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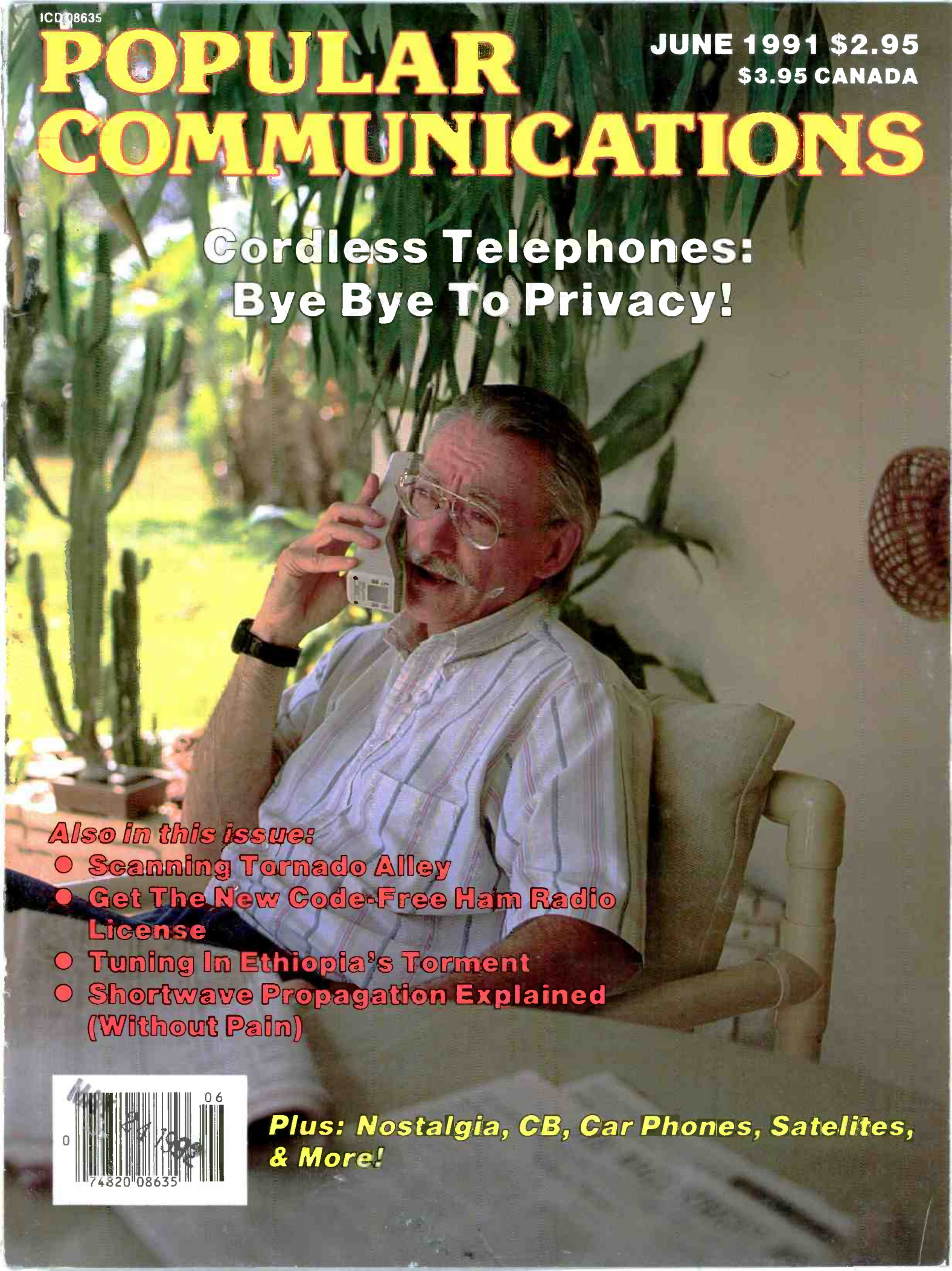

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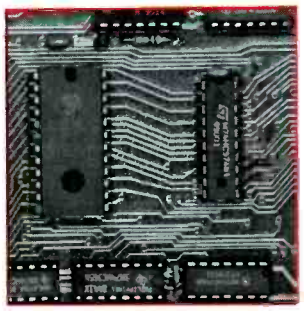
POPULAR COMMUNICATIONS

JUNE 1991 VOLUME 9, NUMBER 10



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FEATURES

COLUMNS

DEPARTMENTS

This month's cover: *A boon to eavesdroppers, cordless phones are about as private as conversing in an elevator. Photo by Larry Mulvehill.*

A publication of

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76 North Broadway
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BEAMING IN

AN EDITORIAL

BY TOM KNEITEL, K2AES

Packet Problem

I want to toss in some thoughts about the messy situation relating to packet (computer) radio bulletin boards that are becoming so popular. These are similar in many ways to commercial and non-commercial landline BBS services, except that they are operated on ham radio frequencies by people with ham licenses—a transceiver replaces the modem and telephone line. Of the 450,000 licensed hams in the US, packet radio appears to be the fastest growing area of the hobby with nearly one out of every five licensees already using packet radio. The new codeless ham license will surely attract many more entrants into this most useful communications method.

An aspect of packet operation is that one operator can originate a message and feed it out into the national packet system. From there it is automatically picked up and repeated in turn, over and over, by hundreds upon hundreds of other local packet stations as it networks its way across the nation. This is probably one of the best things about packet radio, but it's also one of the worst.

A recent controversy popped up when when one particular message went out over the packet network. One ham who received it thought that it violated FCC regulations against commercial messages on ham frequencies. It may or may not have mattered that the message, received by a Navy captain, contained a "900" telephone number and an anti-war message. It might as well have contained a commercial for used cars or laundry detergent. A complaint was filed with the FCC because of the misuse of amateur radio for commercial purposes.

The FCC agreed that this was a violation of the amateur regulations, and attempted to trace the message back to its original source. The callsign of the station signed as the originator of the message belonged to a ham in Norristown, PA. He was given a $300 fine and warned that his ham ticket would be revoked if the commercial messages continued.

The message was a violation of regulations against commercial use inasmuch as it contained a "900" telephone number. But the ham nailed with the FCC fine as the originator of the message denied that he ever sent it, insisting that someone else had sent it and used his callsign as a malicious prank. It is entirely possible for this to have happened, there's no way of knowing. Transmitting false or deceptive signals, such as one station using a callsign it wasn't entitled to use, is another FCC rule violation.

The major fur flew when the FCC suggested that each of the hundreds upon hundreds of packet stations that automatically repeat unauthorized traffic is considered to be in violation of the agency's regulations. The FCC thereupon also fined three packet stations for repeating the commercial message, then fired off a batch of warnings to eight other hams for doing the same. The FCC suggested hams were being put on notice that, under the existing regulations, each is responsible for the content of the packet messages automatically picked up and repeated by their stations to the extent that they could be charged with violations in the event an unauthorized message went through.

Alarmed packet users complained that it would be impossible for them to read, monitor, and accurately screen each and every message; many thought such a requirement would hardly be enforceable inasmuch as satellites carry packet messages throughout the world. The ACLU complained that it was a violation of first amendment rights. The ARRL said that such a requirement would destroy the functioning of the national packet network. The computer industry felt that such a requirement would deal a serious blow to technological advances in a field that offers enormous potentials for the future of telecommunications.

Each of these individual points of view, to one extent or another, has merit. Yet, I still feel that another aspect of all of this can't be swept under the carpet because it's too unpleasant to see lying in the middle of the floor. Essentially, I agree 100% with the FCC's position in this situation. If anything, their regulations fall short of what's needed.

Although I don't actively participate in any packet networks, I often monitor them just to see what's going on. Fact is, I'm always surprised at the outright garbage that comes through mixed in with the otherwise really great stuff. I've seen much more commercialism than the one "900" phone number the FCC became hysterical about. I have also seen nasty, malicious rumors and messages. I've seen messages that are clearly libelous, defamatory, and that contain hoax and other off the wall disinformation. Some of this stuff is tackier than the tabloid press. It's the packet equivalent of the SSB operators who degrade ham radio all day long on 14313 kHz with venomous transmissions. The operator in Norristown is certainly not the first ham to claim that someone pirated his callsign on a packet message he never sent. The packet networks apparently couldn't care less about such minor logistics points amidst the unending fun and games taking place in the world of packet radio.

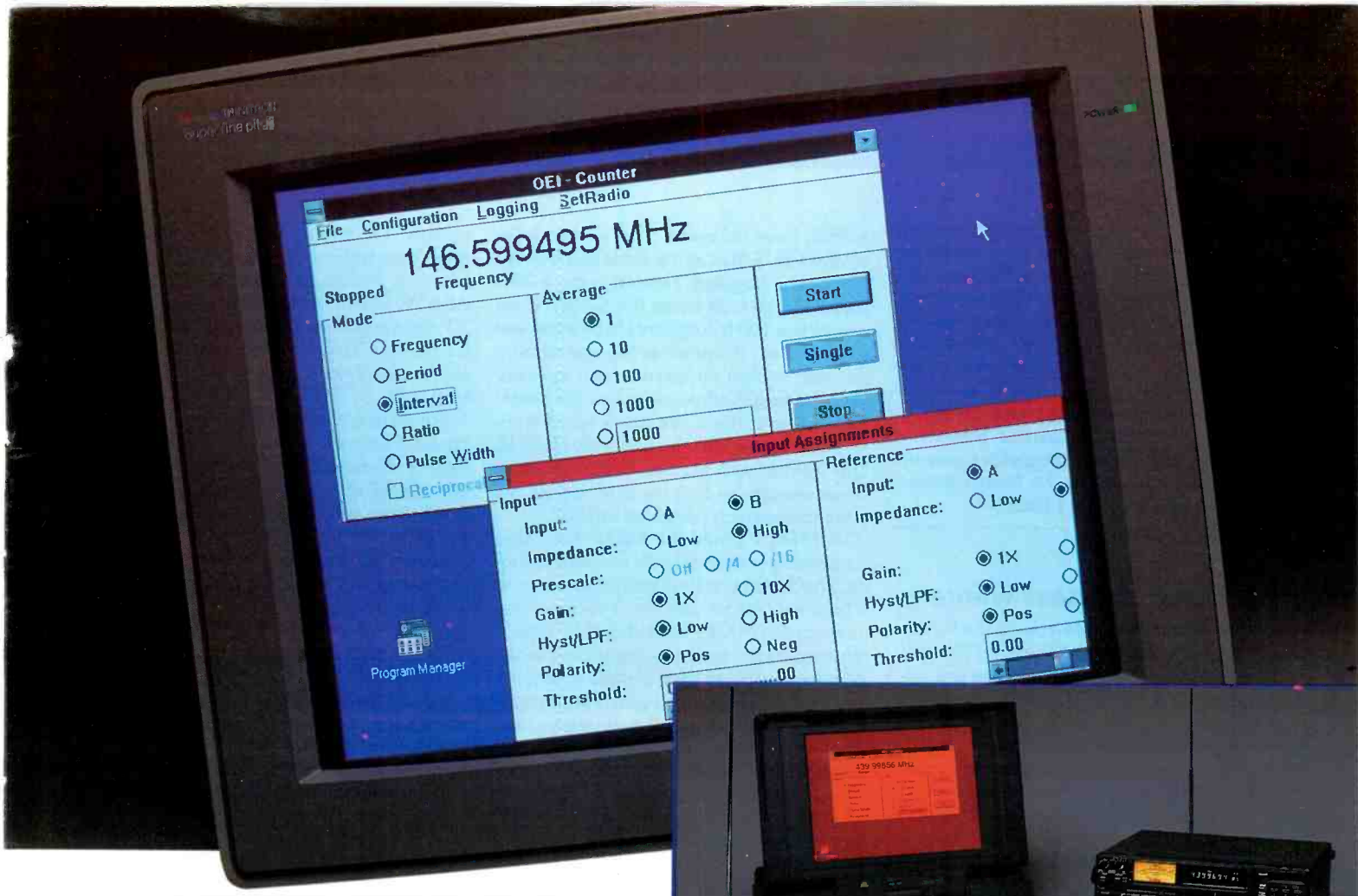
Is this what we want for ham radio? It's hard to believe that such antics and high jinks could be so easily tolerated by the very same hobby whose most vocal members spent thirty years laughing at and complaining about CB'ers, and fighting the loss of the CW requirement for a ham ticket lest the hobby be invaded by those who would destroy its integrity.

Yes, the landline BBS network also has its own allotment of jackasses. But you don't need a license to participate in a landline BBS, and there are absolutely no regulations. It's Weird City. You expect that some of the landline BBS's will reek with an abundance of strange people sending frivolous traffic, so you aren't disappointed when you find out that they actually do. Surprisingly, those landline BBS operations that strive for efficiency are actually far more particular about who they'll allow access than are the packet ham networks in general.

Notwithstanding all of the good things there are to be said about packet radio, and how popular it is becoming, I still don't see how anybody would seek to willingly waive what seems to me to be their basic responsibility for what goes out over a medium supposedly under their control. Even if there were no FCC regulations regarding such matters, I'd think that people would be hesitant and seriously concerned about allowing equipment licensed to them to be so easily misused by those who would do so for purposes that reflect negatively upon the communications medium they love so much, and upon amateur radio. Moreover, you'd think that they'd be howlingly angry that the air time they are providing is being polluted, violated, and frittered away with commercial, hoax, and other piffle type traffic. Instead, they've got a dozen excuses why it should be allowed to continue.

A broadcast station is responsible for the information it transmits. Indeed, all FCC licensees have always been responsible for that which is sent out over their facilities. A licensee is supposed to be in control of his or her station. It's true that only a small percentage of the people involved in radio are

(Continued on page 76)



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MAILBAG

LETTERS TO THE EDITOR

Each month we select representative reader letters for our Mailbag column. We reserve the right to condense lengthy letters for space reasons. All letters submitted for consideration must be signed and show a return address. Upon request, we will withhold sender's name should the letter be used in Mailbag. Address letters to Tom Kneitel, Editor, Popular Communications Magazine, 76 North Broadway, Hicksville, NY 11801.

Exchange of Ideas Wanted

I'd like to congratulate you on the February issue. It was the best issue ever! Would it be possible for you to put my name and address in *POP'COMM*? I'd like to correspond with AM/FM DX'ers in order to discuss equipment and goals with them.

Clayton Vance,
5491 Benck,
Imperial, MO 63052

More Radio Row Memories

The Radio Row story in February was immensely enjoyable. When I was a teen-ager, I also saved my allowance money for two or three months in order to visit Cortland Street. My experience with the auctioneers there was unnerving. I purchased a tape recorder in a sealed box. When I got it home, the recorder didn't work. After two trips back to Radio Row, I had to bring my Dad to rectify the situation. I remember that my first shortwave radio was a Zenith that I used for thirteen years before passing it down to my brother. Other trips to Radio Row produced walkie talkies, all-band portables, and various components. I used to scratch-build equipment because complete kits were too expensive. Thank you for bringing back many wonderful, happy moments from the past. I still dabble heavily in electronics, however, today I work as a Field Engineer for Xerox Corporation.

Roman C. Ilkiw,
Fairport, NY

Your memories of the Hallicrafters S-40A from Radio Row stirred many memories. My first radio (about 1948/49) was a Truetone that could tune to just above the broadcast band. Living in Newport News, I could listen to the WV and OH highway patrols there. I talked Dad into advancing several weeks allowance, then I collected pop bottles for deposit money until I could buy an old S-38D that I saw in the window of a pawn shop. After a few months of using the S-38D, I wanted more. That's when I discovered an S-40A at the same pawn shop. After some haggling, I traded in my S-38D plus $37 and took home the S-40A. Connected to a 100 ft. longwire fed by some war surplus coax, it was attracting signals from all over. It even attracted a ham operator from the neighborhood who saw the antenna and was curious. We struck up a friendship and I found that he had a big Heathkit DX-100 and also used an S-40A receiver. Soon enough he had me studying for my ham ticket, which I obtained in 1952.

In 1956, I joined the USAF and, after completing comms school, was sent to Libya. The S-40A was too big to bring, so I took a National SW-54 with me. I became very interested in MARS while there. In 1960, I returned stateside and switched over to the Army and went to their comms school before going to Turkey for a year. Hamming in Turkey meant using CW exclusively, then tape recording all my transmissions and turning them over weekly to the Turkish PTT. In 1964, I switched from Army comms to go to Army Helicopter Pilot School. Before I left Newport News for flight training, I donated the trusty S-40A to the Newport News Amateur Radio Club for their club station. I still fondly recall that big old black box with the yellow glowing dials.

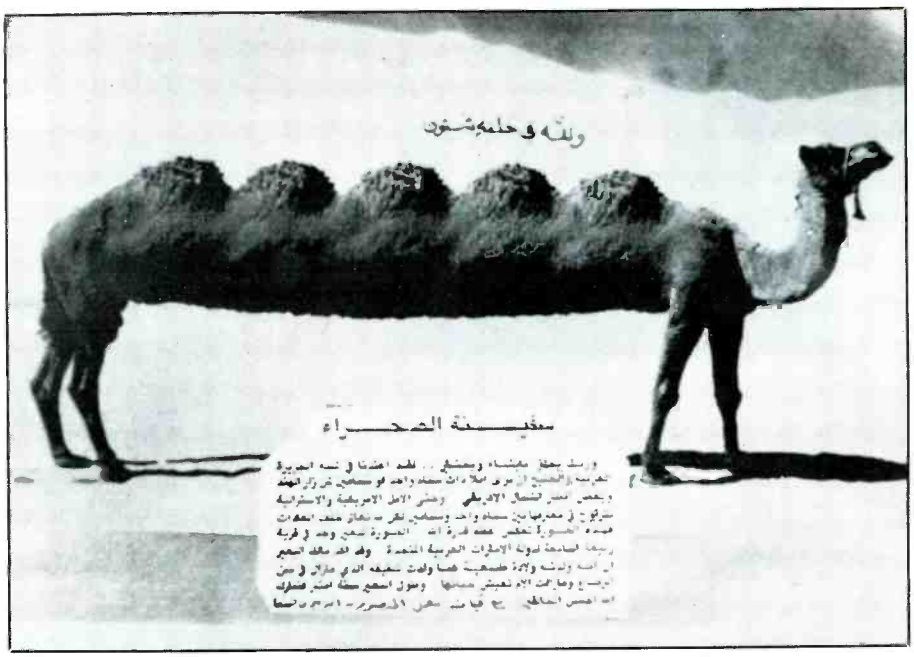
I have been working in Saudi Arabia for the past twelve years. Hamming is not allowed here, except for a few privileged persons, princes, or sheiks, and the old Aramco club station, HZ1AB. SWL'ing is fine, though. I'm in the southwest mountains near Abha with an elevation of 7,000 ASL. I have a Phillips (Magnavox) D9999, an AEA PK-232 multimode data controller, an XT clone and a Seikosha SP-1600AI graphics printer. The 40 ft. longwire is aimed south, and there's a center loaded vertical tapped for 21 MHz.

Forgot to mention what I do here. I am on contract with the Saudi Arabia Ministry of Interior, General Civil Defense Administration, Civil Defense Aviation Command Air Sea Rescue and Firefighting Helicopter Department. I'm Chief Pilot and Senior Flight Instructor training Saudi pilots in the Boeing/Kawasaki KV107-SM helicopter. That's a twin engine, twin rotor, 21,400 lb. max. gross civil version of the USN/USMC CH-46. I'll be retiring soon and heading towards Weatherford, Texas.

I really appreciate *POP'COMM* here. It's a fine publication and the frequency lists are very helpful. Listening here produces gobs of propaganda, especially the RTTY from INA in Baghdad and IRNA in Iran. INA went off the air in the middle of a broadcast the other night. Guess our guys bombed them out!

Orville B. Wolf, WA4IXN/HZ,
Saudi Arabia

We have gotten lots of great mail from readers in the military in the Gulf, but Orville is the first American civilian there we have heard from since the war began. — Editor.



WA4IXN/HZ sent his QSL showing the last of the famous Arabian 5-passenger stretch-limo camels. There's a camel you'd walk a mile for! ■

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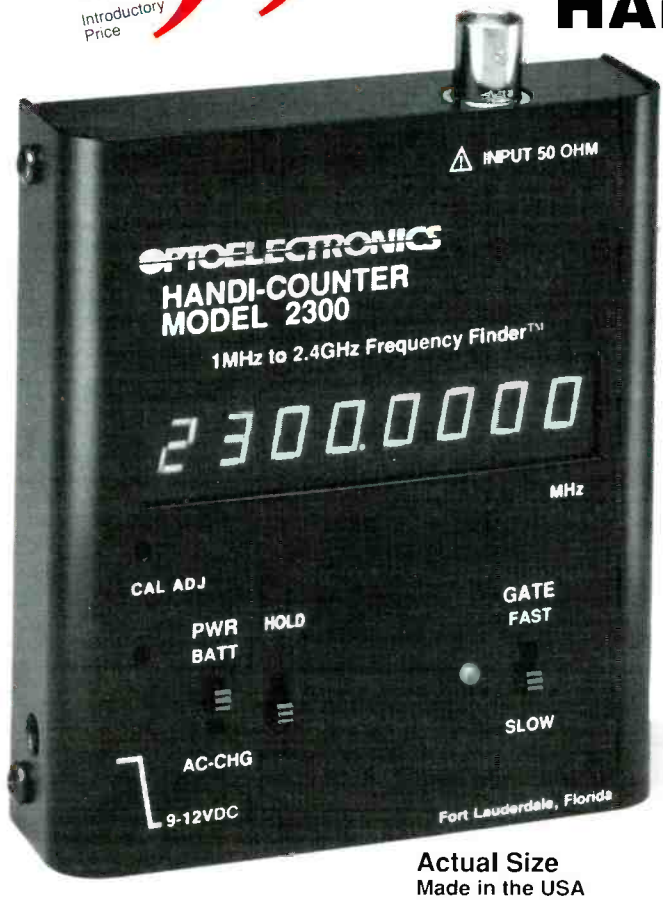

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Display	10 Digit LCD w/Function Annunciators	10 Digit LCD w/Function Annunciators	10 Digit LCD	10 Digit LCD	8 Digit LED	8 Digit LED
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Price	$579.	$375.	$325.	$225.	$199.	*$99.

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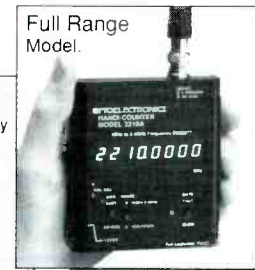

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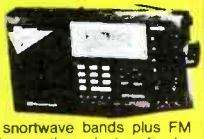

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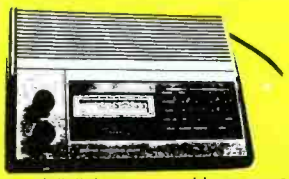

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Cordless Telephones: Bye Bye Privacy!

A Boon to Eavesdroppers, Cordless Phones Are as Private as Conversing in an Elevator. You'll Never Guess Who's Listening In!

BY TOM KNEITEL, K2AES, EDITOR

Cordless phones offer no privacy, although the general public assumes just the opposite. This beautiful unit operates on ten channels and might be monitored from a mile or more away.

OK, so it took a while, but now you've accepted the fact that your cellular phone conversations can easily be overheard by the public at large. Now you can begin wrestling with the notion that there are many more scanners in the hands of the public that can listen to cordless telephone calls than can tune in on cellulars.

Monitoring cellular calls requires the listener to own equipment capable of picking up signals in the 800 to 900 MHz frequency range. Not all scanners can receive this band, so unless the scannist wants to purchase a new scanner, or a converter covering those frequencies, they can't tune in on cellular calls. And let's not forget that it's a violation of federal law to monitor cellular conversations. Not that there seems to be any practical way yet devised to enforce that law, nor does the U.S. Dept. of Justice appear to be especially interested in trying.

On the other hand, cordless telephones operate with their base pedestals in the 46 MHz band, and the handsets in the 49 MHz band. Virtually every scanner ever built can pick up these frequencies with ease. Cordless telephones are usually presented to the public as having ranges up to 1,000 feet, but that requires some clarification. That distance represents the reliable two-way communications range that can be expected between the handset and the pedestal, given their small inefficient receivers and antennas, and that they are both being used at ground level.

In fact, even given those conditions, 1,000 feet of range is far more coverage than necessary for the average apartment or house and yard. Consider that 1,000 feet is a big distance. It's almost one-fifth of a mile. It's the height of a 100-story skyscraper. The Chrysler Building, third tallest building in New York City, is about 1,000 ft. high, so is the First Interstate World Center, tallest building in Los Angeles. When someone uses a sensitive scanner connected to an efficient antenna mounted above ground level, the signals from the average 46 MHz cordless phone base pedestal unit (which broadcasts both sides of all conversations) can often be monitored from several miles away, and in all directions.

Some deluxe cordless phones are a snoop's delight. Like the beautiful Panasonic KX-T4000. Its range is described as "up to 1,000 feet from the phone's base," however the manufacturer brags that "range may exceed 1,000 feet depending upon operating conditions." When you stop to think about it, what at first seems like a boast is really a somewhat harmless sounding way of warning you that someone could monitor the unit from an unspecified great distance. In fact, just about all standard cordless phones

exceed their rated ranges. But the KX-T4000's main bonus and challenge to the snoop is that it can operate on ten different frequencies instead of only a single frequency. The BellSouth Products Southwind 170 cordless phone suggests a range of up to 1,500 ft., depending upon location and operating conditions. The ten-channel Sony SPP-1508 has a built-in auto-scan system to select the clearest channels.

What with millions of scanners in the hands of the public, a cordless telephone in an urban or suburban area could easily be within receiving range of dozens of persons owning receiving equipment capable of listening to every word said over that phone. Likewise, every urban or suburban scanner owner is most likely within receiving range of dozens of cordless telephones. Many persons with scanners program their units to search between 46.50 and 47.00 MHz and do listen. Some do it casually to pass the time of day, others have specific purposes.

Not Covered

The Electronic Communications Privacy Act of 1986, the federal law that supposedly confers privacy to cellular conversations, doesn't cover cordless telephones.

A year and a half ago, the U.S. Supreme Court wasn't interested in reviewing a lower court decision that held that some fellow didn't have any "justifiable expectation of privacy" for their cordless phone conversations. It seems that man's conversations regarding suspected criminal activity were overheard and the police were alerted, which caused the police to investigate further and arrest the man after recording more of his cordless phone conversations.

Yet, even though (at this point) there is no federal law against monitoring cordless phones, there are several states with laws that restrict the practice. In New York State, for instance, a state appellate court ruled that New York's eavesdropping law prohibits the government from intentionally tuning in on such conversations.

California recently passed the Cordless and Cellular Radio Telephone Privacy Act (amending Sections 632, 633, 633.5, 634, and 635 of the Penal Code, amending Section 1 of Chapter 909 of the Statutes of 1985, and adding Section 632.6 to the Penal Code) promising to expose an eavesdropper to a $2,500 fine and a year in jail in the event he or she gets caught. Gathering the evidence for a conviction may be easier said than done.

There may be other areas with similar local restrictions, these are two that I know about. Obviously listening to cordless phones in major population areas is sufficiently popular to have inspired such legislative action. There are, however, reported to be efforts afoot to pass federal legislation forbidding the monitoring of cordless phones as well as baby monitors. Such a law wouldn't stop monitoring, nor could it be enforced. It would be, like the ECPA, just one more piece of glitzy junk legislation to hoodwink the public and let the ACLU and well-meaning, know-nothing, starry-eyed privacy advocates think they've accomplished something of genuine value.

Strange Calls

On April 20th, 1990, *The Press Democrat*, of Santa Rosa, Calif., reported that a scanner owner had contacted the police in the community of Rohnert Park to say that he was overhearing cordless phone conversations concerning sales of illegal drugs. The monitor, code named Zorro by the police, turned over thirteen tapes of such conversations made over a two month period.

Police took along a marijuana-sniffing cocker spaniel when they showed up at the suspect's home with a warrant one morning. Identifying themselves, they broke down the door and found a man and a woman, each with a loaded gun. They also found a large amount of cash, some cocaine, marijuana, marijuana plants, and assorted marijuana cultivating paraphernalia.

In another example, *Newsday*, of Long Island, New York, reported in its February 10, 1991, edition another tale of beneficial cordless phone monitoring.

It seems a scanner owner heard a cordless phone conversation between three youths who were planning a burglary. First, they said that they were going to buy a handheld CB radio so they could take it with them in order to keep in contact with the driver of the car, which had a mobile CB rig installed. Then, they were going to head over to break into a building that had, until recently, been a nightclub.

The scanner owner notified Suffolk County Police, which staked out the closed building. At 10:30 p.m., the youths appeared and forced their way into the premises. They were immediately arrested and charged with third-degree burglary and possession of burglary tools.

I selected these two examples from the many similar I have on hand because they happen to have taken place in states where local laws seek to restrict the monitoring of cordless telephones.

Most of the calls people monitor aren't criminal in nature, but are apparently interesting enough to have attracted a growing audience of recreational monitors easily willing to live with accusations of their being unethical, nosy, busybodies, snoops, voyeurs, and worse.

As it turns out, recreational monitors are undoubtedly the most harmless persons listening in on cordless phone calls.

They're All Ears

A newsletter called *Privacy Today*, is put out by Murray Associates, one of the more innovative counterintelligence consultants serving business and government. This publication noted (as reported in the mass media) that IRS investigators may use scanners to eavesdrop on suspected tax cheats as they chat on their cordless phones.

But, the publication, points out, that accountants who work out of their homes could turn up as prime targets of such monitoring. Their clients might not even realize the accountant is using a cordless phone, and therefore assume that they have some degree of privacy. One accountant suspected of preparing fraudulent tax returns could, if monitored, allow the IRS to collect evidence on all clients.

Furthermore, *Privacy Today* notes that this has ramifications on the IRS snitch program (recycle tax cheats for cash). They say, "Millions of scanner owners who previously listened to cordless phones only for amusement will now be able to do it for profit. Any incriminating conversation they record can be parlayed into cash, legally."

In fact, in addition to various federal agents and police, there are private detectives, industrial spies, insurance investigators, spurned lovers, scam artists, burglars, blackmailers, and various others who regularly tune in with deliberate intent on cordless telephones in the pursuit of their respective callings. If you saw the film *Midnight Run*, starring Robert DeNiro, you'll recall that the bounty hunter was shown using a handheld scanner to eavesdrop on a cordless phone during his effort to track down a fugitive bail jumper.

No, cordless phone monitoring isn't primarily being done for sport by the incurably nosy for the enjoyment and entertainment it can provide. The cordless telephone has been recognized as a viable and even important tool for gathering intelligence.

Intelligence Gathering?

In fact, there are differences between cordless and cellular monitoring. When a cellular call is monitored, it's quite difficult to ascertain the identity of the caller, and impossible to select a particular person for surveillance. These are mostly portable and mobile units that are passing through from other areas, and they're operating on hundreds of different channels. Sometimes the calls cut off right in the middle of a conversation. The opportunities for ever hearing the same caller more than once are very slim.

Not so with cordless phones. These units are operated at permanent locations in homes, offices, factories, stores. Most models transmit on only one or two specific frequencies, and while a few models can switch to any of ten channels, that's still a lot fewer places to have to look around than scanning through the hundreds of cellular frequencies. So, with only minor effort, it's possible to know which cordless phones in receiving range are set up to operate on which channels. And you continually hear the same cordless phone users over a long period of time. They soon become very familiar voices; you might even recognize some of them.

The diligent, professional intelligence gatherer creates a logbook for each of the frequencies in the band, then logs in each cordless phone normally monitored using that frequency. Then, each time a transmission is logged from a particular phone, bits and scraps of information can be added to create a growing dossier picked up from conversations. With very little real effort, it doesn't take long to assemble an amazing amount of information on all cordless phones within monitoring range.

Think about the information that is inadvertently passed in phone calls that would go into such files. Personal names (first and last) which are easily obtained from salutations, calls, and messages left on other people's answering machines; phone numbers (that people give for callbacks or leave on answering machines); addresses; credit card numbers; salary and employment information; discussions of health and legal problems; details of legit and shady business deals; even information on the hours when people are normally not at home or will be out of town, and much more, including the most intimate details of their personal lives. Anybody who stops for a moment to think about all the things they say over a cordless telephone over a period of a week or two should seriously wonder how many of those things they'd prefer not be transmitted by shortwave radio throughout their neighborhood.

Cordless phone users don't realize that these units don't only broadcast the phone calls themselves. Most units start transmitting the instant the handset is activated, and will broadcast anything said to others in the room before and while the phone is being dialed, and while the called number is ringing. Using a DTMF tone decoder, it's even possible to learn the numbers being called from cordless phones.

One private investigator told me that part of a infidelity surveillance he just completed included a scanner tuned to someone's cordless phone channel, feeding a voice-operated (VOX) tape recorder. Every day he picked up the old tape and started a new one. The scanner was located in a rented room several blocks away from the person whose conversations were being recorded.

Hardware Topics

Many people are under the impression that the security features included in some cordless phones provide some sort of voice scrambling or privacy. They don't do anything of the kind. All they do is permit the user to set up a code so that only his or her own handset can access the pedestal portion of his own cordless phone system. In these days of too few cordless channels, neighbors have sometimes ended up with cordless phones operating on the identical frequency pair. That created the problem of making a call and accessing your neighbor's dial tone instead of your own, or your handset ringing when calls come in on your neighbor's phone.

The FCC is going to require this feature on all new cordless telephones, but it still won't mean that the two neighbors will be able to talk on their identical-channel cordless phones simultaneously. Such situations allow neighbors to eavesdrop on one another's calls, even without owning a scanner. The FCC is attempting to relieve the common problem of too many cordless phones having to share the ten existing base channels in the 46.50 to 47.00 MHz band. These frequencies are: 46.61, 46.63, 46.67, 46.71, 46.73, 46.77, 46.83, 46.87, 46.93, and 46.97 MHz. Each of these frequencies are paired with a 49 MHz handset channel.

Manufacturers are going to be permitted to produce cordless phones with channels positioned in between the existing ten frequency pairs. Cordless phones will now be permitted operation on these additional offset frequencies to relieve the congestion.

A date for implementing these new frequencies hasn't yet been announced, but it should be soon. The FCC feels that the life expectancy of a cordless phone isn't very long, and they'd like these new phones to be ready to go on line as the existing phones are ready to be replaced. The new model phones are going to have to also incorpo-

rate the dial tone access security encoding feature I mentioned.

Let's hope the new batch of cordless phones is less quirky than some of the ones now in use. We understand that the transmitters of some cordless phones switch on for brief periods whenever they detect a sharp increase in the sound level, such as laughter, shouting, or a loud voice on the extension phone.

Privacy Today tells of the cordless phone that refused to die. They noted it was reported that the General Electric System 10 cordless phone, Model 2-9675, just won't shut up. It broadcasts phone calls even when they are made using regular extension phones!

As for receiving all of these signals, any scanner will do. Antennas that do an especially good job include 50 MHz (6 meter ham band) omnidirectional types, or (secondarily) any scanner antenna designed for reception in the 30 to 50 MHz range.

There is a dipole available that is specifically tuned for the 46 to 49 MHz band, which you can string up in your attic (or back yard) and get a good shot at all signals in the band. This comes with 50 ft. of RG-6 coaxial cable lead-in, plus a BNC connector for hooking to a scanner. This cordless phone monitoring antenna is $49.95 (shipping included to USA, add $5 to Canada) from the Cellular Security Group, 4 Gerring Road, Gloucester, MA 01930.

The higher an antenna is mounted for this reception, the better the range and reception quality, and the more phones will be heard.

Zip The Lip

Once you understand the nature of cordless phoning, you should easily be able to deal with these useful devices. Let's face it, it isn't really absolutely necessary for all of your conversations to achieve complete privacy. You are perfectly willing to relinquish expectations of conversational privacy. You do it every time you converse in an elevator, a restaurant, a store, a waiting room, a theatre, on the street, etc. You take precautions not to say certain things at such times, so you don't feel that you are being threatened by having been overheard. Think of speaking on a cordless phone as being in the same category as if you were in a crowded elevator, and you'll be just fine. It's only when a person subscribes to the completely erroneous notion that a cordless phone is a secure communications device that any problems could arise, or paranoia could set in.

Manufacturers don't claim cordless phones offer any privacy. Frankly, because they instill a false and misleading expectation of privacy, the several well-intentioned but unenforceable local laws intended to restrict cordless monitoring actually do more harm than good. The laws serve no other purpose or practical function. It would be far better for all concerned to simply publicize that cordless phones are an open line for all to hear.

So, cordless phones must be used with the realization that there is no reason to expect privacy. Not long ago, GTE Telephone Operations Incorporated issued a notice to its subscribers under the headline "Cordless Convenience May Warrant Caution." Users were told to "recognize that cordless messages are, in fact, open-air FM radio transmissions. As such, they are subject to interception (without legal constraint) by those with scanners and similar electronic gear . . . Discretion should dictate the comparative advisability of hard-wired phone use."

Good advice. We might add that if you are using a cordless phone, you don't give out your last name, telephone number, address, any credit card numbers, bank account numbers, charge account numbers, or discuss any matters of a confidential nature. Moreover, it might be a good idea to advise the other party on your call that the conversation is going through a cordless phone.

Some people might not care, but others could find that their conversations could put them in an unfortunate position. Harvard Law School Professor Alan M. Dershowitz, writing on cordless phone snooping in *The Boston Globe* (January 22, 1990), said, "The problem of the non-secure cordless telephone will be particularly acute for professionals, such as doctors, psychologists, lawyers, priests, and financial advisors. Anyone who has an ethical obligation of confidentiality should no longer conduct business over cordless phones, unless they warn their confidants that they are risking privacy for convenience."

That's more good advice. Not that the public will heed that advice. People using cellulars have been given similar information many times over, and somehow it doesn't sink in. But *you* got the message, didn't you? Zip your lip when using any of these devices. And, if you've got a scanner, you can tune in on everybody else blabbing their lives away, and maybe even help the police catch drug dealers and other bad guys—well, unless you live in California or some other place where the local laws are more protective of cordless phone privacy than the federal courts are. ■

Here's the Code-Free Ham Radio License!

You Asked For It, So Stop Complaining!

For the first time, Americans can obtain an amateur radio license without having to learn Morse Code.

New code-free licensees are expected to come from virtually every age group and will include: senior citizens who would like the security of a small two-way radio in a pocket or purse; family members who'll use a mobile radio to call home; teenagers who want to stay in touch on the go; volunteers who participate in emergency services; computer enthusiasts who want an over-the-air link between PCs, and people who simply always wanted a ham radio license.

Licensees can use handheld radios, mobile transceivers, and base stations for local FM voice communications. These communications are virtually free of interference and long-range skip. They may also operate in SSB mode on the 6 meter band, which offers long-range skip.

In addition, amateur radio operators throughout the country have installed more than 10,000 repeater stations that extend the range of these communications. Many of these repeaters also allow operators to access phone circuits to make local phone calls from their mobile or handheld radios. Under FCC regulations, amateur communications may not be used for commercial purposes.

The new license opens the door to many newcomers.

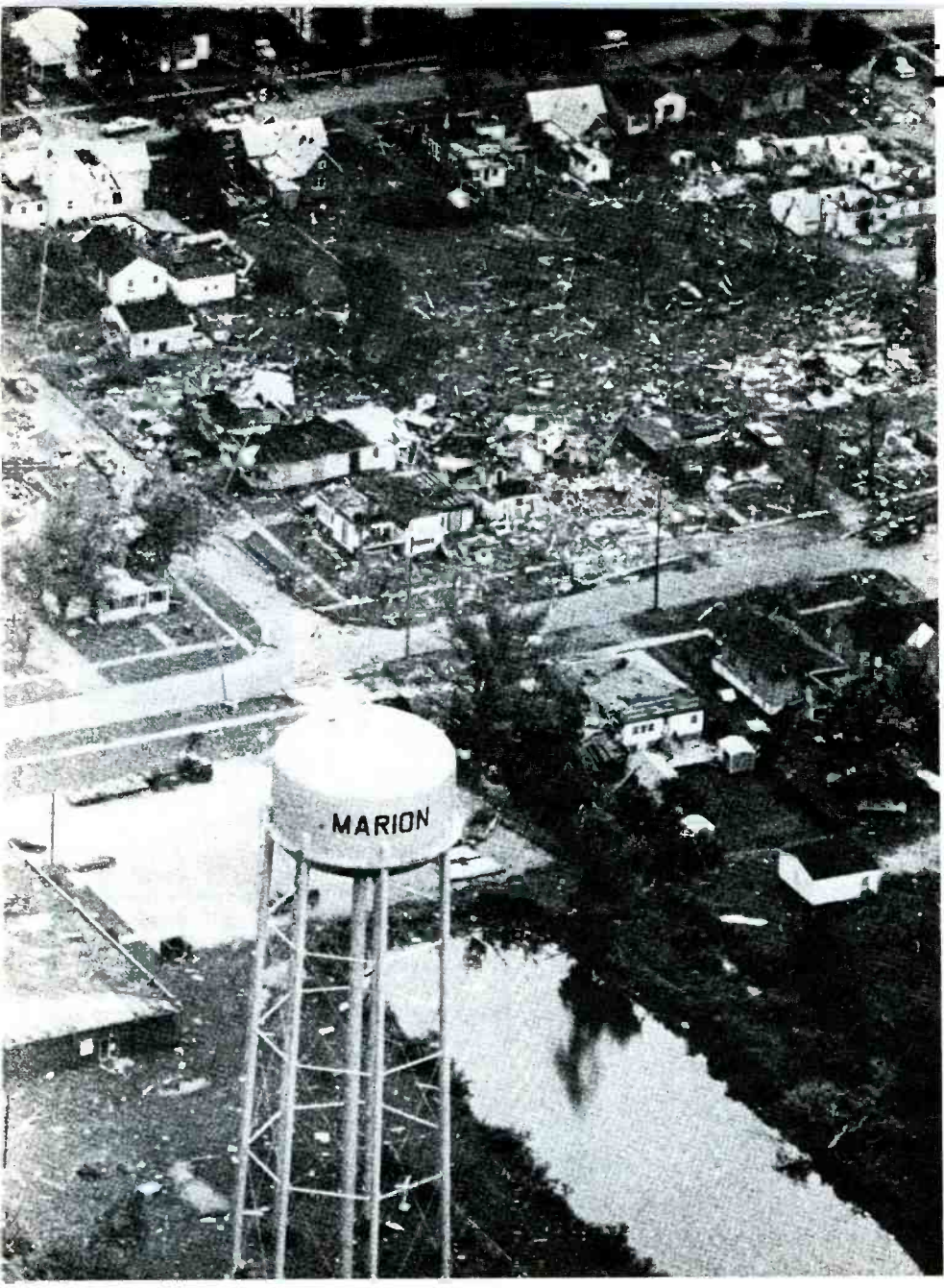
Licenses may also participate in packet communications, which allows direct computer-to-computer communications over the airwaves. Packeteers, as they are called, can communicate directly through their keyboards, leave electronic mail for their friends at unattended computer-controlled stations, and even exchange computer files over the air. Packet radio is now one of the fastest-growing aspects of amateur radio.

Code-free licensees may also use amateur radio satellites to communicate with other parts of the world and participate in exotic forms of communications, such as "Moonbounce," in which signals from the earth are bounced off the moon and back to earth.

The change in licensing requirements was made possible when the FCC modified the existing Technician Class license to drop the Morse Code requirement for all amateur privileges above 30 MHz (VHF and UHF). Under international treaty, people who want to participate in world-hopping communications on frequencies below 30 MHz must still learn Morse Code and pass the test for another class of license.

Those who wish to obtain the new code-free version of the Technician Class license must pass a 55-question written test that emphasizes ham radio operating rules and privileges, safety procedures, and some basic technical information about radio communications. Study materials are available from a variety of sources, and the tests will be given by Volunteer Examiners throughout the United States.

For additional information about the code-free license, write Code-Free License, ARRL, 225 Main Street, Newington, CT 06111.



Scanning Tornado Alley

It's Twister Season! Have Your Scanner Ready to Monitor Disaster Communications.

BY CHUCK ROBERTSON

On May 29, 1982, a tornado ripped through Marion, IL. I heard the entire event, and the aftermath, on my scanner.

Every part of the United States (even Alaska and Hawaii) has experienced the terrible destructive power of tornadoes. Statistics show, however, that twisters most often visit a triangular region bounded by Texas, Ohio, and Nebraska. This is "Tornado Alley," playground for the nastiest storms on the planet—sometimes appearing almost without notice, and roaring through a town like an express train. In direct path of the twister, there is loss of life and extensive property damage.

Tornado Alley seems to shift its borders. A few years ago, they were plentiful in Illinois, Missouri, and Kansas (remember how Dorothy and Toto got to Oz?). These days, Oklahoma and the Texas Panhandle get more tornadoes than other area of the nation.

A second (but less intense) tornado belt extends from east Texas, across Arkansas, northern Louisiana, Mississippi, Alabama, and Georgia. That's called "Dixie Alley."

But isolated twisters can and do turn up just about anywhere else. Last summer, one went right through a residential area of the Staten Island section of New York City. Other areas also reported similar "loner" tornadoes, which usually travel along weather fronts containing especially violent thunderstorms.

This is the time of year to be alert to the danger of twisters. NOAA weather channels, plus local emergency preparedness frequencies should be programmed into your scanner. It could save your life!

Gone With The Wind

I'll always remember the afternoon I was tinkering around my workbench. Suddenly both of my scanners began revealing news that was certainly not good. Police officers on 39.50 MHz were tracking a twister heading straight for their community. It was a miracle that the twister suddenly veered off and missed their helpless village.

Still, it kept on going as it skipped along the countryside. Instinctively, I began running jumper cables from my scanners to the 12-volt storage battery I had purchased for just such an emergency. Ten minutes later, the twister had taken down power lines in my area. I kept on listening, though, and didn't miss a second of what proved to be the worst twister disaster in the history of Marion, Illinois.

On 155.07 MHz, a deputy sheriff in Williamson County hopped in his car and followed behind the tornado as it headed towards its next destination, Marion. His descriptions were harrowing, "There goes Skelly's Truck Stop," and "Taco Gringo has been totally demolished, there's only a slab left."

Another deputy watched as the roof of his home was lifted off the frame and spun into the air by the powerful winds. He begged his dispatcher to let him stay there with his rain-soaked possessions.

An Illinois State Trooper on 154.935 MHz followed the tornado out of town until it spent its energy and went aloft. That was less than eight miles from my house!

Picking Up The Pieces

The days following the disaster were filled with radio comms. The patterns and types of comms I noted can be applied to what might be expected to be monitored in any area struck by this type of disaster.

Emergency services and law enforcement personnel from a hundred miles around showed up, using their own frequencies as well as statewide and national intersystem channels. Security, humanitarian, and clean-up operations were abundant.

Illinois State brought in two comms vans to use as command centers. Oddly enough, they were using the Dept. of Corrections frequency, 453.875 MHz.

The command centers were also using the Dept. of Criminal Investigation car-to-car frequency (154.95 MHz) for base/mobile security comms. I listened as they nabbed two looters making a withdrawal from a bank.

News media frequencies were especially informative, with reporters in cars, on foot, and in the air.

Important comms were also coming from services such as the Red Cross, FEMA, National Guard, EPA, CB'ers, private pilots, hams, the Public Health Dept., and personnel at nearby Scott AFB. Even coal mine and business frequencies were active with people pitching in to help one another.

Table 1

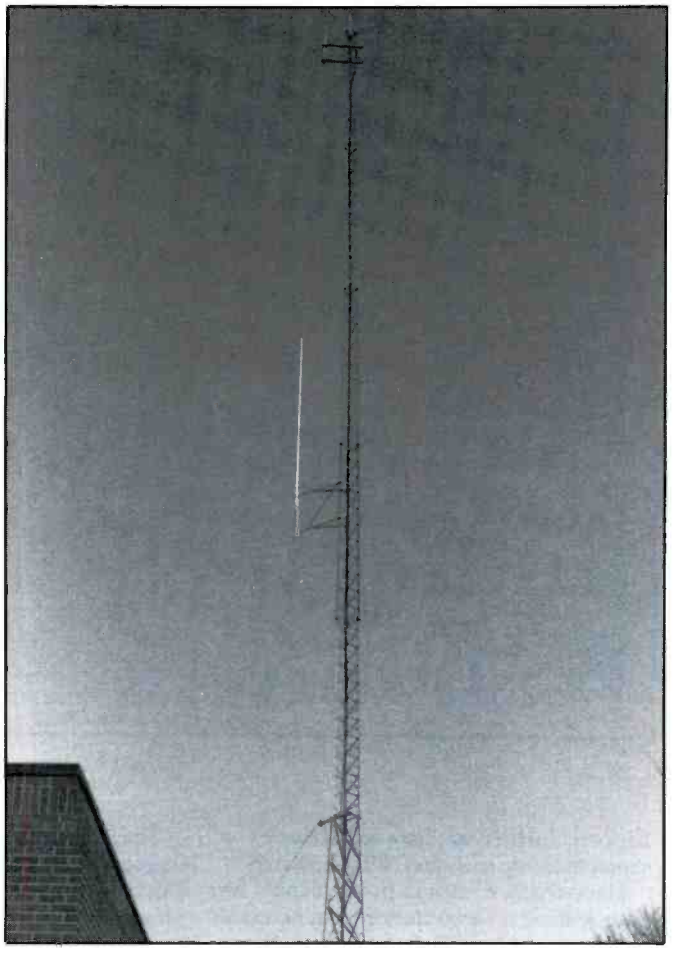
Federal and other national frequencies. For many additional federal frequencies, refer to 7th Edition of **Top Secret Registry of U.S. Government Radio Frequencies.**

FEMA: 142.23 142.35 142.425 142.975 143.00 164.8625 165.6625
National Guard: 34.90 163.4875
Red Cross: 47.42 47.46 47.50 47.66
Search/Rescue: 122.9 123.1 282.8
Military Civil Emergency: 141.06 141.12 141.465 142.44
Police Intersystem: 155.475
NOAA Weather: 162.40 162.475 162.55
National Storms Lab, OK: 163.275 409.75
Military Disaster Preparedness: 163.5125
REACT Teams: 27.065 462.675

Keep On Scannin'

Let's hope that you never experience the thrill of being anywhere near a twister. Of course, you have no guarantee that it won't

A handheld is helpful for tornado monitoring since it has a self-contained power supply and a built-in battery.



The State of Illinois Emergency Services and Disaster Agency base station tower, Marion, IL. This tower supports antennas for low/high band VHF, also UHF.

Table 2
Selected emergency preparedness and disaster comms frequencies, including Army National Guard.

Alabama

Jefferson Co.: 154.025
Calhoun Co.: 155.04
Marshall Co.: 155.16
Lamar Co.: 155.175
Sumter Co.: 155.22
Lauderdale Co.: 155.88
Birmingham: 453.30
Statewide: 453.40 453.425 453.65 453.675 453.725

Arkansas

Statewide: 153.785 158.745
Army Guard: 41.50 139.20

Colorado

Statewide: 45.20 45.24 45.28
Army Guard: 32.75 41.75 141.00 142.40 227.3 230.8 242.0

Delaware

Statewide: 45.24 45.28 154.86

Florida

Dade Co.: 37.18
Hillsborough Co.: 153.92
Orlando: 155.715
Palm Beach Co.: 462.225 462.725
Statewide: 39.10 39.18

Georgia

Cobb Co.: 462.60
Fulton Co.: 462.675
Statewide: 45.56

Illinois

Sandwich: 39.18
Kendal Co./Metamora: 39.82
DeWitt Co./Marion: 45.24
Monroe Co.: 45.48
Will Co.: 153.80
Jackson Co.: 154.04
Mattoon: 155.145
St. Charles: 155.16
Carbondale: 155.88
Sangamon Co.: 158.745 158.82
Logan Co.: 158.76
Skokie: 158.775
St. Clair Co.: 158.835
McLean Co.: 453.70
Statewide: 45.28 45.36 45.44 453.875
DuPage, Fulton, Marshal & others: 45.40

Indiana

Fountain Co.: 153.815
Elkhart Co.: 154.115
Vigo Co.: 154.31 158.76
Huntington Co.: 154.965
Ripley/Grant Co's.: 154.995
Warrick Co.: 155.115
Hobart: 155.745
Wabash Co.: 155.805
Vanderburgh/Scott/Knox Co's.: 155.82
Miami Co.: 155.895
Spencer/Madison Co's: 158.76
Indianapolis/Marion Co.: 158.82
Madison Co.: 453.825
St. Joseph Co.: 453.85
Many areas: 144.025 155.085

Iowa

Cerro Gordo Co.: 154.235
Widely used: 154.28

Kansas

Miami Co.: 39.64
Johnson Co.: 153.995
Sedgwick Co.: 154.965
Douglas Co.: 155.805
Leavenworth Co.: 155.82
Ripley Co.: 155.925
Shawnee Co.: 158.745
Statewide: 39.58/39.70

Kentucky

Harlan Co.: 45.92
Bell Co.: 46.04
Paris Co.: 155.16
Ohio Co.: 155.28
Rowan Co.: 462.975
Army Guard: 139.35 142.35 143.00
Many Co's.: 45.96
Statewide: 45.40/45.60

Louisiana

Baton Rouge: 155.145
Cameron: 451.075
Statewide: 39.50 45.28 45.48 45.52 45.54 45.60 155.845

Maryland

Howard Co.: 37.26
Prince George Co.: 47.62 158.94
Anne Arundel Co.: 155.145
Baltimore: 495.1125
Statewide: 44.74 44.90 47.50

Michigan

Charlevoix Co.: 39.50
Muskegon: 39.82
Chippewa Co.: 153.775
St. Joseph/Macomb/Livingston Co's.: 154.01
Wexford Co.: 154.04
Branch Co.: 154.055
Ionia/Jackson Co's.: 154.115
Shiawassee Co.: 154.965
Muskegon/Eaton Co.: 155.025
Ingham Co.: 155.085
Battle Creek: 155.10 156.105
Detroit: 155.145
Oakland: 155.265
Genesee Co.: 155.745
Midland/Gr. Traverse Co's.: 155.925
Kent Co.: 155.985
Washentaw Co.: 158.76
Cass Co,: 158.775
Ottawa: 158.82
Monroe Co.: 453.625
Mecosta Co.: 453.725

happen. Just in case, here are a few tips on simultaneously scanning while surviving.

Have ready a backup power supply for your scanners. Lawn tractor or motorcycle batteries are ideal for this purpose. If you have more than a couple of scanners to run, consider using a hefty truck battery. Be sure and keep wet cell batteries fully charged.

The lightning storms that accompany tornadoes can devastate electrical equipment. Disconnect outside antennas. Don't bank on a lightning arrester to do the job if your antenna suffers a direct strike. Also, disconnect your scanners from the AC power line as the power surges they produce when struck by lightning can cause a lot of damage.

Mostly, be sure you've got all of the vital frequencies programmed into your scanners well in advance of any actual emergency situation. You won't have time when the winds are whistling.

Long Range Excitement

"A twister just came howling through

Ann Arbor: 852.0875
Statewide: 42.48 155.28 155.865 460.025 460.125 460.175 460.225

Mississippi

Statewide: 45.92
Widely used: 45.96 46.00 46.04

Missouri

St. Louis Co.: 153.89 154.40
Hickory Co.: 154.04
St Louis: 154.725
New Madrid Co.: 154.965
Butler Co.: 155.145
St. Charles: 155.835
Statewide: 45.12 154.055 155.715

Nebraska

Heil Co.: 39.50 155.145
Omaha: 158.76
Statewide: 39.82 39.90

New Jersey

Salem Co.: 33.06
Moonachie: 39.50
Bergen Co.: 37.38 39.76 153.785 155.55 477.1625
Morris Co.: 45.52
Essex Co.: 470.5125
Haledon: 153.905
Hudson Co.: 154.055
Cape May Co./Lwr. Alloways Crk. Twp.: 154.085
Salem: 154.995
Middlesex Co.: 37.98 155.22 155.955
Atlantic Co.: 156.015 158.775
Monmouth Co.: 153.905
Clifton: 154.055
Mercer Co.: 453.575
Jersey City: 460.05
Statewide: 153.785

New York

Westchester Co.: 154.995
Albany Co.: 39.58 39.90 155.415 460.40
Dutchess Co.: 46.36
Greene Co.: 46.00
Suffolk Co.: 154.055
Ulster Co.: 151.655
Army Guard: 41.00 242.4
Statewide: 45.16/45.96 45.16/45.44 45.24/45.28 45.32/45.40 45.56/45.64 45.60/45.64

North Carolina

Statewide: 45.92 45.96 46.00 46.04 47.46 47.50 47.54 47.58 47.62 47.66

Ohio

Auglaize Co.: 45.20
Lake Co.: 154.965
Mahoning Co.: 155.025
Mercer/Shelby Co's.: 155.715
Licking Co's.: 155.775
Williams Co.: 158.745:
Statewide: 45.10 154.68 154.935 155.805

Oklahoma

Oklahoma Co.: 151.445
Tulsa Co.: 153.755
Comanche: 154.085
Seminole: 155.115
Washington Co.: 155.175
Statewide: 151.10 155.235
Sequoyah Co.: 155.295
Pittsburg Co.: 158.76
Oklahoma City: 173.10
Weather Alert (Glenco): 462.875

Pennsylvania

Manheim Twp.: 33.08
Philadelphia: 47.46 47.62 460.45
Montgomery Co,: 154.025
Nanticoke: 155.205
Clinton Co.: 155.715
Allentown: 158.835
Statewide: 45.16 453.525

South Carolina

Army Guard: 32.65 34.15 34.55 40.15 41.30 149.475 246.7
Statewide: 45.48

South Dakota

War Hawk CD: 153.80 158.82
Winner: 154.04
Pennington Co.: 154.98
Bonhomme Co.: 155.04
Charles Hix Co.: 155.76
Minnehaha Co,: 158.745
Martin: 158.76
Southeast SD CD: 158.805
Hutchinson: 158.865
Custer area: 158.925
Statewide: 39.10 39.32

Tennessee

Davidson Co.: 45.64
Shelby Co,: 154.995 155.895
Statewide: 45.12 45.36 45.44

Texas

Archer/Wichita Co's.: 37.90
Bexar Co,: 45.56
Brazos Co.: 154.805
Raytown: 154.98
Dallas: 155.025
Galveston: 155.265
San Antonio: 158.865
Many areas: 155.265

Virginia

National Cap Area: 167.975 171.1875
Statewide: 39.50 37.54

Wisconsin

Polk Co.: 154.025
Milwaukee Co,: 453.375
Statewide: 45.08 45.12 45.20 45.24 45.32 45.36 45.44 158.745 158.76 158.805

Willson's Ranch." This on the spot weather report came from a trucker near Midland, Texas which I was listening to on 47.22 MHz. Even though the trucker was 1,000 miles away, he sounded like he was right outside my house.

Sporadic-E skip propagation was responsible for bringing me these signals. June is the peak month for this type of "short skip," so you can expect to hear distant signals at times between 25 and 76 MHz. Mid-morning and early evening are especially good times, but it can turn up at just about any time, day or night.

Table 1 lists some important national frequencies. In Table 2, we list selected emergency service frequencies for those states most often experiencing twisters. In our Tables, you can look up frequencies you'll want to program into your scanner "just in case." I invite your comments and observations on tornado scanning, including via skip reception. Write to me in care of *POP'COMM*. ■

Radio: A Look Back

Some Thoughts From The Archives About Wartime Doings

BY ALICE BRANNIGAN

In the December issue we rambled on about some of the more notorious propaganda broadcasters of WWII. This was a popular topic and brought in a ton of mail that asked for more coverage of wartime radio, especially espionage, P.O.W., and underground resistance radio (since we didn't cover these in December).

The mail also brought in two letters from England pointing out that we had made a gross error here when we referred to the Nazi propaganda broadcaster, *Lord Haw Haw* (William Joyce) as being "an Englishman."

Simon Mason, who is a long-time *POP'COMM* reader, wrote to say that, "as an Englishman, I would like to point out that William Joyce was not English. He was as Irish as the Blarney Stone."

Also, a letter was received from Donald McLochlainn, of London, who clarifies that, "Joyce was in fact born in the USA of Irish parents in 1906, and subsequently became a supporter of British Fascist Oswald Mosley. Having obtained a British passport, he went to Germany in 1939 and, following his capture after the war, he was tried and convicted of treason. Even then he remained controversial, as commentators have questioned the validity of the British trying an Irish-American for treason when it could be argued he owed Britain no duty of loyalty."

I'm pleased for the clarifications, but in defense of calling Joyce "an Englishman," I'd say that it's more a difference of perception than anything else. When someone becomes an American citizen, regardless of their national origin or ethnic roots, most Americans henceforth consider that person to legally be an American in every sense of the word. The same logic would apply to our view of persons who became citizens of other nations.

Obviously, this is too simplistic a perception to be universal. It hadn't even occurred to me. I'll accept that whatever nationality *Lord Haw Haw* might have been, he certainly wasn't an Englishman—and let's hope it gets me off the hook.

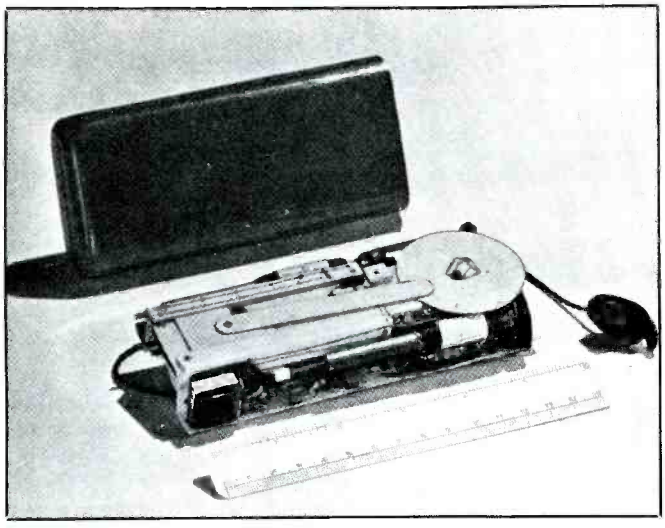
MI9 Radios

Speaking of England during WWII, in 1939, the British War Office formed a group known as M.I.9. Among the primary objectives of M.I.9 was helping British P.O.W.'s to escape, and obtaining intelligence from British P.O.W.'s. The group was classified as "Most Secret," and was headquartered in Room 424 of London's Metropole Hotel.

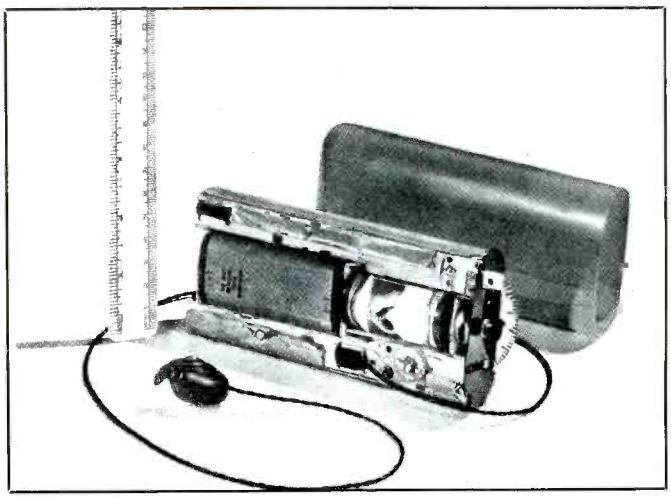
Under the direction of M.I.9, British military personnel were supplied with hundreds of thousands of pre and post capture aids items to be utilized for escape and intelligence transmission activities. Thanks to M.I.9, British P.O.W.'s were mailed parcels from persons and associations (all of which were fictitious) containing items such as slippers, matches, cigarettes, cigars, sewing kits, board games, writing materials, etc. Cleverly concealed in many of these items were escape maps, compasses, messages, instructions, cameras, radios, and other items that were seldom caught by the captors.

Photos of several of M.I.9's escape aid radios are rare, and actual examples that still exist of these sets are far more scarce. We did manage to find some photos in a 1942 classified M.I.9 publication. They show several ingenious miniature transmitters and receivers. One must remember when seeing this equipment now, that radios of the era all normally required large glass vacuum tubes, bulky transformers, heavy dry cells, big tuning capacitors and coils, as well as lots of full-sized fixed capacitors and resistors. Portable receivers were more like valises than anything you'd recognize today as being either small or portable.

That's why M.I.9's radios were so easily



Looks like it holds three cigars. Actually it's a tunable mini-receiver made to be smuggled to British P.O.W.'s during WWII.



The tuning dial of the P.O.W. cigar holder radio is the disk seen just at the point where the earphone wire enters the receiver. That's a ruler shown to the left of the radio.

COMMUNICATIONS ELECTRONICS INC.

Emergency Operations Center has expanded to our new two acre facility and World Headquarters. Because of our growth, CEI is now your *one stop source* for emergency response equipment. When you have a command, control or communications need, essential emergency supplies can be rushed to you by CEI. As always, for over twenty two years, we're ready, willing and able to help.

Our RELM two-way radio transceivers were especially created for government agencies. When you need to talk to police, fire, ambulance, or state, federal and international response forces, RELM transceivers may be quickly programmed for up to 48 frequencies. Listed below, are some of our most asked about transceivers. For additional assistance, call CEI at 313-996-8888.

NEW! RELM® RSP500-A

List price $465.00/**CE price $319.95/SPECIAL**
20 Channel • 5 Watt • Handheld Transceiver
Frequency range: 148-174 MHz. continuous coverage. Will also work 134-148 MHz. with reduced performance.
The *RELM* RSP500B-A is our most popular programmable 5 watt, 20 channel handheld transceiver. You can scan 20 channels at up to 40 channels per second. It includes CTCSS tone and digital coded squelch. Snap on batteries give you plenty of power. Additional features such as time-out timer, busy-channel lockout, cloning, plug-in programming and IBM PC compatability are standard. It is F.C.C. type accepted for data transmission and D.O.C. approved. We recommend also ordering the **BC45** rapid charge 1½ hour desk battery charger for $99.95, a deluxe leather case **LC45** for $48.95 and an external speaker microphone with clip **SM45** for $59.95. Since this radio is programmed with an external programmer, be sure to also order one **PM45** at $74.95 for your radio system.

NEW! RELM® UC102/UC202

List price $128.33/**CE price $79.95/SPECIAL**
CEI understands that all agencies want excellent communications capability, but most departments are strapped for funds. To help, CEI now offers a special package deal on the RELM UC102 one watt transceiver. You get a UC102 handheld transceiver on 154.5700 MHz., flexible antenna, battery charger and battery pack for only $79.95. If you want even more power, order the RELM **UC202** two watt transceiver for $114.95.

NEW! RELM® RH256NB-A

List price $449.95/**CE price $299.95/SPECIAL**
16 Channel • 25 Watt Transceiver • Priority Time-out timer • Off Hook Priority Channel
The *RELM* RH256NB is the updated version of the popular RELM RH256B sixteen-channel VHF land mobile transceiver. The radio technician maintaining your radio system can store up to 16 frequencies without an external programming tool. All radios come with CTCSS tone and scanning capabilities. This transceiver even has a priority function. Be sure to order one set of programming instructions, part # **PI256N** for $10.00 and a service manual, part # **SMRH256N** for $24.95 for the RH256NB. A 60 Watt VHF 150-162 MHz. version called the **RH606B** is available for $429.95. A UHF 15 watt, 16 channel similar version of this radio called the **LMU15B-A** is also available and covers 450-482 MHz. for only $339.95. An external programming unit **SPM2** for $49.95 is needed for programming the LMU15B UHF transceiver.

NEW! RELM® LMV2548B-A

List price $423.33/**CE price $289.95/SPECIAL**
48 Channel • 25 Watt Transceiver • Priority
RELM's new LMV2548B gives you up to 48 channels which can be organized into 4 separate scan areas for convenient grouping of channels and improved communications efficiency. With an external programmer, your radio technician can reprogram this radio in minutes with the **PM100A** programmer for $99.95 without even opening the transceiver. A similar 16 channel, 60 watt unit called the **RMV60B** is available for $489.95. A low band version called the **RML60A** for 30-43.000 MHz. or the **RML60B** for 37-50.000 MHz. is also available for $489.95.

RELM® Programming Tools

If you are the dealer or radio technician maintaining your own radio system, you **must** order a programming tool to activate various transceivers. The **PCKIT010** for $149.95 is designed to program almost all RELM radios by interconnecting between a MS/DOS PC and the radio. The **PM100A** for $99.95 is designed to externally program the RMV60B, RML60A, RML60B and LMV2548 radios. The **SPM2** for $49.95 is for the LMV25B and LMU15B transceivers. The **RMP1** for $49.95 is for the RMU45B transceiver. *Programmers must be used with caution and only by qualified personnel because incorrect programming can cause severe interference and disruption to operating communications systems.*

★★★ *Uniden CB Radios* ★★★

The *Uniden* line of Citizens Band Radio transceivers is designed to give you emergency communications at a reasonable price. Uniden CB radios are so reliable they have a two year limited warranty.

PRO310E-A3 *Uniden* 40 Ch. Portable/Mobile CB . . . $72.95
PRO330E-A3 *Uniden* 40 Ch. Remote mount CB . . . $99.95
GRANT-A3 *Uniden* 40 channel SSB CB mobile $152.95
WASHINGTON-A *Uniden* 40 ch. SSB CB base . . . $209.95
PC122-A3 *Uniden* 40 channel SSB CB mobile . . . $113.95
PC66A-A *Uniden* 40 channel CB Mobile $78.95
PRO510XL-A3 *Uniden* 40 channel CB Mobile $34.95
PRO520XL-A3 *Uniden* 40 channel CB Mobile $49.95
PRO535E-A *Uniden* 40 channel CB Mobile. $73.95
PRO538W-A *Uniden* 40 ch. weather CB Mobile . . . $78.95
PRO640E-A3 *Uniden* 40 ch. SSB CB mobile $133.95
PRO810E-A *Uniden* 40 channel SSB CB Base . . . $174.95

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Buy the finest *Uniden* radar detectors from CEI today.
CARD-A3 *Uniden* credit card size radar detector. . . $127.95
RD3XL-A3 *Uniden* 3 band radar detector. $124.95
RD9GTL-A *Uniden* "Passport" size radar detector. . . $89.95
RD9XL-A3 *Uniden* "micro" size radar detector . . . $107.95
RD25-A *Uniden* visor mount radar detector $54.95

Bearcat® 200XLT-A

List price $509.95/**CE price $239.95/SPECIAL**
12-Band, 200 Channel • 800 MHz. Handheld Search • Limit • Hold • Priority • Lockout
Frequency range: 29-54, 118-174, 406-512, 806-956 MHz. Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz.
The *Bearcat* 200XLT sets a new standard for handheld scanners in performance and dependability. This full featured unit has 200 programmable channels with 10 scanning banks and 12 band coverage. If you want a very similar model without the 800 MHz. band and 100 channels, order the **BC 100XLT-A3** for only $179.95. Includes antenna, carrying case with belt loop, ni-cad battery pack, AC adapter and earphone. Order your scanner now.

Bearcat® 800XLT-A

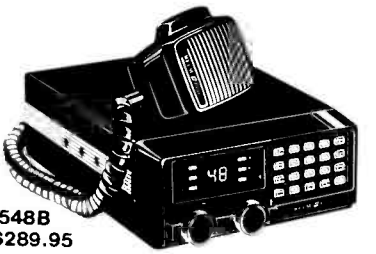
List price $549.95/**CE price $239.95/SPECIAL**
12-Band, 40 Channel • No-crystal scanner Priority control • Search/Scan • AC/DC
Bands: 29-54, 118-174, 406-512, 806-912 MHz.
Now...nothing excluded in the 806-912 MHz band.
The Uniden 800XLT receives 40 channels in two banks. Scans 15 channels per second. Size 9¼" x 4½" x 12½." If you do not need the 800 MHz. band, a similar model called the **BC 210XLT-A** is available for $178.95.

NEW! Uniden® MR8100-A

Call 313-996-8888 for special CEI pricing
12-Band, 100 Channel • Surveillance scanner
Bands: 29-54, 116-174, 406-512, 806-956 MHz.
The *Uniden* MR8100 surveillance scanner is different from all other scanners. Originally designed for intelligence agencies, fire departments and public safety use, this scanner offers a breakthrough of new and enhanced features. Scan speed is almost 100 channels per second. You get four digit readout past the decimal point. Complete coverage of 800 MHz. band when programmed with a personal computer. Alphanumeric designation of channels, separate speaker, backlit LCD display and more. To activate the many unique features of the Uniden MR8100 a computer interface program is available for $19.95. Due to manufacturers' territorial restrictions, the MR8100 is not available for *direct* shipment from CEI to CA, OR, WA, NV, ID or UT.

NEW! Ranger® RCI2950-A3

List price $549.95/**CE price $259.95/SPECIAL**
10 Meter Mobile Transceiver • Digital VFO Full Band Coverage • All-Mode Operation Backlit liquid crystal display • Repeater Splits RIT • 10 Programmable Memory Positions
Frequency Coverage: 28.0000 MHz. to 29.6999 MHz.
The *Ranger* RCI2950 Mobile 10 Meter Transceiver has everything you need for amateur radio communications. The RF power control feature in the RCI2950 allows you to adjust the RF output power continuously from 1 watt through a full 25 watts output on USB, LSB and CW modes. You get a noise blanker, roger beep, PA mode, mike gain, digital VFO, built-in S/RF/MOD/SWR meter. Frequency selections may be made from a switch on the microphone or the front panel. The RCI2950 gives you AM, FM, USB, LSB or CW operation. For technical info, call Ranger at 619-259-0287.



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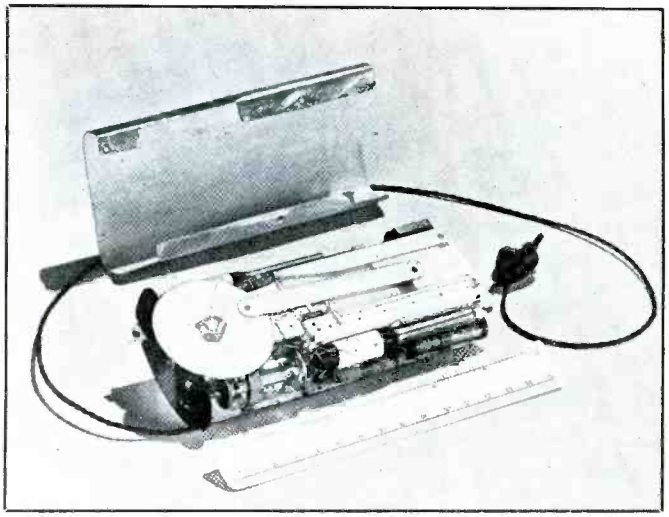
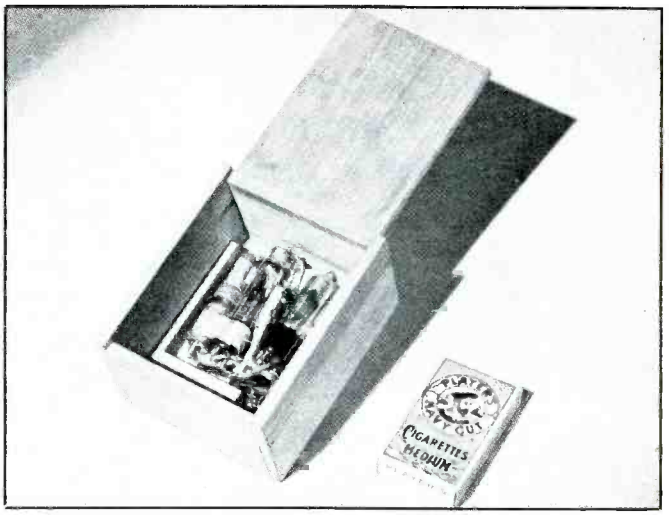


The cigar case radio was so deceptively small for the era in which it was made, it was never suspected as being a radio.



This cigar box radio receiver supplied by British M.I.9 came with a box of matches. It had a range of 400 miles.

concealed. They were so small that the objects that contained them were never thought to be large enough to contain such equipment. But they did!

M.I.9's most basic receiver was built in a case intended to hold three cigars. It had a single earphone, and was tunable. A disk that stuck out of one end of the body permitted tuning to different frequencies. It could pick up stations within 250 miles.

Another, more sensitive type receiver, was in the form of a cigar box, and was supplied with a box of matches. It was 6 inches long, 2-1/2 inches wide, by 1 inch high, and offered a range of 400 miles.

A receiver with a 700 mile range was housed in a cigarette box with an imitation leather covered lid. This was also supplied with matches. This set was 6 by 6 inches, and was about 2 inches deep, offering a 700 mile range. The antenna was a directional loop housed in the lid of the box. Reception was provided by a single earphone. Several versions were produced.

A popular transmitter was built inside a *Player's Navy Cut* tin intended to hold 100 cigarettes. In those days, many brands of cigarettes (including American) were available in flat tin boxes of 50 or 100 smokes. This was a CW transmitter that had a range of about 100 miles via a detachable telescoping whip that would extend to 30 inches. Keying was done by a small button that protruded from the side of the box.

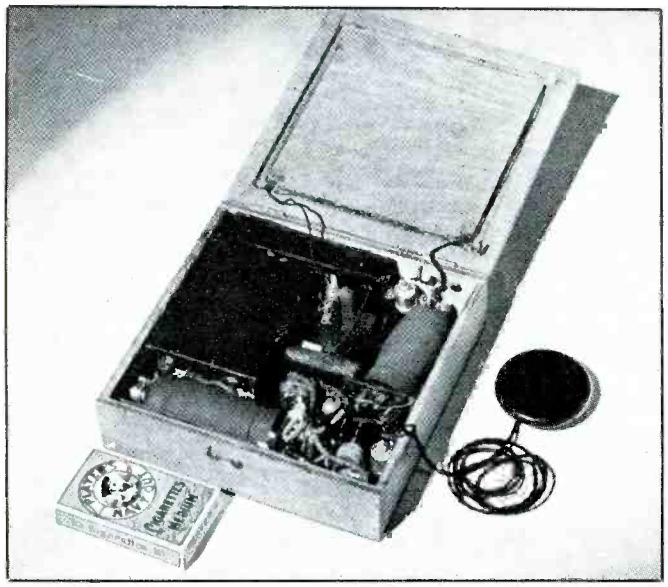
Espionage Stuff

In response to those who have asked for some coverage of espionage radios, I can offer a look at a more modern (although certainly it isn't current, since it uses vacuum tubes) radio sending and receiving set. As for its nomenclature, I do not know what it is. I can tell you that a photo in a Soviet book shows this same equipment set up as a station, which it describes as "captured CIA spy equipment." That claim might be open to dispute, however I can tell you something about the equipment itself. This information is based upon the data furnished with the equipment.

The transmitter is two-stage, crystal controlled and can operate in two bands, 3 to 7 MHz, or 7 to 16.5 MHz. The output is 6 to 10 watts, depending on the frequency. Power input is 400 VDC at 75 mils. Idling during break-in is 400 VDC at 25 mils. The unit is about 7 inches, by 5 inches, by 2 inches, weighing slightly less than 3 lbs.

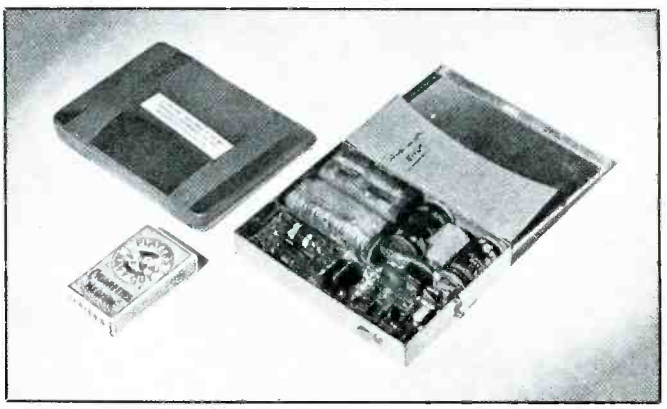
The matching receiver is a superhet operating in two bands from 3 to 6.5 MHz, and 6.5 to 15 MHz. It is tunable, or can be crystal controlled. It is the same size as the transmitter, but weighs a few ounces more.

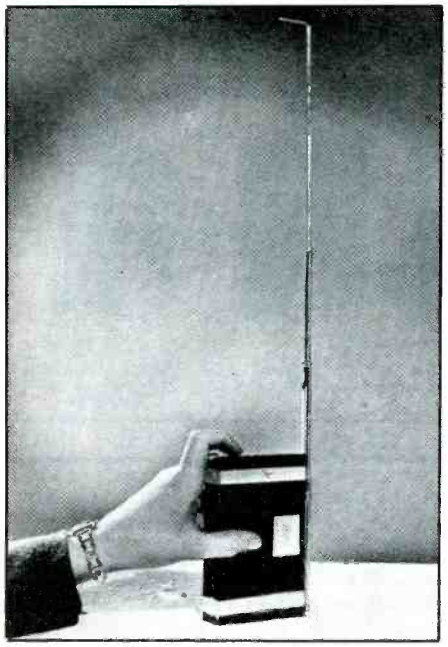
Other components to this equipment are the power supply and a power supply filter



This cigarette case P.O.W. receiver had a built-in loop antenna to give it a 700 mile range. It was dressed up with a simulated leather lid to further disguise its purpose.

A cigarette tin was a perfect container for a clandestine CW transmitter with a 100 mile range.





CW could be tapped out by using the small key on the side of the cigarette tin transmitter. Its range permitted messages to be sent to nearby partisans and others who could relay the information to London.

for the high voltage. The power supply can use a 6 V storage battery, or AC power lines from 70 to 270 volts, 40 to 400 Hz, pulling 80 watts.

We would guess this equipment to be from maybe the late 1950's, or thereabouts.

Another 1950's Spy Radio, Maybe!

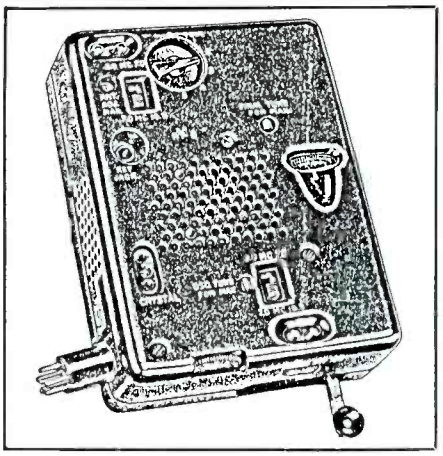
In the early 1950's, the Telefunken produced approximately 100 somewhat unusual transceivers. Covering 3 to 16 MHz, this hefty chunk of equipment was installed in a suitcase and called by Telefunken (on their schematics) a radio intended for ham radio use. Made in Germany, the instruction manuals were in French, and they were never offered in the ham market.

It would seem that that they were not actually produced for the ham market. More than likely, they were used by intelligence officials stationed at embassies and diplomatic posts around the world.

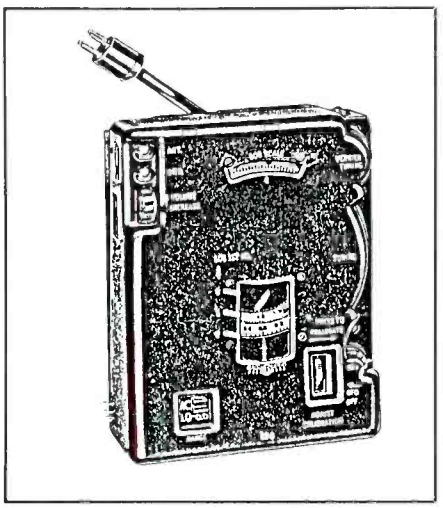
The receiver is a three-band, four-stage superhet. The transmitter is a two stage CW circuit. Considering when it was made, it seems strangely bulkier than was necessary. More information on this curious set was given on page 710 of the September, 1985, issue of the RSGB's publication, *Radio Communication*.

The YTG Story

The late Donald K. deNeuf, WA1SPM, was a distinguished radio historian who frequently sent us his critical observations, comments, and bits of information of interest. He once sent in something that's very appropriate here.



The Soviets called this a captured CIA spy transmitter. Well, maybe. With its vacuum tube design, it seems to be from around the 1950's.



This is the receiver section of the apparent spy radio station. It is tunable and crystal controlled.

Donald related that Nazi Germany invaded Yugoslavia in April of 1941 and caused King Peter II to flee to London. But many Yugoslav troops continued to fight the Nazis in the mountains. Drazja Mikhailovich led the largest group, the Chetniks. Eventually they became involved in open warfare for control of the resistance movement with another partisan group backed by the USSR and Great Britain, and led by Josip Broz, later known as Marshal Tito.

Press Wireless (PREWI), which was a commercial telegraph company, had numerous stations at various locations in the USA. During WWII, Don deNeuf was a PREWI radio operator, and in later years he was an executive of that company. He recalled for me the day a manually keyed CW signal was monitored repeatedly and frantically calling one of the PREWI stations, WPK (13840 kHz) at Hicksville, NY. "WPK WPK, can you read me?" PREWI responded "QTH?" in order to find out more information on the calling station.

"This is General Mikhailovich's press station in the mountains of Yugoslavia and we will sign as YTG. We have a big load of press messages for you. May we begin transmitting them now?"

Commercial radiotelegraph operations were, of course, under government scrutiny during the war, and PREWI had to inform the authorities of their discovery and seek approval to accept traffic from YTG. Approval was granted, and YTG was told to commence sending traffic. Thereupon, day after day, YTG would run a string of lengthy press messages to major American newspapers, magazines, and press services. None of the dispatches were ever signed, but they provided vivid and extremely accurate reports on Mikhailovich and his forces.

In order to stay close to the fighting, YTG moved from one location to another very often. At times, traffic would be interrupted as YTG announced "Nazis are shelling us. Got to get out of here quickly. See you later." Sometimes YTG wouldn't return for days. Then he'd be heard tuning up and getting ready to send a big load of press messages. The PREWI operators knew the "YT" call letter prefix belonged to Yugoslavia, but YTG itself was an unassigned and unofficial call. The PREWI people used to joke that the letters YTG were selected because they stood for "Yugoslav Traveling Guerrillas."

Don deNeuf noted that in listening to the YTG transmissions, he often had the feeling that the *fists* were typically American. It wasn't until long after the end of WWII that Don learned that his guess was correct. The American OSS (forerunner to the CIA) had parachuted a group of seasoned U.S. Navy radiomen to assist Mikhailovich.

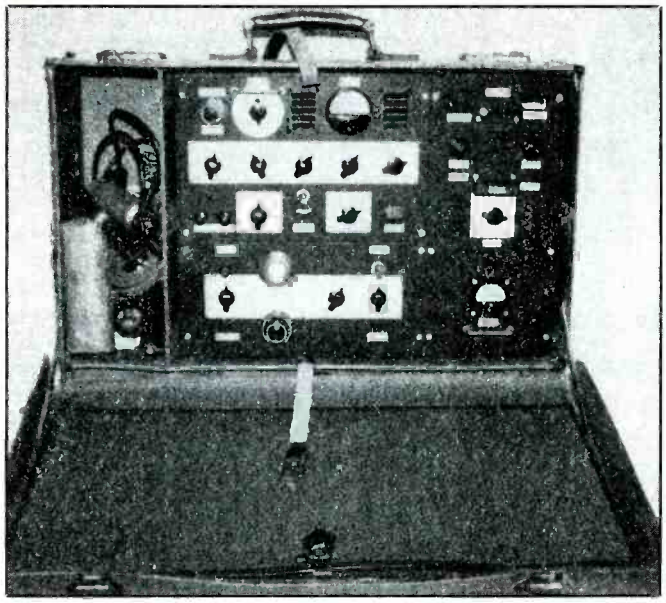
When the war ended, Tito turned up as top dog in Yugoslavia. On July 17th, 1946, Tito's forces captured and promptly executed General Mikhailovich.

Wartime Hamming

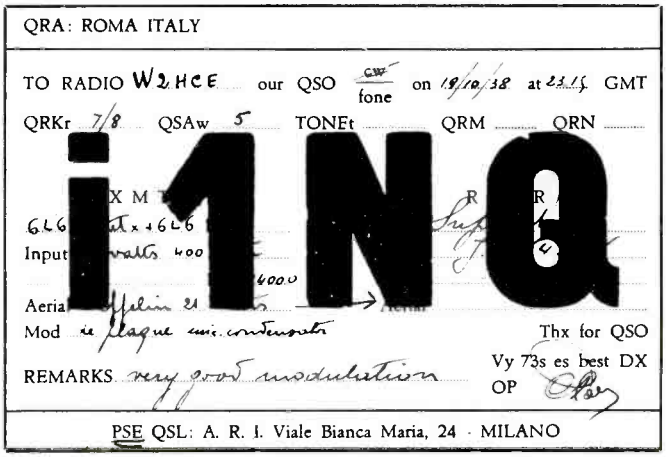
Between 1939 and 1940, because of the war situation, many nations of the world gave the order for their ham operators to cease operations until further notice. By 1941, only stations in USA, some Latin American stations, and Philippine stations were still permitted to operate by their governments, although 1941 saw American hams allowed to communicate only with other American stations. Right after the U.S. entered the war, in late 1941, American ham stations were given the order to close down completely, and remain silent until the war ended.

According to Bill Orr, W6SAI, some South American nations unofficially permitted a few favored hams to continue to operate amongst themselves throughout the duration of the war.

A few (not many) Americans on the



Try dragging this Telefunken suitcase transceiver through airport security and see what happens. Made in the early 1950's, the general consensus is that it was intended for use by intelligence officers stationed at embassies and consulates. Only about 100 units were ever made.



Italian dictator Mussolini shut down his nation's hams in the early 1930's. A few brave operators kept right on transmitting. Station I1NQ was a 30-watt 'phone station active in 1938, long after he had been officially ordered off the air. His address was in care of the Italian Radio Society. Maybe he had friends in high places. (Courtesy Bill Orr, W6SAI.)

homefront were caught breaking the imposed silence during WWII, and were dealt with harshly by the government. But, Bill also observes that it was a long war, and the military services were loaded with hams who were itching to get back on the air.

He remembers that as the war began winding down, some hams in the military could wait no longer and managed to get on the air using military tactical callsigns. Much to the dislike of the FCC, these were legit ID's issued by the USAF. The real purpose was somewhat obscure, but Bill suspects some high-ranking officer was a ham and just looked the other way.

Bill's own wartime quasi-ham military ID was "22-X-2," and he was authorized on 3105, 6210, and 7050 kHz. He remembers that there were about four others in California, and one or two in the Chicago area. He had a 200 watt 'phone transmitter on 7050 kHz at a military facility in El Segundo, Calif., and did QSO with Chicago with it once. Mostly he'd ragchew with other locals in the net, though.

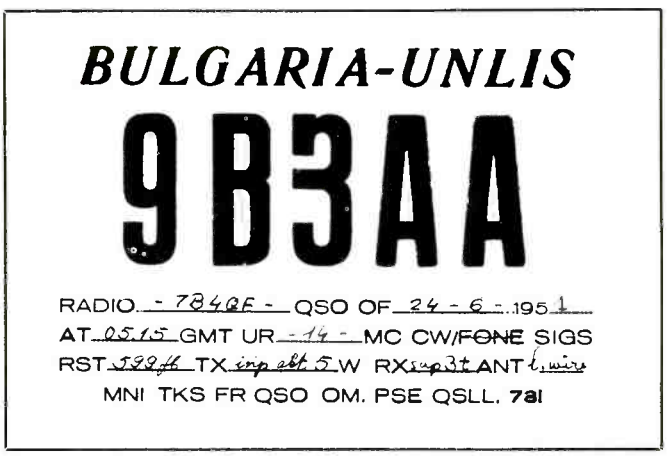
As the war ended, ham radio interest picked up. Many hams in the military simply began working with one another without any authorizations, using tactical callsigns, or no calls at all. In the aftermath of WWII, much of continental Europe was a physical and political shambles. Some European nations were therefore very slow in authorizing the resumption of ham operation. Still, there were a few bold undercover and clandestine ham operators in those nations who went on the air anyway, usually at considerable personal risk.

Bill Orr allowed us a look at some of the unusual QSL's he has representing stations in Europe before and after WWII that were being operated in defiance of wartime gag orders by their respective governments.

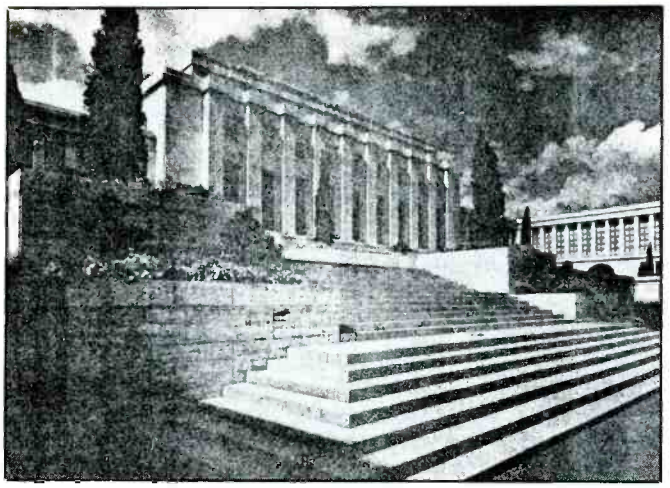
Big League

In 1920, right after WWI, many of the nations of the world formed an organization

D5FF was a clandestine German ham after WWII with quite an elaborate station. Most of the unlicensed ham activity in Germany right after WWII came from the American Zone, and the best guess is that these operators worked for the US military, who looked the other way at such activity. (Courtesy Bill Orr, W6SAI.)



Bulgarian hams weren't allowed on the air after WWII until 1952. A few bolder ones began jumping the gun in mid-1951, like this one who was signing the callsign 9B3AA. Bill Orr was in Andorra (as 7B4QF) when he worked 9B3AA, but he never found out who the undercover operator was! (Courtesy Bill Orr, W6SAI.)



RADIOSTATION: **RADIONATIONS**

Callsign	Wavelength	Power & Aerial	Emission
HBL	31.27 m., 9595 k.c.	20 k.w. omnidir.	Official bulletin
✔ HBP	38.47 m., 7797 k.c.	20 k.w. direction.	Information Section, L.o.N.
HBO	26.35 m., 11385 k.c.	20 k.w. omnidir.	International Labour Office
			Radio-Suisse (private)

Your report of February 1st 1936 received and checked with our transmission, found correct and hereby verified.

Date February 24th 1936.

League of Nations - Geneva

"Radio Nations" was the broadcasting station of the ill-fated League of Nations, Geneva, Switzerland. This is a 1936 QSL from the station, which ran 20 kW on three frequencies. (Courtesy Eileen Hofmaster, Ohio.)

called The League of Nations which, it was hoped, would prevent war forever. Although most of the important European nations belonged to the League, and the founder of the league was U.S. President Woodrow Wilson, the United States never became a member of the organization.

Headquartered in Geneva, Switzerland, the League was able to successfully settle some minor boundary disputes (such as between Greece and Bulgaria in 1925). But there were many failures, most notably the 1935 dispute between Italy and Ethiopia. This failure did much to weaken and finally destroy the League, which was of no value at all in preventing WWII. The League existed, at least on paper, until it was officially dissolved on April 18th, 1946, when it was replaced by another international organization, the United Nations.

During the mid-1930's the League of Nations operated its own shortwave broadcast facility at Prangins, a suburb of Geneva. This was known as *Radio Nations*, and operated with 20 kW over stations HBP (7797 kHz), HBL (9595 kHz), and HBO (11385 kHz). These were point-to-point transmitters which could operate in two-way mode on behalf of the League of Nations in addition to broadcasting official League bulletins. Broadcasts were once a week (usually Saturday) at 1730 UTC for forty-five minutes. Some broadcasts may have continued even through the war years, when HBO was on 11402 kHz and scheduled from 0045 to 0215 UTC.

As you can see, radio activity during periods of military action hasn't been limited to the situation in the Gulf. We haven't even scratched the surface, but our last mention produced such an enthusiastic response, we thought we would use this month's space for some more. Want still more?

Allied military personnel overseas are in our prayers, and we are looking for an early return home by all. We thank readers who most generously continue to send in items for our use here and the archives. ■

BOOKS YOU'LL LIKE

R. L. SLATTERY

Uncle Sam's Undercover Airline

The slogan of Air America was, "Anything, Anywhere, Any Time, Professionally." And who better to do this during the war in Southeast Asia than Air America? The airline was wholly owned and run by the Central Intelligence Agency (a/k/a the "company"), and was one of that agency's more exotic clandestine operations at that. The recent Mel Gibson and Robert Downey, Jr., film, *Air America*, was a fictionalized story that tried (with some degree of success) to capture the flavor of what the world's most unusual airline was all about.

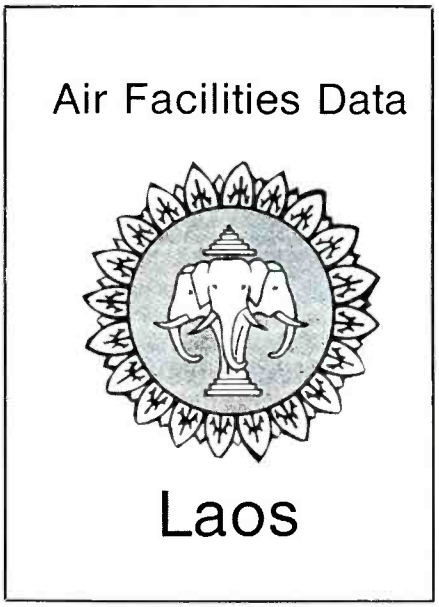
During the war in Southeast Asia, Air America flew throughout Vietnam, Thailand, Cambodia, and especially Laos. Its mission was wide and varied, and it was deeply involved in all of the CIA's many covert activities throughout the region.

American "advisors" moved into Laos in 1960, and the American military and intelligence presence remained in that nation right through to the closing days of the war in 1975. In addition to the planes of Air America, the skies above Laos were also host to the U.S. Air Force Ravens, as well as the CIA's lesser known undercover activity called the Continental Air Service.

To accommodate these activities, Laos was dotted with hundreds of "Lima Airfields," which were landing sites for use by helicopters, STOL, and standard fixed-wing aircraft. Their status constantly fluctuated, sometimes being under "unfriendly control" for varying periods, or subject to "unfriendly" fire during flight operations.

While some Lima Airfields were rather humble in nature, many had concrete runways, radio beacons, air traffic control frequencies, and "company" (Air America/CIA) HF, VHF, and UHF comms facilities.

A fascinating reference entitled *Air Facilities Data: Laos*, is the complete directory of the Lima Airfields in Laos used by the CIA's Air America and Continental Air Service, as well as the USAF's Ravens, during the Southeast Asia conflict. Extensive data shown individually for each of the more than 350 airfields includes: code number and name of field; signal letters; map reference; latitude and longitude; elevation; runway data (size, orientation, gradient, composition, restrictions/warnings); and (as applicable) facilities, such as fuel availability; tower frequencies and hours; radiobeacon type and frequency; and "company" frequencies. Information is also given regarding which sites were closed because they were under unfriendly control, and which could be used only on a "trip by trip" basis because of unfriendly fire.



The book, in fact, is a full, exact, and uncut reprint of the official pilot's flight information publication (FLIP) issued to and used by Air America and other American pilots in Laos at the height of the war there. So far as we have ever seen, it's the first time private "company" HF, VHF, and UHF frequencies, as appearing in any official "company" document, have ever been made public, even in retrospect. That makes it an absolutely unique wealth of data for everybody interested in communications. It's also a great general interest reference for all who are inclined towards history, aviation, or learning something about the secret war that took place in Laos.

In the back of the book, all of the airfields are cross-indexed by map coordinates, and also by name. Then, there is a listing of those airfields available for use by specific aircraft types, such as C-130's, DHC-6's, and the Beechcraft Barons so popular with CIA operatives in Southeast Asia. There are also complete listings of radiobeacons, search and rescue (SAR) frequencies, as well as "company" HF, VHF, and UHF frequencies, along with watch hours and modes. Lots and lots of data!

Knowing the way some federal agencies hang on to certain frequencies for extended periods of time, it will certainly be interesting checking out the comms frequencies listed here to see how they evolved over the years, and (*heh, heh*) if any might still be in use here or elsewhere.

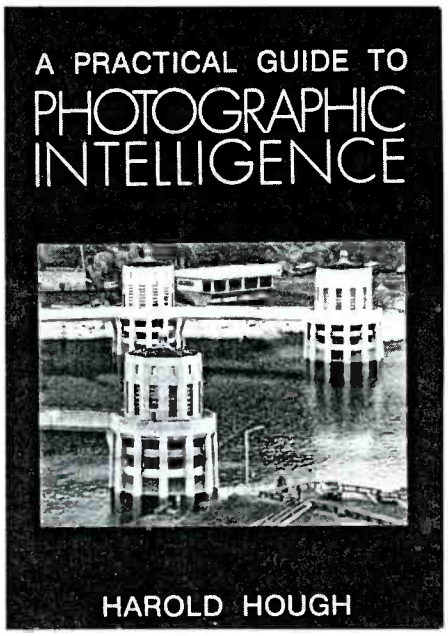
Air Facilities Data: Laos is a large-format (8½ by 11 inch) book, and it's inexpensive; only $8.95, plus $3.50 shipping to addresses in USA/Canada/APO/FPO. It's available from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. Residents of NY State, please add 68 cents sales tax.

Get The Picture?

Standing there in the storm, scanner in hand, with the rain dripping from your nose, you're wondering how much more intelligence you can collect. Naturally, you need to document everything with photos. But, just as using a scanner for gathering intelligence is a studied art, so is completing your assignment with photographic evidence.

That's where this interesting little manual comes in. It's called *A Practical Guide to Photographic Intelligence*, by Harold Hough. This is a 142-page 5½ × 8½ inch format book illustrated with photos and diagrams.

Although photo intelligence is most often associated with military spying, it has come into its own in the civilian world. In fact, photo surveillance is used every day—by corporate spies after business secrets, by private eyes verifying insurance claims and gathering divorce evidence, by law enforcement agencies collecting evidence, by journalists, by guerrillas, by paparazzi sneaking celebrity photos, by environmentalists, and many others.



This book is a complete manual on taking and interpreting surveillance photos. Using actual spy photos and many helpful illustrations, the book explains how to: Plan a photo surveillance operation; take useful photos from miles away; interpret the size of distant objects; read burned documents; reveal hidden objects using infrared techniques; develop film anywhere, any time, with minimal equipment; photograph in government and commercial facilities.

There's information on film, cameras, and accessories for best results, and lots of text about interpreting photos. There is an

explanation on how governments manage to get around Fourth Amendment guarantees against unreasonable searches. Also, there's a nation-by-nation chart showing the photographic restrictions for military and civilian sites, and how sensitive the authorities are about violations. You'd be surprised at some of the restrictions, like not taking photos of railroads in the Netherlands, or airports in Ecuador.

A Practical Guide to Photographic Intelligence stresses low-cost, simple methods to perform effective photo surveillance. It is suited for amateur and professional use. Adding the video to the audio—just the thing to enhance the value of intelligence gathered via a scanner.

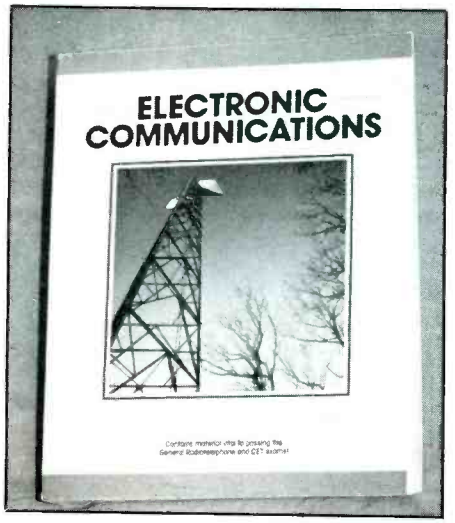
This book is $14.95, plus $3 shipping and handling, from Loompanics Unlimited, P.O. Box 1197, Port Townsend, WA 98368. Residents of Washington State add $1.67 sales tax.

Handy Reference

Electronic Communications, by John J. Dulin, Victor F. Veley, and John Gilbert, is a handy 690-page reference intended to help aspiring techs prepare for the FCC General Radiotelephone or CET exam, and to improve their progress in this rapidly expanding field.

This is a comprehensive book with a readable, easy-to-follow format that places the chapters in a logical sequence in order to avoid excessive and confusing cross-referencing. The book provides a complete intro to: AC circuits, solid-state devices, amps, radar, receivers, tube devices, filters, power supplies, oscillators, transmitters, digital systems, and microwave transmissions. Extensive appendices include information on AM/FM station elements, licensing, and FCC designations, tolerances, and standards. International System Units are used throughout the text.

Both a professional reference for techs in the field and a study guide for students, this book is a well-illustrated intro to the theoretical and practical aspects of modern electronic communications. It offers a solid understanding of the basic principles behind the current technology, however it is written for persons having at least an intermediary understanding of electronics. There are more than 550 tables, formulae, diagrams, and charts to supplement the text. An index makes everything easy to locate.



Electronic Communications is $24.95 in the USA ($32.95 in Canada) from TAB Books, Blue Ridge Summit, PA 17294-0850. Ask for book 3365. This book may also be available from some of TAB's local dealers.

In Addition . . .

Scanner enthusiast Jim Sutton has come out with a 2nd Edition of his *Scanner Radio Data* publication. This is a pretty good frequency guide covering the NY State counties of: Orleans, Monroe, Wayne, Genesee, Livingston, Ontario, Seneca, Wyoming, Yates, Cattaragus, Allegany, and Steuben. It's a 44-page publication that looks to be mimeographed, and contains public safety listings plus schools, ham repeaters, transportation, and some business listings. Some 10-codes and unit numbering details given, and there's even an unusual half-page religious rap in the back of the book that somehow attempts to tie scanner manufacturing in with Heaven. Now you know where to send your Bearcat 250 when Uniden says they can't fix it any longer! This book is $10, plus $2 postage, from A. R. Christiano Hardware, 123 Main St., Leicester, NY 14481.

Comment

Responding to many reader requests, in the January issue, this column reviewed the regional scanner directories brought out by worldwide electronics giant *Uniden*, manufacturer of *Bearcat* and *Regency* scanners. These directories, backed by the well-known *Uniden* name, have become very popular ever since they first began appearing, starting in 1989.

We opined that they were "the best regional public safety frequency guides we have yet reviewed." That opinion brought the magazine an objection from the publisher of *Police Call*, a competing scanner guide. He seemed to conclude that our remark had somehow specifically put down his publication. This was odd since we have never reviewed *Police Call* here! Therefore, obviously, it couldn't have been a reference to his publication. Even if we had previously reviewed *Police Call*, we found it unusual that a person producing a product wrote to question a reviewer's judgment and right to formulate and express a favorable or relative opinion on a competing product. It's the only time we have ever received a letter of that nature. The remark that triggered the letter was innocuous. It was the type of comment we make here quite regularly for different types of publications. We expect to continue doing so in the future, although we surely regret that in January it caused this fellow undue unhappiness by his jumping at unfounded conclusions.

One further point, Mitchell Reback, a reader in Los Angeles, wrote to say that he took issue with our use of the word "new" when referring to this series of books. He suggested someone might have been lying! Uniden previously had a two-book series, one book covering the eastern states, one covering the western states. This older series was well-known and had been produced for a number years. The series was discontinued, but some sources still offer the remaining copies at closeout prices as low as $4 per book. With both series on sale, we therefore felt the need to clarify matters and avoid confusion by the use of the term "new" to distinguish the present series from the old two-book series. The present series is still being added to; a continuing process begun only a year before our review was written. The Southern Plains edition was issued in the last half of 1990, just prior to our January issue. The Uniden Canadian directory, and Uniden's National Police Frequency Directory, both were issued in 1991. Under the circumstances, the word "new" seemed both accurate and appropriate in referring to this series. For lack of a better word, that is why it was used. With only a couple of apparent exceptions, and as usual, our sharp readers appeared to have been able to deal with our opinions and choice of words.

DX'ing Africa's Tibet

Shortwave Voices From Ethiopia Reveal The Nation's Pain

BY GERRY DEXTER

Pretend for a moment that science has invented some sort of political seismograph—an electronic gadget you could set inside the border of a country to get a reading on the degree of problems and turmoil being faced by that nation. Put such a black box inside the border of Ethiopia and the readings would surely jump off the top of the scale. Even in the best of times the list of Ethiopia's woes would be a long one. But these are extremely bad times for this ancient land. There is drought. There is starvation. There is civil war. And a hated government that no longer even controls all of its territory.

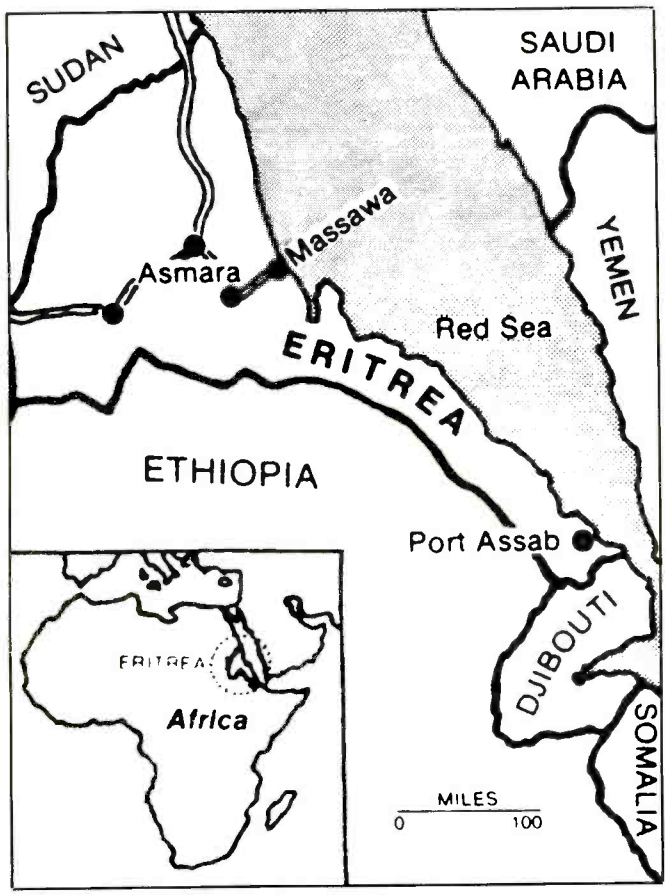
These sorts of situations almost always kick a number of intriguing radio signals into the air and the Ethiopian scene is loaded with them. But, before we get into the radio aspects, let's set the scene for a bit.

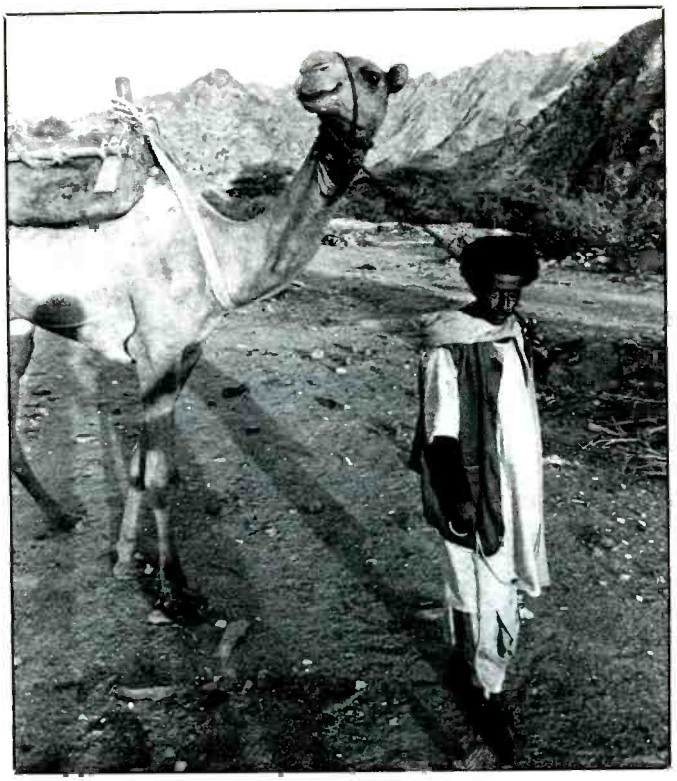
This rugged, mountainous land has been called "the Tibet of Africa". It is extremely beautiful and, in many areas, just as inhospitable. Tradition dates Ethiopia's beginnings back to the 10th century, BC, when it was supposed to have been founded by Menelik I—Solomon's first son, supposedly by the Queen of Sheeba. Written records don't appear until the first century AD, when what is now Ethiopia was the Kingdom of Aksum, founded by Arabian traders. Ancient maps show it as "Aethiopia", stretching from the Atlantic to Indian Oceans. Today, it occcupies an area of northeast Africa bounded by the Red Sea, Djibouti, Somalia, Kenya and the Sudan.

By the late 1800's the Italians had made inroads into Ethiopia but were pushed out by emperor Menelik II in 1896, though they retained Eritrea on the Red Sea. Menelik II was Ethiopia's first modern ruler and introduced roads, schools, electricity, railways and postal services. He founded Ethiopia's capital, Addis Ababa (which means New Flower).

Succession passed to Menelik's daughter, Zaudita. Serving her as regent was Ras Tafau Makonnen who became Emperor Haile Selassi (the name means "Power of the Trinity") after Zaudita died in 1930. Haile Selassi—"King of Kings", "Elect of God", "Conquering Lion of Judah"—became the 225th ruling monarch of Ethiopia. He created a constitution, neutralized feuding private armies and did much to unify the nation. In later years he devoted much of his energies to the cause of African unity.

Haile Selassi was in exile between 1935-41 while his country was in the hands of the Italians. Eritrea joined Ethiopia as a province in 1952, but secessionist forces went to work almost at once. In Addis, Selassi survived a coup attempt in 1960 and put down student riots in 1968. Dissatisfac-





On the road in Eritrea (ERC photo).

August 15, 1980

VOICE OF REVOLUTIONARY ETHIOPIA

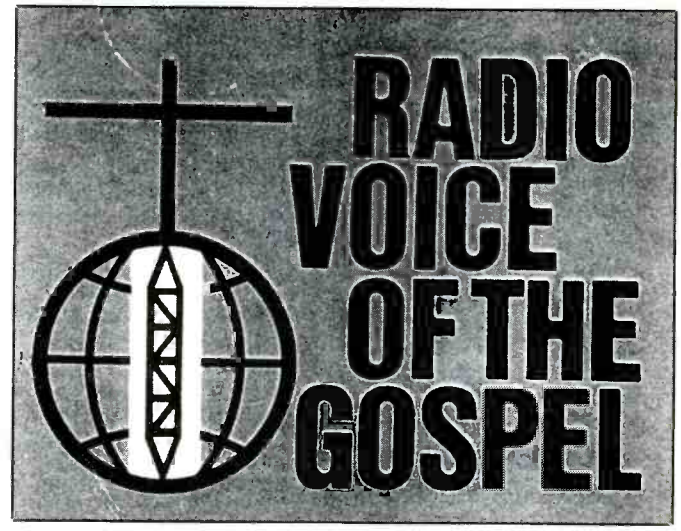
Dear Mr. Dexter:
Your reception report dated: February 2, 1980 has been examined. This QSL card confirms that you were listening to VOICE OF REVOLUTIONARY ETHIOPIA on: February 2, 1980 from: 0330-0356 GMT on the frequency of: 7110 KHz.

We thank you for showing an interest in our broadcasts.

AUDIENCE RELATIONS OFFICE

Asst. A.R.O.

A QSL from the then Voice of Revolutionary Ethiopia.



Ethiopia took over ETLF—the Lutheran's Radio Voice of the Gospel. Note that the VOE's external service uses ETLF's old PO Box!

tion with the aging ruler and a powerless legislature led to a 1974 coup by the army. Selassi retained his throne. A new, army-installed cabinet was ineffective. In September, Selassi was deposed and arrested. He died in prison the following year.

The new leadership, a collective effort by an anonymous group which called itself the Dergue, proclaimed Ethiopia a socialist state. Dergue members jockeyed for power over the next few years, killing off several of their members in the process. Eventually, 32 year old Lt. Col. Menfistu Haile Mariam gained control. He declared Ethiopia a Marxist state in 1980.

Eritrea, with a population of about 2.5 million, was an Italian colony for 60 years before World War II, was controlled by the British for several years after the war and, as noted earlier, became part of Ethiopia in 1952. It has been fighting to regain its independence for some 30 years, in what has become Africa's longest war. The main resistance organization evolved into today's Eritrean People's Liberation Front which is Marxist. The EPLF works more and more in concert with the Tigre People's Liberation Front (Tigre is another Ethiopian province). The TPLF is also Marxist but does not seek independence so much as an end to the government in Addis.

Oddly, the Eritreans began their effort with backing from the USSR, while the US supported Addis Ababa. By 1977, when the nature of the new government became clear, the US dropped its support and the USSR stepped in. Today, both the US and the USSR are in favor of a negotiated settlement which would leave Ethiopia intact. The EPLF receives most of its arms through capture and also obtains South African-made arms via Iraq (at least it did until the Gulf crisis), Israel and several Arab states, including Libya, the Gulf states, Yemen and Saudi Arabia. The Soviets have given the Menfistu government hundreds of millions of dollars worth of arms and other aid but recently that support has been cut way back.

Mengistu renounced Marxism in 1990. The government no longer controls either Eritrea or Tigre. Some of the other provinces have at least nominal liberation front organizations which seek at least some form of increased autonomy from Addis Ababa.

The radio aspect of this unseemly picture is a fairly extensive one. Although there is a great deal on the air, information about what is really going on is difficult to obtain. In addition, most of the broadcasts take considerable amounts of DX'ing prowess and luck in order to be received in North America. Some have yet to be reported here.

The government-owned radio in Addis Ababa is the Voice of Ethiopia, known, up until last year, as the Voice of Revolutionary Ethiopia. In Haile Selassi's time it was simply "Radio Addis Ababa". The station uses shortwave for both its domestic and external services, although the latter is rather limited, being directed only to East Africa and Europe.

The Voice of Ethiopia's domestic service operates from 0030-0600 (Sundays 0400-0800) and 0900-1000 (Saturdays and Sundays 1000-1400) and at 1500-2000. Programs are in Amharic, except for broadcasts in Tifrigna at 1500-1600 and Oromigna at 0500-0600 and 1600-1700. The domestic services uses 100 kilowatts on two frequencies—5990 and 7110. The latter can sometimes be logged in North America at the 0330 sign on.

The external service operates to East Africa from 1200-1300 on 7165 and 9560, 1300-1400 on 7165 only, 1400-1800 on 9560 only, with English at 1500-1600. Broadcasts to Europe are at 1800-1900 (in English) on 9660. So-called "liberation broadcasts" occupy the 1900-2000 period on 9595. These include the "Radio Freedom" broadcasts of the African National Congress at 1930-2000.

Neither of the Voice of Ethiopia's services has ever been known for reliability in the QSL department. The domestic service can be reached at PO Box 1020, Addis Ababa and the external service at PO Box 654.

The Voice of Ethiopia's facilities include those which once belonged to the Radio Voice of the Gospel, a station operated by the Lutheran World Federation, which went on the air in 1963. The new Ethiopian government nationalized the station in 1977 and sent all non-Ethiopians packing.

There are a number of radio voices speaking on behalf of various opposition groups. The longest-running of these is the Voice of the Broad Masses of Eritrea (or "Massed Broads" as one wag once put it). This is the radio of the Eritrean People's Liberation Front, with transmitters believed to be within EPLF-held territory, near the border with the Sudan. Broadcasts are in Tigrigna, Tigre, Arabic and Amharic and begin at 0400, 0900 and 1400. Frequencies used (all of them variable) are 3712, 3940, 6297, 7020, 10010 and 14305. For North American listeners 0400 would seem the best reception opportunity. There have been a handful of receptions of this one over the past several years. The station has been QSL'd via its US connection, the Eritrean Relief Committee, 475 Rochester Drive, Room 907, New York, NY 10015.

Voice of the EDROM (Ethiopian Democratic Officers' Revolutionary Movement) began broadcasts this past summer, with a Sunday only schedule of 0430-0500 on 7886 and 9335 and 1930-2000 on 7905 an 9315. Broadcasts are probably in Amharic, but that's not for sure and nothing else is yet known about this station, nor have their been any reports of its being heard in North America.

The Voice of Ethiopia on the Path to Democracy is operated by the Ethiopian People's Revolutionary Party and it, too, began its operations this past summer. It has

a schedule on 7010 from 0330-0400 and 1430-1500. It has been tentatively heard in Canada to closing at 0330, indicating that the 0330-0400 schedule may have changed. The EPRP says it broadcasts from liberated territories inside Ethiopia. Its programs are in Amharic but, as of last June, the group was planning to add broadcasts in Tigrigna and Oromigna. The station is supposed to also have a 31 meter band outlet but no specific frequency is known or has been traced. EPRP says it wants to establish democracy in the country. In the US, the EPRP can be reached at P.O. Box 710358, Dallas, TX 75371.

The Radio Voice of Ethiopian Unity is run by the Ethiopian People's Democratic Alliance and broadcasts over transmitters belonging to the Sudan government. It has been active since 1987 and its most recent schedule is 1800-2000 on 9540 and 11625, though both frequencies may not be active at the same time and the latter may vary by several kHz. The station has been picked up in North America a few times. There is apparently no address known for this one.

The Voice of the Tigre Revolution began in 1981, at first using the facilities of the Voice of the Broad Masses of Eritrea. More recently, they have switched to other facilities. The station claims to be broadcasting from liberated areas inside Tigre Province. The most recent schedule is 0500-0600 on 7886 and 9335 and 1500-1600 on 7820 and 9315. There's no address available for the TPLF, although the group is believed to be headquartered in Mogadishu, Somalia.

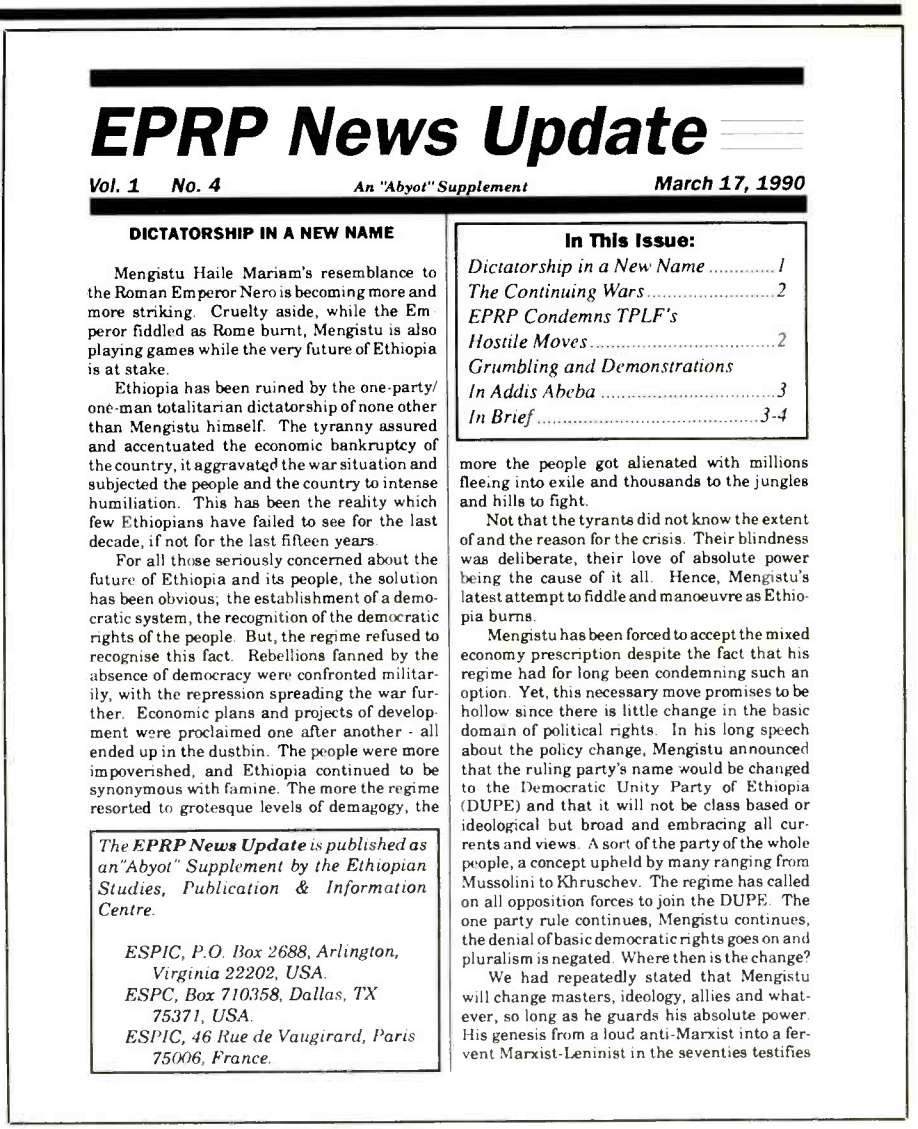
Voice of the EPPDF—Ethiopian People for Peace, Democracy and Freedom speaks for the Ethiopian People's Revolutionary Democratic Front and the Ethiopian People's Democratic Movement. The station came into being last April, apparently as a result of combining two other clandestines—the Voice of the Tigre Revolution and Voice of the Broad Masses of Ethiopia. Broadcasts are in Amharic and are daily at 0400-0500 (Sundays to 0430) on 7886 and 9335. Also at 1900-2000 daily (to 1930 Sundays) on 7905 and 9335. There's no known address for this one, nor are we aware of any North American loggings, although the 0400 time slot would seem to be a possibility.

The Voice of Oromo liberation speaks on behalf of the Oromo liberation Front and airs via Sudanese government radio at 0330-0400 and 1630-1700 on 9550. No North American loggings. No known address. No QSL's.

Another station in support of the Oromo is the Voice of The Broad Oromo Masses which also began last summer. This airs at 0400-0445 on 7886 and 9335 and 1500-1545 on 7820 and 9315. It's not known what group supports this station or where it is based.

It is interesting to note that several of these clandestines have a couple of things in common. They all use a particular group of frequencies (7820, 7886, 7905, 9315, 9335) and began operating last summer. This leads to a strong suspicion that we're talking about a single facility here though we can't say who controls it, or from where.

We can say, though, that as long as the Ethiopian problems remain unsettled we can expect to see the clanestine broadcasts continue, although perhaps with further reshufflings, comings and goings. Hearing all of these will be next to impossible for North American-based monitors. But if you log only the Voice of Ethiopia and perhaps one of the opposition voices you will have managed to tune in on part of a long and very nasty war that the west, with worries of its own, manages to ignore. ■



EPRP News Update

Vol. 1 No. 4 *An "Abyot" Supplement* *March 17, 1990*

DICTATORSHIP IN A NEW NAME

Mengistu Haile Mariam's resemblance to the Roman Emperor Nero is becoming more and more striking. Cruelty aside, while the Emperor fiddled as Rome burnt, Mengistu is also playing games while the very future of Ethiopia is at stake.

Ethiopia has been ruined by the one-party/one-man totalitarian dictatorship of none other than Mengistu himself. The tyranny assured and accentuated the economic bankruptcy of the country, it aggravated the war situation and subjected the people and the country to intense humiliation. This has been the reality which few Ethiopians have failed to see for the last decade, if not for the last fifteen years.

For all those seriously concerned about the future of Ethiopia and its people, the solution has been obvious; the establishment of a democratic system, the recognition of the democratic rights of the people. But, the regime refused to recognise this fact. Rebellions fanned by the absence of democracy were confronted militarily, with the repression spreading the war further. Economic plans and projects of development were proclaimed one after another - all ended up in the dustbin. The people were more impoverished, and Ethiopia continued to be synonymous with famine. The more the regime resorted to grotesque levels of demagogy, the more the people got alienated with millions fleeing into exile and thousands to the jungles and hills to fight.

Not that the tyrants did not know the extent of and the reason for the crisis. Their blindness was deliberate, their love of absolute power being the cause of it all. Hence, Mengistu's latest attempt to fiddle and manoeuvre as Ethiopia burns.

Mengistu has been forced to accept the mixed economy prescription despite the fact that his regime had for long been condemning such an option. Yet, this necessary move promises to be hollow since there is little change in the basic domain of political rights. In his long speech about the policy change, Mengistu announced that the ruling party's name would be changed to the Democratic Unity Party of Ethiopia (DUPE) and that it will not be class based or ideological but broad and embracing all currents and views. A sort of the party of the whole people, a concept upheld by many ranging from Mussolini to Khruschev. The regime has called on all opposition forces to join the DUPE. The one party rule continues, Mengistu continues, the denial of basic democratic rights goes on and pluralism is negated. Where then is the change?

We had repeatedly stated that Mengistu will change masters, ideology, allies and whatever, so long as he guards his absolute power. His genesis from a loud anti-Marxist into a fervent Marxist-Leninist in the seventies testifies

In This Issue:

*The **EPRP News Update** is published as an "Abyot" Supplement by the Ethiopian Studies, Publication & Information Centre.*

ESPIC, P.O. Box 2688, Arlington, Virginia 22202, USA.
ESPC, Box 710358, Dallas, TX 75371, USA.
ESPIC, 46 Rue de Vaugirard, Paris 75006, France.

Newsletter of the EPRP, which operates the Voice of Ethiopia on the Path to Democracy.

NEW PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS

Frequency Counter Uses Windows 3.0 For Control, Display; Implements Unique Self-Tuning Radio

Optoelectronics Inc., announces a radically new type of Universal Frequency Counter-Timer in the form of a 9-inch drop-in card for personal and laptop computers. It uses Windows 3.0 as a control panel and display window, and it directly tunes radio receivers such as the ICOM R7000, resulting in a uniquely configured self tuning radio.

Opto's new Model PC-10 Universal Frequency Counter-Timer is a 10 Hz to 2.4 GHz radio instrument that competes with big name products costing ten to fifteen times as much. It measures, captures and analyzes discrete and average frequency readings, pulse width, time interval, period and the ratio between two frequencies. It provides a useful "reciprocal counting" feature for 8-digit resolution of low frequency readings.

PC-10 has at its heart a 200 MHz custom CMOS ASIC and three bipolar MMICs that reduce parts count to just 23 ICs and some glue parts. It provides a unique blend of sensitive radio instrumentation and PC-based data manipulation and analysis for use in laboratories, cellular telephones, radio sales, service and calibration depots; by computer hackers, ham radio operators and other areas where high sensitivity, wide dynamic range, ease of use and low cost are important.

PC-10 operates as a self-tuning radio—for surveillance applications where frequency scanning is too slow, it identifies the nearest signal source and tunes a companion receiver to it. User-controlled lockout frequencies are written to a file to override local broadcasters and other anticipated noise sources.

PC-10 is simple to install, set up and use. You simply drop it into an 8088 or higher-based IBM compatible PC with Windows 3.0. Establish one of 16 addresses with a DIP switch. Call up the CONFIGURATION window to set the measurement units you want (GHz, MHz, KHz, Hz; nsec, usec, msec or sec), or use it as a discrete event counter or a RPM tachometer for motors.

PC-10's ASSIGNMENTS window controls both input and reference signal conditions such as gain, prescaler, input impedance, polarity, hysterisis, interval and ratio (2 amplifiers at once). For lab measurements, sometimes you need maximum control to count marginal signals with noise, jitter, bad duty cycles, etc.

PC-10 accepts any input signal of 10 mV or greater from subaudio to 2.4 GHz, determines its frequency in terms of a + 1 PPM temperature compensated crystal oscillator (TCX), and then displays it with up to 10-digit resolution. For optimum balance between sample time and resolution, the unit's input gate is continuously variable from 1 msec to 28 seconds.

PC-10 offers a unique software-calibration feature: Input any reference signal and enter its frequency. PC-10 determines the reference frequency, compares it to what you say it is, then writes the difference to an initialization file. Then, whenever PC-10 takes a measurement, it automatically corrects the reading according to the calibration data. Windows 3.0 maintains all calibration data even through power-down cycles.

Opto's new Model PC-10 Universal Frequency Counter-Timer is priced at only $335 in unit quantities. Delivery is quoted off-the-shelf. Model AP10H option ($295) provides custom input amplifiers, signal conditioning and frequency prescalers.

For more information contact: Optoelectronics Inc., 5821 NE 14th Avenue, Fort Lauderdale Florida 33334, or circle 101 on our Readers' Service.

"Use It Anywhere" Car Alarm

Maxon Systems Inc. introduced a portable security device suitable for cars, vans, and other vehicles. The motion sensor alarm, designated PAA-1, is a highly sensitive unit which can be hung from a vehicle's window. When activated by motion or vibration, the unit emits a piercing, siren-like noise at 100 dB.

Requiring no wiring or installation, the Maxon PAA-1 is an ideal security device for those want car security, but wish no permanent installation in the car. Since the 10-ounce unit is easily portable and can be mounted in seconds, it is also suitable for travelers wishing to protect valuables left in a rented car or for those who want to transfer an alarm from one car to another.

The Maxon PAA-1 is simply hung on the window by its mounting bracket and the window is then closed over the bracket. The

electronics, including the motion and vibration sensing circuitry and the control, hang inside the vehicle. The siren alarm hangs on the outside.

To prevent vandals from disabling the PAA-1, the case is of high-impact, carbon-loaded polycarbonate plastic and the chassis and battery cover is 20 gauge steel.

A three-position sensitivity switch enables the PAA-1 to be set for different conditions. For instance, when used in a high traffic area on a narrow street, the low sensitivity setting would be used so that passing cars would not trigger the unit. Conversely, in an open and quiet area it can be assumed that any motion represents a threat and the high sensitivity setting would be used.

An arming delay of 8 seconds allows the door to be closed or other user activity to take place without activating the unit. An audible "chirp" signal indicates arming is complete. A four second delay permits the owner to unlock the door and turn the unit off.

The alarm itself sweeps from 2500 Hz to 3300 Hz at a level of 110 dB. The alarm time is 40 seconds with a three-second rearm cycle.

While its primary use will be for car security, Maxon sees other applications for the PAA-1. Since it is easily portable, the unit can provide an additional measure of night security in a hotel room. After properly locking the door, the PAA-1 can be placed near it. If there is any attempt at entry, the alarm will sound and the desk can be notified.

Maxon's PAA-1 portable alarm system requires four AAA batteries which provide a full year of typical use. When battery strength has dropped from the 6 volts of full power to 4.25 volts, the unit emits a short chirp when turned on to indicate low battery strength. The PAA-1 has a suggested retail price of $119.95.

For further information about this and other Maxon products, contact Maxon Systems Inc., 8610 NW 107th Terrace, Kansas City, MO 64153, or circle 102 on our Readers' Service.

WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS

CB Radio Station That Wreaked Havoc On Area TV Sets Shut Down — Equipment Seized

Illegal radio equipment was seized from a Wyandanch, NY man after area residents had continued to complain of interference to television and other home entertainment electronic equipment, the Federal Communications Commission said. The seizure took place under Federal civil forfeiture provisions initiated by the U.S. Attorney for the Eastern District of New York, Andrew Maloney.

United States Marshals, with the assistance of Engineers from the FCC's New York Office, executed with the in rem seizure at the home of Rohan Monrigh. CB radio equipment was also seized from his automobile.

The seizure took place after the radio operator had ignored FCC directives to cease operating his CB radio until he could eliminate the interference.

The FCC had received petitions signed by 106 area residents that Monrigh's CB radio transmissions could be heard on their televisions and caused picture breakup. The CB transmissions made TV viewing difficult, if not impossible. Residents also heard the CB transmissions while they were making telephone calls—his CB effectively disrupting telephone communication.

After several FCC letters to Monrigh's about his CB went unheeded, the FCC fined Monrigh $1000 for unauthorized CB operation.

The FCC monitored and found Monrigh operating his CB station with excessive power and on frequencies not authorized for use in the Citizens Band Radio Service.

The Department of Justice is proceeding with civil action against the equipment. Christopher Lehmann, Assistant U.S. Attorney is handling the case for the Government.

The seized radio equipment included linear amplifiers capable of boosting transmitter power to 2000 watts, well above the legal 4 watt limit. Linear amplifiers are illegal to manufacture, sell or use for CB radio since their use causes severe interference to licensed radio services.

Marine Center Fined For Illegal Operation

Boat/US Marine Center in South Norwalk, CT has been fined $1000 for unlicensed VHF marine radio operation, the Federal Communications Commission said. A VHF Marine radio in the marine supply store, which was stuck in the transmit mode, caused interference on Long Island Sound to Channel 16 (156.8 MHz) the international distress and calling frequency.

Personnel at the USCG Group Long Island Sound monitored the continuous transmissions and attempted to locate the signal. The FCC was alerted, and using mobile radio-direction finding equipment, an FCC Engineer located the transmitter at the marine supply store.

Operation of an unlicensed transmitter is a violation of Federal law and the Commission has an ongoing program to located, shut down and fine unlicensed radio stations. The action was taken as part of the Commission's continuing effort to preserve the integrity of the marine radio system, a system that boaters depend on for safety while at sea.

During the time Boat/US Center's radio was continuously transmitting, area boaters would have great difficulty in contacting other vessels or land stations such as the Coast Guard on Channel 16.

Unlicensed marine radio operators may be subject to fines of up to $100,000 and one year in prison.

Short-Spacing Of Specialized Mobile Radio Systems Proposed

The Commission proposed amending Part 90 of its rules to permit the short-spacing of Specialized Mobile Radio (SMR) systems upon concurrence from co-channel licensees or when technical showings demonstrate that co-channel licensees are afforded sufficient interference protection.

Commission rules require that SMR systems be located at least 70 miles from co-channel systems, except on certain mountain peaks in the states of California and Washington where the separation must be at least 105 miles. Many SMR operators find it technically possible and mutually desirable to locate their systems closer together, the Commission permits such short-spacing on a waiver basis where there is mutual agreement among co-channel licensees. It also permits short-spacing on a waiver basis if a technical showing of sufficient interference protection can be made, even in the absence of mutual agreement among co-channel.

Previously, in this docket, the Commission has proposed permitting SMR systems to operate at reduced mileage separations without requiring a waiver if all affected co-channel licensees concurred to the short spacing. The Commission also stated its intent to continue to permit short-spacing based on a technical showing of sufficient interference protection, even in the absence of such concurrence.

In this Further Notice of Proposed Rulemaking, the Commission is soliciting comment on amending the rules to permit short-spacing requests based on technical showings without requiring a waiver.

Shared Use Criteria For Private Land Mobile Frequencies

The Commission expanded eligibility and shared use criteria for private land mobile frequencies. These changes, the Commission said, will enhance the public interest by creating additional service options, promoting more efficient use of the spectrum, and extending the availability of private land mobile services to a broader range of end users.

This action amends the Commission's rules to: 1) permit private carrier paging licensees operating on paging-only channels in the Business Radio Services to provide radio communications service to all Part 90 eligibles and to the Federal Government; and 2) allow Private Carrier Paging licensees operating in the 929-930 MHz band to serve the Federal Government. These changes will extend the benefits of a private radio communications service to a greater number of users by providing additional service options for eligibles in a manner responsive to present day demands and capabilities.

The Commission based its decisions in this proceeding on the ability of paging-only frequencies to handle additional traffic in contrast to the congestion and need for long term spectrum management on two-way channels. The Commission declined, however, to introduce new private carrier options on two-way frequencies in recognition of current congestion on those frequencies, and the need for long term spectrum management efforts.

Inquiry Into Preemption Of State And Local Laws For Transceivers Capable Of Reception Beyond Amateur Frequency Allocations

In response to a request for a declaratory ruling filed by the American Radio Relay League (ARRL), the FCC initiated an inquiry into the preemption of certain state statutes and local ordinances that may effectively prohibit the mere possession of mobile transceivers used by Amateur Radio Service licensees.

The laws at issue, which are often called "scanner laws," prohibit the possession of radio receivers in vehicles when the receivers are capable of receiving police or other

public safety channels. Penalties under the laws include fines and the confiscation of equipment.

In support of its position, ARRL recounts instances where amateur operators have had their equipment confiscated while simply travelling out of their home state or locality, where there is no scanner law, and through another jurisdiction that does have such a law.

The Commission noted that the laws and issues addressed in the inquiry would concern only the *reception* capability of amateur transceivers, and *transmission* by an amateur operator on unauthorized frequencies being clearly prohibited.

On March 15, 1990, the Commission released a public notice inviting comment on ARRL's request. The Commission has now stated that it would be helpful to receive additional information. The Commission noted, for instance, that it would be helpful to have additional information on the technical and financial feasibility of modifying existing transceivers to remove the capability to receive police or other public safety channels, and on the current and future marketplace availability of mobile equipment meeting the restrictions of the subject law. The Commission stated that comments filed in response to the previous public notice will be considered to be filed in response to the Notice of Inquiry as well, and therefore need not be refiled.

Experimental Licenses

The Commission, by its Office of Engineering and Technology, Frequency Liaison Brance took the following actions:

KF2XBO, Hughes Aircraft Company, new experimental to operate on frequencies in the 13,5000-15,500 MHz range to fulfill U.S. Government contract (NASA) FX: El Segundo, (Los Angeles, CA)

KF2XBP, Hughes Aircraft Company, new experimental to operate on frequencies in the 9345-9505 MHz range for development of a modular combat fire control system. FX: West Covina, CA

KF2XBT, Motorola, Inc., new experimental to operate on frequencies in the 1740-1745 and 1835-1840 MHz range for export purposes. MO: Within 5 miles radius of fixed. FX: Arlington Heights, (Lake), IL.

KF2XBU, Diablo Research Corp., new experimental to operate on frequency 915 MHz for research and development of devices used to update instore information. MO: San Meteo and Santa Clara Counties, CA.

KE2XEX, Tokyo Broadcasting System, Inc., new experimental to operate on frequencies 1636.5-1645.0 MHz and 1535.0-1543.5 MHz for communication used during natural disasters and emergencies. MO: Throughout various countries in areas of extreme remoteness.

KE2XLH, State Of Washington, new experimental to operate on frequency 401.7145 MHz for transmitting weather telemetry information. (Use of GOES Satellite) MO: State of WA.

KF2XBW, NYNEX Science and Technology, new experimental to operate on various frequencies for development of radio technique for existing or new services and testing/demonstration of equipment in connection with the type approval. FX&MO: Continental U.S.

KF2XBX, NYNEX Science and Technology, new experimental to operate on various frequencies for scientific and technical radio research. FX&MO: Continental U.S.

KF2XBZ, RH Trading, new experimental to operate on frequencies 1635.5-1645 MHz for demonstration of system at trade shows (INMARSAT). FX&MO: Within Continental U.S.

KF2XCA, IWL Communications, Inc., new experimental to operate on frequencies 1635.5-1645 MHz for demonstration of system at trade shows (INMARSAT). MO: Continental U.S.

KF2XCB, Mine Safety Appliances Co., new experimental to operate on frequencies 150-174 MHz for preliminary EMT susceptibility testing of gas detection equipment to ANSI/ISA Standard S12, 12, Part 1. MO: Mars (Butler), PA.

KF2XCE, Able Communications Co., Inc., new experimental to operate on frequencies 1636.5-1645 MHz and 1535-1543.5 MHz for demonstration of INMARSAT earth station to clients and prospective customers. FX: Pearland (Brazoria), TX.

KF2XCF, Mackay Communications, Inc., new experimental to operate on frequencies 1626.5-1646.5 MHz and 1530-1545.0 MHz for demonstration of Saturn C unit to prospective customers. MO: Along the West Coast of the U.S.

KF2XCG, Mackay Communications, Inc., new experimental to operate on frequencies 1626.5-1646.5 MHz and 1530-1545.0 MHz for demonstration of Saturn C unit to prospective customers. MO: Along the East Coast of the U.S.

KF2XCK, Mackay Communications, Inc., new experimental to operate on frequencies 1626.5-1646.5 MHz and 1530.0-1545.0 MHz for demonstration of Saturn C unit to prospective customers. MO: In the Gulf of Mexico.

KF2XCL, the Coca-Cola Co., new experimental to operate on frequencies 1636.5-1645 MHz for communication during an emergency or a natural disaster. MO: Continental U.S.; FX: Atlanta, (Fulton), GA.

KF2XCM, Flam & Russell, Inc., new experimental to operate on frequencies 9.2-10.4 GHz to fulfill U.S. Navy Contract. FX: Horsham (Montgomery), PA.

KF2XCP, Westinghouse Communications Services, Inc., new experimental to operate on frequencies 9600-9900 MHz to fulfill U.S. Navy Contract. FX: Ann Arundel County, MD.

KF2XCS, Geosyna Satellite Services, new experimental to operate on frequencies 915-925 MHz for development and de-

monstration of a satellite platform. FX: Long Branch (Monmouth), NJ.

KF2XCT, Virginia Tech, New experimental to operate on various frequencies for research and experiment of wide band indoor radio wave propagation. FX&MO: Blacksburg, and Roanoke, VA.

KF2XCV, Norden Systems, Inc., new experimental to operate on frequencies 5450-5825 MHz to fulfill U.S. Navy Contract. FX: Melville, (Suffolk), NJ.

KF2XCY, TIW Systems, Inc., new experimental to operate on frequencies 19.2-20.2 GHz and 29.0-30.0 GHz to fulfill NASA contract. FX: Sandia Park (Bernadillo), MN.

KF2XCZ, Westinghouse Communications Services, Inc., new experimental to operate on frequencies 1250-1350 MHz to fulfill U.S. Navy Contract. FX: Dorsey (Ann Arundel County), MD.

KF2XDB, American Telezone, new experimental to operate on frequencies 2400-2483.5 MHz to develop and test PCS technology. FX&MO: Eastern, TX.

KF2XDF, American Telezone, new experimental to operate on frequencies 2400-2483.5 MHz to develop and test PCS technology. FX&MO: Southern, CA.

KF2XDG, Litton Industries, Inc., new experimental to operate on various frequencies to fulfill U.S. Navy Contract. MO: Colorado Springs, CO.

KF2XDI, SAIC Range Systems, new experimental to operate on frequency 141 MHz to test equipment prior to export (Republic of China). FX&MO: San Diego, CA.

KF2XDK, Colorado State University, new experimental to operate on frequency 2725 MHz to fulfill U.S. government contract (National Science Foundation)

KF2XDL, Bellsouth Enterprises, Inc., new experimental to operate on frequencies 846.50 and 849.0 MHz for technical trial of CT-2 units. FX: Athens (Clarke), GA; MO: Within 15 mile radius of fixed.

KF2XDM, ITT Gilfillan, Inc., new experimental to operate on frequencies 5250-5850 MHz to design, build, test, and demonstration an "Active Aperture" air defense radar. FX: Near Newhall (Los Angeles), CA.

KF2XDN, Ford Communications, Inc., new experimental to operate on frequency 94 GHz to research short range anti-collision automotive radar system. MO: Dearborn, MI.

KF2XDP, Duke University, new experimental to operate on various frequencies for communications essential to research project. FX: Beaufort, (Carteret), NC.

KF2XDQ, Litton Industries, Inc., new experimental to operate on various frequencies to fulfill U.S. Navy Contract. MO: Colorado Springs, CO.

KC2XJR, Airborne Cable Television, Inc., new experimental to operate on frequencies in the 2500-2690 MHz range for development of equipment to be used in research program of the wireless cable industry. MO: Within 8 mile radius of fixed; FX: Sarasota, FL.

KF2XDO, Motorola, Inc., new experimental to operate on frequencies 1855 and 1985 MHz to establish a microwave link for interference tests and measurements. FX: Chicago, (Cook), IL.

KF2XDY, PCS Network, Inc., new experimental to operate on frequencies 901-902 MHz and 940-941 MHz for development of PCN technology. FX&MO: Boston, MA.

KF2XDZ, PCS Network, Inc., new experimental to operate on frequencies 901-902 MHz and 940-941 MHz for development of PCN technology. FX&MO: New York, NY.

KF2XED, PCS Network, Inc., new experimental to operate on frequencies 901-902 MHz and 940-941 MHz for development of PCN technology. FX&MO: Philadelphia, PA.

KF2XEB, Upsala Telecommunications Technetronic, Inc., new experimental to operate on various frequencies for technical and scientific radio research of frequency spectrum (2596-2644 MHz). FX: Upsala, (Morrison), MN.

KF2XEC, Upsala Cooperative Telephone Assoc., new experimental to conduct technical and scientific radio research of frequency spectrum (2506-2644). FX: Upsala, (Morrison) MN.

(Continued on page 76)

POP'COMM Reviews:

Universal Radio's M-1000 Decoder Card

Are you a shortwave listener who likes to eavesdrop on "non-traditional" communications? If so, you should investigate Universal Radio's M-1000 decoder card designed for use with IBM-compatible computers. The M-1000 decoder card permits reception of most modes of digital communications including Morse code, Baudot teletype, ASCII, AX.25 packet, and practically all existing formats of SITOR (SImplex Telex Over Radio) including Mode A, Mode B, ARQ-M2 and M4, ARQ-E, and ARQ-E3. Additionally, the M-1000 offers shortwave facsimile (FAX) reception, as well as special display and self-diagnostic modes for the advanced operator. Quite an impressive package!

Overview

Unlike most multi-mode controllers or decoders, the M-1000 card is installed in one of the IBM-compatible computer's expansion slots, inside the computer. The very well written 69 page owner's manual includes step-by-step instructions for this installation. After the hardware installation is complete, the owner's manual again assists you with the software installation, either onto your computer's hard disk drive or floppy disks. After the software installation and initialization are complete, you are ready to hookup your favorite shortwave receiver to the M-1000.

The software programs supplied with the M-1000 are "menu" driven; thus, initiation of any mode is simple. All modes, except the FAX mode, are initiated by typing DECODER. The FAX mode uses the DECFAX command. Modes, speeds, and other aspects of normal operation can be controlled by the arrow keys that highlight one of the items on the status line or by the use of the function (F) keys on the computer's keyboard in conjunction with the Shift and Ctrl keys.

Operation on all modes is simplified by the on-screen bar-graph tuning display provided by the M-1000's software. This bar-graph display indicates input level, filter tuning, or mark/space level. The versatility of M-1000 is amazing! If you have been confused by digital communications terms such as "high tone sets", "shift", "unshift on space", "sense", and others of nondescript nature, the M-1000 is a blessing. The card not only covers all of the typical possibilities, it can do so automatically.

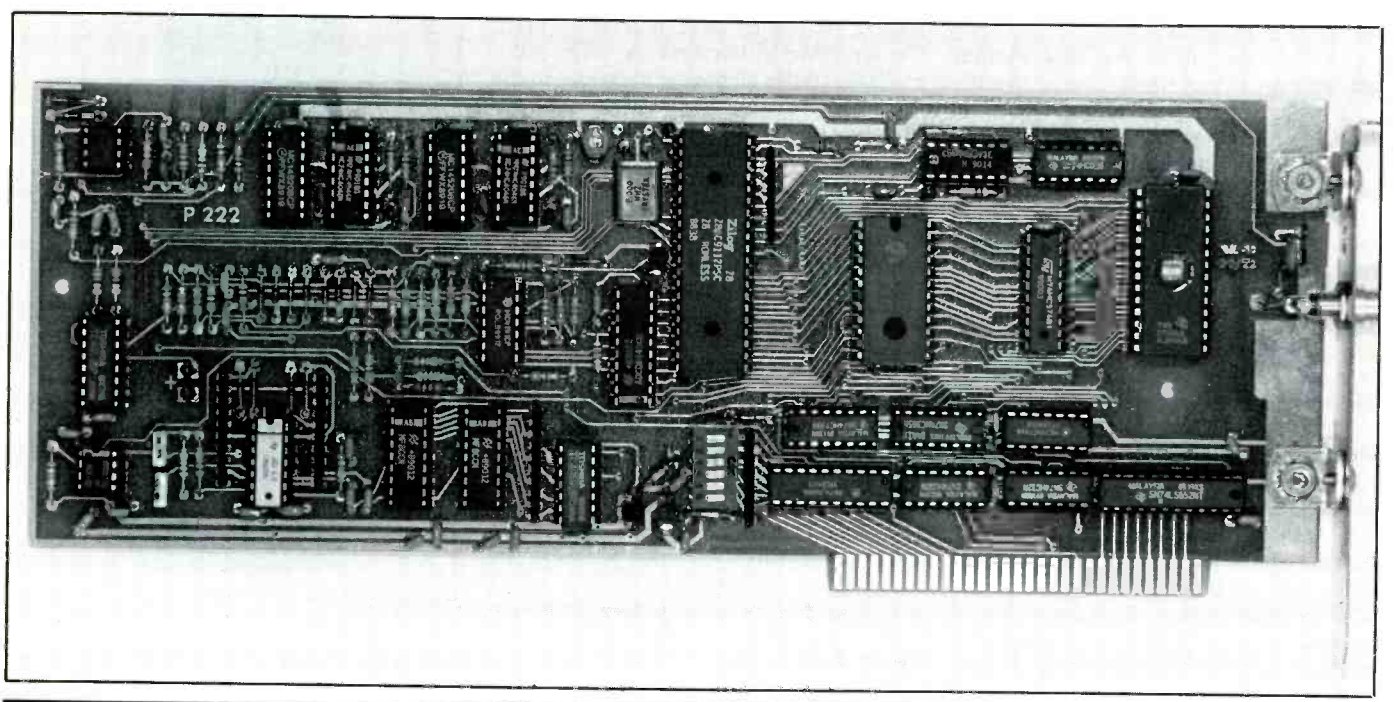
For example, "auto-ranging" tracks Morse code speed, "automatic filter tuning" determines the frequency of the tones used in Baudot teletype, and "auto" automatically selects between Sitor Mode A and Mode B without operator intervention. These are just a few examples of the user-friendly features of the M-1000.

Summary

Space does not permit a thorough technical examination of the M-1000; from its versatile mode and data rate coverage in the digital modes to its colorful and resolute imaging capability in the FAX mode, the M-1000 excels. The demodulator section in the M-1000 card is a state-of-the-art design using microprocessor controlled switched capacitance filters for optimum and versatile bandwidth control. And, of course, full printer support is offered allowing hardcopy of text and pictures. If you own an IBM-compatible computer and wish to monitor the digital communications modes, the M-1000 decoder card should be given serious consideration.

Please contact Universal Radio, 1280 Aida Drive, Reynoldsburg, OH 43068 for more information. Price of the M-1000 decoder card, including software on diskette, is $399.95. ■

Reviewed by Pop'Comm staff.



TELEPHONES ENROUTE

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

Comcast Corporation, of Philadelphia, has applied to the FCC for authority to experiment with new Personal Communications Services (PCS) technology in five local markets where the company provides cable TV service.

The Comcast Corporation, relative to other PCS experimental applications, is unique in proposing experiments to interconnect PCS signals with both a cellular phone network and a cable distribution system as well as testing with cable systems only.

PCS is an innovative wireless communications technology similar to cellular service, but intended to provide more consumers ready-access to portable voice comms at a lower cost.

Using a small, portable handset, calls would be made and received just the same as using an ordinary telephone or cellular phone. The portable handset would communicate through a small transceiver serving a so-called microcell. The microcell's coverage might be a single office building or neighborhood, as compared to much larger areas served by cells in cellular systems. The signals would then, in turn, travel via other existing networks—for example, the existing terrestrial and satellite phone networks—to connect the end users.

The Comcast experiment will explore using existing cable TV networks to route calls from PCS transceivers. In effect, the tests should determine if today's cable TV systems can provide an interconnection role similar to that now provided by local wireline phone companies.

Comcast has applied for experimental authorization to run these tests in five diverse areas, namely Baltimore, Philadelphia/Trenton, West Palm Beach, Indianapolis, and Los Angeles. In each of these areas, about 500 subscribers will participate in the experiments. The cellular/cable interconnection part of the test will be in Trenton (NJ), where Comcast operates both the cable TV system and also the non-wireline cellular service.

In another marriage of communications technologies, Universal Cellular Inc. has teamed with The National Dispatch Center (NDC) to introduce Universal Paging. This is a nationwide paging service that enables subscribers to receive their messages via cellular telephone.

By using Universal Cellular's PagerPhone, which is a pocket-sized cellular phone with a built-in alphanumeric pager, NDC's message dispatch and networking capability enables Universal Paging subscribers to get their paging message in their home city and elsewhere in the USA.

Audiovox just came out with this good looking CTR-1900A portable.

Unlike standard pagers, the PagerPhone always knows where it is. Using advanced cellular technology, PagerPhone is able to electronically determine its location while away from its home city. No matter where it is, the unit will switch to the appropriate paging frequency and announce itself. Once notified in this manner, NDC automatically routes all paging messages to the correct city's facility. All the subscriber need do is turn on the PagerPhone.

In an area not equipped with cellular service, the user simply dials a toll-free number to obtain the information to input into the PagerPhone's keypad in order to receive any paging messages.

To dispatch messages to a PagerPhone user, Universal Paging offers a toll-free number. The caller simply gives the PagerPhone number subscriber number and the message to be sent. Messages may also be sent via telephone keypad, from alphanumeric input devices, and from any PC with a modem, The NDC network then sends the message to the PagerPhone.

The prices had not been announced as this is being written, but three packages will be available, consisting of 20, 50, or 75 messages per month. By the end of the year, it should be available in about 100 cities.

For further information on this, contact Universal Cellular, Inc., 3365 Miraloma Ave., Anaheim, CA 92806.

Moving Right Along

By the end of 1991, nearly 7-million Americans will be using cellulars. This is an annual increase of almost 30%. This boom is expected to continue right through the decade, with approximately 31-million in use by 1995. These figures are according to studies done by NYNEX Mobile Communications Company.

Almost 2-million new users went on line last year, and subscribers are using them more often than ever. NYNEX, alone, handles more than 13.5-million calls per month, and expects to handle more than 162-million calls this year.

Although much of the growth in the cellular industry is still propelled by the business community, personal and mixed usage are also increasing. The NYNEX report claims that almost three out of four users purchase cellular phones for purely personal or mixed business/personal use.

Also, the user demographics are continually changing. In 1986, the average cellular user is 55 years old and the president or CEO of a company. In contrast, the typical present cellular user is between 35 and 44 years old, a college grad and employed in a sales or middle management position. About 46% are women.

The NEC P200 provides basic cellular comms in an uncomplicated unit for those who seek a minimum of "bells and whistles."

Hardware Department

The Audiovox CTR-1900A offers three "one-touch" speed dialing buttons allowing the driver to pre-program frequently dialed numbers. One-touch dialing eliminates the four key strokes normally required to make a call.

Other important features of this portable include a fifteen-digit, easy to read alphanumeric display that allows the user to retrieve phone numbers by name or initials, a last number redial feature that works by pressing a single button. The CTR-1900A also has on-hook dialing, an optional RJ-11 aux jack for hooking up a FAX machine, 911 emergency dialing, and security codes with multi-level restrictions.

There's an auto-answer, too, that picks up after the second ring. This is a 3-watt unit that operates from internal batteries or cigarette lighter plug. The MSRP is $695.

For more information, contact Audiovox Corporation, 150 Marcus Blvd., Hauppauge, NY 11788.

NEC America, Inc., recently added the P200 handheld to its cellular product line. This is a very straightforward unit with the design feature of being made without a lot of "whistles and bells." It's a handy, full-function unit intended to meet personal communications needs without most of the more exotic frills. Actually, it's sort of a no-frills version of NEC's popular P300. Yet, even without all of the fancy extras, the P200 has a lot going for it.

The NEC P200 weighs 14 oz. Standard features include a flip-up antenna, dual NAM, DTMF signaling control, 40-number speed dial, rechargeable battery pack, desktop charger, wake-up tone, signal strength indicator, mute button, electronic locking, alarm and alerting systems, paused dialing, scratchpad, and call timer. There are options, too. Options include automatic radio muting, car-mount external antenna, vehicle antenna adapter, hands-free adapter, three-watt booster, DC quick charger, FAX/computer adapter, cigarette lighter plug, leather case, and leather carrying bag.

For more information, contact NEC America, Inc., Mobile Radio Division, 383 Omni Drive, Richardson, TX 75080.

You are invited to send in any cellular, paging, or personal mobile comms information. We are also looking for info from cellular service suppliers, info on new products, and new applications. ■

Please send all reader inquiries directly.

CIRCLE 47 ON READER SERVICE CARD

YOU SHOULD KNOW

BY HARRY HELMS, AA6FW

INTERESTING THOUGHTS AND IDEAS FOR ENJOYING THE HOBBY

DX From The Twilight Zone

Okay, maybe you're too busy to read my entire column this month, so I'll let the cat out of the bag right now: *the most productive time for DX is one half hour before—and one half hour after—your local sunrise and sunset*. That's this month's column in a nutshell.

Want to know more? I thought so. Read on . . . .

You know shortwave reception conditions are different in daytime than they are at night. The reason why sunrise and sunset are so productive is because those periods are the transitions between day and night reception conditions. Conditions at sunrise and sunset are a mixture of day and night conditions, and are changing rapidly. You might have an opening of less than 15 minutes when certain DX stations are possible, but those 15 minutes might well be your only chance all day to hear those stations!

Layers Vanish From The Ionosphere!

Sounds like a headline from one of those supermarket tabloids, huh? Well, not quite. The heading of this particular section is the reason why sunrise and sunset are such productive DX times: the structure of the Earth's ionosphere (that friendly part of our atmosphere that refracts radio signals over long distances) isn't constant and fixed. In this section, we'll take a simplified—*very simplified*—look at how this happens.

The number of layers and their height above the Earth varies between night and day. (It also varies with the seasons, but we'll save that for another article.) At sunrise and sunset, the ionosphere is "churning" as it changes between the relatively stable day and night states. This is because the structure of the ionosphere depends upon radiation from the sun. During the daytime, the sun causes the ionosphere to "split" into multiple layers. After sunset, the ionosphere—deprived of the radiation from the sun—gradually becomes "de-ionized" and collapses into just one or two layers. At sunrise, the return of ionizing solar radiation causes the layers of the ionosphere that disappeared during the night to return.

Take a look at figures 1 and 2, which show the different layers of the ionosphere during the daytime and night. During the daytime, the ionosphere divides into *D*, *E*, and the *F1* and *F2* layers. The D-layer is closest to the Earth, about 30 to 60 miles in altitude. The D-layer is present only during the day, and is strongest at local noon. As sunset approaches, the D-layer fades and vanishes altogether at night. (In fact, during the short days of mid-winter, the D-layer sometimes doesn't form at all!) The E-layer is found from about 60 to 100 miles above the Earth. The E-layer is usually present only during the day, although it sometimes remains weakly present at night.

Most DX propagation during the day takes place in the F1 and F2-layers. These layers are spread from about 100 to 250 miles in altitude. On most frequencies above 10 MHz during the daytime, signals normally pass through the D and E-layers and are refracted back to Earth over long distances by the F1 or F2-layers, with most signals refracted off the higher F2-layer. Signals below 10 MHz are usually absorbed by

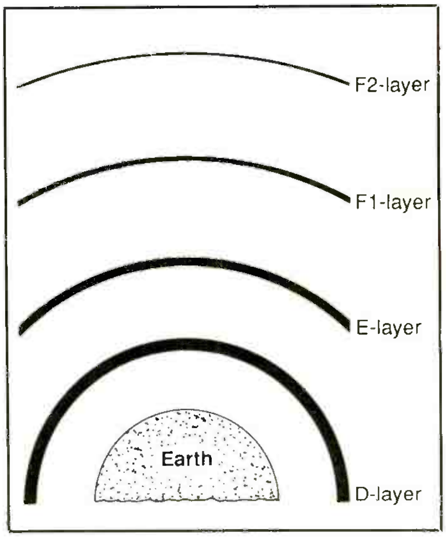
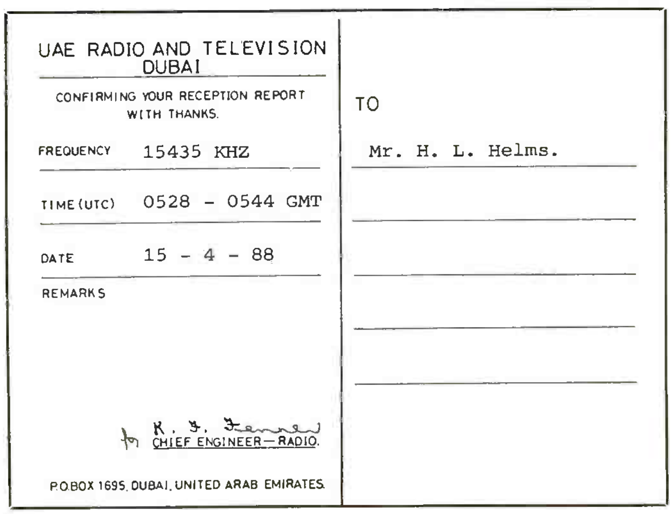


Figure 1

the ionosphere during the daytime. The exact "cut off" frequency above which signals are refracted and below which they are absorbed varies, but a little tuning will demonstrate that there is a daily dividing line for refraction off the F-layers.

What part do the D and E-layers play in daytime propagation? Not much, and it's negative. While the D and E-layers don't refract signals, they do absorb some energy from signals passing through them to the ionosphere.

Now look at the night ionosphere as shown in figure 2. Notice something funny? For starters, the D layer is gone. Deprived of



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Price	$579.	$375.	$325.	$225.	$239.	$179.	**$339.

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* PC10: Universal Counter Timer Board for the PC. Windows 3.0 based software. Frequency, Period, Ratio, Time Interval, Pulse Width, Reciprocal Count, Data Logging, Direct Tune a Radio Receiver, Auto Calibrate, Configure Units of Time & Frequency.

* *Price includes on board 50ohm, 2.5MHz to 2.4GHz input. Companion model AP10H, Dual High Impedance Amplifier is an additional $299.

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CIRCLE 173 ON READER SERVICE CARD

POP'COMM's World Band Tuning Tips

June, 1991

This PopComm feature is designed to help you hear more shortwave stations. Each month, this handy, pull-out guide will show you when and where to tune to hear a wide variety of local and international broadcasters.

The list includes broadcasts in many languages besides English, and most of the transmissions are not beamed to North America. Keep in mind that stations make frequent changes in their broadcast times and frequencies. Changes in propagation conditions may also make some stations difficult or impossible to receive. Your own equipment and receiving location will also have a bearing on what stations you are able to hear.

Note: EE, SS, FF, etc. are abbreviations for English, Spanish, French and so on. Some frequencies may vary slightly from those given in this list. All times are in UTC.

Freq.	Station/Country	UTC	Notes
2390	La Voz de Atitlan, Guatemala	0200	SS
3240	Trans World Radio, Swaziland	0300	vernacular
3260	R. Madang, Papua New Guinea	1100	EE
3270	R. Namibia, Namibia	0400	vernacular
3290	Radio Central, Papua New Guinea	1100	EE/Pidgin
3316	Sierra Leone Broadcasting Service	0700	EE
3330	R. Cultural, Guatemala	0200	SS
3360	La Voz de Nahuala, Guatemala	0300	SS
3365v	R. Rebelde, Cuba	1100	SS
3945	R. Vanuatu, Vanuatu	0845	
4238	R. Inca, Peru	0945	SS
4720	R. Abaroa, Bolivia	1030	SS
4725	V of Myanmar, Myanmar	1200	Burmese
4750	R. Bertoua, Cameroon	0500	
4755	Sani Radio, Honduras	1200	sign on, SS
4766	Moscow, via Havana	0200	RR
4770	R. Nigeria, Kaduna	0430	sign on
4790	R. Atlantida, Peru	0200	SS
4795	R. Douala, Cameroon	0500	
4800	LNBS, Lesotho	0330	vernacular
4810	R. Orion, South Africa	0345	Afrikaans
4815	R. Burkina, Burkina-Faso	0600	FF
4820	La Voz Evangelica, Honduras	0300	EE
4825	R. Educaro Braganca, Brazil	0900	PP
4830	R. Tachira, Venezuela	0300	SS
4835	R. R. Tezulutlan, Guatemala	0100	SS
4839	R. Reloj, Costa Rica	0300	SS
4850	CRTV, Cameroon	0530	FF
4865	LV del Cinaruco, Colombia	0400	SS
4870	R. Rio Amazonas, Ecuador	0300	SS
4875	Voice of Jinling, China	1200	CC
4885	R. Clube do Para, Brazil	0100	PP
4890	R. France Int'l, via Gabon	0445	FF
4902	R. Inf. de Centro America (R. Rica), Nicaragua	0130	SS
4911	Emisoras Gran Colombia, Ecuador	0200	SS
4915	GBC, Ghana	0600	EE
4915	R. Cora, Peru	1000	SS
4920	R. Quito, Ecuador	0200	SS
4920	ABC, Brisbane, Australia	1100	
4922	R. Superior, Peru	1000	SS
4926	R. Nacional, Eq. Guinea	0230	SS
4930	R. Barahona, Dominican Rep	0300	SS
4940	R. Continental, Venezuela	0200	SS
4940	R. Kiev, Ukraine	0430	
4965	R. Santa Fe, Colombia	0400	SS
4970	R. Rumbos, Venezuela	0100	SS
4980	Ecos del Torbes, Venezuela	0400	SS
5009	RTM, Madagascar	0300	sign on
5011	Es. Radiofonicas Populares, Ecuador	0100	SS
5020	SIBC, Solomon Islands	1130	EE
5020	La Voix du Sahel, Niger	0530	FF
5020	R. Rebelde, Cuba	0100	SS
5025	R. Parakou, Benin	0600	FF
5034	RTV Centrafricaine, Cent. Af. Rep.	0430	FF, sign on
5040	La Voz de Upano, Ecuador	0030	SS
5047	RTT Togo	0600	FF
5055	RFO, French Guiana	0400	FF
5055	Faro del Caribe, Costa Rico	0230	EE
5097	R. Eco, Peru	1000	sign on, SS
5925	R. Tallinn, Estonia	0700	Estonian
5930	R. Prague Int'l, Czechoslovakia	0300	EE
5935	R. Riga, Latvia	0400	Latvian, Swedish
5950	V of Free China, Taiwan	0200	EE, via WYFR
5955	LV de Centauros, Colombia	0400	SS
5960	RTVC, Congo	2200	FF
5990	R. Romania International	2200	EE
5995	R. Melodia, Peru	0800	SS
6015	R. Austria International	0530	
6020	R. Netherlands	0030	EE
6025	R. Amanacer, Dominican Rep.	1200	SS
6050	R. Nigeria, Ibadan	0500	
6070	CFRX, Canada	1100	
6080	R. Australia	1200	
6085	Bayerischer Rundfunk, Germany	0700	GG
6090	R. Luxembourg	2330	FF
6110	BBC	0300	via Antigua
6135	R. Santa Cruz, Bolivia	1015	SS
6150	Caracol Neiva, Colombia	0000	SS
6130	CHNX, Canada	1200	
6160	CKZN, Canada	1200	
6165	R. Netherlands	0030	EE
6185	Vatican Radio	0630	EE/Latin
6188	R. Oriente, Peru	1100	SS
6190	Radio Bremen, Germany	0900	GG
6210	European Christian Radio, Italy	0715	EE/Il
6248	Vatican Radio	0600	Italian
6280	Voice of Hope, Lebanon	0400	sign on
6570	Defense Forces Broadcasting, Myanmar	1200	Burmese
6900	Turkish Meterological Radio	0530	TT
7105	RTVC, Congo	0655	sign on, FF
7110	Voice of Ethiopia	0330	sign on
7125	Vatican Radio	0145	EE
7125	British Forces Broadcasting Service	0200-0230	
7180	Cyprus Broadcasting Corp, via BBC-Cyprus	2215-2245	Greek, Fri/Sat
7189	R. Africa, Eq. Guinea	2230	EE religion
7255	Voice of Nigeria	0500	sign on
7265	Sudwestfunk, Germany	0500	GG
7270	R. Polonia, Poland	2200	EE
7275	ELBC, Liberia	0758	sign on
7285	RTM, Mali	0700	sign on, FF
7345	R. Prague Int'l, Czechoslovaki	0400	EE
7355	KNLS, Alaska	0700	RR
7370	Turkish Police Radio	0500	TT

Freq.	Station/Country	UTC	Notes
7376	Radio For Peace Int'l, Costa Rica	0200	EE, USB
7412	All India Radio	1245	
7430	Voice of Greece	0700	Greek
7510	KTBN, Utah	0200	
7520	WWCR, Tennessee	0300	
7600	HD2IOA, Ecuador	0200	time signals
9045	Iran's Flag of Freedom	0400	Farsi (clandestine)
9115	R. Continental, Argentina	0200	SS, USB feeder
9345	R. Pyongyang, N. Korea	1300	EE
9360	Spanish National Radio	0400	SS
9435	Voice of Israel	0100	EE
9445	Voice of Turkey	0400	
9455	WSHB, So. Carolina	0700	
9465	WMLK, Pennsylvania	0600	
9480	R. Tirana, Albania	0430	EE
9515	R. Novas de Paz, Brazil	2300	PP
9535	R. Algiers, Algeria	1900	FF
9535	Swiss Radio International	0730	EE
9535	R. Japan via Sri Lanka	1445	EE
9545	Deutsche Welle, via Antigua	0330	
9555	Radio Veritas Asia, Philippines	1315	CC
9560	Radio Jordan	1730	AA
9560	Voice of Ethiopia	1500	EE
9565	All India Radio	1400	EE
9565	Radio Universo, Brazil	1000	PP
9570	Radio Romania International	0200	EE
9575	RAI, Italy	0100	EE
9580	Radio Australia	1200	
9595	R. Tanpa, Japan	0900	JJ
9600	Radio Portugal	0230	EE
9610	ABC, Perth, Australia	1130	
9605	Vatican Radio	0050	EE
9615	Radio Denmark, via Norway	0130	Danish
9620	Radio Yugoslavia	0100	EE
9625	CBC Northern Service, Canada	1200	EE
9640	BBC via Antigua	0500	
9655	Voice of America, via Gabon	0300	sign on
9655	Trans World Radio, Swaziland	0400	vernacular
9670	Radio Rumbos, Venezuela	0200	SS
9670	FEBC, Philippines	1300	VV
9695	Radio Sweden	0330	EE
9740	BBC via Singapore	1300	
9740	Radio Cairo, Egypt	0200	EE
9745	HCJB, Ecuador	0300	EE
9750	Radio Korea, S. Korea	1300	EE
9750	Radio Havana Cuba	0430	EE
9755	Radio Canada International	0200	EE
9760	Radio Tirana, Albania	0230	EE
9770	Radio Australia	1430	
9780	Radio San'a, Yemen	2100	AA
9785	KVOH, California	0600	
9835	Radio Budapest, Hungary	0200	EE
9840	WCSN, Maine	0600	EE
9870	Trans World Radio, Guam	1300	CC
9885	Radio New Zealand	0700	
9900	Radio Cairo, Egypt	2100	EE
9925	Radio Cairo, Egypt	0500	AA
9925	BRT, Belgium	0030	EE
9950	Radio Damascus, Syria	2130	EE
9965	Radio Caiman (clandestine)	0100	SS, anti-Castro
10010	Voice of Vietnam	1300	VV
11100	CPBS, China	1200	Taiwan-2 service
11335	R. Pyongyang, No. Korea	2330	SS
11560	R. Cairo, Egypt	1800	AA
11585	Voice of Israel	2230	EE
11620	All India Radio	2030	EE
11645	Voice of Greece	0100	Greek
11695	Radio Beijing, via Fr. Guiana	0400	EE
11700	R. Pyongyang, No. Korea	0000	SS
11710	RAE, Argentina	0100	EE
11715	Radio Sweden	1230	EE
11735	Radio Yugoslavia	0100	EE
11750	Radio Sofia, Bulgaria	0400	EE
11755	Radio Finland International	0745	EE
11785	Radio Guaiba, Brazil	0900	PP
11790	VOIRI, Iran	1430	Farsi
11800	RAI, Italy	0100	EE
11815	Radio Polonia, Poland	1430	EE
11830	R. Anhanguera, Brazil	2330	PP
11835	R. El Espectador, Uruguay	0100	SS
11840	R. Beijing, via Canada	0400	
11840	Radio Moscow, via Cuba	1400	
11860	FEBA, Seychelles	1800	Tigrina
11865	Radio Denmark, via Norway	1530	Danish
11880	KNLS, Alaska	2000	
		2100	
11880	Spanish National Radio	0100	EE
11890	Radio Oman	1600	AA
11895	Radio Tirana, Albania	2030	SS
11910	Radio Budapest, Hungary	0230	EE
11925	V of Mediterranean, Malta	1430	EE
11930	Trans World Radio, Bonaire	0300	EE
11938	V of People of Cambodia	1245	
11945	BBC, via Hong Kong	2300	
11945	Radio Encarnacion, Paraguay	0100	SS
11945	UAE Radio, Dubai	0330	EE
11955	Radio Nacional, Angola	0500	PP
11960	RTVM, Mali	0600	FF
11985	V of UAE, Abu Dhabi	1700	AA
11990	R. Baghdad, Iraq	2100	AA
12005	RTT, Tunisia	1800	AA
12015	Radio Ulan Bator, Mongolia	0900	EE
12035	Swiss Radio International	0400	EE
12085	Radio Damascus, Syria	2130	EE
12050	Radio Cairo, Egypt	0200	AA
12105	Voice of Greece	2330	
13625	KHBI, Saipan	1400	EE
13630	R. For Peace Int'l, Costa Rica	2300	EE
13655	Radio Jordan	1200	EE
13665	Radio Pakistan	1500	Urdu
13675	UAE Radio, Dubai	1900	AA
13685	Swiss Radio International	1530	EE
13770	Deutsche Welle	0500	EE
13775	Radio Pyongyang, N. Korea	0000	EE
15084	VOIRI, Iran	1900	Farsi
15140	Radio Nacional, Chile	2000	SS
15155	HCJB, Ecuador	0030	EE
15170	Radio Tahiti	0430	FF/TT
15190	Radio Inconfidencia, Brazil	0030	
15260	Radio Canada International	1900	EE
15265	Radio Nacional, Brazil	1930	PP
15285	Qatar Broadcasting Service	0300	AA
15325	Radio Japan, via French Guiana	0230	JJ
15335	All India Radio	1400	EE
15350	Radio Luxembourg	2130	EE
15345	Trans World Radio, Bonaire	1300	EE
15390	British Forces Bc Service	1330	EE
15400	Radio Finland International	1230	
15430	Radio Austria International	1330	EE
15435	UAE Radio, Dubai	1330	EE
155445	Radio Amazonia, Brazil	2130	PP
15470	Radio Tashkent, Uzbekistan SSR	1200	EE
15475	Africa No. One, Gabon	1700	FF
15500	CPBS, China	0100	CC
15560	Radio Netherlands	0030	EE
15590	KTBN, Utah	2200	
15770	INBS, Iceland	2300	Icelandic
17555	Radio Pakistan	1500	Urdu
17595	RTVM, Morocco	1400	FF
17640	BBC	1600	EE
17665	Radio Kiev, Ukraine	2000	FF
17675	Radio New Zealand	0400	
17695	British Forces Bc. Service	1330	
17705	Radio Beijing	0000	EE
17720	Radio Romania Int'l	1315	EE
17740	Radio Sweden	1230	EE
17755	BSKSA, Saudi Arabia	0500	AA
17785	Voice of Turkey	1330	EE
17790	Radio RSA, South Africa	1700	EE
17830	WHRI, Indiana	2200	
1762v	Radio Nacional, Colombia	2200	SS
17900	RAI, Italty	1400	Italian
21455	HCJB, Ecuador	2330	SS, USB
21485	Vatican Radio	1400	SS
21490	Radio Austria International	1430	EE
21500	Radio Sweden	1530	EE
21530	Radio Portugal	1600	EE
21535	Qatar Broadcasting Service	1200	AA
21550	Radio Finland International	1400	EE
21555	Radio Yugoslavia	1300	EE
21566	Radio For Peace Int'l, Costa Rica	2330	EE
21605	UAE Radio, Dubai	1330	EE
21635	Radio France Int'l	1230	EE
21665	Radio Romania International	1330	EE
21700	Radio Japan, via Gabon	1500	EE
21705	Radio Norway International	1900	EE (Sat/Sun)
21800	BRT, Belgium	1400	EE
21810	BRT, Belgium	1400	EE
21840	RAI, Italy	1330	Italian
25870	BBC	1200	
25950	HCJN	1200	USB

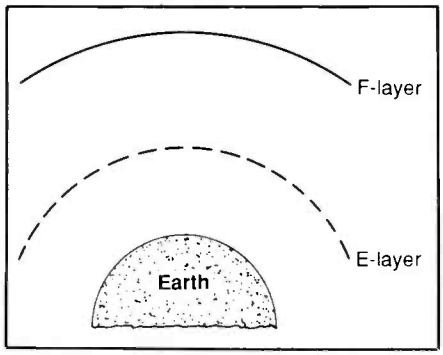


Figure 2

radiation from the sun, that layer vanishes. The E-layer, if it is present at all, is much weaker. And the F-layers have become a single F-layer! What happened?

The secret again is because of the sun. During daytime, the sun heats the upper layers of the ionosphere and often causes the F-layer to "stretch out" and split into the distinct F1 and F2-layers. A surprising point is that the level of ionization in the F-layer(s) can be *less* during the day than at night! While more ionizing solar radiation reaches the F-layer(s) during the day, it's spread over a larger area. At night, the cooling of the ionosphere causes it to collapse back into a potentially denser, more heavily ionized single F-layer. This is especially true in summer.

Now we've really simplified things in this explanation, and not everything is as neat as shown in figures 1 and 2. For example, there's often only a single F-layer in daytime during winter, and separate F1 and F2-layers (along with an E-layer) can remain present at night during the summer. The key point to remember is that the day and night structures of the ionosphere are much different regardless of the season.

Wouldn't it be great if we could somehow combine the best of day and night ionospheric conditions? Let's say we could do away with the annoying D and E-layers which just absorb precious signals, and have a nice F-layer capable of refracting a wide range of frequencies—well, folks, that's what we have around sunrise and sunset!

Home Run DX

Now here's something to think about: if the sun is rising for you, it's setting for someone else. And someone else's sunrise is your sunset.

Bad dialogue from the old *Kung Fu* TV series? Not quite; just a statement of fact. There's a terminator line of twilight/dawn, known as the *gray line*, which divides the planet into daylight and darkness. What happens when it's at your location while it's sunset at another? Great DX happens!

The effects of "gray line" propagation must be experienced to be believed, and are usually most dramatic in winter on the lower frequencies. For example, SWL's along the East Coast can hear stations in India on 60 meters around local sunrise during December and January. These Indian stations might be audible for only about 20 minutes each morning, but those are the only times listeners on the East Coast have a chance to hear those stations *all year*. At sunset on the same days, listeners on the East Coast have a chance to hear rare Indonesian stations on 60 and 90 meters. On the West Coast, SWL's have a chance at rare Central Asian stations at sunrise and East Africans at sunset.

True gray line openings are brief and require that one "end" of the path (such as your listening post) be in sunrise while the other end (such as the transmitter site) be in sunset. Signals can rise and fade greatly within only a few minutes: a station can rise out of noise to a powerful level and then fade completely out within less than a half-hour! But when it's possible, gray line propagation lets you hear DX not possible any other time!

Propagation "Shields"

Not all good DX opportunities at sunrise and sunset involved gray line propagation. A lot of good DX is possible using the sunrise and sunset "dividers" to screen out interference and let you hear some good catches.

Let's suppose you're tuned to 2500 kHz at sunset in winter along the East Coast. At

this hour, there's still too much sunshine along the propagation path from the East Coast to WWV in Colorado. But there's plenty of darkness from the East Coast to South Africa, and you might be able to hear time signal station ZUO from that nation on 2500! An hour after sunset, WWV has built up to enough strength to cover ZUO.

Now what happens at sunset? Try tuning WWV on 15000 kHz a half-hour before sunset in winter. You'll usually find WWV loud and clear. But as sunset approaches, the path from Colorado to the East Coast begins to close on 15000 kHz. However, it's summer below the equator, and there's plenty of daylight left there. At sunset, you might be rewarded with WWV fading into the soup and LOL in Argentina replacing it with their time signals!

The period around sunset can let you hear stations from Africa on 60 and 90 meters before stations from Latin America fade in later in the evening. Sunrise can let you hear stations from Asia and the Pacific on those same bands before they're lost as the D and E layers form again due to the sun's radiation. The patterns of what you can—and can't—hear will vary with the seasons.

Time To Change Your Pattern

Sunrise and sunset are fruitful times to chase DX on the AM broadcast band. This is because many AM stations use different transmitter powers and antenna patterns for night and day operation. Typically, transmitter powers are higher in the day and the antenna patterns are broader in coverage (or even non-directional) compared to those used at night. You have a much better chance of hearing an AM station if it's operating at night under its day power and antenna pattern. Sunrise and sunset give you the chance to do just that.

Start listening about a half hour before your local sunset. At this time, you can hear stations located to your east (which is already in darkness) fade in as night conditions settle in at their locations. Sometimes you'll be able to hear these stations throughout the night, but often other stations located to the north, south, and west of you will dominate those frequencies later in the evening. Thus, you might have only a "window" of a few minutes in which to hear such stations to your east. Once sunset occurs at your location, you'll be able to hear stations in the "sunset zone" as they switch over to their night facilities. Some of these stations will no longer be audible at your location or be greatly weakened. When this happens, you'll be able to hear stations located to your west which are still using their daytime facilities. As sunset proceeds westward, you can follow it by listening to stations switch over to their night facilities. At about a half hour to a full hour after your local sunset, the AM band will have settled down into its "normal" night time pattern. It will remain that way (barring propagation anomalies like those discussed last month) until about a half hour before your local sunrise, when the same thing happens but in reverse; stations to the east can be heard switching over to their daytime facilities before fading out soon after their local sunrise while stations to the west still have night time propagation to your location.

Sunrise and sunset AM band DX'ing is a game for the quick. On several occasions, I've heard one station vanish when it switched to night facilities, leaving a new station in the clear. Less than two minutes later, the second station also switched to night facilities and vanished, leaving yet a third station on the same frequency! Since sunrise and sunset times are always changing, you'll be able to hear new AM band stations throughout the year by listening at sunrise and sunset.

And Don't Forget VHF/UHF DX!

The ionosphere is not the only part of the atmosphere that undergoes changes between night and day. The troposphere is the layer closest to the Earth; it extends from the surface up to an elevation of about six miles. This is the layer where all weather takes place, and is also the layer where *ducting* happens. Ducting happens when a layer of cool, dry air close to the Earth's surface is overridden by a layer of warmer, moister air. This means that a certain point above the Earth, the air temperature and relative humidity *increases* instead of decreases, as is normally the case. A "duct" forms at the point where temperature and relative humidity increase; this sometimes called a *temperature inversion*. When radio signals above 50 MHz enter a duct, they are trapped and follow the curvature of the Earth for a few hundred miles before finally "exiting" the duct.

It so happens that the rapid warming and cooling of the troposphere at sunrise and sunset is favorable for the formation of ducts, particularly during humid weather in summer and fall in the eastern two-thirds of North America. Sometimes such "tropo" openings can be fairly regular along certain paths, as from western Florida into the coastal areas of Louisiana and Texas at summer sunsets. Ducts begin forming shortly after sunrise and sunset and generally reach a peak about a half-hour to full hour after sunrise or sunset. About a hour after sunrise or sunset, however, the ducts usually begin to rapidly break up and conditions return to normal. But while the ducts are present you can nail some great DX on your scanner, FM radio, or TV set.

So don't think you have to get up in the middle of the night to hear terrific DX. If you can listen at sunrise and sunset, you'll do okay! ■

BROADCAST DX'ING

BY ROGER STERCKX, KVT1JH

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

Words of Wisdom? We don't often get accused of having uttered "words of wisdom," so when it happens we take special notice. But Greg Doerschler, of Worcester, MA used that term to refer to something noted in our January column.

He writes that he read in the January column our comments regarding the cost-cutting practice of co-owned stations dumping the staff of the AM outlet and then programming it with a simulcast of their FM outlet.

Then, the following day, Greg learned that one of his local AM'ers, WFTQ/1440, had run headlong into this exact problem. The adult contemporary programming was cut, so were some employees, as the station began its new career of simulcasting the programming of its hard-rock sister FM station, WAAF/107.3. It was a question of economics, and WFTQ just wasn't pulling its weight as well as youth-oriented WAAF.

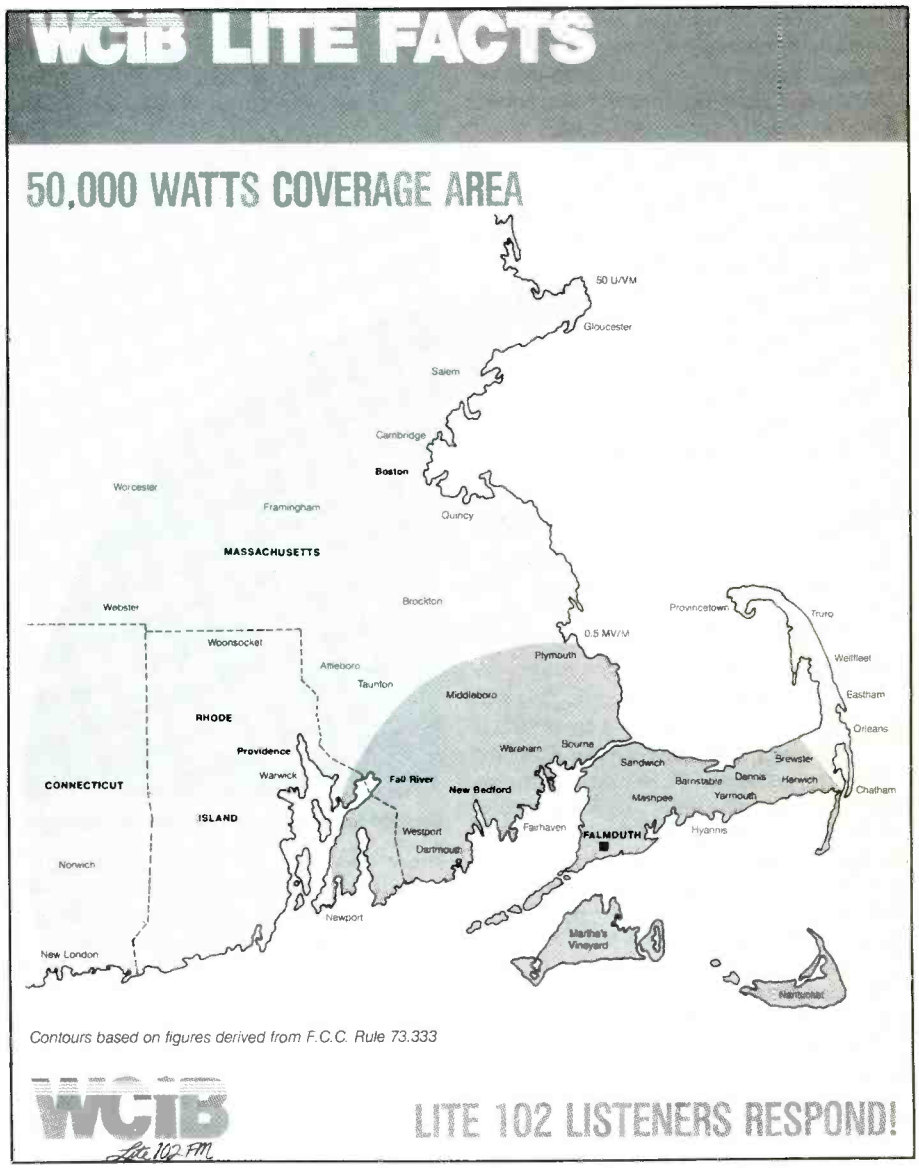
The decision left a lot of devoted WFTQ listeners in various stages of shock, anger, and sorrow. It left Worcester with AM'ers WTAG/580, WNEB/1230, and WORC/1310, plus the FM rock sounds over WFTQ.

Greg observed, "The loss of WFTQ will perhaps have a greater than normal impact on coverage of local news and weather since Worcester has no TV stations, and only one commercial FM station (WXLO/104.5). This is because Worcester is so close to Boston and Providence. Even though WAAF is based in Worcester, its target audience seems to be Boston and a survey a few years ago showed that it had a bigger audience in Boston than locally in Worcester. The irony is that now WFTQ is simulcasting WAAF's programming targeted at Boston, and 5 kW WFTQ can't even be heard in Boston!"

Well, Greg, we know how frustrating this is. All we can offer is a forum to let off some steam. And, I suppose that we can repeat our thoughts that it seems a shame that there are creative people out there in radio-land who want to broadcast on AM but can't do so because of a supposed "shortage of frequencies." And yet, when you look, you see that in so many markets across the nation there are obviously AM frequencies that are simply being occupied with no other apparent purpose than ensuring that nobody else can get a chance at getting on the air and trying to do something with them and pumping up AM radio.

Stats Department: Speaking of crowded AM airwaves, there are now 4,987 AM stations licensed by the FCC. This is compared to 4,392 commercial FM, plus 1,440 educational FM, and 1,866 FM translators and boosters.

In the area of TV, there are 7,254 stations in all categories. This includes VHF/UHF commercial and educational, translators, and low power.



WCIB's coverage area from Cape Cod. (Courtesy Mark R. Schmit, MA.)

DX Trick: Richard, Registered Monitor KFL4DN, of Lake City, FL tells us that he enjoys tuning in on the Sunday night *Old Time Trivia Program* that airs late every Sunday night over St. Louis station KMOX/1120. Most of the time he can bring in the program very well, but there are nights when Cuban stations seem to wipe out all reception in Florida. What Richard does in such an instance is tune to 1120 kHz on his ICOM R-71A, switch to lower sideband (LSB) mode, then retune. He can usually bring up KMOX right through the Cuban, and suggests that we might pass it along to other DX'ers to use on all crowded AM frequencies.

Message From The Cape: Mark R. Schmit, Senior Account Executive at Cape Cod's WCIB/101.9 ("Lite 102") tells us that the station is in the process of increasing its tower height by 150 ft., and that will bring it up to 500 ft. when the job is completed.

WCIB has lots of local programming, and is an affiliate for the Unistar Special Blend adult contemporary format.

Mark is an old friend of this column and, when he was with WORC in Worcester, MA he provided *POP'COMM* with lots of information about that station.

Sunny Times: The Sun Radio Network, of Clearwater, FL writes to tell us that sta-

Applications For New FM Stations

AK	Dillingham	99.1 MHz	6 kW
GA	Greenville	95.7 MHz	
GA	Tennille	99.9 MHz	6 kW
IA	Asbury	103.3 MHz	17 kW
IL	Arcola	107.9 MHz	6 kW
IN	Seeleyville	95.9 MHz	6 kW
MD	Ocean City	106.9 MHz	
MI	Ashley	92.5 MHz	3kW
ND	Arthur	96.7 MHz	5 kW
NH	Gorham	107.1 MHz	6 kW
NY	Brockport	105.5 MHz	3 kW
PA	Oil City	96.3 MHz	
SC	Clemson	104.9 MHz	3 kW
WA	McCleary	96.9 MHz	2 kW

Permits Granted For New FM Stations

AL	Atmore	105.9 MHz	4 kW
AL	Georgiana	107.7 MHz	6 kW
CA	Visalia	88.9 MHz	1 kW
FL	Pt. St. Lucie	101.3 MHz	6 kW
IL	Carterville	95.1 MHz	3 kW
KS	Hutchinson	91.7 MHz	100 kW
KY	Frankfort	013.7 MHz	2.5 kW
KY	Shepherdsville	105.1 MHz	74 kW
KY	Westwood	99.7 MHz	3 kW
MN	Moorhead	90.3 MHz	100 kW
NC	Old Fort	104.3 MHz	2.6 kW
NJ	Asbury Park	88.1 MHz	100 watts
NY	Copenhagen	106.7 MHz	200 watts
OH	Lima	93.1 MHz	3 kW
OH	Mt. Gilead	95.1 MHz	3 kW
TX	Jacksonville	102.3 MHz	3 kW
TX	Tahoka	95.3 MHz	3 kW
UT	St. George	99.7 MHz	100 kW
VA	Lebanon	107.3 MHz	3 kW
VT	Morrisville	93.9 MHz	3 kW

AM Call Letters Changes Requested

Now	Seeks	
KIKR	KJOJ	Conroe, TX
WIXC	WBXR	Fayetteville, TN
WLFF	WRMD	St. Petersburg, FL
WOJY	WRQQ	Farrell, PA

Applications For FM Facility Changes

KRIJ	Paradise, CA	92.9 MHz	Move to 103.9 MHz 1.7 kW
KROF-FM	Abbeville, LA	104.9 MHz	Move to 105.1 MHz 25 kW
WKQR	Citronelle, AL	101.9 MHz	Move to 102.1 MHz 15 kW
WLOT	Trenton, TN	97.7 MHz	Move to 97.5 MHz 25 kW
WPSA	Paul Smith's, NY	89.1 MHz	Move to 98.1 MHz
WVJK	Rock Island, IL	90.1 MHz	Move to 90.3 MHz 31 kW

FM Facilities Modifications Approved

KRCD-FM	Chubbick, ID	98.3 MHz	Move to 98.5 MHz 6.2 kW
KWCB	Floresville, TX	94.3 MHz	Move to 94.1 MHz 50 kW
KXCI	Tucson, AZ	91.7 MHz	Move to 91.3 MHz 335 watts
WAAO-FM	Andalusia, AL	104.7 MHz	Move to 103.7 MHz
WDJW	Somers, CT	89.7 MHz	Move to 105.3 MHz
WGYL	Vero Beach, FL	93.5 MHz	Move to 93.7 MHz 50 kW
WHOD-FM	Jackson, AL	104.9 MHz	Move to 94.5 MHz 19.5 kW
WPKT	Middlefield, CT	90.5 MHz	Move to Meriden, CT
WRJM-FM	Geneva, AL	93.5 MHz	Move to 93.7 MHz 50 kW

Application For AM Facility Changes

WLSM	Louisville, KY	1270 kHz	Drop to 2.7 kW

AM Facilities Modifications Approved

KIST	Santa Barbara, CA	1340 kHz	Drop to 675 watts
KPUA	Hilo, HI	670 kHz	Increase to 50 kW day/nite
KTSJ	Pomona, CA	1220 kHz	Drop to 930 watts
KYND	Cypress, TX	1520 kHz	Increase to 3.2 kW
WDBL	Springfield, TN	1590 kHz	Drop to 710 watts
WILC	Laurel, MD	900 kHz	Drop to 1.9 kW days
WLVN	Luverne, AL		Move to Brantley, AL
WMJL	Marion, KY	1500 kHz	Drop to 1.75 kW
WODY	Bassett, VA	900 kHz	Increase to 2 kW days
WOMD	Pleasantville, NJ	1400 kHz	Increase to 1 kW days

tions that recently affiliated include WSFT in Caribou/Presque Isle, ME; WAUB, Auburn, NY; WKKE, St. Pauls, NC; and WLIQ, Harriman, TN. SRN is a rapidly expanding network and we appreciate them sending us their bi-weekly newsletter.

Volunteer Station: A letter from Vincent Somers, of Champaign, IL offers some information on non-commercial WEFT/90.1 in Champaign. Except for the Station Coordinator and Chief Engineer, everybody else at WEFT is a volunteer, and they welcome people with talent to offer ideas for programs they can air. The station even runs classes to train people in microphone technique.

Programming is an eclectic mix of music and informational shows. Some of it gets rather far out, Vincent tells us. Recently, WEFT installed a satellite dish for increased news coverage.

Vincent reports, however, that there's a problem. He tells us that another station, WKIO, moved from 103.9 to 92.5, and also

The bumper sticker from WEFT shows the city skyline. (Courtesy Vincent Somers, IL.)

Changed AM Callsigns

New	Was	
KBCW	KANO	Brooklyn Park, MN
KDOL	KREL	Henderson, NV
KFLG	KRHS	Bullhead City, AZ
KHCB	KTUS	Galveston, TX
KKFH	KWIC	Beaumont, TX
KMLB	KJLO	Brookings, SD
KSWV	KMIK	Santa Fe, NM
WBBP	WMZM	Memphis, TN
WFKM	WPRQ	Colonia Hts., TN
WGKL	WROQ	Charlotte, NC
WMDH	WCTW	New Castle, IN
WNTJ	WKQS	Johnstown, P
WOCC	WGZB	Corydon, IN
WRAF	WWXX	Alpharetta, GA
WRPT	WMDK	Peterborough, NH
WTME	WXGL	Lewiston, ME
WVAC	WLKR	Norwalk, OH

New FM Call Letters Assigned

KDUV	Visalia, CA
KHRT-FM	Minot, SD
KLUE	Soledad, CA
KUAZ	Tucson, AZ
KVMK	Bloomington, TX
KWRK	Window Rock, AZ
KWVA	Eugene, OR
KWVB	Potosi, MO
KWBD	Morro Bay, CA
KZPF	Ozark, MO
KZPG	Plattsmouth, NE
KZPH	Cashmere, WA
KZPI	Deming, NM
KZPJ	Levelland, TX
KZPK	Paynesville, MN
KZPL	Yuma, AZ
KZSD-FM	Martin, SD
WDHM	Salem, IN
WDLF	Old Fort, NC
WJUS	Ft. Walton Beach, FL
WKED-FM	Frankfort, KY
WLMB	Lima, OH
WMYJ	Pocomoke City, MD
WNJA	Jamestown, NY
WQKI-FM	St. Matthews, SC
WWFO	Vinton, VA
WWFP	Pearson, GA
WWFS	Kosciusco, MS
WWFT	Key West, FL
WWTA	Marion, IA
WXFJ	Flora, MS
WXHC	Homer, NY
WXUS	Ft. Rucker, AL
WYDA	Graceville, FL
WYDB	Bolivar, TN
WYDF	Montpelier, OH
WYDG	Lexington, MI
WYDH	Atmore, AL
WYDR	Eau Claire, WI
WYDS	Decatur, IL

New AM Call Letters Assigned

KSJI	San Martin, CA
KWVG	Hamby, TX
KZPM	Bakersfield, CA
WPNN	Gorham, ME

FM Call Letters Changes Requested

Now	Seeks	
WLOL	KSJN	Minneapolis, MN
WOLY-FM	WAXF	Sharpsville, PA

Changed FM Call Letters

Now	Was	
KALK	KYKM	Winfield, TX
KFAN	KBKK	Johnson City, TX
KFLG-FM	KFLG	Bullhead City, AZ
KHCB	KTUS	Galveston, TX
KHOW-FM	KSYY	Denver, CO
KIOX-FM	KCGC-FM	El Campo, TX
KJOJ-FM	KJOJ	Freeport, TX
KLLK-FM	KZPB	Ft. Bragg, CA
KLRX	KKWM-FM	Dallas, TX
KMMK	KLTN	Las Vegas, NV
KONO-FM	KFAN	Fredicksburg, TX
KQKD-FM	KVCU	Redfield, SD
KQPW	KOQO-FM	Fresno, CA
KRGY	KRIX	Brownsville, TX
KRZE-FM	KNTF	Ontario, CA
KTCM	KAPH	Kingman, KS
KTHX	KSXY	Reno, NV
KTWI	KWSI	Warm Springs, OR
KTWS	KIDD-FM	Bend, OR
KUII	KYII	Dallas, TX
KXYL-FM	KISJ-FM	Brownwood, TX
KZZD	KGAM	Wichita, KS
WAAS	WCEZ	Colombia, SC
WESQ-FM	WUIE	Rocky Mount, NC
WGKL-FM	WZZG	Charlotte, NC
WJZE	WDJY	Washington, DC
WKRH	WIGY	Bath, ME
WKKC	WXJE	Henderson, KY
WMDH-FM	WMDH	New Castle, DE
WMOG-FM	WPFI	St. Simons Issl., GA
WQWQ-FM	WQFN	Muskegon Hts., MI
WRAF-FM	WRAF	Toccoa Falls, GA
WROQ	WCKN-FM	Anderson, SC
WSKX	WXLLQ	Hinesville, GA
WSTG	WYJY	Biddeford, ME
WSYZ	WEKX	Newburgh, IN
WVAC-FM	WVAC	Adrian, MI
WVKX	WSYI	Irwinton, GA
WWMM	WANS-FM	Anderson, SC
WWTN	WQLZ	Manchester, TN
WUFD	WBQM	Decatur, AL
WZBA	WUNI	Moss Point, MS

Listening post of Richard, Registered Monitor KFL4DN, in Lake City, FL.

upped its power from 2.3 kW to 20 kW. This happened almost two years ago. The WKIO transmitter is in the center of town, while the 10 kW WEFT transmitter is outside of town. As a result, many listeners are now reporting difficulty in getting clear reception of WEFT. Filters that WKIO has offered to improve reception of WEFT are well intentioned but people say they don't help much.

Vincent says that the original plans were for the new WKIO 20 kW transmitter to be located outside of town, but the station reconsidered and then received FCC permission to install it at their original in-town location. He feels that maybe this problem wouldn't have occurred if the 20 kW WKIO transmitter had been located outside of town.

Anybody in our audience who can suggest a solution is welcome to offer it. Vincent's address is 202 E. John, A-13, Champaign, IL 61820.

Update: Paul G. Caruso, who is in the USN, and Station on Guam, tells us that KSDA-FM/91.9 ("Joy 92") is a new station that's been heard with equipment tests. This is a religious station owned by shortwaver KSDA. The KSDA-FM tower is on top of Mt. Alutom, which is also the location of the KUAM/610 AM tower. The proximity of the two antennas at the same location has created a few tech glitches that were expected to be resolved without much difficulty.

Paul also sent along an article from *The Boston Globe* that told of station WILD/1090. This is a daytimer that serves black community, but has had various problems reaching its fullest potentials. Not the least of the barriers is the need to shut down at sunset when the frequency "belongs" to WBAL, Baltimore.

Unfortunately, pulling the plug at sunset is a often-heard, but very valid, complaint heard in many areas of AM'casting.

Crying Wolf?: KSHE/94.7, Crestwood, MO had an memorable broadcast recently. That's what listeners thought when, at 7:30 AM the station broadcast what sounded like an EBS tone, followed by sounds of bombs, and the announcement that the nation was being attacked with nuclear weapons.

The air personality apparently responsible for the broadcast said that he was hoping to dramatize how serious a nuclear attack is, in response to listeners who had been pursuing a "nuke Iraq" policy. Listeners were shaken. Apparently they got the message, and more than a hundred called the station and filed complaints with the FCC for the false broadcast.

The station (which is in a St. Louis suburb) denied having any advance knowledge of the broadcast, or having authorized it being sent out. A few hours after the broadcast, KSHE's management was broadcasting an explanation, and also apologizing for the incident. The air personality who ran the broadcast was scolded, and the FCC was investigating the incident to see if there were any rules violations.

We are always interested in your input here; photos, bumper stickers, news clippings, recent QSL's, and thoughts relating to AM/FM broadcasting. ■

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CB SCENE

BY BILL SANDERS, SSB-295

27 MHz COMMUNICATIONS ACTIVITIES

With the good weather upon us, folks will be crowding the highways to travel to vacation spas. As was so aptly pointed out in the April *POP'COMM*, if you don't want to be picked up on *Kojak's Kodak*, your best bet is to have your Aunt Martha as your chauffer. If you're leaving the driving to yourself, then you're going to want to have a CB rig at hand, and tuned to CB Channel 19 to read the mail.

But, maybe you don't worry about such matters, and the constant trucker chatter on Channel 19 is just so much irritating babble. Still, you'd like to have the convenience of knowing you have a CB capability if it's needed at some point.

That's why they designed the Radio Shack Realistic TRC-475 emergency CB and weather radio. It's there when you need it, and when you don't need it (which might be most of the time), it's in your trunk or the glove box. When it's needed, you just stick the mag mount on the vehicle's roof or hood, plug the power cord into the cigarette lighter jack, and you're in business with a full powered handheld transceiver.

Moreover, the TRC-475 can receive the three most popular NOAA VHF weather broadcast channels. It will transceive on all CB channels, and there's an "instant Channel 9" button. Can also operate with the antenna installed directly on the set itself. May alternately be powered by eight "AA" batteries for use away from the vehicle.

This is a versatile piece of equipment and, for less than $100, you can't go wrong. It's even a good idea to keep something like this on hand as a spare CB rig just in case your primary system undergoes a sudden failure.

The Realistic TRC-475 is a convenient emergency CB rig that also receives three NOAA weather frequencies.

Readers Write

Tom Jones, SSB Network member SSB-86C, is in the US Army and stationed in Germany. He wrote to tell us that at some point, the meter on his Browning Golden Eagle Mk. IV-A receiver was damaged. The meter still works, but the needle was snapped off most of the way down. This classic piece of CB equipment, which is now more than a decade old, is quite beautiful and Tom would like to the unit back in its original condition.

Tom hopes that our readers can suggest a source of Browning parts, and also a source of new or used SBE parts. He asks that readers write to him at his home QTH: Thomas Jones, P.O. Box 1001, Las Cruces, NM 88004.

Eddy Methot, SSB Network member SSB-77D, of Campbellton, New Brunswick, tells us that he has sometimes run into problems of CB interference to TV's, stereos, VCR's, and phones. He found that a high-pass filter installed in-line between the VCR and TV did wonders for curing the problem. A low-pass filter on the output of the CB rig also helped.

Eddie likes to swap QSL's and has collected more than 2,000 CB QSL's from around the world. But, he observes that swapping isn't what it used to be many years ago when honor dictated that nobody violate the old "1-4-1" swap formula. Today there's only about a 5% return on cards sent out, including those for actual contacts. He tells us the local Sidebanders hang out on 25-Upper and 16-Lower. The AM channel in his area is 20.

The *White Rhino* group, which goes on some interesting CB DX'peditions was planning one to Swaziland from their home base in RSA. After learning that attempting to run an 11 meter DX operation from that nation might be too dangerous, they decided to go to Lesotho. Even that trip required some connections within the government of Lesotho.

So, last November they set up their station (100 watts into a 2 element Quad) about 115 km. from Maseru, using the ID *142-White Rhino-0-A*. The three operators (Mark, Nico, and Tina) unhappily found the band about as dead as it ever gets. Only ten QSO's were made in an hour.

The following day they rang up 366 QSL's in 34 nations before their power failed. Switching over to the car battery, they racked up another 27 contacts. During the several days of the DX'pedition, which also saw antenna system problems and several days of lackluster band conditions, they totaled out to 975 contacts.

In all, it was an exciting trip and some lucky people ended up with very rare wallpaper from this Lesotho activity. If you weren't one of those, we are presenting one in this issue for your enjoyment. Thanks to Mark, of the WR group, for sending it to the column.

A letter from John Morehouse, of Healdsburg, CA advises that he drove up to the top of a local mountain and was having some CB contacts. He got to chatting with a station and learned that both were Registered Monitors (John is KCA6UJ). The other station operator was Peter, Registered Monitor KCA6WQ. Further comms revealed that both were computer fans, both were BBS members (John is the sysop of a BBS), and both had graphics capabilities on their MS-DOS computers.

Peter then called up John's BBS and sent his QSL in the .PCX format. John returned his own QSL to Peter the same way. John wonders if anybody else has exchanged QSL's this way. John's BBS is the *North Coast BBS*, which operates 9 PM to 6 AM (Pacific). The number is (707) 894-9432. His AD is P.O. Box 1225, Healdsburg, CA 95448.

Freeband Comments

Now that it looks as though we have received most of the response we are going to get regarding Freebanding/Outbanding, as discussed last December, we can draw several conclusions. Those who support the unauthorized hobby comms between 27.405 and 27.995 MHz are enthusiastic, but the nucleus of activists who are willing to go out on a limb to fight on its behalf, while articulate, just seem far too few in number to give any real muscle to the fight to get it legalized.

Those who are against Freebanding appear to be primarily persons who aren't actively involved in any two-way communications between 26.5 and 28.0 MHz. Most of the mail we received came from those who operate only on the authorized CB frequencies, and who are indifferent to the situation, not seeing it as a problem that relates to their interests.

This is the result of a strictly unscientific survey of the comments that have come in since December.

Summing up a representative viewpoint

A look at the neat shack of Eddy, SSB-77D, who checks in from Canada's New Brunswick. The rig is an SBE Console II. There's also a PRO-2011 scanner on duty.

on behalf of the Freeband cause was a letter from Rick, WR-309, who is a MARS operator with the U.S. Army in Germany. He doesn't consider Freebanders/Outbanders as being outlaws or frequency squatters. He notes that the FCC has spent 25 years and lots of money in a failed attempt to "police" Freebanders. The only realistic and logical alternative would to get a handle on the band by establishing a "Super-CB SSB" service there.

Rick has operated there for eight years, running 30 watts PEP. He has made 2,200 contacts around the world. Only once has he come across a rude operator. Only once did a military station ever come up on frequency, call QSK, and request that Rick QSY—which Rick quickly did, and without any argument.

Rick's suggestions are that operations should be permitted, without licenses, between 27.415 and 27.995 MHz, 30 watts PEP, in AM/SSB/FM/CW, no restrictions on communications distance.

British Columbia Channel Guide

Greg Arens, Mission, British Columbia, passes along some information in channel usage in his area. He notes that Channel 9 is *not* being monitored as an emergency frequency, so far as he is able to determine. If you've got a problem on the highway, your best bet is to seek help on Channels 1 or 11. Truckers and vehicles chatter on Channel 1 in BC, and in Washington State they prefer Channel 18.

Popular AM stand-by channels are as follows. Lower mainland on Channels 12 and 19; Central Fraser Valley on Channels 3A (26.995 MHz), 12, 21, and 25; Upper Fraser Valley on Channels 1 and 21. Cussin', swearing, fighting, and general idiot activities are on Channel 21 in most areas.

Civilian patrols, search/rescues take priority on Channel 23.

SSB operations are on Channels 15, 16, 17, and from 31 through 40. SSB calling channels are 16-Lower and 32-Lower. Gentlemen's agreement in effect, SSB'ers and AM'ers stay off one another's channels.

Freebanding most popular on 27.415, 27.695, and 27.995 MHz, LSB mode predominates.

Reader Question Box

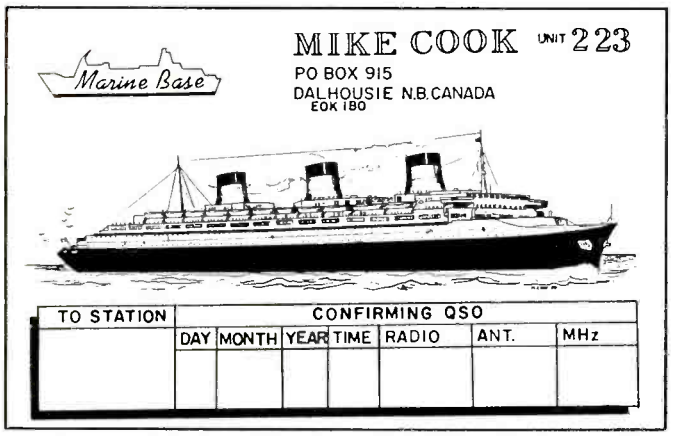
Mort, of The Dalles, OR pleads, "Don't tell me I'm crazy, but there's water oozing out of my RG-8/U that runs from my base station antenna into the shack. Where's it coming from, how do I get rid of it, and what harm is it doing?"

You're far from crazy, and this isn't too uncommon a problem. Depending on just how you make your connections to the antenna, you're quite likely to have a situation where rainwater can drip or run into the antenna-end of the coax, and by capillary action plus gravity, work its way down a 100 ft. length of coax and into the shack.

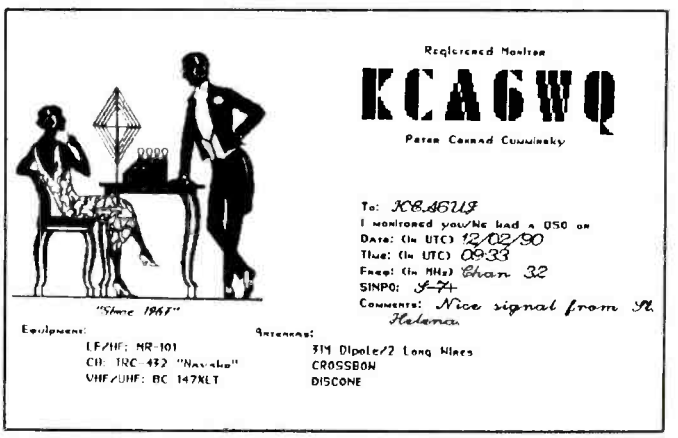
Once you've discovered the problem, plan on discarding the coax. You'll never get all the water out, and it's detrimental to your rig's operation because it is changing the characteristic impedance of the coax. In the case of foam coax, the line's loss is probably increased greatly. Also, corrosion in the shield of the cable is a foregone conclusion with the passage of time.

When you install the new cable, use a sealant (like GE *Silastic* bath tub caulk, or equivalent) to thoroughly seal the end of the coax and even coat the antenna terminals. In the case where you use a coax connector at the antenna end, use the caulk to seal the connector to the coax and then seal the cable's connector to the antenna's connector after you've securely tightened it with pliers. That should keep it dry.

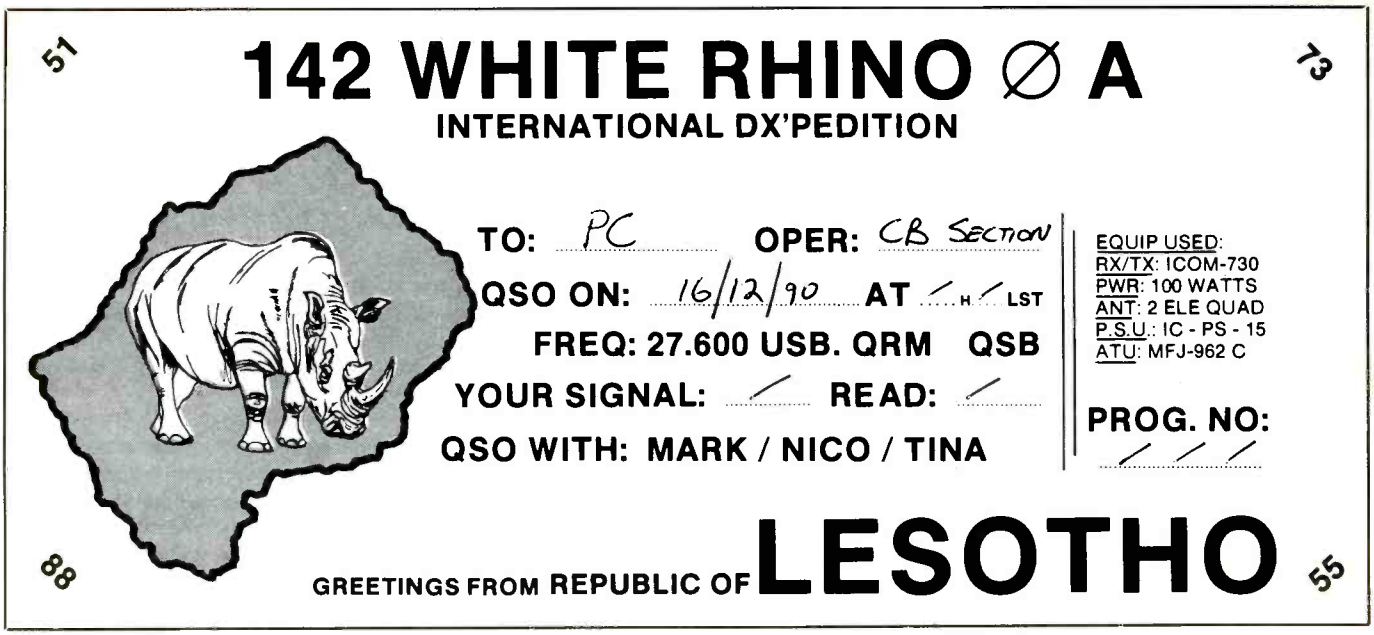
A popularly asked question came in from Barry "Mumbles" McGuire, of Topeka, KS. He tells us that his CB rig has a Noise Limiter (NL) and also a Noise Blanker (NB), and he's curious as to what difference (if any) there is between the two.



An attractive QSL from Mike Cook, Unit 223, of Dalhousie, New Brunswick. Mike enjoys reading about ocean liners, and his QSL shows the famous old liner S/S Normandie (burned 1942). Thanks to SSB-77D for sending in this QSL.



Here's a QSL from Registered Monitor KCA6WQ that was sent via a computer BBS. Does anybody else have similarly sent QSL's?



You don't see many QSL's from the rare DX country of Lesotho. Here's one from the only DX'pedition we have ever known to travel to this nation.

Scanning VHF/UHF *(from page 72)*

the February edition about erasing memories on a Uniden Bearcat 205/200XLT. Al mentions that the only thing about that procedure was that it erased all the memories. On his Radio Shack Realistic PRO-2006, Al erases a frequency from a memory by programming in a single zero into the channel he wants erased. He simply programs in a single zero and then hits "enter"; the radio will not accept more than one zero. Al wondered whether this trick for his PRO-2006 would work on a Uniden scanner so that the entire memories would not be wiped out. Well, I gave it a try and it wouldn't work. But knowing the experimenters that are around out there, maybe someone will figure out something along these lines.

From Wixom, Michigan, Richard P. King writes to say he recently bought a Uniden Bearcat 210XLT. He said he wants to monitor DX communications in the 30-50 MHz band, especially the US military in Saudi Arabia. He asked what type of antenna would be needed. The best set up for pulling in some low-band skip would be to start with a VHF low-band ground plane tuned for the specific area you want to search (preferably 30-40 MHz). It also should be noted that probably only the most experienced of scanner listeners will be able to snag reception of military units in the Middle East. You'll do better trying to tune in military units here in the United States. For instance, I often hear DX military stations and aircraft in the 32 and 33 MHz ranges, some right on top of frequencies used by fire departments across the nation. If you wanted to zero in on low-band signals, you could put up some directional antennas for such low frequencies would prove to be quite sizable.

Ira Paul of Oak Park, Michigan, says that the police in Southfield, Michigan, a Detroit suburb, have started using new frequencies. The new frequencies are: 424.325, F-1, main; 424.025, F-2 surveillance; 423.825, F-3; 423.975, F-4. Southfield Fire Department continues to use 460.600 and security at Northland Mall uses 464.575. Ira also reports hearing a large amount of Drug Enforcement Administration traffic on 418.900 in the Detroit area at all hours of the day. Ira uses a Uniden Bearcat 210XLT to monitor.

An NL is a fairly simple device or circuit that "levels off" certain types of quick noise pulses. It works in the audio portion of the receiver and does a reasonably good job on some pulse noise, but has a tendency to create distortion at higher volume control settings.

A NB is a sophisticated circuit that also acts on pulse-type noise, but does its job much earlier in the receiver circuitry (before the IF selectivity is introduced). What the NB does is sense the presence of a strong noise pulse and sort of shut down the receiver for the duration of the pulse. When the pulse has passed, the receiver is turned back on. This creates a "hole" in the signal that is inaudible, and so brief that you don't even miss what was removed. It does an excellent job of cutting into noise, and the distortion is low.

It's really unnecessary for a receiver to have an NL when it has a NB, since the NB is superior and has always seemed to me to handle any of the NL's assigned tasks. Maybe some manufacturers figure that noise is so odious that you can never have enough circuitry on hand to chase it down.

About NB's and NL's in general: They are only going to work on impulse-type noise such as ignition noise, plus some types of power line noises and static crashes. They aren't going to eliminate background noise from a weak signal, nor will they eliminate *most* atmospheric noises. The reason is that the NB/NL circuitry can't tell the difference between the desired voice signal and certain types of noises, therefore it can't effectively eliminate one without also knocking out the other. Only the human ear can do that.

That's about it for this time. We'll be looking forward to your QSL's (including DX), shack photos, CB news, comments, and questions. See you down the log. Seventy-through and over to you! ■

BY GERRY L. DEXTER

CLANDESTINE COMMUNIQUE

WHAT'S NEW WITH THE CLANDESTINES

There's a lot of confusion surrounding the anti-Iraq clandestine, the *Voice of Free Iraq*, extending even to the name, since it's often also referred to as the Free Voice of Iraq. The station went on the air on January 1, initially using 9570, 15600 and 17940. The trouble is that Radio Baghdad was also reported to be using the latter two spots, running in parallel with 11990 and 6055, both former Radio Kuwait channels. The situation is further confused by the fact that the Voice of Free Iraq is said to use some of the same theme music as Radio Baghdad (called "Baghdad, O, Baghdad"). The schedule for the clandestine is said to be 0330 to 0800 or slightly later, and approximately 1430-2000 using all three frequencies. The 31 meter channel is often reported to be 9569. Tim Johnson of Illinois says he hears both stations on 15600 and 17940, with Baghdad running parallel on 6055 and 11990. Sheryl Paszkiewicz reports the clandestine on 17950//15600 at 2250 with Arabic singing, some talk, and some jamming. Harold Sellers of Ontario noted them on both frequencies at 1957 to apparent sign off at 2003.

Hans Johnson of Maryland, reporting to the *Fine Tuning* bulletin says the station is now announcing 9570, 15600, 15630, 15665 and 17920 and saying that it would soon go to a 24 hour a day schedule. Johnson also heard the station slip up when an engineer played the Radio Cairo news theme at the end of a newscast. So that certainly indicates the broadcasts originate at the studios of Radio Cairo.

As yet we don't know who is running this particular show. But broadcasting is said to be a CIA psywar operation conducted against Iraq, in cooperation with the Pentagon.

The station of Jonas Savimbi's UNITA guerrilla forces, *The Voice of the Resistance of the Black Cockerel*, has been received quite well in North America recently. In Wisconsin, Sheryl Paszkiewicz noted them with an experimental broadcast on 15500, beginning with a sign on procedure at 2050 which included their rooster crow IS, announcement, anthem and ID. All in Portuguese. We found the station also on 7100 from tune in around 2200, apparently in a local language then, but switching to Portuguese at 2230. Reports say that this station's transmitters are now all within Angola. And it would seem some higher power has also been added.

R.C. Watts in Kentucky, notes that the anti-Beijing *Voice of June 4th* is actually listed in the 1991 *World Radio TV Handbook*, which doesn't usually mention clandestines. The listing is included as one of the program networks of the Broadcasting Corporation of China in Taiwan, aired as part of BCC's First Network. The June 4th schedule is given as 0250-0340 on 7250, 0615-0700 on 7150, 7250 and 11905; 0915-0955 on 7150, 7250 and 11905; 1030-1300 on 7150 and 7250, 1630-1830 on 7150 and 11905, 2255-0020 on the same three frequencies. There's also a broadcast on 15280 at 2100-2200. This is all in Chinese, of course. R.C. heard the 7250 frequency in operation at 1115 with a very good signal.

Paszkiewicz heard the anti-Castro *La Voz de Fundacion*, via WHRI at 0156-0230 on 7315 in Spanish with talks about Cuba, an ID and a song about "liberadad". This is scheduled Tuesday through Sunday at 0100-0400. Try 9495 also. Reports are verified and can be sent to 1174 Clarkson Road North, Mississauga, Ontario L5J 2W2, Canada.

It took just over a year, but Aris Giannarelis in Greece finally got a QSL from what's likely the longest running of the current crop of anti-Castro stations, *La Voz del CID*. This one is worth the wait, though, as it's a very attractive red, white and blue QSL card. CID has several addresses, the most reliable being Cuba Independiente y Democratica, 10020 SW 37th Terrace, Miami, FL 33165. Others are Apt. Postal 8130, 1000 San Jose, Costa Rica; PO Box 6019, 08080 Barcelona Spain and Apt. Postal 26843 el Marquez, Caracas, Venezuela.

The current edition of the *NSFL Newsreport*, published by the National Front for the Salvation of Libya, there's a schedule for their station, *Voice of the Libyan People*: 0400-0600 and 1600-1800 on 11825 and 1900-2100 on 9450. These times are different from the last reported schedule and 9450 seems to be a new frequency. Some frequencies used previously (such as 15700 and 9490) have apparently been dropped.

Another clandestine which can often be heard in North America is the *Voice of Unity*, the anti-Afghanistan government station operated by the Muhjahadeen guerrillas. Try 17540 and 15685 at 0130-0215 and 1515-1615. Also 15100 and 15685 at 1200-1215. If you can dig a reply from these folks you'll get a very nice QSL card. The address is PO Box 2605, 2000 Hamburg 60, Germany.

Thanks to those who sent in reception notes and other information this time. We appreciate receiving whatever you may be able to contribute on this subject, whether it's loggings, address information, schedules, background on stations or groups, news clippings and so on. We can protect your identity if you wish.

Until next month—good hunting! ■

La Voz del CID's attractive red, white and blue QSL card, courtesy of Aris Giannarelis, Greece.

TVRO-Satellite Radio

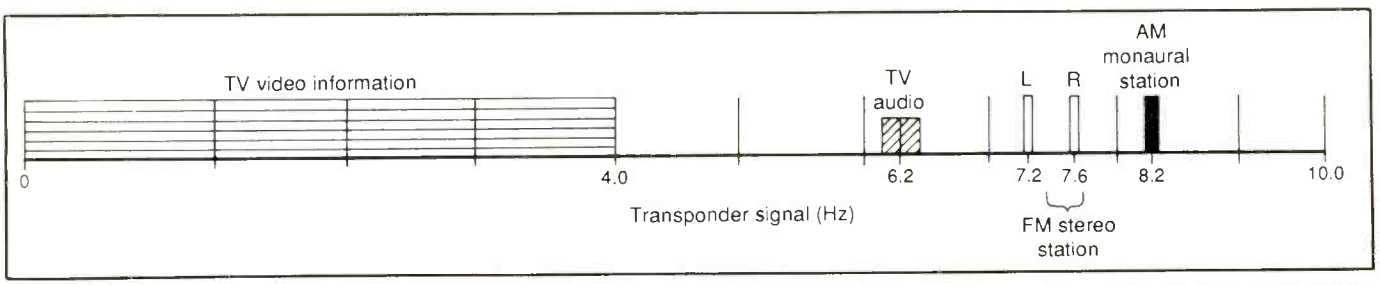
Broadcast band DX'ing is DX'ing in its oldest form. As late as the early 60's, when I started my radio career, broadcast band DX'ing was still popular. My first radio was a table top, 5 tube AM radio that tuned 530 to 1590 kHz. Many of the country's oldest radio clubs like Newark News, were at one time based solely on broadcast band DX'ing. Broadcast band DX'ing has finally come of age. Broadcasters, not only AM, but FM and Shortwave as well, are using satellites to beam their signals nationwide. If you are TVRO equipped you will want to investigate these DX possibilities.

Signals from AM, FM, FM Stereo or Shortwave stations can be attached to TV satellite signals in the same way that the TV program's audio signal is attached to the video transmission. For example, the A TV Satellite's transponder has a baseband (usable frequency space) of approximately 10 MHz. The first four MHz are used to transmit the video information for the TV program on that particular channel. The audio for the TV program is attached, let's say, at 6.2 MHz in the baseband. The audio, of course, can be placed anywhere between 5 and 9 MHz. If you will take a look at the transponder diagram that is shown, you will see there is plenty of room left for additional audio subcarriers. This means that you can attach a stereo signal from an FM radio station, a network news feed, AM or shortwave broadcast or sports event as a subcarrier. This is the way the nationwide rock shows and concerts are carried. Several international Shortwave broadcasters such as Radio France International can be heard on satellites with no additional equipment, simply tune through the audio sections of each transponder and tell me what you find. I have included a partial list of radio stations you can hear on the satellites.

Mobile Satellites

In the not too distant future there may be a whole new satellite system in space that will carry radio programming. Though it is

Satellite	Channel	Program	Sub-carrier	Location
Anik D1	8	CFHI Toronto	6.80 MHz	104.5°W
Anik D1	8	CJCL Toronto	7.80 MHz	104.5°W
Anik D1	11	CBC	6.12MHz	104.5°W
Anik D1	17	CBC FM	6.17MHz	104.5°W
Anik D1	18	CIRK FM Edmonton	7.78 MHz	104.5°W
Anik D1	18	CJFW British Colombia	6.48 MHz	104.5°W
Anik D1	18	CKER Edmonton	7.38 MHz	104.5°W
Anik D1	20	CBM FM Quebec	7.38 MHz	104.5°W
Anik D1	21	CKMN FM Quebec	7.38 MHz	104.5°W
Anik D1	22	CFMI British Columbia	6.80 MHz	104.5°W
Anik D1	22	FBU AM Vancouver	6.80 MHz	104.5°W
Anik D1	22	CBU FM	5.76-5.94 MHz	104.5°W
Anik D1	23	VOCM New Foundland	6.17 MHz	104.5°W
Anik D1	23	CHON FM Yukon	5.41 MHz	104.5°W
Anik D2	11	Smi-classical music	6.80 MHz	110.5°W
Anik D2	17	Semi-classical music	7.56 MHz	110.5°W
Anik D2	20	Semi-classical music	6.43 MHz	110.5°W
Satcom 1	7	KSUN FM Monterey CA	5.76 MHz	139°W
Satcom 1	7	KKJZ LA	5.58 MHz	139°W
Satcom 4	8	Tidewater radio	5.58-7.76 MHz	82°W
Satcom 4	19	Top 40	5.58-7.76 MHz	82°W
Satcom 4	19	R&B	7.38-7.56 MHz	82°W
Satcom 5	24	KSKA FM Alaska	7.38-7.56 MHz	143°W
Morelos 1	2	Radio Mexico/Spanish	6.8 MHz	113.5°W
Westar 5	18	SBN Pittsburgh	7.38-7.56 MHz	122.5°W
Spacenet 1	17	KISN Utah	7.5 MHz	120°W
Spacenet 2	20	Radio France	5.8 MHz	69°W
Spacenet 3	3	WROL Boston	6.12 MHz	87°W
Spacenet	3	Irish Music	6.12 MHz	87°W
Spacenet	5	Pan Am Spanish	6.16 MHz	87°W
Spacenet	5	Sun Radio Network	6.80 MHz	87°W
Spacenet	5	USA Radio net	6.48 MHz	87°W
Spacenet	9	National Black Network	6.3-6.48 MHz	87°W
Spacenet	9	Country Music	5.76-5.95 MHz	87°W
Spacenet	15	Radio Sedeje Iran	6.16 MHz	87°W
Spacenet	15	KKJZ LA	5.58-5.76 MHz	87°W
Spacenet	15	Financial News	6.3-6.48 MHz	87°W
Galaxy 1	3	WFMT FM Chicago	6.3-6.48 MHz	134°W
Galaxy 1	3	TNNR Nashville	7.38-7.56 MHz	134°W
Galaxy 1	7	CNN News	6.30 MHz	134°W
Galaxy 1	11	CBN Radio Network	6.30 MHz	134°W
Galaxy 1	15	WQXR New York	6.3-6.48 MHz	134°W
Galaxy 1	15	Greek Radio	7.33 MHz	134°W
Galaxy 3	11	KOA Denver	8.55 MHz	93.5°W
Galaxy 3	11	Big Bands	5.58-5.76 MHz	93.5°W
Galaxy 3	11	Light Rock	5.94-6.12 MHz	93.5°W
Galaxy 3	11	Jazz Radio	7.38-7.56 MHz	93.5°W
Galaxy 3	11	Oldies station	5.22-5.40 MHz	93.5°W
Galaxy 3	23	WRUL FM Virginia	7.38 MHz	93.5°W
Galaxy 3	24	C-Span/BBC	5.22-5.40 MHz	93.5°W
Galaxy 3	7	Acts Radio Network	6.3-6.48 MHz	93.5°W



General Instrument's 2650R VideoCipher II integrated receiver/descrambler. It provides easy to understand messages on the TV screen to show exactly how the satellite system is functioning.

designed for use in automobiles, hobbyists will no doubt find a way to listen in. According to a new 190 page research study published by International Resource Development, Inc., new technology based on low-earth-orbit (LEO) satellites will be in commercial operation in the US by 1994. This new system would provide mobile telephone, messaging and position-determination services. Because they will be so close to the earth's surface, these LEO spacecraft will eliminate the irritating ½ second delay we now experience with geostationary communication satellites. The new mobile telephone service will provide the automobile driver with new services not offered by today's cellular systems, including a position-determination map following capabilities. Eventually these services would beam high fidelity radio programs from the satellites. These could be received nationwide and without fading or the gaps in coverage. Eight companies have made application to the FCC with proposals for the new satellite system. Two of the companies making proposals are Unisys and Motorola. The Motorola plan calls for a network of 77 LEO satellites to provide world-wide telephone and positioning services. Orbcomm/Starsys and the Radio Satellite Corporation are offering a determination service and a radio programming service respectively.

The position-determination service would display maps and position information on a small video monitor on the dash. Federal safety officials are concerned that this could cause more auto accidents due to the driver being distracted. Current equipment design will allow the system to be used only when the car is stationary. One other solution calls for a "heads-up" display similar to those used in fighter aircraft, where the video information is displayed on the inside of the windshield.

International Resource Development Inc., expects five additional services to develop as the system becomes operational. These include automatic downloading of map information by the satellite; local traffic information automatically fed to the map display; highway detours, road conditions and location of accidents fed to the display; messaging or data transmissions links to national electric mail networks and dispatch of emergency vehicles based on messages generated automatically by the same signal that inflates an air-bag.

Motorola plans to provide world wide coverage by placing 77 satellites polar orbit. Each orbital plane will have 11 satellites in it, spaced evenly, one following the other.

Seven such planes will be placed approximately 51° apart. It looks as though we have "Satellite Telephones" in our future.

Well, it looks like the cycle is complete. The military, amateur radio and now commercial satellite operators have seen the virtue (and cost savings) of operating inexpensive LEO satellites. The military postponed its Milstar satellite project due to cost overruns. AMSTAR, the Amateur radio project was postponed while the Packet and LEO satellites were developed. Commercial interests have also been trying to develop a geostationary mobile satellite system. Again the LEO satellites have made a strong come back. I say comeback because the LEO satellites had been abandoned by almost everyone except the Soviets several years ago. The LEO satellites in Polar orbit have an additional advantage. The ground station equipment can be simple and, therefore, less expensive.

Are you looking for information on how to install or troubleshoot a TVRO system? If so, you will be interested in this new and revised 3rd edition of *The Satellite TV Installation and Troubleshooting Manual*. This 326 page 8½" × 11" format book contains over 300 illustrations, photos and tables. This new revision by Frank Baylin and Ron Long includes two new chapters. Any questions you can think of and most that you haven't thought of yet will find answers in this volume. A free catalog of Baylin Publications can be obtained by writing Baylin Publications, 1905 Mariposa, Boulder, CO 80302.

The ESR 1024 from RL Drake is an integrated Earth Station Receiver with a VideoCipher II descrambler equipped system.

RTTY

BY ROBERT MARGOLIS

THE EXCITING WORLD OF RADIOTELETYPE MONITORING

During my college years, I worked as a copy boy at a local daily newspaper. One of my tasks was to bring AP and UPI teletype copy from the teletype room around to several editors.

During the Christmas season, the AP and UPI teletype operators trumpeted the occasion by sending graphics-like artwork that were designed using only letters and punctuation marks.

Seasonal items such as burning candles, Christmas trees, and Santa Clauses were depicted. Each drawing was about two or three feet long, because the teletype machines were set for double spacing. The artwork was hung on the walls of the newsroom to add to the cheer of the season. One had to stand back several feet from the teletype copy to see the pictures clearly. Some drawings were very imaginative and undoubtedly took considerable time to produce.

I reminisce because last December 28, while viewing RTTY transmissions from the French Embassy at Fort de France, Martinique (18033.5 kHz, ARQ6-90/200), I saw a character-based drawing on my printer. It reminded me of that AP and UPI teletype art. The embassy transmission was somewhat garbled, but it was obvious that a calendar for 1991 was being printed. It had the names of the months in French with the first letter of the days of the week, and the dates, which came out as letters because I didn't press the button that would've produced numbers.

Below the calendar appeared to be a large "1991" produced graphically with characters. It was badly distorted, as was the supposed picture that appeared atop the calendar. I squinted a long time at the picture, but could not make out what it showed. I had failed this RTTY Rorschach Test. The embassy sent the calendar a second time. It too was garbled. I include both transmissions here (Figures 1 and 2) so that you readers can possibly determine what the picture is supposed to be. Each is garbled differently, which may, or may not aid your efforts.

Last month, I mentioned logging a supposed US Navy station on 16619 kHz sending RY's and a string of letters that repeatedly led to encrypted text. Shortly after mailing the column to the *POP'COMM* office, I found another such station operating on 18041 kHz at 1912 UTC. The 75-baud transmission frequently saw RY's followed by "VVMGTCNJBH," the same letter string as reported last month, in front of encrypted text. The mystery of this type transmission continues. Fred Hetherington of Florida reports the same type of activity on 16936.9 kHz at 1400, although he says the 100-baud transmission saw RY's followed by "GTCNJ," which is found within the letter string I logged.

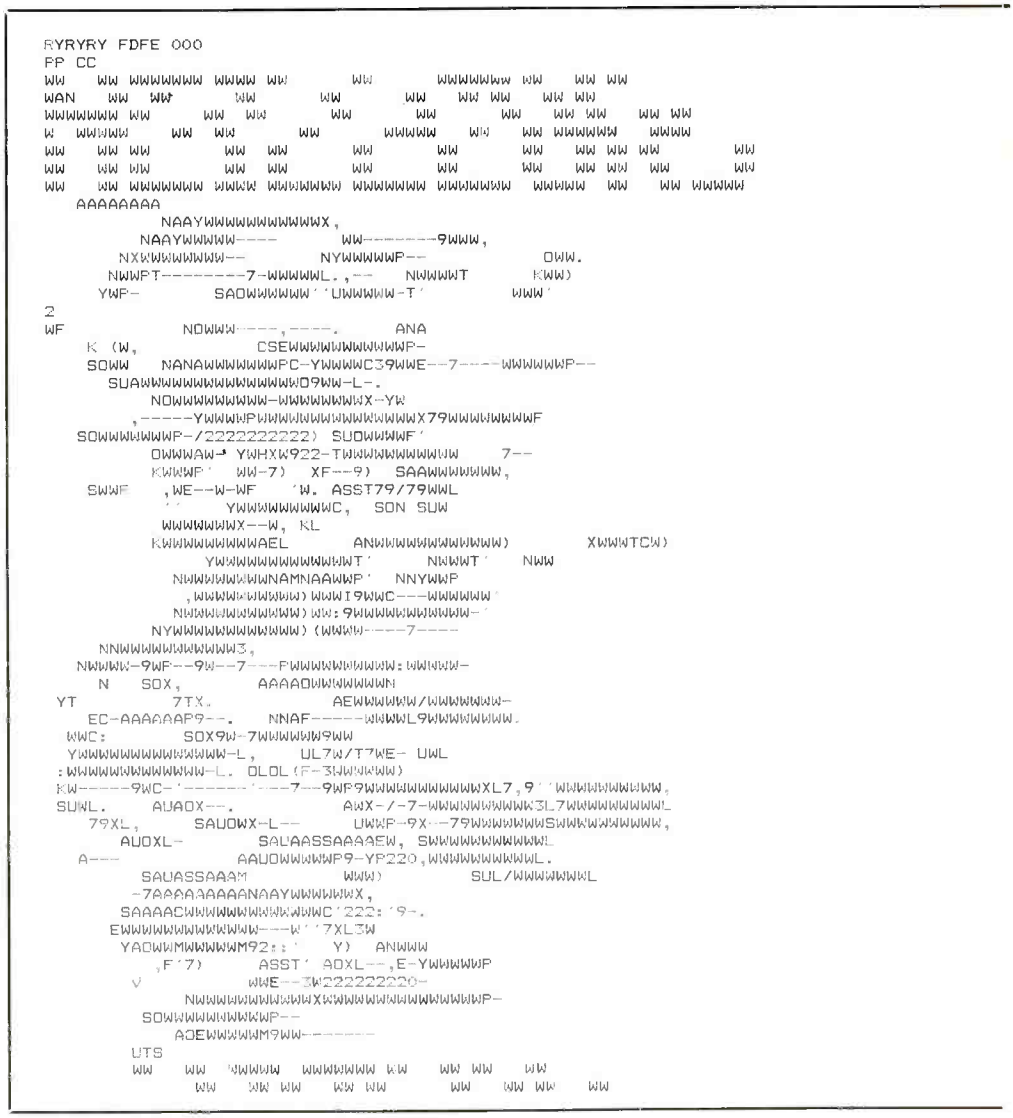


Figure 1

RTTY Intercepts

4462: WLO, Mobile R., AL, w sked for various types of wx rpts, FEC at 0307. (Jerry Domokur, OH)

5393: FDY, French Air Force, Orleans, France, w RYRY, le bricks & 10 count, 50 baud at 0244. (Domokur, OH)

5947: "TWHS" w RYRY to "OWV4" at 1116, 50 baud. (Kevin Tubbs, Germany)

6330: CFH, Canadian Forces Meteo Center, Halifax, NS, w coded wx at 2330, 75 baud. (Domokur, OH)

6805: SOG280, PAP, Warsaw, Poland, w RYRY & CQ, at 2350, 50 baud. (Domokur, OH)

6848: SOG284, PAP, Warsaw, Poland, w nx in EE, 50 aud at 0026. (Manthey, NY)

6992: C/S's IEN21/36/37/39 seen at 1144, 50 baud. (Tubbs, Germany) Thanks for the printout, Kevin. It showed RYRY + "IEN36 de (garbled ID)," "IEN21 de IEN37," & IEN 39 de IEN21." IEN21 is the Italian Army. Padova, Italy; IEN36, is Gorizia, Italy. I find no listings for IEN37/39—Ed.

7331: USAF MARS stas AFA2OV & AFA2TS in 2-way comms, 300-baud packet at 2359. (Domokur, OH)

7345: "FOW" + RYRY at 2031, 75 baud. (Tubbs, Germany).

7428: Telam, Buenos Aires, Argentina, w nx in SS, 50 baud at 0006. (Domokur, OH)

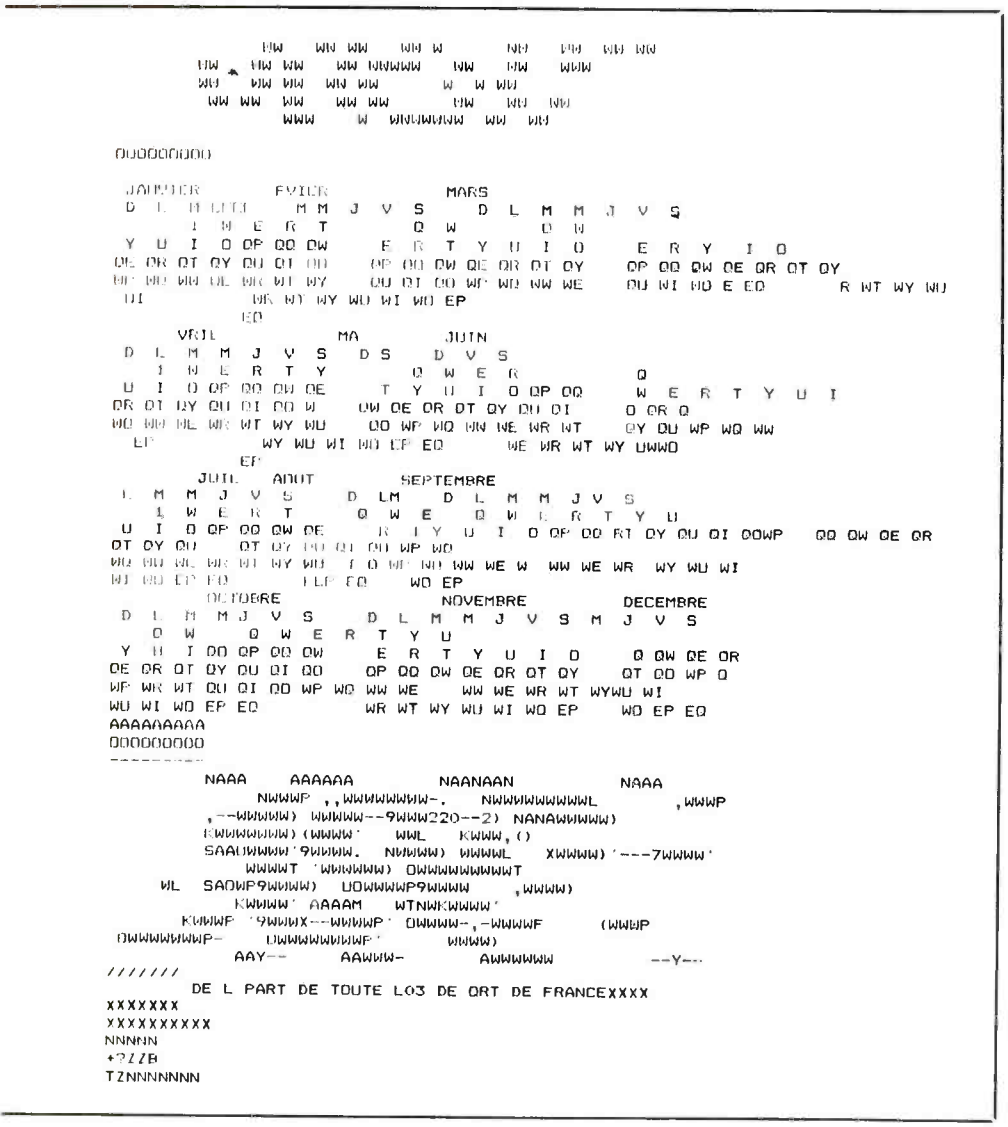
7512: XVH69, Ho Chi Minh Ville Meteo, Vietnam, w RYRY, 50 baud at 1211. (Manthey, NY)

7541: VER, Canadian Forces, Ottawa, ON, w encryption, ARQ-M2/96, channel A, at 1120. (Ed.).

7980: Y3L, Nauen Meteo, Germany, w coded wx, 100 baud at 0018. (Domokur, OH)

9070: 6VU, ASECNA, Dakar, Senegal, w aero wx at 0250, 50 baud. ("Bunky," IL) Actual c/s is 6VY50—Ed.

9994: CSY, Santa Maria Aero, Azores, w aero wx, 50 baud at 0245. ("Bunky," IL) Same sta hrd at 0647. (Paul Scalzo, PQ) The c/s here is CSY65—Ed.



10002: Un-ID w RYRY & foxes, 100 baud at 1312. (Tubbs, Germany)

10406.5: 6VU, ASECNA, Dakar, Senegal, w RYRY, 50 baud at 0048. (Domokur, OH) 6VY56 is the c/s here—Ed.

10536: CFH, Canadian Forces Meteo Center, Halifax, NS w coded wx at 0054, 75 baud. (Domokur, OH) Same sta hrd at 0550. (Scalzo, PQ)

10551.6: GFL23, Bracknell Meteo, England, w coded wx at 2249, 50 baud. (Scalzo, PQ)

10577.5: OMV68, Prague, Czechoslovakia, w tfc at 1440, 75 baud. (Tubbs, Germany)

10633: SUC, Cairo Aero, Egypt, w aero wx, 50 baud at 2205. (Ed.)

10841: MUA, RAF, Boddington, England, w encryption, ARQ-M2/96, channel A, at 1810. (Ed.)

11027.5: 9PL, Kinshasa Aero, Zaire, w RYRY, 50 baud at 0215. ("Bunky," IL)

11071.5: USN MARS sta NNN0NYM in Saudi Arabia w MARSgrams, 75 baud at 2217. (Ed.)

11072.1: USMC MARS sta NNN0BYR wkg NNN0MEF, ARQ at 2125. (Ed.)

11106.5: MFA, Rome, Italy, w a 5L msgs & s/off in II, ARQ, 1039-1058. (Ed.)

11112.5: ETD3, Addis Ababa Aero, Ethiopia, w RYRY, 50 baud at 2106. (Ed.)

11311.7: MFA, Cairo, Egypt, w 5L grps + tfc in EE & AA to Warsaw, Poland, ARQ at 1937. (Tubbs, Germany)

11430: HMF55, KCNA, Jungsan, N. Korea, w nx in FF, 50 baud at 2130. (Fred Hetherington, FL)

11439: TNL, ASECNA, Brazzaville, Congo, w RYRY at 0200, 50 baud. ("Bunky,", IL)

11450: RDD77, Moscow Meteo, USSR, w coded wx, 50 baud at 0200. ("Bunky," IL)

11519: VER, Canadian Forces, Ottawa, ON, w encryption, ARQ-M2/96, channel A, 1603. (Ed.)

12083: IRJ50, ANSA, Rome, Italy, w nx in EE at 1840, 50 baud. (Manthey, NY)

12160: RGD25, Tass, Moscow, USSR, w nx in FF, 50 baud at 1853. (Manthey, NY)

12186: 5AQ62, JANA, Tripoli, Libya, w nx in EE at 1803, 50 baud. (Scalzon, PQ)

12314.8: RVW57, Tass, Moscow, USSR, w nx in

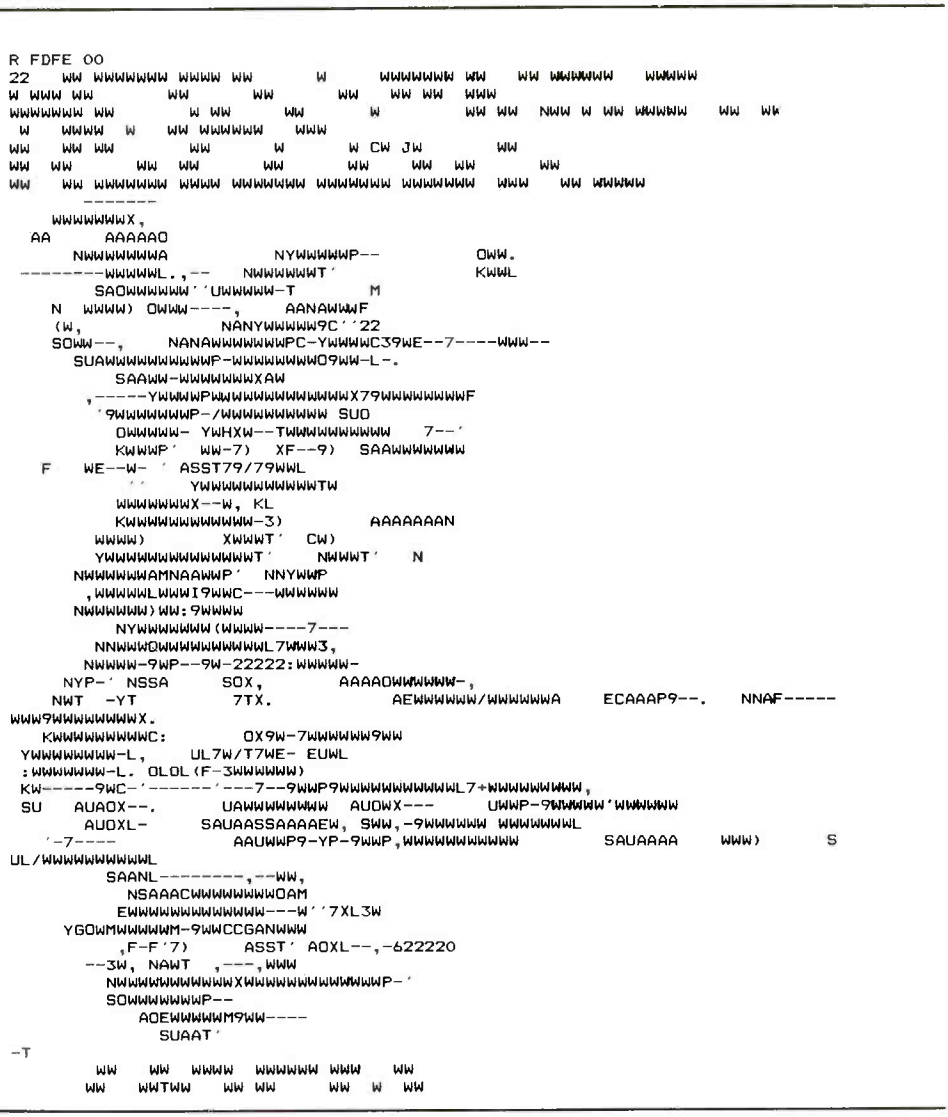


Figure 2

Abbreviations Used In The RTTY Column

AA	**Arabic**
ARQ	**SITOR mode**
BC	**Broadcast**
EE	**English**
FEC	**Forward Error Connection mode**
FF	**French**
foxes	**"Quick brown fox . . . "test tape**
GG	**German**
ID	**Identification/ied**
MFA	**Ministry of Foreign Affairs**
nx	**News**
PP	**Portuguese**
RYRY	**"RYRY . . . "test tape**
SS	**Spanish**
tfc	**Traffic**
w/	**With**
wx	**Weather**

EE, 50 baud at 1901. (Manthey, NY)

12325: RDD72, Tass, Moscow, USSR, w nx in EE at 1923, 50 baud. (Manthey, NY)

13054: UJY, Kalingrad R., USSR, w navareas in RR, 50 baud at 1632. (Ed.)

13415.2: Un-ID idling in ARQ mode, 1651-1800, but occasionally sending selcals such as TVXS, TVKM, TVQS, TVKC, TVXK & TVXY. Might be an Egyptian diplo sta. (Ed.)

13560.4: 3MA22, CNA, Taipei, Taiwan, w nx in EE, 50 baud at 1551. (Peter T., England)

13580: HMK25, KCNA, Jungsan, N. Korea, w nx in FF, 50 baud at 1300. (Manthey, NY) Correct c/s is HMF36—Ed.

13656: XVM8, VNA, Hanoi, Vietnam, w msgs to Beijing & nx in EE/FF, 50 baud at 1015. (Hetherington, FL)

13660: 5YD, Nairobi Aero, Kenya, w RYRY, 50 baud FDM at 1900. (Peter T., England)

13665: 6VU73, ASECNA, Dakar, Senegal, w coded wx at 2250, 50 baud. ("Bunky," IL)

13737: 5YD7, Nairobi Aero, Kenya, w RYRY at 2008, 50 baud. (Peter T., England), and at 2138. (Scalzo, PQ)

13752.5: HZJ, Jeddah Meteo, Saudi Arabia, w RYRY, 50 baud at 2138. (Scalzo, PQ)

13842: OBC, Lima Navrad, Peru, clg in order, LOL, HDN, & CCS, 75 baud after 0110. (Hetherington, FL)

13875: MFA, Ankara, Turkey, w tfc in Turkish & fL msgs, 1912-2045, 75 baud. (Ed.)

13940: CLP1, MFA, Havana, Cuba, w crypto after ZZZZZ, 100 baud at 2009. (Ed.)

14367: BZP64, Xinhua, Yuryumqi, China, w nx in EE, 75 baud at 1310. (Manthey, NY)

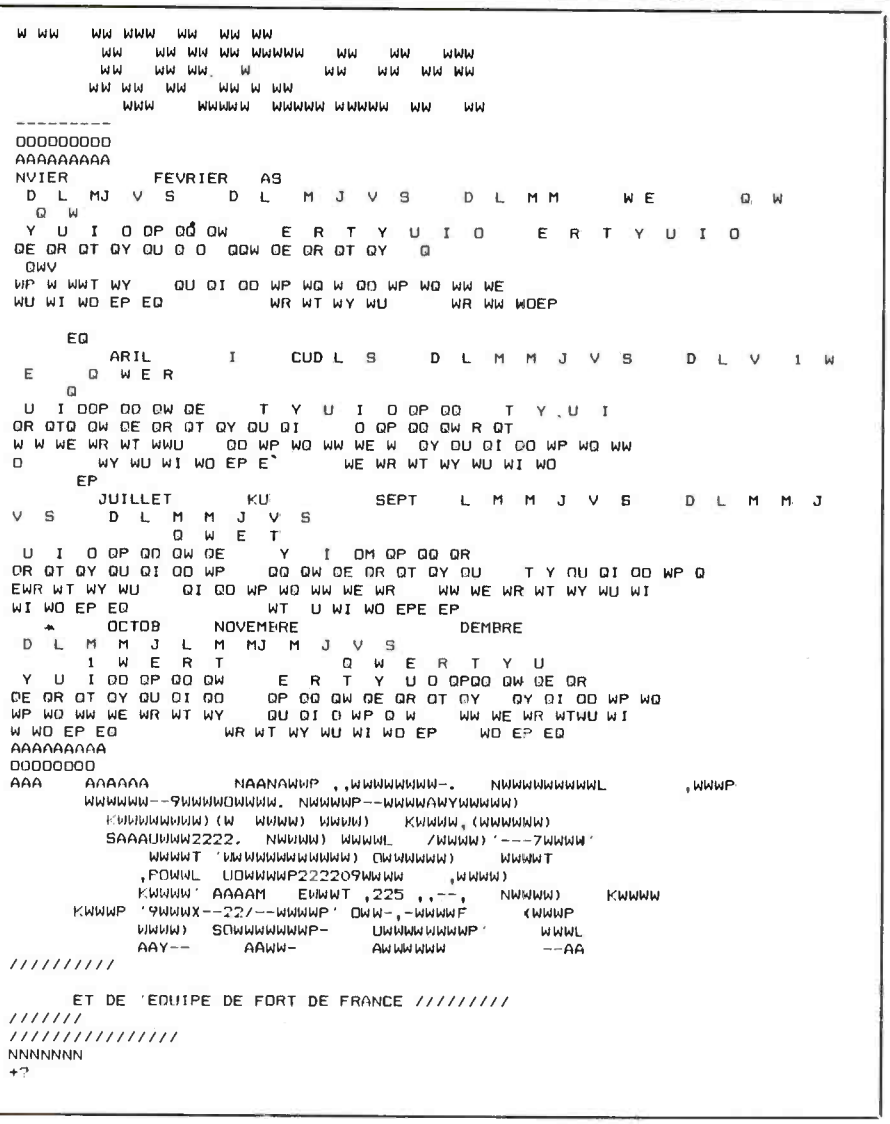
14370: HZJ, Jeddah Aero, Saudi Arabia, w coded wx, 50 baud at 2149. (Peter T., England)

14370.5: Un-ID w RSRS (instead of RYRY) & "DE ER ER ER," 50 baud at 1825. (Tubbs, Germany)

14462.5: TNL, ASECNA, Brazzaville, Congo, w aero wx, coded & plaintext in FF, 50 baud at 2046. (Ed.)

14490: RNK36, Tass, Moscow, USSR, w nx in EE, 50 baud at 1828. (Manthey, NY)

14497.5: CSY66, Santa Maria Aero, Azores, w aero



KDMA TESTING K RYRZRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRY

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Figure 3- *MFA, Jakarta, Indonesia's test transmission was logged by Harold Manthey of New York State on 19101.4 kHz, at 1425 UTC, 50 baud. "Bagaimana penerimaan" is Indonesian for "how's reception?"*

wx at 1903, 50 baud. (Domokur, IL)

14787: 9PL, Kinshasa Aero, Zaire, w RYRY at 0023, 50 baud. (Scalzo, PQ)

14880: JMG4, Tokyo Meteo, Japan, w coded wx at 1320, 50 baud. (Manthey, NY)

14925: "RFTJ," French Navy, Dakar, Senegal, w "controle de voie," ARQ-M2, channel A, at 1700. (Scalzo, PQ) Was it 96 or 200 baud?—Ed.

15693: RWU55, APN, Moscow, USSR, w nx in EE, 100 baud at 0845. (Hetherington, FL)

16248: VOA, Tangier, Morocco, w RYRY to VOA, Greenville, NC. Was 75 baud FDM at 1512. (Domokur, OH)

16300: RMMD59, APN, Moscow, USSR, w APN nx

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KDE S9Y S9Y S.Y
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OUS QJH1
QJH1 QJH1 QJH1
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Figure 4- *Test tape sent by S9Y, Sao Tome Radio, Sao Tome and Principe Islands, on 10121.5 kHz at 0540 UTC, 50 baud. (Submitted by Hugh Hawkins, MS)*

in PP, 100 baud at 0950. (Hetherington, FL)

16457: "6XM8" w RYRY, foxes & 10 count to "C37A" at 1900. (Hetherington, FL) Baud rate not given—Ed.

17425: PWX33, Brasilia Navrad, Brazil, w RYRY to "RPFN," 75 baud at 0120. (Hetherington, FL)

17426: OFA, Helsinki R., Finland, w FEC tfc in Finnish, 1727-1728. (Peter T., England)

17427: PWN, Natal Navrad, Brazil, w drill msgs in PP at 1900, 75 baud. (Hetherington, FL)

17443: BZG48, Xinhua, Yuryumqi, China w RYRY, foll by nx in FF, 50 baud at 1358. (Mathey, NY)

17540: NBA, USN, Balboa, Panama, w RYRY, foxes & 10 count 75 baud at 1645. (Domokur, OH)

17610: YZJ8, Tanjug, Belgrade, Yugoslavia, w nx in SS, 50 baud at 1817. (Manthey, NY)

18021.7: Un-ID Egyptian diplo w tfc in AA, ARQ, 1322-1345. (Ed.)

18033.5: French Embassy, Fort de France, Martinique, w 5L msgs, plaintext msgs & nx, ARQ6-90/200 at 1350. (Ed.)

18040.5: TCY4, AA, Ankara, Turkey, begins nxcast at 1030, 50 baud. (Hetherington, FL) HGX21, MFA, Budapest, Hungary, w msgs in HH, DUP-ARQ at 1400. (Ed.)

18065: CLP1, MFA, Havana, Cuba, w a circular to Embacuba Peru at 1630, 50 baud. (Domokur, OH)

18125: RND70, Tass Moscow, USSR, w nx in EE, 50 baud at 1300. ("Bunky," IL) and at 1352. (Manthey, NY)

18363.5: 9PL, Kinshasa Aero, Zaire, w RYRY, 50 baud at 2115. ("Bunky," IL)

18385: RRQ20, Tass, Moscow, USSR, w RYRY at 1230, 50 baud. ("Bunky," IL)

18401: Hungarian Embassy, Moscow, USSR, w tfc in HH, 100 baud at 1433. (Ed.)

18405: RCT57, Tass, Nikolaev, USSR, w nx in EE at 1345, 50 baud at 1400. ("Bunky," IL)

18433: Un-ID Italian diplo w msgs in II at 1524, ARQ-E/96. (Ed.)

18597.3: U7A91R & I6C33R in 2-way comms, 300-baud packet, 1726-1742. U7A supposed to have training msgs for I6C. Also on USB on 18599.5 until 1745, when they took a 45 min. break. Returned at 1830, then moved to freq "Foxtrot 6" for better comm conditions. (Ed.)

18635: CLP1, MFA, Havana, Cuba, w 5F msgs to Guyana at 1307, 50 baud. (Ed.)

18750: CLP25, Cuban Embassy, Maputo, Mozambique, w "prensamozambicana" nx in SS, 50 baud at 1934. (Domokur, OH)

19035: CLP1, MFA, Havana, Cuba, w a 5F msg to Embacuba Ghana at 1815, 50 baud. (Domokur, OH)

19101.4: "DMA," QTH unknown, w RYRY, 50 baud at 1425. (Manthey, NY) It's MFA, Jakarta, Indonesia—Ed.

19185.5: CLP1, MFA, Havana, Cuba, w crypto after ZZZZZ, 50 baud at 2335. ("Bunky," IL)

19220: Un-ID N. Korean diplo w tfc in KK & 5F msgs,

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11177 PPQRI TPUOU WTRQU PQORO


ZTIGI NMMFM SKXUD XMTQW FMTVV REGNG HHOMX VMZEB QMBSO POFZG
WUHKG TGQCK NXOHN AOJPK JOCLT DQIZU KZPRG NAPFM LVLFI XNTIH
GKLJG COQDA PLRBV XMEWF RXQZS GFAYP JZQSE AVFIA CUTZR DTZSA
DXAYT XZGWF CZOZG HRZUV EIUQH VSWXO IGZFZ NMION TXELY AMTLR
DJBRK OPRLS YJLMQ AWCPQ COOIG DHYDX DXWBW YBBNE RPDYN NWWFH
FIWZO UEWCJ BQVTM AMWRI RVHUR PZZSP YUARW TSIRR DIXEO CZRRS
LDRML ITJZG SQVYP ZDVNK TMNXZ GRJXV RRHJN AKPWJ PKFKP TLZLS
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Figure 5- *Joseph Topinka, IL found this transmission on 16458 kHz at 2200 UTC, 75 baud. Although "YBU" has been observed for many years with RTTY traffic, no one has yet positively identified the sender.*

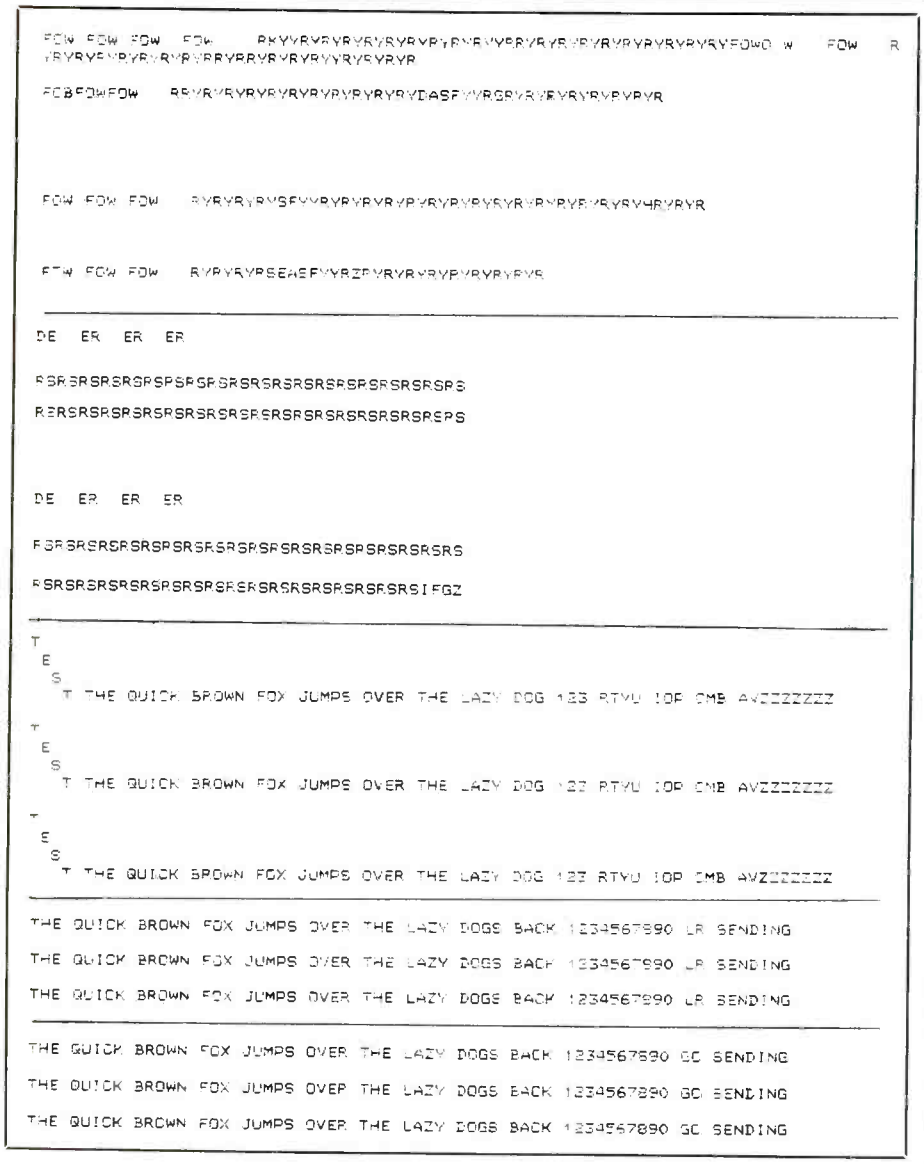


***Figure 6**- Kevin Tubbs of Germany sent us these interesting intercepts. The "FOW" transmission was on 7345 kHz at 2031 UTC, 75 baud. He found the "DE ER" test tape on 14370.5 kHz at 1825 UTC, 50 baud. The foxes from "CMB" was recorded on 19517 kHz at 1108 UTC, 75 baud. The last two test slips, from "LR" and "GC" are Voice of America transmissions, and indicate which overseas stations are occupying the frequency of 19991 kHz at the time. "LR" (Liberian relay) was sending at 0824, and "GC" at 1615. Both were at 75 baud.*

50 baud at 1340. (Hetherington, FL)

19243.5: CLP1, MFA, Havana, Cuba, w prensaminrex, 50 baud at 2030. ("Bunky," IL)

19278.5-19281: 4UZ, UN, Geneva, Switzerland, w RYRY & QRA on several FDM channels, 75 baud at 1200. (Hetherington, FL)

19517: Un-ID w foxes, 10 count, & "CMB AVZZZZZZZ." Was 75 baud at 1108. (Tubbs, Germany)

19821.5: Egyptian Embassy, Khartoum, Sudan, w ARQ tfc in EE at 1830. (Domokur, OH)

19860: GYA, Royal Navy, London, England, w a test tape at 1511, 75 baud. (Ed.)

19980: EPJ2, IRNA, Teheran, Iran, w nx in EE, 50 baud at 1630. (Manthey, NY) Also listed for this freq is 9BC33, Halghehdarreh, Iran. Can anyone tell us which c/s is used by IRNA, or are both used?—Ed.

19991: Un-ID w foxes, 10 count & "LR sending." Was 75 baud at 0824. Also, a similar type test tape at 1615, but w "GC sending". (Tubbs, Germany) It was VOA, Monrovia, Liberia. The "LR" in "LR sending" stands for "Liberian Relay." "GC sending" is new to me—Ed.

20085: ISX20, ANSA, Rome, Italy, w RYRY, 50 baud at 1801. (Manthey, NY)

20092.5: "LBL1," Beirut, Lebanon, w "QCVZ de LBL1" in ARQ at 1110. (Tubbs, Germany)

20402: YWM1, Maracaibo Navrad, Venezuela, w IANTN tfc to OBC, 50 baud at 2018. (Domokur, OH)

20560: 5AQ88, JANA, Tripoli, Libya, w nx in EE at 1645, 50 baud. (Manthey, NY)

20624.5: 5KM, Bogota Navrad, Colombia, w RYRY & SGSG, 1817-1908, 75 baud. (Manthey, NY)

20941: US Army MARS stas AAE1VLK & AAR3NAA in 2-way comms, 300-baud packet at 1900. (Domokur, OH)

21865: Un-ID w crypto after ZZZZPPPPP . . . ZHP FNCJGM. This pattern was constant throughout the xmsn. Was 100 baud at 1440. (Ed.)

22443: OST, Oostende R., Belgium, w telex tfc at 1637, ARQ. (Ed.)

22550.5: GYA, Royal Navy, London, England, w a test tape at 1652, 75 baud. (Ed.)

22849.5: Either Embacuba Nigeria, Burkina Faso, or Ghana, w 5F msgs & diplo nx re sub-Saharan Africa, 50 baud at 1738. (Ed.)

22888: "DFZG," MFA, Belgrade, Yugoslavia, w RYRY & crypto after XYXY, 75 baud at 1459. (Ed.)

22854: MFA, Paris, France, w 5L msgs & msgs in FF, ARQ6-90/200 at 1555. (Ed.)

22916.5: CLP23, Cuban Embassy, Lagos, Nigeria, w 5F msgs, 50 baud at 1509. (Ed.)

22946: "RPFN," Monsanto Navrad, Portugal, w RYRY, foxes & 10 count, 75 baud at 1503. Several days earlier, Monsanto was on 22947.5 w same test tape at 1525. At 1534, told "RPTI" to "up satelite" (PP spelling of satellite). Off at 1538. (Ed.)

23370: HZN50, Jeddah Meteo, Saudi Arabia, w coded wx, 100 baud at 1642. (Domokur, OH)

23997.5: GHH, Jamestown Meteo, St. Helena, w "Met St Helena transmitting on a frequency of 23997.5 kHz at 1000Z with retard synops and midnight pilot. Message will repeated on this frequency and on 17414 kHz. A further message for temp and synop will be broadcast on these frequencies at 1400Z" + RYRY. Was 50 baud at 1000. (Tubbs, Germany)

24553.5: PWX, Brasilia Navrad, Brazil, w RYRY & SGSG to OBC, 75 baud at 1417. Puny sig. Moved to 24552 at 1425 & xmtd w a more macho sig. Sent msgs 1429-1430. (Ed.)

24790: ISX24, ANSA, Rome, Italy, w nx in FF, 50 baud at 1434. (Ed.)

24871: "RFHJ," French Navy, Papeete, Tahiti, w "controle de voie," ARQ-E3/96 at 1435. (Domokur, OH)

25419.5: DMK, MFA, Bonn, Germany, w crypto & msgs in GG to Kinshasa, Zaire at 1401, ARQ-E/96. (Ed.)

25437: OXZ, Lyngby R., Denmark, w telexes, ARQ at 1342. (Ed.)

26240.9: "RFVI," French Navy, Le Port, Reunion, w "non protege" tfc to Toulon, France. Was ARQ-E3/100 at 1358. (Domokur, OH)

27368.7: HBD24, Swiss Embassy, QTH unknown, w tfc in GG, ARQ at 0714. (Tubbs, Germany) ■

LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

The Gulf War had shortwave listeners tuning around for signals from Radio Baghdad. And it was certainly a challenge! The English language North American service wasn't heard on 11810//11830 where it last operated with start times that seemed to hopscotch between 0100-0300. The English language Voice of Peace, aimed at the U.S. military, was in operation only occasionally and probably at very reduced power levels. We heard from one serviceman in the Gulf who, armed with a Sony 2010, figured the schedule as 1100-1400 on 11860, 1700-1900 on 1135 mediumwave and 2100-2300 on 540 mediumwave. We had some reports of very weak reception at 1700 on 11860 and 15505 was reported in use, too at least briefly. Radio Baghdad in Arabic has been active on 6055, 11990 (both from Kuwait), 15600 and 17940. Tim Johnson of Illinois has heard it around 2100.

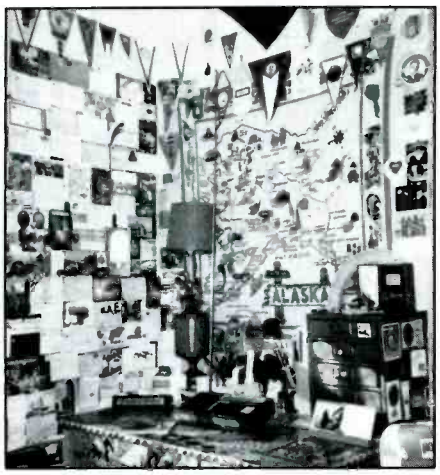
All of the international shortwave broadcasting bands seem to have had more Arabic than normal as world nations increase their radio output into the Gulf, along with broadcasts from Arab world countries. It's nearly necessary to be able to speak Arabic and have 24 hours a day available for monitoring in order to sort it all out.

Last time we mentioned plans for four or five new stations from Nicaragua and now the first of these has arrived. Radio Informaciones de Centro America (Radio RICA) has started up on 4901 variable, running from a sign on around 1155 to sign off about 0200, all in Spanish. The station's address is Altamira de Este de la Vicky, 6c al lago, Casa No. 381, Managua.

The civil war in Liberia knocked all that country's shortwave stations off the air, including the VOA relay. However, the multinational African peace-keeping force has put a station on the air with call letters ELBC, which once belonged to the official government station. ELBC apparently comes from a mobile transmitter and the power is probably fairly low. A few North American DX'ers have managed to pick this one up on 7275 when it signs on at 0759.

The changes continue at Radio Moscow. The latest is the end of or the coming end of the North American Service. Several sources report that this, along with other separate English language services, will be incorporated into the World Service. The station's winter season schedule still listed it as the North American service, however.

Radio Japan's own Sri Lanka relay came on the air on January 1. The initial schedule, for English anyway, is rather limited and not designed for easy reception here: 9535 at 1400-1500 to South Asia, 0100-0200 on 11840 to South Asia and 1700-1800 to Middle East and North Africa on 15210.



These colorful walls filled with QSL's, pennants, maps and etceteras belongs to Anthony Wermuth in Shelbourne Falls, Massachusetts who is a member of 11 DX clubs!

Another expansion for the growing Adventist World Radio—that's Radio Lira—in Costa Rica. The station is adding two—20 kilowatt and a pair of 50 kilowatt transmitters and will use frequencies in the 60, 49, 31 and 25 meter bands. At present, Radio Lira uses 5970 and 9725 between 2300-0400 and 11870 at 1100-1500.

The Italian private station, the Voice of Europe, is reported to have moved from variable 7540 and to now be operating 24 hours a day on 13710, though we've not seen any North American logs on this yet.

News reports indicate that the Gulf crisis brought a five-fold increase in the sale of shortwave radios. That's good news, but there's a downside. We're afraid that too many people who are trying shortwave are finding themselves short on information, and probably patience, too! If you know of people who are trying out shortwave, why not give 'em a hand and help them through the transition. Pass them along a copy of *POP'COMM*, give them some tuning tips, and help them get off on the right foot!

World Christian Broadcasting Corporation, which owns Alaska's KNLS, says that it has become the first religious broadcaster to have a weekly one hour radio program in the USSR! This is being aired on All Union Radio, Channel 1. Wonder if it's on shortwave, too?

THE MAIL: William Moser in Pennsylvania thinks he heard a speech by King Hussein over Radio Jordan. Bill says the Gulf crisis was "probably the first time in the 25 years I've been listening to shortwave that nearly everybody's news agreed with everyone else's!"

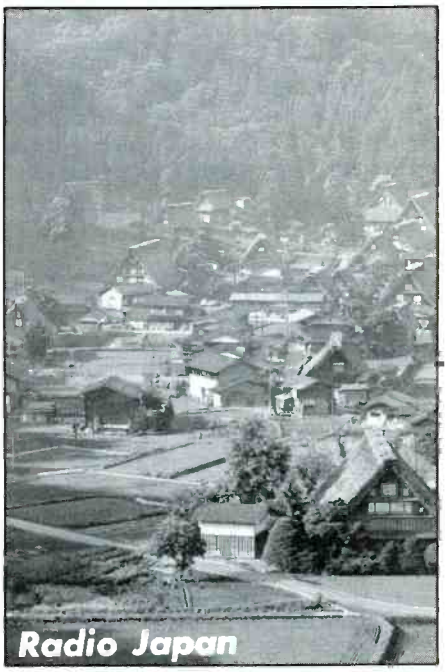
Vince Garcia in Utah says that Radio Nacional de Chile was largely inactive during the last couple of months of 1990. It was on the air for New Year's eve and again to provide news coverage when the Gulf war broke out. Apparently there have been problems in getting funding from the Chilean congress which now have been resolved.

Vince invites Utah SWL's to join the Utah DX'ing Association. You can write to Vince at 417 North Cress Cr., Salt Lake City, 84116, for more information.

Mark Wilkerson of Corbin, Kentucky, wonders what happened to Radio Luxembourg's English programming on 6090. 15350 now offers English 24 hours a day, Mark. A Sony ICF-2003 received as a gift two years ago created a shortwave addict out of Mark.

Randy Bradford in Bellevue, Nebraska supplies us with a welcome shack photo. The equipment includes a Kenwood R-2000 and a Magnavox D-2999. Randy has about 85 countries in his log so far.

Like all those who return to SWL'ing after a long time away, David A. Gasque of Orangeburg, South Carolina has returned with a vengeance and is amazed at all the changes. Particularly striking, says David, are all the new stations and services (and some that have disappeared!) and increased



This recent Radio Japan QSL was received by Andy Johns in Texas.

number of out of band signals. See this month's loggings under Venezuela for the answer to your unidentified, David.

Ron Gillis in New Hampshire and Kevin Mead in Maine are celebrating QSL's at last from Radio Damascus. They even received copies of *The Syria Times* newpaper. Kevin continues to be frustrated by the lack of replies from Radio Yugoslavia.

Remember that we always welcome your shortwave broadcast loggings! Please list them by country, double or triple space between items and add your last name and state abbreviation after each item. Of course, we're always eager to have shack photos, spare (non-returnable) QSL's for use as illustrations, station schedules and brochures and what-have-you. We look forward to hearing from you often!

Here are this month's logs. Language is English unless otherwise indicated. All times are UTC.

Abbreviation 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

Randy Bradford of Bellevue, Nebraska does his listening from this two-receiver shack.

Albania: Radio Tirana, 7205 at 0630. (Pelliciari, CT) 9500 at 0644 with "Music on Request." 9760 at 0230 & offer to accept commercials on Radio Tirana. (Carson, OK)

Algeria: Radio Algiers, 9535 at 0609 with announcer in FF. (Moser, PA)

Antigua: BBC relay on 5975 at 2300. (Moser, PA) 6195 at 1115. (Nichols, UT)

Deutsche Welle, relay 9545 at 0302. (Moser, PA)

Argentina: RAE on 11710 at 0100; 0115. (Garcia, UT; Barry, CA)

Radio Continental, feeder on sideband, 9118 at 0440 in SS. (Bednarski, BC) (nominal 9115. editor)

Armenian SSR: Radio Yerevan, 7400 with EE news at 0254-0258. (Pelliciari, CT) (Rest of half hour is in Armenian, editor)

Ascension Island: BBC relay 7105 to West Africa in FF at 0635. (Nichols, UT) 15400 at 0650. (Moser, PA)

Australia: Radio Australia, 6060//9770 at 1430. 6080 at 1401, 9760 at 0820 and 11720//11820 at 1410. (Carson, OK) 9580 at 1131 and 1610. 9710 at 1610. (Nichols, UT) 21740 at 0311. (Bailey, AR)

ABC Brisbane on 4920 at 1300 with news, apparent technical problem as off abruptly at 1305. (Johnson, IL)

Austria: Radio Austria International, 6015 (via Canada, editor) at 0538; 0553. (Nichols, UT; Bailey, AR) 9870 at 0130 with news. (Moser, PA)

Belgium: BRT, 21810 at 1405 with DX program. (Carson, OK) 1410. (Zamora, ND)

Benin: ORTB on 4870 at 0555 with IS, anthem and sign on. (Moser, PA) (Presume in FF, editor)

Botswana: Radio Botswana, with interval signal at 0249. (Moser, PA) 0425 with "Thursday Morning Show" to 0428 when Radio Nigeria began "tuning up" (Johnson, IL)

Bulgaria: Radio Sofia, 7115 at 0400 with news, listener's letters, folk music. (Pelliciari, CT) 9700//11680 at 0006. (Carson, OK)

Cameroon: CRTV on 4750 (Bertoua) and 4850 (Yaounde) at 2218 with extensive Gulf War feature, switching from EE to vernacular to FF and later back to EE. Also noted on 5010 (Garoua) and 4795 (Douala). (Johnson, IL) 4850 at 0604 with EE news. (Moser, PA)

Canada: Radio Canada International, 9535 at 0127. Also 13670//15260//17820 at 1839 with "SWL Digest." (Nichols, UT) 9755 at 0030, 11940 at 0205, 13670 at 2136 and 17820//21545 at 1723. (Carson, OK) 15325 in FF, with EE ID 2130. (Vaage, CA)

CFRX relaying CFRB, 6070 at 0800. (Carson, OK)

CKZN, St. John's at 0950 after DW leaves. (Smith, MO)

Chad: Radio National Tchadienne, 4905 at 0532 in FF, brief music. (Moser, PA)

Chile: Radio Nacional, 15140 at 0320 in SS. (Garcia, UT)

China: Radio Beijing, 9665 at 1206 with news and 11840, via Canada, 0507. (Nichols, UT) 11695 at 0400. (Pelliciari, CT)

Colombia: La Voz del Cinaruco, 4865 in SS with Latin music, news at 1000. (Gasque, SC)

La Voz del Llano, 6115.9 at 0013 in SS with news and commercials. (Reyes, Mexico)

Voz del (Rio) Aruca, 4899 at 1119, oldies and slow Latin ballads, commercials, all SS. (Johnson, IL)

Costa Rica: Radio Reloj, 4840 at 0331 with music, SS. (Reyes, Mexico) 6005 at 0702. (Moser, PA) (nominal 4839 and 6006 respectively, editor)

Faro del Caribe, 5055 at 0400 with religious program in SS. (Reyes, Mexico) 1120. (Gills, NH)

Adventist World Radio, 9725 at 2331; 0030. (Nichols, UT; Pellicciari, CT)

Radio For Peace International, 7375 with "Radio New York International" program, followed by "Health-watch" at 0649. (Gasque, SC) 21565 at 0007. (Carson, OK)

Cuba: Radio Havana Cuba, 9505//11820 at 0230. (Zamora, ND) 11760 at 0400. (Mead, ME) 11820 at 0242. (Bailey, AR)

Radio Rebelde, 3365 at 1106 with news in SS. (Gillis, NH)

Czechoslovakia: Radio Prague International, 5930 at 0305. (Bailey, AR) 7345 at 0100; 0411. (Mead, ME; Vaage, CA)

Ecuador: HCJB, 9755//11835 at 0706, 21455 USB at 1950 and 2595USB at 1940. (Carson, OK) 15155 at 0042. (Bailey, AR) 15270 at 1943. (Moser, PA) 21480 at 1925. (Mead, ME)

Egypt: Radio Cairo, 9475 at 0215; 0230. (Johnson, IL; Moser, PA)

England: BBC, 5965 at 1100. (Zamora, ND) 9410 at 0542, 9715 at 1155 in JJ, 15260 at 1606. (Nichols, UT) 9915 at 2253. (Bailey, AR) 12095 at 0507. (Moser, PA) 15310 at 0315. (Vaage, CA) 15575 at 1530. (Carson, OK)

VOA via BBC's Wooferton site on 6140//7170 at 0600. (Moser, PA)

British Forces Broadcasting at 1330 on 17695. (Smith, MO)

Finland: Radio Finland International, 11670 at 1230. (Johnson, IL) 15360//17620//17850 at 1620 to Africa. (Nichols, UT) 21770 at 1414 with "Club 9516" program. (Zamora, ND)

French Guiana: RFI relay on 9800 at 0335, 12015 at 1600. (Nichols, UT)

Gabon: Africa Number One on 9580 at 0603 in FF. (Moser, PA) 15475 in FF at 1646. (Nichols, UT)

Ghana: GBC, 4915 at 0533 with local music, ID, news. (Moser, PA)

Germany: Deutsche Welle, 5960//9700 at 0526. (Carson, OK) 6040, via Antigua, at 0100. (Nichols, UT) 6145 at 0117. (Moser, PA) 6160 via Antigua at 0900. (Smith, MO) 9545//15105 (via Antigua) at 2130 sign on in PP. (Zamora, ND)

VOA via Wertachtel site on 5995//6060 at 0603. (Moser, PA)

Sudwestfunk on 7265 at 0721 in GG but including a little EE. (Moser, PA)

Greece: Voice of Greece, 9395 at 0340 with news to 0345 and back in Greek. (Zamora, ND) 9420 at 0345. (Bailey, AR) 11805 at 0602. (Moser, PA) 12105 at 2322 in SS. (Reyes, Mexico)

Guatemala: Radio Cultural, 3300 at 0428 with Bach organ music, to abrupt close at 0431. (Johnson, IL) 0316. (Moser, PA)

Radio Buenas Nuevas, 4800 at 0325 with SS sign off. (Reyes, Mexico)

Radio Chortis, 3380 with religious program in SS at 0216. (Reyes, Mexico)

Hawaii: WWVH time signals, 15000 at 0116 with woman announcer. (Moser, PA)

Hong Kong: BBC relay in CC at 1200 on 7180. (Nichols, UT)

Hungary: Radio Budapest, 9835 at 0030; 0052. (Mead, ME; Moser, PA)

Iceland: Icelandic National Broadcasting Service, 15767 at 2300 with man and woman in EE. Better than parallel 13855. (Moser, PA)

India: All India Radio on 7412 at 1314 ending news. Also 1402 on 9565. (Smith, MO) 9950 with news and into unidentified language at 1545. (Gasque, SC) 11620 at 2110 with program schedule. (Gillis, NH)

Iran: VOIRI, 9022 at 1940; 1942 with news. (Pelliciari, CT; Moser, PA)

Iraq: Radio Baghdad, 13660 to 2348 when suddenly went off the air (on January 16!). (Mitchell, GA)

Israel: Kol Israel, 7465 at 2147 and 0509. (Smith, MO) 9355 in FF at 0028//9388. (Paszkiewicz, WI) 9435 at 0122; 0500. (Nichols, UT; Bailey, AR) //11605 at 2241. (Zamora, ND) 17575 at 1530, tentatively in Persian. (Carson, OK)

Italy: RAI 9575 at 0115 with music. (Moser, PA)

Italian Radio Relay Service, 9815 at 0705 with various programs. (Carson, OK)

Italian Radio Relay Service, 9815 at 0705 with various programs. (Carson, OK)

Japan: Radio Japan, 5960 (via Canada) at 0309, (via Canada) at 1124. (Nichols, UT) 9505 at 1555. (Moser, PA) 11735 at 2300. (Carson, OK) 15325 (via French Guiana) at 0305. (Vaage, CA)

Radio Tanpa, 3925 at 1341 in JJ. (Carson, OK)

Jordan: Radio Jordan, 9560 at 1606 with speech in EE, possibly by King Hussein. (Moser, PA) 9560//11810 at 2105 with some sort of historical radio play. (Johnson, IL)

Kenya: Kenya Broadcasting Corp., 4935 at 0155 with drum and flute IS, ID by woman "This is KBC, the Kenya Broadcasting Corporation, Nairobi." (Johnson, IL)

Lebanon: Radio Voice of Lebanon, tentative, 6549.6 at 0529 in apparent AA. (Smith, MO)

Voice of Hope, tentative 6280 in possible AA at 0535. (Smith, MO) (Believe both are still active. Editor)

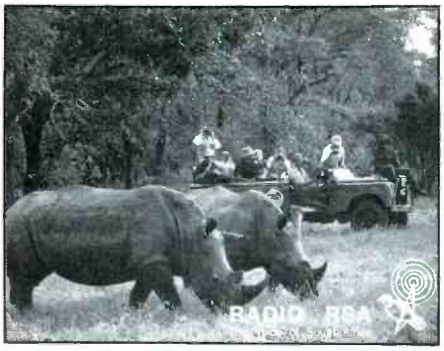
Lesotho: BBC relay, 11940 at 0716 with talk. (Moser, PA)

Lithuania: Radio Vilnius, 9765 at 2300 with features. (Zamora, ND) 15180 at 2304 with music to 2330 then RR. No EE programming. (Moser, PA) (Sovs have pulled the plug again. Editor)

Luxembourg: Radio Luxembourg, 6090 at 0145 with pops in EE. (Moser, PA)

Mali: Radio Beijing relay via Mali, 11715 at 0300 with news. (Moser, PA)

Malta: Voice of the Mediterranean, 9765 at 0600 with "nice & easy 45's." (Pellicciar, CT)



Radio RSA's North American service was usually heard with rhino-sized signals but, alas, no more. QSL courtesy of Andy Johns, Texas.

Deutsche Welle relay, 11865 at 0146. (Moser, PA)

Mauritania: ORTM on 4845 at 0628 with guitar IS and sign on. (Moser, PA) (Presume in FF, editor)

Mexico: Radio Mexico on 5985//11770 at 1637 with music and SS. (Reyes, Mexico)

Radio U.N.A.M. 9600 in SS at 1733 with news. (Reyes, Mexico)

La Voz de Veracruz, 6015.9 at 1920 with music and commercials in SS. (Reyes, Mexico)

La Hora Exacta, XEQK, 9425 at 1617 in SS. (Reyes, Mexico) (nominal 9555, editor)

Monaco: Trans World Radio, 9480 at 0810 with religious program, ID, "Words of Hope." (Carson, OK)

Morocco: RT Marocaine, 17575 in EE at 1530. (Pellicciari, CT)

VOA relay, Tangier, 9760 at 1932. (Moser, PA)

Netherlands: Radio Netherlands, 6020 at 0046. (Moser, PA) 17575 (via Madagascar) at 1503 and 17675 at 0202. (Carson, OK)

Netherlands Antilles: Radio Netherlands Bonaire relay, 6165 at 0049. (Moser, PA) 9590 at 0340. (Nichols, UT) 9630 at 0757. (Carson, OK) 11820 at 1840. (Zamora, ND)

Trans World Radio, Bonaire, 9535//11930 at 0305; 11815 at 1141. (Nichols, UT)

Niger: ORTN, Voix du Sahel, 5020 at 0615; 0626 in FF. (Moser, PA; Johnson, IL)

Nigeria: Voice of Nigeria, 7255 at 0500; 0505; 0530; 0545. (Smith, MO; Zamora, ND; Pellicciari, CT; Moser, PA)

North Korea: Radio Pyongyang, 9975 (nominal 9977, editor) at 1144 to Central America and 15115 at 0014. (Nichols, UT) 15115 at 0005; 0020. (Moser, PA; Gillis, NH)

Norway: Radio Norway International, 17730 at 2200 with EE news. (Mead, ME) 17760 at 1700 with news. (Nichols, UT) 21705 at 1559 with IS and sign on in NN. (Moser, PA)

Oman: Radio, Oman, 11890 at 1825 in AA, many mentions of "Omani". (Johnson, IL)

BBC Masirah Island relay, 11760 at 0408 with news. (Moser, PA)

Pakistan: Radio Pakistan, 9370 at 1730 with news, vocals. Announced as to Europe. (Paszkiewicz, WI)

Paraguay: Radio Nacional, 9735 in SS at 0130, also in Guarani at 0800 with Paraguayan folk music. (Barry, CA)

Peru: Radio Ancash, 4991 at 1058. Commercials in SS, lots of Andean music. (Johnson, IL)

Philippines: Radio Veritas Asia, 1323 on 9555 in possible Kachin language. ID 1324, IS and opening music at 1328. (Carson, OK)

Voice of America Poro relay on 15155 at 1311 with news. (Moser, PA)

Poland: Radio Polonia, 7270 at 2304 with news of central Europe. (Moser, PA) 9675 at 0659 in Polish with IS, ID and news. (Carson, OK)

Portugal: Radio Portugal, 15140 at 1955 with soccer in PP. (Garcia, UT) 15140//15285 at 1319 in PP. (Moser, PA) 21495 at 1940 in PP. (Zamora, ND)

Romania: Radio Romania International, 9510k at 2140. Instrumental (sax) version of Rolling Stones' "Satisfaction" used as bridge during PP programming. (Johnson, IL) 9570 at 0215. (Nichols, UT) 11940 at 0407. Talk of Jesus' baptism. (Moser, PA) Here and //21665 at 1332 to 1355 close. (Carson, OK)

Rwanda: Deutsche Welle Kigali relay, 7225 at 0414 with sports news. (Moser, PA)

Saudi Arabia: BSKSA in AA at 1920. (Bednarski, BC) 21505 at 1432 in AA. ID 1436. (Zamora, ND)

Singapore: BBC Far East Relay, 9740 at 1609 with news. (Moser, PA)

South Africa: Radio RSA, 15365 in FF at 0400. (Reyes, Mexico)

Radio Orion at 2246 on 3320 with easy listening and chamber music. (Johnson, IL)

South Korea: Radio Korea, 9645 at 1143 with talk. 15575 at 0020. (Nichols, UT) 15575 at 0235, into KK at 0300. (Carson, OK)

Spain: Spanish National Radio, 9630 at 0500. (Pellicciari, CT) 0104 and 0508 but three days later not here at 0500. (Nichols, UT) 11880 at 0105, better than //9630. (Moser, PA) 21555//21570 at 1722 in SS. (Reyes, Mexico)

Sri Lanka: Radio Japan relay on 11840 at 0100. (Moser, PA)

Swaziland: Trans World Radio in Chichewa at 0425 with vocals, address in Malawi, ID. (Paszkiewicz, WI)

Switzerland: Swiss Radio International, 6135 at 0205 and 0414. (Nichols, UT) 9885 at 0414 with news and DX program. (Moser, PA) 21695 in FF after EE IDs at 1359. (Carson, OK)

Togo: RTT on 5047 at 0527 with chime IS, ID and sign on in FF. (Moser, PA)

Turkey: Voice of Turkey, 9445 at 2301. (Carson, OK) 0400 with news. (Pellicciari, CT)

Turkish Meterological Radio, 6900, presumed at 0525 in TT with music. Very weak. (Paszkiewicz, WI)

Ukraine: Radio Kiev, 0047 on 15180. (Nichols, UT)

Unidentified: 9585 at 0043 in AA, 4 + 1 time pips at 0100, possible "min Doha" ID so suspect Qatar but not sure. Blocked by Moscow at 0200. (Paszkiewicz, WI)

17500 in AA at 1442 with excited speech, theme at 1500, headlines Tunisia? (Paszkiewicz, WI)

4926.1 at 0000 in SS with ballads. Possible Emisora Meridiano 70 in Colombia? (Paszkiewicz, WI)

United Arab Emirates: UAE Radio, Dubai, 15400 at 0354 to 0400 close. (Nichols, UT) 21605 at 1330. Into AA at 1356. (Carson, OK) 1610 in EE. (Moser, PA)

United States: WMLK, Pennsylvania, 9465 at 1942. (Carson, OK)

WRNO, 15420 at 1954, now just relaying WRNO-FM (99.5) (Carson, OK)

KGEI, La Voz de Amistad, 15280 at 0100 with news in SS., (Reyes, Mexico)

KVOH, California, 1775 with UPI news at 2002. (Nichols, UT)

KTBN, ex-KUSW, 15590 at 1755 with religious; 2300. (Carson, OK; Bailey, AR)

USSR: Radio Moscow, 6000 (via Cuba) at 0458. (Vaage, CA) 7150 at 0258. (Moser, PA) 7260//9795 at 0711, 7270 at 0636, 11710 at 0313, 15475 at 1732, 15530 at 1454 and 17700 at 0220. (Carson, OK) 9705 at 1630, 12010//12050 at 0430. (Nichols, UT) 9895 at 0513. (Bailey, AR)

Radio Minsk, 15180 in RR with talks. (Carson, OK)

Radio Peace and Progress, 7360 at 2256 offering commercial time. (Smith, MO) 7400 at 0130 with news. (Pellicciar, CT) 15180 at 0148. (Nichols, UT)

Vatican: Vatican Radio, 6185 at 0705 in Italian. (Johnson, IL) 71215 at 0145 and 21485 at 1358. (Carson, OK) 9605 at 0050. (Bailey, AR)

Venezuela: Ecos del Torbes, 4980 in SS with music, news from 1020. (Gasque, SC)

Radio Rumbos, 4970 at 0334 in SS, ID 0341. (Moser, PA) 0629 in SS.

Radio Tachira, 4830 in SS at 0338 with Latin music, ID. (Moser, PA)

Observatorio Naval Cagical (YVTO) time station, 5000 at 0258, co-channel WWV. (Reyes, Mexico)

Vietnam: Voice of Vietnam, 9840 at 2337 with "The Sunday Show." (Carson, OK) 12018 at 1810, into FF at 1830. 15010 at 2330-2356 with traditional music and abrupt close. (Smith, MO)

Yugoslavia: Radio Yugoslavia, 5955 at 2230 with letters program and radio hams show. 11735 at 0132. (Carson, OK)

That's the lot—and let's extend a lot of thanks to the following who supplied logs:

Sheryl Paszkiewicz, Manitowoc, WI (welcome back!); A. E. Bednarski, North Vancouver, BC; Kelly Bailey, Midland, AR; John Mitchell, Austell, GA; Tim Johnson, Galesburg, IL; Steve Pelliciari, Norwalk, CT; Vincent A. Garcia, Salt Lake City, UT; William T. Hassig, Mt. Prospect, Il; William Moser, New Cumberland, PA; Larry R. Zamora, Grand Forks, ND; Miguel Angle Reyes, Morelia, Mexico; John Spencer Carson, Jr., Norman, OK; Patrick J. Barry, Mission Viejo, CA; David Gasque, Orangeburg, SC; Kevin Mead, Cape Elizabeth, ME; Jeremy Nichols, Santa Clara, CA (monitoring from Utah), Ron Gillis, Hilsboro, NH; Bjorn F. Vaage, Granada Hills, CA and Jim Smith, Rock Hill, MO.

Thanks to all of you. 'Til next month, good listening! ■

EMERGENCY

COMMUNICATIONS FOR SURVIVAL

BY GORDON WEST, WB6NOA

Tip Whip Fine Tuning

Any respectable looking emergency command post or amateur radio emergency unit will have up to a dozen antennas on the roof. You can double up with a tri-band antenna, into a tri-plexer, feeding 3 different transceivers—but a good command post has mulitiple VHF and UHF stations, and each station will require a different roof-top antenna system.

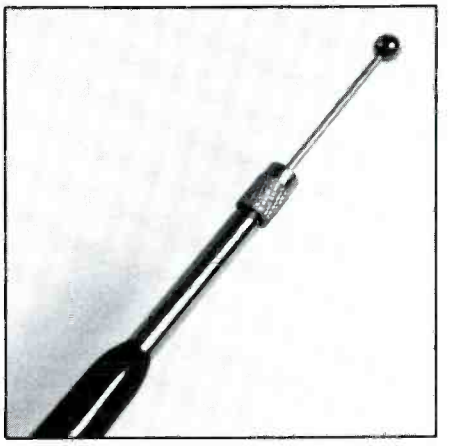
When laying out your roof-top antenna pattern, make every attempt to keep similar band antenna systems away from each other. For instance, if you have a fire radio on 154 MHz and a special emergency system on 155 MHz, make sure one antenna is at one end of the roof, and the other antenna is as far from it as possible. Keeping a sizeable distance between similar band antenna systems will minimize desensitization when one set is transmitting, and the other set is receiving on an adjacent frequency. Running as little power output as possible will also help minimize desense.

Another good antenna mounting tip is the use of a common antenna base for all VHF and UHF whips. This will allow you to change-around your antenna whips without having to cut, re-mount it on the base coil or mount, and then test to see where it works best on the band.

If you are operating just on amateur radio frequencies, the modern ham set may sample the low end of the band, middle of the band, and top of the band, and where the SWR is lowest is a good indicator of where the approximate resonant point of the antenna is. Begin pruning the whip until the SWR is approximately in the middle of the general operating region you wish to operate on, and then look at each end of the band to insure you have cut the whip properly for a low SWR on your operating frequency.

On business band and emergency frequencies, "sweeping the band" is not only impractical with fixed frequency equipment, but also illegal. An antenna noise bridge may be another solution for finding the antenna's natural resonant point, but the noise bridge may not be calibrated as close as you need to spot the precise frequency you wish to cut the antenna down to.

A relatively new piece of equipment, available from MFJ Enterprises (PO box 494, Mississippi State, Mississippi 39762; 601/323-5869) is their Model #208 SWR analyzer which covers 142 through 156 MHz. (They also have Model 207 which covers 2 MHz through 30 MHz and they say they are working on a UHF version, too.)



Adjust the tip-whip out to let the antenna work lower in the band.

Adjusting a whip is faster with an SWR analyzer.

This under $90 SWR analyzer takes the place of illegally sweeping the band to find where SWR bottoms out. The device is a very sensitive series SWR meter which will self-calibrate on its own built-in, flea-powered, variable transmitter. Simply screw this SWR analyzer onto the coax cable, turn on the power button, and sweep the band to see where the SWR meter dips. The SWR bridge gives you forward and reflected readings with a computing circuit that automatically computes the SWR and displays it on the little meter at the bottom of the bridge. If the SWR bottoms out around 150 MHz, cut about an inch off the base of the whip to pop it up to a resonant frequency at 155 MHz. If the SWR drops to a minimum slightly above the desired frequency, loosen up the whip in the base, and pull it a fraction of an inch out to lower the resonant frequency. (Always remember, lower, longer.)

This MFJ SWR analyzer is actually a microwatt HF or VHF transmitter with an auto-calibrating SWR bridge built-in.

This little SWR analyzer also has an output for a portable hand-held frequency counter. This allows you to read out your dialed-up frequency down to 10 Hz. This calls for the Optoelectronics Model 2600 HA frequency counter, and a little patch cord from the output of the SWR bridge to the counter's input. Sweep the band with the SWR analyzer, and then look over the counter and see where the SWR is minimum. If you need your antenna to work higher in frequency, get out the hacksaw. Lower in frequency, simply pull it slightly up in the mount.

Down on worldwide frequencies, the Optoelectronics counter with the MFJ SWR analyzer makes tuning HF mobile emergency whips a breeze. Best of all, you are not hanging big carriers out there on the airwaves to tune the whip. Rather, this flea-powered SWR analyzer only puts out enough signal to get its built-in meter to work, and the signal barely goes 100 feet.

For those of you with a roof top full of antennas, and several coax pigtails that are unlabeled, the SWR analyzer is a quick way to spot which coax cable goes to what antenna on the roof. The analyzer can also spot problems that might occur with a bad mount, a fractured loading coil, or an antenna splitter system that you couldn't see before with conventional multi-meters.

So if you're planning on doing any antenna work on your emergency mobile communications vehicle, plan to invest in an under-$100 SWR analyzer, and an under-$125 (ham show special) Model 2600-HA Optoelectronics frequency counter. It will really make your job easy!

BY DON SCHIMMEL

COMMUNICATIONS CONFIDENTIAL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

The mail bag was overflowing this month so let's get to the letters and see what readers have to say.

Eric Wolfe, PA had a query about the USS Bronstein logging heard on 14441.5 kHz which appeared in the January 91 column. The FF designation is correct. The Bronstein was built as an ocean escort (DE) and was changed to Frigate classification on 30 June 1975.

Harold Cornelius, VA indicated he noted the mention of the "Raspy dots/1 dash" signal in the February 91 column. "This is a good description of LINK 11, a part of the Naval Tactical Data System which exchanges data among ships of a group."

When assigned to Desert Shield, Kevin Tubbs took along his Sony ICF-2010 and Realistic PRO-2206 receivers. Kevin sent in some nifty items and stated that due to operational security he did not include any military loggings.

From Japan, Jeff Hall wrote "Asian DX is a totally different ball game from West Coast USA listening. There's plenty to hear but 99% is in Chinese or Russian or Filipino. I'm trying something different and running the audio out from my 2010 into a Technics SU-X77 integrated amp which has a very nice CPU driven EQ/Spectrum Analyzer built in. I don't think this thing is available in the States (or ever was). But it makes a tremendous difference in listening fatigue and is a great clip filter for CW."

Gary Hamlin, NY included a note with his loggings which said in part, "It has been a while since I've written. Lately I've gotten more involved in VHF/UHF scanning and rather neglected my HF-DXing." Welcome back Gary.

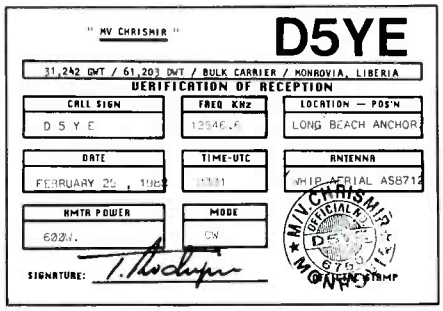
Simon Mason, England reports that he has noticed a reduction in the YL/GG 3/2F stations. He also said the English version is not much more common.

William Briley, MN wrote "This is my first time sending in a report. For the record, I've been a SWL listener for over 40 years but only recently have been tuning into the utility bands."

Digging back through his records, Alain Charret, France discovered that the OM/Italian language transmission (also used 2 German words "an" and "schluss") he heard once in 1989 on 5847.6 kHz he had also heard in 1980 and 3400 kHz.

Based on those observations, I would have to believe the activity had continued during the ensuing years but just was not hearable here in the US. I did ask Simon Mason last year if he had ever heard such transmissions, but he replied that he hadn't.

Some great DX was reported by Andy Gordon, CT. He heard the US Navy Station on Midway Island on 2716 kHz calling NKIN, USS California CGN36 at 1150. The ship was making a port visit to Midway, one of the stops on their WESTPAC cruise. Andy checked and found that Midway is almost 6000 NM west of his location. A real fine catch!


" MV CHRISMIR " D5YE

31,242 DWT / 61,203 DWT / BULK CARRIER / MONROVIA, LIBERIA

VERIFICATION OF RECEPTION

CALL SIGN	FREQ KHz	LOCATION — POS'N
D S Y E	12546.6	LONG BEACH ANCHOR
DATE	TIME-UTC	ANTENNA
FEBRUARY 25 , 1991	0341	WHIP-AERIAL ASB712
RMTR POWER	MODE	
600W.	CW	

SIGNATURE: T. Mcdonald

M.V. CHRISMIR OFFICIAL D5 STAMP MONROVIA

Steve McDonald, BC, Canada shares this PFC with readers.

Jim Smith, MO said "Now that my T2FD is up, my R-390A pulls in signals like never before. If I could just keep the birds off of it, I'd be happy. (I wonder if they improve reception?) If they do, Jim, let me know and I'll spread bird seed on all my antennas!

First time contributor, Sean Dubee, WA, made the following comments: "I've been reading *POP'COMM* for about a year now and have found it to be quite useful to me when listening to the shortwave. I thought it might be time to send along a few items to see if they'd be of use to other readers. As you can probably tell, my main listening is directed towards aero frequencies. I guess it's because there is usually a good volume of traffic to be found there. I don't limit myself to this however, and like to pick up other things as well."

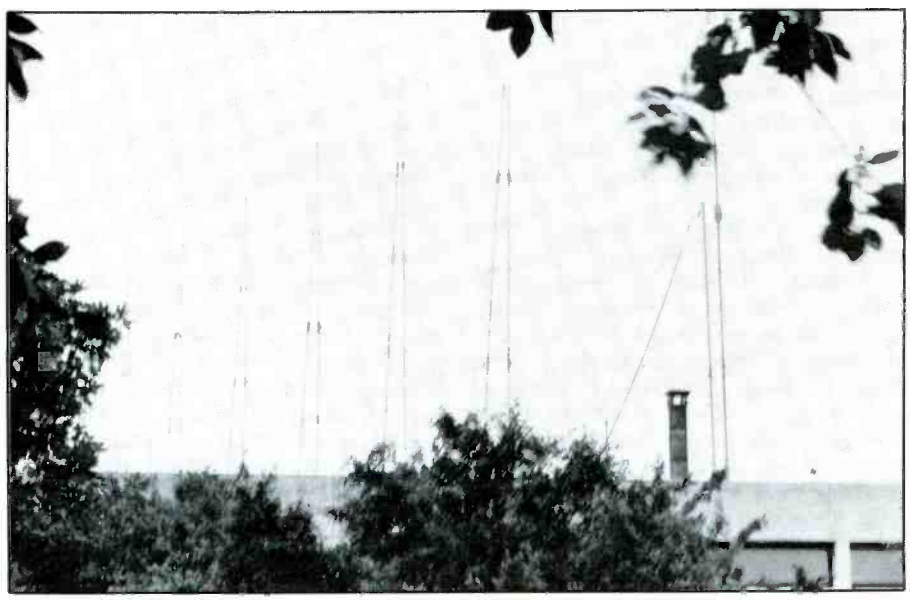
Gregg Arens, BC, Canada described his installation like this: "I am still using a Realistic DX-200 with a home-brew L-type antenna tuner and a thirty foot center-loaded wire that is resonant at 7300 kHz (the weather changes the tuning each season between 5000 and 9000 kHz) and it is nine feet above ground. The antenna tuner lets me tune it anywhere between 800 and 10000 kHz regardless of the weather."

David Sabo, CA advised "Most of my free time over the past eight months or so has been invested in my PC, and in particular its applications towards my radio hobby. While my PC has certainly been a boon to my hobby in some ways, I find that listening to the radio while the computer is running is next to impossible due to the severe RFI generated by the computer. One of the recent QSL's I've received was from Plymouth Rescue along with a very informative letter describing the SAR scenario which was going on at the time I copied them."

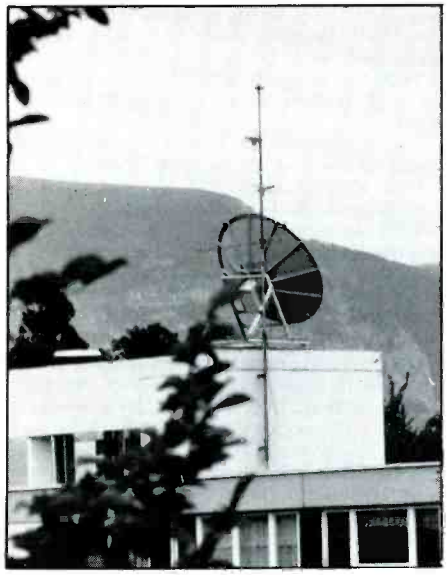
With his letter, David included some QSL addresses and pointed out these are at variance with previously published sources and are based on the actual return addresses on the replies he received.

Victoria Coast Guard Radio Station, Box 490, Sooke BC, VOS 1NO.

Officer Commanding, Rescue Co-Ordination Centre Plymouth, Mount Wise, Plymouth, Devon PL1 4JH.



Antennas at Soviet Embassy, Geneva, Switzerland. Photos courtesy of Prof. Desmond Ball, Australia.



Another view of the Soviet Embassy, Geneva which shows some additional antennas.

Gander IFSS, PO Box 328, Gander, NF, A1V 1W7.

Cambridge Bay IFSS, Transport Canada, Bag Service 500, Cambridge Bay, NWT, XOE OCO.

Tofino Coast Guard Radio, PO Box 345, Ucluelet, BC, VOR 3AO.

Stan Forsman, CA also wrote about QSL addresses. He is looking for those of two Canadian beacon stations, 5J on 328 kHz and 9Y on 311 kHz. Write Stan at 1312 Burrows Rd., Campbell, CA 95008 if you can help out.

Stan provided several QSL addresses he used. For aero beacons in Oregon—Dept. of Transportation, Oregon State Aeronautics Division, 3040 25th St. SE, Salem, OR 97310-0100. For aero beacons in Montana—Dept. of Commerce, Aeronautics Division, State of Montana, Airport Rd., PO Box 5178, Helena, MT 59604. And for private beacon COR, 205 kHz use—Salyer Farms, K.L. Cox, Box 488, Corcoran, CA 93212.

In answer to my request, Ary Boender in The Netherlands provided a rundown on the SLHFB transmissions he heard in 1990. His list appears in Table 1. Ary mentioned he has a list available of VLF & LF utility stations he has heard (excluding beacons and FAX stations). The list contains some 740 stations/frequencies and is available for US $5.00 by writing Ary at Lobeliastraat 33-B, 3202 HR Spykenisse, The Netherlands. The list will be sent by airmail.

Table 1

Frequency	UTC	SLHFB Details
3180	0200	"X" + 5F groups in CW
3290	2045	"P"
3658	0009	"V"
3806	2344	"P" + coded msgs in RTTY (75 baud)
4447.5	2258	"U"
5922	1429	"X"
6572	1340	"A"
6735	2056	"X"
13610	1400	"C"
26170	2050	"L"

Note: All single letter markers were in CW.

Perry Crabill, VA sent in some beacon loggings and commented "I believe the best catches were those in Manitoba; WG on 248 kHz in Winnipeg (1195 miles), and YQ on 305 kHz in Churchill (1523 miles). For these loggings I used my Kenwood R-5000 with a 65 foot inverted "L" antenna, following the special receiving technique incorporating the USB mode with the sharp CW filter."

There have been many queries regarding the DHS callsign heard on 8584 kHz and on other frequencies. It has been confirmed that this station is the replacement for the old Y5M Rugen in former East Germany.

A reminder that we welcome copies of your utility station QSL's and PFC's as well as photos of interesting utility communications facilities.

As a final item I would like to suggest to readers that it is very helpful when mailing loggings to indicate in the address the name of the column for which the loggings are intended. Please do not combine loggings for several columns. Column writers are not collocated in the *POP'COMM* office; consequently, when one of us receives material from the office which also contains loggings for another column, there is always delay in receipt of the pertinent loggings by the other column writer. Thanks.

Abbreviations Used For Intercepts

AM	Amplitude Modulation mode
BC	Broadcast
CW	Morse Code mode
EE	English
GG	German
ID	Identifier/led/lcation
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)

Ute Intercepts. All times are UTC

206: Beacon PWT, Bremerton (Kitsap County), WA at 1210. (Arens, BC, Canada)

222: Beacon BVS, Burlington, WA at 1221. (Arens, BC, Canada) My refs show this beacon to be on 238 kHz? (Ed.)

248: Beacon WG, Winnipeg, Manitoba, Canada at 0311 w/voice wx. (Crabill, VA)

260: Beacon PA, Kolaka, Sula, Indonesia at 1558. (Tubbs, Desert Shield)

273: DHA (u/i) heard in CW at 0459. (Tubbs, Desert Shield) I do not find a Beacon with those ltrs. Rdo stn located Hanover, Germany? (Ed.)

281: Beacon CA, Cartwright Field, Nfld., Canada at 0335. (Crabill, VA)

282: Beacon LRO, Sharpe AAF, Lathrop, CA at 1001. (Vaage, CA); Beacon RT, Rurutu, Austral Islands, French Polynesia at 1600. (Tubbs, Desert Shield)

290: Beacon YYF, Penticton, BC Canada at 1006. (Vaage, CA)

293: Beacon MB, Victoria, BC, Canada at 1259. (Arens, BC, Canada)

305: Beacon YQ, Churchill, Manitoba, Canada at 0348. (Crabill, VA)

318: CW stn using RAS as Id at 0458. RAS also hrd on 393 kHz at 0515. (Tubbs, Desert Shield) Soviet station? (Ed.)

325: Beacon XP at 1308. (Arens, BC, Canada) My refs show two XP beacons, one on 200 kHz and the other on 212 kHz, both located in Australia? (Ed.)

326: Beacon RUV, Bellefontaine, OH at 0406. (Crabill, VA)

337: Beacon 7D, Hudson Bay, Sask., Canada at 1247. (Arens, BC, Canada) Freq reported as 279 but my refs do not show freq change? (Ed.)

344: Beacon CL, Cleveland, OH at 0419. (Crabill, VA)

353: Beacon ZES, Cape Scott, BC, Canada at 1320. (Arens, BC, Canada)

355: Beacon YWP, Webequie, Ont., Canada at 0316. (Ed.)

356: Data burst foll by 10 sec tone in USB at 2253. (Crabill, VA) Checked freq at 0100 & 0312, nil more data bursts. (Ed.)

356: Beacon VES, Bagotville, CFB, PQ, Canada at 0314. (Ed.)

359: Beacon MS, Monticello, NY at 0315. (Ed.)

385: Beacon LUM, Bellingham, WA at 1336. (Arens, BC, Canada)

387: CW stn sending AW at 0513. (Tubbs, Desert Shield)

388: Beacon H7, Manitowaning (Manituoulin East Muni.) Ont., Canada at 0452. (Crabill, VA)

395: CW stn sending ADP at 1606. (Tubbs, Desert Shield)

400: Beacon QQ, Comox CFB, BC, Canada at 1353. (Arens, BC, Canada)

402: CW stn sending MARA at 0516. (Tubbs, Desert Shield)

404: CW stn sending LEN at 1607. (Tubbs, Desert Shield)

408: Beacon MW, Grant Co., Pelby, Moses Lake, WA at 1028. (Vaage, CA)

410: Beacon DAO, Libby AAF-Dragoo, Ft. Huachuca, AZ at 1032. (Vaage, CA)

414: Beacon LYI, Libie, Libby, MT at 1040. (Vaage, CA)

419: Beacon RYS, Grosse Ile, MI at 0517. (Crabill, VA)

448: NMN, USCG Portsmouth, VA w/Hazards to Navigation tfc in CW at 0050. (DP, NC)

466: LAWS2, Jahre Spirit. The vessel was passing tfc poss to NMN, USCG Portsmouth, VA in CW at 2354. (Ed.)

485: A9M, Bahrain in CW at 0528 w/tfc list. AT 1625 tfc re rescue of 35' boat. (Tubbs, Desert Shield)

501: HZG, Dammam, Saudi Arabia in CW at 0837. (Tubbs, Desert Shield)

526: ZLS, poss Stella Maris, Bahamas at 0217. Used to be on 320 kHz. (Crabill, VA)

2054: Victoria Coast Guard in USB at 0514 w/marine wx for BC coast. (Webb, CA)

2055.5: WLO, Mobile, AL in CW at 1205 w/tfc list. Also at 0505. (Margolis, IL)

2063: Juliet 9 Kilo & Delta 9 Tango in USB at 0346. Talking re TTY equip problems. Also hrd J9T & D9T. (Webb, CA)

2182: Yarmouth, NS, Canada, CG wkg vessel Equinox. Some tfc but signal fm vessel weak. USB at 2342. (Hill, MI)

2182: Stn w/id of Cay-no or Kay-no or Kae-no Coast Guard in USB at 0350 w/marine info bcst-gale & storm warnings. (Webb, CA) Wonder if this is Comox, BC CG stn? (Ed.)

2449: Two OM in USB at 0750 in conversation in poss Chinese dialect. (Webb, CA)

2670: USCG Stns in USB. Astoria at 0536 w/wx & notice to mariners; Long Beach, CA at 0515 w/marine info bcst; Port Angeles at 0616 w/marine wx. (Webb, CA)

2815: IRD8, Rome Naval rdo, Italy w/cw mkr at 0127. (Scalzo, PQ, Canada)

3039: Stns AF, AW, AX, G, I, Q and a/c W5U hrd in USB between 0517-0535 on very active net. Comm's re Papa Uniform's and Ping-Pong's and Alligator's. USN tracking/exercise tfc of this sort noted this freq before. (Sabo, CA)

3307: India cld Juliette at 0530 and switched to green tac 3. When back in clear said Delta Foxtrot wud be utilizing this freq, callsign "Carrot." At 0620 all units go green & execute kick Pennsylvania to Michigan in USB. (Harwood, CA)

4021: YL/GG w/5F grps after CW NNN sign-on. Was 24 grps in USB. 2100-2120. (Mason, England)

4066.1: NNZA, USS Acadia AO 42 at 0320 in USB wkg San Diego CSB-1 w/request for pp; NECG, USS O'Brien DD975 at 0400 w/pp thru San Diego CSS-1 to "SCC Supervisor" then back to CSS-1 at 0403. (Sabo, CA)

4134.3: NODI, USCGC Blackhawk WLB-390 wkg USCG CAMSPAC San Francisco in USB at 0338. Duplex w/4429.7 kHz. (Sabo, CA)

4232: CW stn w/5L grps at 0123. Very strong sig. S/off about 0120 w/ BT AR YA 5. On exact freq as FUF, Fort de France Naval, Martinique, who was obliterated. At 0130 unk type of emission up for few secs. (DP, NC)

4235.5: HZG, Damman, Saudi Arabia w/cw mkr at 2148. (Scalzo, PQ, Canada)

4369.8: WLC, Rogers City, MI in USB w/MAFOR (Marine Forecast) at 0346. (Watts, KY); WLC hrd at 0406 wkg bulk carriers Roger Blough, Calcite II, Philip R. Clarke, John R. Munson & Myron C. Taylor. These vessels were at various points on the Great Lakes & were reporting wx conditions. Ships were on 4075 kHz (CH 405). This usually daily after MAFOR's wx report. (Hill, MI)

4373: D2 wkg Giant Killer (USN FACSFAC, NAS, Oceana, VA) in USB at 0501 w/ref to Alligator Playground. D2 fair sig but others on net very weak to unaudible. (Sabo, CA); Giant Killer hrd plus 3DB, K2U, W3W, K3D, & S1X. Placename Chambers Field mentioned. (DP, NC)

4416: X7A at 0317 & M4U at 0319 in USB w/coded tfc. L5N clg "Any stn this net." X9K answered among others at 0354. (Hill, MI)

4419: JGO, Tokyo, Japan in USB wkg ELIF, m/m Ghent. Told ELIF to meet at 1010 UTC on CH 821, then changed instructions & told them to go there now (0945). (Dubee, WA)

4450: USAF MARS affiliates AFA5PN and AFF5F (near Tacoma, WA) in USB at 0336. Hrd same stns few mins earlier on 7305 kHz. (Sabo, CA)

4465: Northeast 2, net control Northeast Region CAP. Cycle 40 wkg Cycle 42. ??? Wing CAP. LSB at 0120; Keystone 5 net control, Pennsylvania Wing CAP in LSB at 2235. (Hill, MI)

4467.5: Georgia CAP tfc in USB between Red Star 100 & 101 at 2310. Red Star 640 closed net at 2330. (Watts, KY); Mississippi CAP net w/Mockingbird 49, 14, 582, 11 & 581. Comms re event coming up in Biloxi. Net to start up again on the hour. 2 stns going to "the other freq." USB at 0035. (DP, NC)

4469: Sparrow 445 clg 400 at 0149 in the Florida CAP net in USB. Sparrow 17 closed net at 0159. (Watts, KY)

4470.5: Indiana Navy MARS net in USB at 0135 w/NNN0Y DU, JAO, EFC, etc. (Watts, KY)

4486: U/i stns Pig Iron, Test Conductor, and Lounger hrd in USB at 0125. Pig Iron noted previously on SAC nets, but this net sounded too casual to be SAC. (Sabo, CA)

4500: P7X to P7L & P6I in USB at 0309 w/authentication checks & advisory to maintain this freq as primary and "03" as secondary. (Sabo, CA)

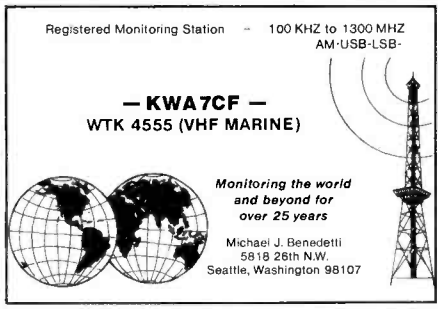
4585: Mountain 29, net control accepting net check-ins. USB at 2230, West Virginia Wing CAP. (Hill, MI)

4625: The single 'pip' hrd here 25 hrs a day has changed. It now sounds like a short 'buzzer' and at 59 mins past hour buzz is continuous (sounds like a fly buzzing). Can some times be hrd on twice this freq—9250 kHz. (Mason, England)

4665: Unusual Mossad transmission. YL rptng VLB96 Bravo 29 Bravo 2330428. 2115-2200. Later v/VLB2. (Mason, England)

4700: Habitat (NAS Moffett, CA) w/alfa-numeric msg to "272" for relay "by fastest means" to GN-177. 272 slightly off freq on 4700.2 kHz. USB during 0540-0548. (Sabo, CA)

4789: CW stn at 0547 continuously sending "Red Dragon". (Tubbs, Desert Shield)



Here is the card used by Mike Benedetti, WA for his Registered Monitoring Station, KWA7CF.

5030: Two OM/EE in USB (8 kHz split-freq) at 1000 talking about shipment values worth at least $30,000 a trip and that he had to get up early next morning to deliver the "blow." They talked for an hour re packaging techniques, how many kilo's and dollars worth a bag for the various colors of plastic (bags?) This sounded like smugglers who didn't know they were xmtng in the clear. (Arens, BC, Canada)

5063: NRO, USCG LORSTA Johnston Island wkg NRO7, LORSTA Kure Island & OMEGA Station Kaneohe w/rdo chex in USB at 0800. (Sabo, CA)

5180: Cape Radio, DOD Cape. King 1 & CG Ship Seneca trying establish contact w/WS Simms in USB at 0520. (Harwood, CA)

5182: YL/SS w/5F grps in AM at 0610. (Sabo, CA)

5426: KRH50, US Embassy, London, England w/QSX info. CW at 0606. (Scalzo, PQ, Canada)

5505: Shannon Volmet stn in USB at 0135 w/wx for Heathrow, Amsterdam and Shannon. (DP, NC)

5574: KMA7, San Francisco ATC in USB wkg UPS 2904 w/query if a/c had enough fuel on board for proposed flight route change. Pilot at 0235 said he had sufficient fuel. Foll a/c also hrd w/position reports to SF, Northwest 023 at 0642, Northwest 002 at 1441, China 981 at 1442 and Nippon Cargo 101 at 1446. American 143 on gnd at Dallas/Ft Worth clg KMA7 for rdo check at 0734. (Dubee, WA)

5598: MAC 9920 wkg VFG, Gander, Canada w/alternate freq request at 0726; Santa Maria ATC wkg MAC 3299 w/position report at 0728. All in USB. (Dubee, WA)

5628: Tokyo Aeradio wkg various a/c incl United 808 & United 58 in USB from 0847-0849. (Sabo, CA)

5629: KUA3, Honolulu ATC wkg Northwest 028 w/position report at 1434 in USB. (Dubee, WA)

5696: Rescue 1717 wkg CommSta Miami for pp to u/i stn. Proceeding to vessel Meridian II. Needed clearance fm Navy to ensure there no a/c's flying & no explosives detonating along route. USB at 1054. (Hill, MI); Rescue 1482 wkg USCG CAMSPAC in USB at 0431 w/advisory that he airborne out of SFO w/5 POB enroute to Monterey Bay area for SAR involving an overturned kayak w/1 POB. Later hrd local action between 1482 and Group Monterey on VHF 157.15 MHz. (Sabo, CA)

5700: Data comm's from 0647-0648, then Panhurst wkg hothouse. Panhurst advised that gnd party was unreadable, and to give him a longer phase. USB at 0647 on SAC P-381 channel. (Sabo, CA)

5800: YL/EE w/087 at 2000. At 2005 569 x2 32 x2 and into 5F grps. (Mason, England); Auto Show wkg Broad Beam w/sig chx in USB at 0351 on SAC W-101 channel. Broad Beam advised that this freq was primary, X-905 (11226 kHz) was secondary. (Sabo, CA)

5924.8: OM/SS & YL/SS at u/i location in USB at 0207 talking to OM/SSd at a remote farm (5925 kHz) & told opr at farm to clean up the field & make it look nice because an engineer was going to visit. Placename Hermosillo hrd during conversation. Mexican vocabulary/accent noted. (Webb, CA)

6201.5: Combination-1 w/unanswered calls to Combination-2 in USB at 0346. Similar u/i calls & activates noted here infrequently. (Sabo, CA)

6303: UTS, Ukrainian alloc. in CW at 0034 trying send msg to unhrd outstation but must rpt & send V's often. (DP, NC)

6395: TBA, Izmir Naval, Turkey in CW at 0050 w/5L grps. Ended 1st msg w/"AR ZFG (RPTS)" then sent TBDJ (poss ship). Call sign TBA was preamble just before group count. (DP, NC)

6506.4: NOJ, USCG COMSTA Kodiak, AK sending wx to USCG Cutter Mellon (no hrd) in USB at 0635. (Dubee, WA)

6515: Radio Pacheco, Argentina in LSB at 0925 w/musical tone + id. (Bednarski, BC, Canada)

6522: WK9268, u/i wkg WFL, Memphis, TN in USB at 0228 re attempting repair radar. (Hill, MI)

6577: American 654 enroute to Bradley airport, CT wkg NY Aeradio in USB at 0115. (Hamlin, NY)

6637: Air France 0-14 enroute Gabon, wkg Paris LDOC in USB w/comms in FF at 0110. (Hamlin, NY)

6649: Clipper 47 to Panama rdo w/pos report and Rio eta. USB at 0610. (Scalzo, PQ, Canada)

6683: AF-2 wkg Andrews AFB for goods & services upon arrival at its destination. USB at 2228. (Hill, MI)

6697: W0B wkg 2QN in USB at 2344 w/comms re Narragansett Bay op area. (Hamlin, NY); ES-977 advised Habitat (NAS Moffett, CA) that he now under Beaver (USN FACSFAC, San Diego) control, then both went green. USB at 0251. (Sabo, CA)

6746: Halifax Military (CZW) at 0319 w/Volmet bcst addressed to J54T, bad audio, hrd better on 9010 kHz. St. John's Military (CJX) at 0600 w/tactical "Do Not Answer" bcst addressed from 8CS to J54T. At 0945, Alligator wkg Hot Time. Latter activity prob SAC stns as this is also SAC "SA" channel. All in USB. (Sabo, CA)

6755: OM/EE w5F grps, heavy SS accent at 0338. At 0349 tfc in SS. All comms in USB. (Scalzo, PQ, Canada)

6756: AFA2, Andrews AFB wkg AF-1 w/pp to Crown (White House Communications Agency) at 0244; Andrews w/unanswered calls to SAM-971 for rdo check at 0650. Both USB mode. (Sabo, CA)

6787: CW stn at 0301 w/callup GGR TD rptd. At 0304 5L grps (cut nbrs) off at 0322 w/AR SK. (Penson, MN)

6790: SLHFB "V" in CW at 0235. Still there at 0324 when checked freq again. On another date noted that the CW is sent by means of shifting a RTTY carrier. Beacon breaks into short bursts of what sounds like RTTY but is really hand sent Morse. This happens 6 or 8 times an hour. Each lasts for less than a minute. No good copy yet only "RRQ28". (Penson, MN)

6795: CW stn w/daily sked of 0030, sends 2-6 group msgs of cut nbrs in very slow Morse & rpts msg until 0040. From May to 2 August 1990 bcst was on 12162 kHz. Then no longer hrd that freq. Rediscovered December 1990 on 6795 kHz. (White, ME)

6801: SLHFB "S" on CW at 2226. Very weak sig. Still there when checked again at 0005. (Penson, MN)

6803: YL/SS in AM at 0209 w/4F grps. 411 411 411 1-0 count then tones and into text at 0210. Ended at 0228. On another date this activity also noted at 0020. (Penson, MN)

6840: Unusual activity here. BBC World Service in USB w/programs for British Forces in the Gulf 2000-0000. YL/EE w/msgs for EZI also here at various times. (Mason, England)

6841: YL/SS in AM at 0235 w/4F grps. Msg in progress. Open carrier when rechecked at 0243. (Penson, MN)

6934: YL/SS in AM w/479 x3 1-0 count. Then Grupo 166 & into 4F grps. Ended w/single digit 6 & off at 0309. (Hill, MI); YL/SS in AM at 0403 w/132 + 1-0 count & 4F grps. (Margolis, IL)

6964: YL/EE in AM at 0240 w/ 3 + 2F grps. Ended at 0247. (Penson, MN)

6967: YL/gg w/649 649 649, 1 between 2100-05. Then "Achtung" 274, 100, 274, 100 & into 5F grps. AM mode. (Mason, England)

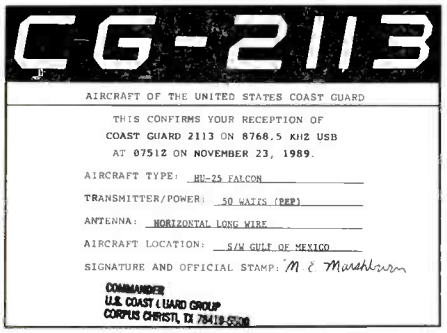
6968.5: NNN0FQF w/tfc call-up as per district, NNN0EBG, NNN0AHJ id'd in net. US Navy MARS. USB at 0209. (Scalzo, PQ, Canada)

7365.9: Kentucky USB net (US Navy MARS) w/NNN0BWU, OCK, BCI, etc at 1830. (Watts, KY)

7373.5: U/i stn to NNN0RZA w/official MARS msg re new freq usage w/7346.5 primary, 7375 2ndary, and 4008.5 kHz tertiary. USB at 1902. (Sabo, CA)

7404.2: YL/GG w/3 + 2F grps at 0617 w/"Ende" at 0620. 5 nights later at 0609 w/same format. (JMS, MO)

7406.5: US Army MARS net at 1602. Passing tfc from troops in Desert Shield to relatives in state of MO. Calls incl AAR7HV, AAT7VK, AAR7NV, AAR7NA,



CG-2113

AIRCRAFT OF THE UNITED STATES COAST GUARD

THIS CONFIRMS YOUR RECEPTION OF
COAST GUARD 2113 ON 8768.5 KHZ USB
AT 0751Z ON NOVEMBER 23, 1989.

AIRCRAFT TYPE: HU-25 FALCON

TRANSMITTER/POWER: 50 WATTS (PEP)

ANTENNA: HORIZONTAL LONG WIRE

AIRCRAFT LOCATION: S/W GULF OF MEXICO

SIGNATURE AND OFFICIAL STAMP: M E Marshburn

COMMANDER
U.S. COAST GUARD GROUP
CORPUS CHRISTI, TX 78419-5000

PFC returned to Dave Sabo, CA.

AAT7GV, AAR7PH, AAT7VJ, AAA9SH, AAR7CV, AAT7OS, AAM6TB, AAR7GQ, AAA0USA, AAT7NV & others. AAT7NV was net control. At 1725 they went "local" and "informal" and AAA7MO was net control. (JMS, MO)

7450: Broadway Consumer, Arizona Emergency Communications net w/informal session between Broadway Consumer 57CO and 57AF. LSB from 0235-0242. (Sabo, CA)

7457: USAF MARS net 6SI in USB at 0225 w/NCS AFB6HK wkg AFF6A, Redlands, CA, AFB6ML, Las Vegas, NV; and AFA6BD. (Sabo, CA)

7527: Homeplate wkg "59" w/clear & secure comms from 0245-0248; Omaha-86, Roadrunner Base, and Lone Star in drug interdictions op 0613-0700. All USB on Customs Service ZB channel. (Sabo, CA)

7645: Sine wave tone here 2000-2020. Then OM/RR w/854. At 2025 590 590 42 42 & into 5F grps. Ended w/00000.

7654.2: YL/EE w/683 x3, 1-0 count at 2100. At 2110, 11 beeps, Count 178 x3, then into 3+2F grps. (JMS, MO)

7700: Hrd digital data comm's in USB at 0458 foll by SHAB-265 to Bravo-830 (also ID'd as Mobile 830) w/remarks re computer. Mobile 830 also cld to 265 as "C-Comm Control. This is DOE Nuclear Transport Safeguard CH 5. (Sabo, CA)

7887: Lincolnshire Poacher tune here at 1900. YL/EE between tunes w/06609. At 1910 two tones x 3 & into 200 5F grps ending at 1946. Was also on 8464 & 9251 kHz. All three affected by warblers. (Mason, England); YL/SS in AM at 0819 w/5F grps. (Sabo, CA)

8241.5: USCGC Mariposa (NDOP, WLB-397) at 0520 wkg Commsta Boston; USCGC Salvia (NODS, WLB-400) at 0614 wkg Commsta New Orleans, then QSY 6961 kHz for RTTY. USB & duplex wkg on 8765.4 kHz. (Sabo, CA)

8277: Crunch and Lucky talking re wx on beach and wind speed. Were wondering where Snorkel, Rabbit and Shark have gone. USB at 0040. (Harwood, CA)

8471: A7D, Doha, Qatar in CW at 0946. (Tubbs, Desert Shield)

8544: YL/SS in AM at 0707 w/5F grps. Same YL on 8056 kHz at same time, nut not simulcast. (Sabo, CA)

8723: Sydney, Australia trying clear net because u/i stn playing music on same freq. General confusion until music ended then normal ops w/pp's. 1228-1233. USB. (Dubee, WA)

8728.2: OM/EE and u/i language in USB at 1457 w/voice mirror "This is LANARCA radio, maritime radio telephone service." (Tubbs, Desert Shield)

8753: JGO, Tokyo Japan w/"Test Transmission" announcement in EE then in JJ and tfc list in JJ. USB mode. (Dubee, WA)

8778: U/i net in USB 1305-1320. Tactical calls hrd incl N9L, P0S, P1G, J8A, L2W, I1F, N8N and R4E. Stns were making commo chex. Hrd daily & callsigns appear change every 24 hrs. (Dubee, WA

8828: ZKZK, Aukland, New Zealand Volmet w/aero wx at 0823; KVM70, Honolulu Volmet w/aero wx at 0826. All in USB. (Dubee, WA)

8855: Centro Asuncion, Paraguay and Centro La Paz, Bolivia exchaning aeronautical info in SS at 1206 on SSB. Brazilian airline flight Vasp 783 w/position report to Centro Brasilia and Centro Manaus in EE on SSB at 1441. (Benevolo, Brazil)

8859: Very strange noise here for most of day. Sounds like "Star Trek" phaser. Have hrd it for many weeks. (Mason, England)

8861: Lufthansa 512 wkg Dakar Aeradio (FIR) w/position rep. Good sigs on both. Dakar ref'd 2ndary of 3452. USB at 0430. (Sabo, CA)

8872: YL/SS in AM at 0619 w/5F grps. (Scalzo, PQ, Canada)

8873: YL/SS in AM w/Atencion then about five 2F grps & finished up w/5F grps w/Final x2 from 0715 to 0725. Carrier sig present until about 0740. (Dubee, WA)

8879: OM/EE in USB at 1713 w/"This is Iceland Radio." Also planes wkg Harare, Zilongwe & Maputo. (Tubbs, Desert Shield)

8912: Roadrunner wkg Omaha-86 in USB at 0345 on Customs Service YC channel. (Sabo, CA)

8942: Singapore ATC wkg u/i a/c & tells pilot that secondary freq was 11396 kHz. Hrd at 1348; MEDEVAC 099 wkg Manila asking for VHF freq; Singapore wks All Nippon 876 at 1403; United 097 at 1411 & American 554 at 1419. All three sent position reports. USB mode. (Dubee, WA)

8950: Conversation in Chinese by u/i USB stn at 0317. (Bednarski, BC, Canada)

8964: AGA2, USAF Hickam AFB w/coded msg at 0835 in USB. (Dubee, WA)

8970: AM carrier here 1100-1108. Then YL/GG w/100 x3 37508 41 until 1113. Then five tones & into 5F grps. Also on 10255 kHz. (Mason, England)

8972: Woodpecker-2 wkg Blue Star in USB from 0743-0745. Woopecker-2 ref'd having "2 targets of interest" and advised Blue Star to stand by on "CRATT." Skyking-101 cld Woodpecker-2 but no joy. (Sabo, CA); A/c 91713 wkg B6P w/tfc at 0347. At 0420 B6P wkg E5B. Went scrambled at 0438. USB mode. (Hill, MI)

8975.5: AXF, RAAF, Sydney, Australia; YL wkg Sunbolt Twin C w/flt info at 1238, then clg Convoy 613 at 1252 but no answer. USB mode. (Dubee, WA)

8984: NOR, AIRSTA San Diego in USB at 0317 advised Y60-L to QSY to 5696 kHz but a/c cudn't hear her. (Sabo, CA)

8989: U/i stn in USB at 0015 w/strings of alpha/numeric tfc. (Bednarski, BC, Canada)

8992: United 1822 clg Bangkok in USB at 1725. (Tubbs, Desert Shield)

8993: MAC 900013 wkg McDill AFB in USB w/Autovon pp to Carbon Copu at 0104. MAC 90013 said to be based at Westover AFB, MA. (Hamlin, NY)

9017: Jidicate w/unanswered calls to Errand Boy for sig check, then Jidicate & WAR46 to Good Punt from 0400-0404; Abstainer established comm's w/McClellan at 0613, then data sigs followed. USB mode. This is SAC X-904 channel. (Sabo, CA)

9032: Haven clg Brittania 896 in USB at 0141. This is an RAF freq. (Hamlin, NY)

9222: YL/SS hrd at 0330 w/5F grps. Ended at 0351. Few weeks later she hrd again at 0314. (Bednarski, BC, Canada)

9230: YL/SS in AM at 0410 w/5F grps. (Sabo, CA)

9240: YKL/EE in USB at 2304 w/5F msg until 231. (Margolis. IL)

9726: YL/cc in AM at 0907 w/4F grps each x2. (Sabo, CA)

9865: VTK, Tuticorin Naval, India in CW at 0921 w/band list. (Tubbs, Desert Shield)

10000: WWVH, Hawaii in AM at 1728. (Tubbs, Desert Shield)

10243: YL/Yiddish in USB at 0428 w/3^{2}F grps. (Sabo, CA)

10305: Acrobat wkg u/i a/c re status of refueling & other flight-related matters in USB at 1012. Acrobat listed as Andrews AFB. This freq listed at NASA alloc. (Sabo, CA)

10692.2: Stn w/LOAD QRA DE M5M then into 5L grps. CW 2135-0025. (Scalzo, PQ, Canada)

10855: YL/SS in AM at 0934 w/5F grps. (Sabo, CA)

10870: WGY912, FEMA Facility at Berryville, VA hrd at diff times. DF bearings seem indicate xmtrs at various locations being used or diff directive arrays utilized. (White, ME)

11055: Andrews AFB wkg SAM 970 iin LSB at 0036. SAM 970 on gnd in Dakar, Senegal said to be a/c formerly used as AF-1 by JFK and LBJ. (Hamlin, NY); Andrews AFB in USB at 0247 wkg AF-2 w/pp, then w/brief comm's to AF-1. (Sabo, CA)

11070: GKF wkg B3F in USB at 0016 w/comms re eqpt problems. (Hamlin, NY)

11142: KRH50, US Embassy, London, England w/QSX info in CW at 1759. (Scalzo, PQ, Canada)

11176: MAC 70166 in USB at 0030 asked for wx at Andrews AFB. Flight told divert to Roanoke, VA. Pilot said he wud make one try at Andrews and if no go wud divert to Roanoke. Bob Hope, who was on MAC flight, was to call Pres. Bush. Pp made and Pres. thanked Mr. Hope for entertaining the troops. During monitoring 0030-0120 freqs 13244 and 15015 kHz USB also used. (Briley, MN)

11217: German AF 014 to unhrd grd stn wi/rdo chk. Mentioned this was the whiskey freq. USB at 2150. (Scalzo, PQ, Canada)

11220: (Also see 11494 item) Utah-99 w/comm's to Slingshot, then asked for pp to Autovon nbr (Air Logistics Center, Utah), to which 99 passed encrypted tfc. Utah-99 back to Slingshot at 2029 re permission exit net which did after Slings hot authentication challenge. USB mode 2022-2031. (Sabo, CA)

11226: Moondust wkg Bentworth in USB 0010-0013 on SAC X-905 channel. Tried set up secure comm's. (Sabo, CA); Advertise wkg Cigarette, & Noon Time wkg Appraisal for rdo chex in USB at 2159. (Hill, MI)

11233: Rescue 464 wkg Trenton Military for pp to RCC. On SAR for two missing snowmobilers in Quebec. USB at 2156. (Hill, MI)

11239: N67 Heavy w/pp to North Island. A/c id'ed as Boeing 707 ECK in USB at 0110. (Harwood, CA)

11243: USAF, SAC "Pathology" w/coded msg foll by multiple tfc requests w/"Pathology" standing by for tfc by no respoonse at 0243 in USB. Off at 0245. (Dubee, WA)

11288: Slingshot wkg Almighty in USB at 0653 on Customs Service YD channel. (Sabo, CA)

11395: Paraguayan AF Department (presumably) in SSB at 1906 furnishing aeronautical data to other stns using tactical id's "Japon," "Holanda," and "Alemanha" in SS. (Benevolo, Brazil)

11396: Qantas-51 wkg Djakarta w/position report in USB at 1052. (Sabo, CA)

11494: Pork Pie wkg u/i stn w/coded tfc in USB at 2209 on channel S-311. (Hill, MI) Slingshot & Utah-99 trying establish comm's. Slingshot requested QSY to S-312 but Utah-99 asked for freq in clear since he didn't have designators. Slingshot then advised move to 11220 kHz. USB 2018-2022. (Sabo, CA)

12342.4: C7N wkg Commsta Guam in USB at 0711. Duplex w/13113.2 kHz. (Sabo, CA)

12364: Ship, Gulf Lancer wkg WLO, Mobile, AL in USB at 2230 for pp to Harvey Base, LA. Harvey on 13135 kHz. (Hill, MI)

12440: Phony callsign stn in CW at 1250 w/QWAF QWAF QWAF DE QLXC QLXC QLXC QRU IMI then signifying either QSY or AR (Hall, Japan)

12747: YL rpts MIW2 in USB at 0406. (Sabo, CA)

12813.2: XFM, Manzanillo, Mexico w/CQ mkr at 0051. (Scalzo, PQ, Canada)

12837: UUTW, u/i Soviet vessel w/RR telexes in CW at 1009. (Tubbs, Desert Shield)

12950: YL rpts SYN2 in USB at 0407. Noted still going strong at 0422. (Sabo, CA)

13113: NMO, USCG COMSTA Honolulu clg USCG cutter Polar Sea in USB at 1827 but no answer. (Dubee, WA)

13160: Coastal stn LPL, Buenos Aires, Argentina wkg passenger vessel Royal Viking Sea (C6DM3) in EE. SSB at 1512. (Benevolo, Brazil)

13181: X6W w/coded mgs at 1844 in USB than X6W asked S6O to re-initiate at 1845. Others hrd were X2W clg B2X at 1847. (Dubee, WA)

13185: Coastal stn Juncao, Brazil (PPJ) in Rio Grande, RS contacting Brazilian Navy research vessel Barao de Tefe, (PWBT) which probably in S. Atlantic Ocean near Antarctica. PP language, SSB at 2245. (Benevolo, Brazil)

13201: King 79 wkg McClellan at 1827 w/pp to Rescue Ops—reported cracked windshield (outer pane) over POGO, will complete mission then return Suffox County. At 1837 MAC 70007 wkg McClellan w/pp to McCord Meteo, wx info. (Parks, GA)

13205: RAAF Townsville (AKH) wkg Aussie-131 in USB at 0532. (Sabo, CA)

13333: Speedburd 225 in USB at 1956 clg Speedbird London (British Airways) while flying over Canada. (Margolis, IL)

13430: VTK 3/4/5/6/7, Tuticorin Naval, India in CW at 1214 w/mkr. (Tubbs, Desert Shield)

13500: Three Mexican maritime stns in USB 2215-2241. Stns blvd be San Blas, Puerto Cortes & Baja Cali-

fornia Sur. Place names mentioned were Zona Naval San Blas, Ensenada, Puerto Cortes, Baja California Sur, three ships, & San Blas. (Webb, CA) Possibly Mexican Navy comms? Puerto Cortes is the Hqs of the 2nd Naval Zone. (Ed.)

13815: Nabol in La Paz, Bolivia w/msg to Inca Peru in SS at 1322 on SS. Later hrd Nabol Bolivia and ZPK, Asuncion, Paraguay exchanging comm reports in SS at 2005. These stns are members of the Inter-American Naval net. (Benevolo, Brazil)

13826: U/i stn wkg NNNONPA, Palmer Station, Antarctica at 0150; at 0644 NNNONRI, Port Hueneme, CA wkg NNNONVX, Camp Shields, Japan w/pp's. (Sabo, CA)

14458.5: CFARS net in USB at 0505 incl CIW201, CIW2101, CIW2105, & CIW2109. (Sabo, CA)

14760: NNNONUW, NAS Whidbey, WA wkg NNNONRI, Port Hueneme, CA in USB at 1755. (Sabo, CA)

15055: Two u/i stns, Bolivia and Tango Bravo 2 w/SS oprs passing msgs in SSB at 1415. Initial contact thru u/i stn Paraguay. (Benevolo, Brazil)

15732: YL/EE in AM at 1534 w/3 + 2F grps. (Margolis, IL)

15875: USCG LORMONSTA Yokota (NRT) wrk LORSTA Marcus Island (NRV6), Iwo Jima (NRT2), Hokkaido (NRT9), Gesashi (NRT3), and Barrigada (NRV) w/comm's re some sort of calibration ops. Lots of talk re polarity of LPA's, and countdown to insertion. USB at 0401. (Sabo, CA)

16382: WUH, USACE, Omaha, NE in USB at 1836 w/comms w/WUB5, Corps of Engineers station at unk location in North Atantic Division. (Margolis, IL)

16500: Two u/i Brazilian vessels, owned by "Transportes Maritimos e Fluviais S.A.—FLUMAR", exchanging crew info in Portuguese language. SSB at 1920. (Benevolo, Brazil)

16534.4: D9K wkg USCG CAMSPAC re switching RTTY freq from 21 megs to 29 megs. USB at 1834. (Sabo, CA)

16805: Soviet vessel USPD in CW at 1132 w/telexes in RR. (Tubbs, Desert Shield)

16921.2: CLS, Industria Pesquera Radio, Cuba w/QSX 12549/8366 kHz in CW at 0105. (Scalzo, PQ, Canada)

17245: PPO, Olinda, Brazil wkg Brazilian vessel Maruim in Portuguese on SSB at 2045. (Benevolo, Brazil)

17275.6: U/i stn in USB at 1703 w/pips, 1 per sec. (Margolis, IL)

17552: KWL90, US Embassy, Manila, Philippines in CW at 0039 w/QRA/QSX mkr. (Margolis, IL)

17937: A/c "65" w/position report to Lima, Peru in USB at 2039. (Sabo, CA)

17952: Guard Dog clg Ambush on YF in USB at 2158. No joy. (lasted for 20 mins). (Hill, MI)

18005: Prolong wkg Spatula w/sig check on PACAF "T" channel, then advised that this was primary, and "U" (21754) 2ndary. Then, Readiness wkg Prolong. Also ref'd "Mike Upper" channel (14755). USB from 2003-2111. (Sabo, CA)

18060: SAM 970? wkg Andrews AFB, setting up RTTY. USB at 1729. (Hill, MI)

18154: TAD, MFA, Ankara, Turkey in CW at 1837 after sending RTTY tfc. (Margolis, IL)

18980: Radio Netuno and Arauco, Chile in comms in SS. Comms started thru Radio Balboa on 18990 kHz SSB at 1330. Stns are members of the Inter-American Naval net. (Benevolo, Brazil)

18981.8: Possible Indonesian stn in CW at 1418 w/transmission in unknown language, possibly Malay. (Webb, CA)

20185: Comms from Space Shuttle in USB at 2246 being retransmitted from Huntsville. (Bednarski, BC, Canada)

20560: U/i CW stn at 1507 w/msg in 5F grps. T = 0. (Margolis, IL)

20720: PPR, Rio de Janeiro, Brazil wkg Brazilian vessel Merety (PPWA) in SSB at 1600. Ship in Red Sea enroute to Barcelona, Spain. Tfc in Portuguese. (Benevolo, Brazil)

20870: YL/SS in AM at 0030 w/4F grps. (Harwood, CA)

20970: CFARS net in USB at 1943: CIW202 & CIW605 (Ontario) wkg VXN91 (not hrd). CIW605 was relaying pro hockey scores to VXN91 from CIW202. After that much talk w/VXN91 re 0200 QRX. At 1955, CIW671 cld CIW605, then wrkd CIW605 and CIW202. CIW671 advised he was new to net. (Sabo, CA)

20992: SLHFB "U" in CW at 1434. (Margolis, IL)

21754: Rpts of "Strong Box Strong Box stand by for communications test call" for about a minute, then Devil Fox came up and made test call to various stns incl Safe Deposit. USB on PACAF channel U. (Sabo, CA)

21770: YL/EE in AM at 1631 w/3 + 2F grps. (Wiemken, IL)

22701: YI/SS in LSB at 2334 w/conversation re hre clg u/i individual on u/i ship. (Bednarski, BC, Canada)

23402.5: Atlas wkg Flint-730 in USB at 1838 on Customs Service R channel. (Sabo, CA)

23642: KSW78, US Embassy, Athens, Greece in CW at 1557 w/QSX info. (Scalzo, PQ, Canada)

25165: LPL, Buenos Aires, Argentina in SSB at 1855 announcing in SS tfc to other Argentine stns, among them Mendoza, Manuel Belgrano, Albamar 4, Albamar 2, and Tamar. (Benevolo, Brazil)

25674.9: U/i Mexican voice net at 2125 in AM & LSB w/conversation in SS re some type of measurements & movement of a needle. Town of Guadalajara was mentioned. (Webb, CA) ■

PIRATES DEN

BY EDWARD TEACH

FOCUS ON FREE RADIO BROADCASTING

The Den received an incredible amount of mail from you folks! I'll start with logs of the newer or more unusual stations and we'll see how far we get.

At least one pirate was tying into the Gulf situation. Joshua Wilkes in Kentucky heard **Radio Free North America** with rock and roll for "the American troops in Saudi Arabia". The station claimed to be using a phone relay to a remote AM transmitter. Joshua says a prankster using the ID "Scud Missile Control" was breaking in on the broadcast. This was on 7415 between 2343 and 2355. Jim O'Connell in Massachusetts has the station signing off at 0010 with "Good night, America; Good morning, Saudi Arabia" and a promise to return next week. Jim says he heard mention of an address in Pennsylvania.

KUSA - Radio Wisconsin was found by Chris London in Minnesota on 8412.5 between 1450-1539 sign off. Announced as 300 watts into a vertical antenna and mentioned they were on frequencies in the 11 and 49 meter bands. No address given. Robert Raudenbush in Oregon had them at 0340 on 7415 ID'ing as the Radio Service of Wisconsin and Stanley Mayo in Maine caught them announcing frequencies of 25840, 6210 and 7415, announcing power as three kilowatts and using slogans "KUSA-Dairyland" and "KUSA-Wisconsin". This station was later busted by the FCC.

Another Wisconsin-based station (perhaps the same one?) is **WKAR-"Wisconsin's Kick-ass Radio"** heard on 7415 at 0500 by Pat Murphy in Virginia. Pat says he lost the signal to QRM after about 10 minutes.

Ken Johnson in British Columbia heard **Folk Radio** on 7412 at 0453 closing and advertising pirate t-shirts.

Radio Covert was airing an episode of the Amos 'n Andy Show on 7415 when Tim Johnson of Illinois heard them at 2344. They went off abruptly at 2304.

WORK (that's Workers Operating Radio Knobs) was snagged by Chris London on 7415 at 2330-2350 with programming dedicated to the working man. The sign off included an ID and slogan in CW. Wellsville address for this one. Tim Johnson had this one, too, on 7413 at 2315 using the song "Working in a Coal Mine" as bridge music.

I hadn't seen any reports for **Radio Mauser Worldwide** in awhile, until Mario J. Filippi in New Jersey reported them on 7490 at 0001-0009 with Beatles music and host Dr. Selsun. The address was given as PO Box 55553, Trenton, NJ 08638.

Skip Harwood in California found the **Voice of Radio Freedom** on 7415 at 0250-0316 with light rock and two IDs. No address announced. Skip notes the modulation and signal strength were excellent.

WHO (not the real one on 1040-MW) was heard on 7416 at 0059 sign on to 0131 close by Robert Ross of Ontario. IDs as the Voice of Free Radio from Galafry (?), (That's the home planet, I think, Bob), and announcing power as an average 100 watts output. Address is PO Box 452, Wellsville, NY 14895. Jeff Foster of Michigan had them at about the same time.

KNBS, the so-called Voice of the California Marijuana Cooperative, was heard on 3470 at 0235 by David Lausten in Pennsylvania. Many comedy bits were aired and the Wellsville address announced. Pat Murphy found them on 3474 at 0200.

Shaun Rockland of Wisconsin had the **Canadian Bootlegger** on 7416 at 0215 announcing the Wellsville address. Shaun, along with Jeff Foster, monitored a string of other stations in a QSO here. I avoid reporting QSO's, but will here as there were some unfamiliar stations included: KLVS, Action Radio, Pancho Villa Radio, KGUN, WHDA and Samurai Radio.

Action Radio was 7415 at 2250, reports Pat Murphy. They were running parodies and heavy metal. ID went " . . . from the city of three rivers, in our underground studios, this is Action Radio . . . " Foster heard them playing segments from the now defunct KUSW, Salt Lake City.

Robert Ross checks in with some great Europirate logs: Pirate Freaks Broadcasting Service on 6285 at 0418; Weekend Music Radio on 6239.9 at 0456; Live Wire Radio on 6276.9 at 0450, an unidentified on 6230 at 0608 and a tentative second log on PFBS on 6295.3 to 0558. Also heard was Radio Orangutan in Holland on 6205.9 at 0833. We all wish for your kind of success with the Euros, Bob!

Hope Radio International seems one of the most active pirates these days. If you need this one check the 7413-7418 range. They've also been heard on 3472 and 7382. The time frame runs from as early as 2100 to well into the evening hours. The program often includes a segment of pirate radio news hosted by the Radio Animal.

WJDI, something of old timer, ran a special broadcast on 1620. This one seems to show up every now and again. The address is given as PO Box 5821, Kingston, NY 12401. Thanks to all of you who sent reports on the above two stations.

Skip Harwood reports that **Zodiac Radio** has begun sending out QSL's again. Skip also says that **Radio Anarchy** says they "blew their transmitter on 9900" and only get two reports for broadcasts on this frequency.

Jeff Foster heard a station he tentatively ID'd as **Radio Fog** on 7415 at 0253, though it amounted only to an announcement about a later broadcast and mention of an address which wasn't picked up.

A reminder that, though they may sometimes sound like it, neither Radio New York International nor Radio Free New York are pirate stations. RNI was at one time. Both are independently produced programs aired over licensed station WWCR in Tennessee, 7520 KHz.

Thanks to all who reported this month, and please keep that mail coming this way! I really appreciate hearing from you! Operators, how about sending me details about your stations, equipment, plans and such? Station photos are much wanted, too! ■

This is the production studio of the Voice of Bono, normally relayed by other pirate stations. (Thanks: Voice of Bono)

SCANNING VHF/UHF

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

As the summer starts to unfold before us, it's the season when the scanning action gets hot with the weather. Now is the time to tune in those vacation spots and send in those frequencies!

Christian Kocielo, Registered Monitor KCT1DS, from Hadlyme, Connecticut, says he has a Uniden Bearcat BC-1, BC-950XLT and BC560XLT at his listening post. In addition, Christian passes along these frequencies: 160.695, Valley Railroad in Essex and New York City Transit Police; Middlesex County fire, 46.18, 46.26 and 46.04; and New London County fire on 33.96 and 33.90.

From Benson, Minnesota, checks in Dell Hilleren. Dell uses a Uniden BC205XLT handheld as well as a Realistic PRO-2021 scanner in his home. The Radio Shack scanner is attached to a Channelmaster model 5094 scanner antenna mounted about 30 feet above ground level. Dell says he lives in a rural area and likes to listen to police and ambulance units. He's about 10 miles away from the closest base station he listens to and about 25 miles from the next closest base station. He says he can hear the base stations with no difficulty, however, the mobile units sometimes come in broken up. He wonders whether a different antenna, an amplifier or a higher antenna would help receive signals better.

The answer to Dell's question is to say yes to any or all of the three counts. An antenna with better gain would certainly help. First of all, if all the frequencies you are monitoring most are all in the same band, such as VHF high band (150-174 MHz), a single band gain antenna will do better than an antenna that is designed to function on three or four bands or more. Next, an amplifier also might help in your situation. However, keep in mind that if the signals are real noisy, the amplifier also will amplify that noise on your receiver. It certainly would be worth a try. If at all possible, it's always best to mount an amplifier at the antenna, rather than at the radio. This allows the amplification to be done at the antenna and enhances the signal before it experiences loss in the coaxial cable as it travels to the radio. An active antenna such as the Dressler VHF/UHF versions available from Gilfer Shortwave in New Jersey works in this fashion, but in all in one self-contained unit that mounts on the mast, antenna and amplifier in all.

Lastly, a higher antenna also will help with your reception. However, raising it another 5 feet won't do the trick. To get a significant and noticeable improvement in signal, you would almost have to double your height for starters. If your antenna can "see" the signals line of sight on what you want to hear, it will help your reception. In addition, make sure you have a good quality coax cable, especially if you are running the cable for a stretch of 50 feet or more. Most scanner enthusiasts prefer Belden 9913 cable because of its low-loss properties. Keep in mind that all these things all together will make a difference on how well you receive. For instance, I have antennas mounted on my tower at 20 feet that receive better than antennas mounted at 50 feet. It depends on all the above factors put together. Experiment by changing things around one step at a time and see what improves your reception best. Don't go into it whole hog and come out disappointed!

Here is the Astoria, IL, listening post of David Law. Included with the Cobra SR-10 scanner are a couple of shortwave receivers so David doesn't miss any of the action.

Ted Sorge of Myrtle Beach, South Carolina, writes to Scanner Scene to ask if he put 800 MHz crystals into his Regency ACT-R-106 crystal scanner whether it would receive signals from the 800 MHz band. He also wonders whether 800 MHz crystals are available. First, you can have crystals cut for any frequency, even out of band, by any reputable crystal manufacturer. They may charge more for such a service, but it is available. Next, if you were to put 800 MHz crystals into a scanner designed to receive only VHF and UHF bands, the radio would not receive 800 MHz signals because the scanner does not have an RF front end that is needed to detect the 800 MHz band. You might receive some interference on such an arrangement if you were lucky, such as a broadcast station, but it would be the radio "spazzing out" at best. The only 800 MHz crystal scanner ever made was a Bearcat and not too many seem to be around. If you come across a used one of these radios, which also receive the other VHF and UHF bands with crystals, then you could tune in 800 MHz signals with the proper crystals.

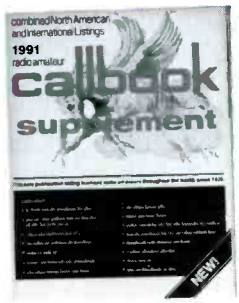
Ted also passes along a few frequencies for the Myrtle Beach resort areas: Myrtle Beach police, 154.800; Myrtle Beach fire, 154.100 (F-1), 154.175 (F-2); Myrtle Beach Rescue Squad, 155.160; North Myrtle Beach fire, 154.2200; North Myrtle Beach police, 154.860; North Myrtle Beach public works, 154.025; new Horry County police data, 860.5875; old Horry County police, 154.725; Horry County rural fire, 154.400.

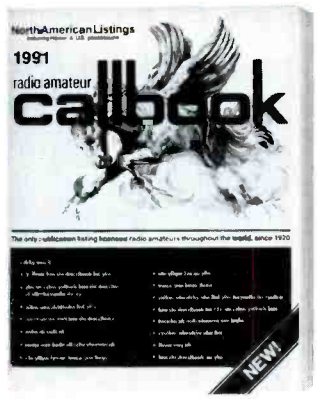
John Callahan of Houston, Texas, writes in to request information on becoming a "registered monitor". John is referring to those distinctive IDs issued to scanner hobbyists to identify them to others in the hobby as well as to agencies and others they may write to. My own Register Monitor ID is KPA3CA. The PA means it was issued to me when I was living in Pennsylvania and the 3 designates the amateur radio call district that Pennsylvania is in. You can obtain information on becoming a registered monitor by writing to: CRB Research Books, PO Box 56, Commack, NY 11725.

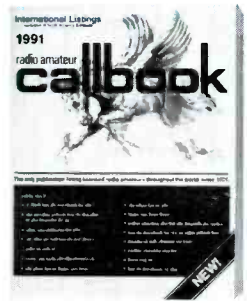
Al Lasoya from Channelview, Texas, writes in response to the steps mentioned in

(Continued on page 50)

COVERING THE COMPLETE RADIO SPECTRUM







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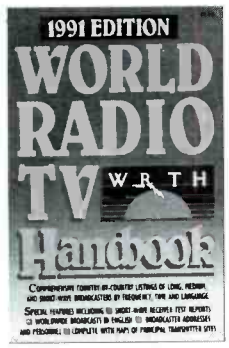

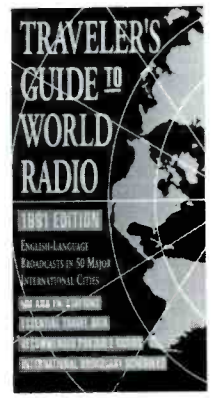

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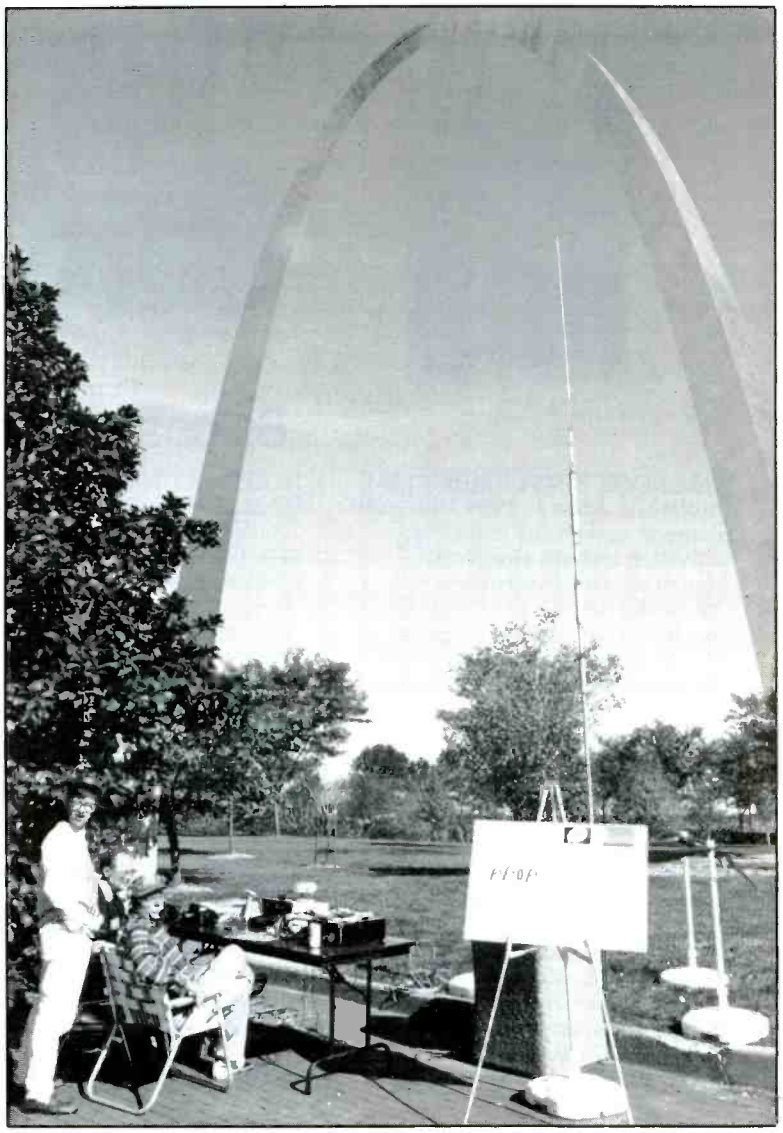
GETTING STARTED AS A RADIO AMATEUR

Using FM Repeaters: No Code Needed

Unless you've been on an extended visit to the northern plateaus of Tibet, you've no doubt heard about the FCC's landmark codeless Technician-class amateur license. For the first time in US history, an amateur license can be yours merely be passing two relatively easy exams totaling 55 questions—and there's not even a reference to Morse code!

As of February 14, 1991, Technicians are allowed full amateur privileges above 30 MHz. They're not allowed to operate on the HF amateur bands (except those Technicians who were licensed before the new license took effect), but they have full access to the exciting world of VHF, including popular repeaters on 6 and 2 meters and above, which brings me to this month's topic.



This is not some sort of "half sine-wave antenna!" Members of the Monsanto ARA operated special-event station AAOA October 27-28, 1990, to commemorate the silver anniversary of the St. Louis Gateway Arch. They made more than 320 QSOs with 41 states and several DX stations.

Repeaters

One of the most exciting enhancements in Amateur Radio was the development of repeaters. These remote receiver/transmitter combinations went into widespread service in the 1960s, and their use on 2-meter FM boomed in the '70s. Today, there are thousands of these "machines" operating nationally (you can probably access several in your area), and the number is growing. FM repeaters operate on 10 and 6 meters, 223, 440, 902 and 1240 MHz, and many are crosslinked to two or more of the above bands.

Repeaters bestow increased capabilities on even low-power hand-held or mobile transceivers. For example, you could be walking through a downtown park and chatting with a friend 50 miles away thanks to the repeater mounted high atop a water tower or a nearby mountain ridge. The same goes for the VHF rig in your car. Some repeaters are part of extensive networks, allowing a ham with a hand-held radio in Arizona to converse with another ham in Los Angeles. Their signals travel back and forth through several "linked" repeaters.

Privileges available to codeless Techs are a powerful incentive to join the ranks as an Amateur Radio operator. And repeaters are only part of the fun. There are satellites, amateur television, packet radio and more—but I'll have to save those for later. What are you waiting for?

Repeater Etiquette

For veteran repeater users, this may be old hat. But there are always new hams appearing on the bands, and a review never hurt anyone.

Here are some standard dos and don'ts for using VHF/UHF FM repeaters:

Don't

1) "Kerchunk" the repeater. This refers to keying your mike without saying anything just to "see if you can hit the machine." It's illegal to transmit without giving your call sign and it's rude to operate someone else's station anonymously.

2) Be long-winded. Keep your transmission brief so you don't tie up the machine—it might be needed for more urgent communications.

3) Talk over the repeater ID. Some people want to know what repeater they're hearing and if you tranmsit on top of the repeater's call sign, it's hard to copy.

4) Use CW abbreviations and most Q-signals. Say "location" or "home" instead of "QTH"; "moving to (frequency)" instead of "QSY"; "clear" or "out" instead of "QRT"; don't say "hi" for laughter—just laugh, already. You have a name, not a "handle";

you say "yes," not "roger that." Have you ever seen "destinated" in any English dictionary? Avoid numbly replying, "very good on the . . ." to acknowledge the other operator's comments. You get the idea! Speak naturally, abbreviations are unnecessary on FM: the sound quality is excellent.

Do

1) Leave pauses between transmissions. "Tailending" others makes it difficult for a station to join a conversation or report an emergency.

2) Acknowledge breakers as soon as you hear them. Then, turn the transmission over to them as soon as you can to find out what they have to say. Keep your transmission short.

3) Remember to give your station identification at least every 10 minutes.

4) State your name when you join an unfamiliar group; you'll be more rapidly accepted if you let the other repeater users know who they're talking to.

5) Stick to normal English. No one's impressed by an earful of muddled "hamese." Does the following conversation sound familiar? What would you think if you overheard this at a dinner party?

"KA5XYZ, WB5ZYX, handle here is Joe, Juliett Oscar Echo, You're DFQ to my QTH in Clunkertown, over."

"KA5XYZ for ID. Very good on the Clunkertown, Joe. Handle here is Tom, Tango Oscar Mike. I'm about to QSY to seven-nine; the road goes over a hill ahead and I'll probably lose the machine soon, hi."

Roger that, Tom. We just destinated here at the home QTH so I'll pass along my best 73s to you and yours and hope to catch you further on down the log. Hope we can talk again soon. KA5XYZ, this is WB5ZYX, pulling the big switch."

Now let's de-garble this:

"This is WB5ZYX, and my name is Joe. I hear you fine in Clunkertown, over.

"This is KA5XYZ. My name's Tom. I'm about to switch to the seven-nine repeater; the road goes over a hill ahead and I'll probably be out of range soon."

"Okay, Tom. I just reached my house, so I'll sign off now. Nice meeting you and 73. This is WB5ZYX, clear."

Remember, the whole point is to communicate clearly and effectively. Logic and common sense will pull you through almost any situation. Guard against the impulse to preach or attack someone else's skill on the air. And keep our valuable Amateur Radio bands clean, clear and classy by using good manners and common sense.

For information on the repeaters in your area, see *The ARRL Repeater Directory*, available from ARRL at the address listed below. It's updated every year and provides complete listings of regular and special-purpose repeaters all across the country.

Send your photos, comments and questions to me at ARRL, Department PCN, 225 Main Street, Newington, CT 06111. See you on the repeater!

Beaming In *(from page 4)*

those who misuse it, but those are obviously the ones who caused the regulations to be established demanding that licensees heed the use to which their facilities are put. At the very least, and if only to protect themselves from FCC hassles and/or civil suits, ham licensees should be anxious to see that blatantly commercial, fraudulent, deceptive, malicious, and libelous messages are not propagated via their licensed stations. A defamatory message originated by a single operator, once fed into the nationwide packet network, could cause hundreds upon hundreds of operators whose stations repeated the message to become co-defendants in a fantastic lawsuit. Think about it.

Not that I have the answer for how to solve these problems, and I realize all the difficulties involved in even trying. Still, I don't feel they can be completely ignored. Somewhere between free speech, the march of technology, the logistics of reading and evaluating every message, and the unimpeded growth of packet radio, there's probably a solution kicking around somewhere.

There's a definite problem. Those who operate packet stations should be seeking a solution rather than attempting to distance themselves from the situation. The man once said that if you aren't part of the solution, then you may be part of the problem.

Washington Pulse *(from page 32)*

KF2XEF, Ericsson Paging Systems, Inc., new experimental to operate on frequencies 940-952 MHz and 862-868 MHz to test and demonstrate its CT-3 Wireless PBX System. FX&MO: Washington, DC and Anaheim (Orange City), CA.

KF2XEG, Nynex Science and Technology, new experimental to operate on frequencies 1850-1990 MHz to test and evaluate TDMA & CDMA radio technologies for use as part of the local exchange carrier distribution system. FX&MO: Boston, MA: New York, NY; and White Plains, NY.

KF2XEH, Omni-Point Data Company, Inc., new experimental to operate on frequencies 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz for development of CT-2 and PCN technology. MO: Continental U.S.

KF2XEI, Telepoint Personal Communication, Inc., new experimental to operate on frequencies 940-941 MHz to develop, test, and demonstrate CT-2 and PCN technology. FX&MO: Atlantic City, NJ.

KF2XGX, American Radio Relay League, Inc., new experimental to operate on frequency 149.195 MHz for emergency communication experiments. FX: Newington, (Hartford), CT.

Availability Of Updated Cuban Broadcast List

An updated list of Cuban broadcasting stations dated December 1990 is now available. Members of the public may obtain a copy of the Commission's calculated Cuban Standard Broadcast List from Downtown Copy Center, 1114 21st Street, N.W., Washington, D.C. There will be a fee for this document.

The FCC has updated the list of Cuban radio stations known to be operating on the 107 channels allocated for AM broadcasting. The list shows, to the extent possible through off-the-air observations, the calculated location and operating power of each observed Cuban station.

In order to determine the existence and level of interference to United States AM radio broadcast stations for the purpose outlined in Part 1, Subpart M of the Commission's Rules, Cuban stations will be presumed to be operating at the location and power listed. The regulations of Subpart M establish standards, requirements, and procedures that the FCC will apply in making findings as to whether applicants qualify for relief from Cuban AM broadcast interference.

The FCC will update the list as changes are noted.

Inquiries concerning the Commission's responsibilities relating to the Radio Broadcasting to Cuba Act should be directed to Henry Straube of the Mass Media Bureau at (202) 254-3394. Technical questions relating to the list should be directed to Rockie Patterson of the Field Operations Bureau at (202) 632-6345.

EPIRB Modulation Requirements Modified, Clarified

The FCC amended Parts 80 and 87 of its rules to modify and clarify the technical characteristics of emergency position indicating radiobeacons (EPIRBs) and emergency locator transmitters (ELTs) that operate on 121.500 MHz and 243.000 MHz.

EPRIBs and ELTs are small battery powered transmitters used to send a distress signal. EPIRBs are carried on ships and ELTs are carried on aircraft. They may be activated automatically or manually and the transmitted distress signal is identical for both. The distress signal functions both as an alarm to alert others that a ship or aircraft is in distress and as a beacon to aid search and rescue personnel.

The distress signal may be received by overflying aircraft and nearby ship or land stations, if they are monitoring the distress frequency and are within range of the EPIRB or ELT, or by low orbiting satellites that are part of the COSPAS-SARSAT tracking system. When received by this system, the transmitted distress signal is retransmitted in its entirety to a ground station. The ground station measures the Doppler shift of the carrier frequency transmitted by the EPIRB or ELT, processes the Doppler shift using digital signal processing techniques in correlation with the satellite's position in orbit, and arrives at an approximate location of the EPIRB or ELT on the earth's surface.

The technical changes the Commission had made will make this technology more dependable and improve the effectiveness of this system.

HOW I GOT STARTED

We invite readers to submit, in approximately 150 words or less, how they got started in the communications hobby. Please submit this information typewritten if possible, or at least easily legible if not typewritten. If you have a photo of yourself taken recently, or when you got started, please include it with your story. We cannot acknowledge or return material, whether or not it is used. Your information need be submitted only once, we'll keep it on file. All submissions become the property of *Popular Communications*.

Each month we will select one to be used in this section. Entries will be evaluated taking into consideration if the story they tell is interesting, amusing, or unusual. We reserve the right to make any editorial changes to improve style or grammar, or to adjust length.

The writer of the letter used each month will receive a 1-year gift subscription (or subscription extension if already a subscriber) to *Popular Communications*.

Address all entries to: How I Got Started, Popular Communications, 76 North Broadway, Hicksville, NY 11801.

Our Winner For June

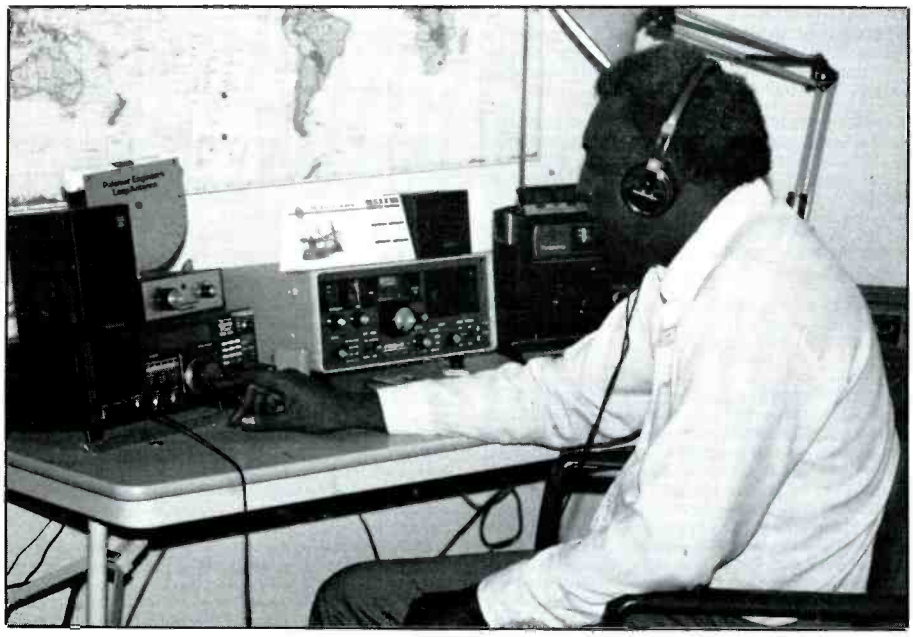
This month's winner is Leon Dabbs, of Montclair, CA. He told us:

"You'd have to say it began because I'm a railfan. Even as a child in Texas, I used to stand by the tracks and watch the steam locomotives of the *Cotton Belt* roll by. After I graduated from high school, I served in the USAF, and upon my discharge I settled in California. My interest in trains continued, even as the age of steam engines gave way to diesels.

"One time, when I was train watching at Cajon Summit in San Bernardino, I noticed a fellow railfan using an unusual radio. He gladly explained to me that it was a scanner that he used to receive communications between train crews and their dispatcher. He said it helped him to know where the trains were, and generally added enjoyment to train watching.

"The next day I had a Bearcat 210XL. Although I had originally bought it just to hear railroad communications, it soon opened up a whole new world for me. My monitoring interests widened. That naturally brought me into contact with *Popular Communications*, and the magazine familiarized me with an even broader view of the communications hobby. And it explained about things such as reception reports, QSL's, UTC, and showed me that this was a hobby that was shared by many people around the world.

"That inspired me to buy a Panasonic RF-2200 from an ad in *POP'COMM*. It was a wonderful introduction to SWL'ing, and I have now added Yaesu FRG-7 and FRG-8800 receivers to my station. I still enjoy watching trains, but now that I've been introduced to scanning and shortwave, I spend plenty of time monitoring."



Leon Dabbs at his monitoring post in Montclair, California.

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Closing Date: The 10th day in the third month preceding date of publication. Because the advertisers and equipment contained in Communications Shop have not been investigated, the Publisher of Popular Communications cannot vouch for the merchandise listed therein. Direct all correspondence and ad copy to: PC Communications Shop, 76 N. Broadway, Hicksville, NY 11801.

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AR1000 $399

1000 Channels. 8-600MHz, 805-1300MHz

Standard Features:

- Extremely compact size.
- Continuous coverage (except UHF TV 600-805)
- Antenna attenuator switch, 10db.
- Manual tuning knob.
- Earphone jack, 3.5mm.
- AM, FM and wide band FM tuning modes.
- Backlighted LCD display.
- 10 Scan Banks, 10 Search Banks.
- Selectable Priority Channel.
- Delay, Hold Features.
- Selectable Search Increments, 5-955KHz.
- Permanent memory backup.
- 4 AA Ni Cad batteries included.
- AC adaptor/charger.
- Carry Case.
- Cigarette Lighter Charger.
- Belt Clip.
- Earphone.

Options:

External Speaker. Mobile Mount.	MS190	$19.50
Extended Warranty. 2/3 yrs		$45/$55

Specifications:

Coverage:	8-600, 805,1300MHz
Sensitivity:	.35uV NFM, 1.0uV WFM, 1.0AM
Speed:	20 ch/sec. scan. 40 ch/sec. search
IF:	561.225, 58.075, 455KHz or 10.7MHz
Increments:	5 to 955KHz selectable/ 5 or 12.5 steps.
Audio:	.4 Watts
Power:	Input 9 - 13.8 V. DC
Antenna:	BNC
Display:	LCD
Dimensions:	6 7/8H x 1 3/4D x 2 1/2W. 12oz wt.

AR950 $239

100 Channels. Low, Air, High, UHF & 800MHz.

Standard Features:

- Extremely compact size.
- Unrestricted 800MHz coverage.
- 100 channels permanent memory.
- Earphone Jack & Attenuator.
- Delay, Hold features.
- Channel 1 Priority.
- 5 Scan Banks, 5 Search Banks.
- Telescopic and Flexible Antennas w/ BNC connector.
- AC & DC Power cords w/ mtng hardware.
- One Year Limited Warranty.

Options:

Base type antenna 25 to 1000MHz w 50'coax.	AS300	$59.95
Mag Mnt Mobile Antenna. 15' coax.	MA100	$25.00
Cigarette Lighter power adaptor.	CP100	$4.00
External Speaker with mobile mount.	MS100	$19.50
Extended Warranty. 2/3 yrs		$40/$55

Specifications:

Coverage:	27-54, 108-174, 406-512, 830-950MHz
Sensitivity:	.4uV Lo,Hi. .8uV Air. .5uV UHF. 1.0uV 800
Scan Speed:	15 ch/sec.
IF:	21.4MHz, 455KHz
Increments:	10,12.5,25,30
Audio:	1W
Power:	12.8VDC, 200MA
Antenna:	BNC
Display:	LCD w/backlight
Dimensions:	2 1/4H x 5 5/8W x 6 1/2D. 14oz wt.

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ACE COMMUNICATIONS

AR2500 $499

2016 Channels. 1 MHz to 1500 MHz

Standard Features

- Continuous coverage
- AM, FM, wide band FM, & BFO for SSB, CW.
- 64 Scan Banks.
- 16 Search Banks.
- RS232 port built in.
- Includes AC/DC pwr crd. Antenna, Mntng Brckt.
- One Year Limited Warranty.

Options:

Earphone.	EP200	$2.00
External Speaker. Mobile Mount.	MS190	$19.50
Extended Warranty. 2/3 yrs.		$65/75
Mobile Mounting Bracket.	MM1	$14.90
RS232 Control Package (software & cable) offers spectrum display and database.	SCS2	$295.00

Specifications:

Coverage:	1 MHz - 1500MHz
Sensitivity:	.35uV NFM, 1.0uV WFM, 1.0AM/SSB/CW
Speed:	38 ch/sec. scan. 38 ch/sec. search
IF:	750.00, 45.0275, 5.5MHz 455KHz
Increments:	5,12,5,25 KHz
Audio:	1.2 Watts at 4 ohms
Power:	Input 13.8 V. DC 300mA
Antenna:	BNC
Display:	LCD, backlighted.
Dimensions:	2 1/4H x 5 5/8W x 6 1/2D Wt. 1lb.

AR3000 $995

400 Channels. 100KHz to 2036MHz.

Standard Features:

- Extremely compact size.
- Continuous coverage
- Attenuation Programmable by Channel.
- Manual tuning knob.
- Tuning increments down to 50Hz.
- AM, FM, wide band FM, LSB, USB, CW modes.
- Backlighted LCD display.
- 4 Scan and Search Banks, Lockout in Search.
- 4 Priority Channels.
- RS232 control through DB25 connector.
- Delay, Hold Features.
- 15 band pass filters, GaAsFET RF amp.
- Sleep and Alarm Features.
- AC adaptor/charger. DC power cord.
- Telescopic Antenna.

Options:

Earphone.	EP200	$2.00
External Speaker. Mobile Mount.	MS190	$19.50
Extended Warranty. 2/3 yrs.		$65/75
Mobile Mounting Bracket.	MM1	$14.90
RS232 Control Package (software & cable) offers spectrum display and database.	SCS3	$295.00

Specifications:

Coverage:	100KHz - 2036MHz
Sensitivity:	.35uV NFM, 1.0uV WFM, 1.0AM/SSB/CW
Speed:	20 ch/sec. scan. 20ch/sec. search
IF:	736.23, (352.23) (198.63) 45.0275, 455KHz
Increments:	50Hz and greater
Selectivity:	2.4Khz/-6db (SSB) 12KHz/-6db (NFM/AM)
Audio:	1.2 Watts at 4 ohms
Power:	Input 13.8 V. DC 500mA
Antenna:	BNC
Display:	LCD
Dimensions:	3 1/7H x 5 2/5W x 7 7/8D Wt. 2lb 10oz.

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(The VHF converter options must be used in the R-5000 and R-2000.)

R-5000

The R-5000 is a high performance, top-of-the-line receiver, with 100 memory channels, and direct keyboard or main dial tuning—makes station selection super easy! Other useful features include programmable scanning, large, built-in speaker, 110 volt AC or 12 volt DC operation (with optional DCK-2 cable), VHF capability (108-174 MHz) with the VC-20 option, dual 24-hour clocks with timer, and even voice frequency readout with the VS-1 option.

RZ-1
Wide-band scanning receiver

The RZ-1 wide-band, scanning receiver covers 500 kHz-905 MHz, in AM, and narrow or wideband FM. The automatic mode selection function makes listening easier. One hundred memory channels with message and band marker, direct keyboard or VFO frequency entry, and versatile scanning functions, such as memory channel and band scan, with four types of scan stop. The RZ-1 is a 12 volt DC operated, compact unit, with built-in speaker, front-mounted phones jack, squelch for narrow FM, illuminated keys, and a "beeper" to confirm keyboard operation.

Optional Accessory
- **PG-2N** Extra DC cable

R-2000

The R-2000 is an all band, all mode receiver with 10 memory channels and many deluxe features such as programmable scanning, dual 24-hour clocks with timer, all-mode squelch and noise blankers, a large, front- mounted speaker, 110 volt AC or 12 volt DC operation (with the DCK-1 cable kit), and 118-174 MHz VHF capability with VC-10 option.

Optional Accessories R-2000:
- **VC-10** VHF converter
- **DCK-1** DC cable kit for 12 volt DC use.

R-5000:
- **VC-20** VHF converter
- **VS-1** Voice module
- **DCK-2** for 12 volt DC operation
- **YK-88A-1** AM filter
- **YK-88SN** SSB filter
- **YK-88C** CW filter
- **MB-430** Mounting bracket.

Other Accessories:
- **SP-430** External speaker
- **SP-41** Compact mobile speaker
- **SP-50B** Mobile speaker
- **HS-5** Deluxe headphones
- **HS-6** Lightweight headphones

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