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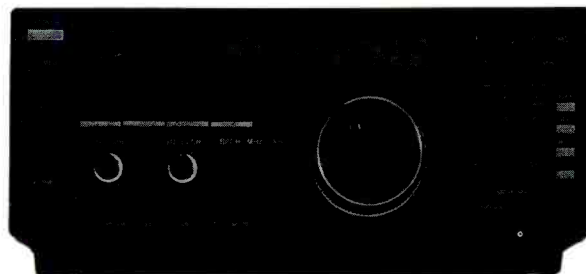
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This month's cover: A young woman displays the communications device of the 1990's—the radio pager, otherwise known simply as “the beeper.” Photo by Larry Mulvehill, WB2ZPI.

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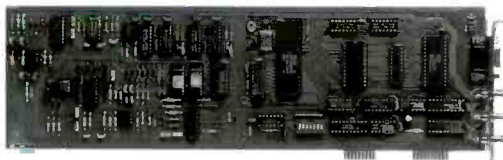
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FM N/A N/A .5μV

*Sensitivity improves with optional 500Hz CW Filter.

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Chips Along The Information Superhighway

There's been quite a bit of controversy and confusion about the Clipper chip. Based on interest our readers are expressing in this device, this is probably as good a time as any to give it some discussion.

At a White House press conference held on April 16th, 1993, President Clinton announced that government scientists had perfected a new computer chip that guaranteed privacy for computer and telephone communications. This chip is what has come to be known as the Clipper chip.

After some research, it was discovered that the powerful and mysterious Clipper chip was designed by the National Security Agency (NSA). The plan is to have the secret Clipper chip installed at strategic telco network facilities so that the feds can easily access all communications using landline telephone equipment. This is in response to the glut of scrambled and strongly encrypted communications now being used by the public. Government wiretappers can't easily or always decrypt or unscramble the messages, putting a crimp in federal eavesdropping activities.

The idea is that the government will adopt a national "weak" encryption standard for the public to use. The Clipper chip can convert such encoded communications into useful and easily readable messages for federal eavesdroppers.

The premise of the Clipper chip is that it is supposed to guarantee privacy, yet it seemed to some that it was going to do just the opposite. The government said not to worry, the privacy guarantee means that they can't read your e-mail or eavesdrop on your phone calls unless they obtain a court order. Questions immediately arose regarding the wisdom of allowing the fox to guard the chickens.

The government is in a blue snit about private scrambling and encryption. They used to be able to set up wiretaps without much fuss, then read phone calls, faxes, and e-mail to their hearts' content. The NSA, as I discussed here several issues ago, routinely eavesdrops on all incoming and outgoing landline communications between the USA and elsewhere.

The public perception is that governmental agencies have spent years grossly abusing available eavesdropping and wire-tapping technologies. It's rather laughable that the feds enacted ridiculous pseudo-privacy laws like the ECPA (1986) that served no purpose other than to convince the naive public that communications privacy is their immutable legal right.

The ECPA was a cellphone sales gimmick the feds got snookered into endorsing. Until the ECPA drew attention to tele-

phone privacy, the public was blissfully unconcerned about such matters. People had gladly used non-cellular car phones for more than 40 years without privacy assurances. The ECPA chickens have come home to roost in the halls of government and now the public is questioning federal eavesdropping technologies.

When digital technology became available in consumer products promising privacy, companies and individuals that particularly felt the need for this were there waiting with ready cash. Would the use of a phone scrambler, computer encryption program, or other any other means to secure comms to prevent the reading of e-mail (or listening in) place the activities of such a person under some question? A person isn't (yet) a criminal for insisting on the very privacy the ECPA promises, but it might come to pass that such a person would draw attention to and bring unwanted suspicion upon his activities.

Point is, nobody outside the government knows the Clipper chip's full potentials, and how it might be deployed. The government's track record for snooping on its citizens is long and questionable. Therefore, it's hard to imagine that this latest piece of eavesdropping technology is mired any less in double-talk than anything ever connected with the NSA's fairytale factory.

Some readers have written telling me they have heard rumors that the White House will try to ban secure, private and computer communications by means of an Executive Order or National Security Directive.

Let's widen our view of electronics when considering what Clipper chips are or might be about. Don't limit their potentials to snooping on phone calls and e-mail. Nobody's talking about it yet, but I'm guessing that Clipper chips could also be made to work with smart cards and other simple-looking identification devices that connect to databases. Clipper chips could someday be built in your cable TV box, the motor vehicle bureau, in the electronic records of insurance companies, credit companies, educational institutions, public utilities, banks, hospitals, and a thousand other places that maintain the files and records about companies and individuals.

Assuming the necessary court order is obtained (as they claim), supposedly confidential information from numerous sources could be readily collected by the federal government.

Last February, the government called together more than 20 honchos of major local and long-distance phone companies in order to generate their support for the proposed "Digital Telephony and Privacy Im-

provement Act of 1994," intended to greatly expand their eavesdropping capabilities. The feds were not only concerned about being unable to eavesdrop on scrambled phone calls and encrypted e-mail, they also point out that when cellphones become all-digital, they won't be able to eavesdrop on those, either.

The FBI told the telco people that they had gone to the trouble of obtaining hundreds of court orders for fed electronic surveillance, only to realize that their efforts were thwarted when they ran up against scrambled and data communications they couldn't understand.

The feds are seeking the phone companies' support of this new law that will allow the installation of monitoring access facilities in their networks to permit federal agents to listen-in on all voice and non-voice communications without being hampered by unbreakable digital or other scrambling or encryption measures. This involves the installation of Clipper chips and associated technologies such as the Skipjack encryption scheme.

Skipjack is an algorithm that, used with the Clipper chip, is part of a "key escrow" system that has a "back door." The back door could be used to monitor supposedly secure communications.

Also, the feds want cellphone companies to make available transactional information, for instance showing the specific cell sites a cellphone was accessing during a call.

These benefits would be available only upon presentation of a court order. Regardless, the phone companies were cool to the initial meeting, expressing regard for their customers' privacy.

For the government's part, they maintain that electronic surveillance is a major crime-fighting tool. They now feel they absolutely must have the Clipper chip to eavesdrop on the bad guys, like criminals and terrorists. About \$8-million Clipper chips are already on order.

Dorothy E. Denning, author of *Cryptography and Data Security*, who evaluated the Clipper System for the government, staunchly supports its implementation. In *Newsday*, Prof. Denning, who chairs the Dept. of Computer Science at Georgetown University, insists that the government really does need this technology in its law enforcement efforts.

She adds that the government wants people to be able to use their own private scramblers that the government can't decode. However, she supports the concept of an encoding standard that would allow lawful intercepts. (One gets the impression

(Continued on page 82)

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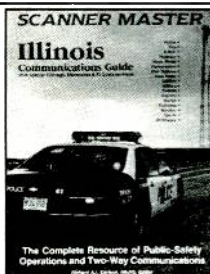


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MAILBAG

LETTERS TO THE EDITOR

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

Get The Band Right

I'd like to clarify a statement made in the January edition. Your article *Cordless Phones: Who's Eavesdropping?* stated that Motorola's Secure Clear cordless model 300 is a 900 MHz telephone. As a matter of fact, all Secure Clear cordless telephone models manufactured by Motorola's Cellular Subscriber Group are actually 49 MHz products.

David A. Pinsky,
Public Relations Specialist,
Motorola Cellular Subscriber Group,
Libertyville, Ill.

Vern A. Weiss, WA9VLK/GØNBZ
Valparaiso, Ind..

Complains About A Program

I have only recently become aware of shortwave radio and have had a lot of fun picking up broadcasts from all over the world. I must say, however, that I was less than pleased with a program heard over WRNO Worldwide called *American Dissident Voices*. This slickly produced program made me think that it was promoting either the American Nazi Party or the American Nationalist Party. This broadcast goes overseas, and I wonder what listeners in other nations think of us if that is what they hear from broadcasters here. Let's hope they understand that this is only a small group of people and does not represent the way most Americans think.

Dan Screffler,
Indianapolis, Ind.

The program identifies itself as being product of "dissident voices." Repulsive though their ideas may be, that clearly puts listeners on notice that these people are out of tune with the majority of Americans. At the very least, being presented with dissident opinions causes us to pause and think about our own values and philosophies. Keep in mind that it takes dissident voices to demonstrate *Freedom of Speech*. In the USA, this is a precious Constitutional right, but is a scarce commodity in many countries of the world.—Editor.

All In The Family?

The *American Movie Classics* cable channel often runs a Max Fleischer Studios' musical color cartoon from the early 1930's called "Dancing On The Moon." The credits show its animator was named Kneitel. Every time I see this film, I wonder if this was a relative of POP'COMM's editor. I have also noticed the name on other cartoons, so my curiosity has gotten the better of me. Now I am writing to ask.

W. VanCook, Jr.,
Los Angeles, CA

Classic cartoons from many companies are now being shown on AMC, TBS, USA, TNT, The Cartoon Network, Nickelodeon, and elsewhere. This has cultivated a large audience of new fans. As a result, I receive a number of similar letters from POP'COMM readers. I hail from a family of cartoonists. Seymour Kneitel, shown as animator or director on some 1,000 cartoons (including *Pop-eye*, *Betty Boop*, *Superman*, *Casper*, and others) made between the late-1920's and the mid-1960's, was my dad. Max Fleischer, was my grandfather.—Editor.

Agrees With Ed

Hats off to POP'COMM reader Edward Robinovitz, DDS, of New Jersey whose let-

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It's a well known fact that the microprocessor made it possible to develop the programmable scanner in 1974. Virtually all programmable scanners could have had (many feel should have had) a computer interface. It's as if the scanner manufacturers had a secret meeting on some deserted island and agreed to put computer interfaces on only a few of the most expensive radios. Why are they trying to limit the number of computer controlled scanners? What don't they want you to listen to or to find?

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The Secret Life of Beepers

What You Aren't Supposed to Know About Pagers

BY TOM KNEITEL, K2AES, EDITOR

Radiopagers have become the communications trinket of the decade. People call them *beepers*. The proof of success is that they've become so popular that they're available in designer colors, and Motorola has been running TV commercials to further increase their public use. These are wonderful devices.

Beeper service can be provided by any company in order to reach its own employees in the field. More popularly, beeper service is used by the public, as provided by common carrier paging companies. This is available for as little as \$8 per month, and may be contracted for on a local or national basis. Beepers may be leased or user-owned, although if subscribers want to use their own beepers, the devices must be programmed as authorized by a specific service provider.

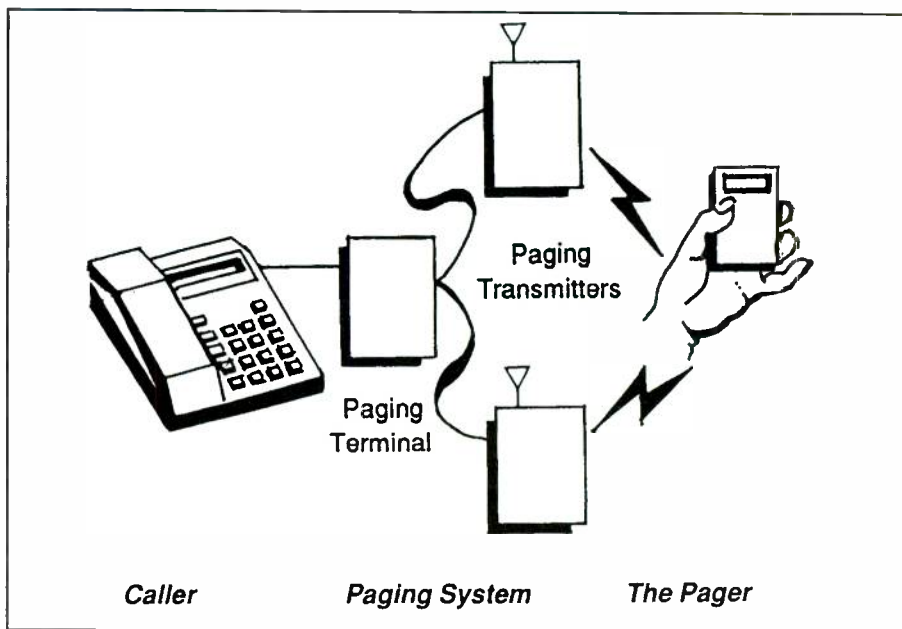
Beepers initially proved a boon to physicians, service technicians, public safety officials, repair and sales personnel. As time went on, more and more people realized how convenient they were. They became a consumer item. This created a demand for beeper frequencies, beeper services, and simply, beepers.

Beepers have been around since 1950. At the end of 1988, there were 7.5-million in the USA. Things are different today. About 20-million are out there, with 58,000 new ones added daily. Because of intensive marketing to the general public, more than half of the new paging customers are said to be employing the devices for personal and family uses. *Paging Network, Inc.*, a major service supplier, added 1-million new beeper subscribers in 1993 and ended the year serving in excess of 3-million pagers. Motorola reports that more and more people are defining pagers as the communications tool of the 1990's.

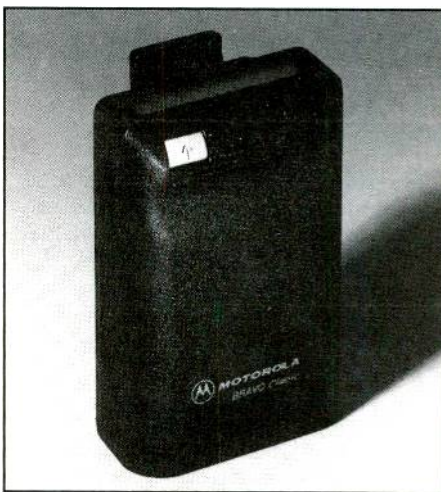
There's more to these handy things than this, however. Lots more. Beepers have secret lives on both sides of the law. Most people don't know this story, and probably aren't supposed to.

Every Silver Lining Has a Cloud

An unfortunate side effect of the immense and rapidly growing popularity of beepers has been the underworld's discovery that they are especially useful in connection with illicit activities—primarily drug dealing.



Here's how paging systems work. (Courtesy Telocator.)



Motorola's highly successful Bravo Classic beeper. It offers basic numeric service with a 12-character read-out. It can also store 16 messages, each time-stamped.

The beeper industry doesn't publicize this. As you can imagine, this wouldn't be a great image builder for a service being heavily promoted as a necessary part of 1990's family life. To its credit, the common carrier paging industry is adamantly opposed to illicit usage of its facilities.

There are the obvious moral, ethical, and legal reasons for this, to say nothing of avoiding the detrimental publicity.

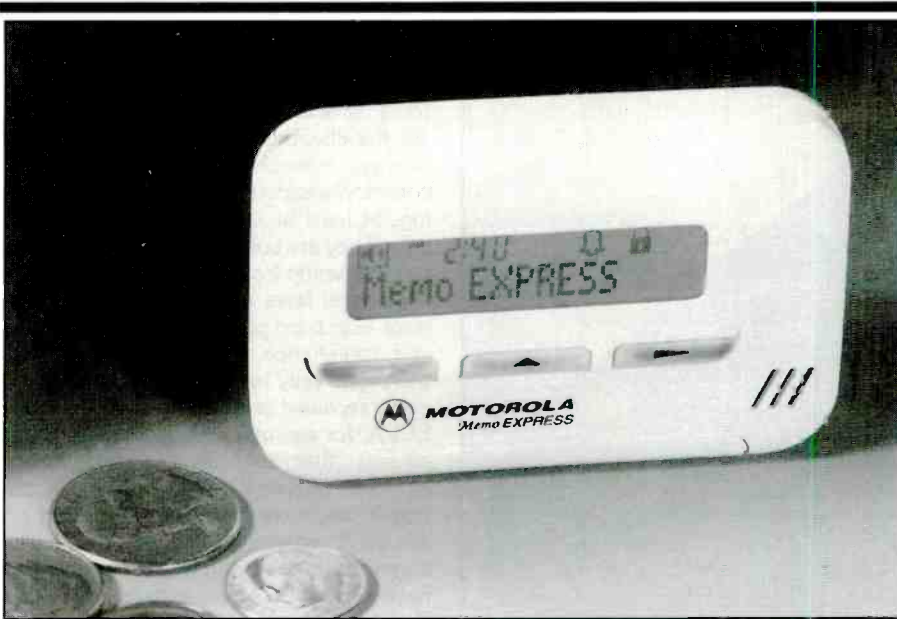
Although it hasn't ever happened, there's always a chance the FCC could come around and issue fines or revoke licenses for allowing licensed common carrier facilities to be used as accessories to criminal activity. These people are smart enough not to take such chances with their multi-billion dollar industry. *Paging Network, Inc.*, which is only one of many paging companies, reported net revenues in 1993 of more than \$311-million!

The common carrier paging industry's trade organization, Telocator, advises beeper companies to aid law enforcement agencies in how to turn beeper technology against criminals and use that technology to catch them.

How Paging Works

To understand the secrets of how beeper technology can be sneakily and effectively turned around and used by the police against the bad guys, let's get a handle on how a beeper system works.

Caller: Places call to paging terminal via phone lines using special phone number assigned to a particular beeper. Beeper companies do not have access to information about callers initiating a page.



The Motorola Bravo Express is an alphanumeric pager available in six designer colors. It can receive and display messages up to 120 letters and numbers. It can retain up to 15 messages in its memory. Various Motorola Bravo models account for about 70 percent of the beeper market.

Paging System: The call is received by the paging terminal where it is processed and sent out in a one-way transmission over the air to a specific pager. Beeper companies retain records of these calls being processed. The type and sophistication of those records varies from carrier to carrier.

The Pager: The paging signal is sent via transmitters to the beeper (personal pag-

ing receiver). The beeper is assigned a unique cap code or address that recognizes and responds only to pages intended to be received by that unit. Properly approved intercepts can be applied to all pages sent out by a carrier. Officials can either intercept a non-voice page directly off the air, using special equipment on their premises, or can receive the actual pages of a suspect

by use of a beeper having a cloned cap code. More information about intercepts and cloning later.

Types of Pagers

Numeric Display: More than half the pagers in use today are this type. Caller uses a keypad phone to call the pager's phone number and enters their own phone number or a numeric code. Pager displays up to a 20-digit number. Several digital displayed messages can be stored for later viewing. Beepers may be used to display telephone call-back numbers, previously agreed-upon codes, parts numbers, prices, purchase orders, instructions, or other types of information.

Tone Only: Caller dials the pager's phone number. The pager emits a beep, which is a signal you recognize as informing you to call a predetermined number or location, such as home, office, answering machine, or voice mailbox. Some people have realized they can jury-rig these pagers to recorders and other instruments, then remote-control activate them by dialing up the pager's phone number from hundreds or thousands of miles away.

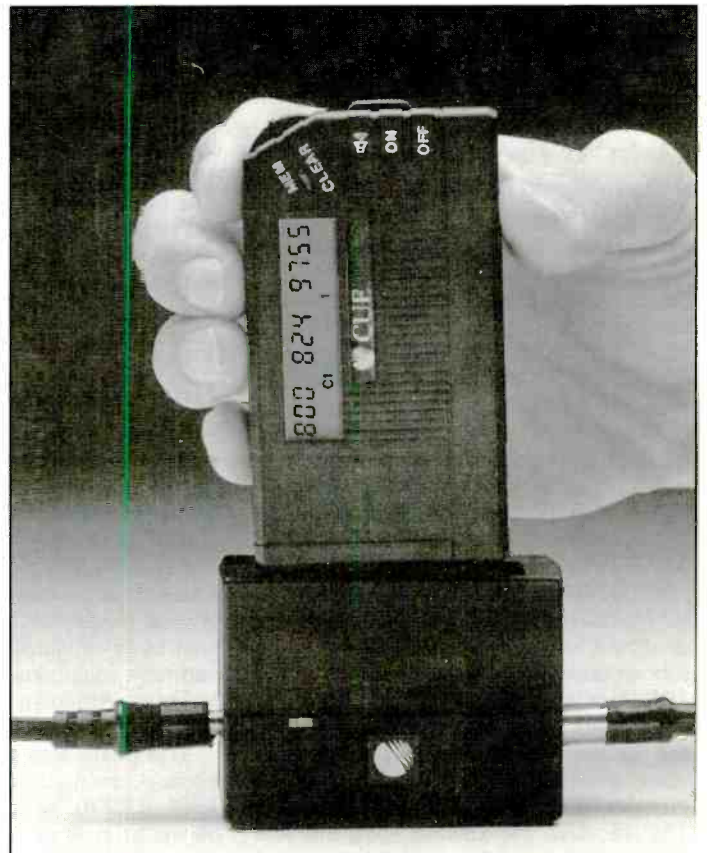
Tone and Voice: Caller dials the pager's phone number and leaves a 15 or 30-second spoken message. An audible alerting tone is heard, then the entire message in caller's voice is transmitted automatically. Some paging units can store several messages for later playback. There is no operator, and no need for a call-back. The pager delivers the complete message by voice.



NEC America's alphanumeric pager is called the Facts Reporter. It can store messages for later playback and has eight selectable alerting tones, plus a silent (vibrating) mode.

For information call 1-800-ASK-NEC, Ext. 001.

CUE Paging, of Irvine, Calif., offers users of its nationwide paging system a chance to extend the receiving range of their beepers. An optional mobile mount (available for rental) powers the beeper, and the beeper plugs into a magnetic-mount car-top antenna. For more information on CUE call 1-800-824-9755.





Panasonic Communications & Systems Company's EY-196 Code Programmer enables that company's Vanguard 160 pagers to be field programmed or to be reprogrammed for almost all of their operational functions, including receive frequency and cap codes. For more information call (201) 348-7000.

Some small taxi companies dispatch their cabs with inexpensive voice pagers because hearing from the drivers isn't worth the cost of a two-way system.

Alphanumeric Display: Caller dials the pager's phone number and gives the on-duty operator a message. The entire message is displayed on the pager's screen following an audible or vibrating alerting signal.

Doin' it Frequency

Radio paging frequencies are sprinkled throughout the spectrum from 35 to 932 MHz, with voice and non-voice modes mixed on the same channels. Many voice pagers in the USA are likely to be found in the following ranges: 152.01 to 152.21 MHz; 453.025 to 453.125 MHz; 454.025 to 454.65 MHz; and 462.75 to 462.925 MHz.

Other major frequency ranges containing high concentrations of beeper channels, but less likely to include voice paging, include: 35.02 to 35.68 MHz; 43.20 to 43.68 MHz; 152.51 to 152.84 MHz; 157.77 to 158.07 MHz; 158.49 to 158.64 MHz; 459.025 to 459.625 MHz; 929.0125 to 931.9875 MHz. Some beeper signals are sent out via "hidden" audio subcarriers of FM broadcasters in the 88 to 108 MHz band, or via cellular radio.

In addition to all of the foregoing, there are isolated paging frequencies used for voice and/or non-voice messages. These include: 151.995, 152.48, 154.625, 157.45, 157.74, 158.46, 163.25, and

465.00 MHz. There are paging activities in the 162 to 174 MHz and 406 to 420 MHz federal-service bands. One good example is 167.025 MHz, sometimes used for the portable pager set up by White House staffers in areas where the President travels. Specialized Mobile Radio (SMR) stations are permitted to page in the 851 to 869 and 935 to 940 MHz bands. In metro areas where the UHF-T band is in use, common carrier frequencies have been made available for paging but do not appear to be widely utilized.

Frequencies given here encompass an overall mix of those used to access pagers utilized by common carriers, as well as businesses, medical services, hotels, governmental and private services, among others.

How Privacy Laws Apply

For each type of beeper, different legal requirements must be met for intercepts. On the federal level, the easiest pager to deal with is the simple tone-only device. The US Dept. of Justice had long held that interception of a tone-only pager was not a search, since there is no expectation of privacy in a device that does nothing more than beep or vibrate. Therefore, the Department maintained, interception raised no Fourth Amendment issues and required neither a warrant nor a court order.

This policy was supported in the Electronic Communications Privacy Act of 1986 (ECPA), which excludes tone-only pagers from its provisions.

Though the information conveyed by intercepting a tone-only pager is limited, such intercepts are used to document patterns of behavior in suspects. Since they are the cheapest and easiest to use of all beepers, tone-only units may be the most commonly encountered with drug trafficking, at least among lower-echelon criminals. They are considered expendable, and are frequently lost.

Federal laws and (in some instances) state laws treat privacy interests in display and tone/voice pagers quite differently than tone-only beepers. Voice pagers are easily received on all scanners. Yet, under ECPA, for example, if they hope to collect evidence that may be used in a court of law, or if they intercept a tone/voice or display pager they must first secure an appropriate court order. This is because Congress concluded that subscribers to such services have a reasonable expectation of privacy in the paging communications they send and receive. Some state privacy statutes impose stricter requirements on carriers and law enforcements than the ECPA.

The criminals have used these increased privacy protections to their advantage, realizing that it has become more difficult for the police to tune in on their messages. As the requirements for legal protections have increased, so have the reasons why there has been so much interest in intercepting what's being transmitted over display pagers. As a result, some electronic surveillance activities have been less concerned with the necessary privacy laws than with the chance to acquire some hot leads.

Voice paging signals are not as often encountered as data paging signals. It takes time to sort through the truckload of data signals to locate voice paging channels used in any area. Some scanner owners enjoy monitoring voice paging frequencies because the messages can range from hilarious to gross. According to the ECPA, such monitoring is not allowed.

What Police Know

A numeric display pager shows a 10 or 12-digit number, usually that of a person who wants a return call. More experienced drug dealers, however, tack extra digits on to a standard 7-digit phone number to add their own customized coded instructions. For example, a "1" at the end of the callback number could mean, "the cocaine is available," and a "2" might mean "cocaine now being processed."

Obviously, police interception of messages like this with specialized monitoring devices or cloned beepers is rewarded with a harvest rich in worthwhile information. Police departments have pursued successful investigations using this type of intercept.

The increase in the popularity of alphanumeric pagers is beneficial to police due to the added bonus of complete message texts. Theoretically, exact details of drug trafficking could be made available to law

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enforcement agencies in the event the transactions took place via alpha paging during an intercept operation.

The Role of Beeper Companies

There are several ways that paging carriers can aid police in preventing the unlawful use of their communications facilities for drug trafficking. They can lease cloned pagers to the police, and can assist in the intercepts of paging comms. They can provide the police with credit and other information in their business and billing files concerning their subscribers.

Federal and state privacy statutes usually require police to secure appropriate authorization before enlisting the aid of beeper companies. Specifically, most privacy laws prevent the police from using a cloned pager or intercepting pager comms unless they have first obtained a court order, a special emergency request, or the subscriber's consent.

Similarly, police can't gain access to information about paging subscribers (such as transactional records) unless they secure

either a subpoena, a warrant, a court order, or the customer's consent.

The Clone Factor

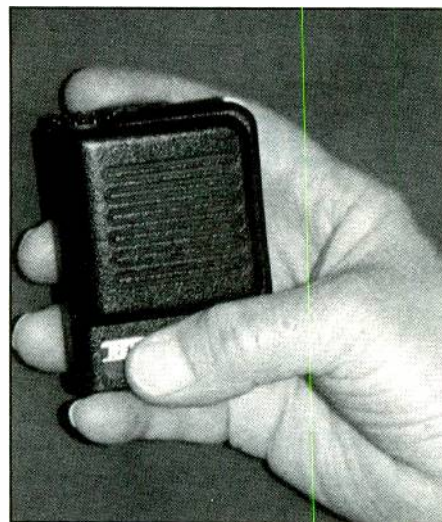
A cap code is a seven or eight-digit serial number embedded in each pager that gives the device its unique and specifically addressable identity. It guarantees that the beeper will receive only those messages intended for that particular pager.

A cloned pager is one containing a cap code identical to one possessed by a subject under investigation or surveillance. For some reason, it seldom occurs to criminals that a cloned copy of their pager might well be in the hands of police.

Paging companies may clone pagers for police, either as leased or owned units, after presentation of proper authorization required by law. Once in possession of such a clone, the police will receive all messages and call-back numbers sent to the suspect.

Intercept

Intercepts of both alphanumeric and numeric display beepers may be made directly off the air using equipment that is avail-



This Motorola KeyNote pager receives voice paging messages. It's activated by sequential coding tones transmitted by the base station.

able from several sources to law enforcement agencies. Police need assistance from a suspect's beeper carrier before initiating an intercept. Carriers will cooperate if presented with appropriate authorization required by law.

The Information Trail

If provided with the proper authorization, carriers may provide police with available billing, transactional, and other information about a particular subscriber. Before a beeper account is opened, most companies take credit and address verification steps on a prospective subscriber. This information can be valuable to police. Of course, once the beeper was obtained, this information may have been rapidly (and deliberately) changed by any subscriber seeking to diffuse a paper trail that could be of use to police.

This is because one of the first things the police ask for is the name and address of beeper service subscriber. This occurs when police find lost pagers at known drug sites, or when beepers are confiscated, ditched, or accidentally left behind at arrest scenes.

Police know that the receiving frequency of the unit identifies it as being fed messages from a particular beeper company. That's the first place they head. Still, they need the cooperation of the company to examine the unit in order to determine the cap code, and then identify the name and address of its owner.

From that point, police can add to their database, or get a cloned beeper to continue collecting evidence. Or, maybe they can add the information to existing evidence to produce a successful prosecution.

This is the secret side of beepers. It is never mentioned in TV commercials offering beepers, and newspapers don't tell you about it, either. But it's very real, and deadly serious.

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C. Sony ICF-SW800
World Band Radio

Was ~~\$129~~ Now **\$109**

Get the world at your fingertips! That's the remarkable capability of this advanced Sony World Band Receiver Radio. It allows you to tune in short-wave broadcasts such as Radio Moscow, the BBC from London, or virtually anywhere else on the globe. With its supplied tuning cards, you can enjoy instant shortwave radio reception just by pressing one button on the keypad. Small enough to slip into a pocket and completely portable, the ICF-SW800 ushers in a new era in shortwave radio ease of use. Supplied accessories include: compact antenna, earphone, preset tuning cards/memory cards (3), clock card, short wave guide, preset frequency list.

D. Sony ICF-2010 **\$359**
World Band Receiver

The 2010 is the world's best-selling shortwave radio, and for good reason. This radio introduced the synchronous-detector circuit that revolutionized shortwave-listening. Full-band AM/FM/aircraft band coverage with 32 memory presets. Includes the world's most accurate tuning system with direct-entry as well as tuning knob convenience. Also includes a 24 hour alarm clock with sleep timer and programmable turn-on. This radio is regarded by all leading authorities as the best portable on the market. Includes earphone, AC adapter and external antenna adapter.

E. Tucker Shortwave Antenna
\$19⁹⁵

A complete ready to install simple shortwave outdoor antenna. 40 feet long w/50 feet of coax lead-in. Specify connector, your choice of 3.5", RCA, PL-259 or BNC connector.

F. Bearcat SC150 Y/B SportCat
100 Channel Scanner Designed for Sports
Enthusiasts

\$199

The SportCat is designed specifically for sporting events, allowing you to go from one channel to the next with just a touch of a button. You can go store up to 10 custom frequencies and for added convenience, there are also 10 corresponding channel identifiers. Features include 100 channels in 12 bands with 10 banks, preprogrammed band search, 10 priority channels, channel lockout and one touch weather. Turboscan lets you scan 100 channels per second and Turbasearch searches 300 steps per second. The unique data skip allows you to skip over unwanted data transmissions and substantially reduces birdies. Memory backup retains frequencies up to 3 days without batteries. The supplied rechargeable NiCad battery pack will supply up to 12 hours of use in the closed squelch position. Includes charger/AC adapter, rubber antenna, beltclip and earphone. Available in either black (SC150B) or striking yellow (SC150Y). 2.5" x 1.7" x 6".
Frequency range:
29-54 MHz, 108-174 MHz, 406-512 MHz, 806-956 (cellular blocked, not restorable)

G. Bearcat BC 890 XLT
200 Channel Scanner-With 800 MHz!

\$275 Order Now While Supplies Last!

This new item from Bearcat has frequency coverage through 956 MHz* with 200 channels of action in 10 banks! The turbo scan feature lets you zip through the channels in lightning speed. 10 priority channels let you scan important frequencies every 2 seconds. It even includes a VFO knob for up-down frequency control. Other features include weather search, auxiliary tape output, weather alert, illuminated LCD display, reception counter, and step select. Frequency Range: 29 to 956 MHz (not continuous).
*Cellular Blocked- modifiable

H. Icom-R100
All-Band Mobile Communications Receiver

\$649 Order Now While Supplies Last!

If you want the best in a mobile communications receiver, the Icom-R100 fits the bill! It covers 500 kHz to 1800 MHz continuously (no gaps) with AM, FM and wide-FM modes. You can directly enter any frequency from the keyboard, tune frequencies from the VFO knob, or let your R100 search any range of frequencies you specify. Store up to 100 of your favorite frequencies into the IC-R100's memory channels with receive mode, RF attenuator and preamplifier settings. Scanning is just as simple, with 7 different scan modes to choose from! Other great features include a 24 hour system clock, 15 dB pre-amplifier, multiple selectable tuning steps, automatic noise limiter and even an optional AC adapter for fixed-station use! Comes complete with mobile mounting bracket, DC power cable, wire antenna and telescopic antenna.

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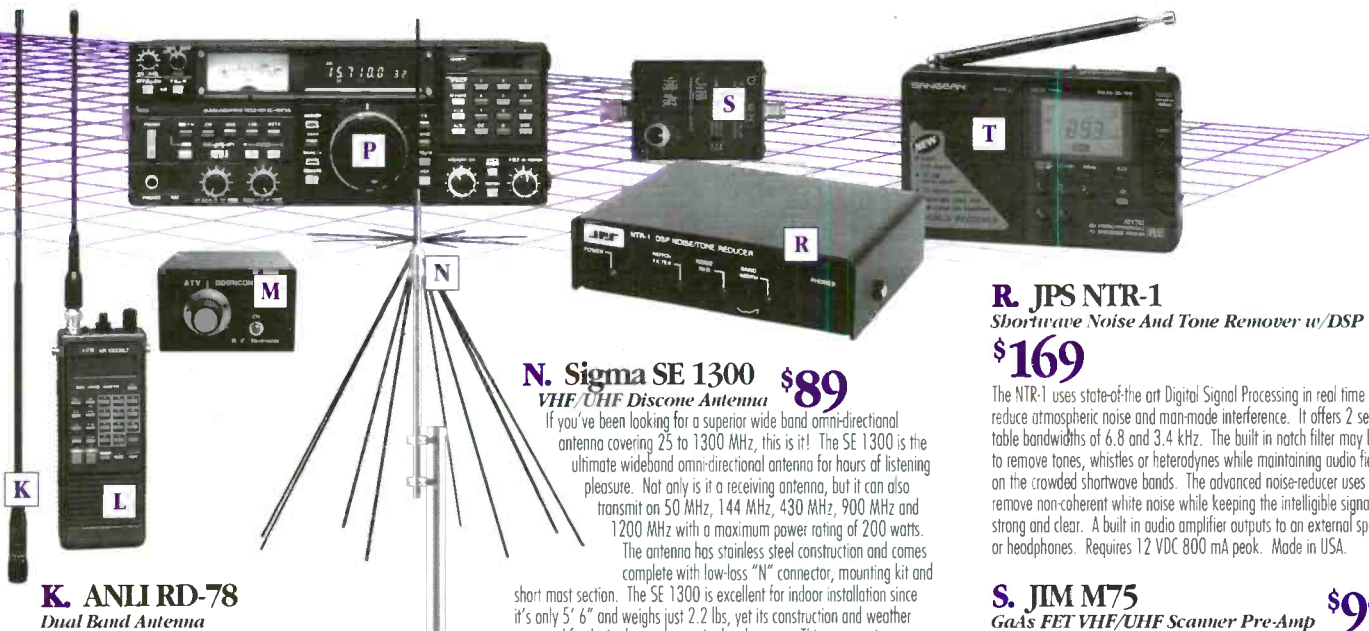


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K. ANLI RD-78
Dual Band Antenna
\$23⁹⁵

Dual band, 2m/70cm (2.15 dB/3.2 dB), also covers 800-900 MHz (receiving only). It's a black flexible rubber whip, 15" OAL, with a gold BNC connector. This antenna works very well in scanning 12 MHz to 1 GHz.

L. AOR AR1000XLT
1000 Channel Continuous Coverage Receiver
\$419 Order Now While Supplies Last!

Continuous coverage of .5 to 1300 MHz (no gaps). Features include: lock-out search and scan, cigarette lighter plug cord, belt clip, case, flex antenna, and earplug. Covers AM and W/N FM. VFO knob at keypad. 6.7" x 1.4" x 2.6", 10 oz.

M. PC Electronics TVC-4G
Amateur Television Receiver/Downconverter
\$87

Get in on Amateur Television with the new TVC-4G! It receives Amateur Television signals from 420 to 450 MHz and converts them to channel 3 on your TV. At only 4.7 x 3.7 x 2.1", the TVC-4G is handy for ATV portable, mobile, demos or getting a friend on. Includes 12 V power supply, "N" connector antenna input and "F" output to TV. Made in USA.

N. Sigma SE 1300 \$89
VHF/UHF Discone Antenna

If you've been looking for a superior wide band omni-directional antenna covering 25 to 1300 MHz, this is it! The SE 1300 is the ultimate wideband omni-directional antenna for hours of listening pleasure. Not only is it a receiving antenna, but it can also transmit on 50 MHz, 144 MHz, 430 MHz, 900 MHz and 1200 MHz with a maximum power rating of 200 watts. The antenna has stainless steel construction and comes complete with low-loss "N" connector, mounting kit and short mast section. The SE 1300 is excellent for indoor installation since it's only 5' 6" and weighs just 2.2 lbs, yet its construction and weather protected feedpoint beg to be out in the elements. This antenna is a must if you want the best possible results!



*Good Things
Come to Those
Who Wait!*

Don't Miss the
Announcement of
Our Exciting New
Products In Our August Ads.

P. Icom IC-R-71A \$1059
Communications Receiver

This receiver covers the entire spectrum from 100 kHz to 30 MHz and is as professional in performance as they come. The latest Icom receiver performance features such as passband tuning and that excellent Icom clean receiver feel. That receiver performance is what separates this radio from its competitors. 86 dB dynamic range and 60 dB image rejection are just examples of its excellent performance in this area. Features are too numerous to list but include 32 memories, 2 VFOs, optional computer interface and 3 selectable filters.

R. JPS NTR-1
Shortwave Noise And Tone Remover w/DSP
\$169

The NTR-1 uses state-of-the-art Digital Signal Processing in real time to reduce atmospheric noise and man-made interference. It offers 2 selectable bandwidths of 6.8 and 3.4 kHz. The built in notch filter may be used to remove tones, whistles or heterodynes while maintaining audio fidelity on the crowded shortwave bands. The advanced noise-reducer uses DSP to remove non-coherent white noise while keeping the intelligible signals strong and clear. A built in audio amplifier outputs to an external speaker or headphones. Requires 12 VDC 800 mA peak. Made in USA.

S. JIM M75 \$99
GaAs FET VHF/UHF Scanner Pre-Amp

State of the art surface-mount technology coupled with features not found on other pre-amps makes the M75 simply the best. Wide band (24 to 2150 MHz), variable gain -10 dB (attenuation) to +20 dB gain. Bandwidth selector switch covers 3 bands: a) 225 to 1500 MHz-reduces TV, FM and Hi Power VHF pagers for clear UHF Airband, PSB, Cellular etc.; b) 108 to 185 MHz- for optimum reception of VHF Airband, 2m Amateur Radio, and other VHF communication eliminating VHF TV and FM bands; c) wide open 24 to 2150 MHz, low noise figure 2 dB gain. Comes with a BNC connector. Requires 12 VDC or 9 V battery.

T. Sangean ATS-202 \$99
Ultra Compact Shortwave Receiver

This ultra compact PLL synthesized digital shortwave receiver fits easily in the palm of your hand yet offers more performance and features than many full-sized receivers. Unique switch allows user to choose continuous tuning across entire SW band or continuous scanning within the selected SW band. Covers all shortwave bands from 120 to 11M as well as AM/FM/FM stereo. Includes 20 memories, auto and manual tuning, a sleep timer and an alarm clock. Measures only 5 1/4" x 3" x 1" and weighs only 10 oz. Comes complete with earphones and a carrying case.

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Model M1 \$229.

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 - Digital Auto Capture locks counter display on first reading to pass filter
 - 5 Hour NiCad
 - 10 Digit Backlit LCD display
 - 16 segment RF bargraph
 - Arm/Store button stores & recalls frequencies
 - 250MHz direct count
 - Digital Communications Port permits data logging with optional converter & software

Model 3000A \$329.

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- High speed OE10
 - Digital Filter greatly reduces random noise & oscillation
 - Digital Auto Capture locks counter display on first reading to pass filter
 - 5 Hour NiCad
 - 10 Digit Backlit LCD display
 - 16 segment RF bargraph
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This Was Radio

Leafing Back Through The Pages of History

BY ALICE BRANNIGAN

In 1930, police radio had come into wide use. This allowed headquarters to broadcast alarms and dispatches to patrol cars; sometimes the cars could respond. Police departments used frequencies between 1500 and 2500 kHz, and many stations were assigned to each available frequency. Soon enough, they realized it was also possible to use these systems to make two-way voice radio contact with police headquarters in other cities and states, thus allowing for the rapid exchange of relevant police bulletins and information.

By 1934, when the number of state and municipal police stations was increasing rapidly, considerable interference resulted as the stations in various cities tied up the

frequencies with their point-to-point communications. Since the available frequencies were limited, the traffic was increasing, and the FCC did not intend these stations to be used for point-to-point communications. An alternate method of intercity police communications needed to be established.

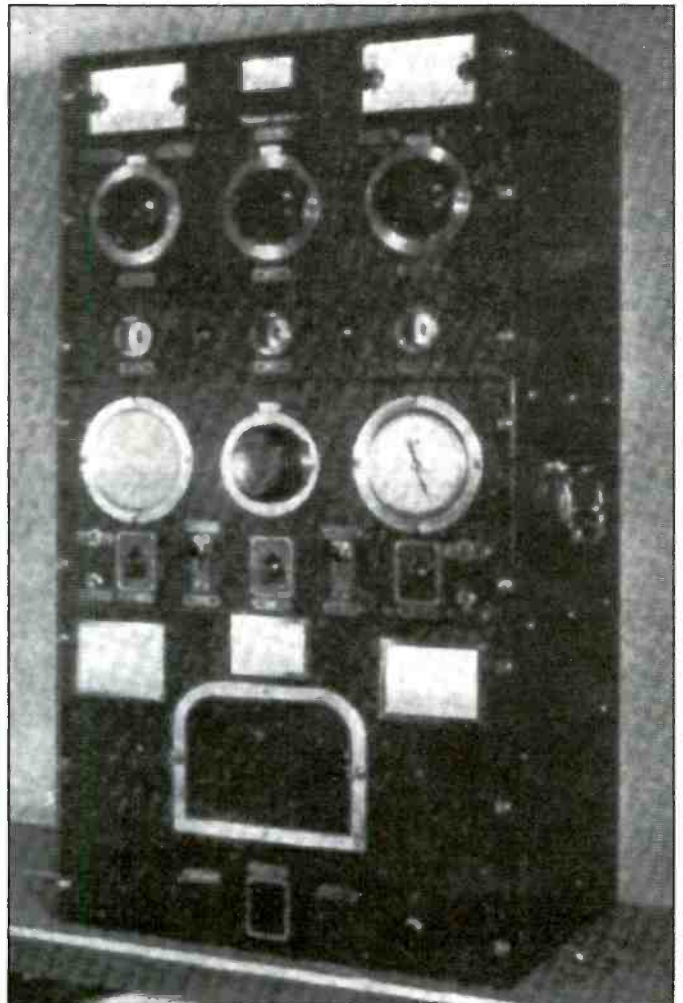
A plan was devised to replace the impromptu intercity voice communications with a dedicated point-to-point radiotelegraph network. In 1936, the FCC had granted licenses to a few of the agencies that had CW equipment installed at their stations. Within six years, the network had grown to 70 zone police stations and 30 interzone police stations extending into

into the eight state Eastern States Teletype Net and the California teletype system.

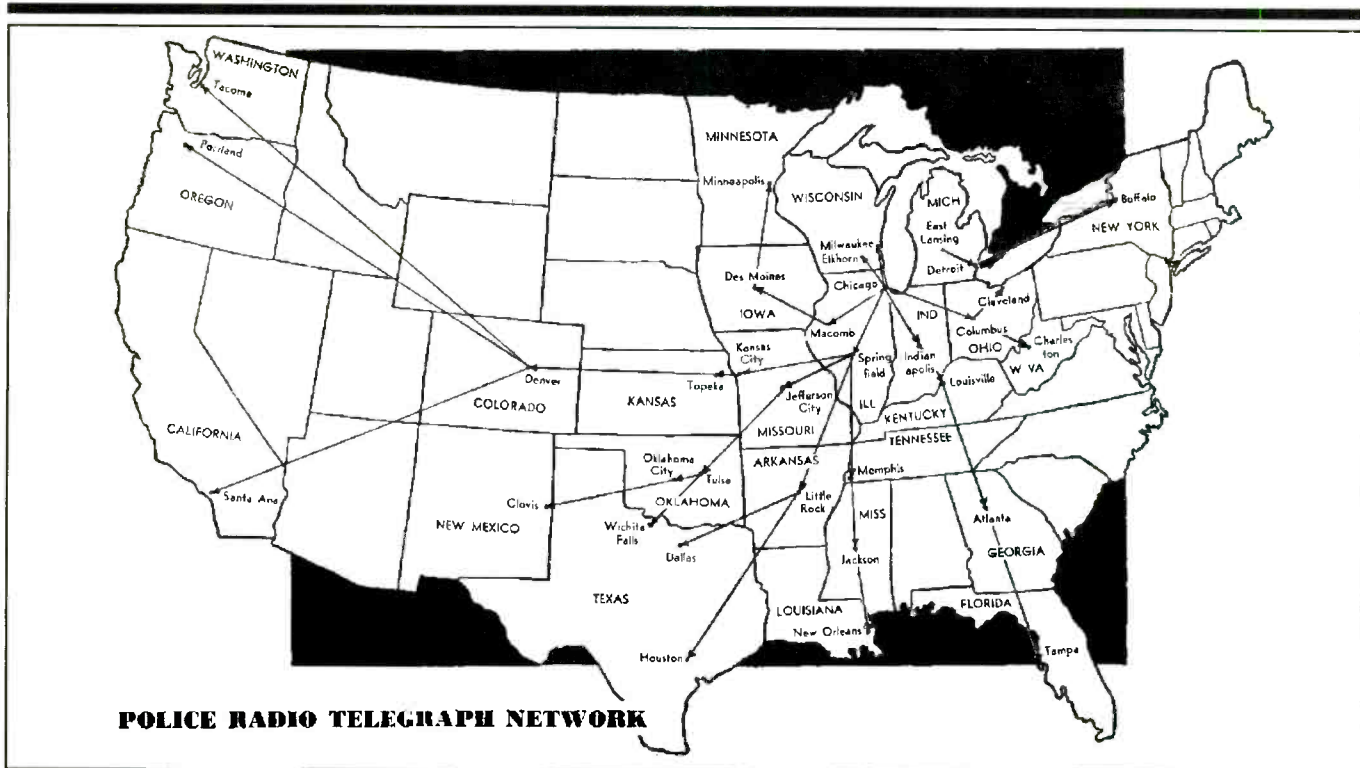
The FCC set aside special frequencies for these communications. These were: 2804, 2808, 2812, 5135, 5140, 5195, 7480, 7805, and 7935 kHz. The 5 and 7 MHz bands were used for interzone daytime use, but only 5 MHz at night. One of the three frequencies was designated as the calling frequency, with the other two being working frequencies. Most stations maintained a 24-hour watch on the calling channel, but some smaller zone stations closed down at midnight. Zone stations operated on 2 and 5 MHz channels during the day, on 2 MHz at night. Stations could be classified as zone or interzone, or both. Zone sta-



Operating position (early 1940's) of zone police station WPHE (later KSB41) of the Indiana State Police, Indianapolis. This was located in the mini-fortress shown in June issue. National HRO receivers were used.



Portable 200 watt zone police station WSPI. This was used in the 1940's by the Indiana State Police.



Map showing the basic zone police networks shortly after the system started up in the late 1930's.

tions communicated only with stations in their own state. Interzone stations communicated with stations in surrounding states.

Zone and interzone stations were licensed to municipal and state agencies. In a state system, the usual method was to license the control station for zone/interzone use, and other stations only for zone operations. A few larger cities, such as Buffalo, Detroit, Milwaukee, Indianapolis, etc., were allowed to operate interzone.

The average speed at which traffic was handled was about 25 w.p.m., but some of the more experienced operators handled traffic as fast as 40 w.p.m.

The transmitters used ranged from homebrewed bandswitching jobs to deluxe commercial units with push button frequency selection. The maximum power allowed was 500 watts.

Callsigns were standard point-to-point types. In the early years they were three or four-letter formats. Typical were WMJ at Buffalo, N.Y.; KGPL at Los Angeles; KGPE at Kansas City, Mo., and WPEK, New Orleans, La. Then, in 1948, all callsigns were changed to modernized formats. These turned into KAB60 at Kansas City, Mo.; KEB23 at Buffalo; KMA89 and KMA90 at Los Angeles; KKB48 at New Orleans, La.

Over the years, the zone/interzone network had stations drop out, and new ones added. Peak size was in the late 1940's, when about 120 fixed and portable transmitters were licensed. Rosters for 1953 and 1963 showed some 80 to 85 stations. A listing for 1979 (last year we checked) indicated only about half that number still licensed.

Today, the FCC no longer designates zone and interzone police frequencies, nor are there any licensed stations. Obviously, they were superseded by national law enforcement landline teletype and other more versatile communications networks.

Zone and interzone police stations never received more than scant publicity, therefore few people outside of police communications even knew they existed. We thought they were worth a look.

Intercept Stations

A fascinatingly informative letter arrived

from Forrest A. Bartlett, W6OWP, Paradise, Calif. Mr. Bartlett enclosed a newspaper obituary of Herbert S. Moore, who was the founder of the Transradio Press Service (TPS) in 1934. Moore was 89 years old.

As Mr. Bartlett explains, the early 1930's was an era in broadcasting when the major wire services (AP, UP, and INS) had exclusive contracts with their newspaper clients. Moore, himself a newsmen, saw the broadcasters' need, and therefore organized TPS to provide radio stations with their own news service.

For delivery, TPS used the shortwave



Transradio Press, Los Angeles' bureau in 1938. These are the intercept facilities located at the KGER studios. Forrest Bartlett is the fellow in the center. (Courtesy Forrest Bartlett, W6OWP, Calif.)



Try this 1938 ZNB veri on for size as a rare one. It represents a 200 watt combo ute/broadcast station in the former country of Bechuanaland. Received by a DX'er in Brooklyn, N.Y.



LRU and LRX, "Radio El Mundo," in Buenos Aires operated from these new shortwave broadcast facilities back in 1936.

telegraph facilities of Press Wireless. Radio stations hired skilled operators to copy the regularly scheduled 39 w.p.m., TPS newscasts that went out from powerful Press Wireless transmitters in Hicksville, N.Y. About 150 radio stations and small newspapers signed on for the TPS service in the days before printer service was available from the established wire services.

The need for intercept operators, as they were called, provided employment during the Great Depression for countless out-of-work or entry-level radio ops. The call letters WCX (7850 kHz, 10 kW) and WJS (15700 kHz, 10 kW) became synonymous around the world with daily news CW transmissions. While domestic users subscribed to TPS, dozens of shipboard operators surreptitiously copied the transmissions to keep on-board personnel current with the latest news.

In some metro areas, TPS operated news bureaus. These were often located at the studios of the stations subscribing to the news service. For instance, in Los Angeles, the bureau was in the studios of KGER—the principal TPS client in southern California. At this bureau, undulator tape

copy of the intercepted shortwave signals picked up at a remote receiver site augmented the manual transcription by a CW operator.

By the early 1940's, leading wire services recognized broadcasting as a significant market. No longer were exclusive contracts signed with newspaper clients. As the printer service became available in radio station newsrooms, TPS's market share dwindled.

Herb Moore's foresight, aided by shortwave radio, had paved the way for broadcasting to become a major factor in bringing news to the public. Moore's feisty little independent company had broken the major wire service monopoly on news distribution to the national media.

Forrest Bartlett adds that during the 1930's he worked as a TPS intercept operator at KFEL in Denver, KIUJ in Santa Fe, KOOS in Marshfield (now Coos Bay), KNX in Hollywood, and KGER in Los Angeles. From 1937 to 1942, he worked either full or part time for TPS at their Los Angeles bureau. He built and maintained the bureau's equipment.

A wonderful glimpse into an area of ra-

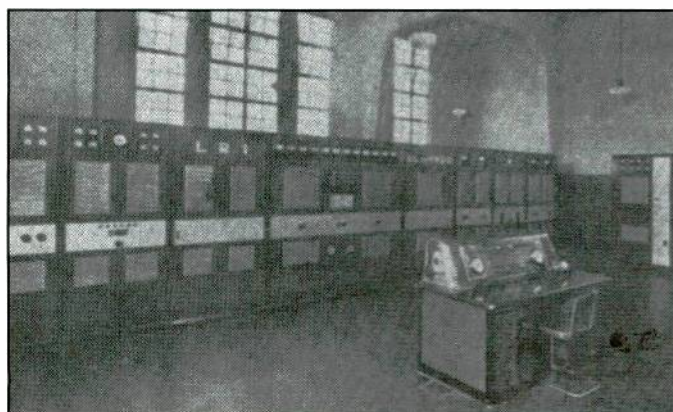
dio that we hadn't known about. Our readers are terrific sources of this type of first-hand information. It is always appreciated.

Long Gone Nation

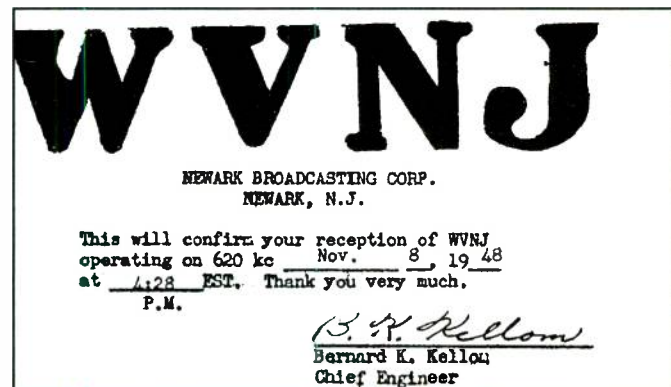
Bechuanaland was a British protectorate in central South Africa from 1886 to 1966. In 1966 it became the independent Republic of Botswana. That means there aren't any more QSL's forthcoming from the former nation, which no longer exists.

We always enjoy rooting around cancelled nations to see what stations once existed there. Bechuanaland did not have many radio stations. It looks like station ZNB on 5900 kHz just about summed it up as far as what the world might ever hear from that nation, and that wasn't much. This was a 200 watt station operated by the Dept. of Public Works, active in the late 1930's from the main city, Mafeking. The low power on that frequency didn't produce a flood of worldwide reception reports.

ZNB was an all-purpose station, being pressed into service for point-to-point radio telephone calls, plus CW telegrams and press traffic. ZNB also maintained a short



"Radio El Mundo," on mediumwave, was station LR1. In 1936, when it opened for business on 1070 kHz, LR1 was the most powerful broadcasting station in South America.



WVNJ, Newark, N.J. began broadcasting in December, 1948. This November 1948, mimeographed QSL represents reception during equipment tests before it officially started up. (Courtesy collection of the late Joseph Hueter.)

daily broadcast schedule. These programs were 0600 to 0730, and 1100 to 1200 UTC, consisting of recorded music. Surprisingly enough, some North American DX'ers did pick up the 1100 UTC broadcasts after weeks of diligence. Best of all, each was rewarded with a QSL from a rare country for all of the trouble it took to pry ZNB out of the static.

This station's point-to-point radio telephone calls were generally between government officials in Mafeking and outposts in various other distant cities. Other stations ran 40 watts in this network. These

were ZNC at Maun; ZNF at Ghanzi; and GND at Isabon. One station, ZNG, at Gaberones, was a battery-operated portable run from batteries. This station also had capabilities on 7600 kHz. No regular skeds or check-ins were maintained, but stations would place and monitor for any calls at the same time each day.

Powerhouse Signals

Unlike ZNB, all 1930's broadcasters weren't intended for local reception. In 1936, two stations opened up on short-

wave from Buenos Aires, Argentina. LRU operated on 15290 kHz, while LRX was on 9609 kHz. These were known as *Radio El Mundo*, and kicked out 5 kW signals in the days when that amount of juice on 9 or 15 MHz meant worldwide signal coverage. LRX and LRU were owned by the newspaper, *El Mundo*.

In 1936, *El Mundo* also opened up a mediumwave version of *Radio El Mundo*. This was LR1, on 1070 kHz, also in Buenos Aires. The station was running 50 kW, but immediately began preparing to increase its power to 75 kW. Even at the 50 kW power level, LR1 had more than twice the transmitter power of any other mediumwave station in Argentina. It was the most powerful broadcasting station in South America. LR1 used an RCA high fidelity transmitter. This station was widely reported by BCB DX'ers throughout North America.

The Call Goes On

In December of 1948, WVNJ began its broadcast career. This was a 5 kW station on 620 kHz in Newark, N.J. Over the years, WVNJ became popular in the New York metro area with listeners who enjoyed easy listening music. Their bag became Martin Denny, Ferranti and Teicher, and Mantovanni.

In WVNJ's early years, the station departed from formula for a couple of hours each night. That's when Art "Pedro" Harris spun hot Latin American platters from the likes of Tito Puente, Noro Morales, Edmundo Ros, and Irving Fields. In early 1961, the successful station opened up an FM outlet on 100.3 MHz to simulcast its programs. WVNJ attracted a wide audience.

Things went along as usual until a fateful day in 1983 when WVNJ was no more. Sale of the much-loved stations brought about significant changes. The AM facilities became WSKQ, a station addressing itself wholly to the area's large Spanish-speaking population. The FM outlet on 100.3 MHz turned into WHTZ, commonly known as Z-100, playing rock music.

Also on an interesting note, a station just opening up in New Jersey will bring call letters WVNJ back to the air. This is a 10 kW station in Teaneck, operating on 1160 kHz. Teaneck is ten miles north of Newark. The new WVNJ plays music, but also has talk programs, so it's not a clone of the earlier WVNJ. The owners may hope that there are plenty members of the earlier station's audience who will return to the WVNJ fold when they again hear the callsign that represents 35 years of good listening.

Reader participation in this column is welcomed and appreciated. We seek your old QSL's (good photocopies; or originals if you don't need them back), old station photos and picture postcards, personal experiences and anecdotes, station listings, etc. Just about everything eventually gets used, here and in our reference archives.



World's Most Powerful CB and Amateur Mobile Antenna*

Lockheed Corp. Test Shows Wilson 1000 CB Antenna Has 58% More Gain Than The K40 Antenna (on channel 40).

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

Guaranteed To Transmit and Receive Farther Than Any Other Mobile CB Antenna or Your Money Back**
New Design

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

Why Wilson 1000 Performs Better

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

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

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

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

The Best You Can Buy

So far you have read about why the Wilson 1000 performs better, but it is also one of the most rugged antennas you can buy. It is made from high impact thermoplastics with ultraviolet protection. The threaded body mount and coil threads are stainless steel; the whip is tapered 177 ph. stainless steel. All of these reasons are why it is the best CB antenna on the market today, and we guarantee to you that it will outperform any CB antenna (K40, Formula 1, you name it) or your money back!

*Inductively base loaded antennas

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Lockheed - California Company

A Division of Lockheed Corporation
Burbank, California 91520

Aug. 21, 1987

Wilson Antenna Company Inc.
3 Sunset Way Unit A-10
Green Valley Commerce Center
Henderson, Nevada 89015

Subject: Comparative Gain Testing of Citizen's Band Antennas
Ref: Rye Canyon Antenna Lab File #670529

We have completed relative gain measurements of your model 1000 antenna using the K-40 antenna as the reference. The test was conducted with the antennas mounted on a 16' ground plane with a separation of greater than 300' between the transmit and test antennas. The antennas were tuned by the standard VSWR method. The results of the test are tabulated below:

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

58% MORE POWER GAIN THAN THE K40

Individual test results may vary upon actual use.

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Magnetic Mount.....79⁹⁵
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Celebrate our 25th anniversary with special savings on the scanners and radar detector found in this ad. This coupon must be included with your prepaid order. Credit cards and quantity discounts are excluded from this offer. Offer valid only on orders mailed directly to Communications Electronics Inc., P.O. Box 1045 - Dept. PC0794, Ann Arbor, Michigan 48106-1045 U.S.A. Coupon expires August 31, 1994. Limit one coupon per item. Coupon may not be used in conjunction with any other offer. Void where prohibited. Coupon may be photocopied.

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Signal intelligence experts, public safety agencies and people with inquiring minds that want to know, have asked us for a world class handheld scanner that can intercept just about any radio transmission. The new Bearcat 2500XLT has what you want. You can program frequencies such as police, fire, emergency, race cars, marine, military aircraft, weather, and other broadcasts into 20 banks of 20 channels each. The new rotary tuner feature enables rapid and easy selection of channels and frequencies. With the AUTO STORE feature, you can automatically program any channel. You can also scan all 400 channels at 100 channels-per-second speed because the Bearcat 2500XLT has TURBO SCAN built-in. To make this scanner even better, the BC2500XLT has AUTO SORT - an automatic frequency sorting feature for faster scanning within each bank. Order your scanner from CEI.

For more information on Bearcat radio scanners or to join the Bearcat Radio Club, call Mr. Scanner at 1-800-423-1331. To order any Bearcat radio product from Communications Electronics Inc. call 1-800-USA-SCAN.

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- Bearcat 890XLT-J base/mobile ..\$244.95
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- Sportcat 150-J handheld\$199.95
- Bearcat 760XLT-J base/mobile ..\$199.95
- Bearcat 700A-J info mobile\$149.95
- Bearcat 560XLA-J base/mobile\$84.95
- Bearcat 220XLT-J handheld\$229.95
- Bearcat 200XLT-J handheld\$199.95
- Bearcat 148XLT-J base/WX alert ..\$88.95
- Bearcat 120XLT-J handheld\$159.95
- Bearcat BCT2-J info mobile\$139.95

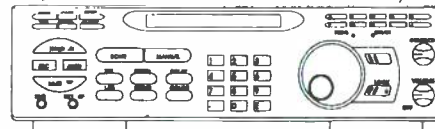
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16 Channel • 5 Watt VHF scanning transceiver
Size: 2.45" Wide x 1.38" Deep x 6.4" High
Frequency range:148.000 to 174.000 MHz. continuous coverage. Will also work 144.000-148.000 MHz. with reduced performance.
The RELM WHS150 is our most popular programmable five watt, 16 channel handheld transceiver with built-in CTCSS, which may be programmed for any 39 standard EIA tones. The full function, DTMF compatible keypad also allows for DTMF Encode/Decode and programmable ANI. Weighing only 15.5 oz., it features dealer programmable synthesized frequencies either simplex or half duplex in both 5.0 and 6.25 KHz. increments. Other features include scan list, priority channel, selectable scan delay, selectable 5 watt/1 watt power levels, liquid crystal display, time-out timer and much more. When you order the WHS150 from Communications Electronics Inc., you'll get a complete package deal including antenna, battery, belt clip and user operating instructions. Other accessories are available. A leather carrying case with swivel belt loop part #LCWHS is \$49.95; rapid charge battery charger, part #BCWHS is \$69.95; speaker/microphone, part #SMWHS is \$54.95; extra ni-cad battery pack, part #BP007 is \$59.95. The radio technician maintaining your radio system must order programming instructions part #PI150 for \$18.00 to activate this radio.

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Frequency Coverage:
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54.000 - 71.995 MHz. (WFM), 72.000 - 75.995 MHz. (NFM),
76.000 - 107.995 MHz. (WFM), 108.000 - 136.995 MHz. (AM),
137.000 - 173.995 MHz. (NFM), 174.000 - 215.995 MHz. (WFM),
216.000 - 224.995 MHz. (NFM), 225.000 - 399.995 MHz. (AM),
400.000 - 511.995 MHz. (NFM), 512.000 - 549.995 MHz. (WFM),
760.000 - 823.9875 MHz. (NFM), 849.0125 - 868.9875 MHz. (NFM),
894.0125 - 1,300.000 MHz. (NFM).

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- Ranger RC12950J 25 watt 10 meter ham radio\$244.95
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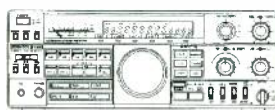
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MODIFICATIONS, OPTIONS, AND MORE!

by
David M. Corney
WB2FCR

One person who loves his R-5000 is Dave Corney, WB2FCR. He has written *The Kenwood R-5000 Communications Receiver User's Handbook*. Let it be recorded that everything in the book represents Dave's opinions and information on his own tech suggestions. None of the information came from Kenwood U.S.A. Corporation. Kenwood has neither sanctioned the book or its contents, did not participate in its preparation, nor does Kenwood endorse any of Dave's ideas as being recommended by their organization.

Dave tells us that the book resulted from many hours of using his own R-5000, and working out all sorts of very effective enhancement modifications, options, adjustments, and operating ideas. The end result comes up as a 34-page book that Dave feels will give added enjoyment and use of this amazingly versatile receiver to every Kenwood R-5000 owner, thereby greatly increasing the value of the equipment.

The book contains complete diagrams and instructions, as well as information on configuring the R-5000 for remote control operation from a personal computer.

Looks as though Dave managed to cram a lot of good information into his book. We enjoyed it.

The Kenwood R-5000 Communications Receiver User's Handbook costs \$8.95, postpaid to any address in North America.

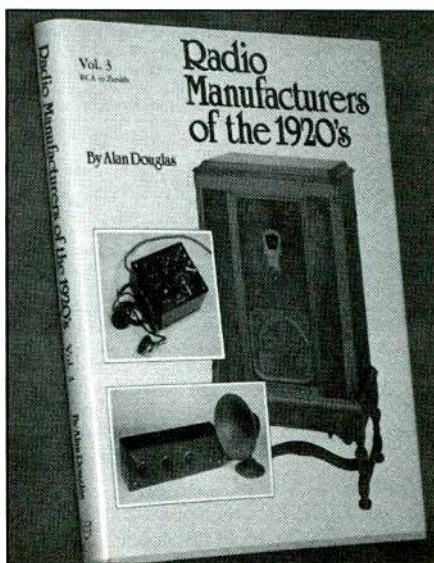
Order it from David Corney, 1552 Starflower Court, Walworth, NY 14568.

A Look Back, Part III

In earlier issues, we have been privileged to have the opportunity of reviewing Volumes 1 and 2 of the *Radio Manufacturers of the 1920's* series, by Alan Douglas. Now Volume 3, which completes the series, has arrived. This book covers RCA to Zenith. Inasmuch as the coverage of this series is alphabetical, many of the best companies ended up in this book. That includes Scott, Silver-Marshall, Stewart-Warner, Stromberg-Carlson, and Western Electric (among many others).

Douglas' Volume 3 runs 285-pages, and (as usual) is extremely well-researched. The history of each company is traced from its earliest stirrings, through its rise, peak, and any mergers that ensued. In some instances, we are let in on the sad narratives of patent litigations, partnership squabbles, horrendous marketing blunders that sent companies quickly reeling from the pinnacle of success into the abyss of bankruptcy. We learn about the founders and other executives of these companies, and learn about the evolution of the equipment their companies produced.

This series goes far beyond its text, it overflows with hundreds of photos of the people involved, as well as the equipment, and the manufacturing plants that turned out the radios. There are ads showing how each of the different brands were marketed during the 1920's. You can see the elegant and dignified ads selling the upscale multi-tube loudspeaker *Thermodyne* sets to the carriage trade, and the grittier looking *Montgomery Ward* ads offering cheapie "one-lung" receivers with headsets to the average buyer.



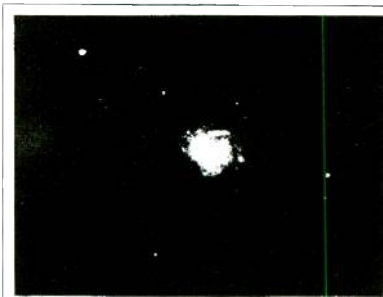
Every page is an education, and a delight. Alan Douglas knows his stuff. His easy-to-read text unfolds the early era of commercial radio manufacture with flair and style. The book is printed on high-quality glossy paper, and photo reproduction is excellent. Volume 3 is a worthy addition and finale to Alan Douglas valuable series of books.

Radio Manufacturers of The 1920's, Vol. 3, by Alan Douglas, is available in softcover at \$29.95, plus \$4.80 shipping and handling from Vestal Press, Ltd., P.O. Box 97, Vestal, NY 13851-0097. Residents of NY State please add sales tax. Phone orders: (607) 797-4872.

Beam Down Those Signals, Scotty!

You may not realize the abundance of radio signals heading our way from beyond the surface of our planet, and its associated atmosphere. There are space shuttles, space stations, military and scientific satellites, as well as satellites for broadcasters, spies, telephone calls, hams, navigators, search and rescue operations, visual astronomy, weather observation, and numerous other specialized purposes. There are also signals arriving here from interplanetary space probes and non-human sources located in deep space.

The Outer Space



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by Anthony R. "Tony" Curtis, K3RXX

These signals, for the most part, exist between 1800 kHz and the microwave spectrum. They encompass voice (NFM, WFM, SSB), beacon, telemetry, CW, FAX, data, TV, and other transmission modes.

The Outer Space Frequency Directory, by Anthony R. Curtis, K3RXX, is your key to monitoring far out signals. You'll join the rapidly growing circle of monitors who have discovered this 21st aspect of action-DX'ing using their scanners and communications receivers.

Tony's very thorough directory contains

fully identified frequency listings for more than 2,200 space and space-related radio signal sources between 1800 kHz and 2840 MHz. The sources are all cross-indexed. Satellites, space probes and stations of all nations are covered. Listings include miscellaneous NASA frequencies of interest, as well as frequencies used for retransmissions of manned spaceflight communications. There is also information on natural radio signals from the distant planets, stars, and galaxies.

The main listing section of this directory shows frequencies in ascending order. Information provided for man-made radio sources includes the nation of origin, the name of the object, its purpose (spy, military, ham, navigation, etc.), and transmission modes. Frequencies are shown for some spy satellites that have gone silent. He offers this data because it may be of use in predicting frequencies where future spy satellites will turn up.

This directory has more than frequency listings. Tony presents valuable information about how to get the best results when monitoring space signals, summarizing the various signals and where to search for them. He discusses the equipment. An overview of radio astronomy, plus an excellent glossary of key words and abbreviations round out this fine reference source.

It's easy to tune in on space using scanners and communications receivers. You hear military and astronaut voice comms, the blips of weather satellites, navigation satellites, the chirps of telemetry beaming down to geologists, engineers, astronomers, and many others.

The Outer Space Frequency Directory, is \$17.95, plus \$4 shipping and handling (\$5 Canada). NY residents add \$1.87 tax. VISA/MC welcome. Order it from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. Phone orders: 1-800-656-0056. Canada/HI/AK orders: (516) 543-9169. FAX orders: (516) 543-7486.

What's New?

The New Communications Technologies, 2nd Edition, by Michael M.A. Mirabito, introduces readers to the latest technologies making an impact on all communications fields. This new edition reflects the status of emerging technologies as they affect the communications professional.

The book covers the technologies and their applications, but this new edition devotes more attention to their legal, social, political, and economic fallout. New topics include intellectual property (remember Dave Letterman's *Stupid Pet Tricks*, and how NBC claimed that as their intellectual property?), privacy (scanner owners, take note), the First Amendment (Howard Stern fans, listen up), and the new technologies, the democratization of information, and even aesthetics.

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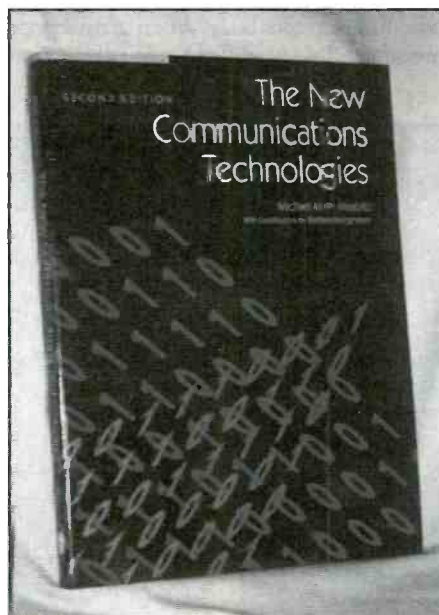
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superhighway are breaking down the boundaries that once clearly defined the fields of video, telephony, and publishing. As technology blends these fields together, communicators increasingly need to become familiar with several media. This book provides the groundwork for understanding these emerging technologies and the issues they engender.

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The New Communications Technologies, by Michael M.A. Mirabito, Ph.D., is \$29.95. Order it from Focal Press, 80 Montvale Ave., Stoneham, MA 02180. Phone orders: 1-800-366-2665. ■

What Is a Flight Service Station Anyway?

How Private Pilots Communicate

BY WILLIAM H. METTS

The Flight Service Station (FSS) is one of three employment options within the Federal Aviation Administration (FAA) Air Traffic Control system. Another option is the more familiar Air Traffic Control Tower (ATCT) located at all major airports, and most, though a declining number, of smaller airports. The least familiar option is the Air Route Traffic Control Center (ARTCC), 20 of which are located throughout the United States and its territories—as far away as Guam and Pago Pago.

The Flight Service Station and Automated Flight Service Station (AFSS) provides General Aviation pilots (private and corporate), and occasionally military and air taxi and airline pilots, with the information necessary to plan the flight they wish to make. This includes weather information—both current and forecast; Notices to Airmen (NOTAM) about whether a runway or a whole airport is open or closed, or a radio aid to navigation is out of service; and flight plan filing service.

The AFSS's are supported by a TANDEM computer system called the Flight Service Data Processing System (FSDPS) which is located in the ARTCC's for convenience of maintenance support. There will be 61 AFSS's when the installation for the second generation of FSDPS's is complete by mid-1994. Non-automated FSS's are also located across the country, but in far fewer numbers than in the recent past. These FSS's have the same duties but less



Most Popular Frequencies

121.5 MHz	Emergency frequency; all locations
122.0 MHz	The Flight Watch weather channel
122.05 MHz	Aircraft-to-FSS at selected locations*
122.1 MHz	Aircraft-to-FSS at many locations*
122.15 MHz	Aircraft-to-FSS at selected locations*
122.2 MHz	Air/ground simplex at most FSS locations
122.3 MHz	Air/ground simplex at many FSS locations
122.4 MHz	Air/ground simplex at many FSS locations
122.6 MHz	Air/ground simplex at many FSS locations
123.6 MHz	Airport advisory channel at FSS locations where there is no control tower. Also (*) aircraft-to-FSS at selected locations.
255.4 MHz	Air/ground simplex at many FSS locations.
272.7 MHz	Air/ground simplex at selected FSS locations.

*Ground station receive-only frequency. FSS transmits using voice over numerous area VOR's (108 to 118 MHz band).

sophisticated equipment than the AFSS's. Though most of the FSS and AFSS business is done over the telephone by use of '800' numbers, a portion is done at walk-in briefing counters and over VHF and UHF air-to-ground radio. All of the tower and ARTCC air-to-ground radio business is conducted through these two ranges as well.

One AFSS is located in Leesburg, VA, the same town that houses Washington ARTCC. The Leesburg AFSS, like most Air Traffic Control facilities, is manned seven days a week, 24 hours a day, and continuously remains busy. When there is good weather, the visual flight rule (VFR) pilots

call to confirm that conditions will remain, and to file flight plans. If the weather is poor, the VFR pilots will call to question when it will improve. Instrument flight rule (IFR) pilots call as well, inquiring weather information and flight plans.

The air-to-ground radio is used by pilots to activate and close VFR flight plans, and obtain weather information for their destinations. The same weather information is requested by IFR pilots, though usually for longer range flights, occasionally international. This position also gets its share of emergency traffic when an aircraft is low on fuel, or if a pilot is lost, or temporarily

disoriented, and unable to contact any other Air Traffic Control facility. These types of radio contacts are very satisfying when they come to a successful conclusion, and a pilot can be directed to a safe landing.

In the past, some international FSS (IFSS) HF radios were used to relay airliner position reports on overwater flights to the local ARTCC. This function has since been taken over by ARINC, although there are two IFSS's still in operation that plot international flight plans and some weather briefing (Miami and New York). New York also still does the east coast VOLMET HF broadcast.

The FSS option also directly assists in search and rescue of overdue aircraft. It does not actually go into the field, but instead conducts communication searches on all available frequencies, and telephones all airports for which they are responsible where the overdue may have landed. FSS's initiate this type of activity when the overdue is on a VFR flight plan and is 30 minutes late on his ETA. They also assist the ARTCC's and ATCT's who are responsible when the aircraft is on an IFR flight plan. There is a more specialized air-to-ground position of operation at many AFSS's and



some FSS's that provides more detailed current weather information on a special set of frequencies. This is called Enroute Flight Advisory Service (EFAS) and it uses the radio call sign Flight Watch. For the normal air-to-ground radio activity, the

radio call sign is (FSS name) Radio. The FSS's and AFSS's uses many different frequencies as shown in the accompanying table and also use broadcast outlets collocated with variable omni range (VOR) radio aids to navigation. ■

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Two New Scanners

Base Station & Handheld Added to Radio Shack Line-up

Radio Shack's Realistic PRO-2027 desktop scanner has the ability to sop up signals from 30 to 54 MHz, 108 to 174 MHz; 380 to 512 MHz, 806 MHz, 806 to 824 MHz, 851 to 869 MHz, and 896 to 960 MHz. The PRO-2027 does this in 100 memory banks, made up of ten banks of ten channels each. Additionally, there are ten monitor memories for temporarily saving channels discovered during a search.

Channels may be selected manually, can be scanned, or searched. Realistic PRO-2027 features *Hyperscan*, meaning that it will scan at 25 channels/sec., and search at twice that rate. In the event you want to run the unit at a slower rate, the PRO-2027 can be switched to search or scan at a very contemplative eight channels/sec. There's a priority function, as well as switchable 2-sec. delay.

The scanner has IF's of 10.7 MHz and 455 kHz. Selectivity is; -6 dB at +/-10kHz, -50 dB at +/- 20 kHz. Sensitivity (20 dB S/N ratio, with 60% modulation for AM, 3 kHz deviation for FM) is 0.5 uV in the VHF low band, 2.0 uV in the VHF air band, 1.0 uV from 137 to 512 MHz, and 2.0 uV above 806 MHz.

There's an LCD display that reads out the selected frequency, channel number, and programming status data.

The Realistic PRO-2027 is housed in an attractive gray case, offering a built-in telescoping whip, plus a BNC antenna connector. The 3-in., built-in speaker provides adequate communications quality audio, and there's a front-panel jack for those who want to use headphones.

For what it may be worth, as a matter of incidental knowledge, the Realistic PRO-2027 is possibly the final Realistic scanner. That's because Radio Shack is phasing out the Realistic name and will be calling products just Radio Shack.

The first of these products in the world of scanners is the Radio Shack PRO-51 handheld. Quite a nice little handful of MHz muncher it is, too. They've packed plenty into this thing.

For starters, how does a 200-channel memory (ten memory banks of 20 channels each) sound to you? That's in addition to the ten extra monitor bank temporary storage slots.

The frequency range runs 29 to 54 MHz, 108 to 174 MHz, 406 to 512 MHz, 806 to 824 MHz, 851 to 869 MHz, and 896 to 956 MHz.

Hyperscan is really energetic in the PRO-51, zipping through 50 channels/



Radio Shack Realistic PRO-2027 is a 100-channel desktop scanner.



The Radio Shack PRO-51 handheld offers 200-channels of memory.

sec. in scan, and 100 channels/sec. in search mode. Priority channel and 2-sec. delay functions are selectable.

A useful feature we liked is the service search, which isn't usually offered in handhelds. By selecting the appropriate keypad button, it's possible to instantly access and search through your choice of all aero, marine, fire, or weather bands.

The IF's of the PRO-51 are 10.8 MHz and 450 kHz. Sensitivity (20 dB S/N with 60% modulation for AM, 3 kHz deviation for FM) is 0.5 uV in the VHF low band also UHF/UHF-T bands; 0.6 uV in the VHF high band; 0.7 uV above 806 MHz; and 1.3 uV in the VHF aero band.

The PRO-51 requires 6VDC (four "AA" batteries) or a suitable DC adapter. Stored frequencies will remain viable in the scanner's memory up to three days during loss of power.

This handful of hardware is nicely styled, and very easy to program and use with its clearly marked keypad. The LCD display shows the frequency, channel, and operational status.

The PRO-51 comes supplied with a detachable rubber duckie antenna that utilizes a BNC connector. Volume control, squelch, and headphone jack are located on top of the unit along with the antenna connector.

Radio Shack's PRO-51 is a fine addition to that company's growing family of scanners. Reviewed by POP'COMM Staff.

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adjustable bass and treble provide the flexibility to create just the sound you want. FSK, RTTY, packet, FAX, CW and all other data systems are enhanced while interference and electrical noise are reduced or even eliminated by the analog audio processor.

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Squelch Hold: 0-10 seconds
Noise Limiter: Adjustable-threshold pulse noise clamp
Tape Activator: Audio activated (VOX), 3 second hold
Tape Output: 500 mV P-P @ 600 ohms (nom.)
Headphone Jack: Universal mono-wired stereo jack
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SCANNING VHF/UHF

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

It's summer time and the scanning is hot. On long summer nights, you often can hear signals coming in from distant cities on the VHF and UHF bands. While skip signals bounce around the continent during the day on VHF low band frequencies, the VHF high band and UHF band become hotbeds of activity late in the evening and into the early morning hours.

When VHF and UHF signals reach extended distances, the effect usually is a result of inversion, or ducting. This occurs in the troposphere when a layer of cool air becomes trapped underneath a layer of warmer air or sandwiched between two layers of warmer air. Ducting is fairly common along and near weather fronts, occur frequently above water surfaces during daylight, and over land at night. Cool air, which is more dense than warm air, has a higher index of refraction for radio waves at certain frequencies. Total internal refraction occurs inside the cooler air in a duct, much like light waves in fiber optics.

Ducting only works when both the transmitting and receiving antennas are inside the same duct. While ducts can be as little as only a few feet wide, a duct over cool water can extend just a short distance above the surface. However, the duct can run for hundreds or even thousands of miles.

While this form of tropospheric propagation is common at times, there is one other type that extends radio signals on VHF—sporadic-E propagation. At frequencies typically between 20 and 150 MHz, the ionospheric E layer occasionally returns signals to earth. The condition usually is intermittent and conditions can change rapidly, hence the name "sporadic."

The range of sporadic-E propagation usually is several hundred miles, but dis-

tances of up to 1,000 to 1,500 miles are possible. Good gauges of sporadic-E propagation are both the FM broadcast band (check for distant signals) and TV Channel 2.

Thus, when strange signals start coming in on your scanner, you're probably being treated to ducting or sporadic-E skip. It's fun to hear police or fire dispatches in cities hundreds of miles away. To identify these stations, listen to street locations and places units respond to. If you think you're hearing a certain city, use a scanner directory to confirm your guess. If that distant city is licensed on the frequency you are listening to, it's likely you are hearing them. Ducting usually starts late in the evening and can continue well into the next morning. For example, it's not uncommon for traffic reporting helicopters to interfere with news reporters in far-off cities during the morning rush hour when ducting occurs.

You may even want to keep a log of the stations you hear during ducting. You'll probably find that ducting occurs in the same general path many times over and over. While ducting can offer some exciting scanner listening, don't hesitate to try tuning in some far away FM or TV stations. If you have an outside TV antenna, rotate it and you'll see an incredible lineup of channels during ducting. In some areas, you'll be able to receive signals on many channels on both VHF and UHF. Of course, you could do the same with your scanner if you tuned in the audio portion of the TV signals in wideband FM.

Mailbag

K.J. Fitzgerald of Holliston, Massachusetts, says he's an avid 13-year-old scanning, CB and ham buff. He owns a Cobra SR900, a Realistic Pro-34 and Pro-2022.

With just indoor antennas, K.J. says he can hear stations in Boston, which is 25 miles away. Here are some frequencies K.J. likes to monitor: Holliston police, 471.3375; Holliston fire, 46.46; Holliston fire channel 2 and public works, 45.64; Framingham police, 471.7625; Framingham fire, 483.7625; Natick police, 472.7375; Natick fire, 154.205; New England Life Flight, 155.160; Boston police, F-1—460.350, F-2—460.450, F-3—460.225, F-4—460.400, F-5—460.500, F-6—460.175, F-7—460.300, F-8—460.125, F-9—460.075, F-10—460.250. For those interested in the 800 MHz band, K.J. also advises that the Massachusetts State Police will be moving to a trunked system soon. Keep us posted on when the system becomes active, and thanks for your report.

Kenneth Kellman of Wappingers Falls, New York, says the police department in his area has added what he thinks is voice-inversion scrambling. Kenneth says it sounds like Donald Duck, which certainly is voice inversion. He asks whether there are descramblers available to decode the voice inversion. While such descramblers were available several years ago (Don Nobles Electronics was one of the major makers of these units), the Electronic Communications Privacy Act of 1986 made it illegal to sell these units anymore.

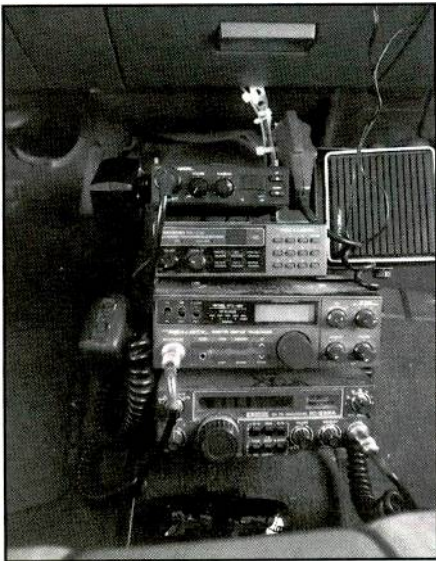
Essentially the law forbids the manufacture of devices that decode encrypted communications, including voice inversion. Smart buyers snatched up a bunch of these before the ECPA became law. You might find someone willing to part with their descrambler, or may come across one at a hamfest if you're lucky. But you won't find any new ones on the market. Occasionally you might find a scrambler-descrambler



Now you see the antennas ...



Now you don't.



The mobile radio equipment belonging to Ron Cheshire, WB6GKI, of Ridgecrest, California, is tied into the magnetic-mount antennas, which can be hidden in the car's trunk to deter theft. Equipment includes a Realistic CB, Realistic scanner, Realistic 10-meter transceiver and an Icon IC-255A for 2 meters. Also not shown is a Realistic Pro-39, which is attached to the dashboard with Velcro, and a cellular phone. Without the mag-mount antennas showing, only a small VHF spike antenna permanently installed on the trunk is seen. When the mag-mount antennas are attached, it's an instant communications center for Ron.

offered in kit form in advertisements in radio or electronics magazines. Outside of that, you'll have to tolerate listening to the duck sounds on your scanner. It's a real pain, but not a whole lot can be done.

Joe Montano of Old Bridge, New Jersey, writes that he is interested in getting into scanning, but is a "total blank page" about the subject. He wants to know if any books could be recommended to help him learn more about the hobby and can buy the proper scanner. The best bet is to continue reading this column and to purchase the annual editions of the *Popular Communications Communications Guide* (1994 edition currently available through advertisements in this magazine). The *POP'COMM Communications Guide* offers great articles about scanning, plus equipment specs and listings of dealers and manufacturers. You might want to write to scanner makers to find out more information on various scanners that you might be interested in buying. We also recommend joining a scanner club where you can share questions and information with other fellow scanner hobbyists. One regional group that covers New Jersey as well as other northeastern states is Northeast Scanning News. A one-year membership—at \$29—includes the club's monthly 60-plus page

newsletter. A sample copy of the newsletter is \$3. Make checks payable to Les Mattson and mail to: Northeast Scanning News, P.O. Box 62, Gibbstown, N.J. 08027.

From the North Pole—Alaska, that is—comes a letter from Dane Lamoreaux, with a list of frequencies from the 49th state. Dane says he's been a *POP'COMM* subscriber for three years and turns to this column first each month. Since it's tourist season in the Last Frontier, he sends along these frequencies of interest: Alaska State Troopers, 155.250 (Channel 1, car to car), 155.790 (Channel 2, dispatch), 155.460 (state jail); Fairbanks police, 155.010 (main), 155.370 (tact); Fairbanks fire/EMS, 154.430; Fairbanks International Airport police and fire, 155.100; University of Alaska at Fairbanks, 154.725 (police), 154.235 (fire/EMS dispatch), 154.190 (fire/EMS); Fairbanks area volunteer fire and EMS units, 154.400 (Chena Goldstream fire), 154.160 (Ester fire), 155.220 (Interior Ambulance Rescue), 154.010 (Steese Area fire), 154.295 (fire mutual aid), 155.160 (ambulance to hospital); North Pole police, 155.130; North Pole fire/EMS, 154.130; North Star fire, 154.370 (dispatch, channel 1), 154.070 (fireground, channel 4); Fort Wainwright/Army, 173.4875 (military police), 407.300 (military police), 173.4125 (fire); Eielson Air Force Base, 163.4875 (security), 163.4625 (security), 173.5875 (fire), 173.5375 (ambulance).

Tim Rogers from Knoxville, Tennessee, checks in with a few favorite frequencies. Tim says he's been a *POP'COMM* fan for two years. His monitoring is done on a Realistic Pro-43 these days, but he started out with one of those Eavesdropper contraptions 23 years ago. For those who recall, the Eavesdropper was a 1960s device that had a 9-volt battery and was placed adjacent to an AM radio. You tuned the AM radio to find a VHF frequency to monitor. The Eavesdropper acted as a converter.

Here's Tim's list of favorite Knoxville frequencies: 463.050, ambulance to hospital MED-3; 463.100, ambulance to hospital MED-5; 463.150, ambulance to hospital MED-7; 462.975, MedComm ambulance dispatch; 453.500, Lifestar helicopter; 155.955, rescue squad; 159.270, Tennessee Department of Transportation; 451.250, Knoxville Utilities Board electric; 451.150, Knoxville Utilities Board gas; 451.050, Knoxville Utilities Board water; 463.325, Knox Allright Parking.

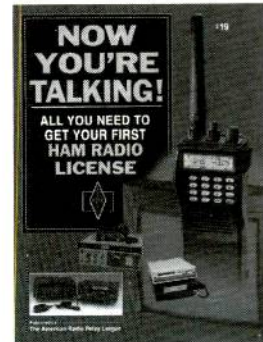
What are you listening to on your scanner? Do you have a unique listening post you would like to share with others by sending in a photograph? What does your antenna farm look like? (shack photos requested also.) What questions do you have about the hobby of scanning? Send your lists, photos and questions to: Chuck Gysi, Scanning VHF/UHF, *Popular Communications*, 76 N. Broadway, Hicksville, N.Y. 11801-2909. ■

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BROADCAST DX'ING

BY ROGER STERCKX, KVT1JH

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

Expanded AM Band: Everybody's been asking about the 1605 to 1705 kHz extension to the AM band. As this is written, the FCC tells us that they were still wrestling with a frequency allocation blueprint for 200 of the 1,000 stations that want to move to the expanded portion of the band. The FCC is trying to work things out so that stations cause as little interference as possible to the operations of other broadcasters. Every station above about 200 in this band increases the potentials for interference. Escaping interference in the existing overcrowded 535 to 1605 kHz portion of the band is why nearly 1 out of every 5 of the 4,938 AM'ers wants to shift to the new part of the band. Once a frequency allocation plan is worked out, stations need to have their FCC documentation FCC-processed in order to become authorized to move to new frequencies. After authorization, technical changes must also be made to station equipment in order to make it operate on a different frequency. In the event a station doesn't protest its frequency assignment, the FCC thought that it could show up in the 1605 to 1705 kHz portion of the band as early as this summer, maybe by the time you're reading this!

AM/FM receiver manufacturers should be pleased to see this band finally get rolling.

Multicultural Radio: Domestic stations carrying programs in Spanish or French are plentiful throughout North America. Here's a station that might hold the record for addressing its programming to the largest number of different target audiences with non-English linguistic preferences. It's a station with the appropriate call letters CIAO, located in Brampton, Ontario, Canada. Calling itself *Multicultural Radio*, CIAO operates on 530 kHz with 1 kW (250 watts at night). In order to serve the area's growing multi-ethnic population (now about 200,000), CIAO's sked shows regular programs in the following languages: Italian, German, Portuguese, Spanish, Polish, Chinese, Hindi, Urdu, Tamil, Afghan, Ukrainian, Farsi, Slovenian, Macedonian, and Croatian.

CIAO plays lots of excellent music, according to Ben Sobczyk, of North Tonawanda, N.Y., who told us about this station (and sent along a bumper sticker).

Price of Fame: Famed broadcaster WGN/720, Chicago, is a 50 kW news/talk station. When listeners call the newsroom, usually it's to give news tips to the reporters who answer the phones there. Not long ago, however, one man called and asked if they could let him know the phone number of the Federal Communications Commission. The WGN newsman who answered the call said that he didn't have it immediately available, but reminded the



CIAO/560, in Brampton, Ontario, has this excellent bumper sticker. (Thanks to Ben Sobczyk, New York.)



Q-106 means KKLQ/106.5, San Diego, Calif., which runs Top-40, and simulcasts over 600 kHz. (Courtesy Mike Carland, Valencia, Calif.)

caller that he could readily obtain the number from Directory Assistance. The man replied, "Sure, but they charge 50 cents!"

This sign of the times was sent in by one of our regulars, Elmer Wallesen, La Grange Park, Ill.

Around Radio: William Peckhart, of Hamilton, Ind., writes that he grew up listening to Ft. Wayne's WOWO/1190. This 50 kW station celebrates its 70th birthday next March. Bill tells us that WOWO still has some of its old timers working on special occasions. Bob Sievers, for example, has been with WOWO for many years. Also, Sam De Vincent, who has a Sunday morning program featuring historic recordings from the 1920's. Bill says that these people have an extensive knowledge of broadcasting and often get into the topic on the air.

Passing: Jack ("Jake") Spector, long a popular New York metro area air personality, passed away last March. During the

1960's, Jack was a deejay on Top-40 "Good Guys" station WMCA. In the 1970's, Spector was a regular deejay on classic rock station WCBS-FM, and filled-in there at times for many years after. Jack was so well-known, he could and did turn up almost anywhere, like WNBC, WHN, or WPIX-FM. He was filling-in for a vacationing deejay at WHLI, Garden City, N.Y., when he suffered a heart attack at the station. Spector was stricken while a record was playing. Rushed to the hospital, he was pronounced dead 45 minutes later. Jack Spector was 66 years old. During his lengthy career, Spector was admired and respected by the many broadcasting industry people he knew. Jack will be particularly missed by his large following of loyal fans, most of whom belonged to his free-membership *Off-Key Singing Club*.

Smart Radio: RBDS stands for The Radio Broadcast Data System. This is an innovative digital technology being introduced

Applied to Construct New FM Stations

AL	Columbiana	101.5 MHz	6 kW
AZ	Chinle	107.3 MHz	3.62 kW
CA	Esparto	97.9 MHz	6 kW
CA	Eureka	88.3 MHz	1.25 kW
CA	Los Molinos	101.7 MHz	6 kW
FL	Indian River Shores	97.1 MHz	
FL	Wabasso	97.1 MHz	6 kW
LA	Blanchard	102.1 MHz	25 kW
LA	Marksville	88.1 MHz	100 kW
MN	Roseau	102.1 MHz	25 kW
MO	Moberly	94.5 MHz	50 kW
MO	Springfield	94.5 MHz	6 kW
NE	Hastings	94.5 MHz	50 kW
NH	New Castle	88.3 MHz	1.2 kW
NH	Rochester	88.1 MHz	150 watts
NJ	Holmdel	88.5 MHz	(low power)
NJ	Sayreville	90.1 MHz	84 watts
NY	Old Forge	99.7 MHz	3.8 kW
TX	George West	104.1 MHz	3 kW
TX	Sterling City	96.5 MHz	50 kW

Permits Issued to Construct New FM Stations

IL	Decatur	88.1 MHz	1 kW
IL	Maroa	107.3 MHz	6 kW
MI	Hudson	102.5 MHz	6 kW
MN	Worthington	93.5 MHz	2.5 kW
NM	Grants	103.7 MHz	100 kW
OH	McArthur	98.7 MHz	6 kW
OH	Richwood	104.3 MHz	3 kW
TX	Benavides	107.7 MHz	100 kW
WV	Huntington	101.5 MHz	2.3 kW

(WMGG booster)

Application Filed to Construct New Shortwave Station

NY	Brentwood	not spec.	55 kW
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Cancelled

KDGB	Dodge City, KS	93.9 MHz	100 kW
KKJJ	Campbell, MO	107.5 MHz	
KYFB	Pine Bluff, AR	91.1 MHz	1 kW
KYFE	Alexandria, LA	91.7 MHz	1 kW
WMNR-FM1	Huntington, CT	88.1 MHz	75 watt booster
WYFY	Fisher, WV	103.7 MHz	6 kW

Seeking Changed AM Facilities

KURS	San Diego, CA	1040 kHz	Seeks night increase to 63 watts.
WBRW	Bridgewater, NJ	1170 kHz	Seeks drop to 229 watts.
WKDA	Lynchburg, VA	1170 kW	Seeks drop to 2.5 kW.

Changed AM Facilities

KCTY	Salinas, CA	980 kHz	Increased to 10 kW.
KIEV	Glendale, CA	870 kHz	Increased nights to 3 kW.
KIQI	San Francisco, CA	1010 kHz	Using 15/1.5 kW.
KLEY	Wellington, KS	1130 kHz	1130 kHz Added nights with 1 watt.
KNEM	Nevada, MO	1240 kHz	Dropped to 500 watts.
WCCF	Punta Gorda, FL	1580 kHz	Increased days to 350 watts.
WGOV	Valdosta, GA	950 kHz	Reduced night power to 63 watts.
WJLS	Beckley, WV	560 kHz	Using 4.5 kW/470 watts.
WMLD	East Point, GA	1160 kHz	Operate nights 11th 160 watts, non-directional.
WMRO	Nashville, TN	1560 kHz	Moved to Gallatin, using 1.5 kW.
WNQM	Nashville, TN	1300 kHz	Increased days to 10 kW.
WSGH	Lewisville, NC	1040 kHz	Added nights with 182 watts.

Seeking Changed FM Facilities

KYLS	Ironton, MO	92.7 MHz	Seeks 92.9 MHz.
WTGA-FM	Thomaston, GA	95.3 MHz	Seeks 101.1 MHz, 6 kW.
WWUN-FM	Clarksdale, MS	101.7 MHz	Seeks 101.5 MHz, 25 kW.
WXEF	Effingham, IL	97.7 MHz	Seeks 97.9 MHz.

Changed FM Facilities

KLJV-FM	Mountain Home, ID	99.1 MHz	Moved to 99.3 MHz, 100 kW.
KVAH-FM	Salida, CA	92.1 MHz	Moved to 92.3 MHz, 13.5 kW.

this year in ten US media markets. RBDS will deliver a host of new features that will benefit consumers, including the ability to relay useful control and display to radios.

RBDS allows FM broadcasters to transmit radio text as digital data on an inaudible subcarrier. Individual broadcasters purchase an RBDS encoder for a minimum price running slightly less than \$2,500.

Consumers having home or car receivers that can pick up RBDS transmissions will have the following specific services available: Display of the call letters; they can tune the band by picking a desired program format; display of song titles and artist names; auto switch to different frequencies for continuous reception of network program while moving; automatic emergency announcements; paging information; supply business and navigation data.

Car radios will have an eight-character digital display, but home RBDS receivers will offer 64-character displays. Equipment for receiving RBDS has been demonstrated by Coupon Radio, Delco, Denon, Goldstar, Grundig, International Jensen, Panasonic, and Philips.

Broadcasters participating in RBDS are using RE America encoders, distributed by Harris Allied, a worldwide distributor of broadcast products. RE America is based in Westlake, Ohio.

The hope is that RBDS will be used throughout the USA and Canada. Europe has been using a similar system since 1984.

For more information about The Radio Broadcast Data System, contact the Electronic Industries Association, 2001 Pennsylvania Ave, NW, Washington, DC 20006-1813. Phone (202) 457-8700.

Oh-Oh Dept.: The FCC contends that WNNQ/1570, Ashburn, Georgia, went dark without authority on April 29th, 1993. The FCC wrote to the licensee to find out what was going on, but the letter was returned with the notation that the licensee was "out of business." In January, 1994, the licensee contacted the FCC and indicated that because he was out of business, it was not his intention to return WNNQ to the air, and that he was giving up the license. The FCC has now officially revoked the WNNQ license.

WDIX/1480, Yadkinville, N.C., has also been dark without permission since April 29, 1993. Last November, the licensee notified the FCC of his desire to return the station to the air, but that never happened. The FCC concluded that it wasn't very likely to happen, either, and revoked the WDIX license.

Open Line: The FCC sent a Notice of Apparent Liability in the amount of \$5,000 to KTBB/600, Tyler, Texas. The agency alleges that a KTBB talk show host made a live broadcast of a phone call without first informing the other party that the conversation was going out over the air. This is a violation of FCC regulations.

KTBB was notified by the FCC of both

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The mobile studio of WDZQ/95.1, Decatur, Ill. (Photo courtesy of Don Dennon, El Sobrante, Calif.)

the allegations, and the complaint filed by the party who claimed to have been called. KTBB admitted the incident, and advised the FCC that the talk show host had been advised of the seriousness of the rule violation. He also assured the licensee that it would not happen again. The party who had complained to the FCC about the KTBB incident, then withdrew the complaint.

The FCC's position was, notwithstanding these factors, there was a clear violation of the rules and the agency was still seeking its \$5,000. The FCC offered KTBB 30 days to either pay, or write a letter explaining why the station thinks the

fine either shouldn't be imposed, or should be reduced.

A Prize Story: The FCC claimed WLLR-FM/101.3, East Moline, Ill., was responsible for an apparent liability in the amount of \$12,500. This came about because of what the agency termed WLLR-FM's "willful and continuing violations of the Commission's contest rule by failing to award the \$1-million prize to the contest winner."

The WLLR-FM licensee contended that there were two separate contests and two prizes. They stated that the unpaid prize in question was the responsibility of a sponsor that had underwritten the contest and

Pending AM Call Letter Changes

Now	Seeks	
WHYD	WTMR	Columbus, GA
WIBM	WCXI	Jackson, MI

Changed AM Call Letters

New	Was	
KGME	KNNS	Glendale, AZ
KHTX	KRSO	San Bernardino, CA
KMFX	KWMB	Wabasha, MN
KTCK	KAAM	Dallas, TX
WBAV	WGIV	Charlotte, NC
WFTP	WGGG	Gainesville, FL
WKBQ	KASP	St. Louis, MO
WKJT	WTYN	Tryon, NC
WLQE	WBLU	Moneta, VA
WWXL	WWLT	Manchester, KY

Pending FM Call Letter Changes

Now	Seeks	
KBBM	KZZQ	Winterset, IA
KFMH	KBOB	Muscatine, IA
WHITE	WCBZ	Williamston, NC
WKNB	WPBH	Port St. Joe, FL

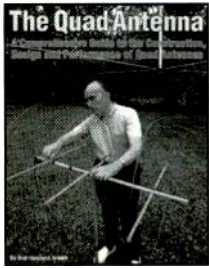


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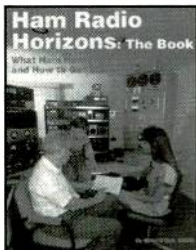
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Order No. BHOR..... \$12.95



The Vertical Antenna Handbook

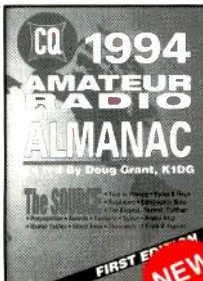
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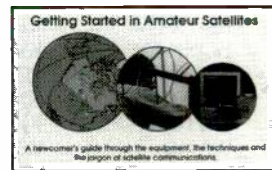
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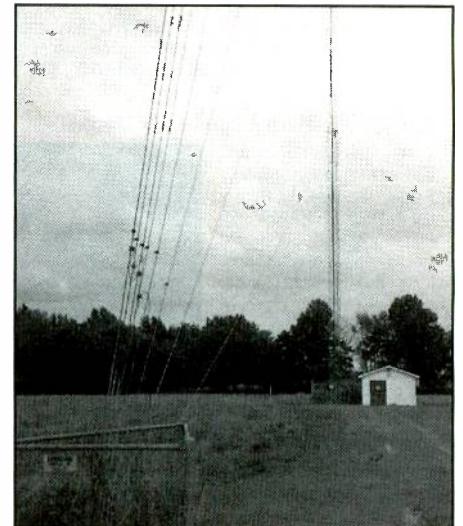
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Changed FM Call Letters

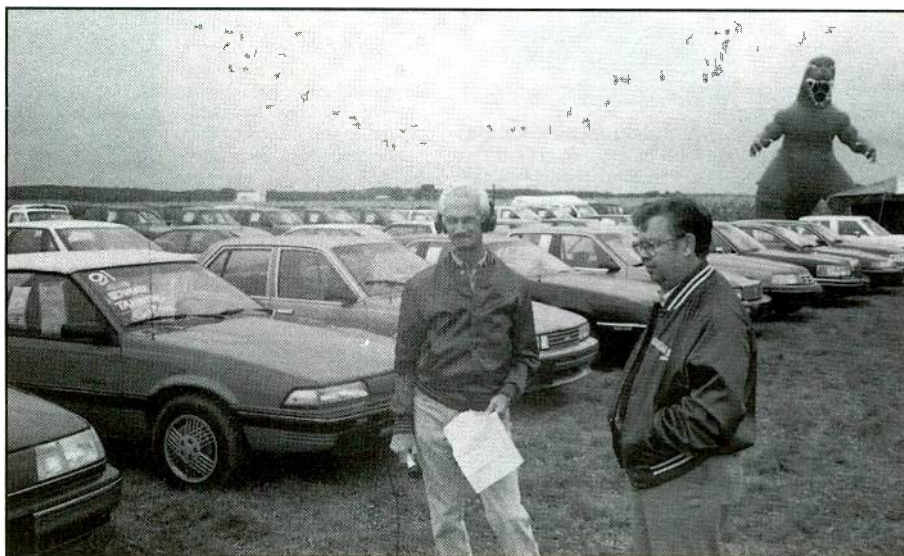
New	Was	
KBOQ	KVOQ	Carmel, CA
KBRQ	KJNE	Hillsboro, TX
KCDI	KRKN	Oro Valley, AZ
KFFA-FM	KCRI-FM	Helena, AR
KFMA	KRQA	Amarillo, TX
KGME	KNNS	Glendale, AZ
KGRA	KLSN	Jefferson, IA
KHTX-FM	KHTX	Riverside, CA
KQNK-FM	KVNV	Norton, KS
KRAD	KZRK	Portland, TX
KSND	KNJM	Lincoln City, OR
KWTO	KKHT	Springfield, MO
WAHQ	WVOZ-FM	Carolina, PR
WBAV-FM	WBAV	Charlotte, NC
WBCD	WUMG	Chattahoochie, FL
WCDZ	WGNN	Dresden, TN
WEDJ	WAQQ	Charlotte, NC
WEUP-FM	WYBM	Minor Hill, TN
WGGG	WRRX	Micanopy, FL
WHKN	WMKO	Millen, GA
WIVR	WCRI	Eureka, IL
WJZF	WHTK-FM	LaGrange, GA
WKBQ-FM	WKKX	Jerseyville, IL
WKKX	WKBQ	Granite City, IL
WKXP	WDLE	Benton, PA
WLIE	WAFE	Bridgehampton, NY
WLIF	WLIF-FM	Baltimore, MD
WLKG	WAEM	Lake Geneva, WI
WMDI	WEJS	Bar Harbor, ME
WMXS	WSYA-FM	Montgomery, AL
WPCN	WAFP	Oxford, NC
WRFK	WBEG	California, MO
WSSF	WVRT	Baltimore, MD
WUSK	WNDD	Jefferson City, TN
WVAO	WANV-FM	Staunton, VA
WWLT	WWXL-FM	Manchester, KY
WWUC	WLJJ	Union City, TN

New FM Call Letters Issued

KAGW	Palmer, AK
KCRQ	Detroit Lakes, MN
KJST	Blooming Prairie, MN
WAHE	Lafayette, TN
WAHF	Guntersville, AL
WAHG	Leland, NC
WAHH	Asheboro, NC
WCMR	Bruce, MS
WELG	Rogers City, MS
WFON	Stephenson, MI
WLRD	St. Pauls, NC
WSBZ	Miramar Beach, FL



Base of the WDZQ/95.1 500-ft. tower in Moweaque, Ill. The sister station is WDZ/1050, one of the nation's first broadcasters. (Photo courtesy of Don Dennon, El Sobrante, Calif.)



Don Dennon (left, wearing the cans and holding the mic) conducts a WDZQ-FM nemo (remote interview) at Clinton, Ill. (Sent in by Don Dennon, El Sobrante, Calif.)

agreed to pay, as explained in the contest rules. WLLR-FM stated that its prior dealing with that company was problem-free, and they had every reason to believe that it was sufficiently reputable and financially sound to pay the full prize. WLLR-FM did not feel it was fair or reasonable for the FCC to hold it responsible as a guarantor

of that company's ability to pay all installments over a 20-year period.

The FCC's position came down to feeling that WLLR-FM had given the public "the clear impression" that the station had been the sponsor of the contest. The FCC said that as a co-sponsor, WLLR-FM must still pay the winner if the other co-sponsor

was unable or unwilling to do so. In addition, the agency stated that "it would be unfair to overlook the winner's detrimental reliance on receiving the full amount of the prize money to which she was entitled."

The FCC does not rank contest violations high on the ladder of rule transgressions. The agency agreed to reduce its demand for forfeiture to \$8,750.

What "Happen?": Charles Nevel, Pocomo Summit, Penna., asks if anybody knows what became of WWJZ/640, Mount Holly, N.J. The 50 kW station kicked out a big signal during daylight hours, and Charles enjoyed their Big Band music format. More than a year ago, however, the music stopped and was replaced by the sounds of silence. After a month, Charles phoned the station only to be given vague information about "managerial problems," plus the estimate that they would be back on in a week. Nothing has been heard since.

That's a 30: Here we are where the top of the hour meets the bottom of the page. That means we are on hiatus until next month. Please pass along AM/FM broadcaster bumper stickers, station photos, newspaper clippings, format changes, questions, and comments. ■

NEW PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS



SWL Noise Reducer

JPS Communications, Inc., announces a noise reduction product designed for the shortwave listener and the radio amateur: the NTR-1 Wide Band Noise and Tone Remover. Two front panel-selectable bandwidths provide optimum noise and tone reduction for AM/FM broadcasts, as well as SSB, CW, or data broadcasts. An internal jumper provides further adjustment of the level of noise processing in the wide-band mode to suit various types of listening habits. One of the main advantages to this device is its ability to provide noise reduction and tone removal for wide band (6.6 kHz) as well as narrow band (3.4 kHz) signals. This feature is particularly important to SWL's and Hams who like to listen to AM or FM shortwave broadcasts and are bothered by noise and/or heterodynes.

Four easy-to-use pushbuttons on the front panel provide power on/off, noise reduction on/off, notch filter on/off, and wide/narrow bandwidth. All functions are independent and may be used separately or together, as desired. An LED indicates the mode in use.

The noise reduction method used is JPS' Dynamic Peaking, which is effective at reducing atmospheric noise and other similar noise types. The notch filter automatically removes any numbers of interfering tones, whistles and heterodynes in 3 to 5 milliseconds. These functions are all performed in "real time," so there is no delay between input audio and output audio.

The new NTR-1 operates from 12VDC, and requires 500 mA peak current. It uses the same power pack used by other JPS Amateur Radio products. The unit is 1.7 inches high, 6.5 inches wide, 5.1 inches deep, and weighs 2 pounds. The NTR-1 is priced at \$169.95 and is available from the factory and from selected dealers. The unit has a one year warranty.

For more information or a data sheet, contact JPS Communications, Inc., P.O. Box 97757, Raleigh, NC 27624. Phone (919) 790-1011, or circle 101 on our Reader's Service.



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For more information, contact Cushcraft Corporation, P.O. Box 4680, Manchester, NH 03108, or circle 104 on our Reader's Service.

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- Activity log function continuously monitors and logs all frequencies of a scan database while displaying active, was active and never active channels.



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DELTA COMM™ I-7000 communication manager program includes all cabling, manual, UL listed power supply and Delta Research custom CI-V interface or \$299.00 + \$8.00 (U.S.) or \$25.00 (foreign) S&H. The DELTA COMM™ DSS interface upgrade comes complete with easy to follow NO SOLDER installation instructions, all cabling and 8-bit DSS A/D converter module (game port required) for \$99.00 + \$8.00 (U.S.) or \$25.00 (foreign) S&H and is available as an upgrade option to registered I-7000 users. Contact us for additional information on DELTA COMM™ communication managers for ICOM™ R7100, R71A, R72 and IC735.



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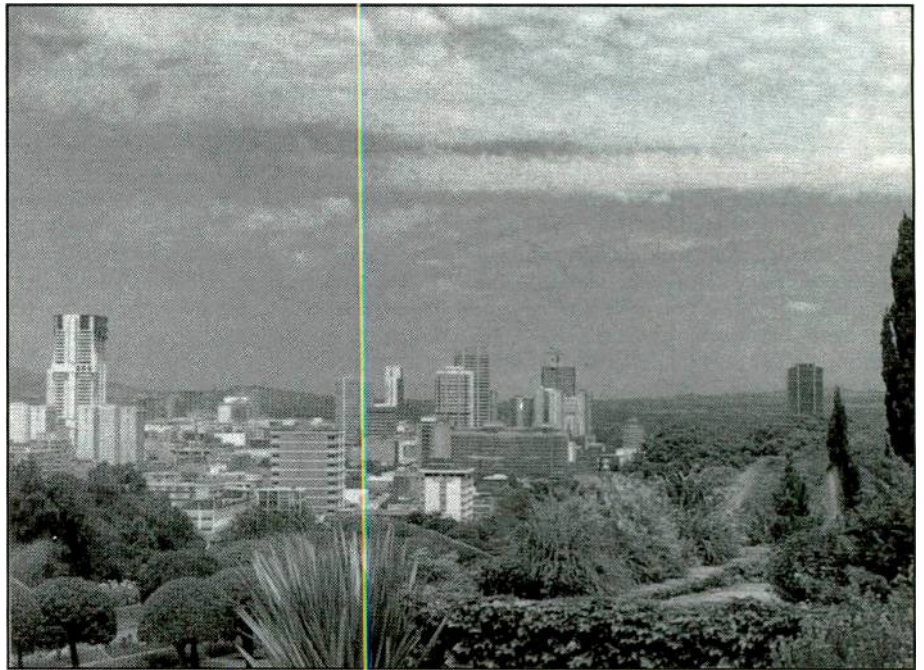
WHAT'S NEW WITH THE CLANDESTINES

Several anti-Castro programs are now on the schedule of commercial shortwave station Radio Copan International in Honduras. Copan is a sister station of Radio Miami International which places a number of these types of programs on various US shortwave broadcasters. At this writing, Copan is carrying Movimiento Nueva Generacion on Wednesdays at 0000-0100 and Sundays 2000-2100, La Voz del Veterano Mondays at 0100-0200 and Sundays at 2100-2200. Colegio de Pedagogos Cubanos is aired Tuesdays through Fridays at 2000 to 2100, La Voz del Caribe (which, while produced by an anti-Castro group, focuses as much on Caribbean news as on Cuba) airs Sundays from 2200 to 2300. Radio Roquero is a rock show, aimed at younger Cubans. It airs on Saturdays at 2200-2230. All programming is in Spanish and airs on 15675.

Radio Miami International is also booking a new anti-Vietnamese government program, Forum For Democracy, sponsored by the Vietnamese Restoration Party. This program is on the new Hawaii shortwave station, KWHR, seven days a week at 1400 to 1430 on 9930. Reports on this or any of the Cuban programs placed by Radio Miami can be sent to Radio Miami International, 8500 SW 8th St., Suite 252, Miami, FL 33144.

Some reports say Radio Dnestr International, mentioned last time, has disappeared already. But it could be more a case of their spotty operating schedule, last known to be only Mondays, Wednesdays and Saturdays at 0330 to 0400 on 7105. This half hour segment is the voice of the government of the Moldavian Republic of Pridnestrova, is aired via Radio Moscow. The MRP is pro-Russia and has broken away from Moldavia itself. Radio Moscow programming picks up at 0400.

It was almost certain to happen. The march towards full representational government in South Africa has produced a clandestine broadcaster. Radio Pretoria is operating from a trailer on a hilltop outside the town of Donkerhoek in suburban Pretoria. The station is the voice of Afrikaaner People's Front, (Afrikaner Volksfront)—a collection of several right wing groups—with programming that is described as Protestant, anti-communist, anti-African National Congress and ultra-nationalist. Radio Pretoria has been in existence as a legal station but the South African government refused to renew its license. According to ABC and other news sources, volunteers have dug trenches and filled sandbags, erecting barricades against any attempts by



A clandestine FM station, Radio Pretoria, broadcasts from a hilltop outside the city.

the government to shut down the station. Armed guards patrol and barbed wire fences surround the location. Some of the announcers were once employees of the South African Broadcasting Corporation (SABC). Unfortunately for us clandestine hunters the station operates only on FM.

Oddly, one area from which we've been expecting clandestine activity—the Yugoslavian conflict—has, to our knowledge, produced nothing. Each of the governments has its own broadcasts but still, one would have thought there might be the usual black clandestines and the like. Perhaps there is activity on FM of which we are unaware?

The Voice of Democratic Burma is now on the air on 11850 between 1430 and 1500, via Radio Norway's facilities.

It seems there was some clandestine radio activity from the Mexican state of Chiapas, during the brief Zapatista rebellion earlier this year but no shortwave broadcasts were heard, though they may have been low power and only active briefly. Just as likely is the possibility the Zapatistas used an FM transmitter.

The Voice of Free Tajikistan (also known as the Messenger of Khorasan Payk-i Khorasan in Tajik) is operating in the area around 7088-7090 between 0300-0330, 0900-0930 and 1400-1430, broadcasting in both Tajik and Russian. The broadcasts oppose what it calls a communist government running the country.

The Voice of the Pan-Africanist Congress of Azania is still broadcast via Radio Tanzania. The program airs Tuesdays, Wednesdays and Saturdays at 0415 on 5050.

A new(ish) clandestine is the Voice of Islam-Voice of the Islamic Movement in Iraqi Kurdistan, which operates on 4105, 4320 and 6410. Broadcasts are scheduled at 1230-1330 and 0500-0630 in both Kurdish and Arabic languages. The group reportedly disagrees with some of the other Kurdish political parties.

There's a new clandestine book on the scene—*The Clandestine Broadcasting Directory* lists all currently active clandestine stations and broadcasters in frequency order, with details about each including backing organizations and addresses where known. There are also special articles on some of the areas which have especially lively clandestine activity. The directory was written and compiled by Mathias Kropf, a widely known expert on clandestines. It's available from selected radio dealers or direct from the publisher, Tiare Publications, P.O. Box 493, Lake Geneva, WI 53147, telephone (414) 248-4845, for \$12.95 plus \$2 shipping and handling (\$3 to foreign addresses). VISA/ MC accepted.

That covers things for this time. Remember, we are always happy to get your clandestine radio information, including loggings and QSL details.

Until next month, good hunting! ■

INTERESTING THOUGHTS AND IDEAS FOR ENJOYING THE HOBBY

SWL DXpeditions

I get a big kick out of reading about the ham radio "DXpeditions" in our sister publication, *CQ*. A DXpedition is where a bunch of hams travel to some place that counts as a DX "country" (which is more often than not some uninhabited island in the middle of an ocean) where they go on the air to give hams the chance to work and QSL a new country. Such DXpeditions were a big help for me in getting my DXCC certificate, and I'm grateful to all the hams that helped put places like Kingman Reef, Christmas Island, and Fernando de Noronha Island on the air so I could work them.

But there's no reason to miss out on the fun of DXpeditions just because you listen instead of transmit. An increasing number of "DXpeditions" of their own for DX fun. Listeners actually have it easier than hams, because SWLs don't have to travel to the other side of the world for a DXpedition. Instead, SWLs look for a location near them where reception will be significantly better than that from their home listening posts. Even if you live in the middle of a congested urban area, odds are there are several good SWL DXpedition sites within a short driving distance.

What Makes A Good DXpedition Site?

So what makes for a good DXpedition site? The big factors are electrical quiet, plenty of room, and being near the ocean.

Electrical noise of all sorts is the biggest problem most DXers face today, and just getting away from it can make a big difference in what you can hear. If you live in a city or the suburbs, it's astounding how much noise you're probably getting from such sources as power lines, personal computers, microwave ovens, timers and controllers, streetlights, electrical signs, etc. When you listen at a quieter location, it can be a revelation! Weaker signals that are masked by a high noise level in urban and suburban locations can be easily heard in a quiet rural location. The change is especially noticeable on lower frequencies, such as the AM broadcast band and longwave, where electrical noise is a major problem.

A good DXpedition site also has enough room to let you use antennas you don't have room for at your home listening post. This is especially true for the frequencies below 10 MHz; even a half-wave dipole for such frequencies can be too big for most urban and suburban backyards. If you've never tuned frequencies below 5 MHz with a full half-wave antenna of some sort, you'll

V47Z

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MEMBERS OF THE ST. KITTS AMATEUR
RADIO SOCIETY. THANK YOU FOR THE
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by
W4MGX**

be amazed at the improvement in reception over a random wire antenna (even one used with an antenna tuner or preamplifier) or an active antenna. Many SWLs have erected Beverage antennas (a straight wire over 1000 feet long and terminated on one end through a resistor connected to ground) for enhanced reception on frequencies below 5 MHz, especially the AM broadcast band. The combination of a quiet location and a "no compromise" antenna can produce amazing receptions. Examples that come to mind include reception of Australian AM broadcast band stations in Alabama and Indian AM band stations in Oregon!

Many SWLs do not understand how proximity to the ocean can enhance reception. Simply put, the best possible DX location is one right on the beach! One reason the beach is a great DX location is that there are no mountains or other obstructions on the ocean to block or weaken DX signals. Signals arriving from the direction of the ocean will be significantly stronger on the lower frequencies, especially below 2 MHz. Another is that seawater weakens multihop signals (signals that are refracted from the ionosphere to Earth and back to the ionosphere) much less than the ground does, especially at frequencies below 5 MHz. As a result, low frequency signals are heard significantly weaker 100 miles inland compared to how they sound right at the beach. Finally, the ocean is a tremendous conductor of ground wave signals on the AM broadcast band. Listeners in locations like Cape Cod or the Outer Banks of North Carolina report reception of AM band stations all up and down the East Coast at noon!

When you put all three factors togeth-

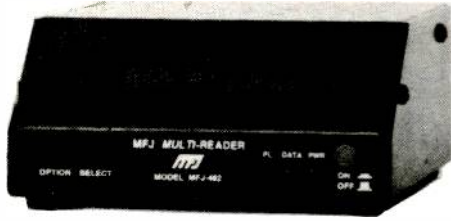
er—low electrical noise, room for big antennas, and proximity to the ocean—the results can be mind-boggling. For example, in October of 1993 four members of the National Radio Club (a club devoted to AM band DXing) traveled to Newfoundland for four days of DXing. They used five different Beverages oriented toward different parts of the world. In just five days, they managed to receive AM broadcast band stations from 92 different countries, including Lesotho, Benin, India, Saudi Arabia, Iran, the Sudan, Argentina, and Greece!

But don't despair if you're in the middle of the country. Any location that's electrically quiet and has room for high-performance antennas will let you hear DX you can only dream about at your home listening post. DXpeditioners using Beverage antennas in places like Oklahoma and Nebraska have managed to snag AM broadcast band signals from both Europe and Asia during the same DXpedition, a feat not duplicated so far by DXpeditions on the Atlantic and Pacific coasts.

If you're a scanner listener tuning the frequencies above 30 MHz, your DXpedition site requirements are different and simpler—just get as high up as you can! Hilltops and mountaintops are ideal locations, since the reception above 30 MHz is largely "line of sight" and the greater your elevation the more stations you can "see." I'm lucky in that southern California has numerous mountains over 10,000 feet in height whose summits can be reached by hiking trails, which lets me pack along some radio equipment. To spend a couple of hours atop a peak and be able to hear FM and scanner stations from the San Fran-

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

Super Active Antenna

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

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

Receives strong, clear signals from all over the world. 20dB attenuator, gain control, ON LED. Switch two receivers and aux. or active antenna.

6x3x5 in. remote has 54 inch whip, 50 ft. coax.

3x2x4 in. 12 VDC or 110 VAC with

\$129.95 MFJ-1024 MFJ-1312, \$12.95.

Indoor Active Antenna

MFJ-1020A **\$79.95**

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

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

Compact Active Antenna

MFJ-1022 **\$39.95**

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

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

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

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

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

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

Printer Monitors 24 Hours a Day

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

Printer cable, MFJ-5412, \$9.95.

MFJ MessageSaver™

You can save several pages of text in 8K of memory for re-reading or later review using MFJ's exclusive MessageSaver™.

High Performance Demodulator

MFJ's high performance phaselock loop demodulator consistently gives you solid copy --

even with weak signals buried in noise.

Easy to use, tune and read

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

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

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

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

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

No Matter What Guarantee

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

Try it for 30 Days

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

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

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

MFJ Antenna Matcher

MFJ-959B **\$89.95**



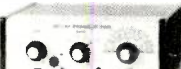
Matches your antenna to your receiver so you get maximum signal and minimum loss.

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

Pushbuttons let you select 2 antennas and 2 receivers. Cover 1.6-30 MHz. 9x2x6 inches. Use 9-18 VDC or 110 VAC with MFJ-1312, \$12.95.

High-Gain Preselector

MFJ-1045B **\$69.95**



High-gain, high-Q receiver preselector covers 1.8-54 MHz. Boost weak signals 10 times with low noise dual gate MOSFET. Reject out-of-band signals and images with high-Q tuned circuits. Pushbuttons let you select 2 antennas and 2 receivers. Dual coax and phono connectors. Use 9-18VDC or 110 VAC with MFJ-1312, \$12.95.

Dual Tunable Audio Filter

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

MFJ-752C **\$99.95**

How to build MFJ-38 **\$16.95**

Easy Up Antennas Book

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

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

MFJ-1214PC **\$149.95**



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

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

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

Super Hi-Q Loop™ Antenna

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

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

High-Q Passive Preselector

MFJ-956 **\$39.95**



The MFJ-956 is a high-Q passive LC preselector that lets you boost your favorite stations while rejecting images, intermod and other phantom signals. Covers 1.5-30 MHz. Has preselector bypass, receiver ground position. 2x3x4 in.

Mobile Scanner Ant.

Cellular MFJ-1824BB/BM look-a-like. Covers 25-1300 MHz. Highest gain on 406-512 and 108-174 MHz, 19 in. Magnet mount. MFJ-1824BB has BNC/UHF plug; MFJ-1824BM has Motorola plug. **\$19.95**

MFJ 12/24 Hour LCD Clocks



MFJ-107B **\$9.95**



MFJ-108B **\$19.95**

MFJ-105B **\$19.95**

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

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

MFJ Antenna Switches



MFJ-1704 **\$59.95**



MFJ-1702B **\$21.95**

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

World Band Radio Kit

MFJ-8100K **\$59.95**

MFJ-8100W **\$79.95**

MFJ-8100W **\$79.95**

Build this regenerative shortwave receiver kit and listen to shortwave signals from all over the world with just a 10 foot wire antenna.

Has RF stage, vernier reduction drive, smooth regeneration, five bands.

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POP'COMM'S World Band Tuning Tips

July—1994

Freq.	Station/Country	UTC	Notes	Freq.	Station/Country	UTC	Notes
2390	R. Huayacocotla, Mexico	1100	SS	6117	La Voz del Llano, Colombia	0900	
3200	TWR, Swaziland	0300		6120	R. Japan via Canada	1100	
3230	R. Oranje, S. Africa	0230	Afk.	6130	CHNX, Halifax, Canada	0500	
3235	R. West New Britain, P. New Guinea	1100		6135	Swiss Radio Int'l	0230	
3250	R. Luz y Vida, Honduras	0200	SS	6155	R. Fides, Bolivia	1030	SS
3270	Namibia Bc Corp.	2345		6165	R. Netherlands via Bonaire	0400	
3270	Ondas del Oriente, Ecuador	1015	SS	6175	Faro del Caribe/TIFC, Costa Rica	1000	SS
3290	Namibian Broadcasting Corp.	0400		6185	R. Educacion, Mexico	0600	SS
3300	R. Cultural, Guatemala	0300		6190	R. Yugoslavia	0200	
3315	R. Manus, P. New Guinea	1130		6205	HCJB, Ecuador	0300	
3320	Radio 2000, S. Africa	0100		6245	Vatican Radio	0640	
3335	TWR, Swaziland	0330	PP	6250	R. Nacional, Eq. Guinea	0500	SS
3362	LV de Nahuala, Guatemala	1045	SS	6576	R. Pyongyang, N. Korea	1130	
3370	R. Tezulutlan, Guatemala	1100	SS	6790	CPBS, Beijing, China	1100	CC
3375	R. Nacional, Sao Gabriel	1000	PP	6890	R. Bosnia Hercegovina	0030	
3380	R. Chortis, Guatemala	1130	SS	7020	V of Broad Masses, Eritrea	0400	Amharic
3385	Educadora Rural, Brazil	0930	PP	7125	R. Russia	0200	RR
3945	Vatican Radio	0600		7125	Cyprus Bc. Corp (wknds)	2230	Greek
4040	R. Mayak, via Armenia	0330	RR	7150	Capital Radio, S. Africa	0330	
4419	R. Frecuencia Lider, Peru	0400	SS	7160	R. Qatar	2100	AA
4550	R. Tropico, Bolivia	1000	SS	7180	AWR, Slovakia	0659	s/on
4712	R. Abora, Bolivia	0300	SS	7195	R. Ukraine Int'l	2245	
4735	Xinjiang PBS, China	1130	CC	7200	Rep. of Sudan Radio	0300	AA
4754	Rdf. Maranhao, Brazil	0000	PP	7250	Vatican Radio	0600	
4760	Yunan PBS, China	1100	CC	7255	V of Nigeria	0500	
4760	ELWA, Liberia	0555	s/on	7265	Sudwestfunk, Germany	2200	GG
4765	RTVC, Congo	0355	s/on, FF	7270	AWR, Solvokia	0230	Hindi
4770	R. Nigeria, Kaduna	0500		7280	VOA, botswana	0300	
4775	R. Tarma, Peru	0958	s/on, SS	7295	RTV Malaysia	1030	
4780	Onda Musical, Dominican Rep.	0200	SS	7335	R. Moscow	0300	
4784	Rdf Malienne, Mali	0500	FF	7345	Czech Rep. Radio	0700	
4800	R. Lesotho	0400		7365	KNLS, Alaska	0830	
4805	Rdf. Amazonas, Brazil	0030	PP	7375	RFPI, Costa Rica	0300	
4810	Afrikaans Stereo, S. Africa	2200	Afk	7455	R. Bulgaria	2300	
4825	R. Mam, Guatemala	1130	SS	7475	RTT Tunisienne, Tunisia	0500	AA
4835	RTV Malienne, Mali	0600	FF	9165	R. Omdurman, Sudan	0255	sign on, AA
4845	R. Mauritania	0600	FF	9375	RFPI, Costa Rica	24hrs	USB
4865	LV del Cinaruco, Colombia	0200	SS	9405	R. Prague, Czech Rep.	0000	
4875	R. Roraima, Brazil	0200	PP	9420	Voice of Greece	0130	GG/EE
4885	Ondas del Meta, Colombia	0200	SS	9435	Kol Israel	0500	
4895	LV del Rio Aruca, Colombia	0130	SS	9445	Voice of Turkey	2330	TT
4895	R. IBP, Brazil	0600	PP	9475	R. Cairo, Egypt	0200	
4900	RTV Guineenne, Guinea	0600	FF	9480	TWR, Monaco	0730	
4910	Zambia Broadcasting Corp.	0345	lang.	9495	Radio France Int'l	2030	FF
4915	GBC, Ghana	0600		9505	R. Record, Brazil	2300	PP
4920	R. Quito, Ecuador	0300	SS	9510	R. Romania Int'l	0200	
4935	R. Tropical, Peru	0930	SS	9510	R. Tashkent, Uzbekistan	1200	
4950	R. Bahai, Ecuador	0930	vern	9530	R. Ssingapore Int'l	1100	
4975	Ondas del Ortegaza, Colombia	1000	SS	9535	R. Japan	1400	
4990	R. Apinte, Surinam	0200		9540	R. Nacional Espana, Spain	0100	
5020	Solomon Is. Bc Corp.	0700		9560	V of Ethiopia	1400	AA
5020	ORTN, Niger	0530	FF	9560	R. Jordan	1500	
5025	R. Transamazonica, Brazil	0930	PP	9570	R. Portugal	0230	
5030	Bhutan Broadcasting Service	1200		9570	R. Romania Int'l	0230	
5035	R. Aparacida, Brazil	0800	PP	9575	Radio Medi Un, Morocco	0730	FF
5045	R. Cultura do Para, Brazil	0200	PP	9580	R. Tirana, Albania	0230	
5047	RTV Togolaise	0524	s/on, FF	9580	Africa No. One, Gabon	2200	FF
5055	TIFC, Costa Rica	0400	SS	9605	V of UAE, Abu Dhabi	2200	
5060	R. Nac. Progreso, Ecuador	0300	SS	9610	Broad. Corp. of Taiwan	1000	CC
5075	Caracol, Colombia	0100	SS	9625	CBC No. Quebec Service	1600	
5700	R. San Ignacio, Peru	0130	SS	9630	Spanish Nt'l Radio via Costa Rica	0200	SS
5895	Croatian Radio	0800		9635	R. Portugal	0230	
5900	R. Vlaanderen Int'l, Belgium	0000		9640	Ecos del Torbes, Venezuela	1100	SS
5900	Kol Israel	0445	AA	9645	R. Bandeirantes, Brazil	0000	PP
5960	R. Japan via Canada	0300		9650	Swiss Radio Int'l	0000	
5985	R. Moscow	0000		9650	Channel Africa, S. Africa	0400	PP
6010	R. Havana Cuba	0330		9655	R. New Zealand Int'l	1300	
6015	R. Austria Int'l, via Canada	0530		9675	NBC, Papua New Guinea	1200	
6020	R. Australia	1200		9675	R. Japan via Fr. Guiana	0830	
6050	HCJB, Ecuador	0700	PP	9685	R. Ukraine Int'l	2300	Ukrainian
6055	R. Prague, Czech Rep.	0700		9690	China Radio Int'l, via Spain	0300	
6060	R. Nacional, Argentina	0500	SS	9695	R. Sweden	0200	
6060	RAI/Radio Uno, Sicily	0530	II	9700	R. New Zealand Int'l	0800	
6095	Vatican Radio	0250		9720	Radio Nacional, Angola	0500	PP
6100	Deutsche Welle, Germany	0400	GG	9725	RAI, Italy	0100	
6105	R. Universidad de Costa Rica	0300	SS	9730	Channel Africa, S. Africa	0300	

Freq.	Station/Country	UTC	Notes	Freq.	Station/Country	UTC	Notes
9745	HCJB, Ecuador	0730		13720	AWR, Guam	1600	non-EE
9750	R. Korea, S. Korea	1200		13730	R. Austria Int'l	1130	
9755	Radio Canada Int'l	0000		13750	AWR Latin America, Costa Rica	1200	s/on
9760	R. Tirana, Albania	0330	Alb.	13750	Reshet Bet, Israel	1415	Yiddish
9765	V of Mediterranean, Malta	0630		13785	R. Pyongyang, N. Korea	1500	
9770	R. Australia	1500		13835	INBS, Iceland	1230	Icelandic
9779	Rep. of Yemen Radio	2100	AA	13830	Croatian Radio	1800	
9780	China Radio Int'l, via Mali	0300		15050V	R. Patria Libre, clandestine	2130	SS, irr.
9810	R. France Int'l	1200		15090	Vatican Radio	2245	s/on
9815	Radio Havana Cuba	0200	USB	15095	FEBC, Philippines	1130	VV
9825	R. Kiribati	0555	s/on	15100	FEBC, Philippines	1400	EE & others
9830	R. Jordan	1900	AA	15115	Radio New Zealand Int'l	0400	
9840	R. Kuwait	2100	AA	15130	R. Pyongyang, N. Korea	0000	
9845	R. Netherlands via Kazakhstan	0100		15165	R. Havana Cuba	2145	
9880	R. Galaxy, Russia	2200		15168	R. Tahiti	0300	FF/TT
9880	R. Austria Int'l	0130		15175	FEBA, Seychelles	1100	AA
9900	R. Cairo, Egypt	2230		15185	R. Finland Int'l	2300	
9930	KWHR, Hawaii	1200		15195	R. Ukraine	0030	
9955	WRMI, Miami	due on		15205	R. Algiers, Algeria	1600	
9965	R. Caiman, anti-Cuba	0200	SS	15235	V of Great Homeland, Libya	2000	AA
9990	R. Cairo, Egypt	1800	AA	15240	Channel Africa	1600	
10059	V of Vietnam	1200	VV	15240	R. Sweden	0330	
11402	INBS, Iceland	2300	Icelandic	15260	VOIRI, Iran	0030	
11430	R. Uno relay, Canary Islands	2100	SS (USB)	15270	HCJB, Ecuador	1930	
11550	RTV Tunisienne, Tunisia	1600	AA	15305	UAE Radio, Abu Dhabi	2340	
11570	R. Pakistan	1600		15315	R. Canada Int'l	1430	
11610	AWR, Slovakia	1700		15325	R. Japan via Fr. Guiana	0300	
11620	All India Radio	2000		15340	Rdf. Rwandaise, Rwanda	2000	FF
11625	Vatican Radio	0630		15345	RTV Marocaine, Morocco	1800	AA
11645	Voice of Greece	1600	Greek	15345	RAE, Argentina	0200	SS
11650	FEBC, Philippines	2300		15350	R. Luxembourg	1800	GG
11660	Radio Australia	1500		15395	UAE Radio, Dubai	1330	AA
11665	R. Netherlands, Madagascar	0030		15400	R. Finland Int'l	1330	
11675	Kol Israel	2230		15410	VOA, Morocco relay	2200	s/off
11680	China Radio Int'l via Fr. Guiana	0400		15420	R. Tashkent, Uzbekistan	1200	
11690	FEBC, Philippines	1200	VV	15425	SLBC, Sri Lanka	1500	
11710	UAE Radio, Abu Dhabi	2330	AA	15445	Radiobras, Brazil	1245	EE
11710	RAE, Argentina	0200		15445	R. France Int'l	2300	FF
11725	R. Korea, S. Korea	1000	SS	15475	Africa Number One, Gabon	2100	FF
11730	BSKSA, Saudi Arabia	2230	AA	15505	Swiss Radio Int'l	1500	
11750	Channel Africa, S. Africa	0500	PP	15515	R. Portugal	1900	
11755	R. Finland Int'l	0130		15520	R. Bangladesh	1330	
11780	BSKSA, Saudi Arabia	1730	AA	15565	R. Australia	1200	
11785	Rdf. Nacional, Colombia	1900	SS	15575	R. Korea, S. Korea	0030	
11790	V of UAE, Abu Dhabi	2000	AA	15630	R. Australia	1200	
11800	SLBC, Sri Lanka	1200		15640	Kol Israel	1400	
11800	RAI, Italy	0100		15650	Voice of Greece	1830	
11805	KTWR, Guam	0930		15675	R. Copan Int'l, Honduras	2300	SS
11815	Spanish Ntl Radio via Costa Rica	0100	SS	15770	ISBS, Iceland	1230	Icelandic
11820	BBC Relay, Hong Kong	1400		15815	WINB, Pennsylvania	2000	
11825	R. Tirana, Albania	2200		17490	HCJB, Ecuador	1000	
11827	R. Tahiti	0300	FF/TT	17500	RTV Tunisienne, Tunisia	1330	AA
11835	HCJB, Ecuador	0700		17535	V of Greece	1430	GG/EE
11840	R. Japan	1100	JJ	17590	R. Finland	1430	
11850	R. Denmark via Norway	1530	DD	17595	R. Cairo, Egypt	1200	
11865	R. Norway Int'l	0300		17620	R. France Int'l	1600	
11870	AWR, Costa Rica	1400		17630	Africa No. One, Gabon	1430	FF
11880	R. Galaxy, Russia	2100		17670	Swiss Radio Int'l	1500	
11885	UAE Radio, Abu Dhabi	2330		17690	R. Ukraine Int'l	0100	
11890	R. Oman	2100	AA	17705	R. Havana Cuba	2130	SS
11895	Voice of Turkey	2300		17730	Swiss R. Int'l, via Brazil	0000	
11910	R. Sweden	2230		17740	R. Finland Int'l	1430	
11925	R. Norway Int'l	2200		17745	R. Algiers, Algeria	1930	
11945	R. Canada Int'l	2100		17750	Voice of Free China, Taiwan	2200	via WYFR
11950	Kazakh Radio	0000		17760	R. Havana Cuba	2130	
11975	R. France Int'l	1600		17775	R. Romania Int'l	1300	
11985	UAE Radio, Dubai	2100	AA	17790	HCJB, Ecuador	2130	
11990	R. Kuwait	1500	AA	17805	R. Romania Int'l	1730	
12005	RTT Tunisia	1400	AA	17810	R. Japan	2300	
12035	Swiss Radio Int'l via Gabon	2000		17820	R. Canada Int'l	1300	
12050	R. Cairo, Egypt	0300	AA	17845	Spanish Foreign Radio	1500	SS
12085	R. Damascus, Syria	2030		17870	R. Sweden	1500	
12160	WWCR, Tennessee	2300		17875	R. Canada Int'l	2030	
13590	R. Pakistan	1600		17880	R. Finland Int'l	1300	
13605	Capitol Radio via UAE, Abu Dhabi	2230		17890	Spanish National R. via Costa Rica	2130	SS
13615	R. Bangladesh	1230		17900	R. Portugal	2000	PP
13620	R. Kuwait	2000		21455	HCJB, Ecuador	1330	
13625	KWHR, Hawaii	1800		21515	R. Portugal	1500	PP
13635	Swiss Radio Int'l	1700		21550	R. Finland Int'l	1430	
13650	R. Pyongyang, N. Korea	2300		21590	R. Netherlands, Bonaire	1800	
13660	R. Havana Cuba	0200	USB, EE	21605	R. Yugoslavia	1230	
13675	UAE Radio, Dubai	1630		21625	Radio Sweden	1330	
13680	Deutsche Welle, Germany	1600		21810	R. Vlanderen Int'l, Belgium	1330	Flemish
13690	R. Canada Int'l	2200					

CONFIRMING QSO WITH: **AA6FW**

DATE	TIME	MHZ	TWO WAY	RS (T)
29.10.88	17.48	28	SSB	5/9

OUR GRATITUDE AND ACKNOWLEDGMENT EXTENDS TO THE FOLLOWING FOR ASSISTANCE RECEIVED WITHOUT WHICH THE EXPEDITION WOULD NOT HAVE BEEN SUCCESSFUL:

INEPAR S/A, TRIEX ELETRÔNICA, NUTRIMENTAL S/A, VARIG S/A, DENTEL, NATAL DX GROUP, CATRE AND PY0FG VASCO.

TKS QSL

73, CUAGN

OPR

FERNANDO DE NORONHA ISLAND DX - PEDICTION

The ecological reservation of FERNANDO DE NORONHA Island being the largest of an archipelago of 21 Islands is located just south of Equator line and lies in the South Atlantic Ocean. Its geographical co ordinates are 3° 50' 27" S and 32° 24' 52" W.

This island has a total area of 16,9 km² and was discovered by the portuguese FERNANDO DE NORONHA in the year 1503. FERNANDO DE NORONHA with its forests, high plains, bays and beaches is extremely beautiful, being encircled by emerald coloured crystal clear waters.

This DX-Pedition was carried out by the ARAUCARIA DX GROUP from the state of PARANA, BRAZIL using the special callign ZX0F. A total number of 14,244 QSO's were made operating all bands from 1.8MHz to 50MHz in the period October 26th till November 1st 1988, including the QOYW CONTEST.

VY 73' ZX0F OPERATORS (PY5EG, PY5CA, PY5ZBA, PY5ZBU, PY5ALP, PY5TT). PY5VM

that means that the receiver needs to be battery-powered, and that in turn means you want a receiver that's stingy on how much current it uses from a battery.

The exact power consumption of a receiver at 12 volts DC can be determined from its manual or by calling the manufacturer. However, there are some receiver features which you should look out for. For example, those fluorescent tube or LED digital readouts are easier to read than most LCD types, but they also "eat" a lot more current. A receiver with a lot of illuminated meters and controls will also drain a lot of current. Some receivers let you shut off unwanted panel lights and displays, thus saving current.

Some smaller portable receivers will have room for internal batteries (such as "D" cells). With such receivers, a couple of sets of spare batteries should be enough to keep you listening throughout a weekend DXpedition. For larger communications receivers, a good option is a rechargeable "marine" battery such as that used by weekend boaters to start their engines or power shipboard electronics equipment. Marine batteries are sealed (you don't have to worry about spillage) and are usually lighter and more compact than auto batteries, making them a good choice for DXpedition use.

Another big temptation on a DXpedition is to get overly elaborate with antennas. A good, effective antenna is not the same thing as an elaborate antenna. A

cisco Bay area out to Phoenix and Las Vegas is a real treat! (If you have a ham radio license, a two-meter handie-talkie will let you communicate over a similar area using only a couple of watts!)

Receivers And Antennas

It's a big temptation to pack along a super-receiver for a DXpedition, and a deluxe kilobuck receiver surely helps you take ad-

vantage of the better locations and antennas. However, other considerations—especially power consumption—must be kept in mind in addition to raw performance.

To keep electric noise to a minimum, a good DXpedition site should be as far away from all AC power lines, outlets, and devices as possible. A location at least a mile or so away from the nearest high voltage line, like a campsite in the middle of the woods or desert, would be ideal. However,

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Actual size
(2-9/16 X 5-6/32 X 1-3/8)

CIRCLE 67 ON READER SERVICE CARD



TO RADIO: AA 6FW

DATE	GMT	RST	MHZ	2X
7 Nov-88	0341	59	14	SSB



73!

Vili de Peter

The last but not the least stop in our 1988 Pacific-pedition was Niue Island, ZK2. Although the nice weather tempted us just to relax by the pool bar we were forced to satisfy the endless pile-ups from all over the world, specially on low-bands.

We made over 10000 qso's signing ZK2RY, Peter on SSB, and ZK2AA Vili on CW.

OH2BAZ (also OH0BA) OH1RY (also OH1J)
 Vilho Flink Pekka Kolehmainen
 Kuikunläänintie Box 29
 SF-02980 Espoo SF-21531 Paimio
 FINLAND FINLAND

CHRISTMAS ISLAND, REPUBLIC OF KIRIBITI



DX-PEDITION

ZONE 31
 GRID BJ11
 4600 QSO'S
 116 COUNTRIES
 QSL via N6CW

T32JA

OPERATOR: JOHN ACKLEY, KP2A

CONFIRMING QSO WITH	DAY	MONTH	YEAR
AA6FW	14	MAY	1988

UTC	MHZ	RST	2-WAY
0128	14.2	59	SSB

Rig: Kenwood TS440 Ant: Cushcraft A3, Butternut HF6V

good DXpedition antenna should be easy to transport, set up, and take down. Unless you're going to be at the DXpedition site for a while (like over a week), it's usually not worth the time and trouble to erect something like a rhombic or quarter-wave vertical. Perhaps the most common antenna for SWL DXpeditions is a simple long-wire. A 300 or 400 foot longwire, fed to your receiver through an antenna tuner, can provide remarkable reception in an electrically quiet area. Half-wave dipoles are also popular for DXpeditions; if you've never used a half-wave dipole on frequencies below 5 MHz, you will be surprised at the DX you can hear on one. It's best to use wire with plastic or fabric insulation for DXpedition antennas, since it is less prone to kinks and snags than bare copper or aluminum wire. Some experienced "DXpeditioners" store their antenna wire on "garden wheel" devices like those used to store garden hoses or rope. These devices resemble large fishing reels, complete with a crank, and let you unreel and reel in antenna wire. A good book on receiving antennas will have plenty of ideas for you to try.

While it's generally true that any antenna works better the higher it is in the air,

most can still function well (especially for reception) at lower elevations above ground. Trees are the most convenient supports, if they're available; otherwise, use telescoping or "shock corded" poles like those used with tents. These are made of aluminum and are available from camping supply stores.

Some antennas don't even need to be in the air at all! For example, the Beverage antenna works about as well when it's laying on the ground as it does when it's elevated into the air. The most important element to any Beverage antenna is that the wire be placed in as straight as line as possible, and it's often easier to do this with the wire on the ground instead of in the air.

Other Stuff

It's a good idea to carry along spare fuses, simple tools (screwdrivers, pliers, etc.), and a copy of your receiver's manual with you. A DXpedition site in the middle of nowhere is the wrong place to be caught without those items! Remember to also carry along frequency guides and directories, logbooks, tape recorders, and other materials to let you identify and "preserve"

the DX you hear. The tape recorder is especially valuable; your DX buddies might not believe what you heard without some proof! The other things you will need will be the usual items you'd pack along on a camping trip, like lights, sleeping bags, tents, food, water, etc.

It's important to do some advance scouting to find a good location. Besides electrical quiet and room for antennas, you also need a location where kids won't be yanking down your antennas. You may also need to get camping and use permits if your site is on public land. Some of the most successful DXpeditions have been held on private land, like a farm. Of course, you have to get permission before using any private land. If you don't know the owner well, it sometimes helps to explain that you want to conduct "radio reception experiments" using highly advanced antenna systems and equipment. Stress no transmitting will take place (RF energy has become the new terror du jour for America's growing army of scientific illiterates).

When the DXpedition is underway, remember to respect the rights of others nearby. Use headphones (especially if you're DXing in the wee hours) and keep other noise and activity to an absolute minimum. And be sure to clean up your DXpedition site afterwards!

So if DXing from your home location is getting a bit dull, start looking around for somewhere to conduct a DXpedition to!

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CIRCLE 11 ON READER SERVICE CARD

PIRATES DEN

BY EDWARD TEACH

FOCUS ON FREE RADIO BROADCASTING

The shortwave "news wires" are still heavy with stories about the radio ship *Fury* and the broadcast transmissions which (according to the FCC) supposedly came from its shipboard transmitter, resulting in an FCC raid, backed by federal marshals and the US Coast Guard. All of the ship's radio equipment was confiscated, scuttling at least for now, any plans to turn it into a floating broadcast platform for the pitchings of Brother Stair. The ship would have operated from Belize waters once it had become fully operational. The details appeared in our June issue, so I won't go into any further detail here.

Radio Doomsday was logged by Mick Sanger in Texas on 7405 from 2324 tune in. It had dedications to the *Voyager* pirate, greetings in Spanish to the sideband operators who "hang around" the pirate bands, poetry read by "Red Green" and an ID with mention of the Wellsville address (P.O. Box 452, Wellsville, NY 14895). The announcer referred to himself as "Nemesis" and also played patriotic music. The broadcast ended at 2351. Scott Gentry had this one at his Illinois location at 2322 with a commentary about the crowded 41 meter "frontier" given over Star Trek music and suggested various new frequencies to try, including 13900 and the range from 21450 to 21500. Chris London in Minnesota recently received a QSL from this station and I'm picturing it this month.

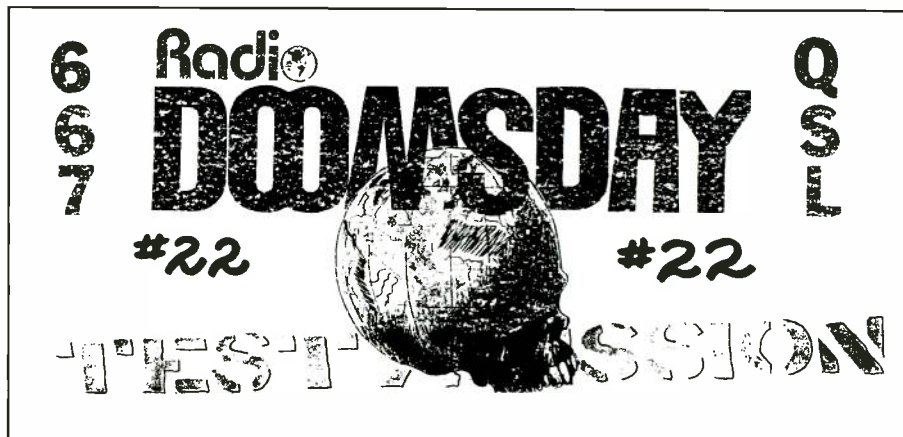
George Roberts had Radio Airplane on 7465 at 0340-0352 closing, with a "Taco Bell Documentary" (whatever that might be), and Captain Eddy claiming to be broadcasting "from the free skies over North America." Also heard on another occasion "broadcasting from a Piper Cub aircraft," and announcing the Wellsville address for reception reports.

George had Radio Cyclops on 7425 plus a fraction, with "Null and Void" and identification as "the senseless edition of Radio Cyclops." Also satires on Jesse Helms, Hillary Clinton, Tipper Gore and one or two others. Mike and Mel as hosts.

Scott Gentry reports Solid Rock Radio on 7415 upper sideband at 2357 to 0011 with Dr. Love giving news of pirate radio station activity and the Wellsville address. Love said he's QSL this broadcast and that he had plenty of QSLs "to get rid of."

Scott also had Radio Earth on 7412 USB at 0020 to 0024 giving an address of Box 321, Chicago, Illinois (zip code not copied). I presume this has no connection with the Radio Earth program which was produced in the Chicago area and aired on WRNO for some years.

Mark Hauer of Indiana heard Wire Line Radio on 7416 from around 2315 to sign off at 2330. The program contained ref-



Radio Doomsday's QSL, courtesy of Chris London, Minnesota.



A QSL from Radio Satellite on 7423, courtesy of Fahen Serve in France.

erences to Radio New York International and a rap song, followed by a commentary on pirate radio. They gave the address P.O. Box 109, Blue Ridge Summit, PA 17214 for reception reports.

Jack Sheldon in Michigan had something called Radio After Dark on 7415 upper sideband at 1439 with a humorous discussion. Missed the announced address.

Sheldon also heard Hit Parade Radio on 7412 LSB at 2235 playing rock music requests and dedications. They mentioned the Wellsville mail address.

Gentry had WPIG on 7415 USB at 0008 to 0044 with "Pig Radio" IDs, mention of the Wellsville address, and the host singing a song called "Bunnymobile" and announcing not only his home phone number, but his home address as well! (If he's gonna do that why does he mess around with a mail drop, I wonder?)

Roberts had Altered States Radio on 7413 at 2230 with a wide variety of music, from hard rock to the Outer Limits theme. Stuff by Dylan, Black Sabbath, the Animals. ID as "This is Altered States Radio." Their mail drop was given as P.O. Box 293, Merlin, Ontario N0P 1W0, Canada.

Radio Free Euphoria was logged by Roberts in Pennsylvania on 7465USB at 0230 with Captain Ganja and Maharishi Hashishi Ali Ganja. Pushing the use of pot, Grateful Dead music, Wings, the Who and others, with various skits. Says they're broadcasting from the "Temple of the Expanded Mind" and give out the Wellsville address.

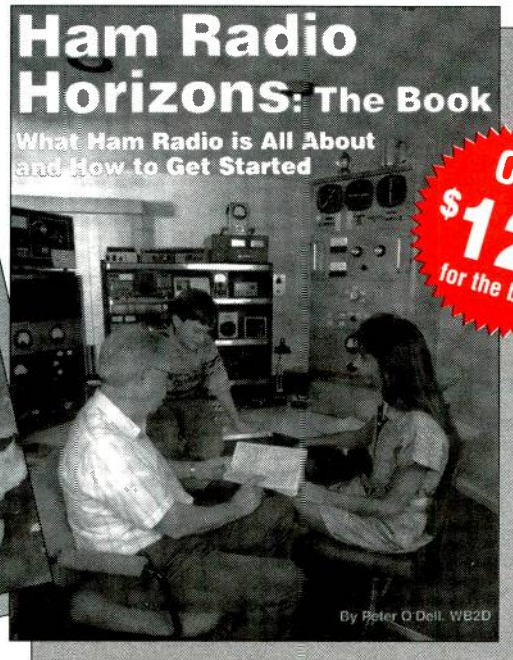
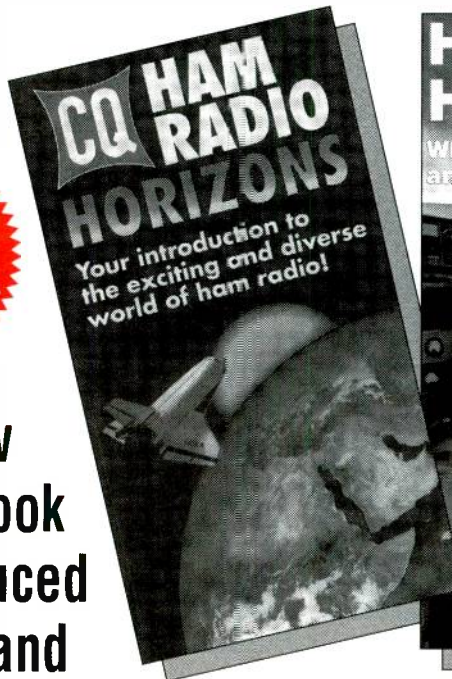
That's all for this time. We need and appreciate your log reports so please keep sending them in as regularly as you can. I also need copies of pirate QSLs, station photos and so on. Let's hear from you soon and often. ■



PRESENTS

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27 MHz COMMUNICATIONS ACTIVITIES

Uniden America introduced their Pro-340XL portable handheld CB just recently. This is a full-power unit that operates from internal rechargeable batteries, and can also be powered from any vehicle's cigarette lighter.

Channel selection is by means of up/down electronic pushbuttons. A low-power transmit button is provided as a battery-saver for short-distance communications. Comes with a rubber duckie antenna that connects through a BNC.

The Pro-340XL seems well suited to summertime CB'ing. Look for it at dealers carrying Uniden CB products.

New Sky Hook

Telex Communications, Inc., has a fine track record in the area of military antennas. They tell this column that their top loaded AT-2740/TRC Tank Antenna is practically identical in all important ways to the antenna they have manufactured for the last 20 years for US Army use on tanks. This special version is now available to civilian communicators.

The AT-2740/TRC, like the military version, is ruggedly constructed and can handle 100 watts. It features an exclusive silver braid radiating element. The mobile antenna looks as impressive as it is durable, with its military green design, military hardware, and distinctive teardrop tip. This special AT-2740/TRC version is cut for 27 MHz, and features a 3/8 inch-24 heavy duty threaded base that fits standard antenna mounts. It can also be used with AM and SSB CB radios.



Uniden's Pro-340XL is a versatile CB handheld.

For more information on the AT-2740/TRC, contact: Telex Communications, Inc., 9000 Aldrich Ave South, Minneapolis, MN 55420, or circle 105 on our Readers' Service.

From The Mail Sack

Doug, of Salem, Oregon, lets us know of an apparent pirate broadcaster operating in his area using Channel 10-LSB. This station mostly operates Sunday nights after

7 p.m. local time, offering no ID. Transmissions consist of the operator pouring out rage, often related to political matters. Sometimes he can rattle on for 90 minutes without a pause, and not make any sense. He doesn't take contacts when he's finished.

Crackpot tirade broadcasters aren't anything new on CB. Give some people a mic and they become ratchet jaws. The truth is that Rush Limbaugh got started with a CB radio. If the right agent hears this Salem guy, he could easily become the next late night network megabuck talk-show host.

Doug also writes to say that he and five friends want to get together to study to get ham tickets. They all live within a three mile radius. The question is whether there is a way they could legally CW for this.

Doug's letter didn't go into details on how this was to be done. In any case, CB isn't a CW service so the FCC would find such transmissions to be unauthorized. Perhaps Doug meant keying up the mic and then sending code via AM using a code practice oscillator. I don't know whether that's legal. I would venture a guess that it would definitely be annoying to other operators. There must certainly be better and more effective ways for you and your friends to learn CW than any method connected with 27 MHz. Check with any ham club in the Salem area.

Looking For Help in All The Right Places

One of our readers came across a Robyn DG-3D CB radio. It's an old 23-channel radio, and appears to be in rather good con-



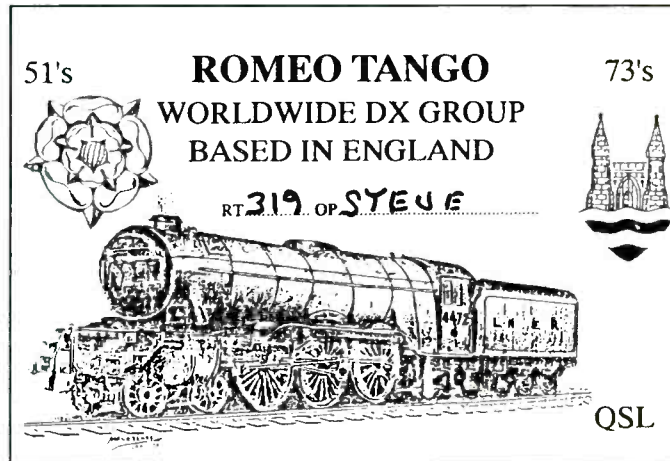
The Telex AT-2740/TRC Tank Antenna is the special 27 MHz civilian version of a military antenna designed for tanks.



Here's Chip, of New Jersey, who uses the CB handle, "The Judge." After he finishes engineering school, he's headed for law school.



This QSL's from 161-BM-104. That's Krzysztof, P.O. Box 9, C.P. 58-305, Watbrzych, Poland. (Courtesy, Brian, 33-AT-110, of Alaska.)



An attractive club QSL from Steve, RT-319, of New York State. Tells us he likes the entire magazine. Thanks, Steve!

dition for its age. What is needed is a copy of an owner's manual, schematic, or any other paperwork relating to this radio. If any reader can help, please contact George Crisafulli, P.O. Box 2563, Edison, NJ 08837.

Another reader recently acquired a Tram D-201 and hopes that someone can supply a schematic for this set. He tells us that the D-201 has one small circuit board that is blackened from something that obviously popped there. This board is marked "BA QC6 17016-1," and maybe it can be replaced. Does anybody know of sources for replacement boards for these radios? Can anybody fix it? Does anyone have a schematic? *Help!!* Contact: Kerry J. DeGrand, E5899 Fremont St., Algoma, WI 54201.

What a radio the Tram D-201 was! A

deluxe 40-channel AM/SSB base station that was one of the finest and most expensive pieces of equipment available during the late 1970's.

Just a reminder about the numerous 23-channel CB radios still in existence. These are quaint and historic mementos of a very distant era, harking back to the early days of 27 MHz CB service. As such, their technology is not only outdated, they no longer meet FCC standards. While it's fun to collect and restore the 23-channel CBs for the pride and pleasure of ownership they bring, keep in mind that they are relics. As such, we don't recommend their use as communications devices.

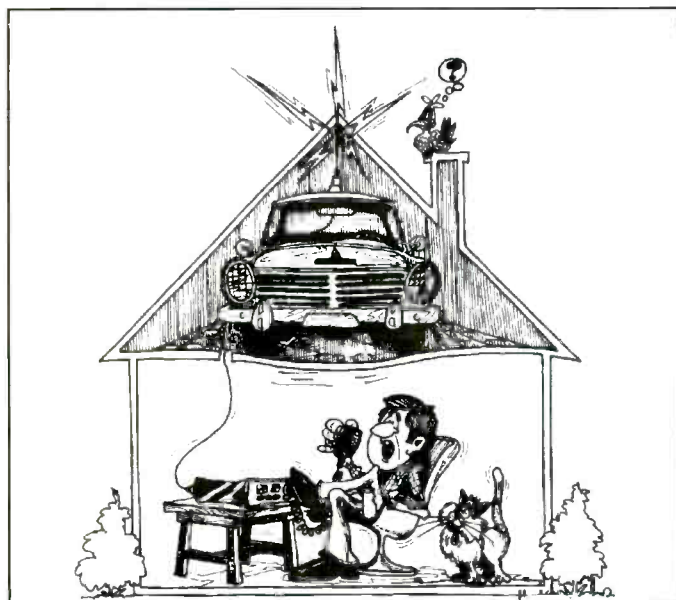
React to This

The 1994 REACT International Con-

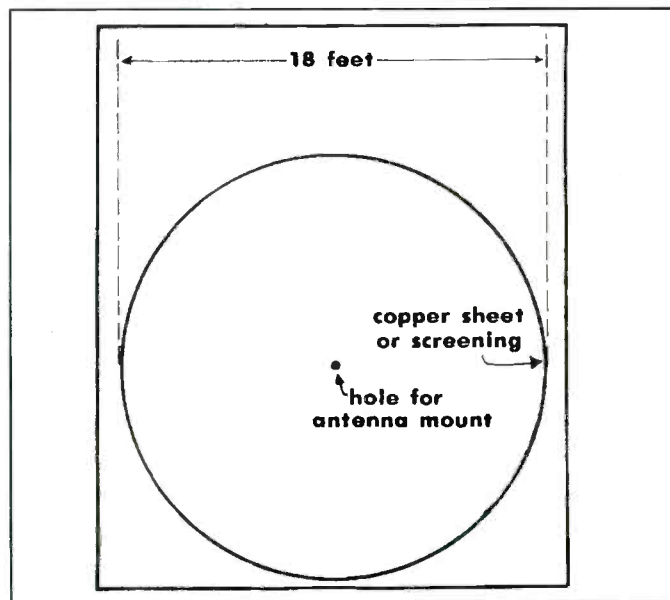
vention takes place from July 18th to 22nd at the Radisson Hotel Somerset, Somerset, New Jersey. This year it is hosted by the Garden State Council of REACT Teams. If you are a REACT member, or interested in learning more about REACT, or becoming a member, this sounds like something worth attending. Time for this is getting close. For registration information call Michelle Schendorf at (908) 738-4464.

Ye Olde Indoor Base Station Antenna

Many CB'ers complain that they can't get permission to put a CB antenna on the roof of a rented house. Or, they live in a community where outdoor antennas are prohibited. This doesn't mean that an oper-



A loaded mobile whip can be pressed into service as an attic-mounted base antenna...



Ground plane consisting of 18-ft. diameter copper sheet or screening.

AZ) 1557 with "Listener's Choice" program. (Flemmer, WA) 9830 at 2025 in AA. (Lamb, NY)

KUWAIT—Radio Kuwait, 9840 at 2021 in AA with middle eastern music. ID, phone interview. (Lamb, NY)

LESOTHO—Radio Lesotho, 4800 at 0403 with news in vernacular. (Fenwick, VA)

LITHUANIA—Radio Vilnius, 7150 at 0000 sign on. (Rocker, NY) Sign on with IS. ID, EE news. "Letterbox." This first half hour of EE is on Sunday/Monday UTC only. The rest of the week the first five minutes is in EE, the rest in Lithuanian. (Lamb, NY)

MEXICO—Radio Educacion, 6185, at 0569 with ID. address in EE. (Pellicciari, CT) 0713 in SS with jazz, ID and address in SS, then in EE. (Fenwick, VA) 0730 with SS songs. (Pappas, SD)

MOROCCO—RTV Morocco, 15345 at 0255 in AA with music. (Pellicciari, CT)

NETHERLANDS—Radio Netherlands, 13700 at 1519. (Fenwick, VA) 17605 at 1928. (Rocker, NY)

NETHERLANDS ANTILLES—Radio Netherlands relay, 6165 at 0347. (Fenwick, VA)

NEW ZEALAND—Radio New Zealand Int'l, 9700 at 0815 with music: 1005 with local news. (Fenwick, VA; Barton, FL)

NIGERIA—Radio Nigeria, Kaduna, 4770 at 0638 with children singing, church broadcast. (Fenwick, VA)

NORTH KOREA—Radio Pyongyang, 6576 at 1040 with news. Off at 1050. (Flemmer, WA) Here and parallel 9977 at 1110. (Low, TX) 11335//13760 at 0025. (Lamb, NY) 13650 at 2332. (Brockman, AK)

OMAN—BBC relay, 11740 at 0340. Call to

Prayer in Farsi. (Flemmer, WA)

PALAU—KHBN on 9830 with religion in CC. (Barton, AZ)

PARAGUAY—Radio Encarnacion, presumed, 11939 at 0209 in SS with gauch-style music, frequency, possible ID. (Lamb, NY)

PERU—Radio San Martin, 4810.2 in SS at 0408. (Low, TX)

Radio Eco, 5097.1 at 0400 with vocals, commercials, ID, time check, accordion, slogans. (Paszkievicz, WI)]

Radio Quillabamba, 5025 at 1023 with classical music, SS ID, mentions of Cusco, time check, talks, huaynos. (Paszkievicz, WI)

Radio Maranon, 4834.9 in SS at 1040 with time check, ID, "musica Andina", commercials, flutes. Lost to the Guatemalan, Radio Tezulutlan. (Paszkievicz, WI)

Radio Imagen, 4969.1 at 1125 in SS with ID, sound effects, time check. (Paszkievicz, WI)

Radio Atlantida, 4790 at 1032 in SS with rooster sounds, ID—"Usted escucha a Radio Atlantida" and music. (Fenwick, VA)

PHILIPPINES—Radio Pilipinas, 21580 at 0321. (Brockman, AK)

VOA relay, 6110 at 1730. (Flemmer, WA)

PORTUGAL—Radio Free Europe/Radio Liberty, 7220 at 2351 in RR with US pops. (Fenwick, VA)

Radio Portugal, 9570 at 0230 sign on. (Rocker, NY) 15200 in PP at 1730. (Fenwick, VA)

ROMANIA—Radio Romania Int'l, 17775 at 1330. (Rocker, NY)

RUSSIA—Radio Moscow, 7105//7260 at 1625

with radio drama and 7205 at 1433 with Russian by Radio. (Barton, AZ) 9620 with news at 2200. (Fenwick, VA) 11655//11675 at 1240. (Rocker, NY) 11675 at 2000. (Low, TX)

AWR-Russia, 7180 at 0700 with music. "Quiet Moment" program at 0730. (Miller, GA)

RWANDA—Radio Rwanda, 15340 at 1930 with news in FF, several mentions of Rwanda, tentative ID at 1948 and into African pops. (Miller, GA) 2058 with ID in EE, anthem and off. (Pellicciari, CT)

SAUDI ARABIA—BSKSA, 9555//9870 at 2002 in AA with world news, classical music, IDs. (Lamb, NY) 2010 in AA with news. (Pellicciari, CT)

SEYCHELLES—BBC relay, 11730 at 0245 with IS, ID, "Business English" program in EE and Swahili. (Kohl, IA)

SINGAPORE—Radio One, 6155 with news, weather, traffic report at 1600. Into music program and abruptly off at 1604. (Barton, AZ)

SOLOMON ISLANDS—SIBC, 9545 at 0800 with news and talk. (Woodard, CA)

SOUTH AFRICA—Channel Africa, 11900 at 0500. (King, PA)

Radio 2000, 4810 at 0115 with cricket match with coverage alternating in EE and Afrikaans. Also IDs and frequencies. (Lamb, NY)

SPAIN—Radio Exterior de Espana, 6130 at 2232 in SS with ID, interview, mentions of several Latin American countries. (Lamb, NY) 9535 at 2015 with "Musica del Matrimonio" and 15380 at 1730 with futbol. (Fenwick, VA)

SWAZILAND—Trans World Radio, 6120 at 0355 with 11 tone IS, vocal ID. Crushed by Radio Japan sign on via Canada at 0400. (Kohl, IA)

SWEDEN—Radio Sweden, 6195//9850 at 0330 with "Sounds Nordic." (Miller, GA) 0235 with "60 Degrees North." (Rocker, NY)

SWITZERLAND—Swiss Radio Int'l, 6135 at 0425. (King, PA) 13635 at 1701 with news. (Fenwick, VA) 15505 at 1320. (Rocker, NY)

TAHITI—Radio Tahiti, 11826.7 at 0620 in FF. (Barton, AZ)

THAILAND—VOA relay on 9680 in CC from 1635 to 1700 close with top 40 program. (Paszkievicz, WI)

TOGO—RTT Togolaise, 3222//5047 in FF at 0611. (Fenwick, VA) 5047 at 2050 in FF. (Pellicciari, CT)

TURKEY—Voice of Turkey, 9445 at 2200. (Rocker, NY)

UKRAINE—Radio Ukraine Int'l, 7195 at 0100 with news. (Fenwick, VA)

UNITED ARAB EMIRATES—UAE Radio, 9780 at 1600 with Holy Koran in AA. (Flemmer, WA)

VENEZUELA—YVTO time station, 5000 at 2340 with time pips and time in SS. (Fenwick, VA)

Ecos del Torbes, 4980 at 2344 in SS with sports news. (Fenwick, VA)

Radio Tachira, 4830 at 0239 in SS with slow music. (Fenwick, VA)

VIETNAM—Voice of Vietnam, 12020 at 2049 in EE and sign off at 20546. (Brockman, AK)

YEMEN—Republic of Yemen Radio, 9780 at 2130 in AA with phone calls. (Pellicciari, CT)

YUGOSLAVIA—Radio Yugoslavia, 6190 at 0205. (Rocker, NY)

That's it! Hoist your glass in a toast of thanks to the following who supplied the info this month:

Charles Fenwick, Chesepeake, VA; Jeff Woodard, Eureka, CA; Joseph Rampulla, Miami Beach, FL; Gerald R. Brockman, Kenai, AK; Marie Lamb, Brewerton, NY; Daryl E. Rocker, Herkimer, NY; Del Flemmer, Tacoma, WA; John Miller, Thomasville, GA; Ted Kohl, Cedar Rapids, IA; Brad Low, Jacksonville, TX; Rick Barton, Phoenix, AZ; David King, Jersey Shore, PA; Sheryl Paszkiewicz, Manitowoc, WI; Maria Pappas, Huron, SD and Steve Pellicciari, Norwalk, CT. Thanks to all of you.

Until next month—good listening!

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Medium Frequency H.F. Systems

There are hundreds of communications channels found in the high frequency spectrum from 3,000 kHz to 30,000 kHz (3 MHz-30 MHz). Emergency communication teams may have access to some of these frequencies as part of their community's civil defense network, U.S. Coast Guard, military affiliate radio service, FEMA, Civil Air Patrol, and other government agency channels. If multi-band operation is desired, many emergency teams have adopted high frequency 3 MHz-30 MHz automatic antenna couplers to track their operating requirements.

These automatic antenna couplers, sometimes called "ATU's," mount well away from the transceiver in the communications van or communications center, and are placed right at the antenna feedpoint.

The output of the ATU is where the actual radiating antenna begins! And it is at this point where many vehicle, marine, and building installations get into serious problems—"serious" because at this point there may be up to 10,000 volts at 3 or 4 amps that will literally arc-over through most common insulation.

Automatic antenna tuners are designed primarily for use with end-fed, unbalanced antennas, such as whips and long wires. When whips are used in connection with a remote-mounted automatic antenna tuner, a minimum of 3 inches of separation is required between the output of the antenna coupler and anything metal near it. The voltage and current on a relatively short whip between 2 MHz to 6 MHz may be so great that an arc-over will occur with anything less than 3 inches of air or solid insulating material.

"When we first started working with the remote-mounted ATU, everything worked great," comments Brian Foster, an emergency medical technician and emergency communicator for his local civil defense unit. "When we loaded up our relatively short helical-wound whip for CAP operation on 4 MHz, we began to smell hot rubber, and we could hear a distinctive arcing sound," adds Foster. Close inspection revealed the antenna coupler professionally mounted on the inside of the vehicle frame, and the high voltage antenna wire passing through a rubber boot leading to the external whip antenna assembly. Even though the rubber boot was over 2 inches in thickness, the 150-watt SSB transceiver set for continuous wave for tune-up was able to generate thousands of volts at 4 amps, which was plenty to arc-over the feed-through position. A major sized porcelain feed-through now prevents this from ever occurring.



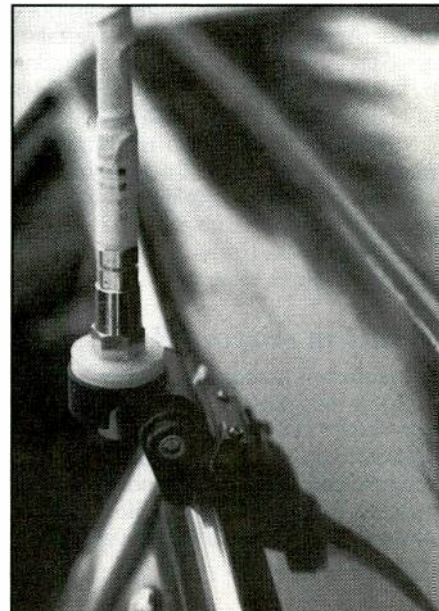
The large white insulator is necessary to prevent an arc-over at 2 MHz-6 MHz frequencies.



Here is where the ATU feeds through the high voltage R.F. output.

Running coaxial cable on the output of an ATU may also lead to arc-over and imminent fire danger. Coax cable presents 29 picofarads of capacitance, per foot, to ground. The close proximity of anything that is metal grounded to the output connector on a remote-mounted ATU will dramatically soak up the signal, and lead to poor transmission and reception. It could easily arc-over as well, creating a meltdown of the coax, or even worse yet, a fire inside the vehicle.

The output of the ATU may not be fed to a ball-mount assembly. A very high voltage of 15,000 to 30,000 volts RF would be applied to a short antenna through the ball mount, and ultimately it will arc-over to the nearby metal, and you are off the air.



Roof level 50Ω feedpoint using a simple gutter-mount clamp.

High-voltage, porcelain, feed-through insulators, at least 3 inches in diameter, are necessary to isolate the output of a properly installed ATU from any surrounding grounded metals. These insulators must be kept absolutely clean of salt spray build-up which could short out the entire works.

For long-wire antenna installations, the high voltage RF is more distributed throughout the entire line, so the insulator requirements at the ATU are not as severe. Most interesting, most long-wire antenna systems usually use grossly underrated wire sizes as the actual conductor. You can gain valuable dB's of signal performance on high frequency 3-30 MHz by switching over from #12 gauge wire to #8 gauge wire. It's also interesting to note that stainless steel rigging, employed as an antenna and insulated out by big insulators offers relatively high ohmic resistance as opposed to a similar-sized dedicated antenna line made up of copper or silver-tinned wire.

The professional short, helical-wound, 8-foot, military whip, used as the radiating element of an active ATU, uses a minimum of #8 gauge wire for its windings. This dramatically improves the performance of a short antenna system.

Remote-mounted automatic antenna tuner units are indeed flexible, but their feed-point isolation requirements are something you must watch carefully at medium and high frequencies. ■

INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

Airfones

We introduced our readers to airphones in our April issue. This month we take a close-up look at its systems and operations by talking to Bob Holmquist, vice president of engineering for GTE's Airfone.

GTE's Airfone division is placing telephones and special communication packages on commercial jet liners. Their two biggest customers so far are Delta and United Airlines. We began our conversation with Bob with this question:

What is Airfone?

"Airfone is a company that provides an air-to-ground passenger telecommunication service. We install telephones on aircraft and operate ground stations so passengers can place calls from aircraft to ground. With our new GenStar™ system, passengers will be able to receive calls from the ground as well."

What has made this type of service possible?

"In the early 1980's there was a perceived need for business travelers to keep in touch with their offices and clients while in the air. It was then the FCC allocated the frequencies of 849.0 to 851.0, and 894.0 to 896.0 MHz in the trunked system for Airfones; each section of the band having 28 channels 6 kHz wide."

What technology made this service possible?

"Well, a combination of technologies. We utilized advanced radio technology central computer processing and digital techniques. A complex computer system on the ground tracks aircraft and the availability of radio channels. The computer also processes phone calls from the ground to the aircraft. Our system can track passengers on any particular aircraft by seat location."

"We are on the cutting edge of state-of-the-art digital radio techniques. The radios use digital signal processors, which provides an error-free, low-noise quality radio signal. The up-shot is that it provides greater reliability and quality."

"There is also a computer located in the belly of the airplane. It is the control point for the radios, and provides the air to ground link. The computer also processes your credit card when you either swipe your card through the credit card slot on the handset or punch your account numbers into it manually. You can even charge your call to a third phone from your seat."



Delta 602's and 718's are among the airline's legion equipped with GenStar Airfones.

How would a passenger make a call?

"The handset is typically located in the back of the seat in front of you, and by pressing a button, the handset is released. It has a liquid crystal display (LCD) that shows your options, including voice or FAX. The LCD options can also be displayed in any one of several different lan-

guages. After swiping your credit card or manually entering your credit card number into the handset, the Airfone connects to the CTU (Central Communications Unit). The unit is connected to a radio transceiver, and both are located in the belly of the plane. The CTU then selects the ground station, typically the station farthest ahead that has appropriate signal strength and is in the flight path of the aircraft.



Bob Holmquist, Airfone's vice president of engineering, says passengers are now able to engage in air-to ground and ground-to-air conversations via the GTE Airfone system.

"The system has a hand-off capability. Meaning, if you are connected to a ground station whose signal strength falls below acceptable levels, the system automatically switches to a stronger ground station."

How is the strength of a ground station measured?

"The ground station has a pilot or control channel called a data link. Links are used to control switching between the ground stations and aircraft. These ground stations are connected to ground control hubs that actually track the aircraft."

Do satellites play a part in Airfone service?

"Yes, we have been providing telephone services via satellite for over two years now. The airlines currently use satellites for administrative/data channels, and they are also used for navigation information and passenger telephone services."

Which satellites do you use?

"We use the four Inmarsat that are in orbit. The aircraft location determines which one we use. Inmarsats use the L-band (1,000 to 2,000 MHz)."

What type of antennas are used on the aircraft?

"A small blade antenna is used for both the ground link and satellite uplink. The

satellite antenna is mounted on the top of the aircraft, while the belly of the plane carries the other."

What are GenStar's special features?

"On some United flights the GenStar telecommunications system is integrated with individual video services. This allows passengers to use the LCD to shop, check the stock market, or catch news reports. You can even track the aircraft you are in by bringing up a display on the LCD."

Sounds like Airfone is on the cutting edge of the new information highway. We thank Bob for giving us insight into these

to modern communications. I would also like to thank Tom Lazour of Delta Airlines for providing the aircraft photos.

We have a winner for our March space quiz question: which branch of the military was the first to design and successfully launch a rocket capable of placing a satellite in orbit? George Speck (KTX5FT) of Ft. Worth, TX, was the first to send in the right answer, which is the Army. George will receive a copy of *Radio Satellite*, by Thomas P. Harrington, a book about TVRO and all the radio signals you can hear on them.

Let me know what you are hearing on the satellites, shack photos or other items of interest, questions, and comments. See you next month. ■

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SIMPLE ANTENNAS AND ACCESSORIES FOR SIGNAL IMPROVEMENT

Build The Double Extended Zepp Antenna

There are a number of so-called “classic” antennas that were popular once upon a time, and that experience was a resurgence in later times. While we probably won’t see many of the old 1920s vintage flat top arrays—several wires for several hundred feet—we do see certain other designs. One that is used by hams and SWLs alike is the *double extended Zepp* antenna, which a version of the collinear wire antenna. The “regular” Zepp antenna—if such a thing exists—consists of a half wavelength wire antenna fed at the end with open wire feeders; an antenna with a pretty good following prior to World War II. I say “if such a thing exists” because it has become popular to call any antenna that is fed with open wire parallel transmission line, or 450-ohm twin-lead, a “Zepp” antenna.

The double extended Zepp (DEZ) is “dipole-ish” in that it uses two Zepp radiators back-to-back (Fig. 1). Where one line of the parallel transmission line on the pure Zepp was not terminated in a radiator, the DEZ terminates that other half of the transmission line in a second radiator element.

The radiation and reception pattern of the DEZ antenna is shown in Fig. 2. It has two main lobes and four minor lobes arranged symmetrically off-axis from the main lobes. In some ways, this clover-leaf style pattern is better than a dipole, but in others it is less useful. For example, if the reason you like dipoles is to use the null zones off the ends to reduce interference from some station (or section of the country), then that capability is harder to realize with the DEZ.

According to one standard reference text on antennas, the DEZ should be capable of gains up to 4.5 dBd (decibels over a dipole), but the *ARRL Antenna Handbook*, which tends to be a little more conservative on such matters (some say “realistic”) claims 3 dBd. Of course, 3 dB is nothing to sneeze at...it’s as if the transmitter doubled its power, or your receiver noise floor dropped by one-half. Hey look, a dB is a dB! Like all antenna gain predictions, this one should be taken with a grain of salt because achieving maxed out gain figures is sometimes chancy—especially since it depends in part on the surrounding environment. However, one can expect the DEZ to produce at least some gain over a dipole in all but the absolute worst of cases, and those are hard to find.

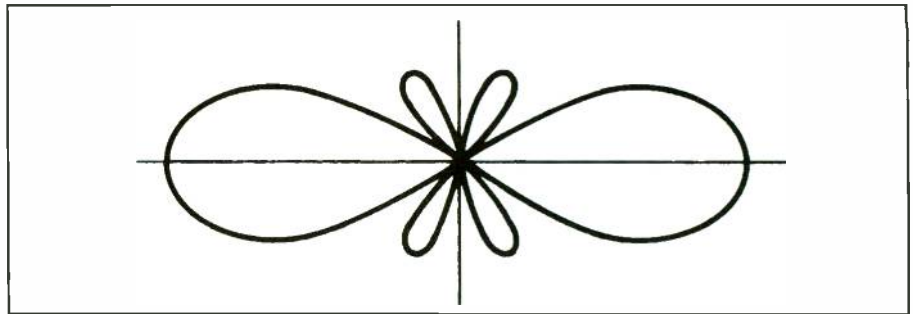


Fig. 1. Double Extended Zepp antenna.

The lengths of the two elements in the DEZ of Fig. 1 are approximately 0.64 wavelengths (~), so each element is better than 2.5 times longer than the elements of a half wavelength dipole cut for the same frequency. The length, in feet, of each element is $630/\text{FMHz}$ (where FMHz is the desired frequency in megahertz). Table I lists the appropriate lengths for some popular shortwave bands.

The basic construction of the DEZ antenna parallels the construction of the dipole that it resembles: end insulators separate the support ropes from the antenna wire; a center insulator (not a BALUN!) accommodates both the wires and the transmission line.

The impedance of the antenna at the feedpoint is not suitable for direct coaxial cable connection. There are two philosophies on how to feed the DEZ, and I’ll relate both of them to you. The version shown in Fig. 1 (and reflected in the “B” entries in Table I) is similar to the feeding of the G5RV antenna: a matching section of 450-ohm twin-lead transmission line is connected

between the antenna feedpoint and the 52-ohm coaxial cable that goes to the receiver. The 450-ohm line is similar to the 300-ohm twin-lead used in television antennas (before cable went everywhere), but is larger and heavier (as well as having a high characteristic impedance).

The other method of feeding the DEZ is found in Bill Orr’s (W6SAI) classic *Radio Handbook*. It uses a shorter section of parallel line (i.e. about 70 percent of the lengths used here), but it connects to a 4:1 BALUN transformer at the bottom of the 450-ohm section to reduce the 200 impedance to 50 ohms. Both methods seem to work equally as well, especially where VSWR is not a huge concern (as it is when transmitters are used). It seems that modern solid-state transmitters shut down or burn up when looking into VSWRs that receiver operators usually laugh at.

How important is VSWR? After all, there are a lot of receiving antennas that have a non-zero VSWR under the best of circumstances. Indeed, the “random 25 to 100 foot wire end-fed” recommended by

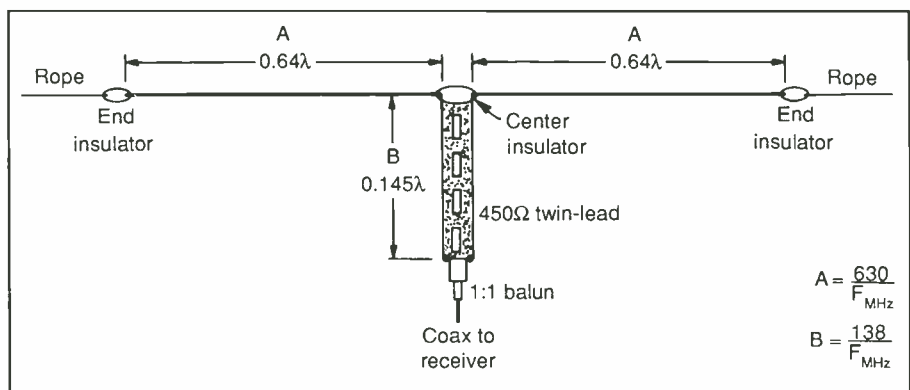


Fig. 2. Horizontal extent antenna pattern for the D.E. Zepp

a lot of receiver owner's manuals can have a sky-high VSWR on some frequencies within the range of the receiver's tuning dial. A lot of well-performing specialty antennas operate with a non-trivial VSWR, and this problem becomes worse as the receiver is tuned away from the design frequency of the antenna.

On transmitters, the reflected power can be tremendous when VSWR is high, and can cause damage. Early solid-state final amplifiers blew instantly if the VSWR was high...and "high" was awfully low compared to what could happen in practical antenna systems. Today, modern rigs use a special "VSWR shut-down circuit" that starts reducing transmitter power as soon as VSWR hits some threshold like 1.5:1 ...and it completely shuts the transmitter down above some figure like 2:1 or a bit higher. Hams go to a lot of effort to either match the antenna system and reduce VSWR, or to hide the issue by using an antenna tuning unit.

Shortwave listeners may or may not have to worry about VSWR. The mismatch loss for moderate VSWRs tends to be relatively low, so it's almost more trouble than it's worth to eliminate the last vestiges of VSWR. Of course, like hams, SWLs can use an antenna tuning unit, and a number of different manufacturers offer ATUs designed specially for SWL use. For moder-

Lengths for D.E. Zepp for International SW BC Bands

BAND (METERS)	"A"	"B"
60	126'	28' 3.5"
49	103' 8.5"	22' 8.5"
41	87' 6"	19' 2.5"
31	65' 9.5"	14' 2.5"
25	54'	11' 3.5"
22	46' 7"	10'
19	41' 7"	9'
16	35' 7"	7' 7"
13	39' 7"	6' 4.75"

Table I

ate SWRs (under 2:1), I wouldn't worry overmuch about it. After all, the normal losses in an ATU—which will cancel out VSWR losses—may well be higher than those VSWR losses.

Calculating Your Own Antenna Lengths

The formulas for the "A" and "B" lengths for the double extended Zepp antenna are given above, and in Fig. 1. If you want a band that is outside the normal bands, then use a handheld calculator and work them out.

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FCC ACTIONS AFFECTING COMMUNICATIONS

FCC Revises Application For Amateur Operator/Primary Station License

FCC Form 610, application for Amateur Operator/Primary Station License, has been revised. The new version dated November 1993, may be ordered from the FCC Forms Distribution Center at (202) 632-3676. The new form reflects recent changes in the Amateur Rules.

Only the November 1993 edition of the FCC Form 610 may be used to obtain an Amateur license. Earlier editions of the form received will delay issuance of the license as the application will be returned without action and the applicant will be required to refile on a current form.

For further information, contact the Consumer Assistance Branch, Private Radio Bureau, Gettysburg, PA 17325. Telephone number, (717) 337-1212.

Private Radio Bureau Obsolete Forms

Effective now, only the editions of the forms indicated below will be accepted for processing. Previous editions of the application forms will be obsolete. Any filed after April 1, 1994, has been returned without action, along with a request to refile the current edition.

FCC 13: Application for Authorization in the Auxiliary Radio broadcast Services; 11/89 and more current editions are acceptable.

FCC 402: Application for Station Authorization in the Private Operational Fixed Microwave Service; 12/89 and more current editions are acceptable.

FCC 404: Application for Aircraft Radio Station License; 9/91 and more current editions are acceptable.

FCC 405A: Private Radio Application for Renewal, Reinstatement and/or Notification of Change to License Information; 5/92 and more current editions acceptable.

FCC 406: Application for Ground Station Authorization in Aviation Services; 4/91 and more current editions acceptable.

FCC 503: Application for Land Radio Station License in Maritime Services; 4/93 and more current editions are acceptable.

FCC 506: Application for Ship Radio Station License; 8/93 and more current editions are acceptable.

FCC 574: Application for Private Land Mobile and General Mobile Radio Services; 11/89 and more current editions are acceptable.

FCC 703: Application for Consent to Transfer Control of Corporation Holding Station License; 2/91 and more current editions are acceptable.

FCC 753: Restricted Radiotelephone

Operator Permit; 10/88 and more current editions are acceptable.

FCC 756: Application for Commercial Radio Operator License; 10/93 and more current editions are acceptable.

Current editions of these forms may be obtained from the Commission's Forms Distribution Center, 2803 52nd Avenue, Hyattsville, MD 20781. Phone (202) 632-FORM.

For further information, contact the Private Radio Bureau's Consumer Assistance Branch, 1270 Fairfield Road, Gettysburg, PA 17325-7245. Phone (717) 337-1212.

Rules and Policies For Mobile Satellite Services: 1610-1626.5/2483.5-2500 MHz

The FCC proposed regulations for the licensing and operation of mobile satellite systems to provide a variety of voice and data mobile satellite services (MSS) in the 1610-1626.5/2483.5-2500 MHz frequency bands (MSS above 1 GHz service).

The Commission said this service has the potential to provide the public with a wide range of needed mobile services and to help stimulate the domestic economy as these multi-billion dollar systems are implemented in the United States and throughout the world. Operations outside the United States, however, will be subject to the regulatory requirements of the countries in which these systems may seek to operate.

The services that could be established by these proposed systems include cellular-like mobile services that could reach anywhere, position location services, search and rescue communications, disaster management, environmental monitoring, paging services, facsimile transmission services, cargo tracking and, industrial monitoring and control.

Domestically, the service will help meet the demand for a nationwide communications system that is available to all and can offer a wide range of voice and data telecommunications. In addition to enhancing competition in current cellular markets, these new services will also provide Americans in rural areas that are not linked to the communications infrastructure immediate access to a features-rich communications network.

The proposed requirements for this new service would include the capability of providing global service; the capability of providing continuous voice services throughout the United States; and a stringent financial showing. The Commission also proposed a plan for accommodating the systems of up to five applicants, which is based primarily upon the applicants' state-

ments regarding their spectral requirements. If mutual exclusivity cannot be resolved among qualified applicants with this plan, or some variation of it, alternative measures such as an auction or a lottery are proposed. The Commission stated that the proposed frameworks for both alternatives are designed to award at least two MSS licensees.

Also, the Commission proposed technical coordination rules to accommodate sharing between MSS and other services operating in the band or in adjacent bands.

Proposal to Redesignate the GHz Band to Point-to-Multipoint Services

Pursuant to the Negotiated Rulemaking Act, the Commission began the process to determine whether it should implement a Negotiated Rulemaking Proceeding to allow industry participants to reach a consensus on methods of sharing the 27.5-29.5 GHz frequency band (28 GHz band). In the event that the participants fail to reach such an agreement, the Commission is also seeking comment to establish a record to be used in choosing among the proposed services.

The action, a Second Notice of Proposed Rulemaking, initiates the process determining whether or not a Negotiated Rulemaking Proceeding should begin.

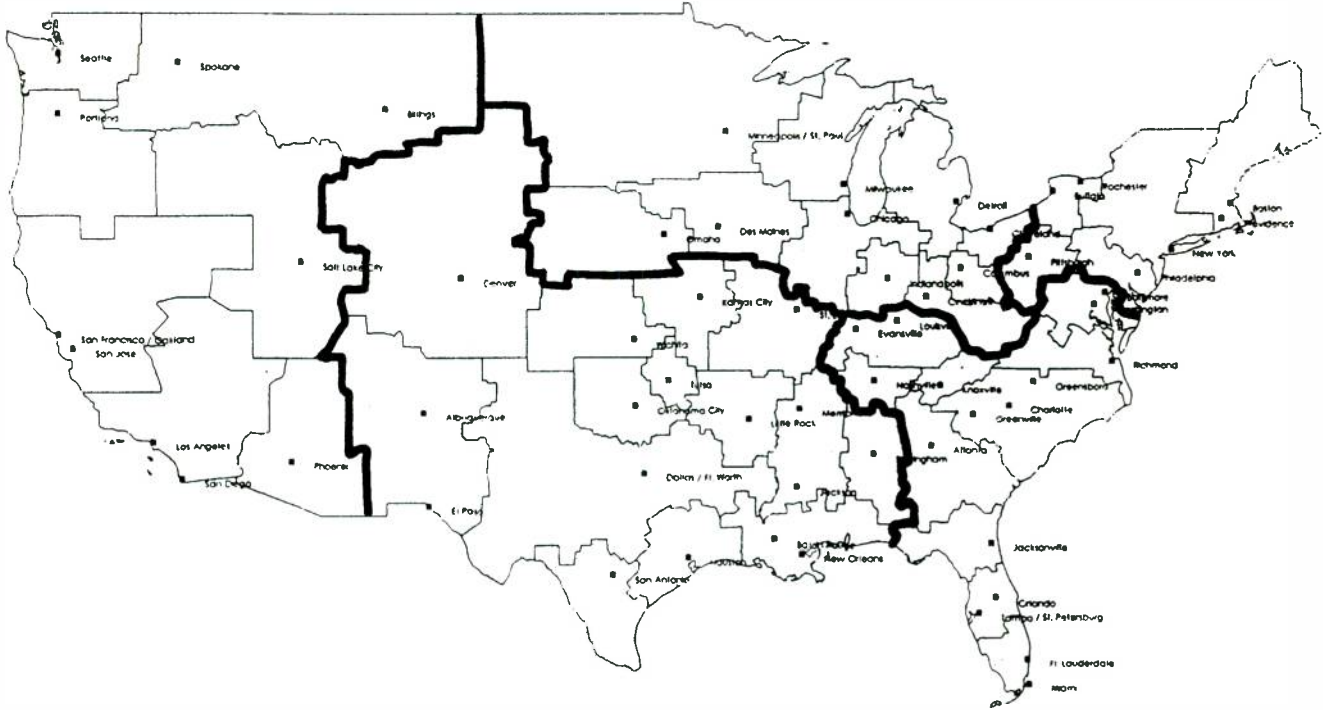
At the same time, the Commission is also issuing a Public Notice requesting comments regarding the establishment of a Negotiated Rulemaking Committee (NCR) that would develop technical regulations, to reflect a consensus determination, as to whether proposed terrestrial and satellite users can share, on a co-frequency and co-coverage area basis, the 28 GHz band. In case sharing is not possible for some of the proposed uses of the band, the Commission has asked that parties provide detailed analyses of the costs and benefits of the various choices it can make for these of this band.

The Negotiated Rulemaking Proceeding and the Negotiated Rulemaking Committee allow interested parties to participate first-hand in the Commission's decision making. The Negotiated Rulemaking Proceeding can also reduce the likelihood for delay in the licensing of new services because participants have an incentive to work together to produce a workable solution.

Rules For New Narrowband Personal Communications Services

The Commission finalized the spectrum allocation, service rules, and pioneer's preference decisions for the narrowband personal communications service (PCS).

Regional and MTA Narrowband PCS Service Areas



MTAs are copyrighted by Rand McNally © 1992 and depicted with permission.

The action completes the Commission's regulatory plan for narrowband PCS rules. The Commission stated these rules intended to foster the introduction of this new service to the public, contribute to the development of the national information infrastructure and provide for ubiquitous wireless access to new voice and data services. The Commission said facilitating the introduction of these services will create new jobs and promote U.S. competitiveness in the global communications market.

In the Report and Order, the Commission allocated spectrum 901-902, 930-931 and 940-941 MHz for narrowband PCS as a family of mobile services that includes advanced voice paging, acknowledgment paging, data messaging, and both one-way, and two-way messaging of narrowband PCS on a nationwide, regional, Major Trading Area (MTA), and Basic Trading Area (BTA) basis (which are copyrighted by Rand McNally). It also adopted technical licensing rules; affirmed the grant to Mobile Telecommunications Technologies, Inc. (Mtel) of a pioneer's preference; and affirmed the denial of 18 remaining pioneer's preference requests.

On reconsideration, the Commission took the following action with respect to:

1) Licensing Areas: Revised the current service area plan to include five new larger service areas. These new regions each have about 20% percent of the nation's

population and are based upon MTAs:

Region 1 (Northeast Region)—Region 1 consists of the MTAs of Boston-Providence, Buffalo-Rochester, New York, Philadelphia, and Pittsburgh.

Region 2 (South Region)—Region 2 consists of the MTAs of Atlanta, Charlotte-Greensboro-Greenville-Raleigh, Jacksonville, Knoxville, Louisville-Lexington-Evansville, Nashville, Miami-Ft. Lauderdale, Puerto Rico-U.S. Virgin Islands, Richmond-Norfolk, Tampa-St. Petersburg-Orlando, and Washington-Baltimore.

Region 3 (Midwest Region)—Region 3 consists of the MTAs of Chicago, Cincinnati-Dayton, Cleveland, Columbus, Des Moines-Quad Cities, Detroit, Indianapolis, Milwaukee, Minneapolis-St. Paul, and Omaha.

Region 4 (Central Region)—Region 4 consists of the MTAs of Birmingham, Dallas-Fort Worth, Denver, El Paso-Albuquerque, Houston, Kansas City, Little Rock, Memphis-Jackson, New Orleans-Baton Rouge, Oklahoma City, San Antonio, St. Louis, Tulsa, and Wichita.

Region 5 (West Region)—Region 5 consists of the MTAs of Alaska, American Samoa, Guam-Northern Mariana Islands, Honolulu, Los Angeles-San Diego, Phoenix, Portland, Salt Lake City, San Francisco-Oakland-San Jose, Seattle, and Spokane-Billings.

The Commission amended the chan-

nelization plan to accommodate the new regions as follows:

Service Area	Channels Available
Nationwide	3—50 kHz paired with 12.5 kHz. 5—50 kHz paired with 50 kHz. 3—50 kHz unpaired.
Regions	4—50 kHz paired with 12.5 kHz. 2—50 kHz paired with 50 kHz.
MTA	3—50 kHz paired with 12.5 kHz. 2—50 kHz unpaired.
ETA	2—50 kHz paired with 12.5 kHz.

In addition, it amended the rules for the 12.5 kHz paging response channel to provide that four of the eight channels are to be licensed on an MTA basis and the other four are to be licensed on a BTA basis.

2) Channel Plan: Maintained the current 50 kHz-based channel plan for the narrowband PCS spectrum.

3) Aggregation Limit: Clarified that parties are limited to a total of three licenses for narrowband PCS spectrum per geographic area. (This limit excludes that response channels reserved for the upgrade of existing paging systems; existing paging licensees are limited to two response channels in any geographic area.)

4) Construction Requirement: Amended the construction requirements to require that narrowband PCS licensees construct facilities that cover a minimum geographic area, or alternatively, cover a specific

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percentage of the population of the service area. Specifically, licensees will be required to cover 37.5% of the population of the service area in five years and 75% of the population in 10 years.

5) Service Definition: Maintained the current narrowband PCS definition.

6) Pioneer's Preference: For the license that Mtel may receive as pioneer, the Commission required Mtel to build a system that uses the design and technologies upon which the award is based and to hold its license for at least three years or until the five-year construction benchmark is met, whichever is earlier. In addition, services in the greatest possible number of localities and communities, the Commission will consider the possibility of imposing a stricter build-out requirement on Mtel, such as 90% at the 10-year mark as a further condition to Mtel's license. Mtel and other parties to the licensing proceeding will be able to comment on the possible condition in the context of the licensing proceeding.

Denial of four additional pioneer's preference requests was affirmed.

The Commission will soon issue a public notice that will open a filing window, during which time Mtel is invited to apply for its pioneer's preference license.

FCC Provides Framework For Competitive Mobile Communications Market

The Commission amended its mobile service rules to implement amendments to the Commissions Act made by section 6002(b) of the Omnibus Budget Reconciliation Act of 1993 (the Budget Act), signed into law last August 10. The Budget Act amended sections 3(n) and 332 of the Communications Act to create a comprehensive framework for the regulation of all mobile radio services and directed the Commission to establish rules defining the regulatory status and treatment of mobile services including Personal Communications Services (PCS).

This Order will change significantly the way in which mobile services are regulated by replacing a patch-work approach with a systematic approach that creates symmetry in the way providers of similar mobile communications services are regulated. The Commission believes that this Order will maximize opportunities for entrepreneurs to bring innovative and feature-rich services to the American public at affordable prices. It will also result in the creation of thousands of new jobs as the mobile communications market grows. Because radio requires no wires or fiber, services can penetrate even remote areas easily to enhance universal service. This Order provides a framework that should help all Americans have ready access to the information superhighway.

On September 23, 1993, the Commission asked for comment on: 1) the defini-

tion issues raised by the Budget Act; 2) which existing mobile services and future mobile services should be classified as "commercial mobile radio services" (CMRS) under the statute and which should be classified as "private mobile radio services" (PMRS); and 3) which provisions of Title II of the Communications Act should not be applied to commercial mobile services.

This order reflects the Commission's efforts to implement the congression intent of creating regulatory symmetry between similar mobile services and to avoid imposing unwarranted regulation upon even those services classified as CMRS.

First, the Commission interpreted the statutory elements that define commercial mobile and private mobile service and then, using these definitions, determined the regulatory status of existing mobile services and of PCS. For those services that will be classified as CMRS, the Commission addressed the degree to which they will not be subject to regulation under Title II.

The Commission addressed other issues including interconnection rights for CMRS providers and preemption of State regulatory of mobile service providers.

Additional issues raised by the Budget Act, such as revisions to the FCC's technical rules needed to implement the regulatory scheme adopted, for services other than PCS, will be addressed in an added proceeding in this docket to be commenced shortly and, consistent with the Budget Act mandate, to be completed by August 10, 1994.

Definitions

The Commission defined the term "mobile service" to include all public mobile services, private land mobile services, mobile satellite services and most marine and aviation wireless services. It defined the term "commercial mobile radio service" in a way that covers a significant portion of mobile carriers. Under the statute, there are three prongs to the CMRS definition: the service must be provided for profit, it must be interconnected to the public switched network, and it must be available to the public or to such classes of eligible users as to be effectively available to a substantial portion of the public.

•A mobile service is provided "for profit" if it is offered with the intent of receiving compensation or monetary gain. If a private licensee offers a portion of its excess capacity with the intent of receiving compensation, the offering of the excess capacity will be treated as "for profit."

•A mobile service is "interconnected service" if it allows subscribers to send or receive messages to or from anywhere on the public switched network (PSN). Both direct and indirect interconnection with the PSN satisfy this criterion, as well as the use of store and forward technology. However, incidental use of the PSN, for example to control transmitters, does not constitute interconnection.

•A service is made available "to the pub-

lic" if it can be offered without restriction in who may receive it under the Commission's Rules. Several factors—including the type, nature, and scope of users of a service—are relevant in determining whether the service is offered to "such classes of eligible user as to be effectively available to a substantial portion of the public." Services that are only used internally or only by a specified class of eligible users under FCC Rules do not meet the "public availability" prong of the definition.

The Commission determined that the statutory language and the legislative history support its conclusion that a mobile service may be classified as PMRS only if it does not fall within the statutory definition of CMRS and it is not the functional equivalent of a service that meets the three-part definition of CMRS. In applying the functional equivalence test, the Commission decided to consider a variety of factors, including whether the mobile service offering at issue is a close substitute for any CMRS offering, as evidenced by the cross-price elasticity of demand.

Question Pool For Global Maritime Distress and Safety System Radio Maintainer License

The FCC released the question pool for Commercial Radio Operator written examination Element 9. Passing Element 9, in

addition to the previously released Elements 1 and 3, is a requirement for a GMDSS Radio Maintainer license.

Copies of released question pools are available through the Commission's duplicating contractor, International Transcription Services, Inc., 2100 M Street, N.W., Washington DC 20037, (202) 857-3800. Copies are not available from the FCC. A printed copy of each released element is available for viewing during business hours in the Special Services Division, Room 5322, 2025 M Street N.W., Washington DC, (202) 632-7197, and in the Public Reference Room, Licensing Division, 1270 Fairfield Road, Gettysburg, PA (717) 337-1212.

Commercial Operator License Examination Managers must use questions from these question pools when preparing the question sets they administer to examinees. Each pool contains at least five times the number of questions that are asked on one question set. The minimum passing score for Element 9 is 38 correct answers on a 50 question set.

Have You Heard the News?

Over 300 broadcast stations heard the news last year and activated the Emergency Broadcast System (EBS) to transmit emergency information to their listening audiences. One station activated within 90 seconds of a tornado touchdown; another ac-

tivated for an immediate controlled evacuation of a town.

As of January 11, 1994, the Commission had received 1,887 EBS activation reports for 1993. Most of the activations were weather related such as the blizzard of March, the midwest floods and tornadoes. An examination of the reports provided the following statistics. The reasons for activating were (number of activation and the percent of the total number in parenthesis): severe weather (523, 28%), severe thunderstorm (472, 25%), tornado (291, 15%), flash flood (214, 11%), flood (187, 10%), blizzard (75, 4%), snow emergency (58, 3%), midwest flood (24, 1%), high wind (9), Hurricane Emily (6), marine warning (5), prison escape (4), toxic chemical fire (4), evacuation (4), tanker spill and evacuation (4), 911 outage (2), curfew (2), water contamination (2), and waterspout (1).

The National Weather Service (1,556, 67%), EBS receiver alert (366, 16%), Civil Defense or Emergency Services (144, 6%), local official (76, 3%), Associated Press Wire (75, 3%), station staff (71, 3%), California Emergency Services (11), New York EBS satellite network (7), United Press International Wire (1) and Skywarn (1), were the primary sources alerting activations during the year.

Since 1976, the Commission has received 17,399 activation reports. The FCC does not require broadcast stations to file a report when they activate the EBS, so the actual number of activations may be considerably more than these.

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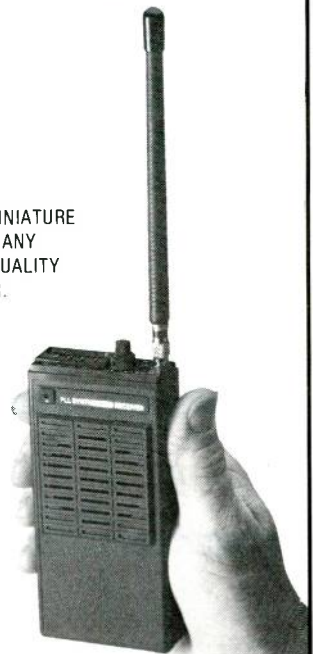
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Regulatory Classification of Existing Services and PCS

Based on the definitions adopted in the Order, the Commission classified all existing government and public safety services, including the Special Emergency Radio Service, and all existing Industrial and Land transportation Services, other than certain licensees in Business Radio Service, as private mobile services. The Commission also classified Automatic Vehicle Monitoring as a private mobile service.

In the Business Radio Service, which has a broader range of eligible users than other Industrial and Land Transportation services, the Commission classified Business Radio licensees who provide for-profit interconnected service to third-party users as CMRS. Meanwhile, Business Radio licensees who operate non-profit internal systems, or who do not offer interconnected service, were classified as private. The Commission also took this approach with respect to classification of 220-222 MHz private land mobile systems.

The Commission classified Specialized Mobile Radio (SMR) licensees as CMRS if they offer interconnected service to customers. This classification will apply to providers of wide-area SMR service, and to traditional SMR systems as well. SMR licensees who do not offer interconnected service, however, will be classified as private.

The Commission classified private carrier paging (PCP) as CMRS, based on its finding that PCP licensees are providing for-profit interconnected service to the public, but classified as PMRS those private paging systems that serve the licensees internal communications needs but do not offer for-profit service to third-party customers.

The Commission concluded that existing cellular services, common carrier paging and 800 MHz air-ground services all should be classified as CMRS because they meet the statutory definition.

With regard to mobile satellite services, the Commission concluded that it would exercise its discretion under the statute to determine whether the provision of space segment capacity by satellite licensees and resellers may be treated as common carriage. The provision of both space and earth segment capacity by either satellite system licensees providing service through their own licensed earth station or by earth station licensee resellers directly to users of commercial mobile radio services will be treated as common carriage.

PCS, both narrowband and broadband, will be classified presumptively as CMRS. Under this approach, a PCS applicant would be regulated as a CMRS carrier, but would be able to offer private PCS upon making the requisite showing during the application process or subsequently.

Forbearance

The Commission said it would exercise its forbearance authority regarding a number of Title II provisions in order to maxi-

mize market competition. It found that its forbearance will help to promote competition and is justified pursuant to the three prong test set forth in Section 332 (c) of the Act. In general, the Commission has forbore from enforcing any tariffing requirements and Commission authority to investigate existing and newly filed rates and practices, collection of intercarrier contracts, and Commission approval relating to market entry and exit.

The Commission has not forbore from provisions that are related to its authority and regulatory obligations, are actually related to the complaint remedy, or provide specific consumer protections. In addition, in the case of cellular service, the Commission proposes to issue a Further Notice of Proposed Rule Making on establishing monitoring provisions applicable to the cellular marketplace because it has not yet concluded that the cellular marketplace is fully competitive.

The Commission stated that this action strikes a proper balance between a number of relevant factors, including protection of consumers, promoting competitive markets, and facilitating development of the mobile services marketplace. It stated that the regulatory structure for CMRS should not result in unreasonable burdens on any mobile service provider, including providers of mobile service reclassified from private radio service to CMRS under this action. Rather, the CMRS classification should provide carriers as well as companies who will be reclassified from private to common carriers.

Transition

The Commission determined that all providers of private mobile services who are subject to reclassification as CMRS providers and were licensed, and thus, authorized, to provide a private service as of August 10, 1993, will continue to be regulated as private licensees for that service until August 10, 1996. These grandfathered licensees will be allowed to modify and expand existing systems, and to acquire additional existing licensees in the same service for which they were licensed prior to August 10, 1993. However, private mobile licensees who are subject to reclassification as CMRS providers and were not licensed as of August 10, 1993, will be subject to CMRS regulation when new rules for reclassified services become effective, pending completion of further proceedings in this docket. In addition, private radio licensees who seek to enter new services previously classified as private but reclassified as CMRS will be subject to CMRS regulation with respect to such services.

With regard to SMR service, the Commission concluded that SMR licensees who provide wide-area service and who were licensed prior to August 10, 1993, will be regulated as private until August 10, 1996. All private paging licenses on frequencies allocated as of January 1, 1993, however, will be regulated as private until August 10, 1996, regardless of when they were licensed.

HOW I GOT STARTED

Popular Communications invites readers to submit, in approximately 150 words (more or less), how they got started in the communications hobby. They should preferably be typewritten, or otherwise easily readable. If possible, a photo of the submitter should be included.

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

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Our July Winner

This month's winner is Bob Phillips, KB2JRD, from Lanoka Harbor, NJ. Here is

how he became interested in amateur radio:

"When I was about seven, I came to the United States from Liverpool, England. My father had purchased a second-hand radio containing a few shortwave bands as well as the standard broadcast.

"Several nights we tried picking up some international broadcasters, but they were coming in very weak as we were only using a few feet of wire as an antenna. I watched in fascination as my father took the radio apart and 'tweaked' a few variable capacitors, attempting to get a stronger signal. Soon it became badly out of tune and he lost interest.

"Still curious, I tried retuning it, added an outside longwire, and between luck and patience, stations actually came booming in. From then on, my father called me a 'technical whiz kid,' and I began developing an interest in shortwave radio.

"I eventually acquired a CB license, a Ham and commercial license, and became a radio repair technician for many years. Presently, I'm very active in Ham and emergency service communications. In addition to being a Fire Police Officer for my county emergency management team, I'm also employed by a firm that utilizes radio communications for personal security devices."



Bob Phillips, of Lanoka Harbor, NJ, turned his passion for radio into a career as he has become a radio repair technician, and remains active in Ham and emergency service communications.

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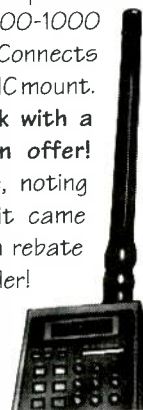
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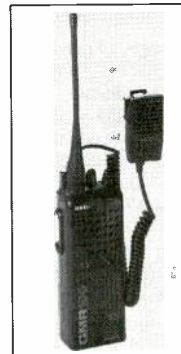
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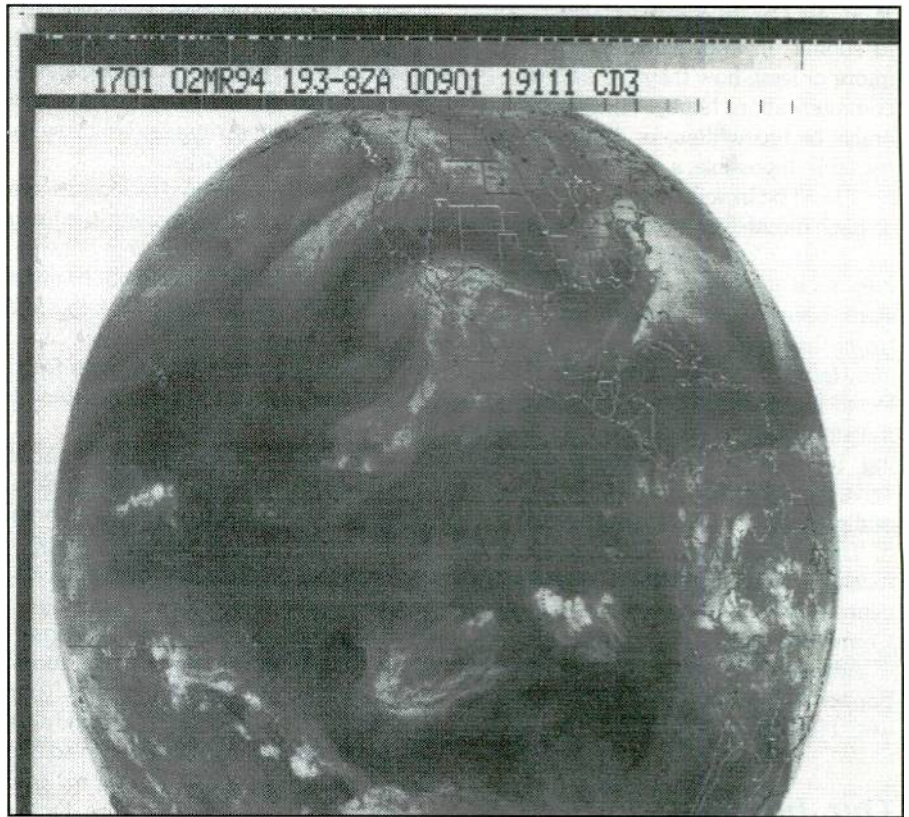
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THE EXCITING WORLD OF RADIOTELETYPE MONITORING

Monitoring conditions at The RTTY Ranch during February, March, and April were terrible due to poor propagation. Not many stations were heard in several weeks. Happily some of our regular contributors came through with plenty of loggings to share with you. Contributors this month are Richard Baker of Ohio (R.B.), Ary Boender of The Netherlands (A.B.), "L.D." of Germany (L.D.), Robert Hall of South Africa (R.H.), Harold Manthey of New York (H.M.), Robert Margolis of POP'COMM (R.M.), and Eddy Waters of Australia (E.W.)

RTTY Intercepts

2727.0: DAN, Norddeich R., Germany, w/tfc list. ARQ at 0800. (A.B.)
3172.5: IMB31, Rome Meteo, Italy, w/RYRY + CQ, 50 baud at 2350. (A.B.)
3196.0: Prague Meteo, Czech Rep., w/wx synops at 1733, 50 baud. (A.B.)
3279.0: DHJ51, Grengel Meteo, Germany, w/coded wx at 2140, 100 baud. (L.D.)
3550.0: YMA20, Ankara Meteo, Turkey, w/coded wx, 50 baud at 0023. (A.B.)
3814.0: DER, MOI, Bonn, Germany, w/coded msgs. ARQ-E/96 at 0757. (A.B.)
3814.6: "HFVTH," Erfurt, Germany, w/op msgs to MOI, Bonn, ARQ-E/96 (VFT) at 1838. (L.D.)
4002.0: YRR2, Bucharest Meteo, Romania, w/wx synops, 50 baud at 2246. (A.B.)
4215.0: WCC, Chatham R., Mass., w/tfc list at 0841, FEC. (R.B.)
4215.5: WOM, Ft. Lauderdale R., Fla., w/tfc list. FEC at 1010. (E.W.)
4245.0: GYA, Royal Navy, London, England, w/"MTT de GYA INT ZBZ kilo" + foxes, 75 baud at 1935. (A.B.)
4442.5: RGC72, Kiev Meteo, Ukraine, w/coded wx at 2215, 50 baud. (A.B.)
4583.0: DDK2, Pinneberg Meteo, Germany, w/coded wx, 50 baud at 1704. (A.B.)
4600.0: SNN299, MFA, Warsaw Poland, w/msg to Budapest, POL-ARQ at 1725. (A.B.)
4601.5: "0A," Irish Mil., Dublin, w/northwest herring & mackerel licenses at 1737 & nx at 2205, ARQ. (A.B.)
4618.9: Un-ID w/RQ sig for over 6 hrs, ARQ-E/96 at 0300. German MFA? (R.M.)
4764.0: CCS, Santiago Navrad, Chile, w/msgs at 0050, 850/100. (H.M.)
4880.0: "KUL" w/RYRY + 5L & 5F grps at 1852, 75 baud. (L.D.)
5300.0: CAN6D, El Centro Meteo, S. Shetland Is. (Chilean base), w/SCEF wx prognostics in SS, 850/50 at 0040. (H.M.)
5421.0: Un-ID w/encryption, 250/81 at 2241. (R.M.)
5437.0: FDY, French Air Force, Orleans, France, w/RYS & "le bricks," 400/50 at 0045. (H.M.)
5474.0: CSY, Santa Maria Air, Azores, w/pos & flt lvl rpt on UAL flt 910, 665/50 at 0432. (R.B.)
5478.7: "GOVHF," MOI, Bonn, Germany, w/encrypted msgs to Goslar, ARQ-E/72 (VFT) at 1240. (L.D.)
5731.0: YRR4, Bucharest Meteo, Romania, w/coded wx, 425/50 at 0040. (H.M.)
5824.0: "V5G," MFA, Bucharest, Romania, w/circulars, ROU-FEC/164.5 at 1838. (L.D.)
5827.5: RFLI, Fort de France, Martinique, w/"controle de voie," ARQ-E3/96 at 0100. (H.M.) Not RFLI, but RFLIG, Cayenne, French Guiana, relaying RFLI's msg back to RFLI—Ed.



Breathtaking view of the Western Hemisphere as seen from a weather satellite. This global image ran on satellite Spacenet 3, transponder 17. (From Robert Margolis.)

6474.0: Un-ID w/encryption, 170/110 at 1455. (R.M.)
6934.0: Un-ID w/encryption, 250/81 at 1838. (R.M.)
6935.0: Un-ID mil. w/wx, 75 baud at 1400. (A.B.)
6966.0: FDY, French Air Force, Orleans, France, w/RYRY, "le bricks" & 10 count, 50 baud at 1547. (L.D.)
7319.4: SUU, Cairo Meteo, Egypt, w/coded wx, 850/75 at 0335. (R.H.)
7342.5: Indiana & Michigan CAP wings w/Package msgs at 1545. (R.M.)
7451.7: "RFFP," French Forces, Paris, France, w/"controle de voie" to RFFVAY at 1350, ARQ-M2/200. (L.D.)
7521.5: FDY, French Air Force, Orleans, France, w/RYRY & "le bricks," 50 baud at 1630. (A.B.)
7524.0: TYE, ASECNA, Cotonou, Benin, idling, ARQ-M2/342/96, on both ch's at 0256. (R.M.) Ditto at 0353. (R.H.)
7528.5: Un-ID w/5L grps, 0208-0212, 480/75. S/off w/NIL CFM GB SK SK. (R.M.)
7610.0: 3XA, Conakry Air, Guinea, w/RYRY, 400/50 at 0213. (H.M.)
7614.0: Un-ID French Mil. idling 0017 to past 0600, ARQ-E/72. (R.M.)
7643.7: RFQP, Djibouti, w/"controle de voie" at 0151, ARQ-E3/100. (H.M.) Not RFQP, but RFLIG, French Guiana, w/relay to RFQP—Ed.
7658.0: YZD, Tanjug, Belgrade, Yugoslavia, w/nx in EE at 2214, 418/50. (R.B.)
7692.5: 3BT3, Bigara Meteo, Mauritius, w/tropical storm warning, 850/75 at 0035. (H.M.)
7760.0: RGH77, Arkhangelsk Meteo, Russia, w/coded wx at 1845, 50 baud. (A.B.)
7808.0: "DFZG," MFA, Belgrade, Yugoslavia, w/nx in EE, 75 baud at 1535. (A.B.)
7822.3: Un-ID idling, ARQ-E3/200 at 2241. (R.M.)
7850.0: ZAA, ATA, Tirana, Albania, w/RYRY at 1850, 50 baud. (A.B.)
7855.5: ROK24, Moscow Meteo, Russia, w/coded wx at 0229, 1000/50. (R.H.)
7860.3: PWN33, Natal Navrad, Brazil, w/RYRY. 850/75 at 0231. (H.M.)
7912.5: 9JZ8, Lusaka Air, Zambia, w/av tfc. 425/50 at 0245. (R.H.)
7917.0: DFG91, PIAB, Bonames, Germany, w/nx in GG, FEC-A/96 at 1542. (A.B.)
7946.1: RFVI, French Navy, Le Port, Reunion, idling at 2200, ARQ-E/96. (R.M.)
7959.1: 9BC23, IRNA, Teheran, Iran, w/nx in EE, 425/50 at 2050. (E.W.)
8028.0: "V5G," MFA, Bucharest, Romania, w/??? at 1105, ROU-FEC/164.5. (L.D.)
8105.0: French Forces, Versailles, France, w/brief msgs to Beirut, Lebanon, ARQ-E/72 at 0500. (R.M.)
8123.0: TNL, ASECNA, Brazzaville, Congo, w/wx, ARQ-M2/96 at 2204. (E.W.) Ditto at 0402. (R.B.)
8192.2: 9MR, Johor Baharu Navrad, Malaysia, w/"9MR 9/11/15 RMMJ MRB" + RYRY & SGSG, 844/95 at 2055. (R.H.)
8417.5: WOM, Ft. Lauderdale R., Fla., w/tfc list at 1145, FEC. (E.W.)
8673.2: MTO, Royal Navy, Rosyth, Scotland, w/test tape, 850/75 at 2005. (R.H.)

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/led
MFA	Ministry of Foreign Affairs
nx	News
PP	Portuguese
RYRY	"RYRY . . ." test tape
SS	Spanish
tfc	Traffic
w/	With
wx	Weather

8723.0: HJN2, a Colombian coastal sta., w/tfc list in FEC at 2302 in the radio band set aside for USB voice from coastal stas. (R.B.) None of my governmental refs, both domestic & foreign. list this c/s yet. Wonder why not?—Ed.

9001.6: Un-ID using unk TTY mode, 415/220, 0320-0323. (R.M.)

9041.0: 5YE, Nairobi Meteo, Kenya, w/coded wx, 100 baud at 2148. (L.D.)

9047.0: Polish Emb., Paris, France, w/5F grps at 0954, POL-ARQ. (L.D.)

9130.2: MTO, Royal Navy, Rosyth, Scotland, w/available ch's list at 0200, 850/75. (H.M.)

9208.0: SNN299, MFA, Warsaw, Poland, heard at 1101, POL-ARQ. (L.D.)

9217.5: TTL51, ASECNA, N'djamena, Chad, w/coded wx, ARQ-M2/96, ch A, at 0435. (R.H.)

9286.7: TNL, ASECNA, Brazzaville, Congo, w/av wx, ARQ-E3/48 at 0121. (H.M.)

9424.0: 5ST, Antananarivo Air, Madagascar, w/wx in PP for E. Africa, 181/50 at 0458. (R.H.)

9924.7: ZPJ, Asuncion R., Paraguay, w/ID only, 425/100 at 0155. (H.M.)

10158.0: "DOR," MFA, Sofia, Bulgaria, w/nx in Bulgarian, 75 baud at 1453. (L.D.)

10199.3: MKK, RAF, London, England, w/foxes, 170/50 at 0955. (E.W.)

10281.3: RFLIG, French Navy, Cayenne, French Guiana, w/unclas tfc, ARQ-E3/96 at 1956. (R.M.)

10344.0: "6XM8" w/encrypted tfc to & from "C37A" on 10749.5 kHz, ARQ-E/288 at 1738. (L.D.)

10536.2: CFH, Canforce Meteo, Halifax, N.S., w/coded wx at 0552, 803/75. (R.H.)

10551.3: GFL23, Bracknell Meteo, England, w/wx synops, 395/50 at 0548. (R.H.)

10892.1: GXQ, British Army, London, England, w/R/Y's & foxes on 6 VFT ch's, 170/50 at 0517 & 1952. (R.H.)

10960.0: 3MA28, CNA, Taipei, Taiwan, w/nx in EE at 0809, 850/50. (E.W.)

10966.2: Un-ID heard at 1940, ARQ-E/72. (R.H.) Might have been the French Forces in Somalia—Ed.

11037.0: "D2Z," French Emb., Budapest, Hungary, w/5L grps to Paris, FEC-A/192 at 1656. (L.D.)

11044.2: "RMMJDA, V50. B1N. wx msgs for Palawan, Phuket, etc. Asia" at 1025 (E.W.) I comprehend most of your logging, Eddy. You're telling us that RMMJDA (an ASEAN sta. in S.E. Asia) sent wx data for Palawan, etc., at 50 baud VFT, but what does "B1N" stand for? Where exactly is RMMJDA?—Ed.

11092.0: RFVI, French Navy, Le Port, Reunion, w/msgs to Mayotte, ARQ-E/96 at 1217. (E.W.)

11110.7: RFLI, French Navy, Fort de France, Martinique, idling at 2243, ARQ-E3/192. (R.M.)

11133.0: BZG41, Xinhua, Yuryumqi, China, w/nx in FF at 1255, 425/50. (E.W.)

11382.6: Un-ID w/5L msgs, nr 213-215, 850/75 at 0850. (E.W.)

11415.2: "RFFP," French Air Force, Paris, France, w/msgs to RFFVAY, French Forces, Sarajevo, ARQ-M2/200 at 1217. (L.D.)

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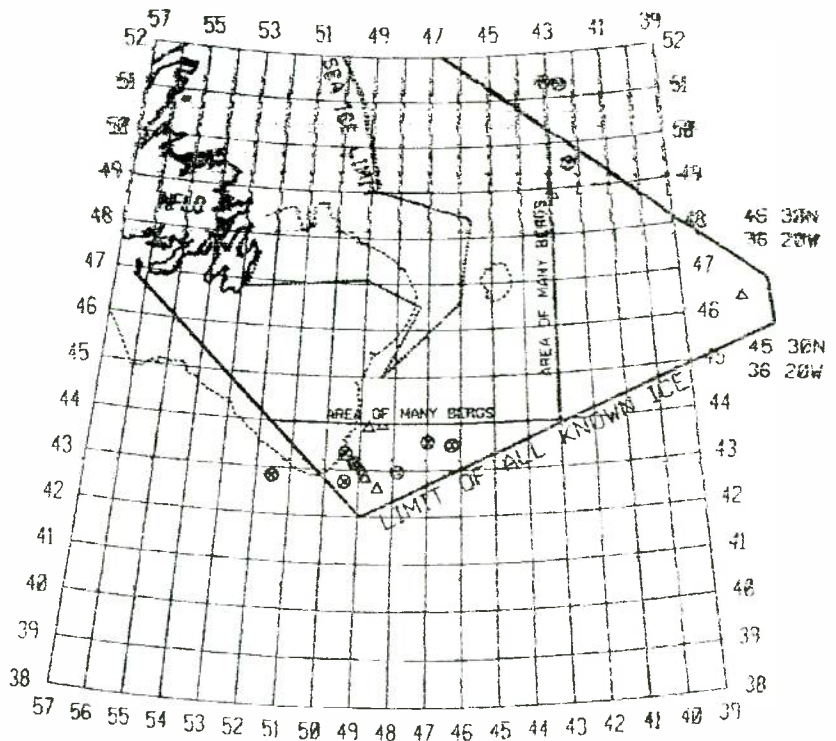
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Weather chart of NIK, U.S. Coast Guard, Boston, MA, sent on 12750.0 kHz. (From Robert Margolis.)

11436.0: Un-ID w/encryption, 170/110 at 1557. (R.M.)

11448.0: German Emb., Amman, Jordan. w/encryption, ARQ-E/192 at 1414. (L.D.)

11498.5: Un-ID idling at 0020, ARQ-M2/96. (R.B.)

11541.7: RFLI, French Navy, Fort de France, Martinique. idling at 1230, ARQ-E3/96. (R.M.)

11680.0: BZP51, Xinhua, Yuryumqi, China, w/RYRY at 1415, 425/75 (H.M.) & nx at 1505, 75 baud. (A.B.)

12228.4: BZR62, Xinhua, Yuryumqi, China, w/RYRY, 425/75 at 1415 (H.M.) & nx at 1515. (A.B.)

12492.5: CUFT, the Portuguese fishing trawler Coimbra w/KPCV selcalling (CUL, Lisbon R., Portugal) in ARQ at 2047, fol'd by "NAFO Report;" and CRXS, the Portuguese tanker Erati, w/KPCV selcalling at 2103, fol'd by "notice of readiness...to load a cargo of lokele crude oil." (R.M.)

12579.0: NMC, Point Reyes CG Sta., Calif., w/hydropac info, FEC at 0910. (E.W.)

12580.5: KFS, Palo Alto R., Calif. w/tfc list, ARQ at 1338. (R.B.)

12586.5: KPH, San Francisco R., Calif., w/tfc list, FEC at 1508. (R.B.)

12591.0: VPS64, Cape D'Aguilar R., Hong Kong, w/ship tfc in ARQ at 0935. (E.W.)

12594.0: PPR, Rio de Janeiro R., Brazil, w/kg var. ships, ARQ at 0125. (R.B.)

12630.0: KMI, Dixon R., Calif., w/high seas forecast from NWS Honolulu, FEC at ??? (R.B.)

12639.3: Un-ID ment'd "Pyengyang," "Milani," & China, 850/50 at 1137. (E.W.)

12680.0: HJNL, M/V Cte. Lucia, w/tlx tfc to

5AT, Tripoli R., Libya, ARQ at 2229. (R.B.) My refs show HJNL as being the Colombian cargo ship Almirante Jose Padilla—Ed.

12824.0: GYU, Royal Navy, Gibraltar, saying ch's 08A & 12A are available for t/c, 170/75 at 1835. (R.M.)

12835.0: AFS, Offutt AFB, Elkhorn, Nebr., w/KAWN wx data, 850/75 at 1335. (R.M.)

13372.5: 5YD, Nairobi Air, Kenya, w/RYRY, 250/50 at 1929. (R.M.)

13430.0: Un-ID w/5L grps at 1606, 400/75. (R.M.)

13436.0: Un-ID idling, ARQ, 1714-1721. (R.M.)

13527.2: Un-ID w/ARQ idling at 1620 & 1400 on diff. days & TVPQ selcalling at 1414 on another day. Gut feeling this is a Dutch diplo sta. (R.M.)

13530.0: RVW53, Moscow Meteo, Russia, w/coded wx, 50 baud at 1317. (A.B.)

13542.0: ZRO3, Pretoria Meteo, RSA, w/wx at 1850, 425/75. (H.M.)

13812.0: RFVI, French Navy, Le Port, Reunion, idling, 2002-2235, ARQ-E3/192. (R.M.)

14354.0: "V5G," MFA, Bucharest, Romania, w/nx in Romanian, ROU-FEC/164.5 at 0850. (L.D.)

14355.0: Un-ID Mexican wx sta in Baja Calif. w/list of stas present on the net at 1414, fol'd at 1419 by "pronostico meteorologico estado B.C." Was 147/75. (R.M.)

14356.0: MKK, RAF, London, England, w/foxes at 1600, 400/50. (H.M.)

14429.0: Poss Lubumbashi, Zaire, sta. idling in ARQ at 1923. (R.M.)

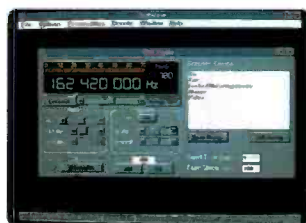
14450.0: RDD77, Moscow Meteo, Russian w/coded wx, 50 baud at 1500. (A.B.)

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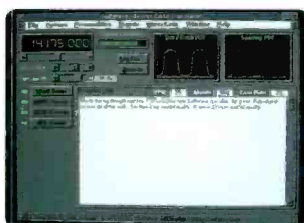
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NOAA-11 view of North America on March 22, 1994, at 1533 CST. Xmsn was on 137.620 MHz. (From Robert Margolis.)

- 14736.0:** Un-ID w/5L msgs, 479/75 at 1425. Headers begin "11177..." (R.M.)
- 14762.5:** NNN0COW. USN MARS aboard USS Trenton (LPD-14), w/MARSgrams to NNN0GKF. ARQ at 1800. (R.M.)
- 14801.7:** RFVI, French Navy, Le Port. Reunion. w/"controle de voie," ARQ-E3/100 at 1824. (R.M.)
- 14912.0:** DFZG, MFA, Belgrade, Yugoslavia, w/crypto after XPXPXP to 12 diplo missions, 379/75 at 1433. (R.M.)
- 14926.5:** "RFTJ." French Navy, Dakar, Senegal. w/"controle de voie," ARQ-E3/48 at 0505. (R.H.)
- 14932.0:** Polish Emb., Tel Aviv, Israel, heard at 1348, POL-ARQ. (L.D.)
- 15705.0:** YZJ6, Tanjug, Belgrade, Yugoslavia. w/RYRY at 1100. 425/50. (E.W.)
- 15794.0:** "TAD." MFA, Ankara, Turkey, w/msgs to Kiev, Tbilisi, Kisinev, Ljubljana, & Dushanbe, FEC-A/144 at 1045. (L.D.)
- 15860.0:** Un-ID French Mil. idling at 1456, ARQ-E/72. (R.M.)
- 15946.5:** Un-ID w/msgs in SS at 1405, ARQ. (R.M.)
- 16020.3:** Un-ID w/ARQ idling 1330-1340. (R.M.)
- 16087.7:** RFVI, French Navy, Le Port, Reunion, relaying "de Paris...controle de voie" back to Paris. ARQ-E3/100 at 1912. (R.M.)
- 16108.0:** Un-ID, poss a Swiss diplo, w/KPVP selcalling in ARQ at 1555. (R.M.)
- 16183.0:** 5YE, Nairobi Meteo, Kenya, w/coded wx, 400/100 at 1915. (R.M.)
- 16201.0:** Polish Emb., Phnom Penh, Cambodia, heard at 0712, POL-ARQ. (L.D.)
- 16213.0:** French Emb., Dakar, Senegal, w/5L grps at 0947, ARQ6-90/200. (L.D.)
- 16273.8:** Un-ID w/5L grps at 1007, 425/75. (E.W.)
- 16324.7:** RFTJD, French Forces, Libreville, Gabon, idling 1636-1901, then sends "de RFTJ" msg back to RFTJ, ARQ-E3/192. (R.M.)
- 16326.0:** Romanian Emb., Tel Aviv, Israel, heard at 0955, ROU-FEC/218.3. (L.D.)
- 16448.0:** "KRN" w/RYRY at 1744, fol'd by one 5F msg, 479/75. (R.M.)
- 16608.1:** SPH61, Gdynia R., Poland, w/tfc list, FEC at 0650. (R.H.)
- 16690.5:** KSFJ, Atigun Pass (Amer. tnkr—Ed.), w/voyage orders, ARQ at 2118. (R.B.)
- 16701.0:** GHJW, the British cable ship Alert, w/tlx to Portishead R., ARQ at 1927. Ship is owned by British Telecom. (R.B.)
- 16798.5:** DZJ, Manila, Philippines, w/nx in EE at 1735, FEC. (R.M.)
- 17430.0:** Polish Emb., Teheran, Iran, w/info re Iranian citizens, POL-ARQ at 1141. (L.D.)
- 17443.1:** BZG48, Xinhua, Yuryumqi, China, w/nx in FF, 397/50 at 1142. (R.H.)
- 17459.0:** Austrian Emb., Ankara, Turkey, heard at 0945, ARQ-S6/96. (L.D.)
- 17461.0:** Un-ID w/occ ARQ phasing sigs at 1534. (R.M.)
- 17921.5:** Un-ID w/s/off msg in SS, ARQ at 1625. (R.M.)
- 17922.5:** EAE220, MFA, Madrid, Spain, heard at 1013, Twinplex. (L.D.)
- 18040.5 & 18041.5:** HGX21, MFA, Budapest, Hungary, w/text in Hungarian at 1415 & 1600 respectively, DUP-ARQ. (R.M.)
- 18064.0:** SNN299, MFA, Warsaw, Poland, w/msgs to Ankara, Turkey, POL-ARQ at 1106. (E.W.)
- 18066.5:** Indonesian Emb., Ankara, Turkey, w/msgs to Jakarta, ARQ at 1240. (L.D.)
- 18284.7:** Un-ID w/BMEV selcalling at 1430, ARQ. (R.M.)
- 18325.0:** Diplo tfc from Belgrade, Yugoslavia, to New York & Peru, 425/100 at 1610. (H.M.) Not Yugoslavia, Harold, but OMZ, MFA, Prague, Czech Rep.—Ed.
- 18345.0:** German Emb., Jeddah, Saudi Arabia, heard at 0743, ARQ-E/192. (L.D.)
- 18380.0:** "De Paris...controle de voie," ARQ-E3/100 at 1630. (H.M.) Need to know the cct ID for

- 14460.0:** RFTJF, French Navy, Port Bouet, Ivory Coast, w/"controle de voie" at 2139, ARQ-E/48. (R.M.)
- 14476.0:** Un-ID w/encryption, 170/110 at 1428. (R.M.)
- 14478.5:** OEC, MFA, Vienna, Austria, w/s/off msg in GG at 1424, ARQ-S6/96. (R.M.)
- 14485.7:** Poss MFA, Paris, France, idling, FEC-A/192, from 1650 to past 1730. (R.M.)
- 14509.5:** CLP1, MFA, Havana, Cuba, w/manually typed text in SS, 400/75 at 1700. (R.M.)
- 14510.2:** CLP1 w/crypto & circulars to Nicaragua, 960/75 at 1622. (R.M.)
- 14522.0:** MFA, Sofia, Bulgaria, w/tlx's & nx, 479/75 at 1813. (R.M.)
- 14545.5:** Un-ID w/foxes, VFT 85/75 at 1118. (E.W.)

- 14569.0:** Un-ID w/ARQ sig splattered by severe QRN at 1436. (R.M.)
- 14606.7:** Un-ID idling 1542-1600, ARQ-E3/100. (R.M.)
- 14680.0:** "V5G," MFA, Bucharest, Romania, w/encryption, ROU-FEC/164.5 at 1354. (R.M.)
- 14681.1:** "V5G" heard at 1128, ROU-FEC/164.5. (E.W.)
- 14688.0:** Romanian MFA w/encryption at 1405, ROU-FEC/164.5. (R.M.)
- 14718.2:** RFHI, French Navy, Noumea, New Caledonia, w/op msgs to Tahiti, ARQ-E3/100 at 1533. (R.M.)
- 14723.5:** Un-ID w/unlk TTY mode at 835/150 at 1417. No sync using ASCII or Baudot. (R.M.)
- 14732.0:** Un-ID idling, 1800-1805, ARQ-E/96. (R.M.)

a positive ID on this one, Harold. This is the first logging I've seen for the French Forces on this freq. My database shows Interpol stas here—Ed.

18487.8: MFA, Oslo, Norway, w/msg in Norwegian, Twinplex at 1110. (E.W.)

18490.2: Un-ID w/continual rpts of "EVNCK-GEKCWVISAR3(1)" at 1253, 492/96. Clues anyone? (R.H.) Try ARQ-S/96, Bob. This could be OEC, MFA, Vienna, Austria—Ed.

18572.0: Polish Emb., Baghdad, Iraq, w/5L grps, POL-ARQ at 1240. (L.D.)

18639.0: CLP1, MFA, Havana, Cuba, w/pren-saminrex, 500/75 at 1446. (R.M.)

18640.0: Un-ID w/encryption, 500/81 at 1507. (R.M.)

18648.5: SOT265B, PAP, Warsaw, Poland, w/nx in Polish at 1500 in FEC. (H.M.)

18702.4: DGS70, MFA, Elmshorn, Germany, w/nx in GG, FEC-A/96 at 1530. (H.M.)

18739.0: Italian Emb., Jerusalem, Israel, w/msgs & 5L grps to Rome, ARQ-E/96 at 1335. (E.W.)

18885.0: Un-ID w/encryption, 425/40.5 at 1518. (R.M.)

18972.0: "DFZG," MFA, Belgrade, Yugoslavia, w/nx in EE at 1519, 380/75. (R.M.)

19031.7: MFA, Islamabad, Pakistan, w/msg in EE, ARQ at 1120. (E.W.)

19109.0: OZU25, MFA, Copenhagen, Denmark, w/msg in Danish, Twinplex at 1054. (E.W.)

19171.0: CNM85, MAP, Tangier, Morocco, w/nx in FF, 425/50 at 1550. (H.M.)

19227.1/19227.8/19228.5: "CIF9" w/foxes, RYRY & 5L grps at 0830, FEC-A/192 (VFT). (L.D.)

19306.7: Un-ID Dutch diplo idling in ARQ, 1527-1600. (R.M.)

19646.0: RFLIG, French Navy, Cayenne, French Guiana, w/5L grps to RFFUAJ, ARQ-E3/192 at 1955. (H.M.)

19648.2: "W5E," un-ID French diplo, testing to "P6Z," Paris, "...pour le réglage de vos recepteurs..." FEC-A/192 at 1039. (L.D.)

19680.5: KMI, Dixon R., Calif., w/tfc list in FEC at 2100. (R.B.)

19693.0: URD, St. Petersburg R., Russia, w/tfc list, FEC at 1129. (E.W.)

19712.0: URD, St. Petersburg w/wx, 170/50 at 1500. (H.M.)

19724.4: UJY, Kaliningrad R., Russia, w/wx bc at 1505, 170/50. (H.M.)

19805.0: Czech Emb., Tel Aviv, Israel, heard at 1215, 100 baud. (L.D.)

20020.0: German Emb., Cairo, Egypt, idling, ARQ-E/96 at 1112. (E.W.)

20085.3: ISX20, ANSA, Rome, Italy, w/nx in EE at 1040, 352/50. (R.H.)

20110.7: FJY5, TAAF, Crozet Is., w/msgs to RFGW at 1127, ARQ-E3/96. Xmtr problems xmits very strong but distorted and unsteady sig. (L.D.)

20123.0: Italian diplo mission, Lagos, Nigeria, w/msgs to Rome, ARQ-E/96 at 1119. (L.D.)

20421.5: German Emb., Cairo, Egypt, w/tfc to Bonn, via emb. in Bern, Switzerland, fol'd by discussion w/Bern op re problems w/"ALIS," the Rohde & Schwarz automatic radio sys used by most German diplo stas. Was ARQ-E/96 at 1253. (L.D.)

20422.5: German Emb., Brasilia, Brazil, w/tfc to Bonn, ARQ-E/96 at 1137. (L.D.)

20584.0: Salcost, Rome, Italy, w/tfc in II to Salcost, Bumbuna, ARQ at 1125. (R.H.)

20724.0: "RPFN," Monsanto Navrad, Portugal, w/RYRY, SGSG, & foxes to PWX, 75 baud at 1318. (L.D.)

20804.0: Czech diplo mission, Lagos, Nigeria, w/5F grps to Prague, 100 baud at 1336. (L.D.)

20824.6: CLP1, MFA, Havana, Cuba, w/pren-saminrex at 1314, 50 baud. (L.D.)

20858.0: CLP1, MFA, Havana, w/crypto to Mozambique, 50 baud at 1632. (L.D.)

20901.7: Un-ID idling for over an hour w/no tfc. Tuned in at 1217. (E.W.)

21859.1: "DFZG," MFA, Belgrade, Yugoslavia, w/nx in EE, 389/72 at 1455. (R.H.)

22387.6: SVA, Athens R., Greece, w/tfc list, FEC at 1022. (R.H.)

ALPHA DELTA Model DX-EE Limited Space High Performance Multi-Band Dipole



- "No-Trap" design provides exceptional broad spectrum receive coverage from 5 MHz thru 30 MHz. Covers world-band broadcasts and "utility" frequencies in a single antenna.
- 2 kW transmit capability in the 7, 14, 21, and 28 MHz ranges without a tuner. Broad HF range transmit coverage with a widerange tuner.
- Designed for rooftop, attic, and condo installations where space is at a premium. Only 40 ft. overall length.

• kW size components, stainless steel hardware, and 12 GA. copper wire means the Model DX-EE has less loss than light-duty receive-only antennas. The Alpha Delta design concept does not permit the use of small, lossy traps as found in other brands. If you put RF power in the small trap-type models they will "smoke"—not what you want in a precision antenna!

• Frequency selection in the Model DX-EE is by a combination of special broadband RF choke-resonators and full size radiators on

various ranges. An antenna loaded with a number of traps in each wire is so narrow-banded, its useful ranges are severely limited.

• Special hardware and connector arrangement on the Model DX-EE accepts either balanced or coax feed. With other brands you have to make a choice of models.

• The instructions with Model DX-EE show how to tune it for transmit. For receive applications no tuning is necessary. Since it comes assembled, just take it out of the box, put it up and enjoy great DX!

Model DX-EE . . . \$89.95 ea. at your Alpha Delta dealer. Add \$5.00 shipping & handling for direct orders in the U.S. Exports quoted.

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CIRCLE 123 ON READER SERVICE CARD

FROM: WREDSIS/SSD RDG/IPC (CODE)

DATE/TIME: February 23, 1994 2030 UTC

SUBJECT: GOES-7 Spring 1994 Eclipse Schedule and Updated Meteosat Eclipse Information

Projected GOES-7 VLS Data Loss

	0700 UTC	0730 UTC	0800 UTC
2/22 - 2/23		CHX	CHX
2/24 - 2/26	700 lines	CHX	CHX
2/27 - 4/6	CHX	CHX	CHX
4/7 - 4/9	CHX	CHX	

CHX = Canceled

The Meteosat-3 spring 1994 eclipse season began February 22 and will extend to April 9, 1994. For the period February 24-27, 1994, expect Meteosat-3 data losses at 0500, 0530, and 0600 UTC.

Meteosat-5 eclipse season runs from February 26, 1994, to April 8, 1994. Since Meteosat-4 experiences data degradation around the eclipse periods, Meteosat-5 is acquiring data at 0 degrees until further notice. For the period February 26-27, 1994, expect Meteosat-5 data losses at 0030 and 0100 UTC.

Weekly Meteosat eclipse updates (data losses) will be provided as they become available from the European Space Agency.

Notice posted on TVRO satellite Spacenet 3, transponder 17. (From Robert Margolis.)

COMMUNICATIONS CONFIDENTIAL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

This month's mailbag contained a letter from an anonymous individual who brought up the subject of the Single Letter High Frequency Marker stations (SLHFM). The letter writer claimed these signals reminded him of the DF "Tip-Off" transmissions he was familiar with during the war. He did not specify if he was referring to the WWII period or to a later conflict.

The explanation given was that a DF net control would transmit an idle marker on several frequencies to keep the channeled open. When an intercept site would tip-off the control station regarding a target, the callsign, frequency and other pertinent details were sent to the DF net stations. Bearings were taken by those stations and the results sent back to control where they were placed on a plot board.

Over the years we have certainly seen a lot of different explanations for the SLHFM activity. I have to admit that the above statement seems to be one of the better explanations received to date.

The sharp eyes of Richard Monjure, LA, noted a mistake in the January 1994 column in the comments about the U.S. Coast Guard. The portion should have read: "Most of you probably know that the U.S. Coast Guard, effective this past August, discontinued their coverage of the 500 kHz Morse Code emergency distress system." Sorry for the boo-boo folks!

Thomas A. McKee, 104 Water Leaf Lane, Cary, NC 27511-9728 is compiling a database of information about shortwave radio utility listening fans. Its purpose is to provide address information to enable fans of HF utility listening to easily contact each other by electronic or printed means to exchange information about the hobby.

Column space restrictions do not allow me to include all of the information which Tom forwarded. If you are interested in further details send your request to Tom at the above address. Remember to include an SASE for him to use for the reply.

I have frequently observed a very strong carrier on 16347 kHz at various times during the day, but I have never heard any transmissions on that frequency. Have any readers ever heard any signals there other than the carrier? I even left the receiver on the frequency for hours at a time and still did not note anything.

Mark Heywood, Alberta, Canada wrote, "While reading back issues of *Flight International* magazine at the local library, I noted a letter regarding the fate of HF aeronautical radio use. Soon those of us who listen to the aviation utility stations on our shortwave radios will hear nothing but dead air. And, it is my understanding that the

To: David Sabo, Seoul, Republic of Korea

Q S L

This confirms your reception of


Gulf Air, Bahrain

on 11354 kHz USB/voice at 1402 UTC on 11 April 1992

Transmitter/Power: AEROCOM 1330 / 5 K.W.

Antenna: Verticle


Location: Near Bahrain International Airport
(2615.5 N 5039.3 E)

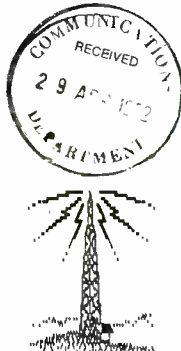


(Signature/Official Stamp)

N.B. Your particulars are correct. Our Aircraft Boeing 767/GF 149 flying from SYD to SIN was in contact with us on 11-4-92 at 1403 Z. QRX was 3/3 on 11354 Khz.

With all the best.





Q S L

PFC designed by David Sabo, S. Korea.

equipment required to listen to the satellite communications could be very expensive."

The letter Mark mentioned was from Graham Brett, Regional Secretary of the International Federation of Airline Pilots Associations (IFALPA). Mr. Brett was referring to transmissions of satellite-derived positions sent via satellite communications.

According to Mr. Brett, it is anticipated that the new capability will be in operation worldwide within 20 years. An effective demonstration of this new technology was conducted by Northwest Airlines in October, 1991 on a Boeing 747-400 flight from Detroit to Tokyo.

Robert Polhamus, CA, indicated he has been listening to longwave signals for almost five years. He uses a Sangean ATS-

803A receiver, 70 foot longwire, Palomar VLF converter, MFJ-956 antenna tuner/preselector and an Interceptor 12 inch loop (active). Bob is 26 years old and resides about 15 miles east of Los Angeles. He reported he only received a little damage from the January earthquake that devastated other parts of the LA region.

Perry Crabill, VA, advises, "added enough turns to my homemade BCB two foot square loop to tune down to 193 kHz so I could use it for the beacon band. It must work, because I heard beacons in Grand Turk Island, as well as two in Cuba, two in Colombia, and one in Brazil. I'm especially pleased with the Brazilian; it was my first, and is my best DX at 2,737 miles."

Ary Boender, Netherlands sent his re-

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NAVY MARS STATION

TKS FOR THE REPORT

NEW LONDON COUNTY

WAC / ph / cw
WAS / ph
DXCC



NAVAL SUBMARINE BASE, GROTON, CONNECTICUT

TO RADIO	CONFIRMING QSO						
	DAY	MONTH	YEAR	UTC	RST	MODE	MHz
	08	NOV	92	1935		SSB	14

RIG 73 DE STEVE OP
ANT PSE QSL TNY
CQ Zone 5 ITU Zone 8 GRID SQ. FN31 10X # 46690 BURO/DIRECT

U.S. Navy MARS QSL sent to Russ Hill, MI.

been found on a new frequency of 4090 kHz. It is very active. U.S. Navy ships noted were USS Ainsworth (FFT-1090), USS Conolly (SS-979), USS Barry (DDG-52), and USS Flatley (FFG-21). The amphibious assault ship USS Nassau (LHA-4) was also on station as well.

For quite awhile now, a station with ID of BAYONNE has been heard on the GHFS frequencies. In response to a query by an aircraft, the location was given as Bayonne, NJ."

Richard, the Bayonne station is reportedly under the operational control of the Military Traffic Management Command. This command provides support to the Air Mobility Command.

Carnival Lines new cruise ship 'Fascination' is to make its maiden voyage this month. Additional 'mega' cruise ships from Carnival are scheduled to be launched in 1995 and 1996. The latter one will be the largest cruise ship afloat. The newest Carnival ship in service, the M/S Sensation, has been observed to be very active on the coastal station frequency pairs with radio-telephone traffic.

Navy MARS Update: NNNOCN is CSS Conserver (ARS-39) FPO AP 96662-3202; NNNOCUY is USS Cayuga (LST-1186) FPO AP 98666-1908; and NNNOCWK is USS Comstock (LSD-45) FPO AP 96662-1733. The following have been listed as decommissioned ships: NNNOCNE, NNNOCPF, NNNOCPX, NNNOCQZ, NNNOCSL, NNNOCVF, NNNOCVX, NNNOCYR, NNNONAP, NNNONXN, and NNNONZC. NNNONOI is HSL-44 DET. RN NAVSTA MAYPORT FL 32228.



Majesty of The Seas

VERIFICATION OF RECEPTION

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

DATE: 24 May 92 FREQ: ch 810 MODE: J3E
XMTR.: SBJ - STA 910A ANTNA: whip
POWER: 800 WATTS LOCATION: Ocho Rios JAMAICA
REMARKS: TKS FER QSL CA7D

(Station Seal)



CH. RADIO OFF.
MAJESTY OF THE SEAS

SIGNED

Ed Rausch, NJ, shares this reception verification with readers.

Abbreviations Used For Intercepts

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

UTE Intercepts. All Times In UTC.

- 203: Beacon NSI, San Nicholas Island, CA at 1400. (Polhamus, CA)
- 225: Beacon SYW, u/i at 0539. (Low, TX) The updater shows this to be Cash, TX. (Ed.)
- 230: Beacon SH, Shreveport, LA at 0536. (Low, TX)
- 232: Beacon GT, Grand Turk, Turk Islands at 0615. (Crabill, VA)
- 241: Beacon VKX, Friendly, MD at 2354. DSB 1000 Hz. (Crabill, VA)
- 257: Beacon LKA, Chino, CA at 1400. (Polhamus, CA)

grets that he was unable to do very much monitoring because he is occupied with some studies. No problem, Ary, hit the books and you will soon be able to return to your listening schedule.

Richard Baker, OH, provided his usual informative summary—here is what he sends this month: "I have been hearing ships with CSS prefixes on 2182 kHz. The CSS stands for Canadian Survey Ship. These ships operate out of the Bedford Institute of Oceanography, Dartmouth NS, Canada, B2Y 4A2, and are similar to the U.S. NOAA ships. Bedford is the main research institution for the Department of Fisheries and Oceans in Canada. The west coast equiva-

lent is the Institute of Ocean Sciences, Patricia Bay, 9860 West Sannich Road, P.O. Box 6000, Sidney, BC, Canada V8L 4B2. On the east coast I have heard so far: CGBS, CSS Parizeau; CGDG, CSS Hudson; and CG2683, CSS Alfred Needler. One ship, CSS Dawson, was recently decommissioned. The last known west coast ships were CSS Vector and CSS Tully. I recently QSL'ed the CSS Parizeau through the Bedford address. I wrote Bedford requesting information on them and their ships, but so far there has been no reply.

Operation Support Democracy, the UN mandated sanctions against Haiti, with the multinational task force (CJTF-120), has

- 263:** Beacon JDN, Jordan Municipal, MT at 0844. (Vaage, CA)
- 264:** Beacon UIA, Andalusia, Redeye 1, River Falls, AL at 0842. Best DX this month. 1865 miles. (Vaage, CA)
- 292:** Beacon DP, Dana Point, CA at 1400. (Polhamus, CA)
- 294:** Beacon BMC, Brigham City, UT at 0857. (Vaage, CA)
- 296:** Beacon UVT, Victoria de las Tunas, Cuba at 1109. DBS 1000 Hz. (Crabill, VA)
- 299:** Beacon IUL, Blytheville, AR at 1157. New ID, ex-IVI. (Crabill, VA)
- 302:** Beacon V, Point Vicente, CA at 1400. (Polhamus, CA)
- 303:** Beacon OA, Oak Island LS, NC at 1148. Ex-298. (Crabill, VA)
- 314:** Beacon VM, Ventura Marina, CA at 1400. (Polhamus, CA)
- 317:** Beacon CVP, Helena Regional, MT at 0905. (Vaage, CA)
- 320:** Beacon HTN, Miles City Wiley Field, MT at 0906. (Vaage, CA)
- 322:** Beacon S, Point Sur, CA at 1400. (Polhamus, CA)
- 326:** Beacon MA, Midland, TX at 1932. (Farley, NM)
- 329:** Beacon TAD, Trinidad Las Animas County, CO at 0910. (Vaage, CA)
- 331:** Beacon LAN, San Salvador, El Salvador at 0504. 400 Hz. (Crabill, VA)
- 339:** Beacon A, Havana, Cuba, at 0455, 1000 Hz. (Crabill, VA)
- 341:** Beacon ALM, Almagordo White Sands Regional, NM at 0925. (Vaage, CA)
- 344:** Beacon GNC, Seminole Gaines County, TX at 0928. (Vaage, CA)
- 353:** Beacon HOT, Higuero, Venezuela at 0514, 1000 Hz DSB; 2,116 miles from Winchester, VA. (Crabill, VA)
- 355:** Beacon TGU, Tegucigalpa, Honduras at 0602. DSB; 1000 Hz. (Crabill, VA)
- 362:** Beacon SC, Sherbrooke, PQ, Canada at 1041. (Crabill, VA)
- 369:** Beacon ZDX, St. John's, Antigua at 0555. (Crabill, VA)
- 370:** Beacon PAI, Pacoima, CA at 1400. (Polhamus, CA)
- 371:** Beacon TOX, Siler City, NC at 0310, 1000 Hz DSB. (Crabill, VA)
- 379:** Beacon FSK, Ft. Scott, KS at 0449. (Crabill, VA)
- 380:** Beacon GC, Gillette, WY at 1011. (Baumann, CA)
- 382:** Beacon PCZ, Waupaca, WI at 1118; Beacon POS, Port of Spain, Trinidad at 0615. (Crabill, VA)
- 385:** Beacon CPZ, La Pryor, TX at 0653. (Baumann, CA); Beacon EMR, Augusta, GA at 0353. (Ed.)
- 386:** Beacon SYF, St. Francis Cheyenne County, KS at 0949. (Vaage, CA)
- 397:** Beacon SB, San Bernardino, CA at 1400. (Polhamus, CA)
- 400:** Beacon FN, Fort Collins, CO at 0820. (Baumann, CA)
- 404:** Beacon IFJ, u/i at 0405. (Low, TX); Beacon Guide shows IFJ at 402 kHz w/id of Winnfield, LA. (Ed.)
- 405:** Beacon ABG, u/i at 1411. (Low, TX); Beacon Guide shows ABG at 404 kHz w/id of Big Sandy, TX. (Ed.); Beacon BVI, Boa Vista, Brazil at 0523, 2,737 miles from Winchester. (Crabill, VA)
- 407:** Beacon LET, Leticia, Colombia at 0527. DSB; 2,649 miles from Winchester. (Crabill, VA)
- 408:** Beacon MW, Moses Lake Grant County, WA at 0955. (Vaage, CA)
- 410:** Beacon DAO, Ft. Huachuca, Libby AAF, AZ at 0957. (Vaage, CA); Beacon AKL, u/i at 0142. (Low, TX) Beacon Guide lists 407 kHz for AKL w/id of Haskell, TX; also 407 kHz for BVV w/id of Brookhaven, MS. (Ed.) 3EKK9, MV Oriental Venture (tanker) at 0745 and V7AA3, MV Falcon (oiler) at 0756. Both in CW wrking DFA, unlocated German stn. (Boender, Netherlands)
- 415:** Beacon HFM, Bonham, TX at 0830. (Baumann, CA)
- 416:** Beacon MSN, u/i at 2344. (Low, TX) Wonder if this could be MSD which Beacon Guide lists as 414 kHz w/id of Mansfield, LA. (Ed.)



Ted Melinosky, NH, with his equipment. Ted, by the way, compiles the annual K1BV DX Awards Directory.

VERIFICATION OF RECEPTION

SPEEDBIRD - 293

Date	Time (UTC)	Frequency	Mode
1 st Aug 1993	1553.	13306 kHz.	USB

Aircraft Type	Approx. Xmsn Location	Power (watts)
B-747	37°N 50°W.	N.R.

Aircraft Home Base
HEATHROW APT. LONDON ENGLAND

British Airways
British Airways
PO Box 10
Hounslow TW6 2JA
Telephone: 01-759 5511

Signature *J.M. Preston*

P.T.O. Official Stamp

A PFC from the collection of Steve McDonald, BC, Canada. He heard this Boeing 747 in mid-Atlantic working New York. The plane was enroute from Miami, FL, to Heathrow, London. This verification was signed by the pilot, Captain J.M. Preston.

439: DVSW, MV New Prospect (Cargo ship) w/ Oostende Radio in CW at 1615. (Boender, Netherlands)

526: Beacon RWE, San Miguel, CA at 1400. (Polhamus, CA)

530: TIS Irvine, Orange County, CA at 1400. (Polhamus, CA)

1646.5: CW signal "CQ CQ DE Y 1646.5 kHz AND 187.5 kHz NEW ORLEANS." (Dean, LA) This is a Lower transmission by Mark Burkart, New Orleans

2103.5: At 0609, CGAS, Canadian CG Ship Ann Harvey wkg Sydney CG Radio simplex w/ETA to disabled vessel of 2-3 hrs. At 0629, CGJV, Canadian CGS Edward Cornwallis wkg Sydney for wx obs, said to be in Country Harbor. At 0631, CG2960, CCGS Samuel Risley calls/wrks CGJV. The Risley is a Lake Huron icebreaker/nav aides tender assigned Thunder Bay. Said to be breaking ice on Detroit River and it was the 1st time he had hrd a east coast CCGS. First Great Lakes CCGS for me! All USB. (Baker, OH)

2182: LFO, Orlandet, Norway at 2155 in USB w/tfc. (Boender, Netherlands)

2707: YL/GG rptng Romeo Delta fm 2200-2205, then 5F grps for 116 and 218. (Mason, England)

2932: Tokyo Aeradio (OM opr/strong sig) selcalls Korean Air 098 (vy faint sig) at 1456, advises of ATC clearance to higher altitude; at 1457, Tokyo Selcalls Japan Air 32T, advises ATC clearance to FL 330. All USB mode. (Sabo, S. Korea)

3116: Khabarovsk Volmet, YL/RR w/aviation wx bcst in USB fm 1847-1850. Signed off w/id of "Khabarovsk Mityor." //5691 kHz, good copy on both freqs. (Sabo, S. Korea)

3195: SLHFM "R" in CW at 1825 and continues for many hours. (Boender, Netherlands)

3262: YL/GG rptng Romeo Delta fm 2030-05 then 5F grps for 914 and 457. Another day at 2230 YL/GG station Gilo Kilo w/5F grps for 316. (Mason, England)

3280: At 2000 Czech number station OLX sending its 3F call up of 597 as spoken by YL/Czech. However, on // freq of 5301 kHz it came out as "Click 9 7" apparently due to malfunction. When actual text was sent the number 5 came out alright. (Mason, England)

QST

Wilhelmshaven, 26. No. 93

YOUR REPORT FROM 3. MARCH 93 AT 0816Z

WE ARE A NAVAL STATION ONLY WITH DUTY TRAFFIC. SORRY THAT WE ARE NOT ABLE TO GIVE FURTHER INFORMATION. NEVERTHELESS, MANY THANKS FOR THE AMIABLE INTEREST, ALWAYS BEST RECEIVING CONDITIONS FURTHER ON AND 79.

WITH KIND REGARDS

Mege, Ltcdr

NAVAL RADIO STATION WILHELMSHAVEN

Richard Baker, OH, received this QSL from the German Naval Station at Wilhelmshaven.

3331: CW mkr of VVV DE HEP at 0729. HEP is listed as Bern, Switzerland. (Boender, Netherlands)
3440.8: U/i CW stn rpts at 1352 "V 8L6S 8L6S DE 2RCB 2RCB. //4276.5 kHz. Same transmissions noted exactly one week and two weeks earlier on 3446.1//4274.6 kHz. Quite strong, apparently re-

peats same for hours on end. (Sabo, S. Korea)
4088.5: USCG & USN ships w/comms re Haiti blockade at 2330. (Rausch, NJ)
4090: Hotel wkg Sierra re contact, advises "I hold that to be your snooper." Then passes course/speed details. This is Haitian Op's freq. Hrd in USB at 2002.

(Baker, OH)
4125: ZMB, Bermuda Harbor Radio wkg vessel SQEB at 0650. Earlier hrd on 2182 kHz. Bermuda attempting assist re crewman w/chest pains. USAF para-jumpers ruled out due to sea state. Last hrd attempting to arrange helo from NAS to land on ship. USB mode. (Baker, OH)
4126: At 2210 a three note rising scale signal was sent which is same as used by German Telephone Company to advise of incorrect dialing. Then at 2215 YL/GG said 'Achtung Achtung' and went into 5F grps. (Mason, England)
4222.3: Ningbo Radio, PRC in CW at 1605 sends CQ CQ CQ DE XSN XSN XSN QRU IMI BK. (Sabo, S. Korea)
4323: SLHFH "R" w/2.8 sec gap between R's. Hrd at 2005. (Mason, England)
4485: YL Bulgarian Betty (actually Czech) rptng 555 5 555 313 313 05 fm 1355-1400, then 42 05 42 05 67029. This stn changes freq every month. (Mason, England)
4600.5: DER, Ministry of Interior, Bonn, Germany in CW at 0850. OLX, Prague, Czech in CW at 0900 w/VVV DE OLX + coded msg. (Boender, Netherlands)
4630: OM/EE at 2000 w/372 372 372 00000 in AM mode. Off at 2005. (Mason, England)
4725: REACH 60201 w/urgent need for replacement IFF avionocs to be sent to Sigonella AB, Italy. Comms via PP to HILDA thru Thule...stated part is common to every AF & Navy a/c in the inventory. Hrd at 2005. (Pihale, MN)
4885: YL/GG w/Swedish Rhapsody music boc mkr at 2000 w/5F grps. It was also on 4779/ 5340/ 6507 kHz. This 4th freq not noted before. (Mason, England)
4888: YL rptng Alpha Uniform fm 0900-0905. Then 'Message for 214 214 34 Groups. Attention and into EE 5F grps. Next day 'AU' was on 4821 kHz at 1000 but w/diff msg of 47 5F grps. 'AU' was always a GG speaking station, and addee 214 is also currently used by YL/EE stn 'Delta Mike.' (Mason, England)
5015: YL/GG rptng Papa Delta fm 0400-0405

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w/tones foll by 5F grps for 054. (Mason, England)

5230: At 2105 Mossad YL was rptng Mike India Whisky Bravo 21 Alpha 22. (Mason, England)

5263: OM/RR rptng 824 824 824 1 fm 2000-2005 then 5098 26 5098 26 and into 5F grps. Ended w/00000. (Mason, England)

5320: NOY, USCG Group Calveston clg USCGC Papaw at 0249, no joy. At 0342, S9N wkg NOY8, Group Corpus Christi, running EPIC (El Paso Intelligence Center, Ft. Bliss, TX) checks on subjects on vessel. All in USB mode. (Baker, OH)

5400: Australian Antarctic Bases wkg Hobart Control, Tasmania w/peronnel report & supply requests at 0600. (Rausch, NJ)

5526: Maniquetia IFSS (NE-SAM), Venezuela wkg GeorgeAIR flight with position at 0625 in USB. (Baker, OH)

5544: Jeddah Saudi Arabia LDOC wkg Air Arfque 090 w/pos report & Selcal check at 0257. (Rausch, NJ)

5616: UPS6572 wkg Iceland Radio w/posit report & Selcal ck at 0952. (Rausch, NJ)

5629: YL opr (weak sig) in USB at 1434 rpts SYN2 in phonetics. //8465 kHz. Mossad activity. (Sabo, S. Korea)

5655: Aeroflot-541 (OM opr/strong sig) wkg Bangkok Aerodia (OM opr/med sig) in USB at 1516. (Sabo, S. Korea)

5680: Edinburgh Rescue w/climbers wx for u/i mountain range. Special warning re unstable snow conditions & avalanches will occur especially on N and E facing slopes. Avalanche alert Category 4. USB at 0750. (Rausch, NJ)

5696: USCGC Forward & CG Rescue C130 1719 w/pp comms w. Atlantic Area Ops via CommSta Portsmouth at 1530 in USB. Comms re airevac of survivors of sunken sailing vessel Lightfoot from Japanese freighter Shin Kakogawa Muru. Unable to evac due to on scene wx, 40 knot winds & 25 foot seas. Survivors remained on Japanese vessel enroute Ireland. USCG C130 Rescue a/c 1500, 1503 & 1719 in pp comms w. RCC New York via Comm Sta Portsmouth re request for evac from sailing vessel Malachite 41 foot ketch due

to loss of rigging due to storm. 3 POBs wearing orange PFDs w/strobe lights. EPRIB activated, vessel has orange and white flares and will abandon vessel into yellow and black Avon lifereft. Hrd at 1710. Jayhawk Rescue helo 6008 also enroute to scene. 6008 advised RCC NY that on scene conditions were difficult but crew has successfully conducted hoist w/rescue swimmer. Hoist ops completed at 2330 & all a/c proceeded to Bermuda w/survivors. 1503 informed CommSta Portsmouth entire ops videotaped. CommSta requested 1503 RTB USCG Air Station Elizabeth City, NC w/video tape & survivors ASAP as local media had been alerted. (Rausch, NJ) First item was accomplished by article from STAR-LEDGER newspaper describing the rescue of the two individuals who had been on the sailboat Lightfoot. (Ed.)

5718: Rescue 103 wkg Halifax Military at 0601 re SAR mission for freighter in North Atlantic. (Pihale, MN)

5782: OM/EE at 210 rptng 182 182 182 1. At 2115 705 705 24 24 and into 5F grps. Ended with/00000. (Mason, England)

6224: Stratford, New Zealand Marine Radio w/high seas wx for Pacific at 0635. (Rausch, NJ)

6393.5: Darwin Naval, Australia in CW at 1647 w/mkr VVV DE VHI5 AR. (Sabo, S. Korea)

6501: Honolulu CommSta (NMO), hrd wkg vsl Alley Cat in USB 1738-1749 re emerg situation on board vessel. CommSta queried extent of damage, drifting, and asked several times if crew planning abandon ship. CommSta was also xmtng on 8764 kHz. (Sabo, S. Korea)

6507: VIM, Melbourne Marine Radio w/Pacific high seas wx at 0950. (Rausch, NJ)

6518.8: CommSta Portsmouth wkg NHNC, CG Cutter Harriet Lane at 2241. (Pihale, MN)

6658: Telecomm conversation or perhaps air/gnd pp between male & female (RR speakers) in USB at 1824. Said "Dasvadonya's" at 1827 foll by OM oprs for few xmsns. (Sabo, S. Korea)

6678: U/i dive boat QTH Marquesas Islands w/OM & YL in simplex comms re plans meet in Fiji at 2220. (Rausch, NJ)

6716: USCG Rescue 1500 wkg Vancouver Military confirming refueling at Gander at 0607. Also wkg Halifax Military re refueling at St. Johns. RCC requests 1500 contact Center upon arrival in Gander re SAR for Liberian-registered freighter in North Atlantic which is breaking up. (Pihale, MN)

6730: SAM 682 wkg Andrews w/many pp's while enroute California after earthquake w/VIPs on board. Hrd at 2230. (Rausch, NJ)

6738: Yokota Air Base, Japan w/SKYKING bcst in USB at 1856. (Sabo, S. Korea)

6812: AF-2 wkg Andrews GFSS at 1951 w/sig ck. At 1955 advises "on deck" foll by arrival report. At 2014 SAM 31683 wkg Andy for pp after advising was airborne 2005. USB mode. (Baker, OH)

7480: YL/SS w/5F grps fm 0115-0117. (Dutch-er, NY)

7535: Ships hrd wkg SESEF: NTSG, USS Thomas S. Gates (CG-51) at 1439; NPBA, USS Defender (MCM-2) at 1736; USS Providence (SSN-719). This LA-class nuclear attack sub is first ever hrd w/name ID used. Hrd at 1808. U/i ship w/tactical call U7C at 1826; NYKN, USS Yorktown (CG-48) at 1837; NHXX, USS El Paso (LKA-117) at 1843; NTAC, USS Tempest (PC-2) at 1855; NHJK, USNS Henry J. Kaiser (T-AO-187) at 1859; USS Warrior (MCM-10) for rdo ck at 2040. Later QSY'd 12315, 18220 kHz for data sys ck. Primary mode above was USB. At 0600 Christian Science Hour hrd on this USN SESEF Norfolk primary freq. Also noted on Cape Radio freq 5810 kHz. (Baker, OH) According to 1994 WRTH, WWCR, Nashville, TN uses 5810 & 7435 kHz during 0000-1000 UTC???

7918: YL opr in USB at 1601 rpts YHF in phonetics til 1603, then "Two messages, two messages. Message, message. Group 82, group 82. Text, text." and into 5L grps. Weak sig. (Sabo, S. Korea)

8219: C6CN3, Golden Princess (Princess Cruise line) hrd at 0203 in USB w/R/T t/c w/KMI (on 8743 kHz). Cruise ship M/S Nordic Prince clg/wkg KMI at 0206 for R/T t/c holding. (Baker, OH)

8300: New Star Radio Station #4 in AM at 1537; YL/CC passing 4F grps, each x2. (Sabo, S. Korea)

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8450: Benghazi, Libya in CW at 1528 rpts VVV VVV VVV CQ CQ CQ DE 5AB 5AB K. (Sabo, S. Korea)

8452: Strong CW sig by u/i stn at 1511 w/rptd xmsn of "V BFR7 BFR7 BFR7 DE 4XML 4XML." Similar xmsns w/diff callsgns, noted on 3440.8//4276.5 & 3446.1//4274.6 kHz. (Sabo, S. Korea) These signals remind me of those described in June 1986 POP/COMM article by William I. Orr. I and other monitors have copied similar signals quite frequently. As a possible explanation, opening comments in column this month might apply. (Ed.)

8604.3: Bulacan Radio, Philippines in CW at 1657 w/mkr CQ CQ DE DZJ DZJ KDZ MCI MLA RDO QSL 8 12 AND 16 MHz K. (Sabo, S. Korea)

8688.5: Capetown Radio, South Africa in CW at 1627 w/callsign mkr. (Sabo, S. Korea)

8758: SVA, Athens, Greece w/rebcst of National Time Standards stn at 1956 as voice mkr in USB. (Baker, OH)

8849: Beijing Volmet w/aviation wx for PRC locations at 0045 in USB. (Rausch, NJ)

8903: Asiana-232 advised Honolulu Aeradio of position & at FL 330. USB at 1539. (Sabo, S. Korea)

9032: U/i prob RAF Volmet stn in USB 1615-1621. YL opr, vy weak sig. Ferrell's CFL shows it poss VIPER, RAF Falkland Islands. (Sabo, S. Korea)

9040: YL/GG w/Oscar Alpha fm 1600-1605, then into 5F grps for 122 and 820. (Mason, England)

9130: YL passing 5L phonetic grps in USB at 1642. (Sabo, S. Korea)

9222: YL/SS in AM at 0200 w/"239, 1-0" rptd. (Low, TX)

9251: YL/EE in USB at 1824 passes 5F grps each x2. This was "Lincolnshire Poacher" bcst. (Sabo, S. Korea)

9270: YL/EE here daily at 0820 rptng 274 for 5 mins. Then 707 707 21 21 and into 5F grps, ends w/00000. (Mason, England)

9467: YL/EE in AM at 1206 rpts 951 x3 & 1-0 counts. Strong sig & fairly clear. At 1210 ten beeps, Count 225 x2, and into 3/2F grps. //13555 kHz. (Sabo, S. Korea)

9725: YL/CC 4F grps x2, weak in AM at 1515. (Sabo, S. Korea)

10493: WGY938, FEMA Region 8 Hqs, Cheyenne, WY wkg WGY909, FEMA District 9 Hqs San Francisco w/query if any nets set up due to LA earthquake. Hrd 1844 in USB. (Baker, OH)

10510: YL/SS rptng 30 02 555 fm 1010-15, then into 5F grps. (Mason, England)

10529: YL/EE in AM mode at 1300 w/883 x3 & 1-0 counts. (Sabo, S. Korea)

10723: YL/EE w/1-0 count and 111 fm 1400-1410. After 10 tones said Count 225 and went into 3/2F grps. Also on 7871 kHz. (Mason, England)

11176: Shadow 91 (Seymour Johnson AFB KC-10) wkg Albroom w/pp to Maxwell AFB (Atlanta) for arrival wx info. (Baker, OH)

11233: Eskimo 311 wkg Edmonton Military w/Selcal check & msg for RCC in regard to SAR area. (Pihale, MN)

11229: Judicate clg "on X210 w/request" at 0031 in USB. No joy. (Baker, OH)

11415: CW stn at 1020-25 sending 555 555 555 771 771 771 10 after which into fast CW 5F grps. (Mason, England)

11470: YL/EE passing 3/2F grps in AM at 1514. (Sabo, S. Korea)

12167.8: YL/EE in USB at 1505 with 3/2F grps. Very weak sig. (Ed.)

12230: ELMQ, cruise ship T/SS Fair Princess at 2359 wkg KMI for R/T tfc in USB. (Baker, OH)

12282: CW stn sending VVV DE DEA47, Husum, Germany. Hrd at 1205. (Mason, England)

12315: USS Warrior (MCM-10) wkg SESEF Norfolk for LSB rdo ck at 2043. (Baker, OH)

12356: WHH, Seattle, WA wkg MV Polar Star w/pp tfc at 0031. (Rausch, NJ)

12750: CWA, Cerrito, Uruguay at 0008 w/CW tfc list, Nav area warnings & EE wx forecast. //17231.2 kHz. (Baker, OH)

12874: VCS, Halifax CG radio, in CW at 1936 w/VVV-CQ mkr. (Low, TX)

12923: Seoul, S. Korea in CW at 1306 w/CQ DE HLW2 mkr. (Sabo, S. Korea)

13044: Cape D'Aguiar, Hong Kong in CW mode at 1000 sending CQ CQ DE VPS61 VPS61 QXS

CHANNELS 3/4/5/6. (Sabo, S. Korea)

13089: NMN, CommSta Portsmouth at 1939 wkg M/V Bright Star re patient vital stats ("no heart problems cr cold sweats...needs medication"); CAMSPAC San Francisco w/GPS status update at 2245. (Pihale, MN)

13201: McClellan GHFS wkg Air Evac 67952 w/pp enroute to Eielson AFB, AK; then to Elmendorf AFB, AK w/pp to Denali (Alaskan Command CP). (Pihale, MN)

13254.6: Raspy dots/dash signal in CW at 1746. Hrd many times on this freq. (Ed.)

13400.1: Very weak CW stn at 1400 sending UCD UCD UCD QRU. UCD listed as Yalta, Ukraine. (Ed.)

13750: YL/CC hrd passing 4F grps, each x2 on two diff evenings at 0607 and 1441. Both AM mode. (Sabo, S. Korea)

13878.4: Raspy dots/dash signal in CW at 1543. Hrd this freq often. (Ed.)

14461.8: Stn in FSK Morse at 1545 sending what sounds like ETFNIX QAGAS or AFNIX QAGAS. Sequence sent few times then he stopped halfway through a sequence as if he broken by other end & few moments later carrier off. Other end not on this freq. (Ed.)

14470: NNNONZV, USS Denver (LPD-9); NNN0-CUY, USS Cayuga (LST-1186); and NNNOCWK, USS Comstock (LSD-45) wkg NNN0ERA in rotation at 2111 for pp tfc in USB. (Baker, OH)

14670: CHU, Ottawa, Ontario, Canada, Time Station in AM at 0058. (Low, TX)

15015: REACH 709DA wkg Lajes GHFS w/pp to Dover Metro at 1924. (Pihale, MN)

16086: YL/EE passing 3/2F grps in AM mode at 1214. Usual 1200 Sunday sked. //13555 kHz. (Sabo, S. Korea)

16222.6: At 2305 hrd u/i CW stn w/261 403 126 BT BT and into 5F grps x2. (Ed.)

16299.1: At 1718 in USB hrd "THIS IS NRO" (Prob NNN0NRO) 9 PIECES OF TFC FOR YOU. Stn then shifted to RTTY with MARS tfc. (Ed.)

16652.1: Seems to be a private CW chit-chat network. Hrd at 1605. Also noted similar activity on 16656.5 kHz with many of same callsgns observed. Hrd calls JVR, 5B, AA, PARE, RQ, LAN3, LAN2, PAT, & many others. Most chatter was in EE but also saw a little bit of u/i jargon. Lots of references to fish, docking, ports, voyage. These stns poss boats of fishing fleet. (Ed.)

16986: CTP97, Oeiras Naval, Portugal (NATO) in CW at 1927 w/QSX mkr. (Low, TX)

16998.5: JDC, Choshi, Japan w/CW CQ/QSX mkr at 2354. (Baker, OH)

17052: Keelung, Taiwan in CW at 0942 w/CQ DE XSX mkr. Same noted on 17010.5 at 0917. (Sabo, S. Korea)

17995: CHR, Trenton Military wkg CanForce 7312 enroute Winnipeg for tfc ck and Selcal ck "ASCP" at 1955. USB mode. (Baker, OH)

20936: NNNOCYG, USS Ticonderoga (CG-47) wkg NNN0NIU, NAS Cecil Field, FL for pp tfc at 1758 in USB. Later hrd w/NNN0FMN, QSY'd to 20678.5 kHz. (Baker, OH)

21985: Honolulu Aeradio advised Air Mike (?) 952 of ATC clearance thru Yap Airport to Agana (Guam) Airport as filed, cruise flight level 290 to Yap; upon departure climb to maintain FL 290. USB mode at 0140. (Sabo, S. Korea)

22452: Guangzhou, PRC in CW at 0827 w/CQ DE XSQ/4/7 mkr. (Sabo, S. Korea)

22565: Kaoshiung, Taiwan in CW at 1350 w/CQ DE XSW mkr. (Sabo, S. Korea)

22690.5: Nagasaki, Japan in CW mode at 0916 w/CQ DE JOU mkr. (Sabo, S. Korea)

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82 / POPULAR COMMUNICATIONS / July 1994

Beaming In (from page 5)

that these two approaches may be at odds with one another.)

Prof. Denning recognizes that there are strong opponents to the Clipper chip, but points out that it's folly not to allow law enforcement agencies with court orders to intercept and understand the communications of suspects.

With respect to the government's assurances that the Clipper provides safeguards against unwarranted or casual eavesdropping, Prof. Denning offers more specific information than provided by the White House. In order for a Clipper chip to be activated, two activation components must be brought into play. One is at the Treasury Dept., and the other held by the National Institute of Standards and Technology (Dept. of Commerce). Without a court order, the separate components supplied from both agencies, and the code and key information required to utilize the complex chip, there is no eavesdropping.

Prof. Denning recognizes that opponents of the Clipper chip claim that terrorists wouldn't be so foolish as to use encryption to which the government holds the key, and will use their own coding methods. She dismisses this argument by pointing out that nobody would have believed the terrorists who bombed the World Trade Center would have been so stupid as to return a rental truck.

Responding in *Newsday* to Prof. Denning's statements, Ludwig R. Vogel had some points to make. He's the Chairman of New York State's Libertarian Party. Vogel said that unfortunately, this example offers no evidence as to whether any terrorist group or criminal has ever been intelligent enough to use encryption in the past, and why, in the future, they might be dumb enough to use a virtually useless one that can be compromised.

Based on past governmental excesses and abuses of intercept technology, the assurances of protection from abuse under Clipper chips are best taken with a grain of salt. It is Ludwig Vogel's understanding that there are federal documents confirming that governmental intercept procedures involving Clipper technology offer users no more protection from wrongful governmental electronic surveillance than the present systems.

Vogel suggests that intercepted data protected by so-called "strong" encryption can't be sorted out from data protected by "weak" encryption until somebody actually tries to break the code. That would make random checking of the data stream necessary in order to expose users of unauthorized strong encryption methods. Of course, the government disclaims the use of code-breaking except under court order.

Vogel feels that universal adoption of Clipper technology is unlikely now. That's because, he says, on the heels of the government's unveiling of Clipper, designers

are offering programs using strong encryption as freeware on BBS. Sooner or later we can expect military-level crypto software on the market, and Clipper may become the Edsel of cryptography.

A high-ranking police officer in a large police department told me that giving the feds ultimate control of access to electronic surveillance will thwart the surveillance abilities of local police agencies. He pointed out that it already takes municipal, county, or state police time and effort to secure a court order for a wiretap. When police need to obtain wiretap access approvals and coordination from assorted federal bureaucrats representing several agencies, it will make police electronic surveillance a lengthy and almost impractical nightmare. He cited instances of kidnapping or hostage situations when wiretaps are essential, and time is a prime factor.

The most ominous anti-Clipper opinions I've seen were in a clipping from *The Spotlight* a reader passed along. The news clipping contained the opinions of Clark Matthews, a New York computer consultant and writer. Matthews alleges that in 1989-90, secret remote-monitor devices were developed by Bell South for a powerful and wealthy unnamed "client." He claims that the equipment is designed to be installed in telco facilities to enable simultaneous eavesdropping on multiple households, and remotely operated from even thousands of miles away. Apparently the devices could be suitable for national deployment throughout the landline telecommunications network.

According to information Matthews alleged, the client required four things of each device:

1. It must be activated by remote control and have its own private dedicated tie-line to feed the eavesdropping data direct to the client without processing through telco switching networks.
2. The remote monitor must be capable of collecting and storing numbers called, as well as incoming callers' numbers.
3. It can be programmed to record all phone conversations, data, and fax calls, or
4. It may be programmed to pick up and record room conversations through the microphone in the telephone instrument, even when the phone is on the hook.

Matthews' opinion is that the proposed "Digital Telephony and Privacy Improvement Act of 1994" resulted from the fact that the system he alleges was field tested (he claims in six cities) and therefore deemed very successful.

I have attempted to provide some of the various positions and opinions being circulated regarding the Clipper chip, pro and con. As you can see, this is a hot topic. If you had not yet heard about Clipper, certainly you will as time goes on.

My own opinion is that nothing good will come of any of this. If you have your own opinions, why not let me know what they are. People should also write to their Congressional representatives to let them know what they think. ■

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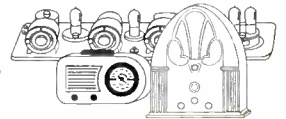
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500KHz to 1300MHz. Ten scan banks, ten search banks. Search lock and store. BFO. 2 Antennas. AM/NFM/WFM. Selectable increments. Tons of features, small size: 5 7/8 x 1 1/2 x 2.
Wt. 14 oz.

Fax fact document # 250 **\$449.00**

Continuous Coverage

New Bearcat mobile/desktop offer continuous coverage of VHF/UHF/800 bands!. The Bearcat 890XLTB covers 29-956MHz with 200 channels, Turbo scan, WX search, VFO tuning, 10 priority channels and more! The Bearcat 8500XLTC covers 25-1300MHz in AM/NFM/WFM modes with 500 channels, turbo scan, 10 priorities, VFO tuning, and more. Fax fact documents 477 & 475.

Bearcat 2500XLTA \$349.00
Bearcat 8500XLTC \$379.00
Bearcat 890XLTB \$259.00

Mobile Scanners

Bearcat 760XLTM \$229.95

100 Channel 800 MHz

Five banks of 20 channels each. Covers 29-54, 118-174, 406-512 and 806-954MHz (with cell lock). Features scan, search, delay, priority, CTCSS option, lockout, service search, & keylock. Includes AC/DC cords, mounting bracket, BNC antenna. Size: 4 3/8 x 6 15/16 x 1 5/8. Weight: 4.5lbs. Fax fact document #550

Other Mobile Scanners

BC560XLTZ \$99.95

Fax fact on above: #560

(color slide)

Trident TR-2 \$49.95

Scan/CB/Highway Patrol/ plus extra cost WX. X,K,Ka,Wide & Laser

Scans police pre-programmed by state channel plus full radar and laser alerts in one small unit. Weather, CB receive & mobile relay. Size: 5 5/8 x 4 7/8 x 1 3/4. Wt: 1.5lbs. Fax fact #580

Other pre-programmed scanning receivers

BC350AS \$129.00
BCT2 \$149.00
BC700AS \$169.00

Fax fact on all above: #580

Hand Held Scanners

Bearcat 200XLTN \$209.95

200 Channels 800 MHz

Ten scan banks plus search. Covers 29-54, 118-174, 406-512 and 806 956MHz (with cell lock). Features scan, search, delay, 10 priorities, mem backup, lockout, WX search, & keylock. Includes NiCad & Chrgr. Size: 1 3/8 x 2 11/16 x 7 1/2. Wt. 32 oz. Fax Facts # 450

Other hand held scanners

Bearcat 70XLTP 20Ch H/L/U \$139.95

Bearcat 55XLTR 10 Ch H/L/U \$99.95

Fax facts on all above: #475

Table Top Scanners

Bearcat 855XLTE 50Ch w/800 \$159.95

Bearcat 142XLM 10Ch H/L/U \$84.95

Bearcat 147XLJ 16 Ch H/L/U \$89.95

Bearcat 172XM 20Ch H/L/U/Air \$124.95

Bearcat 210 16Ch H/L/U/Air \$129.95

Fax facts on all above: #675

Shortwave Receivers

ATS-818CS \$224.95

16 Band digital receiver with programmable cassette recorder, BFO for SSB, AM/FM Stereo, 45 preset memories LCD display with dual time. Signal & Btt. strength indicator. Sleep timer & tone control.

Fast Fax #505

ATS-818 \$194.95

Same as 818CS but w/o cassette.

Fax Fact #506

ATS-803A \$174.95

The perennial best buy receiver. 16 band digital receiver with AM/FM/FM Stereo modes. 9 memory presets. Auto/Manual and Scan modes. BFO RF Gain and Dual Filter controls. Complete with adaptors and headphones.

Fax Fact #507

ATS-808 \$184.95

Compact size, great performance in a 16 band digital receiver. AM/FM/Stereo with 45 memory presets. LCD display with dual time clock. Complete with adaptors and headphones.

Fax fact #508

(photo)

ATS-606 \$154.95

16 band ultra compact digital receiver with auto tuning and scan system. 45 memory presets cover AM/FM/Stereo. Dual time display, alarm timer, adjustable sleep timer.

Fax Fact #509.

SG-621 \$79.95

Compact 10 band receiver with AM/FM/Stereo. Analog tuning with a digital display.

Fax Fact #513.

ATS-800 \$94.95

13 band digital receiver with AM/FM/Stereo and 20 memory presets. Auto/Manual, scan clock and sleep timer.

Fax fact #510.

SG-631 \$99.95

10 band analog tuning with digital display which shows time and day for 260 cities throughout the world.

Fax fact #511.

SG-789 \$54.95

10 band analog tuning super compact and very economical.

Fax fact #512.

SG-700L \$49.95

12 band AM/FM compact portable analog receiver

Fax Fact #514

**TOTAL
COVERAGE
RECEIVERS**



TR 2500



TR 980

TR 1000XLT

TR 1500



BC 200XLTM



SCANNERS



BC 760XLTM



TR 2

**SHORTWAVE
RECEIVERS**



ATS 818CS

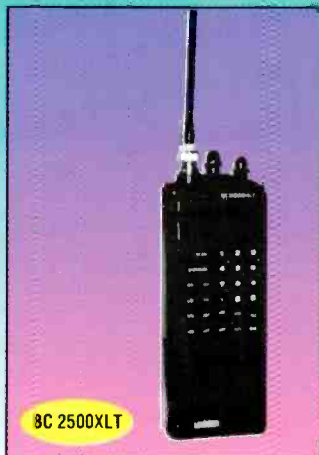


ATS 606

NEW!



BC 8500XLT



BC 2500XLT

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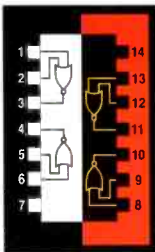
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