken didn't cite Item "B" which talks about "Storage and Waste Disposal." On second thought, maybe they should have. ■





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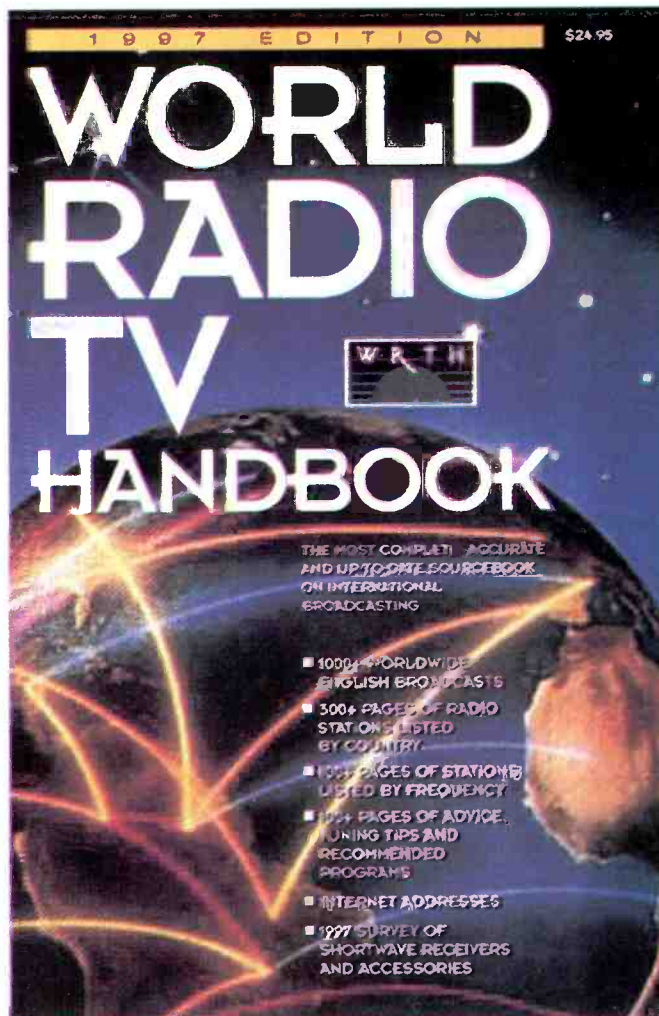
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Ancient Modulation?

Dear Editor:

In his article "CB—The Service That Technology Forgot" in the November issue, Bill Pasternak is correct when he states that AM modulation is old technology that should be phased out. A few amateurs use it for nostalgia. AM suits aircraft use because of their high altitude and controlled operation. For everyone else, AM stands for ancient modulation. So why should any CB manufacturer still sell AM equipment and what are the alternatives? Good questions.

Like so many others involved in CB, Bill has his heart in the right place, but his sights are pointing in the wrong direction. Bill and others should understand that the main goal of Citizens Band radio in the mind of the vast general public is to obtain highly dependable, high quality communicating ability with similarly radio-equipped people. It is not meant to be a substitute for a person-to-person cellular phone or any other telephone. It's one thing to phone for a tow truck. It's another thing to talk to the tow truck at the side of the road. The main public body of citizens abandoned CB when it failed their expectation. It still fails their expectation. However there still remains a void to be filled. What's to be done to convince them to come back?

To shift the entire operation to SSB would be a serious error. SSB has many advantages in its favor, spectrum and power efficiency among them. SSB has a distance advantage. However, pleasant

sounding, reliable local area communications suitable for the mass general public is not an attribute. Put five SSB stations on a frequency and at least one of them will sound slightly off frequency. Most of them will not sound totally natural and static remains a problem. It's great for the military.

In the public's mind, SSB factors, such as working a distant station or spectrum/equipment efficiency are not factors in the equation. They want a natural quality sound, free of static and interference with a feeling of reliability. They want a sharp positive squelch action which is not always available with SSB. They want the ability to selectively block some signals and pass others, plus a host of other modern state-of-the-art features. They also want some control over interference from skip propagation distant stations.

When you turn on your scanner to listen to crucial emergency communications, it will always be an FM signal. So why are we now touting SSB as the savior of the CB Band? FM has proven itself for several decades to be a superior form of reliable local communications. All amateurs with VHF mobile radios now use FM exclusively for local contacts. Just review some of the bells and whistles included with modern amateur FM radios. New CB FM radios should also be allowed a modest increase in power output. Do we want to deny these state-of-the-art features to the mass of potential radio users? Definitely not.

It may not be well known in the USA, but CB radios in England and most European countries operate using only the FM mode. In Canada, I recently approached the regulatory authorities in an effort to introduce FM into Canada and was essentially told that there is a common North American standard for CB equipment and that standard is set by FCC policy in Washington. I find it hard to believe that in all the USA there isn't a single individual or association with the ability to successfully drum up the needed petition to the FCC to authorize the FM mode. Let's get the ball rolling in the right direction for once.

Joe Cusimano, VE3OV
Ontario, Canada

Security vs. Responsibility

Dear Editor:

I would like to share with you some of my thoughts on the article written by J.T. Ward in your August issue which dealt with the ongoing debate over monitoring cellular and cordless phones as well as other communications.

I disagree with Mr. Ward's commentary on the subject. The prohibition of monitoring the devices that are in question is ridiculous. If one receives a signal, then they have the right to listen to it. Mr. Ward also continues to say the scanner listeners should take responsibility for their listening habits. What about people using cordless phones and such? Shouldn't they be just as responsible for their actions? If you use a device such as a cordless phone, you should realize that you can, and probably are being monitored. If you want privacy or security, don't use a device that radiates.

I'm in the USAF and communications security is sometimes a real problem. Elevating awareness is a constant task. With all of the constant training and resources, it is so surprising that people still don't get the picture. Thanks for reading my two cents worth.

Steven Capocci
Installation MARS Director
Holloman AFB, NM

Dear Steven:

This whole business about monitoring cell and cordless phones is a tough call. I've never been one for Uncle Sam telling me what I can and can't do. Common sense should prevail. Use a wireless phone or radio and you can reasonably expect someone is listening to your conversation. That's why I don't have a cordless phone.

But you're right in your assessment that the users of these devices should be responsible for what leaves their antenna. Police and military users of the radio spectrum have been observing commsec for years—the use of proper radio procedures along with codes and jargon provided security for countless public safe-

(Continued on page 94)



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Citizens Band Radio— Heading for 2001

As we head for the next century, there are a number of different directions that CB may take . . .

BY KEN COLLIER, KO6UX/SOCAL 2775

The United States has long been a leader in citizens band radio. We were among the first nations to grant our citizens access to 27 MHz, and it was our 1970s CB boom that really inspired the people of other nations (particularly in Europe) to demand CB services of their own.

Given that fact, one might ask (and rightfully so) why it is the U.S. citizens band is still confined to the technology of

the 1950s. The last major change that occurred on CB was the switch from 23 channels to 40 back in 1977—almost 20 years ago!

The users of 11 meters are screaming for technological innovation—that's the real reason for the growing number of export and 10 meter radios making their way onto the service. Users want the extra bells and whistles, frequencies and modes offered by these radios. There was even

a debate raging a few months back on the amateur radio packet network over whether CBers should be allowed to use packet radio and other types of digital communications. No doubt the suggestion was a sign of similar desire.

Today's CB operators are more sophisticated than the hobbyists of the 1970s. Many are hams (coded and non-coded alike) looking for an environment that's a bit more open. Quite a few are comput-

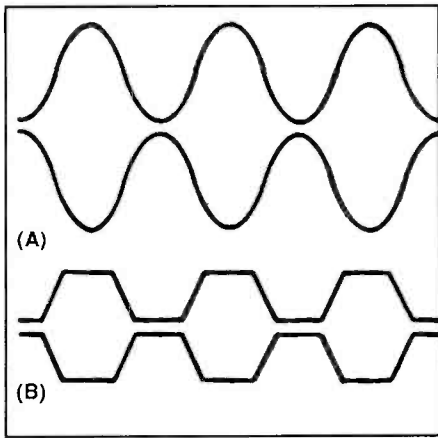


Figure 1.

er and Internet users who are plugged into cutting edge electronics technology. These users demand the best from their equipment. The current standard falls horribly short.

Perhaps as we head for the next century, the time has finally come for a new generation of CBs, paired with this new generation of users. There are a number of different directions that citizens band may take. This article contains a few of my own suggestions.

The Ancient Mode vs. the Future Mode

The mode of choice on today's citizens band is the same as it was when CB was first created, the first mode that was EVER used to transmit human speech via radio: AM. This glaring fault is by far the biggest deficiency of the U.S. citizens band.

Almost every other citizens band service in the world is using FM on at least some of its allocation, and CB, shortwave broadcast, and aircraft are the only services still using AM in the US. AM has been largely replaced by FM and single sideband, and with good reason—it just isn't very efficient and it doesn't sound very good. Two-thirds of the power in an AM signal is used by the carrier, which conveys NO information. Plus, AM is composed of two identical sidebands, each carrying the same information, which means that it takes up twice as much bandwidth as it could.

The worst drawback of AM, though, is the high degree of interference it both causes and receives. The reason is fairly simple. In AM, information is conveyed by varying the amplitude (that is, the peak power) of the transmitted carrier in a manner proportional to the input signal. The

louder the signal input into the microphone, the more output power your transmitted signal has. This is the reason for the eye-catching phenomena known as "meter swing," and it's also the reason why an amplified mic allows you to punch through interference better than a non-amplified one.

But this works only up to a certain point. Eventually, as volume of your input signal increases, the AM signal becomes saturated and the peak output of the wave will no longer increase, only distort. Figure 1 shows what a normal AM signal modulated at 100 percent by a steady tone would look like on an oscilloscope. You can see the wave's two sidebands (each sideband looks like a single wave). Figure 1-B shows the same signal, but the input tone has been increased to the point of over-modulation.

As you can see, the second wave doesn't even come close to resembling the first. Instead of a sine wave, the over-modulated wave is "flat-topped"—its become a square wave. Unfortunately square waves contain much more harmonic energy than pure sine waves (which in theory at least should contain NO harmonic energy). So, an over-modulated AM signal not only distorts, it also causes much more TVI and RFI.

That's why an operator with a hot mic splatters all over the band (and other bands for that matter), and it's what the ALC (automatic limiting control) circuit of a radio is supposed to prevent (if it hasn't been cut out by an over-zealous and under-educated radio "doctor.") An over-modulated signal contains a great deal of energy at multiples of 27 MHz, which includes TV channels 2, 5, and 9, and for this reason a CBER running too much mic gain is liable to be plagued by his neighbors.

The FM Difference

By comparison, FM is created by causing the carrier frequency of a signal to deviate in proportion to the amplitude of an input signal. In essence, FM is constantly changing frequency; the louder

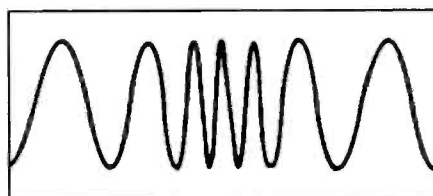


Figure 2.

you scream into the mic the further the carrier moves from the center frequency.

Figure 2 shows an FM voice signal displayed on an oscilloscope. You can see the wave change in frequency, but note, there is no change in output power. No matter how loud you scream into the mic of an FM transmitter, you will never see "meter swing."

There are a lot of benefits to using FM on 27 MHz. AM receivers are much more susceptible to man made and atmospheric noise than FM is, because such noise tends to involve a change in amplitude and is easily picked up.

Over-modulating an FM signal is more likely to cause in-band splatter than harmonic radiation. This means CBs will cause less interference. We still won't be completely interference-free, though, as the type of interference caused by having one's antenna too close to household electronics will still take place.

Of all the advantages a switch from AM to FM would include, by far the one that will be most appreciated by the users of CB will be the improved clarity of FM. Frequency Modulation is an excellent mode for faithfully reproducing sound and speech (hence the reason it is used by stereo music broadcasters).

To use FM on CB, it's deviation will have to be severely limited, though, to about 2.5 kHz above or below the carrier frequency to make the 10 kHz channel spacings work. This will minimize some of FM's noise-cancelling effects. (By comparison, amateurs typically use 10 kHz deviation and FM broadcast stations use 75 kHz deviation!)

Even with limited deviation, FM will be much clearer and cleaner than AM. With that in mind, I think that the time has come to change over from AM to FM—completely. A number of manufacturers would like to have FM added to the current all-mode radios coupled with a voluntary band plan developed for frequency usage. (FM on channels 1–8, AM on 9–30, and SSB on 31–40, by "gentleman's agreement.") This will cause more trouble than it's worth—trying to get people to conform to a voluntary band plan hasn't worked in the current scheme of things (listen to the supposedly sideband-only channels from 36–40 and see how much AM you hear).

Yes, do away with AM. The quality of CB will increase and the amount of TVI caused by CBERs will decrease. Simply adding FM to the current band will cause a myriad of problems, and solve few. A

CHANNEL	Old FREQ. (MHz)	Typical MODE	New FREQ.(MHz)	MODE
1	26.965	AM	26.965	FM
2	26.975	AM	26.975	FM
3	26.985	AM	26.985	FM
4	27.005	AM	26.995	FM
5	27.015	AM	27.005	FM
6	27.025	AM	27.015	FM
7	27.035	AM	27.025	FM
8	27.055	AM	27.035	FM
9	27.065	AM	27.065	SSB,FM, AM*
10	27.075	AM	27.095	FM
11	27.085	AM	27.105	FM
12	27.105	AM	27.115	FM
13	27.115	AM	27.125	FM
14	27.125	AM	27.135	FM
15	27.135	AM	27.145	FM
16	27.155	AM, SSB	27.155	FM
17	27.165	AM	27.165	FM
18	27.175	AM	27.175	FM
19	27.185	AM	27.185	FM
20	27.205	AM	27.195	FM
21	27.215	AM	27.205	FM
22	27.225	AM	27.215	FM
23	27.255	AM	27.225	FM
24	27.235	AM	27.235	FM
25	27.245	AM	27.245	FM
26	27.265	AM	27.255	FM
27	27.275	AM	27.265	FM
28	27.285	AM	27.275	FM
29	27.295	AM	27.285	FM
30	27.305	AM	27.295	FM
31	27.315	AM, SSB	27.310	LSB
32	27.325	AM, SSB	27.315	LSB
33	27.335	AM, SSB	27.320	LSB
34	27.345	AM, SSB	27.325	LSB
35	27.355	AM, SSB	27.330	LSB
36	27.365	SSB	27.335	LSB
37	27.375	SSB	27.340	LSB
38	27.385	SSB	27.345	LSB
39	27.395	SSB	27.350	LSB
40	27.405	SSB	27.355	LSB
41	NA	NA	27.360	LSB
42	NA	NA	27.365	LSB
43	NA	NA	27.370	LSB
44	NA	NA	27.375	LSB
45	NA	NA	27.380	LSB
46	NA	NA	27.385	LSB
47	NA	NA	27.390	LSB
48	NA	NA	27.395	LSB
49	NA	NA	27.400	LSB
50	NA	NA	27.405	LSB

NOTES:

- * Channel 9 lower sideband preferred
- 30 kHz guard band around Channel 9 to protect it from interference.
- 15 kHz guard band between channel 30 and 31 to protect the sideband allocation from interference
- 10 kHz channel spacings for FM
- 5 kHz channel spacings for SSB

Figure 3—CB band plan

complete switch will make 11 meters much more usable.

What About SSB?

While I would do away with AM, sideband should remain on the citizens band. As a dedicated sidebander myself, I know how much fun working distant stations can be—and even on a day with no skip conditions SSB will go two to three times as far as a normal AM or FM signal.

However, SSB and FM are even more mutually exclusive pastimes than AM and SSB were. (Just ask a ham whose worked 2 meter sideband what an errant operator on FM does to a frequency!) For this reason, I think FM use should be legally restricted to channels 1–30, excluding Channel 9, and this restriction should be built into radios (that is, the radio should automatically tune FM from channel 1 up, and automatically switch to LSB at channel 31). This will help insure that lovers of these different modes have an equal opportunity to use them free of cross-mode interference. (As far as what I think about Channel 9, keep reading.)

Further, by limiting 31 and above to sideband, we can make room for extra channels. Currently, all CB channels have 10 kHz spacing, which is perfect for double sideband AM, but it would be possible to space SSB channels at 5 kHz. It's possible to add another 10 channels to the band for SSB operation without expanding the frequency CB occupies! (See Channel 9 Notes and Figure 3 for specific frequencies.)

FCC Rules Compliance—The Easy Way

Recently the FCC announced that they were no longer going to investigate any CB rules violations, much to the horror of a vast number of CBers. This is a terrible decision as it effectively gives the minority of inconsiderate operators permission to do what they please. The effects of the FCC's neglect could be minimized, though, if rules compliance were required to be built into radios. I've already mentioned one new way this could be done (making the radios automatically switch from FM to LSB at channel 31), but let's not stop there. Since we are theoretically modifying FCC rules anyway, let's examine some changes in hardware that could have a positive effect on 11 meters. These features would be required in all radios before type acceptance would be granted.

TIME-OUT TIMER: "Broadcast" type operation on 27 MHz is extremely distressing, especially if the signal being broadcast is just a dead carrier polluting a frequency. In the hopes of encouraging more two-way use, it may be a good idea to borrow an idea from the hams—a "time-out" timer. A circuit of this type would be built into a radio for the purpose of limiting the length of a station's transmissions. Three minutes is a good timer length—it should be possible to cram enough information into three minutes to allow good conversation. It should take 10 seconds to reset the timer after a transmission of less than three minutes in length, and 1 full minute to reset after a transmission that actually times a radio out. A timer will discourage jamming, and give jammed operators a chance to coordinate during the reset period.

CARRIER DETECTION: It happens all the time: people playing around on our CB channels, inconsiderately keeping others from having a conversation by hanging a dead carrier on a channel. Some commercial services have begun to combat jamming and "doubling" by installing circuits in their radios which prevent the transmitter from being keyed up in the presence of a signal in the receiver (and this was also suggested by many people who filed comments on the new Family Radio Service). This makes it impossible to key up over the top of someone, and makes "doubling" very unlikely. A carrier detection circuit, combined with the "time out" timer mentioned above would certainly help restore order to CB, and would help give everyone an equal chance to talk.

MODIFICATIONS: "Yeah, that sure is a pretty nice radio out of the box. It could use some work, though. Manufacturer's don't care what their radio's sound like. You should take that thing over to [Insert handle of radio doctor here] and have him tweak and peak it. Cut that limiter out, peak the power, you know, the really good mods. Then go get a big power mic, and crank the thing up. You'll be loud and proud . . ."

Unfortunately, too many people take this advice seriously, having their radios illegally modified to run excessive modulation, power, and extra frequencies. Today there's no reason for this to happen. I've seen at least two radios (one ham and one CB) that are designed specifically to not support any kind of modification. This is very easy to do with microprocessor-controlled radios, and there's

no reason we shouldn't require manufacturers to do so. All it takes is just a little extra work on the software that controls the radio's microprocessor. No sliders, no extra power or frequencies, and no yanking out of modulation limiters, what a wonderful world it would be!

RECEIVER IMPROVEMENTS: Isn't it finally time to see a CB with a decent receiver? Amateurs are already dabbling with DSP (Digital Signal Processing) technology which dramatically reduces atmospheric noise and splatter. Meanwhile, it's hard to find a CB that has a noise blanker that actually does anything but provide an extra button to play with. Wouldn't a decent receiver be worth a few extra bucks?

10 METER BAND BAN: A growing problem on CB, and one of the things that would make this change over difficult is the proliferation of modified 10 meter radios that are appearing on the band. To curb this, the FCC should start requiring type acceptance for any amateur radio capable of operating on 10 meters, and should deny type acceptance to any rig which can transmit from 26.0 to 28.0 MHz, even with modification. There is no reason for an amateur radio to have this capability, except for transverter opera-

tion. (A transverter is a device that takes a radio signal on a specific frequency band and multiplies it for use on another band.) Most transverters in the VHF range have 10 meter inputs (that is, 28 MHz in gets you 50 or 144 MHz out). Since stock legal 10 meter rigs operate from 28.0 to 29.7 MHz, a station in transverter operation won't have access to the whole 6 or 2 meter band. (VHF transverters operating with a stock 10 meter radio will tune only from 50.0 to 51.7 and 144.0 to 145.7 MHz.) Modifying the radio to TX from 26.0–30.0 MHz and retuning the transverter gives the amateur the whole 4 MHz.

Because this is perfectly legal, it isn't fair to restrict this type of mod. However, there's no reason why the FCC can't, for type acceptance purposes, require that the transmit range of these radios be confined to 28.0 to 32.0 MHz. This will give the hams the 4 MHz they need for transverter operation, and will prevent the radios from being used as "high end" CBs.

Channel 9 Notes

Channel 9 is the only emergency radio channel available to everyone in the U.S.,



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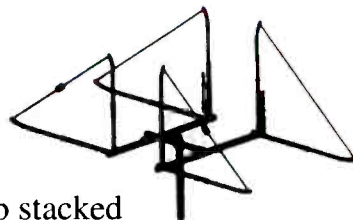
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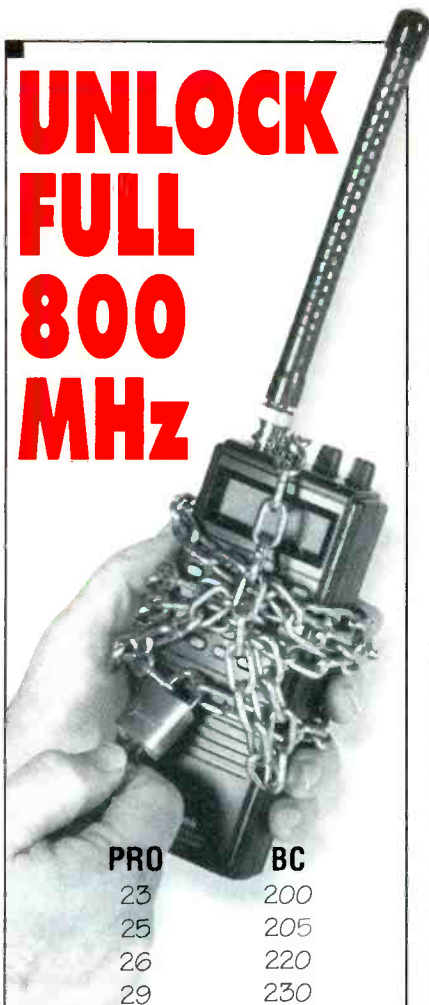
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on any service. As such, it deserves special protection. Although most CBers go out of their way to protect it from interference, many monitors still suffer cross-channel bleed-over from nearby stations. That too, can be minimized.

Figure 3 shows two different channel plans for CB. The first list on the table shows the current CB band plan, channels 1-40 and their typical use, while the second list is a new and improved band plan (of my design) which does away with the skipped frequencies after channels 3, 7, 11, 15, 19, and the out of order mess from channels 23-25.

The extra frequency space is used as a 30 kHz guard band around Channel 9. This will dramatically reduce the cross-channel interference suffered by Channel 9 monitors, and will make the lives of REACTers everywhere more livable. (The new and improved band plan also includes 5 kHz channel spacing for SSB and 10 extra channels for sideband use.)

Under this plan, Channel 9 becomes lower sideband preferred. The use of sideband will increase the effective range of emergency communications, and make it much easier for CB users to obtain help via radio. Rigs should be capable of all mode operation (AM, FM, and LSB) on Channel 9 only, though, making it possible for monitors to handle calls from users of both old-style and questionable radios.

Hello, Uncle Charlie

It's not likely that any of this is actually going to take place. According to sources within the major CB manufacturers (who would like very much to add FM to the existing service), the FCC has all but said that they have no intention of revisiting Part 95. In essence they have turned away from 27 MHz and they have no intention of going back.

However, dramatic public outcry has a way of influencing the Federal Communications Commission. Changes can take place on CB as long as there is enough popular support from the manufacturers and the users.

If you like the ideas presented here and you want to see a brighter CB service drop me a note or a postcard/QSL card at:

Ken Collier, KO6UX / SoCal 775
7510 Rudell Rd.
Corona, CA 91719
e-mail: <kjcollier@juno.com>

With enough popular support (a consensus among CB users), I have every reason to believe (hope?) that the FCC would consider a petition for rule making in the matter of replacing AM with FM on 27 MHz, and force manufacturers to build rules compliance into their equipment. You can help make it happen.

A New Dawn

If anything like this ever does come to pass, the new rigs will have to be phased in slowly. Perhaps manufacturers should be given a year to manufacture old style radios and three years to sell them. New rigs would come on the market in four or five years, and the U.S. could have a modern citizen's band by the year 2000.

Who would buy these new "super duper" CBs? Well, the serious users of the band. If you're reading this magazine, you probably qualify. Granted, if all of the changes I suggest went into being the days of the \$40 AM-only CB would be gone. While increased price would keep some potential users off of the band, it would help ease congestion (and the FRS still provides a fairly low-cost alternative to the people left out by this coming CB revolution). Perhaps manufacturers could even market low-cost Channel 9 only emergency radios for the crowd that has CBs only for emergency use.

The new band that would arise if we employed these changes would indeed be a kinder, gentler CB, one I think everyone would be more pleased to use.

Any Other Ideas?

This is just one possible plan for the future of 11 meters. I'd like to hear from others may have different ideas. Feel free to drop me a note expressing your opinion. I certainly am open to all suggestions on how the needs of the CB user can best be served.

Editor's note: While Ken has presented some thought-provoking ideas, I think it's important to note that they are his ideas, and as such, don't necessarily mean that we're taking a stand for the use of FM on our CB bands. It seems prudent to invite your comments. Certainly, write to Ken as he requests, but we at Popular Communications would also like your comments on his proposals. Contact us at the magazine or via e-mail at <popular-com@aol.com>. Is FM CB an idea whose time has come? ■

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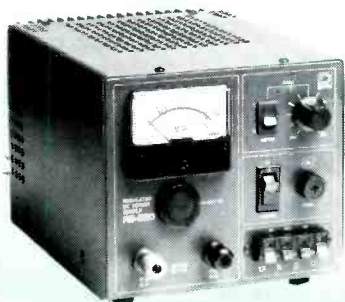
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Caught in a Snowstorm . . . In Your Shack!

Plowing Through the Frequencies to Keep You Ready for Winter Scanning . . .

BY CHUCK GYSI, N2DUP

During winter's inclement weather, you'll want to keep a close ear on your scanner, especially if you have to drive anywhere, or you are concerned about a loved one driving during nasty wintry conditions. Your scanner can bring you up-to-date weather and road reports; essential information if you

need to know what's going on outside and on the highways.

Start Looking

Frequencies that might typically be used during the spring, summer and fall for road crews performing routine street

maintenance can suddenly become alive during a winter snowstorm. Highway garage dispatchers will be heard sending highway trucks outfitted with plows and sand or salt spreaders to slick and dangerous roadways. If you know the frequencies used by local, county and state road and highway crews, you'll know where

Here are the frequency ranges you will want to search through during a winter storm:

Highway Maintenance Radio Service

33.02, 33.06, 33.10
37.90-37.98
45.68, 45.72, 45.80, 45.84
47.02-47.40 (state use only)
150.995-151.130
156.045-156.240 (some frequencies not authorized within 100 miles of New Orleans, La., while some cannot be licensed to states)
158.985-159.195 (cannot be licensed to states)
453.050-453.950 (shared with other public safety services)
470.0125-511.9875 (in larger metro areas only)
851.0125-868.9875 (trunking and conventional)

Local Government Radio Service

37.10, 37.18, 37.26 (shared with police)
39.06 (2 watts), 39.10, 39.18, 39.50, 39.58, 39.82, 39.90, 39.98
45.08-45.64 (40 kHz steps)
46.52-46.58
153.740-154.115
154.965-155.145
155.715-156.015
158.745-158.955
453.050-453.975 (shared with other public safety services)
470.0125-511.9875 (in larger metro areas only)
851.0125-868.9875 (trunking and conventional)

Automobile Emergency Radio Service (tow trucks with plows)

150.815-150.965
157.470-157.515
452.525-452.600

470.0125-511.9875 (in larger metro areas only)
851.0125-868.9875 (trunked and conventional)
935.0125-939.9875 (trunked and conventional)

Business Radio Service (service stations with plows)

30.76-31.24
35.02-35.18
35.70-35.98
42.96-43.00
151.625-151.955
152.300-152.420 (non-metro areas only)
154.515-154.600
157.560-157.680 (non-metro areas only)
460.650-460.875 (non-metro areas only away from major airports)
461.025-462.175
463.200-465.000
470.0125-511.9875 (in larger metro areas only)
851.0125-868.9875 (trunked and conventional)
935.0125-939.9875 (trunked and conventional)

Special Industrial Radio Service (road contractors)

30.58-30.64
31.28-31.96
35.28-35.86
43.02-43.18
43.28-43.52
47.44-47.68
49.52-49.58
151.490-151.595
152.870-153.395
158.325-158.460
451.725-452.175
470.0125-511.9875 (in larger metro areas only)
851.0125-868.9875 (trunked and conventional)
935.0125-939.9875 (trunked and conventional)

the slick spots are and which roads still need attention.

There are three groups of frequencies used by organizations charged with keeping highways, streets and roads clear of ice and snow during winter storms. The primary group is **highway maintenance radio service** frequencies. These frequencies are used primarily by state, county and city highway departments.

Another radio service used by snowplows is the **local government radio service**. These frequencies are a catch-all for state, county and municipal governments. While in many areas, these frequencies might be used by street and road crews, they may also be used for police, fire and other municipal services.

Lastly, the **business radio** and **automobile emergency radio service** might become active during winter storms for those garages helping stranded motorists, but also for private snowplows. A service station might have contracts to plow snow from parking lots and private drives. Some large construction firms that might operate in the special industrial radio service also may have contracts to clear snow from state or county highways. In this case, you won't hear state or county plows on these highways; you'll have to tune in the private frequencies of these contractors to hear any of their road-cleaning operations.

Frequencies

It really isn't a trick knowing which frequencies you need to monitor to keep abreast of highway conditions. For the most part, most county and state highway crews use frequencies allocated to the highway maintenance radio service. For cities, towns and other municipalities, highway maintenance radio service frequencies may be used, however, it's just as likely to find crews using frequencies allocated to the catch-all local government radio service.

In the business and automobile emergency radio services, you can find service stations and garages not only out helping stranded motorists but also using plows attached to their tow trucks and other service vehicles.

Automobile emergency radio service

"This information may even be broadcast regularly during a winter storm when conditions change from hour to hour."

channels in the 150, 157 and 452 MHz bands are used by tow trucks and automobile clubs to provide road service to motorists. You'll find out how bad the day is by monitoring these channels. For instance, on a very cold morning, you can expect to hear road service trucks responding to handle dead battery calls. Tow trucks also can be heard typically using business band repeaters in the 461-465, 851-866 and 935-940 MHz bands. They will be sharing these business repeaters and trunked systems with other businesses, so you'll hear more than just tow trucks. But during a winter storm, it's likely only road service crews and tow trucks will be using these frequencies; everyone else will have taken off early and gone home!

On The Alert

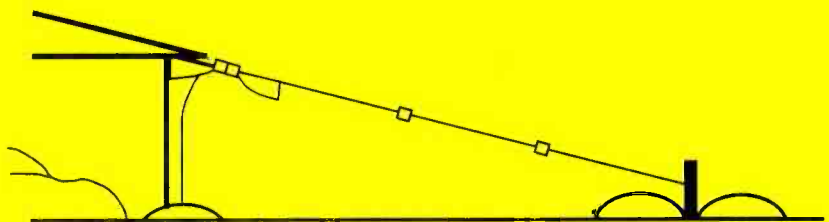
In some areas, you'll hear snowplows in action and even special weather updates broadcast on highway maintenance channels. Many state highway departments subscribe to specially pre-

"... on a very cold morning, you can expect to hear road service trucks responding to handle dead battery calls."

pared weather forecasts and information from private weather forecasting services. This information, which is done for a fee, usually is broadcast over primary highway department channels. These forecasts may be prepared for specific regions of your state by the weather forecasting company.

This information, which is intended for supervisors and crews working on snowplowing and sanding, may even be broadcast regularly during a winter storm when conditions change from hour to hour. Sometimes these forecasts may be narrowed down to county by county and offered in broadcasts. Monitor your local state highway channels during the next storm and see if your state transportation department offers this information over the air. ■

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Proposed Bill Would Allow States to Regulate RF Interference Caused by CB Equipment

CBers who run power and cause interference with home electronic equipment could be in for some nasty surprises if a bill introduced by Sen. Feingold is passed. The legislation would allow individual states to impose fines and/or limit operating conditions on CB operators whose stations interfere with home electronic equipment, if the interference resulted from use of a transmitter or amplifier not authorized for CB.

The ham radio operators are concerned about this legislation because some local authorities apparently cannot distinguish between ham and CB radio. Steve Mansfield, Legislative and Public Affairs Manager of the American Radio Relay League, reports that "Any action on S. 2025 is not likely given the short amount of time left in this session."

Here is a copy of the text of the bill which would amend the Communications Act of 1934 to authorize the States to regulate interference with radio frequencies. It was read twice in the Senate and referred to the Committee on Commerce, Science, and Transportation. It reads:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. AUTHORITY OF STATES TO REGULATE RADIO FREQUENCY INTERFERENCE

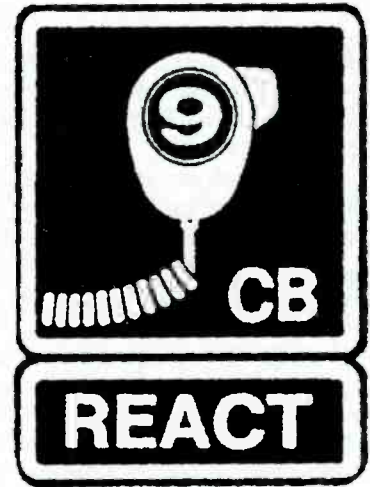
Section 302 of the Communications Act of 1934 (47 U.S.C. 302) is amended by adding at the end the following:

(e) Where radio frequency interference to home electronic equipment is caused by a CB radio station through the use of a transmitter or amplifier that is not authorized for use by a CB radio station pursuant to Commission rules, the State, county, municipal,

or other local government shall not be preempted from exercising its police powers to resolve the interference by prohibiting the use of such unauthorized equipment or by imposing fines or other monetary sanctions. For purpose of this subsection, home electronic equipment includes, but is not limited to, television receivers, radio receivers, stereo components or systems, video cassette recorders, audio recorders, loud speakers, telephone equipment and other electronic devices normally used in the home. Any action taken by the State, county, municipal, or local government shall not preclude concurrent action by the Commission. Nothing in this subsection shall be construed to diminish the Commission's exclusive jurisdiction over radio frequency interference in any matter outside the scope of this subsection.

Frankly, I have very mixed feelings about this bill. On one hand, it seems that it would be good news if there were some additional legal means of getting "bad apple" operators under control. When I first started writing this column, I believed that perhaps 20 percent of CBers were causing 80 percent of the problems. I have since revised that opinion and believe that fewer than 5 percent of CBers cause 98 percent of the problems.

But face it: One rotten operator with a high-powered station and a splatter problem can screw up communications on 10 channels or more. On the other hand, I have heard of cases where CBers who were running legal stations had problems with interference to home electronics, and the problem was with the design of the stereo, TV, or other device and not with the CB. I fear that local enforcement officers may not understand the technical issues involved, and, as a result, some legal operators could get unjustly tarred and feathered.



What do you think? Would this be a good idea, or not? Write me here at *Popular Communications* and let me know. And while you're at it, send me your QSL card and a shack photo.

Horns and Tail?

Incidentally, on the subject of legal and illegal operators, recently I received a couple of letters that said, in effect: "You seem to believe that all freeband operators and anybody who runs some extra power has horns and a tail!" Not at all. I know many freeband operators and they are, virtually without exception, exemplary radio operators. And many legal and freeband operators of my acquaintance run some extra power without splatter and without causing interference problems for others.

But—and this is a big "but"—I am honor-bound to tell you that both operating in the freeband and running extra power are illegal. The plain truth is that, since licenses are no longer required for

"... some legal operators could get unjustly tarred and feathered."

CB, a whole new generation of Cbers has grown up, and some of them don't even know that there are rules for CB established by the FCC. So, if you're a free-bander or you're running some extra wattage, you've got a potential problem with the FCC if you get caught, but it gives me no pleasure to say so.

On the other hand, if you're running a big, splattery linear in the middle of the 40 legal channels, causing problems for everyone on CB, getting into the neighbor's stereo and TV, and you talk dirty besides, then I'm convinced you have horns, a tail, and you need to discover what it means to be a good neighbor.

REACT Responds to CRC Proposal

Bonnie Zygmunt, Vice President of REACT International, Inc., wrote: "In regards to the your March 1996 article proposing the establishment of a national Citizens Radio Corps (CRC). This is an enticing idea, if the FCC would agree to it.

The first mission you outline for the CRC (monitoring emergency frequencies available to the general public—marine distress, aircraft distress, GMRS travelers' assistance, and CB Ch. 9—Ed.) is already being handled by the members of REACT International, Inc. Enclosed are the totals for the past year of the number of hours monitored and the number and types of calls responded to.

The second mission, while needed, has the possibility of placing the volunteer in dangerous situations. REACT believes that volunteers can be asked to detect and locate radio stations that are interfering with emergency communications, but the inspecting and issuing of notices of violation should be left to the government agency who has that authority.

REACT International would be interested in providing support to a proposed plan to the FCC and allow trained and qualified CB operators to police the emergency radio frequencies in the same way that amateur operators do now. If you have any further conversations with Mr. John Santy of the FCC on the possible creation of the CRC, we would be very interested in hearing about them.

Please feel free to use the Monitoring Totals for your "CB Scene" article. REACT is proud of our dedicated radio monitors who spend many of their hours waiting for, and responding to, any call for help."

Thanks, Bonnie, for your kind letter.

Here's the impressive report of monitoring totals racked up by REACT volunteers. It's certainly an inspiration to all of us to see what volunteers can do when they set their minds to helping others.

FCC Launches Toll-Free Information Service

John Santy of the FCC also wrote to say that the number of responses to the CRC article has "exceeded 20." Santy also enclosed a news release from the FCC. The upshot is that the FCC is gradually expanding a nationwide toll-free information service. If you have a prob-

"... a whole new generation of Cbers has grown up, and some of them don't even know that there are rules for CB..."

lem that the FCC could help with, call 1-888-CALL FCC (1-888-225-5322).

The FCC Call Center is designed to respond to "all telecommunications issues, including, but not limited to, broadcasting, cable, new technologies, telephone rates or charges on your phone bill, answer questions about long-distance carriers, or provide information on obtaining

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1995

REACT International, Inc. Yearly Monitoring and Activity Report

• Total Hours Monitored	3,631,668
• Total Hours for Community Events	585,312
• Total Hours for Training	164,016
• Total Hours for Disaster Assistance	53,064
• Total Calls Taken	170,989
• Savings to Taxpayers per year	\$39,906,540

Road Related Incidents:

• Accidents	28,064
• Reckless/Impaired/DUI	13,432
• Stalled/DAVs	36,335
• Traffic Hazard	17,215
• Traffic Jams	3,056
• Traffic Control Malfunction	2,830
• Request for Road Info.	30,578
• Vehicle Fire	1,469

Other Incidents:

• Boating Emergency	426
• Crime Activity	2,197
• Flood/High Water	1,143
• Medical Emergency	2,349
• Missing Persons	410
• Severe Weather	4,677
• Non-Vehicle Fire	1,513
• Relay Personal Call	6,839
• Other	18,458

a license or form, filing a complaint, or expressing a concern about what a local radio or television broadcast station aired. When FCC subject matter experts must be consulted, the call will be electronically transferred directly from the Call Center to FCC Washington headquarters at no additional cost to the caller."

The toll-free Call Center services are being phased in geographically, with full coverage planned for early 1997. I wonder what the Call Center would do with a report of a "horns-and-tail" CBer?

Big News at CB Scene

Drum roll please . . . I am very proud to announce the addition of a valued friend and colleague to CB Scene. Starting next month, Ed Barnat, former sideband editor of the now-defunct *CB Radio* magazine, will join me as co-author of this column. You'll see the results immediately: The next two issues of *Pop'Comm* will publish in this column a dynamite two-part series that Ed has written on freebanding. It gives the "real skinny" on the how's and whys of freebanding, as well as what the FCC thinks about it. I think you're in for some real surprises . . . I know I was!

Ed has been a CBer for more than 30 years. He lives a few miles from me, and we talk almost every morning as part of a Ch. 9 monitoring group. For more than 20 years, Ed has run Tri-County Assis-

"If you have a problem the FCC could help with, call 1-888-CALL FCC . . ."

tance, one of the most effective local emergency monitoring groups in the country. (Tri-County, incidentally, is a group that survives without dues, by-laws, or regular meetings.) Over the years, Ed's base station has taken more than 15,000 calls for assistance—that's NOT a typo, in recent years, Ed has been logging 3,800 calls per year.

I asked Ed to join me in writing the column because I have been very busy with other writing projects recently, and, frankly, I wanted some extra time to "play radio" instead of writing about radio. Sometimes Ed and I will alternate writing columns; sometimes we will co-author a column together in a kind of "point-counterpoint" format. Our goal is to make CB Scene better, more informative, and more fun.

Please write to us here at *Pop'Comm*. Send us your questions, comments, cards, and shack photos. Let us know what you think; how we can improve. You can take this to the bank: Every scrap of mail that arrives here at CB Scene is read (sometimes reread) and carefully considered. So keep those cards and letters coming, folks! We'll be reading the mail and listening for you on the air. ■

The Old CB Shack

BY DON PATRICK

GIVING NEW LIFE TO YESTERDAY'S RIGS

Resuscitating an Old Polycomm II

One of the most interesting aspects of working with CB radios is that no two radios are the same, whether we're talking about old or new ones! And many of the old relics that were around during the CB craze years can be given a new lease on life, and restored to operating condition. In this bi-monthly column I'll be helping you breathe life into some of those old CBs, so bring the tools, schematics, and soldering iron and let's get to work!

A few of the old CB radios manufactured in the '60s and '70s were better than any manufactured today. They had to be better because other stations were few and far between, car ignition systems radiated more noise and the transmitter efficiencies were generally lower.

Do any of today's radio manufacturers give a performance guarantee? Polytronics Labs gave such a guarantee and didn't water it down with lots of conditions. The Poly "N" increased the guaranteed range to 10 miles mobile-to-mobile and 15 miles mobile-to-base.

Using Old CBs

In the past, some people have said that old sets can't be used. The FCC never said that. They did say that any NEW sets manufactured or imported for sale after a certain date had to be FCC Type accepted for Class "D" CB use and meet the new rules. Older sets, both in consumer hands or dealer stocks ready for sale, made before that date were OK to use, sell, resell, buy or trade as long as they met the FCC Rules at the time they were manufactured. So don't worry about the CB, as long as it is on frequency and meets the five watt input power limit, modulation and harmonic limits in effect when it was made. It's still OK to buy, sell, trade or use the old CB.

What's the Best CB?

Over the past 30 years I have been asked this question many, many times, along with "what's the best mobile antenna, base antenna or microphone?" An honest answer is not simple. Consider a mobile antenna. Do you want the best for



An old Polytronics CB in good condition.

the money, the best without drilling a hole, the best range, the best looking or the best on a special vehicle such as a motor home? Which "best" is most important to you will determine the answer. One antenna won't be the "best" under all of the above conditions.

The same manner of thinking applies when deciding which CB radio is the best mobile or base unit. It's which is easier to mount, has the lowest battery drain, immunity to ignition noise (yours and other vehicles), ruggedness, transmitter power and modulation, receiver sensitivity and selectivity, ability to handle extreme temperature swings, and many more factors. The old Polycomm II and Poly "N" models got high marks in all categories, except size and battery drain!

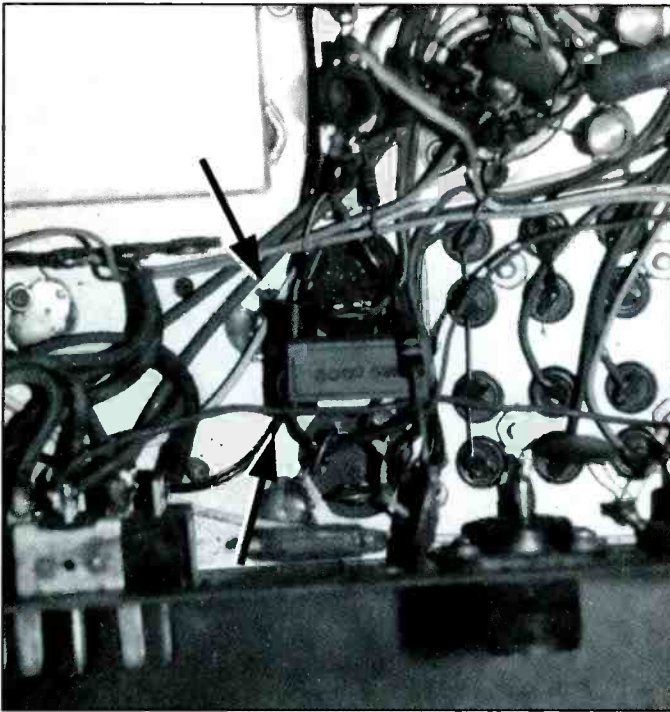
The engineers that designed the Poly units must have come from the ranks of the commercial two-way radio field because they included many features, both in construction and technical aspects, that were used in the business band market. Many of the construction pluses are what makes the Poly still a good, serviceable unit today, such as Teflon wiring throughout and a cadmium-plated chassis. On the technical side, all units worked on 12 or 117 Vac. The transmitter used fundamental crystals in a three-stage design instead

of the less expensive two-stage, 3rd overtone method. The receivers were always dual-conversion with triple IF stages which gave unparalleled selectivity and sensitivity. It's easy to build a real sensitive or selective receiver, but it is difficult to make one that is both.

A sensitive receiver will hear those weak signals, a selective one will do so without picking up the channel on either side of the one you are trying to hear. With only 10 kHz between most CB channels, selectivity to stop or reduce what is called "bleedover" becomes real important. It's not within the scope of this column to explain all the hows and whys of the importance to you of dual-conversion in your receiver, but trust me, it is crucial. Much of the interference blamed on bleedover in single-conversion units is really direct image signal interference that dual-conversion would have prevented.

Overhauling the CB

If you are going to overhaul an old radio of any type, a service manual is really useful to have. However, very few radios will come with one and many of the manufacturers are long since gone. But salvation is at hand! We made a few phone calls and found that while Sam's



← Resistor R-70 in our unit was cracked and required replacement. It is nearly hidden beneath the larger rectangular 3000 ohm resistor.

The shield covers the vibrator and rectifier section of the power supply. It's held in place by four screws. ↓

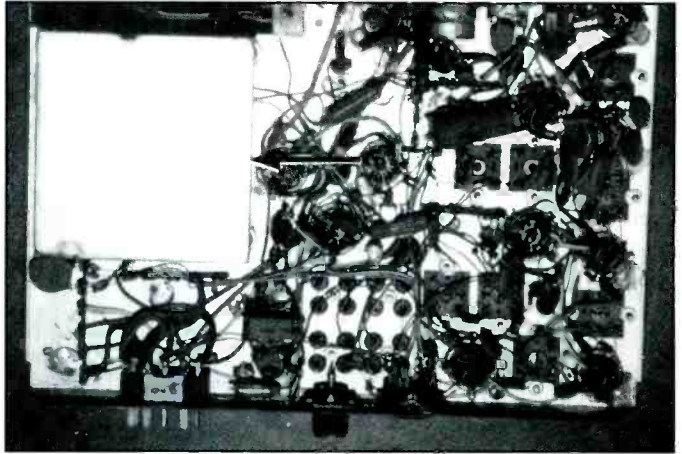


Photo Fact CB Series is now out of print and they don't have any of the manuals, they do have the information on record and you can get a copy. Each Sam's Manual had complete information on four or five radios. This included schematics, parts lists, layout and alignment instructions on each of the models of various brands. You can get a copy of a whole manual for \$50 or a copy of the information concerning any one radio you are interested in for \$24.95. Each price is plus shipping. Before you call, have the brand, full model number (including any letters, Roman numerals or words in the model name) plus the serial number. Call Sam's Photo Fact with credit card in hand at 1-800-428-7267. You can also pay by check or money order, but call them for the details. If they don't have the information on your unit, write me with all the information on your radio, since I have some they don't have.

There were actually a few CBs that were produced in such small quantities that they didn't qualify for publishing a service manual. In some cases, all I have is the schematic, but it's better than nothing! The Poly units we're working on in this column are in Sam's CB No. 2 and 3, depending on the model.

Rebuilding a Poly Comm II

The same procedure will hold true for a Poly "N" since these radios are almost identical. The main difference is one tube and the microphone. The "N" model used a NUUVISTOR as the RF amplifier instead

of the 6BJ6 for lower internal noise and improved sensitivity. The microphone was changed from a carbon element to a ceramic one. If you have a Poly II with the carbon mic, you might want to change to a ceramic one. It's a simple change and it improves the transmitted voice quality. In this case, changing to the NUUVISTOR is not an option.

Disassemble the set by removing the chassis from the case. This is done by removing the two self-tapping screws on the rear of the case at the bottom left and the bottom right, then the two screws holding the front handle on, and one self-tapping screw through the bottom, just behind the front panel and near the mic plug. On some units, the carrying handle has been discarded and the bottom screw may not be in place. You don't need the handle, except for complete originality, but the bottom screw is needed to prevent rattles and to provide good grounding.

Remove all the tubes to have them out of the way while cleaning the unit and to have them tested. Be careful not to wipe off the printing on the tubes, which gives you its type number. Some of the paint used back then will come off with almost any solvent, so wipe them only with a soft DRY rag. You will be able to re-install them later by referring to the illustration.

Give the unit a careful visual examination, looking for any obvious problems such as signs of overheating on the power transformer T-11 and audio transformer, T-10. Then look at the bottom side for any problems such as broken parts, cut wires,

"It's easy to build a real sensitive or selective receiver, but it is difficult to make one that is both."

and overheated resistors, which would indicate a possible excessive current situation in some circuit.

In the radio we are working on, the first thing that I noticed was that after more than 30 years, the chassis is rust-free due to the cad-plating. All the wiring is in perfect condition because it's Teflon and not fiber or plastic, which degrade with age. Be careful as you hold the unit, not letting your fingers bend or push any of the wires out of position or together, causing a short. The only obvious defect we noted on our test unit was R-70, a two-watt, 680 ohm resistor which is cracked and broken. In the picture, it's almost hidden by the square 300 ohm, five-watt resistor over it. The R-70 is used between two capacitors, C-35 and C-40, in the B+ power supply due to any number of reasons; perhaps a shorted tube or leaky section in C-35. In any case, it's a minor problem and we'll deal with it later, only noting it for now.

The next step is to remove the shield over the vibrator and rectifier section of the power supply, as shown in the photo. It's held in place by four 1/4" hex head self-tapping screws that you access from the top of the chassis. Note that there are two cutouts in this shield for wires to pass through. You must re-install it in the same

"If you are going to overhaul an old radio of any type, a service manual is really useful to have at hand."

position without pinching any wires when you replace this shield. With the shield off, inspect the area for any visual signs of problems. You need to leave the shield off until later, allowing access to this part of the high voltage power supply. Put the shield and its screws, along with other screws and parts you've removed in a safe place for later use.

You might want to note at this point, that Polycomm, like most manufacturers, make changes in their units between production runs as an on-going process, making improvements, adding features and correcting problems. The top view in the illustration is of an early model PC-II, but the set we are working on is a later version and has two major changes. Tube V-9, the audio output and modulator, was changed from a 6AQ5 to a 6BQ5 which is a much heavier tube. Tube V-7 was a 6AL5 used with one section as the detector and second section as the automatic noise limiter. These functions were taken

over by two small diodes and a 6AV6 tube was installed in this location. This change was made to add an additional stage in the mic audio path to improve modulation. Don't be surprised when you pull these two tubes if they don't match the tube layout in our illustration.

Now that you have the tubes out, make some phone calls to find someone with a tube tester that will check them for you. Advise them that you wish to *test only* at this time with an estimate on the cost of any required replacement. You might want to locate replacements, if they are needed, on your own after hearing the price of new ones. If you are told that a 12AT7 or a 6BH6 is bad, you'll need to know which one, as there are two of one, and three of the other used in this set. Price the cost of any replacements at your local electronics supply store. Also check with Richardson Electronics at 1-800-323-1770. They have most tubes and generally at lower prices. Unless you're going to run your unit as a mobile, don't worry about the vibrator. For 117 Vac use, you don't even need a vibrator in the unit. This CB is too heavy to mount in today's cars, especially under a plastic dashboard!

Now is the time to finish cleaning up the chassis. Don't worry about stains or

discolorations on the chassis. Simply blow out or remove any visible dirt. Don't use a high-pressure air hose, because you might move some parts around or even ruin the speaker. Be very selective about which, if any, electronics spray cleaner you use. The channel selector switch could easily be ruined by a poor choice.

Re-install your old tubes and any replacements at this time. Also, it's time to replace any defective or damaged parts noted during the visual inspection. We're going to replace the damaged resistor R-70 noted earlier, by first gently moving the wires at the end of the resistor toward the center of the chassis, out of heat—and harms way. Then, in order to reduce the chance of heat damage to other components, I chose to clip out the bad resistor instead of unsoldering it. Place the new resistor in the same place as the old one and wrap one turn around the lug of the capacitor to which the old resistor was connected, and solder it in place. Be sure to use rosin-core solder, NEVER acid core. In soldering many places in a tube-type unit, you will need 125 watts or more heat—not the little 25 to 60 watt pencil-type units. Clip off the extra lead lengths after it's soldered in place.

While you may not need to replace this



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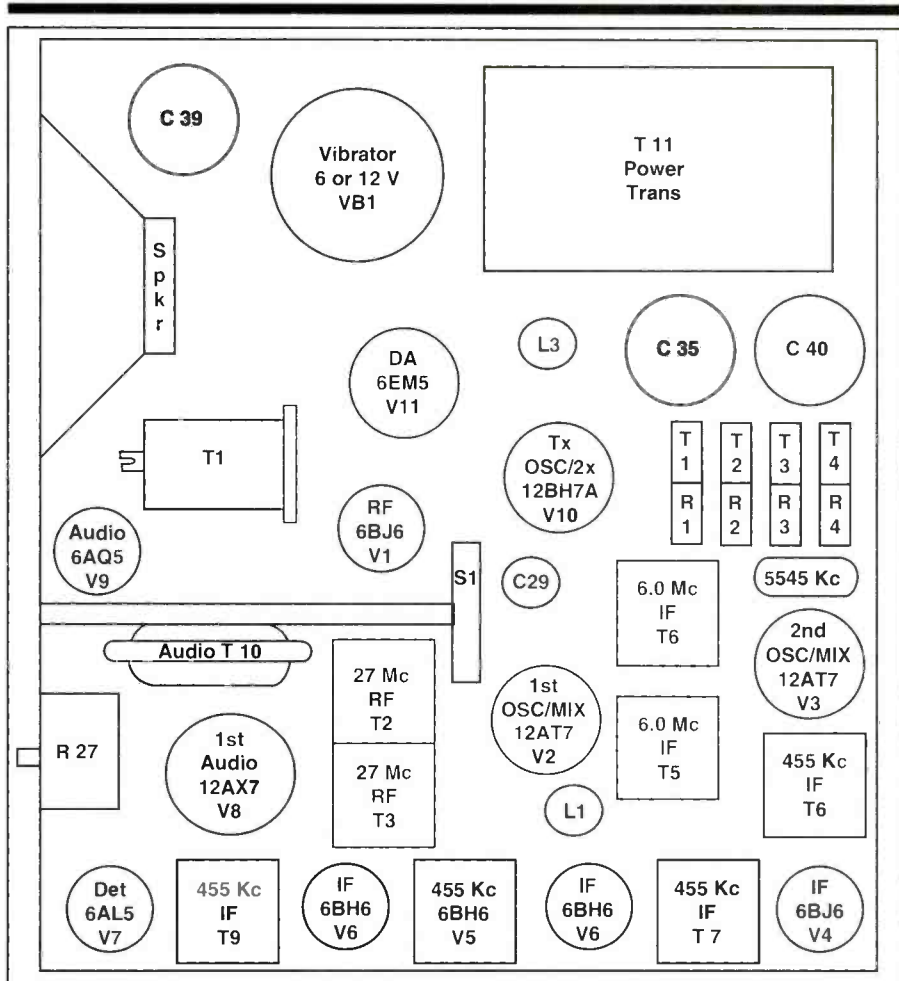
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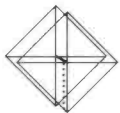
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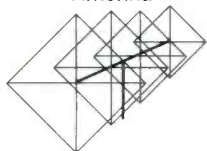
Here's the top view of a typical Polycomm chassis.

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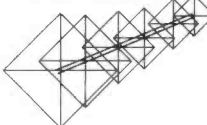
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particular resistor, the same process
 would be used elsewhere on your unit for
 any defective parts you find, now or later.
 If any part you replace has an insulating
 sleeve on it, be sure to put it back on the
 new part.

Getting The Right Tools

Since I don't know what tools or skills
 you have with electronic equipment, you
 should consider finding someone that's
 more experienced and has the required
 tools or meters. Perhaps a friend knows
 an electronics technician or you know the
 electronic instructor at your nearby Vo-
 Tech school. The instructor might even
 suggest a former student that would be
 willing to work with you on a project.

This will become increasingly impor-
 tant, because we'll soon be powering up
 this radio. There are many places on both
 top and bottom having exposed high volt-
 age in excess of 300 volts! *This is serious
 voltage and can kill you!* A moment of
 inattention spells disaster. So if you don't
 have any experience, find someone who
 does. You'll be safer and live a lot longer.

In our next column, coming up in
 March, we will begin with checking your
 117 Volt power cord to ensure it's correct,
 or making one if yours is missing. The
 power connector on the back of the set is
 a 10-pin plug, and it's important that it be
 wired properly and fused correctly. In
 fact, we're going to have you *under-fuse*
 the set when you first power it up. When
 you turn it on, other than the initial surge,
 the current on receive is lower than dur-
 ing transmit. The normal fuse used is a
 standard 1 amp (not slow-blow), allow-
 ing for a transmit load, plus some extra to
 prevent fuse fatigue. At first we will use
 a lower value so it will blow quickly if
 there is a problem in the power supply or
 receiver section, preventing additional
 damage, if possible. Remember resistor
 R-70? It was damaged for some reason,
 and whatever caused the damage may still
 exist in the radio.

If you have any questions concerning
 our project, some other model or other CB
 matters, feel free to write me at 3701 Old
 Jenny Lind, Ft. Smith, AR 72901. En-
 close a stamped, self-addressed envelope
 for a direct reply. ■

Popular Communications Reader Survey

January 1997

Happy New Year! While most of the country is waist-high in the deep freeze—except you clever folks who migrated to warmer areas—and our coax has that icy glow, we can't help wondering if there's any end to winter's wrath!

But from the warmth of our *Pop'Comm* conference room we're sorting through the first results of our Reader Survey, and we've selected our first winner of a one-year *Pop'Comm* subscription, D. Zanelotti, of Buffalo, NY. Congratulations!

Of the several thousand responses we've received, we've learned that most respondents have been monitoring and directly involved in the hobby for more than a quarter century. A great many readers also report between 11–25 years monitoring experience. Interestingly, that's not to say those folks with fewer radio years under their belt aren't a significant part of *Pop'Comm's* readers; those reporting radio monitoring experience from 3–5 and 6–10 years, were one-quarter and one-third the total of more experienced monitors, and still count as a sizeable portion of our readership.

Age. It's something many of us would rather not think about, but it's a fact of life; and it underscores something we've been saying for many years: Folks in our little corner of the world are seeing a few more grey hairs these days. According to our survey, most readers seem to range in age from 45–54, followed a close second by those 35–44 years young. We also find very few readers 18–24, but interestingly, there are twice as many readers age 75 and over as there are 18–24; in each case the numbers aren't insignificant. There were 10 times as many respondents age 25–34 than those under 18.

Our Reader Survey also tells us that 98 percent of our readers are male, and of those numbers, most are married. The ratio of male to female readers is 49 to one.

By far, the majority of you indicated you enjoyed international shortwave listening, followed closely by HF monitoring of amateur, utility and DX stations. That by no means diminishes the many readers who monitor pirate broadcasts and RTTY/digital communications. In fact, the number of folks who are into RTTY/digital communications warrants more coverage in *Pop'Comm*, so look for these articles in future issues!

On the scanning side of the house, by a margin of 2-to-1, you listen to police, fire and medical comms over aircraft and government communications. But again, the number of readers who indicated a keen interest in the later two categories are significant. By a margin of 6-to-1 your interest in police, fire and medical comms over satellite monitoring underscores our continued extensive coverage of these types of communications. Your responses do indicate a growing interest in military and other communications; something we'll certainly consider in the coming months as we plan our editorial coverage.

Once again, we invite you to take part in our free Reader Survey by circling all numbers on the postage-paid Reader Service Card that apply to you. Next month we'll be announcing the name of another winner of a free one-year *Pop'Comm* subscription or one-year subscription extension. It could be YOU! Thanks, and Happy Holidays!

Using our *Reader Service Card*, please circle numbers that apply:

1. Which one of the following best describes the type of community in which you live?

Large City	30
Small City	31
Suburb of a city	32
Small Town	33
Rural Area	34

2. Considering all sources, approximately what is your household income (before taxes)?

Under 20,000	35
\$20,000–\$29,999	36
\$30,000–\$39,999	37
\$40,000–\$49,999	38
\$50,000–\$59,999	39
\$60,000–\$74,999	40
\$75,000–\$99,999	41
\$100,000 or more	42

3. In the last 12 month, which of the following actions have you taken as a result of reading an advertisement in *Popular Communications*?

Used Reader Service Card	43
Purchased Product/Service	44
Discussed ad with others	45
Contacted advertiser directly	46
Filed ad for future reference	47
Passed ad along to others	48
Recommended Product/Service	49

4. How many other people (besides yourself) usually read or look through your copy of *Popular Communications*?

5 or more	50
4	51
3	52
2	53
1	54
none	55

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CIRCLE 75 ON READER SERVICE CARD

Don't forget to fill out the **Popular Communications Reader Survey on page 27**

1. Which one of the following best describes the type of community in which you live?

Large City	30
Small City	31
Suburb of a city	32
Small Town	33
Rural Area	34

Your answers help us serve you better.

4. How many other people (besides yourself) usually read or look through your copy of Popular Communications?

5 or more	50
4	51
3	52
2	53
1	54
None	55

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CIRCLE 11 ON READER SERVICE CARD

Product Parade

REVIEW OF NEW, INTERESTING AND USEFUL PRODUCTS

New Tone Encoder Available



The new TE-64D tone encoder from Communications Specialists, Inc. is currently available at a suggested retail price of \$129.90.

Communications Specialists, Inc. of Orange, CA has introduced an upgraded version of their TE-64D tone encoder. The multi-purpose CTCSS/Burst tone unit now displays the actual tone frequency on a four-digit LED display. The self-contained, fully enclosed unit provides all CTCSS tones from 67.0 to 203.5 Hz plus all common burst tones from 1600 to 2550 Hz in 50 Hz increments. A front rotary dial switch provides tone selection, making it ideal for mobile or nighttime operation or when ever high visibility readout is desired.

The new TE-64D tone encoder operates on 6-16 Vdc (can be modified up to 30 Vdc) and measures 5 1/4" x 3 1/3" x 1 3/4". Frequency accuracy is .1 Hz for sub-audible and 1 Hz for audible tones. The digital display portion of the TE-64D can be added to an existing TE-64 with the TE-64D-MOD kit priced at \$49.95. This item is available as a kit or return your TE-64 for free factory installation. The TE-64D is priced at \$129.90 and is available for immediate delivery with Communications Specialist's "no-hassle" one year factory warranty. For more information, contact Communications Specialists, Inc., 426 W. Taft Avenue, Orange, CA 92865-4296 or call 1-800-854-0547 or fax 1-800-850-0547.

Newpoint Satellite Surge Pro

Newpoint recently announced that its Satellite Surge Pro model DBS500 mul-

tipath surge protector for home entertainment, home theater, and satellite surge protection expands manufacturer's warranties on satellite receivers to five years. The expanded warranty covers a registered DBS receiver for any defects in materials or spontaneous failure.

Surges, spikes and EMI/RFI noise are common electrical problems that occur on power, satellite dish, cable television and telephone lines. They can be caused by environmental disturbances, problems in the utility company's power distribution system, and poor or ageing telephone and electrical wiring. They in turn create operating problems and degrade components, significantly reducing the life of sophisticated electronic systems.

Newpoint's multipath satellite surge protectors are specifically engineered to protect today's satellite and home entertainment systems from the hazards of lightning, power surges, spikes and EMI/RFI noise. With Newpoint's multipath surge protectors, connected equipment is fully protected: The Satellite Surge Pro provides three pairs of coaxial connectors that allow the connection of dual LNB and multiple satellite receiver systems including DSS[®], Dish[®], Network, AlphaStar[®], Hughes[®] and PrimeStar[®].

San Diego-based Newpoint, a division of Fiskars[®] Inc. also manufactures a complete line of surge protectors for home office, personal and business/computer grade. This "grading" system, according to Newpoint, was first developed



Expanding the warranty on registered DBS receivers for five years. Newpoint's new DBS500 multipath surge protector retails for \$99.99.

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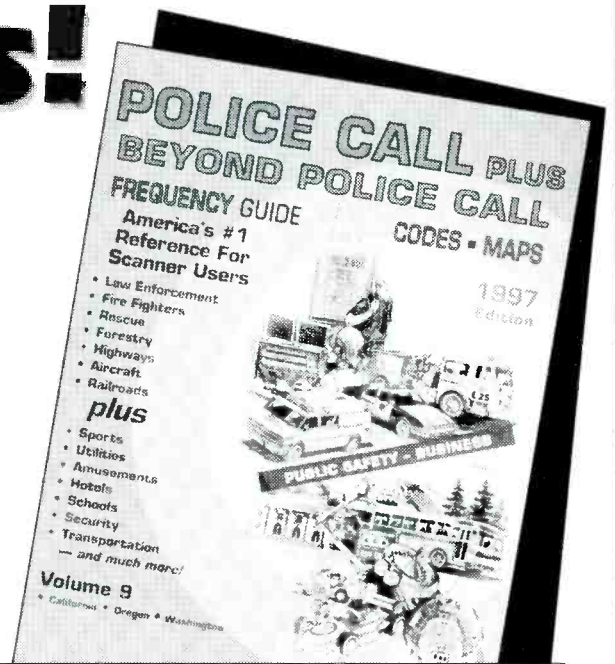
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by their company to eliminate the confusion when buying and selling power protection by designing products for specific applications.

For more information on the DBS500 which retails for \$99.99, contact Newport, 6370 Nancy Ridge Drive, San Diego, CA 92121 or call 1-800-639-7646.

Panasonic Introduces New 900 MHz Cordless Phone

Panasonic's new KX-TCM940 cordless phone combines two of the most popular features among consumers today; 900 MHz operation and digital messaging. The new phone also boasts an all-digital speakerphone.

"Many consumers are now buying replacements for their first or even second cordless phone, and they're discovering features that weren't available before, such as 900 megahertz and digital messaging," observed John McNeeney, national marketing manager for Panasonic telephone products.

Unlike conventional cordless phones which operate in the 46-49 MHz frequency range, the handset of the KX-TCM940 communicates with its base at about 900 MHz. As a result, it is less susceptible to

interference from microwave ovens, fluorescent lights and the neighbor's 46-49 MHz cordless phone. It also incorporates Panasonic's Sound Charger™ technology. This "componder" (compression/expander) based system helps maintain the integrity of the signal as it travels between the phone's base and handset, resulting in virtually corded-phone clarity, under ideal conditions.

Adding to the value of the new Panasonic cordless phone is its built-in



Panasonic's new KX-TCM940 900 MHz cordless phone features 30-channel operation, digital speakerphone and answering system.

digital answering system. Since messages are recorded on a microchip, they can be randomly played back, skipped or deleted and saved indefinitely.

The new KX-TCM940's all-digital speakerphone helps assure every word is clear, even when multiple voices on the same or opposite ends of the line are competing to be heard.

The new Panasonic 30-channel cordless phone features 10-speed dial memory slots, two-way paging between the base and handset, call screening, and hold, flash and redial buttons. It is wall-mountable and comes in either black or white. Suggested retail price is \$299.95.

Police Call Plus CD-ROM Delayed

Several weeks ago, Hollins Radio Data announced the introduction of Police Call Plus on a CD-ROM. Shortly after the announcement went out, Hollins received word that a new and improved CD-ROM "engine" would soon be available. In order to make full use of this advancement, the release has been postponed. As soon as the product is ready, readers will be advised. The company regrets any inconvenience this may cause.

Product Spotlight

POP'COMM REVIEWS PRODUCTS OF INTEREST

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Optoelectronics CX12 Optolinx

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The Optoelectronics Optolinx CX-12 PC-Radio Universal Interface.

Writing this column can get expensive. For example, earlier this year the folks at Optoelectronics sent me their Scout frequency recorder for evaluation. To give the unit a good workout, they also loaned me an AOR AR8000 scanning receiver. You may recall I also turned this into a subsequent review. Well, upon returning the AOR unit, I felt that something was missing in my life. So it wasn't too long before I succumbed to temptation and bought my own AR8000. I think my wife would like to blame that purchase on Optoelectronics for turning me on to the receiver in the first place. So when the folks at Optoelectronics sent me that Optolinx Universal Interface for evaluation, the first thing my wife said was "What else did they send you?" Well they didn't send me anything else to drool over, but I think you can count on the Optolinx becoming a permanent addition to my shack.

A Truly Universal Device

Coming up with an interface that will comply with all the various data standards that are currently used by radio manufacturers would seem to be an insurmountable task. The Optolinx is a truly universal device allowing communication in both full and half-duplex modes of operation. It also complies with the CI-V interface standard developed for ICOM receivers and now being used by newer Optoelectronics devices. This unit can also communicate with a standard TTL asynchronous serial interface. Further, the unit can connect with as many

as four such devices at a time. The Optolinx also complies with the NMEA 0183 standard for communication with GPS and LORAN receivers. Have I left anything out? This makes the Optolinx compatible with just about every modern receiver capable of computer interaction. Receivers and devices that currently can benefit from attachment to the Optolinx interface include the AOR AR8000, AR-3000A, AR2700, ICOM R7000, R7100, R9000, Optoelectronics' own Scout frequency recorder, DC440 tone decoder, and M1 frequency counter. Additionally, GPS devices such as the Trimble units can be connected to your personal computer by way of the Optolinx. Developers and experimenters will appreciate that the unit has the capacity for developing custom applications. Full electrical specifications and schematics are included to facilitate this line of inquiry.

Physically the Optolinx is small, measuring 1 3/8" H x 5 1/4" W x 2 1/2" D. However, its input and output jacks, 10 in all, can make it bristle with cables going in many directions depending on the number of pieces of hardware you have hooked up at any time. The front panel includes two 2.5 mm subminiature phone jacks. One of these provides a pair of normally-open relay contacts for controlling the pause function on a tape recorder. In fact, this relay could be trained to perform other functions by some creative programming. The second 2.5 mm jack is set up for communication with an appropriate GPS receiver that conforms

to the NMEA standards. Next comes three standard 3.5 mm miniature stereo phone jacks that serve as serial data connectors. At these points, you can jack into three separate Optoelectronics or other CI-V compatible devices. These jacks are followed by a special connector for a 7-pin FFC (Flat Flexible Cable) designed to connect with the data port that can be found on the AOR AR8000 and AR2700 series receivers. The Optolinx comes supplied with a 12-inch long FFC with reinforced ends. A word to the wise. Don't lose track of this cable! The folks at Optoelectronics assure me that the only source they have is AOR and these puppies cost in excess of \$20 to replace. The final connector on the front of the Optolinx is labeled for Custom Input Applications. This is a 9-pin miniature DIN-type connector similar to what you might find for connecting a microphone to a transceiver. This connector allows the user access to RS-232C, TTL, RTS, CTS, CI-V, Audio and Squelch inputs and outputs. This port can be used to develop additional applications. Currently it is intended for use with the AR3000A's special switching capabilities, but the possibility for use with other receivers and devices will no doubt be found by the curious folks who like to hack their hardware. The front panel is further augmented with four LEDs that serve to verify Remote, Half-Duplex, Full-Duplex and AR3000 functions.

The back panel reveals the more utilitarian aspects of the Optolinx unit. There

is a four-position DIP switch used to configure the Optolinx into its many operating modes. Next is the on/off power switch. Then we find the standard DB9 RS-232C serial interface port for connecting the interface to your personal computer. This port follows accepted computer industry conventions. Then there's the jack for inputting 9-12 Vdc to power the Optolinx device. The unit is supplied with a 9 volt "wall wart" transformer. An optional internal rechargeable battery pack is available for portable operation. Finally, we find an LED to indicate the power-on state of the unit.

The supplied manual includes complete documentation with pin-out configuration for all jacks. This allows the user to have a full understanding of what is actually going on when the various equipment is connected to their computer by way of this interface. The folks at Optoelectronics have even included a detailed schematic diagram to further enhance understanding and the potential for further device implementation. They have included audio input circuitry that can serve as a Data Slicer. This gives the possibility of software decoding of FSK and AFSK modulated carriers. I also know of at least one software engineering firm that is taking a hard look at the GPS features toward the possibility of "real time" position mapping. Clearly the Optolinx is designed not just for today's leading edge receivers, but also for future receiver and device developments.

Controlling the AR8000 With Optolinx

When I purchased my AOR AR8000 receiver, I had more than a little trouble tracking down the companion AOR CU8232 interface. I found the Optolinx to be an excellent substitute, capable of all needed interface functions. I was able to control the receiver by way of my computer with a high degree of flexibility and utility. The Optolinx allowed me complete frequency control, high-rate scanning and quick and easy bandplan modification. Since I travel a great deal, the ability to quickly upload frequencies for areas I'm working in is paramount. I just don't have the patience to punch all those buttons. With the Optolinx, I simply pick a database prepared from the files stored in my computer or on a CDROM, load up and go, all in just a few minutes. Also, bringing my "domesticated" AR8000 up to international standard frequency cov-

erage took less than five minutes using appropriate software. Speaking of software, I fed my Optolinx ScanCat Gold, Scan*Star, ScannerWEAR, AOR PC-Manager, Radio Manager for Windows as well as Optoelectronics own Codelog and Scout software. Nothing burped, and all software packages worked as advertised within the limits of the devices I hooked up. In addition to connecting the AR8000, I also made use of my Optoelectronics Scout and DC440 Tone Decoder. Use of both of these devices were significantly enhanced with the addition of Optolinx technology. I was able to take my Scout for a walk, allowing it to pick up a bunch of frequencies in its memory. Upon return home, I simply jacked the Scout into the Optolinx. These frequency hits were then stored in my computer's memory for further analysis including researching against the Percon Spectrum CD-ROM which I reviewed in November's *Pop-Comm*. The information management potential of this capability would have been unthinkable to the hobbyist even a few short years ago. Now this well-researched frequency information can be loaded up into my AR8000 for future use.

Other Great Possibilities!

The DC440 was never easier to use than when I had hooked it up to the Optolinx device. The Optolinx gives the user the ability to log tones and codes and associate them with frequencies for future reference and use. Marrying the capabilities of the Optoelectronics Scout, DC-400 and a high-performance scanning receiver through the Optolinx interface made for an unbeatable setup for frequency hunting when coupled with a laptop computer. My briefcase would make

anybody short of an NSA agent drool. Speaking briefly of the computers I used for this test, I was able to run the Optolinx to computers using 8250, 16450 and 16550 UARTS, and found it to be well behaved in every case. The computer-to-Optolinx connection is rock solid RS232C industry standard all the way. Following the directions in the unit's manual and any information supplied by your device or receiver manufacturer should result in excellent data transfer through the Optolinx.

Optoelectronics also sells the M1 frequency counter. This device is one of the few frequency counters on the market that comes with a TTL asynchronous serial interface. This unit hooks up to the Optolinx in half-duplex mode and allows logging of frequencies with time and date stamping using Optolog software.

Many receivers produced by ICOM can also make use of the Optolinx's capabilities. As stated earlier, the Optolinx conforms to the ICOM CI-V interface standard. The Optolinx is able to perform all of the functions of ICOM's own CT-17 interface with the additional feature of squelch status input allowing for a greatly enhanced scanning rate.

The full capabilities of the GPS interface are still being considered. The ability to generate mapping, based upon frequency research information taken from a CDROM such as the Percon Spectrum. No transmitter location will ever remain secret for long with such a setup.

It's exciting to see a device that is destined to become a standard for radio-computer communications. As more software and hardware engineers take the Optolinx capabilities into consideration, the future of computer assisted scanning looks very bright indeed. ■

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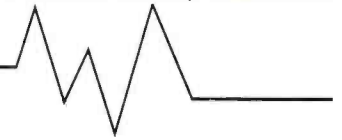
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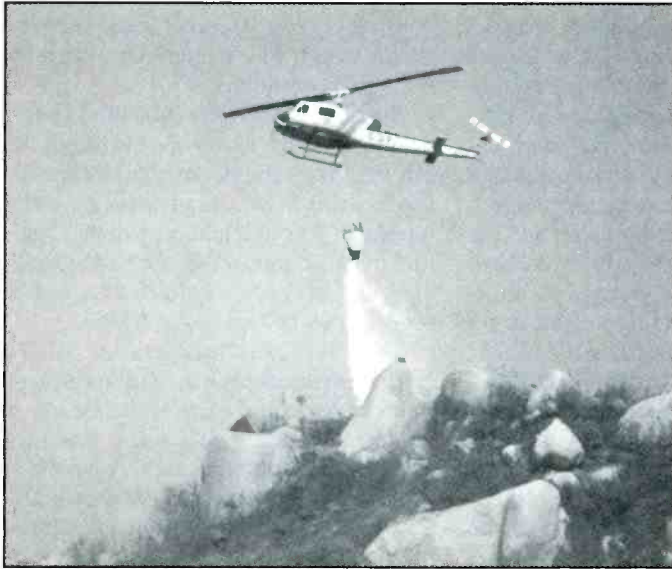
Radio Resources

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INTERESTING THOUGHTS AND IDEAS FOR ENJOYING THE HOBBY

Searching and Scanning



It's easy to find more action if you take advantage of your scanner's search function. Check your manual for specific details, and remember to search small segments for the best results. (Photo by Steve Adams)

The Uniden Bearcat 800XLT, still used by many hobbyists, is an old favorite. Its search function enables the listener to snag unusual transmissions from many agencies. (Courtesy Uniden America Corp.)



When most people buy a scanner, they just enter the known frequencies of their public safety agencies, the fire and police departments serving their area, and scan and listen. Most scanners today are designed to do much more.

If you haven't used your scanner in the *search* mode, you could be missing more than half of the listening that is available to you. One of the hottest scanners on the market today is the Bearcat 9000XLT. Probably the best feature of this scanner is the fantastic search rate. The 9000XLT can search at the rate of 300 steps per second. The scanner will also keep a record of how many times a frequency is active during the search process. You can always find some interesting activity with such a scanner.

If your scanner has a search mode, the owner's manual is filled with directions on how to set up a search sequence. To search, program in an upper and lower frequency limit, and let

the scanner search all of the frequencies between these two limits for activity. I have two suggestions. First, search small portions of the band. You are much more likely to get better information, for example, if you search between 155 and 156 MHz rather than enter a large frequency block such as 155 MHz and 165 MHz. I would use a 2 MHz maximum search block. Use less if you want to really know what's in the selected block of frequencies. Finally, do not mix modes such as AM and FM. Do not, for example, search the AM aircraft band and a nearby FM band at the same time. Some scanners do not handle mode changes well, and some search only in one mode at a time.

It's helpful to know FCC band and frequency assignments when you search. Many local police sometimes use "local government" channels during nighttime, non-business hours, to work special surveillance details. The following listing gives you the FCC assignments of the most frequently scanned frequencies. Use this listing to check the activity in your listening area.

30-50 MHz FM in 20 kHz steps

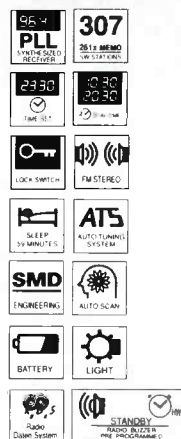
30.000-30.560	U.S. government	39.020-40.000	Police/Local govt.
30.560-31.980	Business/Industry/Forestry	40.000-42.000	U.S. government
31.990-32.000	Public Safety	42.020-42.940	State Police
32.000-33.000	U.S. government	42.960-43.680	Business/Paging
33.000-33.100	Public Safety	43.700-44.600	Transportation-bus, truck/Cordless base
33.120-33.400	Business/Petroleum	44.620-45.060	State Police/Forestry Conservation
33.420-34.000	Fire	45.080-45.860	Police/Local govt./Highway Maint.
34.000-35.000	U.S. government	45.900-46.040	Police/Emergency
35.020-36.000	Business/Paging	46.060-46.500	Fire
36.000-37.000	US Government	46.520-46.580	Local govt.
37.020-37.420	Police/Local govt.	46.610-46.970	Cordless Phones-base in 20/40 kHz steps)
37.460-37.860	Power, Water, Pipeline	47.020-47.400	Highway Maint.
37.900-38.000	Highway Maint./Special Emergency	47.440-47.680	Industry/Emergency
38.000-39.000	US Government	47.700-49.580	Industry/Cordless handset
		49.670-49.990	Cordless Phones-handset (irregular steps)

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- Auto Tuning Methods
- Auto SW Search
- ATS Automatically Presets Memories
- Manual Editing
- USB/LSB Single Side Band Select
- RF Gain Control
- 3 Individual Timers
- Adjustable Sleep Timer
- Dual Time System
- Selectable Tune Steps
- Priority Key
- Wide/Narrow Filter
- Battery Indicator
- Signal Strength Meter
- Mono/Stereo Switch
- LCD Display Light
- Auto Daylight Savings Time Button
- Lock Switch
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50-150 MHz

50.000-54.000	Amateur (6-meter)
54.000-72.000	Broadcast TV chs 2-4 (6 MHz steps-FMw)
72.000-76.000	(various)
76.000-88.000	Broadcast TV chs 5-6 (6 MHz steps-FMw)
88.100-107.900	FM Broadcast (200 kHz steps-FMw)
108.000-118.000	Aero-navigation
118.000-136.000	Aero-communications (25 kHz steps-AM)
136.000-138.000	Satellite
138.000-144.000	U.S. government
144.000-148.000	Amateur (2-meter)
148.000-150.800	U.S. government

150-162 MHz FM in 15 kHz steps

150.815-150.965	Auto Emergency
150.995-151.595	Highway/Forestry/Industry
151.625-151.955	Business (30 kHz steps)
152.030-152.240	Mobile phone (Base)/Page (30 kHz steps)
152.270-152.450	Taxi (Base)
152.510-152.840	Mobile phone (Base)/Page (30 kHz steps)
152.870-153.725	Industry
153.740-154.445	Fire/govt. (mobile)
154.452-154.482	Industry (telemetry) (7.5 kHz steps)
154.490-154.625	Industry
154.650-156.240	Police/govt./Emergency/Hwy.
156.025-157.425	Maritime (ship) (25 kHz steps)
157.470-157.515	Auto Emergency
157.530-157.710	Taxi (mobile)/Business
157.770-158.100	Mobile phone (mobile)/Page (30 kHz steps)
158.130-158.460	Industry
158.490-158.700	Mobile phone (mobile)/Page (30 kHz steps)
158.730-159.210	Police/govt. /Highway
159.225-159.465	Forestry Conservation
159.495-160.200	Transportation-bus, truck
160.215-161.610	Railroad
160.625-160.950	Maritime-Coast (25 kHz steps)
161.640-161.760	Broadcast Pickups
161.500-162.025	Maritime-Coast (25 kHz steps)

162-450 MHz

162.025-174.000	(various, mainly U.S. government)
174.000-216.000	Broadcast TV chs 7-13 (6 MHz steps-FMw)
216.000-218.000	Maritime-AMTS, coast (25 kHz steps)
218.000-219.000	IVDS-Interactive Video & Data
219.000-220.000	Maritime-AMTS, ship (25 kHz steps)
220.0025-220.9975	General (trunked)-base (5 kHz steps)
221.0025-221.9975	General (trunked)-mobile
222.000-225.000	Amateur (1.25-meter)
225.000-400.000	U.S. government-Aero (AM)
400.000-406.000	U.S. govt.-Meteorological/Space
406.000-420.000	U.S. government
420.000-450.000	Amateur (70cm)/military radar/radiolocation

450-460 MHz FM in 25 kHz steps (450-455 base, 455-460 mobile) 12.5 kHz steps for 2 watt use (451-454 & 456-459)

450.050-450.925	Auxiliary Broadcasting
451.025-452.025	Industry
452.050-452.500	Taxi/Industry/Transport
452.525-452.600	Automobile Emergency
452.625-452.950	Transportation-Trucks/Railroad
452.975-453.000	Relay Press
453.025-453.975	Local govt./Public Safety
454.025-454.650	Mobile Telephone
454.675-454.975	Mobile Telephone Air (ground)
455.050-455.925	Auxiliary Broadcasting
456.025-457.025	Industry
457.050-457.500	Taxi/Industry/Transport
457.525-457.600	Maritime-shipboard repeater
	(mobiles-467.xxx) Business-low power
457.625-457.950	Transportation-Trucks/Railroad

457.975-458.000	Relay Press
458.025-458.975	Public Safety/Local govt.
459.025-459.650	Mobile Telephone
459.675-459.975	Mobile Telephone Air (airborne)

460-470 MHz FM in 25 kHz steps (460-465 base, 465-470 mobile) 12.5 kHz steps for 2 watt use

460.025-460.550	Police/Public Safety
460.575-460.625	Fire
460.650-460.875	Business-Airport use
460.900-461.000	Business-Central Alarms
461.025-462.175	Business
462.200-462.525	Manufacturers/Industry
462.550-462.725	GMRS (12.5 kHz steps)
462.750-462.925	Business (paging)
462.950-463.175	MED (Ambulance/Hospital)
463.200-465.000	Business
465.025-465.550	Police/Public Safety
465.575-465.625	Fire
465.650-465.875	Business-Airport use
465.900-466.000	Business-Central Alarms
466.025-467.175	Business
467.200-467.525	Manufacturers/Industry
467.550-467.725	GMRS-Family Radio (25 kHz steps)
467.750-467.925	Business (2 w. telemetry)
467.950-468.825	Maritime-shipboard (Rptrs. at 457.xxx)
468.200-469.975	MED (Ambulance/Hospital)
	Business

470-806 MHz 6 MHz per channel, wide FM audio

470.000-512.000	Broadcast TV, chs 14-20, Large Metro
	Public Safety (25 kHz steps-FM)
512.000-806.000	Broadcast TV, Chs 21-69

806-896 MHz FM in 25 kHz steps (mobile 806-851, base 851-896)

806.0125-809.7375	General-conventional
809.7625-810.9875	General-single channels
811.0125-815.9875	General-trunked
816.0125-820.9875	SMR-trunked
821.0125-823.9875	Public Safety-trunked (12.5 kHz steps)
824.040-834.360	Cellular Telephone (30 kHz steps)
834.390-835.620	Cellular Telephone (data) (30 kHz steps)
835.650-848.970	Cellular Telephone (30 kHz steps)
849.0055-850.9735	Aircraft Telephone (6 kHz steps-AM)
851.0125-854.7375	General-conventional
854.7625-855.9875	General-single channels
856.0125-860.9875	General-trunked
861.0125-865.9875	SMR-trunked
866.0125-868.9875	Public Safety-trunked (12.5 kHz steps)
869.040-879.360	Cellular Telephone (30 kHz steps)
879.390-880.620	Cellular Telephone (data) (30 kHz steps)
880.650-893.970	Cellular Telephone (30 kHz steps)
894.0055-895.9735	Aircraft Telephone (6 kHz steps-AM)

896-1300 MHz

896.000-901.000	SMR/Business/Industry-mobile (12.5 kHz steps)
901.000-902.000	Personal Communications Services
902.000-928.000	Amateur (33cm)/various secondary
928.000-929.000	
929.000-930.000	Paging
930.000-931.000	Personal Communications Services-base
931.000-935.000	
935.000-940.000	SMR/Business/Industry-base (12.5 kHz steps)
940.000-941.000	Personal Communications Services-base
941.000-944.000	
944.000-952.000	Broadcast Auxiliary-STL (studio-xmitter link)
953.000-960.000	
960.000-1215.000	Aeronautical navigation
1215.000-1240.000	U.S. govt.-Radiolocation/Space
1240.000-1300.000	Amateur (23cm)

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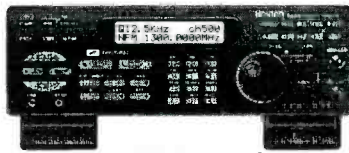
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- Barometer, Indoor Hygrometer & Thermometer, Clock/Calendar BA888-Z \$89.95
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- Thermometer with transparent calendar & clock display by OSI TC188-Z \$19.95
- Thermometer with AM/FM clock radio by Oregon Scientific CR388-Z \$39.95
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Bearcat® 9000XLT-Z Radio Scanner

Mfg. suggested list price \$769.95/Special \$357.95
500 Channels • 20 banks • Alpha numeric display
Turbo Scan • VFO Control • 10 Priority channels
Auto Store • Auto Recording • Reception counter
Frequency step resolution 5, 12.5 & 25 KHz.
Size: 10-1/2" Wide x 7-1/2" Deep x 3-3/8" High
Frequency Coverage:

25,000-549,995 MHz., 760,000-823,995 MHz.,
849,0125-868,995 MHz., 894,0125-1,300,000 MHz.

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

VHF Transceiver

RELM® WHS150-Z Transceiver/SPECIAL

Mfg. suggested list price \$481.67/Special \$289.95
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Scanning The Globe

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

A Bunch of Answers

It's that time of year—a new year. Time to get the scanning priorities straight for the coming year. Why not think about where you've gone in the hobby, and then take a look at where you want to go for the coming year. Why not try to understand more complex radio systems such as trunking. Or try to develop an understanding how cellular phone systems operate. Get a book, read some information. Advance yourself in the hobby in the coming year.

Hey, the year 2000 is almost here and while it always seemed futuristic as I grew up, the future is here and we need to be able to know what the future is before we live the future. So . . . go at it! We'll try to help you through the year through this column, too. Anyway, we have a hodge-podge of information to present this month, so lock on the channel and we're off!

Rail Radio

One of the favorite scanning targets of my oldest son are railroad frequencies. He's a railfan, and the hobby of scanning meshes well with his interests. When we go on excursion or tourist line rides, we always take along a handheld scanner to monitor our ride. Some of the smaller tourist lines just use business radio frequencies, however, most full-fledged railroads use a set of frequencies specifically allocated for rail use. First of all, railroads have both short and long-distance communications. Railroads usually use remote transmitters along rail lines to keep in touch with trains while they're traveling in certain areas. These remote transmitters usually operate on designated road channels and can be activated by dispatchers either by microwave or telephone lines. This allows rail crews to have constant contact with their dispatchers no matter where they are. Some railroad communications, such as those in a rail yard, are short distance by their very nature, and don't need to transmit over a wide area. In many areas of the United States, railroads will operate private telephone systems on dedicated frequencies



Here's the listening post of Peter Strank in Eaton Rapids, Mich. Scanners included in this shack are the Realistic Pro-2040 and a Pro-23 handheld. Also included are shortwave receivers and CB equipment.

so rail crews can make telephone calls over their radios.

If you want to know where to look for railroad communications, all you have to do is search in 15 kHz steps in the 160.215 to 161.565 MHz range. There also are some 12.5 kHz channels on UHF from 452.3125 to 452.4875 and 452.7625 to 452.9625. Likewise, the accompanying "input" frequencies 5 MHz higher also may be used for inputs or mobile communications. In fact, on UHF you'll probably find data tones as trains pass by. These tones are transmitted by radio boxes installed on the last car of a train to send signals to the crew in the locomotive. The rear-end detectors have replaced the caboose of the past.

Im-media-ate Fire

If you're on the east coast, you may have noticed that the frequency of 170.150 is used for fire calls, but seems to be a news media frequency in some other areas. There's a good reason why this is true. The frequencies 166.250 and 170.150 may only be assigned to fire

departments within 150 miles of New York City. The frequencies are in use primarily in northern New Jersey, Connecticut and Philadelphia. The Philadelphia Fire Department probably is the biggest user of the two frequencies; it uses 166.250 as a repeater input frequency for repeaters on 170.150. The system is used there for rescue and paramedic service.

However, in the rest of the nation, radio and TV stations get to use 166.250 and 170.150 for remote broadcasts. In many areas, a station may use both of the frequencies in one way or another. The usage of those frequencies may be in conjunction with channels in the 161 MHz band (161.640, 161.670, 161.700, 161.730 and 161.760) that stations also may be licensed to use. For instance, in the area where I used to live, a radio station uses 166.250 for the actual remote broadcasts, but uses 161 MHz channels for cuing on that system.

Picking Up Signals

I know many scanner listeners will use a handheld scanner at home, but also have

a base scanner antenna on the roof of their home for extended range. Some listeners say that allows them to hear most stations in a 50 mile radius of their home, especially if the area is mostly flat. However, if you want to hear a station that's farther away, how do you accomplish this?

First of all, there may be a reason you can't hear a specific station you want to hear. The station's power output may be too low for you to ever hear it, no matter what you do. If you can hear the signals while you're mobile a good distance from where the transmitter is located, then you might be able to tune it in from home with a few tricks. Also, consider that there may be a natural obstruction that keeps you from hearing the signal. Is there a mountain or high rise in the land that would effectively block the signal?

If you want to try to capture the signal, here are a few tips. First of all, omnidirectional antennas are out of the picture. You've got to aim a directional (yagi) antenna at the desired signal. The more elements you have on the yagi antenna, the greater your chances of snagging the station. You also need to get the yagi antenna up as high as possible, even if it means using a tall mast or tower. Yagi

"The more elements you have on the yagi antenna, the greater your chances of snagging the station."

antennas aren't generally available from scanner shops. You'll need to check with a local two-way radio dealer or amateur radio supplier for what you want. The yagi antenna generally will be operative on one band only, such as VHF high band or UHF, although there are some dual-band ham yagi antennas available. Ham yagi antennas are generally cheaper than yagi antennas made for two-way radio users and perform the same (and sometimes are the exact same antenna, but cut lower in frequency for the ham bands at 144-148 and 440-450 MHz).

In addition to a yagi, be sure to use a good coaxial cable. Forget the CB-type RG58U cable, as you will lose too much signal before it gets from the antenna to the receiver. Spend a little more on a cable such as 9913, which has a lot less signal loss at VHF and UHF frequencies. Another idea would be to purchase a signal preamplifier designed for scanner users, or

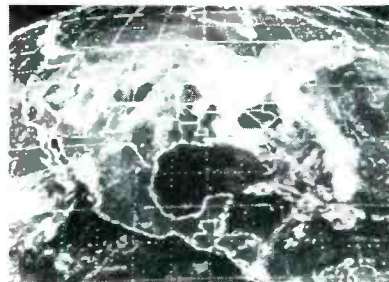
even better yet, one designed for the band you want to listen to. If you can't find one of these from a radio supplier, you can use a preamp designed for TV. Check the operating frequency range of the preamp. Typically you will find them for a range such as 50-900 MHz, which would cover all the TV channels, as well as all VHF high and UHF scanner bands, including the 800 and 900 MHz bands. I know of many scanner listeners who have gotten very satisfactory results from TV preamps on their scanners (between the antenna and receiver).

By improving your scanner's ears, you greatly improve your chances of hearing a faraway signal. We're not guaranteeing that you will be able to hear the desired station, but you will be much closer with each step you take along the way.

On Your Tows

Many hobbyists enjoy listening to tow trucks when the weather gets bad. Unless you're looking in the right places, you may hear only half of the tow trucks in your area, especially if all you monitor are the frequencies allocated to the automobile emergency radio service.

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CIRCLE 88 ON READER SERVICE CARD

First, let's take a look at the frequencies reserved for privately-operated tow trucks: 150.815, 150.830, 150.845, 150.860, 150.875, 150.890, 157.470, 157.485, 157.500 and 157.515. In addition, the following frequencies can be used by auto clubs providing emergency road service for members: 150.905, 150.920, 150.935, 150.950, 150.965, 452.525, 452.550, 452.575 and 452.600. The four UHF frequencies are simplex only—without repeaters—meaning the base stations and mobiles operate on the same frequency, which is unlike most wide-area UHF radio services. Tow operators also are eligible for automobile emergency frequencies in the 851–866 and 935–940 MHz bands.

However, you'll find that most tow trucks aren't generally on automobile emergency radio service frequencies. Most use business band frequencies because it's easier for radio shops to set up their customers this way. Because any profit-making enterprise can use business radio service frequencies, tow operators are included in this group. While some tows may take advantage of frequencies in the VHF low band range between 30 and 50 MHz, as well as those frequencies

available for businesses in the 151 and 154 MHz ranges, many simply operate on wide-area repeater systems in the 461–465 MHz band. In larger metro areas, you'll find tow trucks using the 470–512 MHz band, the 851–856 repeater band, the 856–866 MHz trunked band, or the 935–940 MHz trunked band.

A towing firm may require wide-area repeater coverage, however, the automobile emergency radio service does not allow repeaters on UHF. Because the business radio service does allow repeaters on UHF, that may prove a viable alternative for a tow operator. It may prove cheaper for a tow operator to operate on a community UHF repeater that's owned by a radio shop and which is rented to various firms that all use the same repeater. It certainly is a lot more expensive for a firm to put its own repeater on the air, so community repeaters with monthly user fees usually prove less expensive. It's the same reason you may see newspapers using community repeaters for news and circulation activities, instead of putting their own repeaters on the air on the two available frequencies at 452.975 and 453.0 MHz.

There are also a number of frequencies available to tow operators for low-power (2-watt) operation. These frequencies—452.5125, 452.5375, 452.5625, 452.5875 and 452.6125—could technically be used for on-scene comms, but might be more practically employed for mobile repeater use. For instance, the tow truck driver would carry a UHF handheld while outside his truck and transmit to the truck on UHF, while a repeater in the truck retransmits the signal onto the VHF channel with much more power output, allowing the driver to maintain contact with his or her dispatcher while outside the tow truck. As a general rule, these frequencies aren't normally used, but don't be surprised to find something pop up!

Mailbag

Do you have any scanner-related questions? Do you have any listening tips worth passing along to your fellow readers? How about sending in a photo of your listening post or antenna farm? Write to: Chuck Gysi, N2DUP. Scanning the Globe, *Popular Communications*, 76 N. Broadway, Hicksville, N.Y. 11801-2909.

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The DELTACOMM™ I-9000 (1-2000 MHz) communication manager and your MS-DOS computer gives you a custom interface integrated with optimized software that will not just control but will maximize the potential of your R9000. Here are a few (there are many more) examples of the advanced features DELTACOMM™ I-9000 has to offer.

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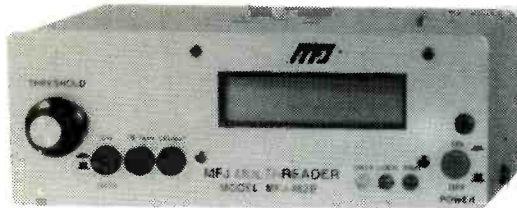
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Mobile Scanner Ant.

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look-a-like. Covers 25-1300 MHz. High - est gain on 406-512 and 108-174 MHz, 19 in. Magnet mount. MFJ-1824BB has BNC/UHF plug; MFJ-1824BM has Motorola plug.

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Pop'Comm's World Band Tuning Tips

January 1997

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 7 pm EST, 6 pm CST, 4 pm PST.

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0000	5995	Voice of America		0200	5077V	Carocal, Colombia	SS
0000	6020	R. Netherlands via Bonaire		0200	5930	R. Prague, Czech Rep.	
0000	7150	Radio Ukraine		0200	6000	Radio Havana Cuba	EE
0000	7165	Croatian Radio		0200	6095	R. Portugal	
0000	9580	R. Yugoslavia	EE	0200	9475	R. Cairo, Egypt	
0000	9705	R. Mexico Int'l	SS	0200	9735	R. Nacional Paraguay	SS
0000	5010V	Radio Cristal Int'l, Dominican Rep.	SS	0200	11710	RAE, Argentina	
0027	6055	VOIRI, Iran	sign on	0245	7305	Vatican Radio	
0030	4980	Ecos del Torbes, Venezuela	SS	0250	7200	Republic of Sudan Radio	AA
0030	5965	R. Havana Cuba	SS	0250	9605	Vatican Radio	
0030	6065	R. Sweden		0258	4750	Voice of America relay, Sao Tome	
0030	9540	Radio Exterior Espana, Spain		0300	3210	R. Exterior de Espana via Costa Rica	SS
0030	9990	Voice of Hope, Lebanon	AA	0300	3306	Zimbabwe Broadcasting Corp	
0030	15370	Radio Thailand		0300	3340	Radio Uganda	
0050	11800	RAI, Italy		0300	4920	R. Quito, Ecuador	SS
0100	4805	R. Amazonas, Brazil	PP	0300	4940V	R. Amazonas, Venezuela	SS
0100	4835	R. Tezulutlan, Guatemala	Quechua	0300	6560	Republic of Iraq Radio	
0100	4840	R. Andahuaylas, Peru	SS	0300	7115	R. Sweden	
0100	4950	Radio Nacional, Angola	PP	0300	9665	Voice of Turkey	
0100	6135	Swiss Radio Int'l		0300	9725	Adventist World Radio, Costa Rica	
0100	6235	Radio Quisqueya, Dominican Rep.	SS	0330	4930	R. Internacional, Honduras	SS
0100	7250	V of Vietnam, via Russia		0330	7520	R. Moldova Int'l, via Russia	vern.
0100	7345	R. Prague, Czech Republic	EE	0350	3396	Zimbabwe Broadcasting Corp	
0100	9560	R. Norway	EE Sun	0400	3330	Christian Voice, Zambia	
0100	9695	UAE Radio, Abu Dhabi	AA	0400	3390	BBC, via South Africa	
0100	9745	HCJB, Ecuador		0400	4755	Trans World Radio, Swaziland	GG
0100	9835	Radio Budapest, Hungary		0400	4890	Radio France Int'l, via Gabon	FF
0100	9955	WRMI, Miami	EE/SS	0400	4910	RTV Guineenne, Guinea	FF
0100	11785	R. Guaiba, Brazil	PP	0400	4915	R. Cora, Peru	SS
0100	17510	KWHR, Hawaii		0400	5955	Channel Africa, S. Africa	
0130	5960	R. Japan, via Canada		0400	5975	BBC, via Antigua	
0130	7448	Voice of Greece	GG/EE	0400	7180	Voice of America, via Sao Tome	
0130	9655	Radio Austria Int'l	PP	0400	7240	V of Russia	
0145	4885	R. Clube do Para, Brazil	PP	0400	9435	Kol Israel	
0145	6140	Radio Tirana, Albania		0430	4770	R. Nigeria, Kaduna	sign on
0145	7290	R. Sweden		0441	5965	R. Oranje, South Africa	sign on
0200	4830	R. Tachira, Venezuela	SS	0457	7185	Channel Africa	PP, sign on
0200	4955	Radio Nacional, Colombia	SS	0500	4815	Radio Burkina, Burkina Faso	FF
0200	4985	Radio Brazil Central, Brazil	PP				

(Continued on page 57)

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0500	4832	Radio Reloj, Costa Rica	SS	1230	15640	Radio Bulgaria	
0500	4990	Radio Nigeria, Lagos		1230	17630	Africa No. One, Gabon	
0500	6110	Radio Japan	EE	1300	9590	R. Norway	NN
0500	6185	R. Educacion, Mexico	SS/EE	1300	9625	CBC Northern Service, Canada	
0500	7465	Kol Israel		1300	11815	Polish Radio Warsaw	
0500	7480	R. Bulgaria		1300	11850	R. Thailand	NN
0500	9675	Channel Africa, South Africa		1300	17745	R. Romania Int'l	
0600	4870	ORTB, Benin	FF	1320	21520	RAI, Italy	sign on; Sun.
0600	5055	TIFC, Costa Rica	SS	1330	11650	R. Sweden	
0600	6165	Swiss Radio Int'l		1330	15060	BSKSA, Saudi Arabia	AA
0600	9425	Voice of Greece		1330	15340	Radio Denmark, via Norway	DD
0600	9820	R. Havana Cuba		1400	9355	Monitor Radio - KHBI, No. Marinas	
0630	5047	RTT, Togo	FF	1400	11720	R. Norway	NN
0630	5985	R. Vlандаaren, Belgium		1400	11800	Radio Australia	
0630	6015	R. Austria Int'l, via Canada		1400	11895	R. Japan, via Fr. Guiana	
0630	9645	Vatican Radio		1430	15325	R. Canada Int'l	
0700	5025	Radio Rebelde, Cuba	SS	1430	21515	Radio Portugal Int'l	
0700	6070	CFRX relay CFRB, Canada		1500	11580	KTWR, Guam	
0700	6018v	Radio Victoria, Peru	SS	1500	13785	Radio Pyongyang, North Korea	
0730	5985	Radio Vlaanderen Int'l, Belgium		1600	21560	Deutsche Welle, Germany	GG
0800	6100	R. New Zealand Int'l		1630	17870	R. Exterior Espana via Costa Rica	SS
0800	9445	HCJB, Ecuador	EE	1630	21700	R. Japan via Gabon	JJ
0800	9525	V of Indonesia		1700	15675	R. Copan Int'l, Honduras	SS/EE
0900	3290	V. of Guyana	EE	1700	21455	HCJB, Ecuador	
0900	6160	Deutsche Welle, Germany via Antigua	GG	1730	11970	R. Jordan	AA
0900	7115	Trans World Radio, Monaco		1800	15160	Radio Algiers Int'l, Algeria	
0900	7500	Radio Internazionale, Italy	EE/II	1800	15265	Radiobras, Brazil	
1000	4461	Radio Norandina, Peru	SS	1800	15495	R. Kuwait	AA
1000	4775	Radio Tarma, Peru	SS	1900	8000	V of Sudan (clandestine)	AA
1000	6085	Radio San Gabriel, Bolivia	SS	1900	12060	Voice of Mediterranean, via Russia	
1000	21605	UAE Radio, Dubai		2000	12085	Radio Damascus, Syria	
1030	13645	Radio Finland		2000	15150	R. Canada Int'l	
1100	3360	La Voz de Nahuala, Guatemala	SS	2030	11615	Voice of Armenia	CC
1100	6175	Faro del Caribe, Costa Rica	SS	2100	5925	R. Canada Int'l	
1100	9580	R. Australia		2100	6185	R. Yugoslavia	
1100	11330	R. Pyongyang, North Korea	RR	2100	6205	R. Democrat Int'l (anti-Nigeria)	S.Africa
1100	17387	All India Radio, Bangalore		2100	7210	Qatar Broadcasting Service	AA
1130	6120	R. Japan via Canada		2100	9550	R. Havana Cuba	
1130	9650	R. Korea, S. Korea, via Canada		2100	9910	All India Radio	
1130	11930	VOIRI, Iran		2100	13495	Voice of Russia	
1200	3325	R. Bougainville, Papua New Guinea	Pidgin	2130	15415	R. Jamahiriya, Libya	AA
1200	4725	Voice of Myanmar (Burma)	BB	2145	11760	R. Havana Cuba	
1200	6030	CFVP, Canada		2200	9388	Kol Israel	Hebrew
1200	6570	Defense Forces Broadcasting, Myamar Burmese		2200	9570	R. Portugal	PP
1200	7270	Polish Radio Warsaw		2200	11815	Radio Brazil Central, Brazil	PP
1200	9510	R. Australia		2200	11880	R. Exterior de Espana	SS
1200	11680	Radio Pyongyang, North Korea	KK	2200	11945	R. Canada Int'l	
1200	12005	HCJB, Ecuador		2200	11965	R. Record, Brazil	PP
1200	13790	R. Bulgaria		2230	5945	Radio Austria Int'l	
1200	13800	Radio Norway		2230	6090	Radio Nigeria, Kaduna	Hausa
1200	15260	VOIRI, Iran		2230	6135	R. Aparecida, Brazil	PP
1200	15400	R. Finland Int'l		2230	9505	R. Havana Cuba	
1200	15445	Radiobras, Brazil	Finnish	2230	9605	UAE Radio, Abu Dhabi	
1215	9680	RRI, Jakarta, Indonesia	II	2230	9855	Radio Kuwait	AA
1215	15295	R. Tashkent, Uzbek		2230	11600	R. Prauge, Czech Republic	
1230	4950	Voice of Pujiang, China	CC	2300	5100	Radio Liberia	EE/FF
1230	9370	KSDA, Guam	CC	2300	11915	R. Gaucha, Brazil	PP
1230	9885	Radio Thailand		2330	5770	R. Miskut, Nicaragua	SS
1230	11900	Radio Finland Int'l		2330	7105	Radio Romania Int'l	
1230	12085	R. Ulaan Bataar, Mongolia		2330	7125	Voice of Russia	
1230	13610	R. Vlaanderen Int'l, Belgium		2330	7285	Radiostanisya Belarus Belorussian	
1230	13740	Radio Sweden		2355	9925	R. Vlaanderen Int'l, Belgium	GG

The Pirate's Den

BY EDWARD TEACH

FOCUS ON FREE RADIO BROADCASTING

Strange Happenings in Pirate Land!

Let's get going with this month's pirate pickins! WRV—Radio Virus (the station nobody wants to catch) was caught by Brandon Artman of Pennsylvania on 6955 from 2357 with a talk on cougars. They mentioned using a Viking mobile transmitter running 45 watts. "Cougar" was growling and mauled Pete the Pirate's leg while he was reading the address. He said they would send the "WRV QSL and bumper sticker" to reports sent to the Wellsville address. (Now closed, Ed)

Artman also picked up a station claiming to broadcast from the University of Wisconsin in Madison, on 6949 at 0127 but could not catch the call (which I believe is KAT—Ed). The program included audio clips of Sylvester and Tweety cartoons and rock tunes. Announced "(KAT), from the campus of the Univer-



Here's a recent QSL card from Radio Xanax, courtesy of Martin C. Barry in Montreal.

sity of Wisconsin, Madison" and gave the Blue Ridge Summit address.

Guy Fisher of Florida picked up WARR on 6955 at 0245 with the song "Let's Go Smoke Some Pot," (sung to the tune of "Let's Go to the Hop") by Dash Rip Rock, which Guy says is a group from southern Louisiana. The DJ called him-

self Captain Bluebeard and said that WARR was "fighting the war against the war on pot." Later he said that the first pirate to come on the air and identify the next song would get a special QSL. He also said he was going to go on "vacation" for six months after the current transmission. The station signed off at 0300. Richard Florio in New York heard them at 0400 with a poor signal. The announcer invited listeners to tune in at the same time next week when he would answer all listeners' questions, including how to grow pot. Rich notes that after WARR signed off, an unidentified station came on frequency and played an old Green Hornet radio show and then went off without any announcement.

Florio also had WLIS to 0133 sign off (I presume on 6955, Rich?) but the signal was very poor. Rich managed to pick

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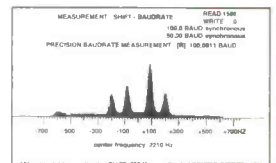
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out the ID at sign-off and heard a mention of "73".

Benton Owsley in California picked up WPRS on 6955 USB from 0135 to 0220 with rock songs and a man announcer calling himself Willie B. Quiet, who gave an ID at 0200.

KAOS was heard by Owsley on 6955 USB from 0220 to 0255 with the disc jockey mentioning the "great sound of KAOS." They played techno-rock and gave the Belfast mail drop address. Anthony Uvino in New York had this one at 0130 on 6955 to sign off at 0200, playing rock and airing a Popeye skit. Right after they signed off a voice said "Break. Pick up a six pack of Miller before you return to station, Jo Bubba." A minute later, "Break. Sparky says Micholobe Lite, Jo Bubba."

Owsley also heard Rock-It Radio on 6950 (AM) from 0600 to 0658 sign off with DJ Bennie Bingo playing '50s rock-and-roll.

Lawrence Schmidt was in Camarillo, California when he heard what he believes was a local pirate on 11 MHz. The ID was "KCBM, the Jolly Roger of Southern California operates with an ERP of 15 watts on 11 MegaHertz. Real pirate radio." The host was "Berry Strange." They played Jethro Tull, CCR oldies from

the '60s and '70s, "War" by Edwin Star, "Spill the Wine" by Eric Burden and many others. In between the selections were song IDs, mentions of the call letters and weather reports. He also apologized for frequency drift since the transmitter wasn't crystal-controlled. The broadcast ran from 1700 to 1930, with the frequency drifting over that time from 11006 to 11002 at sign off.

Radio USA was heard by Isaac Kelley in Texas on 6955 AM from 0020 to 0053 sign off. Isaac was only able to pick out parts of some sort of comedy skit and an ID or two before they started playing rap numbers. The signal started to improve just as Mr. Blue sky signed off.

KOLD was heard by Kelley on 6955 USB at 0050 to 0118 close with an all big band show, including Woody Herman, Les Brown, Ella Fitzgerald. A great signal, even using just the receiver's whip antenna, says Isaac.

WPN was another Kelley catch, on 6955 USB from 0026 to 0044 sign off. Mike the Pirate gave the Huntsville, Alabama QSL address, played AC-DC's "Hell's Bells." sound effects, gave an ID and then signed off with the Ghostbusters theme. They also offered to send studio tapes of the show in return for recordings

of the program as received by the listener.

Free Hope Experience was also heard by Kelley. (6955, Isaac?) from 0352 sign on to fade out at 0455.

Artman notes that he heard Radio Azteca ask for three mint stamps for a QSL plus three "wise-@\$\$ comments they can use on the air, along with your excruciatingly detailed reception report."

George Roberts in Pennsylvania reports Big Johnson Radio on 6955 USB to 0155 sign off hosted by Enormous Johnson and airing a number of off-color, even distasteful, skits and tunes and announcing the Providence, RI QSL address.

Another one George picked up was Hitchhiker's Guide to the Galaxy on 6955 (AM) from 2243 to close at 2317. They aired some kind of drama about outer space beings destroying the earth, a space ship trip. A couple of days later George caught them carrying an episode of "Hitchhiker's Guide to the Galaxy." This station uses the Blue Ridge Summit, PA address.

That's a wrap for this time. Keep those log coming my way, folks. Where are you Pat Murphy, Dick Pearce and the rest of you regulars?

Until next month, keep those ears peeled on 6955 and environs!

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Antennas & Things

BY JOE CARR, K4IPV

SIMPLE ANTENNAS AND ACCESSORIES FOR SIGNAL IMPROVEMENT

The Windom Antenna: An HF Multi-Band Antenna

I see a lot of interest in low frequency antennas that work on the bands from about 8 MHz down to the bottom of the shortwave bands. Another interest, however, is in antennas that work well *throughout* the shortwave bands. Unfortunately, that's not easily done. The problem of multi-band antennas on the high frequency (HF) shortwave bands is sometimes a bit daunting for a couple reasons. At the low end of the HF spectrum (e.g. the ham 160 meter and 75/80 meter bands and the tropical bands), antennas tend to be huge. Another problem is that the normal multiband tactics (traps, tapped coils, etc.) tend to be mechanically cumbersome. One solution is to make an antenna that works on harmonically related bands.

The Windom antenna (**Figure 1**) has been popular since the 1920s. It is a half-wavelength antenna that will also work on even harmonics of its fundamental frequency. The basic premise is that the antenna radiation resistance varies from about 50 ohms, to about 5,000 ohms, depending upon the selected feedpoint. When fed in the exact center, a current node, the feedpoint impedance will be 50 ohms; similarly, end-feeding the antenna finds a feedpoint impedance of about 5,000 ohms. In **Figure 1**, the feedpoint is tapped away from the center at a point that is about one-third ($0.37L$) the way from one end, at a point where the impedance is about 600 ohms.

The lengths of the sections are:

$$L \text{ FEET} = 470/F \text{ MHz}$$

and,

$$B = 0.37L$$

Where L FEET is the overall length in feet, B is the connection point in feet from one end of the antenna, and F MHz is the center of the lowest frequency band to be covered. At 4.75 MHz the lengths are $L = 98.95$ feet (e.g. 95' 11") and $B = 36.6$ feet (e.g. 35' 7").

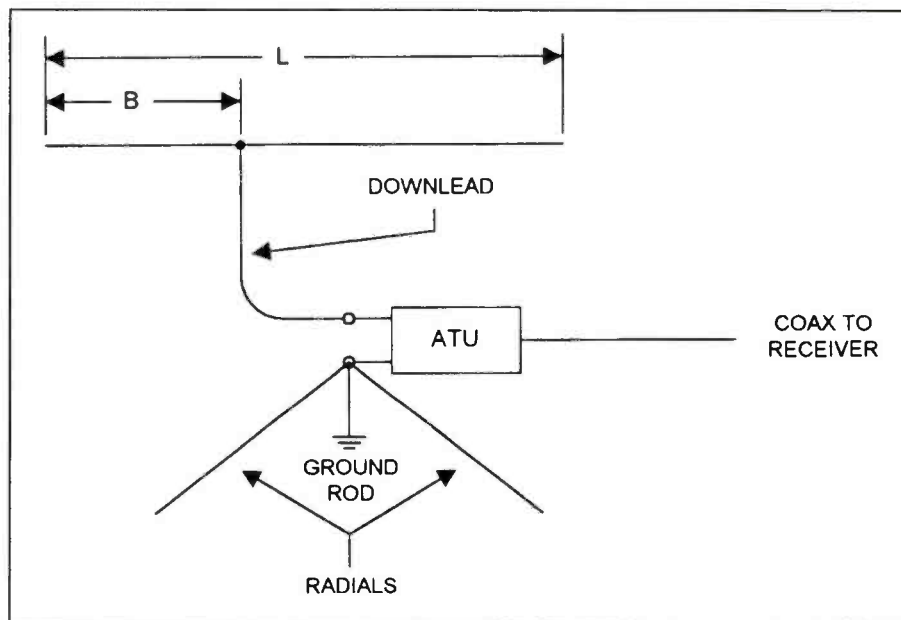


Figure 1: The classical Windom antenna.

The feedline for the basic Windom **Figure 1** is an insulated length of regular hook-up wire (such as No. 22 PVC insulated wire will do). Of course for hams, the size of the wire may be different, and depends on the power level. For those folks, the usual No. 14 insulated stranded wire will work if you're running less than 200 watts of power (most hams don't like to use a Windom at high power levels than a couple hundred watts because of the "RF in the shack" problem, i.e. they get a little nip when they touch the microphone to their lips).

The Windom antenna works well, but with some serious reservations. For example, the antenna has a tendency to put "RF in the shack" because of the fact that it is voltage fed. Second, there is some radiation loss from the feedline. Finally, the antenna works poorly on odd harmonics (3F, 5F, 7F) of the fundamental frequency, even though it works well on even harmonics (2F, 4F, 6F). For the receiver operator, these distinctions are not as important as for hams, but they do need to be considered because they can affect antenna operation.

The antenna tuning unit can be either a parallel resonant, link-coupled, LC tank

circuit (see **Figure 2**); or commercial antenna tuner that will accommodate high impedance antennas. A pi-network can also be used, but in the case of the Windom, the pi-network is turned backwards from the usual configuration: $C1$ is at the low impedance end of the network, so it is larger than $C2$. Design a pi-network to match 50 ohms on the transmitter end, and 600 ohms on the antenna end.

Note that a good ground should be used with this antenna (note the ground connection at the output of the antenna tuning unit). This basically means having an eight-foot ground rod, or a system of radials. I personally like to use both a ground rod and the radials. The radials become a bit of a problem, however, if they are not buried. Non-buried radials must be quarter wavelength long, and at least two (and the more the merrier!) should be used on each band. That could be a lot of radials. If the radials are buried, however, and are made of non-insulated wire, then you can get away with using only a set cut for the lowest frequency of operation. Even that configuration is not critical, however, as the length for buried radials can be almost any length near quarter wavelength.

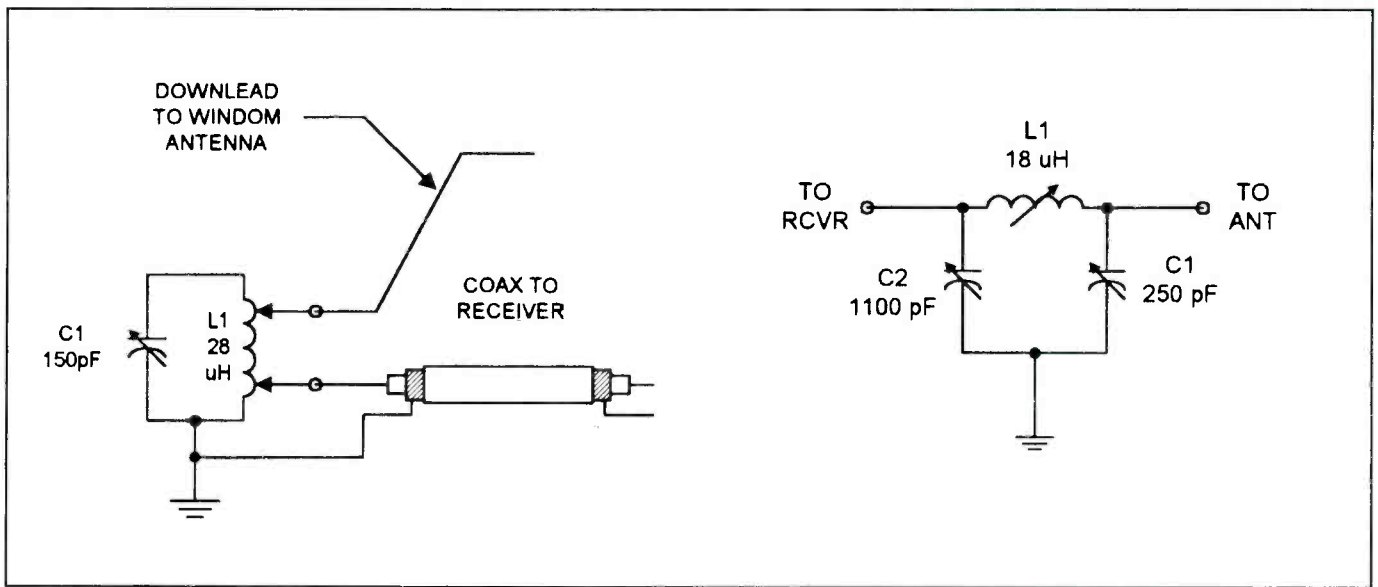


Figure 2: Typical antenna tuners: a) Parallel tuned; b) pi-network.

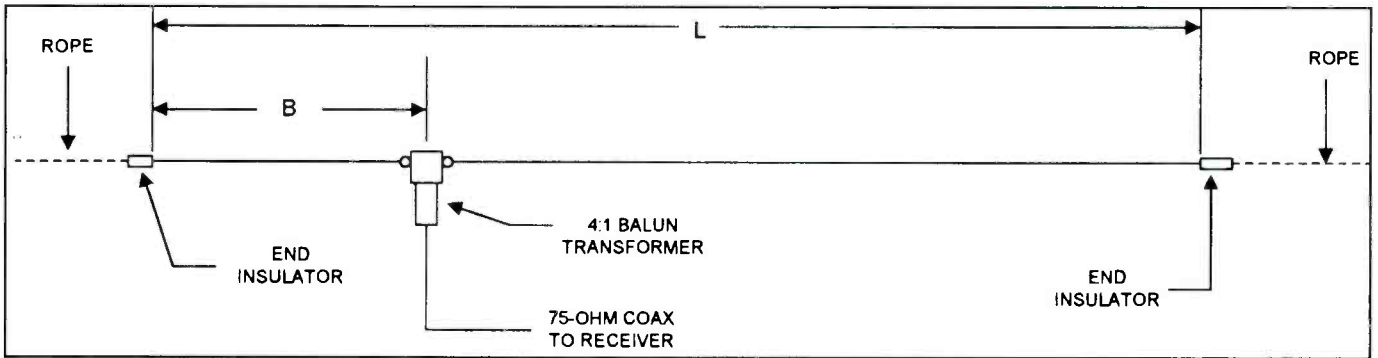


Figure 3 BALUN-fed classical Windom.

A reasonable compromise Windom, that reduces feedline radiation losses, is shown in **Figure 3**. In this antenna, a 4:1 BALUN transformer is placed at the feedpoint, and this in turn is connected to 75 ohm coaxial transmission line to the receiver. A transmatch, or similar antenna tuner, is then connected between the receiver and the transmission line. A better compromise is shown in **Figure 4**. This antenna is the Off Center Fed Doublet. It is a species of Windom in which the

feedpoint is forced to be a current node by feeding it at one end and using a quarter wavelength radial on the ground side of the feedline. Note that this antenna uses a 1:1 BALUN transformer, rather than the 4:1 used in **Figure 3**.

It works well for the purposes intended, especially on harmonically related bands. At other frequencies within the HF spectrum, it will work about the same as a random length Marconi. So if that's your present antenna, you won't lose by adding a Windom to your antenna farm.

I can be reached for comments, questions, suggestions or brickbats at P.O. Box 1099, Falls Church, VA, 22041, or via Internet E-mail at <CARRJJ@AOL.COM>. See you in March! ■

A Good Performer!

The Windom antenna isn't always held in high esteem, but that's a darn shame.

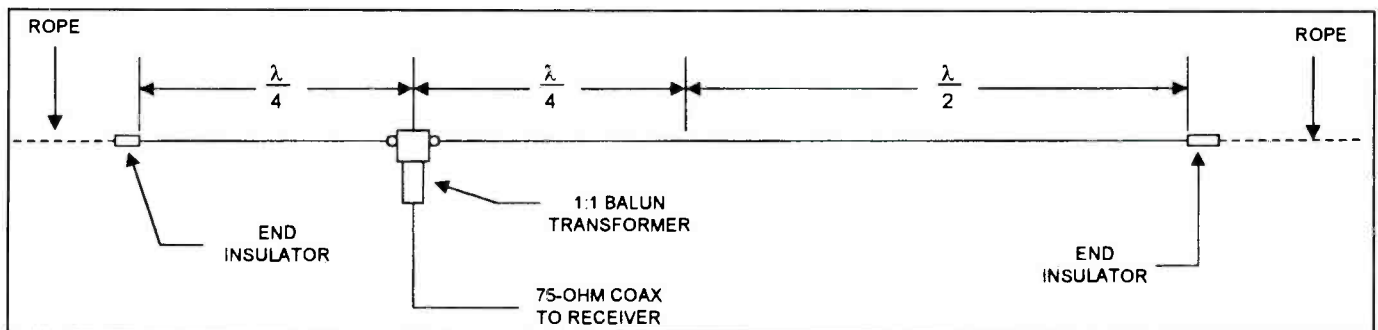


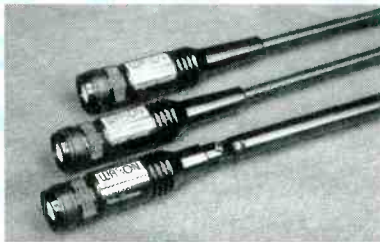
Figure 4 OCFD style of Windom.

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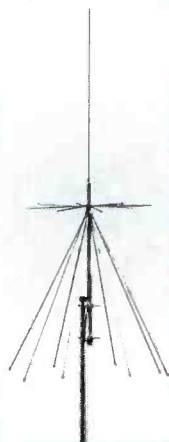
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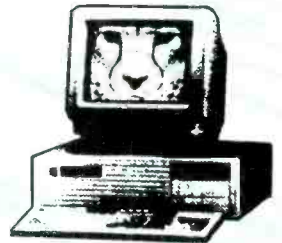
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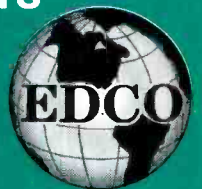
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The Radio Connection

A LOOK BEHIND THE DIALS

Radio of the Month and Some Restoration Basics

Do you own a vintage radio, or have a nifty workshop geared for restoration? We'd like to feature pictures of our readers with their favorite set or collections. Send along one or two paragraphs telling us about your interests.

Our radio of the month is a 1924 model 51S Crosley battery set that was sold by Sears. I've owned this fellow since I was a teen in the early '60s. I paid five dollars for the radio, but that was over 30 years ago! Today, a Crosley 51S in good condition, with tubes, would have a market value of about \$150!

Does it work? Well, it did when I got it. I remember hooking up a bunch of flashlight and 45 volt batteries and a pair of Brandes headphones to the radio, and receiving several stations. The little audio transformer now has open windings, an ailment common to many 1920 battery sets. The radio uses two tubes, one as a regenerative detector, the other as an audio amplifier. The original tubes were rather unusual, they were '99s based for UV sockets.

What's so "special" about this Crosley is the fancy slope-front case. Most Crosley battery sets were housed in plain square wood boxes. This little set was my first vintage radio and it is rather special to me.

Restoration Supplies

There are many suppliers that cater to the needs of vintage restorers. Some are large full-time businesses with huge inventories, others are small part-time hobbyists who specialize in reproduction knobs, dial scales or speaker grill cloths.

Whether your favorite radio is a 1924 Crosley battery set, or a 1942 Zenith console, there is someone out there who has parts for it! I'll mention sources for this material in upcoming columns. For example, in time we will be discussing some fabulous Philco shortwave sets, I will show you where to find replacements for the large and colorful dial scales used in those sets.

Antique Electronics Supply (6221 South Maple Avenue, Tempe, AZ 85283, phone 602-820-5411, fax 602-820-4643



Photo A: Exterior view of the Crosley 1924 battery set. Cabinet was large enough to hold batteries.

or 1-800-706-6789) is perhaps the biggest and best known vintage parts supplier. Write or call them for a catalog, I will be referring to many of the supplies offered by AES in future columns.

New, Repro, or NOS

When dealing with suppliers, you will often find parts that have been scavenged from old donor sets. These parts are sold as used. Old radio stock garnered from

closed radio repair stores is sold as "NOS." NOS is New Old Stock, meaning the parts have never been used, and are usually in the original box. Most new vintage tubes are NOS. If a used part or NOS part can't be found, often "repros," or reproductions of the part can be found. Some tubes are becoming very scarce. Many dealers now regularly test and offer otherwise expensive tubes that are used, tested and reboxed.

Getting started—A Simple AC/DC Set

The best way to learn radio restoration is to dig in and gain some experience, following the tips and examples shown in this column. Our radio-to-be-restored is a relatively common and inexpensive bakelite-cased radio, a vintage Emerson AC/DC tabletop kitchen radio dating back to the late '30s or early '40s. I came across this little set at a local tag sale last summer, and for a dollar I couldn't resist snatching it up. Unless this radio has "nostalgia" value (mom's old radio), it isn't very rare or valuable, it's a good practice set for the beginner.

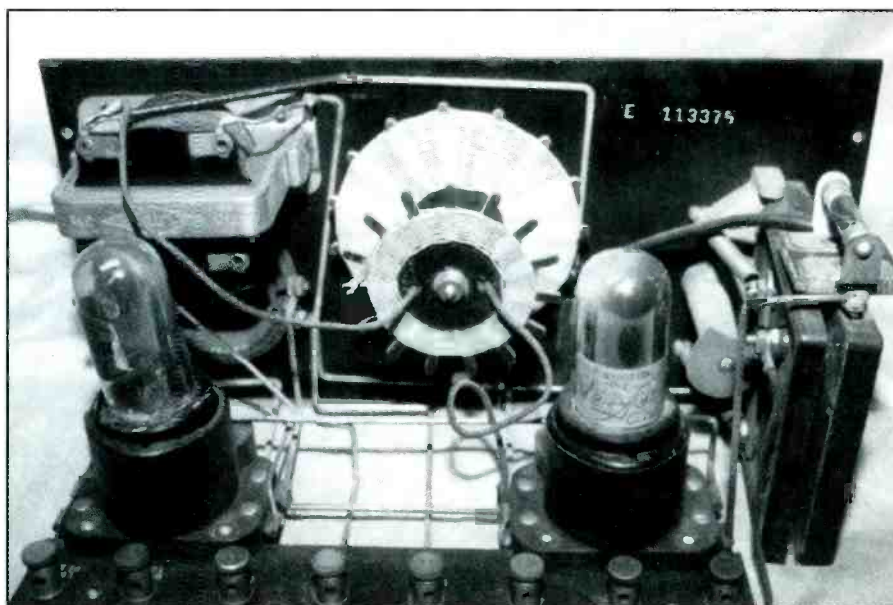


Photo B: Removing the 51S from its cabinet shows the elegant simplicity of these early battery sets. One tube is used as a regenerative detector, another serves as an audio stage. Regeneration is controlled by moving the feedback coil in or out.

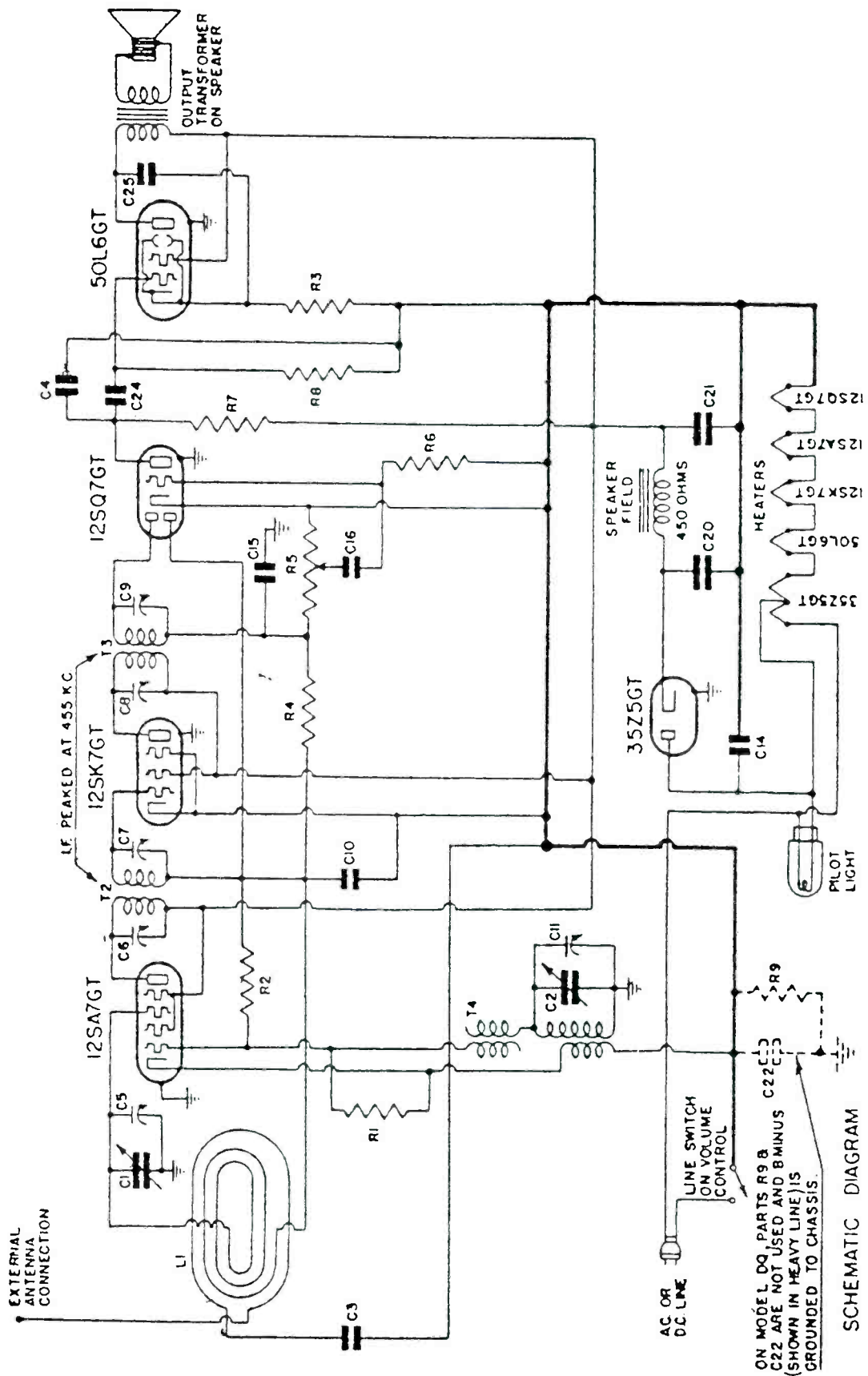


Figure 1: This is the Riders schematic for the Emerson DQ chassis. Keep this issue, we will refer back to this schematic in the next few columns.

“The real trick to soldering is to use an iron that is hot enough and has enough thermal mass to do a soldering job quickly.”

When I got the set, its back cover was missing, and along with it so was any information relating to the Emerson's model or chassis number! In my Riders volume 10 I found a chassis that matches. Most of the Emerson part numbers match those shown in the Riders part list. Through experience, I knew the Riders volume 10 covered sets made around the period this set was made, which I estimated from the parts and tube lineup of the radio. You can find Riders manuals at many large urban libraries, or Antique Electronics Supply can supply schematics for most sets for a modest charge.

The drawing is a copy of the Riders page for this set. If you trace the power cord back to the power switch you'll find a little notation that the switch is connected directly to the chassis for the Emerson DQ model, a serious shock hazard. My first steps in restoring a set like this is to rewire the power cord, replacing it with a cord equipped with a more modern polarized plug. The wider plug prong mates with the AC neutral side, the power cord lead from this prong is wired directly to the chassis in AC/DC sets that have a hot chassis. I redo the wiring so the hot AC lead is now routed through the AC power switch, leaving the AC neutral always connected directly to the chassis. The next step was to make a “shopping list” of all of the resistors and capacitors that need to be changed.

Soldering and Old Radios

I hate poor workmanship! If I had a dollar for every inch of old electrician's friction tape I have found in old sets, I would be rich. Most repairmen would simply clip out a bad part, leaving enough old leads to attach the replacement part dangling in midair. Exposed or frayed leads were given several wraps of friction tape for good measure.

A far better approach is to secure the new part leads directly where they belong, either at a tube socket or other major chassis component. With the old solder removed, do the best you can to get a good mechanical connection for the new lead before resoldering. Sometimes



Photo C: My son, Tom helps to demonstrate the use of a solder sucker to remove excess solder from a terminal. This helps to find room when its time to add the replacement components leads. Ample heat is assured by the using the 33 watt Ungar soldering iron.

the “inn is full,” and you may have to rely on the solder to make a good mechanical bond if you can't find a free hole to wrap the wire lead through. Don't be over zealous, those old phenolic sockets are easily broken, and likewise you can damage volume controls, IF transformers and oscillator coils, if you are not careful.

Always “tin” the leads of new components first for good solder connections. Some restorers insist on removing all old

wire ends from the terminals, but that may risk damaging the terminal. I sometimes leave a half-inch lead when clipping away the old part. This remnant and the new component lead can be twisted together; the twisted connection pushed against the terminal after the old solder has been sucked away. Any excess wire can be trimmed at this point. Once resoldered, you can't tell how it was done—and the connection is very secure.

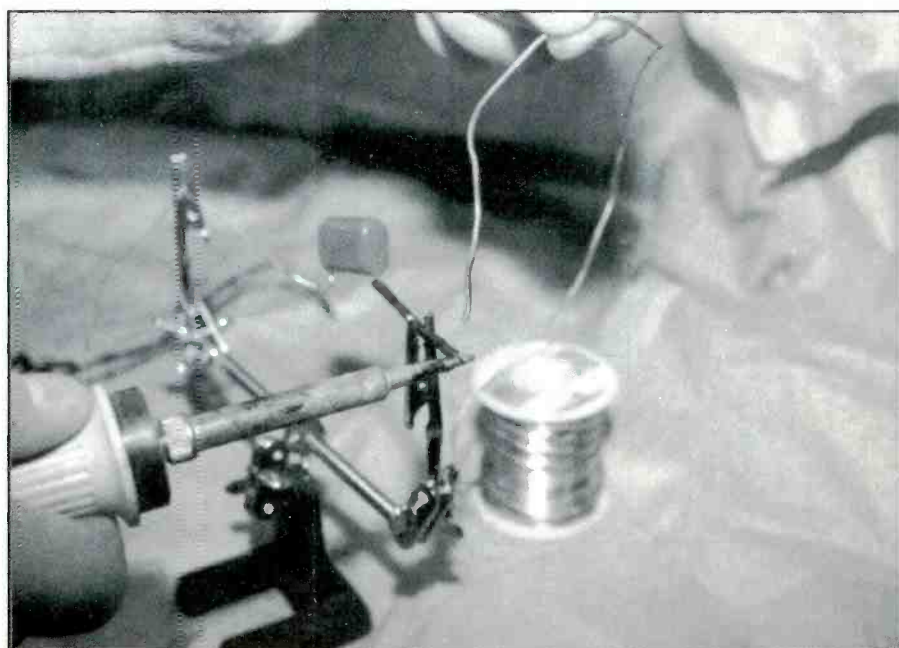


Photo D: Tom shows how to tin a component lead before it is wired to the chassis. Here he's using a 750 degree tip on a Weller controlled temperature station.

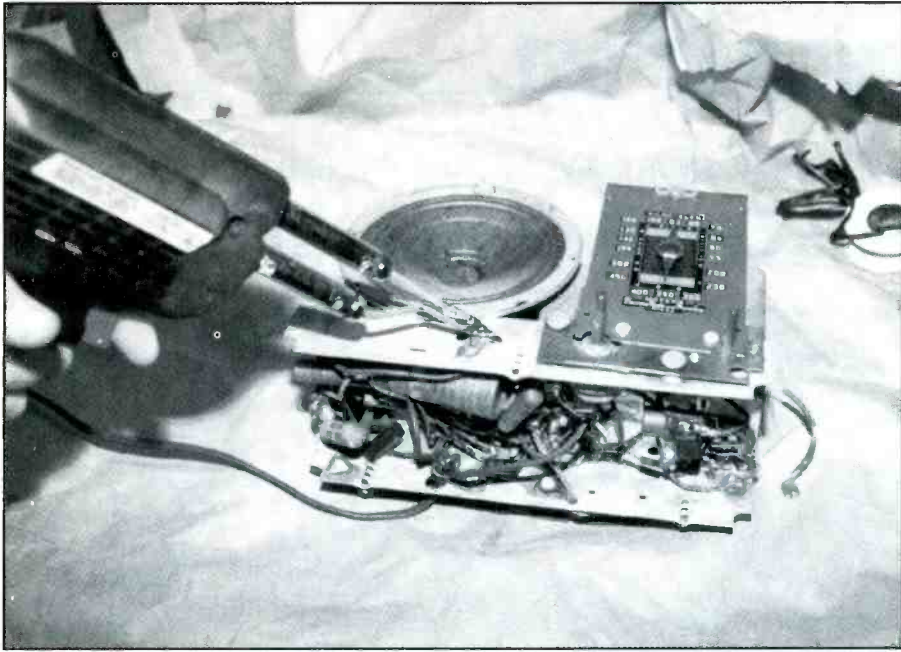


Photo E: Tom rolls out the heavy artillery. This 300 watt Weller soldering gun is the ticket when soldering to a metal chassis. Periodically loosening and retightening the solder tip nuts on your soldering gun helps to keep the heat output at full capacity.

If I have to tack-solder a lead to a terminal point that's already full, I wrap the component lead into a small quarter-inch loop. Soldered flat against the terminal point, the loop gives a better solder bond due to the increased solder area.

The real trick to soldering is to use an iron that is hot enough and has enough thermal mass to do a soldering job quickly. An undersize iron will quickly cool when applied to the work, increasing the amount of time you must fumble about the joint while the tip temperature recovers. A heavy-duty 45 watt iron, or 300 watt gun is often needed for soldering grounds that attach directly to the chassis, or for twist-lock grounds on electrolytics. For more routine soldering on tube sockets or terminal strips, 750 degree tips on Weller soldering stations will do.

Pete's Radio Tips

To heat a junction for soldering, or for solder removal, melting a small blob of fresh solder between the hot soldering iron tip and the work will speed things along. Sometimes a lead isn't quite long enough to make it from point A to point B. Newer parts are smaller, and their leads are shorter than their vintage cousins. You can extend the lead with length of bare tinned wire; RadioShack carries spools of 24 gauge bare and tinned wire (Part No. 278-1341) that are ideal for this. Regard-

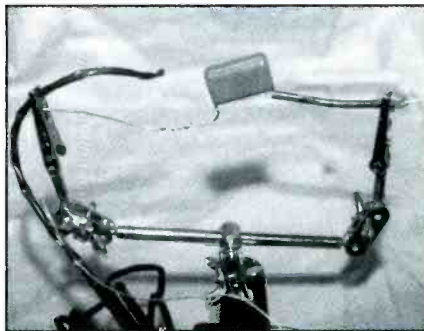


Photo F: Sometimes a component's leads are too short. The use of some tinned wire, available at RadioShack, helps to extend the lead lengths. Note the solid wrap splice made between the wire and lead. The use of "spaghetti" (insulated black tubing) over the bare leads provides insulation and makes a neat and professional-looking job.

less if a lead is spliced or not, I always use insulating sleeving to cover exposed component leads. Old style varnished black insulating "spaghetti" is still available and makes for a professional job. Kits of various diameter spaghetti tubing are also still available.

Cutting Out Old Parts

Even experienced radio technicians can mess up when cutting out old parts and installing new ones in a chassis. Always work slowly, and do a few parts

at a time. Work in small areas of the chassis to avoid confusion. It's a good idea to make a pencil sketch of where an old part connected before cutting it free.

IF Transformers

Early IF transformers had wire leads that were connected internally. These leads usually followed a standard color code; the blue wire was connected to a tube plate, the red lead was connected to B plus, and the green lead was connected to the grid of the IF amplifier stage, or the detector diode. The black lead was connected either to the AGC line or ground. Transformers with terminal connections used a green dot to signify the grid connection. I found the old rubber-coated wiring coming from the IF transformers had rotted and needed to be replaced. More on this next month as we continue with our Emerson saga. ■

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The Listening Post

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

Radio Lesotho Continues on Shortwave!

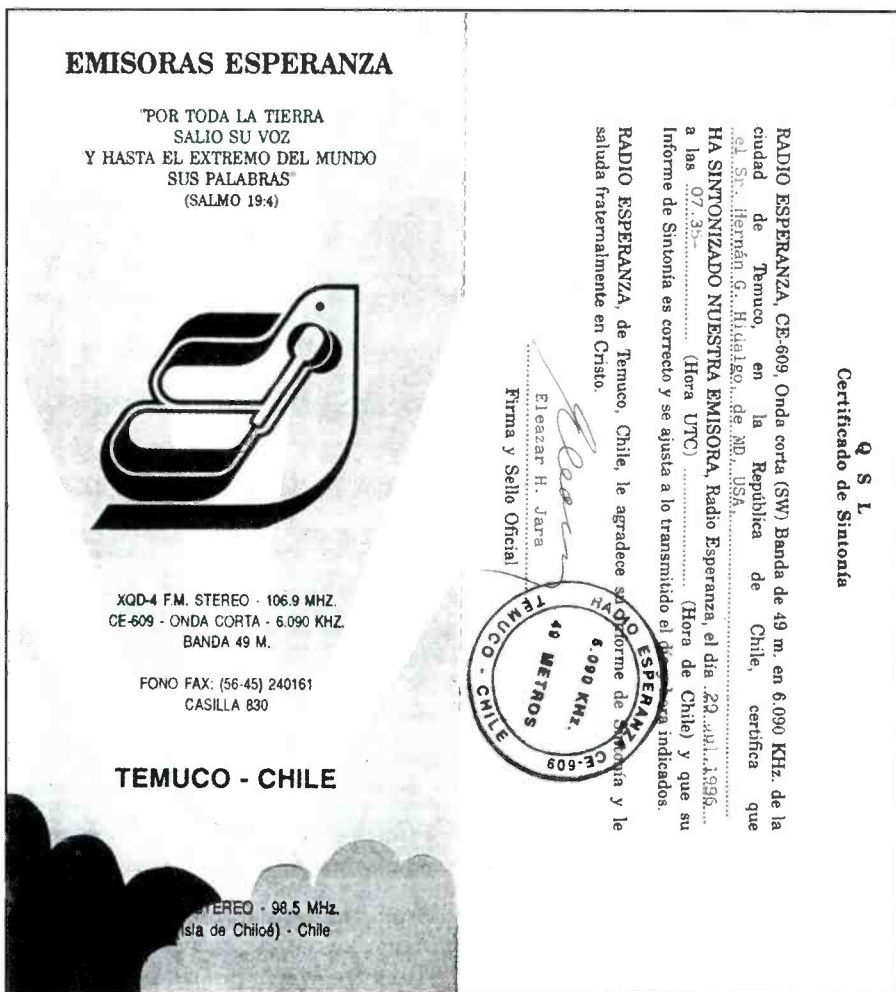
OK BBC, we apologize! Last month we took you to task a bit because of reports that Radio Lesotho would be leaving shortwave due to the closure of your relay station there. We didn't see why the equipment couldn't be sold, leased or donated to Radio Lesotho. Since then we've had the very good news that Radio Lesotho is continuing its short-wave operations.

Apparently the BBC has worked out a lease arrangement enabling the LNBS to continue to use the BBC-owned short-wave transmitters. So the BBC's reputation as a class act has suffered no damage. **Radio Lesotho** can be heard on **4800** with sign on slightly before 0300.

Coverage for the now silent Lesotho relay has been picked up by South Africa's Meyerton transmitters. So, although you may still hear the **BBC** on **3255** (the old Lesotho frequency) it's now coming via Meyerton. **6190** and **11940** are two other BBC-Meyerton frequencies currently in use. Others used by the new Meyerton transmitters are 3280, 6125 and 11900.

In other areas of the BBC's world, the Hong Kong relay has closed down and work is underway to return the site to its original, natural condition. The BBC Thailand relay station may well have come on the air by the time you read this. The BBC also has an arrangement with Kyrgyzstan to upgrade Kyrgyz Radio and use part of the facility to relay the BBC in Russian.

The same kind of arrangement may be forthcoming in Tajikistan. The U.S. government's Asian version of Radio Free Europe/Radio Liberty has come on the air. Originally named Radio Free Asia, the handle was changed to the Asia-Pacific Network. Then, just before the station began broadcasting, it was changed back to Radio Free Asia. Eventually RFA will broadcast from three 500 kW transmitters on the island of Tinian in the Northern Marianas, which will also be used to carry VOA programming to Asia. While that facility is being built, RFA has arranged to be carried over several other



Radio Esperanza, Chile, on 6090, sent this nice folder QSL to Hernan G. Hidalgo in Maryland.

transmitters. One of them is Monitor Radio's **KHBI** in Saipan, scheduled at 2200 to Korea on **13825**, 2300 on **13825** in Chinese, 0100 on **13625** and at 1500 on **9455**. Other times, frequencies and transmitter sites include: 1500-1600 on **7495** (via a transmitter in Kazakhstan), **5865** (also Kazakhstan), **7530** (via Armenia), **6025** and **6240** (Tadjikistan). Another broadcast airs at 2300-0000 on **7495, 7530, 6205, 6240** (sites as at 1500). Still to come are broadcasts in Tibetan and broadcasts to Burma, North Korea, Cambodia, Laos and Vietnam.

The studios of RFE/RL in Washington are being used on a temporary basis. Reception reports should be sent to Radio Free Asia, 1201 Connecticut Ave., NW, Suite 400, Washington, DC 20036. A Web site should be up by now at: <<http://www.rfa.org>>.

New Name For Radio Japan

"**NHK World**" is supposedly the new name for **Radio Japan**. Isn't that more confusing for listeners? Speaking of confusion, since the monumental political



This is the transmitter site for the High Adventure Ministries shortwave station Voice of Hope, located on the border of Israel and Lebanon.

changes which brought down the USSR and eventually led to Radio Moscow becoming the Voice of Russia (Golos Russi) there have actually been two Voice of Russia services—one of them serving a domestic audience and another, different one on shortwave. A year or so ago the domestic version also went on shortwave in order to provide Russians abroad with access to a domestic radio service. The station's shortwave schedules even covered the same time period! But the Russian government has restored some sense of order. The domestic version of the Voice of Russia has been incorporated into the foreign broadcasting effort so now there's only one Voice of Russia. Incidentally, the station is also using new theme music: a short segment from Musorgsky's "Pictures at an Exhibition."

News from South Africa

Afrikaans Stereo, one of the stations of the South African Broadcasting Corporation, has been reconstituted as **Radio Sonder Grense** (Radio Without Borders) and, although its use of shortwave over the long term is uncertain, it will continue for the time being at least. RSG is scheduled from 0300-0535 and 1535 to 2300 on **3320** and 0550 to 1530 on **6000**. We find very strong utility station QRM at the most likely reception time here—0300 on **3320**.

Also from South Africa, the SABC's Radio Orange will be sold to a private

company, leaving the long term future of Radio Orange on SW up to speculation.

Wanted: Your Loggings, QSLs, Shack Photos and Schedules

Remember, we always appreciate your log reports and other information concerning shortwave broadcasting. Logs should be double-spaced and arranged by country (you don't need to alphabetize them), and your last name and state abbreviation should be included after each logging. Also needed are shack and shortwave station photos, spare QSL cards you don't need returned, schedules, other station literature and items, news of QSL requirements, address changes and so on. Mail may be sent in care of your editor at *Popular Communications*, 76 North Broadway, Hicksville, NY 11801.

Here are this month's logs. All times are in UTC, which is five hours ahead of EST (0000 UTC equals 7 p.m. EST, 6 p.m., CST, 4 p.m. PST). The language of the reported broadcast is assumed to be in English (EE) unless otherwise indicated by such abbreviations as SS (Spanish), RR (Russian), PP (Portuguese), AA (Arabic), etc.

ANGOLA—Radio Nacional, **9535** at 3350 with talk, several mentions of Angola and Luanda. (Paszkiwicz, WI)

ANTIGUA—BBC relay, **5975** at 0006 with "Newsdesk." (Hallenbeck, ME) 9590 at 0008. (Vaage, CA)

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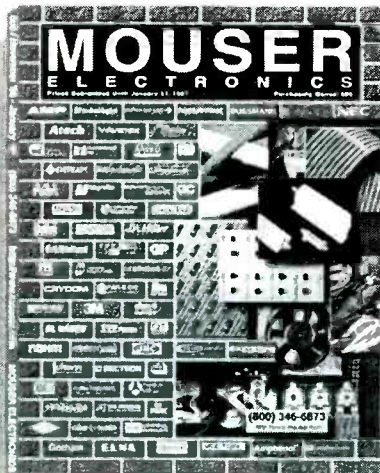
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ARGENTINA—Radio Rivadavia, **8100** LSB feeder in SS at 0140 with sports coverage, time check and "Rivadavia emisora todo en el pais." Mention of "comunicado Arcangel San Gabriel." Rivadavia is on 630 MW in Buenos Aires. Perhaps a feed to the Argentine base in Antarctica. (Rausch, NJ)

AUSTRALIA—ABC, Alice springs, **2310** kHz at 1002 with that day's birthdays of famous people. (Foss, AK)

ABC/Radio Rum Jungle, Katherine, **2485** sat 0846. (Miller, WA)

Radio Australia, Brandon, **5995** at 1052 in Pidgin English. 9770 from Shepparton at 1118 in Indonesian (Miller, WA). 9515 at 1235 with music. (This gets blocked by WEWN at 1300. Editor) 9615 at 1220 with talk about computers. (Northrup, MO) 17715 at 0212. (Jeffery, NY) 17795 at 2210. (Hornstein, MI)

AUSTRIA—Radio Austria Int'l. **6015** (via Canada) at 0533. (Wilden, IN)

BELGIUM—Radio Vlaanderen Int'l, **13610** at 1300-1330 "The Voice of the Flemish Community in Belgium." (Bartlett, PA)

BOLIVIA—Radio Santa Ana, **4649** heard at 0320 in SS with lively South American pops, ID and closing announcements and four bars of the national anthem to closing at 0330. (Rausch, NJ)

Radio Illimani, **4945** in SS at 1013. (Miller, WA)

Radio Animas, tentative, **4990** at 1018 in SS. (Miller, WA)

BOTSWANA—VOA relay, **7375** at 2230. (Hornstein, PA)

Radio Botswana, **4820** at 0246 with barnyard IS until anthem at 0259 then into SeTswana. Co-channel QRM from HRVC. //7255 was swamped by VOA at 0300. (Lamb, NY)

BRAZIL—Radio Aquidauana, **4795** heard at 0917 in PP with music, man announcer. (Jeffery, NY)

Radio Marumbi, **9665** at 2300 in PP with "A Voz do Brazil" program, ID. This is the

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

spelling used on a QSL received a couple of years ago. (Paszkievicz, WI)

Radiodifusora Roraima, Boa Vista, **4875** at 0946 in PP. (Miller, WA)

Radio Brazil Central, Goiania in PP at 0217 on **4895**. (Miller, WA)

Radio Bandeirantes, **11925** in PP at 0226 with mentions of Sao Paulo. Parallel to 6090. (Paszkievicz, WI)

Radio Universo, Curitiba, 2247 on **11765** with music. PP. (Miller, WA)

Radio Nacional Amazonia, **6180** in PP heard at 0932. 11780 in PP at 0154 and 0932. (Miller, WA)

Radio Liberal, **4775** at 0238 with Brazo-pops, canned announcements in PP, clear frequencies and ID for "Radio Liberal, Belem, Para. Brazil" at 0258, prayer, then more pops. (Lamb, NY) (Moved from 3225. Editor)

BULGARIA—Radio Bulgaria, **7480** at 2324. (Hornstein, MI) 9700 at 2100. (Bartlett, PA)



Don Aspinall does SWLing and computing from his nice shack in Toano, Virginia.

CANADA—Radio Canada Int'l, 9640 at 1220 with "As It Happens," 9650 in FF at 1230. (Northrup, MO) 15305 at 2228 with news. (Vaage, CA)

CBC Northern Service, 9625 at 1501 with news in FF. (Klingman, NY)

CHINA—CPBS, 9380 heard at 1011 in CC. (Foss, AK)

COLOMBIA—Radio Nacional, 4955 at 0145 in SS. (Hornstein, MI) 0251 with flute music, male vocals, ID. (Jeffery, NY)

Caracol Colombia, 5075 at 1037 in SS. (Miller, WA)

COSTA RICA—4832 Radio Reloj in SS at 0936. (Miller, WA)

Adventist World Radio, 5030 in SS at 1034. (Miller, WA) 6150 at 0200 in SS. //9725. (Paszkiwicz, WI) 0045 with instrumentals, address at 0104. (Wilden, IN)

CROATIA—Croatian Radio, 5895 at 0304 with EE news. Into Croatian at 0311 with IS, ID, frequencies. (Lamb, NY) 7165 in EE at 0005. Also 5895 in EE at 0205 with five minutes of news in EE, then into another language, likely Croatian. (Hornstein, MI)

CUBA—Radio Havana, 9485 at 0306 in EE with news, ID. (Jeffery, NY) 9550 at 1230 in SS. (Northrup, MO)

Radio Rebelde, 5025 in SS at 0241, also 1042. (Miller, WA)

CZECH REPUBLIC—Radio Prague, 5930 at 0020. (Hornstein, MI)

DOMINICAN REPUBLIC—Radio Amanacer, 6025 heard at 0150 with religious program in SS. (Paszkiwicz, WI) 2245 in SS with religious program, ID 2300 with location and address. (Rausch, NJ) 0151 with SS version of Beethoven's "Ode to Joy," man and woman talks, Christian music, ID and frequencies over "Battle Hymn of the Republic." (Lamb, NY)

ECUADOR—Radio Buen Pastor, 4830 at 0240 in SS with talk by man, music and ID. (Jeffery, NY)

Radio Quito, 4920 in SS at 0959. (Miller, WA) 0336. ID as

Radio Quito, "La Voz de la Capital." (Hornstein, MI)

HCJB 9445 heard at 1128. (Hornstein, MI) 15115 at 1400 with Pan American news. (Wallesen, IL) 15140 heard at 2231 in SS. (Vaage, CA)

EGYPT—Radio Cairo, 9855 at 2215 with man and woman in Arabic and Arabic music. (Wilden, IN)

ETHIOPIA—Voice of the Tigray Revolution, 5500, presumed, at 0407 with man in unidentified language, presumed news, electronic organ, woman with Islamic religious talk, bird calls, Afropops, phone talks. Heard until 0438 when it began to fade. (Lamb, NY)

ENGLAND—VOA relay from Woofferton, 15205 at 1507. (Jeffery, NY)

FINLAND—Radio Finland Int'l, 15400 heard at 1400 with news in Finnish, music. (Klingman, NY)

FRANCE—Radio France Int'l, 7135 at 0259 in FF. (Miller, WA) 15465 in EE at 1600. (Bartlett, PA)

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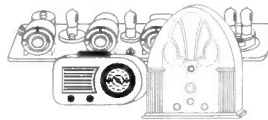
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A Craftsman at work on mosaic tile, Hyderabad

John Miller in Georgia got this QSL for reception of Radio Pakistan's slow-speed news bulletin directed to southeast Asia.

GABON—Africa Number One, **15475** in FF at 1818. (Dray, MN)

GERMANY—Radio Alpha and Omega. **6110**, (Iceland via Germany) heard at 1857 with IS. ID, two men talking about the founding of A and O TV Vision 10 years ago; to establish a SW service. U.S.-produced religious programs. Address simply Radio A & O, Reykjavik, Iceland. Airs on Sundays only. (Rausch, NJ)

Deutsche Welle, **6185** at 0500 mixing with Radio Educacion, Mexico. (Miller, WA); **11865** at 0000 in SS; **17715** at 1606. (Vaage, CA) **17800** at 1600, apparently to Africa. (Bartlett, PA)

GREECE—Voice of Greece, **7448** at 0331 in Greek. (Miller, WA) **15175** at 1300 to 1500 in EE. (Klingman, NY)

GUAM—Trans World Radio/KTWR, **9785** at 0952 with children singing in CC. (Foss, AK) **11515** in Farsi at 1522. (Miller, WA)

GUATEMALA—Radio Cultural Coatan, **4780** at 0959 in SS with anthem, music, man announcer, ID. (Jeffery, NY) **4779** at 0233 in SS. (Miller, WA)

Radio Tezulutan, Coban. **4835** at 0213 in SS. (Miller, WA) 0228. (Hornstein, MI)

Union Radio (AWR), **5981.2** at 0145 with talk. ID. hymn. (Paszkievicz, WI)

HAWAII—KWHR, **17510** at 0227 with EE religious programs including information on LeSea tours. (Jeffery, NY)

La Voz Evangelica, **4820** at 0207 in SS. (Miller, WA)

Radio Internacional, San Pedro Sula, **4930** at 0241 in SS. (Miller, WA)

HUNGARY—Radio Budapest, **9840** in HH at 0201. (Miller, WA)

INDIA—All India Radio, Panaji (Goa), **7250** at 0130 in language with IS, ID "Neh AIR ashkavani Panaji" and into subcontinental music. (Rausch, NJ)

INDONESIA—Radio Republik Indonesia, Yogyakarta, **5059** at 1444 in II. (Miller, WA)

RRI Ujung Pandang, **4755** (nominal **4757**, Ed) at 1420 in II. (Miller, WA)

IRELAND—RTE via BBC **15600** with experimental broadcast of soccer play-by-play. Lost to WYFR by 1700. (Altman, PA)

ISRAEL—Kol Israel, 1400 on **16515** in EE with news about Israel and Middle East. (Klingman, NY)

ITALY—RAI **6005//9675** in EE at 0050. (Hornstein, MI) Radio Nova/RAI. **9657** at 0058 with news in EE. At 0100 "Weekend Leisure Time" with Judith Harris.

Radio Uno, **11800** at 2232 in II with mention of Nottorno Italiano. (Wilden, IN)

JAPAN—Radio Tampa. **3925** in JJ at 0916. (Miller, WA) **9595** in JJ at 1001. (Foss, AK)

Radio Japan, **5960** (via Canada) at 0106. (Wilden, IN)

KUWAIT—Radio Kuwait, **12005** in EE at 1800. (Bartlett, PA)

LIBERIA—Radio Liberia Int'l, **5100** at 0000. "We are having a difficult time here in central Liberia." (Roberts, NC)

LESOTHO—Radio Lesotho, **4800**, in SeSsotho with religious talks and prayers, mentions of "Bible College," choir, bird song, man and woman with IDs and presumed news. (Lamb, NY)

MALAYSIA—Radio TV Malaysia, Sibul, in unidentified language at 1437 on **5005**. (Miller, WA)

Radio Malaysia, Kuching, **4895** at 1430 and **5030** at 1441 in unidentified language. (Miller, WA)

Radio Malaysia, Kuala Lumpur, **4845** at 1429 and **4897** at 1434 in unidentified language. (Miller, WA)

MAURITANIA—Radiodiffusion Mauritaine, **4839** at 0710 in FF ending presumed news, then high-life music to 0730 fade. (Klingman, NY)

MEXICO—Radio Mexico Int'l, **9705** in SS/EE at 0235. (Hornstein, MI)

NETHERLANDS ANTILLES—Radio Netherlands via Bonaire, **6165** at 0003. (Wilden, IN)

NEW ZEALAND—Radio New Zealand, **6100** at 0952. (Hornstein, MI) **15115** at 0222 with classical music. (Miller, WA)

NIGERIA—Radio Nigeria, Kaduna, **4770** at 0600 with ID, news, nationwide commercials for an Internet provider and Newcastle Wire and Cable. (Rausch, NJ)

NORTH KOREA—Radio Pyongyang, **9345** at 1014 in RR. (Foss, AK) **9665** at 1225 in KK. (Northrup, MO)

NORTHERN MARIANAS—Monitor Radio/KHBI, **9430** heard at 1009 with news. (Foss, AK)

PAPUA NEW GUINEA—Radio East Sepik, **3335** at 1123. Other PNGs heard on **3260**



Dick Pearce tunes the world from this nicely equipped shack in Battleboro, VT

(Radio Madang, editor). **3315** (Radio Manus), **3345** (Radio Northern) and **3365** (Radio Milne Bay). (Roberts, NC)

NBC Port Morseby, **4890** at 1130. (Roberts, NC); **3315** Radio Manus at 1010 with children singing with guitar. (Foss, AK)

Radio East Highlands, **3395** at 1002 with news in Pidgin English. (Foss, AK)

Radio West Highlands, **3375** heard at 1006 with woman talking, presumed in Pidgin. (Foss, AK)

PARAGUAY—Radio Nacional, **9735** at 2254 with soccer match. Barely audible and promptly faded to nothing. (Miller, WA)

PERU—Radio Cora. Lima, **4914** at 0901 in SS. "Dios Pescador" religious program. (Miller, WA) 1042 with frequent IDs. (Hornstein, MI)

La Voz de la Selva, Iquitos, **4820** (nominal **4825v**, editor) at 0207 in SS. (Miller, WA)

Radio Tropical, Tarapoto, **4935** at 1004 in SS. (Miller, WA)

PHILIPPINES—FEBC Radio Int'l. **9475** at 1004 in CC. (Foss, AK)

RUSSIA—Primorsk Radio, Vladivostok, **5105** in RR at 1136. (Miller, WA)

Magadan Radio, **9600** at 0957 with man in RR. (Foss, AK)

Voice of Russia, **7125** at 2300. Website address is <www.vor.ru> and email is <Letters@vor.ru>. (Bartlett, PA) 7250 at 0056. Off at 0059. (Wilden, IN)

ROMANIA—Radio Romania Int'l, **9510** in EE at 0210. (Hornstein, MI)

SAO TOME—Voice of America relay, **4750** at 0300 with IS, ID, Daybreak Africa. African regional news. (Rausch, NJ) **7290** at 0258 with ID, IS, news. Practically wiped out by Deutsche Welle sign on at 0300 on 7285. (Jeffery, NY)

SINGAPORE—BBC relay. **3915** at 2250 in II to 2300 with EE ID. (Rausch, NJ)

Radio Singapore Int'l, **6015** at 1336. (Miller, WA)

SOLOMON ISLANDS—SIBC, **5020** in Pidgin at 1033. (Miller, WA)

SOUTH AFRICA—Channel Africa, **5955** at 0354 with news about Burundi, ID, time check, program lineup, ID at 0400 "6'clock from Channel Africa in Johannesburg" and news. (Lamb, NY)

SOUTH KOREA—Radio Korea Int'l, **9570** at 1230 with news. (Northrup, MO) **15575** at 0200 with IS, ID, schedule. (Rausch, NJ)

SPAIN—Radio Exterior de Espana, **9540** at 0135 with discussion of electromagnetic spectrum and history of Radio Havana. (Hallenbeck, ME) 0100. (Wallesen, IL) 0102 with news of Span. (Wilden, IN) **9630** in SS at 1230. (Northrup, MO)

SRI LANKA—VOA relay, **15395** at 1634 with programming in Special English. (Jeffery, NY)

Sri Lanka Broadcasting Corporation, **4902** at 1432 in unidentified language. (Miller, WA)

SWAZILAND—Trans World Radio, **4760** at 0321 to 0330 sign off. Woman with religious talk in presumed Swahili, choir, clear "Trans

World Radio, Swaziland" ID and mention of meter band followed by handbell IS and off. (Lamb, NY)

SWEDEN—Radio Sweden, **6090** at 0234. (Hornstein, MI) Here and **7115** at 0255. (Miller, WA) **13740** at 1330 to 1400. (Bartlett, PA) **15240** at 1330 with "60 Degrees North." (Klingman, NY)

SWITZERLAND—Swiss Radio Int'l, **9885** at 0228. (Dray, MN) 0105. (Hornstein, MI) **11650** in Italian at 2310. (Miller, WA)

TAHITI—Radio Tahiti, **15167** heard at 0223 in FF. Very poor with deep fades. (Jeffery, NY) **15168** with nice music, woman talking in FF. (Roberts, NC) (You should get this one now if you don't have it. The 19 meter transmitter is the only one still operating and it is deteriorating. When it goes off the word is that Radio Tahiti won't spend the money to stay on shortwave! Editor)

TAIWAN—Voice of Free China, **15600** via WYFR at 2200. (Hornstein, MI) 2251. (Vaage, CA)

UKRAINE—Radio Ukraine Int'l, **7150** at 0308. (Miller, WA) **9550** at 0046 with IS. a discussion about the station's transmitters and the upcoming anniversary of Ukraine independence. (Wilden, IN)

UNITED STATES—Voice of America feeder, **10454 LSB** at 1900. There appeared to be faint bubble or warble jamming. To what part of the world is this beamed? (Klingman, NY)

VATICAN CITY—Vatican Radio., **7310** at 2245 to 2300 in EE. (Bartlett, PA)

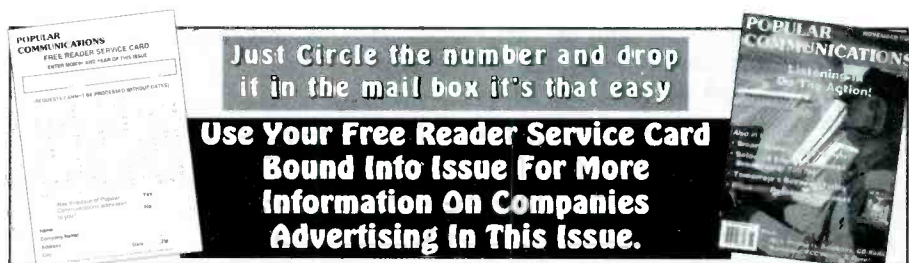
VENEZUELA—Ecos del Torbes, **4980** heard at 1008 in SS. (Hornstein, MI) 1016. (Miller, WA)

VIETNAM—Voice of Vietnam, **7250** heard at 0207 with news in EE, "Vietnam Land and People." (Altman, PA) (via Russia, Ed.)

YUGOSLAVIA—Radio Yugoslavia, **7115** at 0000 in EE. (Bartlett, PA)

ZAMBIA—Radio Zambia, **4910** at 0411 with presumed news read by man and woman in various local languages. Between each language there are drums and the call of the fish eagle followed by a time check in EE and an ID in each language. (Lamb, NY)

That's it! A rousing cheer to the following stout hearts who came through for all of us this month: Sheryl Paszkiewicz, Manitowoc, WI; Mark Northrup, Gladstone, MO; Don Hallenbeck, Maine; Michael J. Miller, Issaquah, WA; Elmer W. Wallesen, La Grange Park, IL; J.W. Roberts, Breward, NC; Marty Foss, Talkeetna, AK; Richard Klingman, Mt. Upton, NY; Dave Jeffery, Niagara Falls, NY; Ed Rausch, Cedar Grove, NJ; Marie Lamb, Brewerton, NY; Hugh A. Hornstein, Muskegan, MI; Bjorn F. Vaage, Granada Hills, CA; Sue Wilden, Columbus, IN; Daniel Bartlett, Gettysburg, PA and Tim Dray, Minneapolis, MN. Thanks to each of you! Until next month, good listening and 73s!



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Clandestine Communique



TUNING IN TO ANTI-GOVERNMENT RADIO

It's Not Over 'Til It's Over


The Nigerian clandestine **Voice of Democracy** has changed its name and now calls itself **Radio Kuridat Nigeria—The Voice of Democracy**. It continues to broadcast from 2058 to 2200 close on **6205**, via the South African government's Meyerton transmitting site. Listeners in the eastern and central parts of North America should be able to hear this one quite well during the winter months. One of the lines used at sign off is "remember, it's not over 'till it's over." The address for this one is UPDN, P.O. Box 9663, London, SE1 7ZD, England.

Radio Democracy is the name of a new clandestine station broadcasting on behalf of Burundi's National Council for the Defence of Democracy (CNDD), a pro-Hutu group. It uses **7040**, apparently signing on at 0430. The station also announces itself as "the voice of the people" and claims to also be using channels (unspecified) in the 49 and 60 meter bands. The programs are in French and Kirundi. We don't know of any North American loggings of this one yet, but if the station is using halfway decent wattage, the time/frequency combination should work for North America under favorable conditions.


Colombian clandestine **Radio Patria Libre** has been heard around 2200 on **6250** and on other occasions on **6250** and is reported to be announcing **6600**, a frequency it has used in the past. The FARC station, **La Voz de la Resistencia** broadcasts on a much more irregular basis. Recent appearances have been on **6260v** and **6325** around 2300.

Some lucky DXers have been managing logs of the **Voice of the Tigray Revolution** with a sign on at around 0330 on **5500**, broadcasting in Tigrigna. The station is located in Tigray Province, Ethiopia. This station, which was a pure clandestine during the Ethiopian civil war, can be reached at P.O. Box 450, Mekelle, Tigray, Ethiopia.

Broadcasts of the **Voice of Kurdistan**, run by the Patriotic Union of Kurdistan had its broadcasts disrupted when the Iraqi and Kurdish Democratic Party

1945  ۱۳۲۴

Democratic Party of Iranian Kurdistan حزب دمکرات کوردستان ایران
 Parti Democratique du Kurdistan d'Iran حزبێ دیموکراتی کوردستانی ئێران



A L'ECOUTE DE LA RADIO DU KURDISTAN IRANIEN
 Un article de Bernard CHENAL, Mulhouse - France -

Peuple oublié lors de l'éclatement de l'empire Ottoman, les kurdes qui constituent un des groupes ethniques les plus importants dépourvus d'Etat nation, sont aujourd'hui répartis entre cinq états: Arménie, Iran, Irak, Syrie et Turquie.

Au cours du vingtième siècle se sont succédé plusieurs tentatives de formation d'un état kurde. En 1919, le traité de Sévres prévoyait même la création d'un Kurdistan indépendant dans le cadre des règlements de la première guerre mondiale. Ce traité fut cependant abrogé par celui de Lausanne en 1924. En 1946, grâce à l'appui de l'URSS, une République Kurde éphémère fut créée à Mahabad, dans le Kurdistan iranien. Elle fut réprimée de façon sangnante par l'Iran en 1947. Estimés à une vingtaine de millions, voire à 25 millions, les Kurdes seraient environ 5 à 6 millions en Iran, une dizaine de millions en Irak, et un million en Syrie. Il existe aussi une importante communauté kurde en exil, notamment au Liban.

Les Kurdes sont majoritairement musulmans sunnites. On compte cependant une communauté chilte importante en Iran et quelques tribus chrétiennes.

Le Parti Démocratique du Kurdistan d'Iran a été fondé le 16 août 1945. Comme la plupart des partis d'opposition iraniens (Fedayin du peuple d'Iran, Moudjahidin du peuple de Massoud Radjavi, le Parti Toudeh, le Parti Démocratique du Kurdistan Irakien, le Komala (parti communiste du Kurdistan iranien), le Parti du Travail d'Iran, etc.), le P.D.K. Iran possède sa propre station de radio qui diffuse depuis le 13 octobre 1980.

Le PDKI est aujourd'hui un des partis les plus importants au Kurdistan d'Iran. À tel point que le régime islamique des mollahs a déclaré la guerre ouverte contre les Kurdes d'Iran. Khomeiny avait déclaré (par une

Several of the radio stations based in Kurdistan or having Kurdistan as their target have reportedly been funded by the CIA.

forces took much of the Kurdistan area from the PUK. Saddam Hussein's incursion into Kurdish territory at the invitation of KDP and the subsequent taking of the town of Irbil led to revelations of CIA involvement in some of the Kurdish clandestines, according to a report in the Washington Post. The newspaper says

the CIA spent \$100 million to promote Kurdish opposition to Hussein, part of which went for broadcasting activities. These included the **Voice of Free Iraq** (original name) operated by the National Accord, a group the CIA supposedly sponsored. The station used a transmitter in Saudi Arabia. It was later renamed

Republic of Iraq Radio—Voice of the Iraqi People. This later version was reported to be broadcasting from Syria and Egypt in addition to Saudi Arabia.

The CIA apparently also had a hand in several other stations such as the **Voice of Iraq** (using a transmitter in Egypt) which also served as an outlet for **Radio Freedom—News Center of Free Iraq, Voice of the Free People of Iraq and Iraqi Army Radio.** Another one using this transmitter was the **Voice of Human Rights and Freedom for Iran.**

Another station which apparently received CIA money was the **Voice of Iraqi Kurdistan**, operated by the Kurdish Democratic Party. As it turned out this was a bad investment since the KDP turned to Hussein for help against the PUK and, in so doing, invited Saddam's troops into the Kurdish area. **The Voice of Iraqi Kurdistan** is reported to be operating on or around **4070** from 0245 to 0400 in Kurdish, then in Arabic to 0500. Also at 0930 to 1100 (Kurdish), 1645 to 1800 in Kurdish, 1800 to 1900 in Arabic and 1900 to 1930 in Kurdish and Arabic.

Semi-official Angolan station **VORGAN** (Voice of the Resistance of the Black Cockerel) which is the station of Jonas Savimbi's National Union for the Total Independence of Angola has a new schedule. It is broadcasting in Portuguese from 0450 to 0900 on **9755**, (other reports put it on **9750**), also 1150 to 1530 on **11830** and from 1650 to 2100 on **7100**. The station is often heard in North America fairly often.

The Democratic Voice of Burma, via Radio Norway, now airs at 1100 on **15170** and 1430 on **11850**.

The Voice of Palestine—Voice of the Palestinian Islamic Revolution broadcasts in Arabic from 0400 to 0500 on **5995** and **9670**; 1200 to 1300 on **11745** and again from 1930 to 2030 on **6025**, **7190** and **9665**.

The Voice of Southern Azerbaijan, operated by the National and Independent Front of Southern Azerbaijan broadcasts to the Azeri population in the Iranian province of Azerbaijan and opposes the Iranian government. It was operating on **12090** between 1530 and about 1630, then moved to **9927** for a brief time, but has left that frequency and, so far, has not been spotted anywhere else.

The Voice of Sudan is scheduled from 0400–0600 daily and from 1600 to 1800 on **8000**, **9025** and **12008**, the latter in USB. It is the radio of the National Democratic Alliance, a group comprising several parties which oppose the current

government of the Sudan. The station is believed to be transmitting from Eritrea. It has been heard by many in North America, but requires great care because the official Sudanese radio likes to operate during the same hours and on or near the same frequencies in order to create radio confusion.

The Voice of Tibet, which is aired on the Far East Broadcasting Association's (FEBA) station in the Seychelles Islands seems to be making almost equal use of **15445** and **15480** for its 1145 to 1200

broadcast in an attempt to escape jamming efforts by **China.** Word is that a second outlet will be put into play in the 17 MHz band.

That covers things for this month. Remember, we always welcome whatever clandestine station loggings and other news you can pass along. This includes address information, QSLs received, hints about the location of transmitters, background information on the organizations which are operating and/or funding these stations. Thanks, and good hunting!



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27.165	1.50	41
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27.315	1.95	57
27.365	2.00	58
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FOR THE HANDICAPABLE COMMUNICATIONS HOBBYIST

Which Antenna is Right For You?

Happy New Year, and welcome to this special extended edition of HandiChat. Despite the falling snow and frigid temperatures, spring is closer than you think, and with spring, the radio hobbyist's thoughts inevitably turn to antennas. In fact, of the hobby's many aspects, none evokes more discussion and analysis or generates more ink than the subject of antennas. After all, without them the most sophisticated receiver or transceiver is little more than an overgrown paperweight. Commercial or home-brewed, active or passive, from VLF to microwave, the variety of antenna configurations and feedlines can be overwhelming. Basically, the "right" antenna for *you* will be determined by your needs, and, when dealing with outdoor antennas, such practical considerations as the size of your lot and whatever zoning restrictions exist in your area.

Of course, the first criterion for any antenna is performance—you can't work what you can't hear. But for most of us, reliability is also a consideration, espe-

"... the 'right' antenna for you will be determined by your needs ..."

cially when someone else will have to make, or help with any needed repairs (more on this later). For those with sufficient space, the first alternative to consider is wire. It's light-weight, resilient, readily available (most of the materials you will need are at your neighborhood hardware store), and cheap. Furthermore, since many, if not most designs are horizontally polarized, a good signal-to-noise ratio can be realized on the low bands. For those of you not wishing to roll their own, commercial alternatives, including several variations on the famous G5RV, are also available.

If space is limited, loops and verticals can be worthy contenders. For our purposes, a loop is merely a folded dipole. If two are positioned so that they bisect one another, broad omnidirectional coverage

should result. The "double loop" is a popular configuration for FM broadcast reception. I have run two of these small antennas over the last 30 years, and can testify that they are both durable and highly effective.

The vertical is undoubtedly the greatest space saver of them all. On frequencies above 30 MHz, it functions as a dipole (the FM whip on your automobile provides a good illustration). Coverage below 30 MHz is considerably broader, and the low angle of radiation facilitates DX. The performance of many multiband HF verticals can be improved through the use of ground radials, placed just below the surface. Results will vary according to the number and length of the radials, and the conductivity of the soil. Overall, however, the performance of these multibanders, particularly when optimized by a trans match, can be highly satisfactory.

Of course, those who really want to go for the gain will opt for a beam, usually some variation on the classic yagi; a driven element, a director, and one or more reflectors. However, the added forward gain and front-to-back ratio come at a price, both literally and figuratively. Such antennas are invariably larger and more expensive than their omnidirectional counterparts. Furthermore, the addition of a rotator adds mechanical complexity, thereby insuring that something will happen at the worst possible moment—preferably when the mercury is hovering somewhere around minus 10 Fahrenheit. Finally, large HF beams often require a separate antenna structure, and are extremely vulnerable to heavy weather. Of course, each of these factors will vary with the size of the antenna. A two-meter or television antenna is one thing, a 40-meter yagi (I know of no commercially available beams for the bands below 40) is quite another. Anyone who has ever seen one of these big boys brought down by ice or high winds will agree that it is not a pretty sight. Therefore, those wishing to go this route should be aware of the trade offs, and be well prepared when (not if) things go wrong.



Active antennas are another consideration. They usually follow a standard design. See the discussion in the August, 1996 HandiChat. And for a brief, cogent discussion of feedlines, see Joe Carr's "Antennas and Things" column in our May 1996 issue.

An Equipment Note

Readers of the January '96 edition may recall a brief discussion of Ten-Tec, Inc. I stated at that time that I knew of no VHF equipment bearing the Ten-Tec name. However, this past year saw the introduction of the T-Kit 1208 6-Meter transverter. For those unfamiliar with the concept, a transverter allows an HF transceiver to operate on VHF, or vice versa. Although the former is far more common, I recall a contact with a gentleman in the United Kingdom, who was working across North America with a 6-to-10-meter transverter. Measuring just 1.3 inches high, by 7.3 wide, by 6.1 deep, and weighing just 2.5 pounds, the 1208 should fit comfortably into even the most crowded shack. The kit version is available for \$95, while the fully assembled, factory-tested version costs just \$159 (both prices plus shipping and handling).

Thus it would appear that the 1208 offers an attractive alternative for those who are curious about 6 meters, but cannot afford a second full-featured transceiver. Anyone desiring further information can contact Ten-Tec at 1185 Dolly Parton Parkway, Sevierville, TN 37862, or phone 1-800-833-7373.

Last April's issue featured a discussion of the use of closed captioning and audio descriptions in television broadcasts. But what about home video? Apparently, closed captions are now widely available in feature films. Therefore, PBS has taken the next logical step, offering a line of videos featuring audio description. Titles include both PBS and other documentaries and standard commercial fare. What's more, the narration is audible on any VHS machine, either hi-fi or monaural. For further information or a catalog, contact DVS Home Video, Customer Service, 1000 West gate Dr., St. Paul, MN 55114 or phone 1-800-333-1203. Orders may be placed at P.O. Box 64428, St. Paul, MN 55164, phone 1-800-776-8066. Thanks to Jim Shaw (KD4SDX) and Patty Johnson for bringing this development to my attention.

Inside the Mailbag

Now let's turn to the mailbag, where our first item dovetails neatly with the theme of adaptive technology. Joan Drezhlo of Schenectady, NY has discovered another source for SCA and/or SAP-equipped receivers, AJL Enterprises of High Point, North Carolina. Their catalog is smaller than that of FM Atlas, suggesting that they may be a relatively new company. However, the introduction provides a solid overview of subcarrier broadcasting, and some of the items were quite intriguing. Those interested should contact AJL at P.O. Box 5354, High Point, North Carolina 27262.

In addition to the above information, Joan shared a little of her personal history. She's a long-time DXer and SWL, where radio was a family tradition. Her father was a broadcaster for WRGB, WGFM, and WGY in Schenectady, and served as both state and national director of MARS, although she didn't specify which branch. Furthermore, she is emphatic in her devotion to subcarrier broadcasting ("I think . . . that a radio without SCA is incomplete!"), and feels these special radios should be retailed in the United States, as they long have been in Canada. She also shared fond recollections of subcarrier DX from the exot-

"Of course, the first criterion for any antenna is performance—you can't work what you can't hear."

ic Midwest and other places. Thanks a lot, Joan. I really enjoyed hearing from you, and I know our readers did too.

Our anonymous correspondent in Queens offers some updates and corrections on the voice of the Associated Blind of Chelsea (April, 1996). First, the call letters are WTAB (for Associated Blind), not WTAV, as previously stated. Also, the assigned frequency is, indeed, 540 kHz. Those desiring more information about the station can phone 212-255-1123.

Our June stroll down memory lane prompted a nice letter from Susan Shell of Louisville. Apparently my references to WKLO struck a chord. As a child, Susan resided in the Louisville area from 1960 through 1962, during which time she became quite a devotee of WKLO. Now back in Derby City, she would like to hear from anyone who shares this passion, and would be especially interested in collecting audio artifacts; air checks, jingles, commercials, etc. from "The Big Ten Eighty," dating back to the early '60s. All mail should go to No. 7 Canterbury Court, Louisville, KY 40214. The lady can handle either braille or tape, but she notes that cassettes are particularly appreciated, as her motor skills are limited. She will also accept calls at 502-366-1693. Thanks for thinking of us, Susan; I hope you draw a good response.

Missing AFRTS on Shortwave

While on hiatus, we observed the eighth anniversary of the radical cut-back of the Armed Forces Radio and Television Service (AFRTS), and I could not let the occasion pass without comment. In the days before CNN, this network of shortwave feeders, operated under the auspices of the United States Information Agency for the benefit of its overseas affiliates, was a primary resource for news junkies. Virtually every domestic news program, including those cut by many commercial broadcasters could be heard, along with political commentary and sports. As a long-time University of Kentucky fan, I was always proud to hear the announcer say that a particular game was being heard "around the world on Armed Forces Radio." The breaks normally re-

served for commercials were filled by military public service spots, or "closed-circuit" announcements concerning future programming. Although I never saw a comprehensive list of AFRTS frequencies, those I recall included 6030, 9700, 11830, 15345, 15430, and 25625 kHz.

But in the fall of 1988, the USIA announced it was switching to a satellite delivery system for most Armed Forces programs. Various technological justifications were advanced, but the root cause appears to have been a territorial squabble over frequency allocations between the Voice of America and AFRTS—an ignoble end to an exemplary broadcast service. As far as I know, AFRTS still uses some overseas HF feeders, such as 16141 kHz SSB, but they are difficult to hear stateside. In its hey day, Armed Forces Radio provided a unique service to the HF enthusiast, one which is not likely to be duplicated in the foreseeable future.

Lending a Helping Hand

Those who were with us in December, 1995 will recall my observation that the holidays are a good time to lend a helping hand to fellow hobbyists. Over the past three years, it has been my pleasure to salute those who, by their energy, enthusiasm, and love for people, exemplify the Christmas spirit year-round and, before I close, I wish to acknowledge two more dedicated hobbyists.

Our first honoree is Carol Westberg, KJ7C of Bozeman, Montana. Early on the evening of November 8, 1991, I answered a CQ on 10 meters. It was Carol, conduct-

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“... my grandmother sparked my curiosity through her stories of tuning in European SW broadcasts during WWII.”

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

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



Here's our January winner, Stokes Schwartz, adjusting the RF gain to hear Radio Japan.

entries to: How I Got Started, *Popular Communications*, 76 North Broadway, Hicksville, NY 11801-2909, or e-mail to <popularcom@aol.com>. If you e-mail your entry, please let us know if you're sending a photo.

Our January Winner

Stokes Schwartz, in Madison, Wisconsin, wrote in this month to tell us how he has grown up with shortwave and even found a fiancée who understands his “obsession.” Here's what he told us:

When I was 16, my grandmother sparked my curiosity through her stories of tuning in European SW broadcasts during WWII. One day in September of 1983, I arrived home to discover a package, which, to my surprise contained a radio with two SW bands.

Excitement was high as we plugged it in and immediately tuned in the BBC, Radio Moscow and many other stations. To a young person curious about the world, this was real excitement! I regularly “borrowed” the radio, for many late nights' listening. It became even more difficult to get out of bed for school! Since then, very few days have gone by without at least some news and music via the shortwaves.

“I regularly “borrowed” the radio, for many late nights' listening.”

I've been a serious listener for two years now, along with my fiancée Christina, who is extremely tolerant of a SW listener's eccentricities! We enjoy “mail-bag,” classical and jazz music programs the most. During the last 18 months, we have collected 38 QSL cards too, mainly from Europe. For us, nothing beats a good SW program and a fresh cup of coffee on a chilly autumn afternoon. ■

“In its hey day, Armed Forces Radio provided a unique service to the HF enthusiast...”

ing a demonstration of amateur radio for her sixth-grade class as part of an after school licensing course. My log shows the contact lasted about 23 minutes. They were some of the happiest of my amateur career. Here was an example of someone doing more than she had to, and drawing an enthusiastic response from her students in the process.

Then there is C. C. Carter, Jr. of Louisville, W4REF. Our paths crossed last spring, when a particularly windy Friday afternoon snapped one of the guy ropes on my HF vertical. Subsequent examination revealed the other two were ready to go, and the five-day weather forecast promised more of the same.

Attaining a suitable quantity of high-quality nylon rope proved a simple task; now all that remained was finding a helping hand at 6 p.m., Friday. After some discussion, I began calling other blind hams, to see who had helped them in their time of need, which led me to Calvin. Following some initial questions about how I got his name, and a brief synopsis of the problem, he said he would drop by the next morning. True to his word, he and his son showed up just after 8 a.m. on Saturday. Within less than 10 minutes, everything was ship shape. When offered compensation, he said he'd bill me on the 35th of the month.

How many hobbies can boast the kind of people who will assist a stranger, sight unseen, and for no reward except the satisfaction of a job well-done? Thanks, Calvin, you make me very proud to be a ham! Carol and Calvin personify the spirit of our great hobby. After all, one of the primary purposes for radio, at any level, is lasting friendship.

Finally, I have an announcement. Scripture tells us that everything has its time and season, and this marks the end of my third year as your conductor. It has been a ball. Now, however, changes at *Pop'Comm*, combined with changes in my own professional responsibilities compel me to announce that this will be my last HandiChat. To Senior Editor Tom Kneitel, K2AES, the father of HandiChat, and to all of you who took the ride with me, I say a heart-felt thank you. Together, I believe we achieved something unique, and I am grateful. So for now, from our household to yours, we wish you all the best. See you down the dial. ■

Broadcast DXing

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING



Third U.S. Station to Move to Expanded AM Band

Costa Mesa, CA's KNNZ-AM will be the third U.S. station in the expanded AM band when it moves to one of 10 new channels between 1605 and 1705 kHz sometime in mid-December 1996. KNNZ received FCC authorization to use 1650 kHz, and the station was expected to be on in 60 days pending facilities changes, general manager Saul Levine told *Pop'Comm* in mid-October.

KNNZ was able to go ahead with its move despite the absence of an allocation plan, which remains in limbo pending a review of the process used by the FCC to determine which stations could migrate. A Congressional mandate in the 1990 legislation creating the band stipulates that daytime-only stations in cities with populations over 100,000 be given first priority in the allocation process. "We're guaranteed an assignment," Levine explained.

Whether 1650 kHz is KNNZ's permanent home, however, will undoubtedly be determined by the FCC's revised allotment plan. "The preliminary assignment is 1650," Levine said, "but they reserve the right to change it."

The expanded-band outlet will simulcast the news format of its 540 kHz sibling, but with a signal that will provide full nighttime coverage of its Orange County market. "K News" currently runs 25 kW days and a mere 240 watts nights on 540 kHz; in the expanded band, it will run 10 kW days and 1 kW nights. Original programming for the 1650 kHz outlet is also being considered, Levine said.

Broadcasters who receive expanded-band assignments have a five-year period in which they can use both their old and new channels before they must decide

which of the two to keep. "Since we're given this five-year option, we're not precluding anything," Levine said, "but at the moment, it would appear that we intend to stay permanently on 1650... because it is full time."

Marriage of Convenience

When the Telecommunications Act of 1996 raised the limits of how many radio stations a single party could own, it set off a wave of mergers and buyouts that put more stations in the hands of fewer owners. The feeding frenzy wasn't limited to the largest markets, either. In Sioux Falls, S.D., for example, the recent sale of two stations has put nearly a third of the market's stations in the hands of only two owners.

Midcontinent Radio, owner of KELO-AM/FM, bought KRRO-FM and KWSN-AM, making the Minneapolis-based company the second largest group owner of stations in the market. "We'll be able to reach another element of the audience that we've had trouble reaching with our formats," announced Midcontinent chairman and CEO Larry Bentson in a *Sioux Falls Argus Leader* article that was sent in by Terry Jones, of Plankinton, SD. "It will bring more listeners under our sphere of influence."

Southern Minnesota Broadcasting is the market's largest group owner, with six stations, including KIKN-FM, KKLS-FM and KXRB-FM. Last March, it took control of KSOO-AM, KMXC-FM and KIXK-FM in what's called a local-management agreement, which allows a sta-

tion to lease a portion of its airtime to another station. With KSOO, KMXC and KIXK, as is often the case, the LMA was an engagement ring preceding the union.

What makes buyouts so common is that they allow the new owner to operate the stations more efficiently. Instead of each station having its own newsroom, salespeople and engineers, several stations can draw from a single pool of human and technical resources. "The audience benefits, because if there is quality talent on one station, it can be utilized on all of the stations," said Results Radio general manager Don Jacobs.

But Lee Axdahl, owner of one of Sioux Fall's remaining stand-alone commercial stations, KTWB-FM, doesn't feel threatened by the increased concentration of ownership. "Bigger is not always better," he said. "I'm an old radio guy and an independent businessman. I like entrepreneurship and creativity. When one person is making decisions about the sound of several stations, it can stifle creativity."

That's a concern echoed by the fans and staff of Philadelphia's WFLN-FM. The classical format station was bought in August by radio giant Evergreen Media, its fifth owner in 1996. And despite Evergreen's assurances to the contrary, classical music lovers are worried that the company will eventually reformat the station in an effort to boost ratings and revenues. "Classical is a stable, good demographic, but it is a tough niche and an expensive format to program," said Walt Gradzki, general manager of Trenton, N.J.'s WWFM-FM, in a Philadelphia Inquirer article sent in by Mike Regensburger, of Lansdale, PA. "If you want to make a lot



"Arrow 105.3" is Kittery, Maine's WXBB. They run 2.2 kW of classic rock. (Courtesy Bob Gilbert, Portland, ME)

Pending AM Call Letter Changes

New	Old	
WINW	WPGY	Canton, OH
WLAL	WDCS	Cobleskill, NY

Changed AM Call Letters

New	Old	
KBZS	KKGM	Grand Junction, CO
KCLI	KXOL	Clinton, OK
KEBC	KXXY	Oklahoma City, OK
KFNX	KCNR	Salt Lake City, UT
KGOE	KTMA	Eureka, CA
KKBY	KJUN	Puyallup, WA
KKFJ	KCNO	Alturas, CA
KKUZ	KKID	Sallisaw, OK
KOMH	KRIG	Pawhuska, OK
KOPY	KDSY	Alice, TX
KQWB	KQFN	Fargo, ND
KRRF	KXXL	Denver, CO
KUCU	KHOB	Hobbs, NM
WAZU	WAOZ	Cincinnati, OH
WFFX	WMGP	Meridian, MS
WHYM	WRIP	Lake City, SC
WJJS	WVLR	Lynchburg, VA
WJZZ	WXOX	Bay City, MI
WKAJ	WCKM	Saratoga Spgs., NY
WMAK	WCKD	Madison, TN
WMWR	WMAZ	Macon, GA
WNCR	WJHB	Fair Bluff, NC
WPTS	WGMP	Philadelphia, PA
WROR	WMEX	Boston, MA
WTAM	WWWE	Cleveland, OH
WWLE	WRWD	Cornwall, NY
WXTR	WQSI	Frederick, MD
WZAM	WMVN	Ishpeming, MI
WZHF	WMZQ	Arlington, VA

Pending FM Call Letter Change

New	Old	
WGLN	WQLX	Galion, OH

Changed FM Call Letters

New	Old	
KAZR	KFMG	Pella, OR

KBIQ	KIKX-FM	Manitou Spgs., CO
KCNO	KKFJ	Alturas, CA
KDJK	KHOP	Mariposa, CA
KESR	KLPQ	Sherwood, AR
KHHT	KWMX-FM	Lakewood, CO
KHKK	KROW	Modesto, CA
KHOP	KKJK	Oakdale, CA
KJKB	KAIH	Jacksboro, TX
KKHB	KBOE	Eureka, CA
KKLH	KZBE	Marshfield, MO
KKRN	KBBL-FM	Cabot, AR
KMXJ	KKUZ-FM	Sallisaw, OK
KMXM	KAKO	Gooding, ID
KNRX	KEBC	Oklahoma City, OK
KOPY-FM	KOPY	Alice, TX
KPLW	KAIR	Wenatchee, WA
KPRZ-FM	KBIQ	Fountain, CO
KRTX	KMIA	Winnie, TX
KSES	KNWZ-FM	Yucca Valley, CA
KSWG	KBSZ-FM	Wickenburg, AZ
KTCX	KAPW	Beaumont, TX
KXLL	KBUQ	Paradise Valley, AZ
KZOL	KYLZ	Santa Cruz, CA
WANG	WMSQ	Havelock, NC
WAXL	WAZU	Santa Claus, IN
WBKW	WSZN	Key West, FL
WBTZ	WGFB	Plattsburgh, NY
WCHB-FM	WJZZ	Detroit, MI
WDHC	WCST-FM	Berkley Spgs., WV
WDRQ	WLTJ	Detroit, MI
WFSO	WAIL	Olivebridge, NY
WJCO	WUNX	Harwichport, MA
WJFJ	WKJT	Tryon, NC
WJES-FM	WJRQ	Saluda, NC
WJJS-FM	WJJS	Vinton, VA
WLVE	WPLL	Miami Beach, FL
WNSX	WALQ	Poughkeepsie, NY
WOVO	WXPC	Horse Cave, KY
WPLL	WSHE	Ft. Lauderdale, FL
WPPR	WDEM	Demorest, GA
WRSN	WZZU	Burlington, NC
WSTA-FM	WTBN	Charlotte Amalie, VI
WTPR-FM	WTWL	McKinnon, TN
WWKJ	WUNZ	Falmouth, MA
WWVZ	WXVR	Braddock Hts., MD
WWZZ	WQSI	Waldorf, MD
WXHT	WCOL-FM	York Center, ME
WXXR-FM	WCOC	Holly Pond, AL
WXXZ	KANQ	Grand Marais, MN
WYLT	WHLE	Byhalia, MS

of money quick, you are not going to stick with classical."

Worse, Evergreen has a history of buying and then reformatting stations. It did with Los Angeles' KFAC-FM, a classical music station it revamped as urban-contemporary outlet KKBT. And a year ago, it bought New York City's sole country music station, WYNY-FM, changing it into the discotheque WKTU. Changing WFLN's nearly 50 year-old format would leave the City of Brotherly Love without a classical music station. As one fan told the *Inquirer*, WFLN is "an oasis in the desert of the airwaves here," and drop-

ping classical music "would be a terrible cultural shock for the city."

In Brief

The Canadian Radio-television and Telecommunications Commission in October approved a request to revoke the license of Kapuskasing, Ontario's CHYK-AM. Parent company Pelmorex Radio Inc. decided to pull the plug due to "losses resulting from a weak local economy and competition from a community FM station." CHYK had abandoned its local programming and relayed Timmins

CKOY-AM full time. As part of the ruling, the 1 kW daytime, 600 watt nighttime transmitter on 1230 kHz was added to CKOY's license. The CRTC also agreed to allow Melfort, Saskatchewan's CJVR-AM to increase its daytime and nighttime powers to 25 kW from 10 kW, a change the Commission said would "improve the signal quality and extend the coverage area of the station."

A couple of veteran stations have changed their calls in the past few months. Philadelphia's WPTS is now WPHT, the fifth set of calls in eight years for the 50 kW station, which has gone by WCAU,

Applied for Permits to Construct New FM Stations

AL	Gadsen	89.9 MHz	
AR	Fayetteville	90.1 MHz	
AR	Forrest City	88.1 MHz	12.5 kW
AZ	Globe	88.5 MHz	
CA	Alturas	106.5 MHz	
CA	Chester	99.7 MHz	
CA	Crescent City	91.9 MHz	800 watts
CA	Hydesville	94.1 MHz	
CA	McCloud	95.5 MHz	
CA	Shasta Lake City	107.1 MHz	
CA	Weaverville	103.1 MHz	
CO	Westminster	88.1 MHz	125 watts
GA	Savannah	88.1 MHz	1.5 kW
HI	Lihue	88.5 MHz	1 kW
LA	Jonesville	105.1 MHz	
ID	McCall	98.3 MHz	
ID	Wallace	97.5 MHz	
IL	Flora	88.5 MHz	1 kW
IL	Kankakee	88.3 MHz	1.2 kW
IN	Crawfordsville	91.3 MHz	2.2 kW
IN	Kentland	101.7 MHz	
KS	Colby	97.9 MHz	
KS	Ingalls	96.3 MHz	
KY	Mt. Sterling	88.1 MHz	
LA	Cotton Valley	88.5 MHz	

MI	Flint	88.9 MHz	150 watts
MI	Honor	100.7 MHz	
MI	Rogers Hts.	91.5 MHz	
MO	Kennett	89.9 MHz	1 kW
MS	Duck Hill	91.9 MHz	
MS	Stonewall	106.9 MHz	
OH	Lima	89.3 MHz	
OK	Lawton	91.1 MHz	
OR	Lakeview	95.3 MHz	
SC	Dillon	90.5 MHz	
TN	Elizabeth	90.5 MHz	
TN	Maynardville	88.3 MHz	3 kW
TN	Ripley	89.7 MHz	4.5 kW
TX	Leakey	104.3 MHz	
TX	Longview	97.3 MHz	

Granted Permits to Construct New FM Stations

GA	Pearson	101.9 MHz	6 kW
HI	Lihue-Kauai	98.1 MHz	100 kW
LA	St. Martinville	89.9 MHz	100 kW
MS	Hattiesburg	89.3 MHz	1 kW
OK	Wewoka	104.7 MHz	6 kW
TX	Edna	96.1 MHz	13 kW
WA	Clarkston	102.9 MHz	440 watts
WA	Dayton	102.3 MHz	6 kW

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Micro-Broadcasting Earns a Spot at NAB Convention

By Peter Hunn

For most people who make their living via the electromagnetic spectrum, the National Association of Broadcasters Convention is the most important event of the year. In 1996, over 90,000 radio and TV professionals met in Las Vegas to attend the industry-related seminars, brainstorming about our socio-economic-technological future, and experience the latest in broadcast gear. While the gathering has recently grown so large that it's now held in three distinct exhibit halls, it was a focus on something small that caused a good deal of grassroots communication excitement.

It was about 15 years ago, with an eye for low-power FM equipment, that I first attended an NAB convention. Quite frankly, there wasn't too much evidence that anyone, except me, wanted a reasonably-priced FM broadcast transmitter capable of only a few hundred watts. FCC docket "80-90" (calling for more and bigger FM authorizations) was hot, making "power-upgrade" a key trend. Consequently, I built my pint-sized, 818 watt, Adirondack, NY station (see *Pop'Comm*, September 1985) using second-hand components from "upgrading" stations.

Things for the budget broadcaster today, however, are very different. FCC rule changes, a "micro-broadcasting" court case precedent, and a global marketplace, sparked the NAB '96 Convention floor with an impressive selection of low-power FM products.

One fascinating micro-broadcast FM item was displayed by a California firm called BEXT. Weighing only six pounds, the hyper-portable, programmable FM transmitter could actually be held in one hand. This tiny, but sturdy rig covers any spot in the 87.5 to 108 MHz range with one to 10 watts. Should the FCC or CRTC ever sanction low-power FM, transmitters like this will be ready to put your personal programming on the air.

Back in the early '80s, when I got my

Pete Hunn is a former station owner who now serves as a professor in the Communication Studies Department of the State University of New York at Oswego. You can email him at <hunn@oswego.edu>.



CCA engineer, Howard Ginsberg, sends 60 watts of FM through the NAB Radio/Audio exhibit hall. The author "test drives" a pair of headphones to receive the results in crisp, clear stereo.

little upstate NY FM going, a helpful engineer named Howard Ginsberg (NW1N) did all the soldering, figuring and connecting. We'd lost track of each other over the past decade, but were happily reacquainted at the CCA Electronics, Inc. booth. Howard is an official with CCA, an organization that has produced countless AM/FM/shortwave transmitters. He proudly demonstrated his company's low-power, 60 watt FM offering. It was placed in a conventional (19" (W) x 6' (H)) equipment rack with enough room to spare for a modulation monitor, various audio processors, satellite receiver, remote transmitter control, emergency broadcast gear, FM studio monitor/receiver, as well as a couple of blank panels ready to accept more electronic goodies. In other words, the 60 watter (or a similarly-sized CCA 100 watt transmitter) and the rest of a micro-FM station can fit into a space on speaking terms with a college dorm-sized refrigerator.

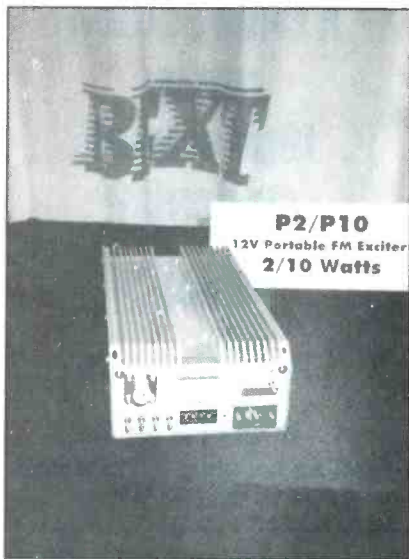
Of course, NAB '96 also included some smaller AM products, such as PPB,



Dial in a good frequency between 88-108 MHz, plug in a mic and consumer-grade portable CB player into one side of Crown's 100 watt FM broadcast transmitter and an antenna in the other. Next, add 12 volts of battery, solar or wind-generated power and you're on the air. Missionaries using these tiny "plug-n-play" FM stations in densely populated areas can send a signal to millions.

Inc.'s 30 and 60 watt transmitters. Maybe a bit larger than a kid's lunchbox, the Pennsylvania company's 30 watter is a favorite of former daytime-only AM outlets now authorized to use micro-power at night. It's incredible just how well those tiny unit's signal can deliver a local high school basketball game on a frigid February evening.

Conversation in exhibits promoting PC computer-driven audio and transmitter control often surrounded ways to warm up local signals that have been frozen off the air due to financial strain. From the Pacific Northwest to Long Island, problems in a local economy often translate into a community's once-dependable radio voice "going dark." In more than one case, such a facility can be rescued out of bankruptcy for a fraction of its real worth and returned to a new brand of profitable operation. A case in point is the new owner of a local AM.



One to 10 watts of FM stereo come from just six pounds in this BEXT broadcast transmitter. This is the ultimate in portable radio station gear, and is perfect for a commonly-owned chain of FM facilities desiring a su- per-versatile emergency back-up capability.

He'd always dreamed of having his own radio station, and picked up this one (with a modest transmitter site and tower) for \$25,000. Using a 486 PC-based audio/ transmitter control and satellite-delivered programming, the 250 watter practically runs by itself. The owner does a live local early morning show (from a studio in his basement!), activates the PC control at 8:45 a.m., and then heads off to his regular job! Two or three times weekly, his wife gathers advertising from nearby stores.

Without the burden of a typical payroll, the once-dead AM livens up the community and generates extra income for its owners. It just goes to show that the wide range of equipment, informative stories and broadcast opportunities, large and small, that make NAB conventions so enjoyable.

As you read this, an entire department at the Washington, DC-based National Association of Broadcasters is planning the 1997 industry-wide get together. The upcoming NAB convention, featuring everything new in radio, TV and multi-media, is slated to run in Las Vegas from April 7-10. If you'd like additional info, contact the NABA at 202-429-5300.

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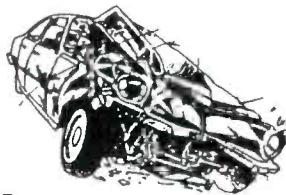
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KAIW	Wheeling, MO	105.9 MHz	6 kW
KJKS	Cameron, TX	101.3 MHz	3.05 kW
KLRX	Clovis, NM	106.5 MHz	60 kW
KNCR-FM	Paso Robles, CA	103.1 MHz	1.1 kW
KRMR	Ketchum, ID	104.7 MHz	100 kW
WCAE	Nekoosa, WI	1590 kHz	500 watts

Ordered to Show Cause Why Licenses Should Not Be Revoked

KFCD	Bay City, TX
KLEH	Anamosa, IA
KNFL	Tremonton, UT
KRHT	Concord, CA

Requesting AM Facilities Changes

WBUL	Ft. Knox, KY	1470 kHz	Seeks move to Shepherdsville, 760 w.
WDUN	Gainsville, GA	550 kHz	Seeks daytime increase to 10 kW.
WGTX	DeFuniak Spgs., FL	1280 kHz	Seeks move to Freeport, 890 kHz, 2.5 kW.
WHAM	Neenah-Menasha, WI	1280 kHz	Seeks daytime increase to 20 kW.
WQXI	Atlanta, GA	790 kHz	Seeks daytime increase to 28 kW.
WUSS	Atlantic City, NJ	1490 kHz	Seeks to change power.

Requesting FM Frequency Changes

KCES	Eufaula, OK	101.9 MHz	Seeks change to 102.1 MHz.
KTKC	Springhill, LA	92.7 MHz	Seeks change.
WFWM	Frostburg, MD	91.7 MHz	Seeks change to 91.9 MHz.
WYMR	Sebring, FL	105.5 MHz	Seeks change.
WZMQ	Key Largo, FL	103.9 MHz	Seeks change.

WGL and WGMP. The WPTS calls were dropped to avoid confusion with WPST-FM, in nearby Trenton, NJ. Meanwhile, Cleveland's WWWE is now WTAM. The station IDs as "News Radio AM 1100."

A 500 foot-tall antenna tower and brand new pickup that was to be given

away as part of a contest were among the casualties of a July storm in Nashville. Wind gusts up to 100 mph leveled the tower, knocking its three tenants, WGFX-FM, WKDF-FM and WKDA-AM, off the air. WGFX and WKDF were back on in a few hours, but it took two days on a long-

**A radio station
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students?**

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WNAS FM 88.1

**New Albany High School, 120 Vincennes St,
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*WNAS runs 2.85 kW into a three ft. antenna.
(Courtesy R. C. Watts, Louisville, KY.)*

wire strung between a telephone pole and a tree limb to get WKDA on air.

A man claiming to have a mandate from God to eliminate asphalt, skyscrapers and Russian pornography scaled an antenna tower in Miami's Biscayne Bay to publicize his cause. Carlos Paris Alvarez perched atop WQBA-FM's 400-foot tower, touching off seven hours of negotiations that ended with the 36 year-old college student unhurt and in a mental hospital for evaluation. Police said Alvarez told them he also wanted to be Bob Dole's running mate in order to bring God's message to a wider audience.

Thanks

News clippings, bumper stickers and QSLs are always welcome, as are your questions and comments. Send 'em to "Broadcast DXing" at *Popular Communications*, 76 North Broadway, Hicksville, NY 11801. Until next month, 73s.

New FM Call Letters Issued

KAQE	St. Martinville, LA
KBGA	Missoula, MT
KLMB	Bastrop, LA
KMJE	Gridley, CA
KMVL-FM	Madisonville, TX
KRWB-FM	Yucca Valley, CA
KSWG	San Diego, CA
KUQQ	Milford, IA
KYPL	Yakima, WA
WBJJ	Jackson, LA
WGPK	Rensselaerville, NY
WLVZ	St. Marys, OH
WRJL-FM	Eva, AL



Joe Kurtz caught Vallejo, CA's KXBT on both their old frequency of 1640 kHz and their current home on 1630 kHz from his QTH in Eden Prairie, MN.

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- Instant channel 9 • 4 Memory channels
- Dual channel watch
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- Local-DX receiver switch
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- Instant channel 9
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Tornado 27



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- TB3000PL**
- HP3000**
- Mini Mag 27**
- Taifun 27**
- Tornado 27**
- Sirio 827**
- Vector**

- 26-28, 5/8 wave 1000W
- 27-28MHz
- 27-28MHz 4-5dB PL259
- 27-28MHz 5dB 3000W
- 27-28MHz Mag Mt PL259
- 27-28MHz Sleek Eurolook
- Base Ant 19' 3.5dB
- Base Ant
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BY DON SCHIMMEL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

A Brief History of the Brentwood ITT HF Station

First, I want to tell readers that the 10th anniversary running of the Kuplsville, PA Winter SWL Fest will be held from March 13–15. I have learned of some of the details and it looks like it is shaping up to be the best one yet! Hope to see you there.

For those who have asked for a language aid, Edward R. Hamilton, Falls Village, CT 06031 is again offering the "Seven Language Dictionary," catalog number 838810. The cost is \$7.95 plus \$3 shipping/handling.

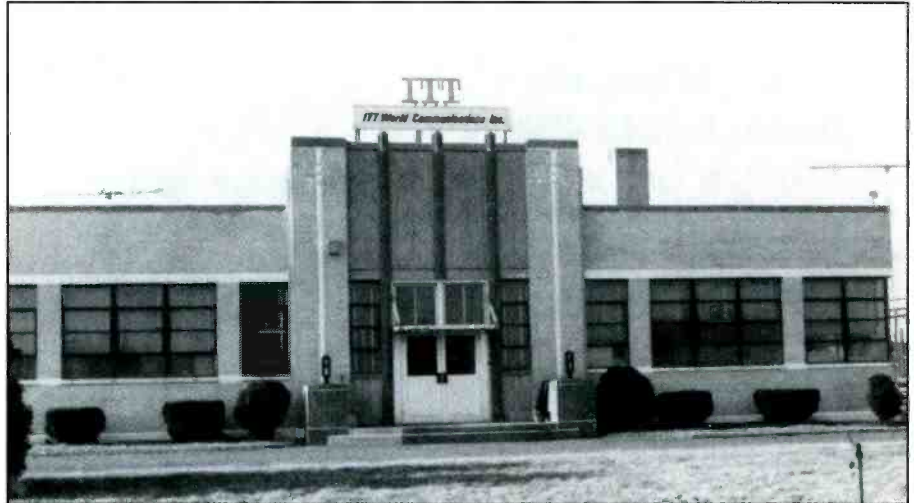
A note from Tom Severt, KS indicates he did a little monitoring while on a campout. He took along his Sony 2010 and threw a longwire up in the trees. Being far away from any power lines, he reported he had a very successful monitoring session. He heard the Lincolnshire Poacher transmission which he does not hear at his residence.

Tom also mentioned that he noticed the OTH radar is very active on weekends on 6955 while the pirates are doing their thing. He also heard a few data burst transmissions on this frequency between and during pirate broadcasts.

The last item from Tom concerned a station he found on 8073.5 kHz sending cut number messages (1-0 = AN34567DNT) nonstop for over two hours in CW. I agree Tom, it appears to be a training operation.

Do You Remember?

Old timers are requested to put on their thinking caps. I received a query regarding callsign RTZ which was active during WWII and into the late '40s. The station was believed to be in Russia and the transmissions were high-speed Morse. So far I have scanned most of my frequency books containing information from that period, but with negative results. I recall reading something on the subject perhaps 15 years ago. It may have been in the book "War Secrets in the Ether" by Wilhelm F. Flicke. The book was written by Flicke at the request of the



This photo of the main building of the Brentwood ITT station was provided by Jim Bedard, NY.

U.S. government and was classified. When it was declassified in the '70s, it was published by Aegean Park Press. The copy I read was borrowed and is no longer available to me, so I am unable to confirm if that is where I noted reference to station RTZ. Any help that readers may offer will be most appreciated.

From Sayville to Brentwood

Pop'Comm reader Jim Bedard, NY has furnished some interesting comments on the history of the Brentwood ITT communications station. He also included photos of the facility.

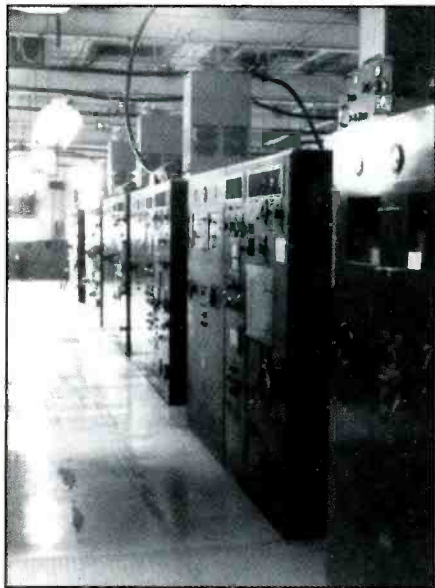
The Brentwood station was initially located in Sayville, Long Island. It was moved from there to Hauppauge, Long Island in 1935 as a result of a demand for more overseas circuits. Originally operated by McKay Radio, it was later taken over by American Cable and Radio, and finally by ITT. The station occupied some 1,100 acres with 60 antennas and transmitters. When operations commenced in 1935, the transmitters were water-cooled, with an output of 10 kW and a frequency range of 4 to 26 MHz. An unusual fea-

ture of these early federal transmitters was the power amplifier section—it was made of wood!

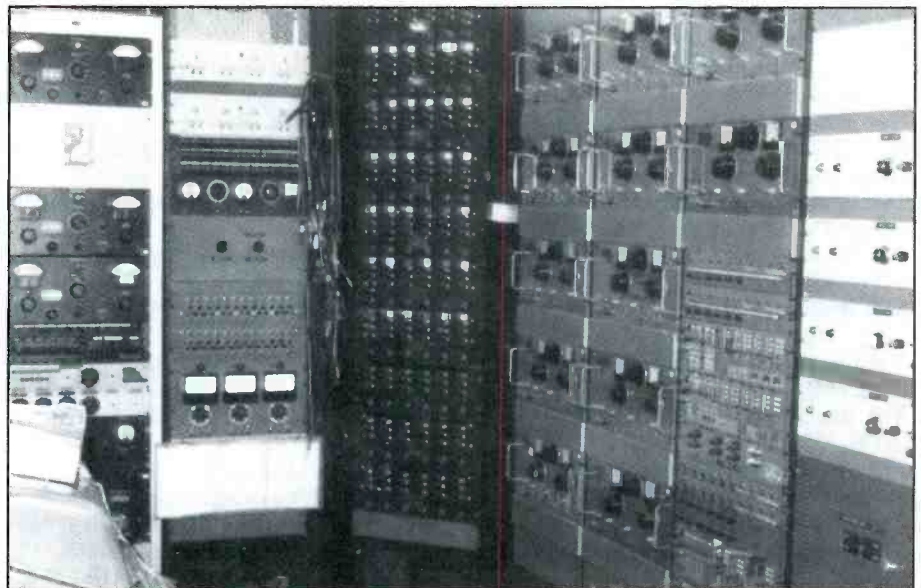
By 1938 the operating personnel total had increased to 50 due to expanding point-to-point circuits to Germany, France, Chile, Brazil and cities in South America. In the '40s, Brentwood engineers designed and built the 34E, a 10 kW transmitter with driver and power amplifier in one unit. Most of the component parts of the 34E were actually made in the station's machine shop.

During WWII, the Brentwood facility was run by the U.S. Army. The former storage, carpentry, painting and machine-work buildings were converted to barracks for the guard force which patrolled the site perimeter.

By the late '40s, the Voice of America had circuits to Geneva, Switzerland at the site. The antennas used during the '40s were mostly rhombics, Sturbud curtains, and two and four-bay phased arrays. The antennas were fed with 600 ohm open wire feed lines that ran across the ceiling of the main building. The introduction of the 33F transmitter in the early '50s provided air-cooling and solid state rectifiers. The use of 6421F power amplifier



3F 10 kW transmitters.



Control room showing transmitter alert panel.

tubes and 6156S drivers delivered 10 kW in a more efficient transmitter; one not subject to leaks as with the previous water-cooled transmitters.

In 1970, Collins 13-element rotary log periodics were installed to provide better directional capabilities because most of the fixed log periodics were oriented to the south. In the early '70s, much of the land was sold to developers for an industrial park, leaving the site with just 40 acres of the original 1,100 acres. The larger fixed antennas were gradually replaced with six rotary log periodics.

The control room was located in the center of the main building, and enabled the operator to monitor each transmitter. An RF carrier-operated relay activated an alert bell and red light if the transmitter went off the air. Normal transmitter operation was indicated by a green light. Patch panels provided for rapid switching of audio and phone lines. Watkins Johnson digital receivers monitored transmitted and received signals from ITT-owned Globe and RCC Havana circuits. Facsimile coverage to South America was used by the Associated Press. United Press International, taken over by Reuters, went to satellite transmission at the beginning of 1986. Other circuits included the National Weather Service, Indian Press and the ICA in Washington, D.C.

Station power was supplied from the 2300 volt main distribution panel adjacent to the control room and then fed to the outside transformers which supplied 220 volts to the individual transmitters. The Brentwood station also provided use of the 10 kW transmitters and arrays for

ITT Coastal Station WSL located in Southampton, Long Island. WSL relayed ship traffic on the Atlantic coast with most of the transmissions being CW.

The station was in operation 365 days a year and had three shifts; 8 a.m. to 4 p.m., 4 p.m. to midnight, and midnight to 8 a.m. As more and more circuits were switched to satellite, this ultimately spelled the end for the HF station.

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

- 205:** Beacon XZ, Wawa, Ont., Canada, 795m at 0553. (AH)
- 208:** Beacon YSK, Sanikilauq, NWT, Canada, 1094m at 0643. (AH)
- 210:** Beacon CLO, Cali, Colombia, 2654m at 0828. (AH)
- 230:** Beacon AQE, Greenville, SC, 520m at 0533; Beacon BA, Westfield, MA, 87m at 1519; Beacon YBM, St. Bruno de Gigures, PQ, Canada, 294m at 0850. (AH)
- 250:** Beacon UAC, Poste Montagnais, PQ, Canada, 750m at 0822. (AH)
- 265:** Beacon SXD, Springfield, VT 136m at 0506. (AH)
- 272:** Beacon OLD, Old Town, ME, 274m at 0714. (AH)
- 275:** Beacon RI, Thetford Mines, PQ, Canada, 311m at 0510. (AH)
- 282:** Beacon Z, Santa Cruz, Argentina, 6328m at 0709. (AH)
- 285:** Beacon NS, u/i, prob Nantucket Shoals, MA at 0743. (AH) Al, you're right, it is Nantucket Shoals. See Stryker's UPDATER for details. (Ed.)
- 288.5:** Beacon YM, Ijmuiden, Holland, front light, hrd at 0845. (AB)
- 296.5:** Beacon BH, Blavands, Denmark, Huk light at 1647. (AB)

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)

- 303:** Beacon P, u/i, sends 3-P's foll by dash, 5 wpm at 0519. (AH)
- 305.5:** Beacon AL, Pointe d'Ailly, France, light, hrd at 2153. (AB)
- 317:** Beacon R, Trenton CFB, Ont., Canada, 365m at 0720. (AH)
- 323:** Beacon OUK, Calhoun, GA heard at 2058. (WP)
- 326:** Beacon LLS, Lelystad, Holland at 1400. (AB)
- 328:** Beacon BZJ, Indiantown Gap, PA, 285m at 0525. (AH)
- 332:** Beacon FIX, Key West, FL at 0330. (WP)
- 338:** Beacon POP, Ft. Bragg, NC, 602m at 0611. (AH)
- 341:** Beacon FM, Fort Meyers, FL heard at 2325. (WP)
- 344:** Beacon PIX, Williamsport, PA, 281m at 0644; Beacon YGV, Harve St. Pierre, PQ, Canada, 704m at 0756. (AH)
- 349:** Beacon APG, Aberdeen, MD, 288m at 0910. (AH)
- 350:** Beacon ROT, Rotterdam, Holland at 2135. (AB)
- 353:** Beacon LAG, Lago Agrio, Ecuador, 2887m at 0624; Beacon LLX, Lyndonville,

VT 208m at 0544; Beacon MG, Montgomery, NY, 155m at 0524. (AH)

357: VZ, Locator Groningen/Eelde, Holland at 0802. (AB)

362: Beacon GND, Pt. Salinas, Grenada, BWI, 2119m at 0555. (AH); Beacon SUR, Fitzgerald, GA at 2116. (WP)

365: Beacon FKV, Gainesville, GA at 2121; Beacon CKK, Miami (Int'l), FL at 2120. (WP)

366: Beacon CYO, Circleville, OH, 629m at 0919. (AH)

367: Beacon TP, Tampa (Int'l), FL heard at 2113. (WP)

369: Locator PS, Rotterdam, Holland heard at 2138. (AB)

379: Beacon BRA, Asheville, NC, 743m at 0917. (AH)

385: Beacon YNC, Wemindji, PQ, Canada, 866m at 0805; Beacon UWL, New Castle, IN, 743m at 0746. (AH)

386: Beacon STD, Stad aan het Haringvliet, Holland at 2142. (AB)

388: Beacon NXX, Willow Grove, PA, 222m at 0607. (AH); Beacon AM, Tampa, FL at 0200. (WP)

388.5: Locator CH, Amsterdam, Holland at 2139. (AB)

390: Beacon OWC, Douglas, GA heard at 0052. (WP)

395: Locator OA, Schiphol/Amsterdam, Holland at 0730. (AB)

396: Beacon NEL, Lakehurst, NJ, 190m at 0828. (AH)

397: Beacon A, Hamilton, Ont., Canada, 460m at 0801; Beacon J, St. John, NB, Canada, 369m at 0818. (AH)

398: Beacon ONO, Oostende, Belgium at 2146. (AB)

402: Beacon SJE, San Jose del guaviare, Colombia, 2694m at 0929. (AH)

404: Locator MRV, Merville, France heard at 2158. (AB)

407: Beacon RZZ, Roanake Rapids, NC, 493m at 0629. (AH)

418: Beacon MK, Calais/Dunkerque, France at 0638. (AB)

420: Beacon CFY, Lake City (Municipal), GA at 0240. (WP)

429: Beacon CLN, Clacton-on-Sea, UK at 0642. (AB)

432: Beacon MHP, Metter (Municipal), GA at 2125. (WP)

435: Beacon ILY, Washington, GA, 827m at 0842. (AH)

1991: Royal Navy Hyper-Fix statin Glasgow, UK w/pulses at 2202. (AB)

2182: VAU, Yarmouth CG Radio, NS, Canada at 0540 in USB w/ann for MIB "listen 2749." (RB)

2520: PIQN, mv Wilma UK88 in USB at 1730 w/Scheveningen Radio. (AB)

3413: Delat 225 talking to Honolulu Radio in USB at 1015. (RG)

4187: ODNK, m/v George in CW w/HLG at 1230. (JSM)

4194: C4IQ, m/v Irene P., Gen Cargo vsl, in CW heard at 1253 w/JOS, arrival Tomogaishiua. (JSM)

4195: ELLE3 m/v Van Trader, Bulker, in CW at 0609 w/HPP, xmtg Panama Canal for Cristobal. (JSM)

4213.8: KFS, San Francisco, CA in Sitor-B at 0600 w/tfc, bulletins & wx advisory. Globe Wireless network. (RG)

4235: VAI, Vancouver, BC, Canada in CW at 0625 w/CQ mrkr. (RG)

4300.6: KEJ, Honolulu, Hawaii in CW at 0802 w/mrkr. (RG)

4402: KMI, San Francisco, CA in USB at 1215 w/maritime wx. (RG)

4513.5: NNN0MRS, Navy MARS HF mailbox at 2012 in Pactor sending MARSGRAMs from various USMC units. (RB)

4583: DDK2, Hamburg Meteo, Quick Born, Germany at 0313 in RTTY, 50/425, w/AAXX meteo reports. (RB)

4604: BLUE MOUND 556, Wisconsin CAP at 1333 in USB closing the net. (RB)

5142.6: J9Z, aka CG 6016 (HH-60J) at 0606 in USB clg CG stn Port Canaveral, FL, NMA12, no joy, but CG 41319 (USCG 41-foot utility boat) ans & sez will attempt contact NMA12 for proper freq for "LANT 6," app fisheries patrol coord. as later mention made of shrimp boats. (RB)

5207: AAT3TCF, U.S. Army MARS, Ft. Richie, MD at 1922 in packet wkg AAT3TVA, Army MARS Regioin 3. (RB)

5277: PANTHER, DEA, Nassau, Bahamas at 2359 USB wkg 32C for flt ops normal; at 0010 wkg 12C for same on DEA Alpha freq. (RB)

5301: OLX, MOI Prague, Czech Repb. in CW at 1700 w/msg to 476. (AB)

5320: N0Y8, USCG "Group Corpus", Corpus Christi, TX at 0015 clg u/i trigraph call, then into ANDVT. At 0254. NOQ, USCG Group Mobile, AL wkg W5C re CommSta (app new Orleans) req they come up on 2670 kHz. At 0534. N0Y, USCG Group, Galveston, TX clg E4T w/no joy. All USB. (RB)

5550: NY Radio wkg American flt 663. Gives him diff freq; Primary 5598. Secondary 8906 at 2240. 8906 new to me as active freq, altho it is listed. NY Radio also mentions 8846 and 8825 w/6628 as secondary. 8846 listed as Western Caribbean, and appers active. 6628 new to me. (WP)

5598: Gander wks Air Moroc (?) 275 w/posit rpt and Selcal ck heard at 0258. NY Radio assists in establishing contact between Gander and plane. (WP) Air Moroc is listed in two of my reference pubs as Royal Air Maroc with telephony call of MAROCAIR. It is the National Company of Air Transports for Morocco. (Ed.)

5680: Plymouth Rescue in USB at 0939 w/SRG 193, RC. (AB)

5741: KGA93, FCC Washington, D.C. at 1344 in USB wkg KGD34, NCS, Arlington, VA w/relay for AAD1DE during SHARES exercise. At 1347 wkg KGD96. (RB)

5800: NIGHTWATCH 01 at 0431 in USB wkg WAR46 w/rx cks "on Z-150." (RB)

5810: YL/SS on at 1100 on top WWCR on this frequency "Atencion 21703" and into 5F grps. (RS)

6267.5: UWFU, M/V Viktor Kornatovskiy at 0043 in Sitor-A, Ukrainian flgged dry cargo (Azov) vsl, w/tls re arrival Houston pilot, login 67936 UWFU. (RB)

6315.3: U/i stn in Sitor-A sending msg to vsl Western Eagle re automatic ship hold cleaning. Hrd at 0630. (RG)

6326.5: WNU, Slidell, LA in FEC at 0412 w/wx and tbc list. (TS)

6336.9: CBV, Valparaiso, Chile in CW at 0710 w/VVV mrkr. (RG)

6385: WNU42, Slidell, LA in CW w/QRU-QSX mrkr at 0340. (SW)

6411: U/i stn in FEC at 0346 w/trade against Carnival Cruise Lines and other U.S. shippers who flag their vessel in Panama and Liberia to supposedly avoid OSHA rules and to avoid paying workman's comp. Off abruptly at 0401 and into CW. (SW)

6440: WLO, Mobile AL in FED at 0343 w/tfc list. (SW)

6487: NMN, USCG Portsmouth, VA at 0431 w/computerized voice wx info. (SW)

6492.8: VCS, Halifax, NX, Canada in CW at 0618 w/V mrkr. (RG)

6496.4: CFH, CF Halifax, NS, Canada in RTTY 75/850 w/coded wx at 0359. At 0405 went into WEFAX mode. (TS)

6604: New York Radio VOLMET in USB at 0345. (RG)

6607: New York VOLMET in LSB herad at 2148. (SW)

6622: P2-MBL. At 0726 w/Madang re departure clearance to 5000. Dehavilland DHC-6 Twin Otter. (JSM)

6640: Hrd "31 LIMA, ROGER" and nothing more. LSB at 0352. (SW)

6955: OTH radar w/CW "O" ID. (TS)

7535: SESEF Norfolk logged w/equp tstg by foll: NDKH, USS Merramack (AO-179) at 1312. At 1350. GUNSLINGER, u/i unit. At 1505. NTSG, USS Thomas S. Gates (CG-51). At 1650, NJPX, USS Nassau (LHA-4). At 1701. NACK, USS Concord (AFS-5) went through all modes of xmt in record time! At 1749, NNTR, USS Theodore Roosevelt (CVN-71). SESEF Norfolk having hard time hearing CVN-71 and at 1752, SESEF Mayport takes over tstg. This seems to confirm Mayport is a new SESEF facility. Primary mode is USB. (RB)

7660: RTTY stn w/lots of tfc. Stn is u/i hrd at 1940. (LW) Possible Mexican commercial stn. Most of tfc concerned money orders to recipients in various Mexican cities. (Ed.)

7784: KAWN stn in RTTY 75/850 at 0730 w/USAF coded wx. (TS)

7831: NIGHTWATCH at 2214 in USB wkg TEUTONIC, who authenticates into the net on Z-170. (RB)

8050.3: RFQP, French Forces, Djibouti at 0003 in ARQ-M2 200/425 w/Controlle de Voie ch. B, ZID PQC014, ZIC QPC020. (RB)

8073.5: U/i stn in CW at 1138 passing 4F cut # grp msgs. Appeared to be practice tfc as stn sent msgs nonstop for over two hours. Sample heading: TO TO VYAS, II ENFO INFO HMTQ HMTQ FAQP FAQP NMAS NMAS KGIV KGIV RQWB RQWB GR84 GR84 BT BT. (TS)

8151: IJG44, Italian Navy, Augusta at 0536 in

RTTY 100/850 w/tst tape. (RB)

8207/8731: WOM, Miami, FL in USB at 0243 w/ship to shore pp. (TS)

8258/8782: KMI, Dixon, CA in USB at 0631 w/ship to shore pp. (TS)

8300: New Star YL/CC #'s stn in AM at 1154. Diff Chinese music than usual, but w/normal music at top of hour foll by YL/CC msg. (TS)

8344.5: 3EYT2, M/V Blue Ondo, General cargo vsl in CW at 1338 w/JOS. (JSM)

8346: BTNH, M/V Fan Xiang, Refrigerated cargo vsl in CW at 1548 w/JOS—sailed Ishinomaki for Shanghai. (JSM)

8350: DZDI, M/V National Honor, General cargo vsl. in CW at 2332 w/KFS w/AMVER/OBS. The CW note is pure AC! (JSM)

8358: BAWZ, M/V Hua Sha, General Cargo vsl in CW at 1455 w/VRX re arrival. (JSM)

8377.5: WEZM, SS Ewa at 0250 in Sitor-A w/AMVER/FR, final rpt for Seattle, WA login 10949 WEZM. (RB)

8384.5: 9HYM3, M/V Kavø Malaeas at 0303 in Sitor-A w/tlx to rpt loading, Miss R. passes ships info, bound Bayuquan, China; Psan, S. Korea & Vera Cruz, Mex. (RB)

8392: P3RK4, M/V Abava at 0302 in Sitor-A, tanker w/tlc to Riga radio SHRSM w/new callsign after name. Is ex-YLAD, also ex-UIAX. (RB)

8402.5: LYES, TR Suomiyos, Ilanka heard at 2235 in RTTY 50/170 w/RYRY/DE to LYL, Klaipeda Radio, Lithuania & into posn rpt from Master KPT Artiomov to Transflot Klaipeda. Vsl is Lithuanian-flagged reefer/fish carrier. (RB)

8468.5: XFL, Mazatlan, Mex. in CW at 0721 w/CQ mrkr. (RG)

8573.2: CLA, Havana, Cuba in CW at 0721 w/CQ mrkr. (RG)

8781.8: Vessel Dream Catcher making ship to shore call in LSB at 0600. (RG)

8828: Auckland VOLMET, NZ (PAC-VOL) at 0550 in USB w/aviation wx by YL voice reader til Honolulu comes up & covers Auckland. (RB)

8846: NY Radio wkg American 658 hrd at 2258. Mentions flt will cross Bermuda, west to east. (WP)

8867: Brisbane, Australia (SP6/7 MWARA) at 0525 in USB clg VH-UUA (Swearingen SA-227 Merlin) no joy. At 0543 then wrks them for posn rpt. At 0530 wkg "VFJ" poss PH-HFJ, a Falcon 20 out of Cairns. At 0542 wkg New Paradise 70. (RB)

8921: Speedbird London (British Airways LDOC) at 0343 in USB wkg Speedbird 106 w/pp to company ops. (RB)

8965: U/i stn in USB at 0409 w/"disregard . . . disregard." (SW)

8968: MUSIC 68, C-130 118th ALW, Tn ANG at Nashville Metro airport. Nashville, TN at 1426 in USB wkg Andrews GHFS w/pp MINUTEMAN (Ops Center Air Nat'l Guard Bireau. Andrews AFB re-departed Tumda AFB at 1400. (RB)

9016: WAR46, Alternate National Military Communications Center, Raven Rock Mountain, PA at 0429 in USB wkg NIGHTWATCH 01 on Z-175, then w/BEANSOUP entering the

net. (RB)

9458: U/i stn in automatic CW at 0327. Speed was approx. 15–18 wpm. Only copied portion of msg but grps had first digit of 6 or 4 or 1. No other digits seen as beginning number in 5F grps. (LW)

10060: OTH radar w/CW "O" ID at 1449. (TS)

10080: Speech inversion scrambling in USB at 1452. (TS)

10493: WGY908, FEMA District 8, Denver. CO at 1635 in USB wkg KNY80 w/NCC exercise tfc. At 1701 WGY910, FEMA Bothwell, WA wkg same w/rx ck. (RB)

11030: AXM34, Canberra, Australia at 0246 w/WEFAX charts. (TS)

11164.3: Bulgarian Embassy, Washington, D.C. (presumed based on prior logs) hrd at 2034 in IRA-ARQ 240/500 foll by op chat in RTTY 75/850 w/RYS and pse ZRY, pse ZAR 300. (RB)

11175: PEP RALLY clg MAINSAIL w/req for op NIGHTWATCH freqs. Andrews answers and complies w/Primary 0205, Secondary 0175, heard at 2019. Andrews wkg DERBY 72 heard at 2022. (WP) Wonder if Andrews was saying ZULU instead of ZERO? If so, Z205 is 11494 kHz and Z175 is 9016 kHz. (Ed.)

11217: TEAL 28, WC-130 from 53rd WX Recon Sqd at Kessler AFB, MS at 1655 in USB wkg MacDill GHFS on a discrete freq w/pp to poss Kessler, setting up some sort of remote bdst link for radio stn feed. (RB)

11330: NY Radio wkg KIWI 176 w/posit rep at 1620. (WP)

11544: OTH radar at 0100. (TS)

11545: Lincolnshire Poacher in USSB at 2012 w/5F # msg. (TS)

11659: YL/SS at 0105 w/3/2F grps. Stopped at 0123. (LW)

12300.5: BRQE, M/V Yu Lung Shan at 1550 in Sitor-A, Chinese-flagged bulk carrier w/tls re ETA Miss. R. Login 09711 BRQE. (RB)

12563.9: UEYP, Russian bulk carrier TKH Tonya Bondarchuk at 0223 in 50/170 RTTY w/admin RR TG fm Master KM Sugak to Murmansk Shipping Co. Vsl has cargo of 24.250 MTs of bagged sugar. (RB)

12569: YFLP, RTMS Misa at 1658 in 50/170 RTTY, Latvian Super Fishing Trawler/Super Freezer vsl w/admin TG for types/tons of fish fm Master KM Knotsov, using hull #/ID RTMS-7579. (RB)

12750: Various HF WX FAX images fm Boston w/many on Hurricane Bertha. USB at 1523. (SW)

12835: KAWN stn in RTTY 75/850 at 0049 w/coded wx. (TS)

13050: OTH radar at 1630. (TS)

13306: NY Radio wkg Speedbird 293 w/posit rpts & Selcal Ck at 1755. (WP)

13505: AAA6USA, Ft. Sam Houston, TX Central Army MARS gateway at 1809 in packet wkg AAT7TKS via AB4USC. KC. PAC gateway. Note the first "A" in each c/s is dropped to confirm to packet protocol w/these stns. (RB)

13907: OTH radar at 0029. (TS)

13956.5: "251," MFA Tunis, Tunisia at 2000

in Sitor-B off w/ENVOILE 09/08/96 XXAL', at 2005 w/RYRY to "ZGI" & w/"routine" marked 5L grps. (RB)

13976.2: NNN0LHR, Navy MARS stn in FEC at 0018 w/telegrams to NNN0ICE, McMurdo Stn. Antarctica. (TS)

14384.5: CIW822, Canadian CFARS St. John, NB, Canada at 1724 in USB wkg CIW202, CFARS, Vancouver, BC on "Bravo." (RB)

14660: YL/EE (American accent) in AM at 1515 w/5F grps. Out at 1535. (SW)

14670: CHU, Time Stn, Ottawa w/annemt in FF. Hrd 1417 in AM. (SW)

14686: ATLAS, Customs Over-the-Horizon Enforcement Net (COTHEN), at Rockwell-Collins, Cedar Rapids, IA hrd at 1545 in USB wkg FLINT 941 (DEA a/c) re ETA to "101," 101 then wrks ATLAS to adv they copied direct. (RB)

14931: 8BY in CW at 2154 sending 3F grps separated by slant bars. (TS)

15000: WWV in AM hrd at 1418 w/solar flux rpt. (SW)

15016: Navy LV745, P-3B or EP-3J of VP-66 "Liberty Bells," reserve PATWING ATL, NAS Willow Grove, PA at 2004 wkg MacDill GHFS w/pp u/i NAS re-location & time of TLMR event. At 2126 NOAA 43, WP-3D "Hurricane Hunter" wkg MacDill w/pp Nat Hurr Ctr, Coral Gables, FL & passes wx data line info from Hurricane Edouard. (RB)

15253: OTH radar at 2207. (RB)

15946.5: EAE220, MFA Madrid. Spain at 1548 in Sitor-A selcalling TQQV. (RB)

16384: OTH radar w/"0" ID at 1903. (TS)

16622: 3EQU6, M/V Ocean Ace, Vehicles Carrier in CW at 1624 wkg KFS re revised ETA Panama Canal due slowing for hurricane. (JSM)

16642: HPEP, M/V Northern Hope, General Cargo vsl in CW hrd at 0350 w/JOS w/posn rpt. (JSM)

16803: UIIE, TKH Vilyam Foster at 2027 in RTTY 50/170, Russian-flagged dry cargo ship (Baltic shpg), w/admin msg (SPB/BMP) fm Master KM Tofank. Vsl bound Port of Tampa. Poss name change to Ulan Foster because U Foster used in each msg. (RB)

17141.5: USU, Mariupol Radio, Ukraine at 1503 in RTTY 50/170 w/'Rajone' regional warnings foll by Mariupol Morflot tlc. poss to collective calls. (RB)

17287: DAJ, Norddeich, Germany at 1621 in USB wkg u/i vsl in EE, reqhe QSY to ch 1639, then in response to vsl "you listen 17356, you transmit 16474." (RB)

17976: SENTRY 60, USAF E-3 AWACS at 2151 in USB wkg Offutt GHFS w/pp 359 DSN. (RB)

Logging contributors this month were: AB—Ary Boender, Netherlands; RB—Rick Baker, Ohio; AH—Al Hemmalin, Rhode Island; RG—Rodney Grussling, Idaho; WP—Walt Petersen, FL; JSM—Steve McDonald, BC, Canada; TS—Tom Severt, KS; LW—Louis Wheeler, CA; and SW—Sue Wilden, IN. Thanks to all!

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Pop' Comm P.O.

(from page 8)

ty agencies for many years. Cordless/cell users should always be thinking comm-sec, but fortunately for folks who inadvertently tune through these frequencies, they don't!

He is absolutely right when he said hobbyists should "take personal responsibility for their listening habits . . ." Taping conversations and openly talking about what you might hear on these frequencies comes under the heading of common sense!

Another Alice Fan

Dear Editor:

I've been looking back over all my old issues of *Pop' Comm* and have an observation. This Alice Brannigan gal must be someone very special. She's not only a very good writer, but she really knows her stuff. I think she's the best thing that ever happened to *Pop' Comm*.

George Johansen
Indianapolis, IN

Club Information

A while back we said we'd publish club information and give you the names of folks who are interested in starting radio groups in their area. While taking part in a recent online discussion on AOL, we met **Bob Krasnoff** of Delray Beach, Florida. He wants to start a scanner club in south Florida. Call him at 561-637-2870 if you're interested.

One radio organization, the "**ZDX—R.C.N.Y.**" has free membership. Their only requirements are that you have a desire to broaden the radio family, operate your CB station in a clean, courteous and professional manner, follow all FCC regulations, and respond to distress calls when encountered.

Their activities include SWL and QSLing with shortwave broadcasters around the world, and through Youth Radio, helping young operators become knowledgeable about radio operation. They offer club QSL cards and DX log sheets. If you're interested, send a SASE to: **Harold Abbott**, ZDX—R.C.N.Y., 1147 Sutter Avenue, Brooklyn, NY 11208. Don't forget to tell them you read about it in *Pop' Comm*!

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RADIO COMMUNICATIONS HUMOR

I Was Just Being . . . "Neighborly"!

Last Saturday I watched new neighbors move in across the street. I'd always had a good relationship with the previous owners, but I was a little nervous with new folks moving in. What if they were fearmongers who thought that RF energy would poison their food and deform their pets?

"Maybe they'll be nice old people who like to read books," my wife said. "Wouldn't it be nice if they didn't even have a television set?"

That's it. He'd be a television DXer hell-bent on getting signals from the west—from a path that pointed his antennas *right across my roof!* I'd never be able to transmit again.

I watched for signs of electronic equipment. Radios, fancy stereo systems, big-screen TV—but everything was in boxes. Nice, neat, uniform boxes provided by the moving company. How I longed for the good old days when a person could see everything a new neighbor owned on move-in day. I slipped off my stool, put the binoculars back into the drawer, and headed downstairs.

"Hi," I said, extending my hand. "I'm Bill, your neighbor from across the street. Welcome to the neighborhood."

"Bob. Bob Jameison," he said. "Mighty big antennas you've got there. Are they for television? I was hoping they'd have cable here so I didn't have to put one up." I told my new neighbor I was into ham radio.

"Is that like corned beef television?" he asked, "or chicken stereo?" I knew this wasn't going to be easy. "It's an informal term for amateur radio," I told him. "The origin of the word is obscure."

"So you build radios?"

"Well, I did build a ham radio once—when I was a kid. Most of us aren't building them anymore. The circuits are pretty sophisticated."

"Then you must buy them. So where's the hobby?"

"You *use* the radios. You *communicate* with people. People all over the world," I said.

"Sort of like on the Internet? With e-mail?" he asked.

"Well—we have packet radio—that's similar to e-mail—but ham radio is *free*—the Internet costs money . . ."

"Twelve bucks a month, unlimited access, he said."

"But you can only send e-mail to people on the Internet," I said.

"But you can only talk to other hams," he countered. Do they at least let you put another packet station at your office so you can telecommute, like I do?"

"No, you can't use amateur radio for business—it's a big taboo."

"Sort of like swearing on the air?"

"No, you *can't do that*—no need to. You just can't conduct business."

"What do you say to these people you talk to?"

"Well, you give them signal reports, you tell them where you are, what the weather is like. You tell them your name and what kind of equipment you're using. You tell them what you do for a living."

"They ask you these things?"

"No, they don't *ask* you these things. It's just what you tell someone when you contact them."

"Is that part of the rules—you have to tell them these things?"

"No, it's not required, it's a way to open a conversation—find out if you have anything in common with the person you're talking to. It's something that might lead to an interesting conversation, or perhaps a long-term friendship."

"What if they work for the CIA? Would they tell you that, or would they make up some other job as a cover?"

"I don't know. I've never talked to anyone who worked for the CIA."

"How would you know? Do you think they'd *tell* you?"

"I never thought of that."

"What about some guy who has a boring job, or an *embarrassing* job? What if some guy cleans out septic tank trucks at the dumping station—you think he's going to tell you *that*? He'll probably be the one who *tells* you he works for the

CIA—better yet, he'd *imply* he's with the CIA without saying it—he'll tell you something like, 'I can't discuss what I do for a living,' and *that's* not much of a lie."

"I never thought of that either," I said.

"How long you been at this ham stuff?" he asked.

"Must be about 15 years, now."

"You'd think you'd be better at opening a conversation by now," he said. "Have you ever gotten on the Internet?"

"No, I'm afraid I wouldn't have the discipline to get off after a while. I'd probably stay on it 'til two o'clock every morning browsing all the different sites."

"What time do you go to bed?"

"About two o'clock."

"In the morning?"

"Yeah. I usually operate 'til about then."

"You're a *surgeon*?" he asked.

"No! That's when I operate my *radio*!" "Oh."

Bob said, "C'mon inside. I want to show you something." We walked in and down to the basement. I'd been there a dozen times before with the previous owners, helping fix the little things that hams are known to be good at. "Over here," he said, pointing to a stack of boxes. "Open that one on top." The box contained some of the prettiest old Collins S-Line gear I'd ever seen. It looked as if he had a complete Collins station.

"Where'd you get all this stuff? I asked him. Do you know what this *is*? Do you know what it's *worth*?" I asked, then wished I hadn't.

"Sure, I know what it is. It's my *station*," he said. "Just thought I'd pull your leg for a while. Been a ham over 32 years. Funny how you squirmed. C'mon up for a cup of coffee. The movers should be bring out my tower sections and beams soon. We'll have to figure where to put 'em. You got an extra ginpole?"

"Yeah—but what about all that Internet business?" I asked him.

"Oh, I design Web pages for a living. I was just pulling your leg. Now let's get that coffee."

It was going to be a good day after all.

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