

ICD08635

# POPULAR COMMUNICATIONS

SEPTEMBER 1996

*In this issue:*

- **Taboos On The Airwaves**
- **Checked Out: Magellan GPS Receiver**
- **Pre-WW II Shortwave**
- **CB's "Forbidden Fruit"**

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# POPULAR COMMUNICATIONS

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**This month's cover:** Members of the Long Branch, N.J., Police Department's SWAT team perform a drug bust exercise. You can tune in exciting surveillance communications. Photo by Larry Mulvehill, WB2ZPI.



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# QUALITY COMMUNICATIONS EQUIPMENT SINCE 1942

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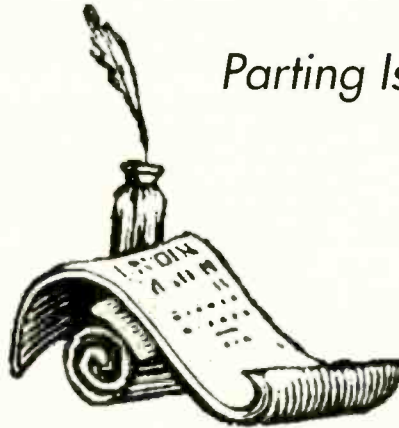
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BY CHUCK GYSI, N2DUP

# Thoughtwaves

## AN EDITORIAL



## Parting Is Such Sweet Sorrow

ity magazine for radio hobbyists on the newsstand and in your mailboxes. That will not change.

I have been affiliated with *POP'COMM* since 1983, shortly after its startup, when I began penning the Scanning VHF/UHF column (called Scanning Scene back then, but changed when another magazine assumed the same title for its scanner column!). I have written many features over the years for both *POP'COMM* and other publications produced by CQ. I always have enjoyed being associated with a class organization, and even more in the past year and a half.

While I no longer will be responsible for the production of this magazine, I am sure you will see my name appear again at some point. I will be searching for new avenues and venues for my work, though I am unsure immediately where that will land me. But in my heart, I know *POP'COMM* will continue to accomplish what it set out to do this month 15 years ago.

In the first editorial in this magazine, Tom Kneitel said: "...we are here to serve your needs and interests. That is to say, we are interested in you and we need you."

Nothing will change in that regard as *POP'COMM* begins its 15th year of publication. It only can get better.

I wish to thank all those who have been supportive of my endeavors in the past year as editor, and I know I have made my mark on the magazine, as evidenced by all your kind letters and e-mail messages. It allows me to move on comforted, knowing our readers care.

I am not in hiding; I can be reached by e-mail at SCAN911@aol.com, or by old-fashioned methods at: P.O. Box 911, Burlington IA 52601-0911.

*POP'COMM's* readers are the best. I will miss your interaction.

73, Chuck

This perhaps is the most difficult "Thoughtwaves" I've had to pen during my short tenure as editor of *Popular Communications*. However, I find it necessary.

Effective with the next issue of this magazine, Harold Ort, N2RLL, will replace me as editor. This is a result of several things. First, CQ Communications Inc., publisher of this magazine, has discontinued publication of *CB Radio* magazine, started earlier this year. Harold has served as editor of *CB Radio* and previously as editor of the *Popular Communications Communications Guides*.

Because Harold has been with the company longer, I have been released and Harold will assume the helm of *POP'COMM*. This was not an easy decision by the publisher of this excellent journal, but one that was made necessary by the economics of a soft market. You just can't have more editors than you have magazines.

As I have worked with Harold for several years, I know the magazine will remain in good hands. Expect much of the same as you have come to count on when I assumed the helm from Tom Kneitel just over a year ago.

This issue marks the 15th anniversary of the publication of *POP'COMM* and if you look back to reflect what the magazine was like back then, you will see how far we have come. The staff has constantly strived to continue to put a qual-

# Mailbag

## LETTERS TO THE EDITOR

Each month we select representative reader letters for our Mailbag column. We reserve the right to condense lengthy letters for space reasons and to edit to conform to style. All letters submitted must be signed and show a return mailing address or valid e-mail address. Upon request, we will withhold a sender's name if the letter is used in Mailbag. Address letters to: Chuck Gysi, N2DUP, Editor, *Popular Communications*, 76 N. Broadway, Hicksville, NY 11801-2909, or send e-mail via the Internet to POPCOMM@aol.com.

### Those Misplaced K Calls

In your article *A Visit to Radio's Past* that was featured in the July 1996 issue of *POP'COMM*, you offered a brief discussion of the handful of "K" callsigns that exist east of the Mississippi River. Your write-up correctly identified the three Pennsylvania stations with "K" calls—KDKA, KYW and KQV. You also included two stations that, frankly, obtained this unique distinction by default: KSGM in Chester, Ill., which had its start on the other side of the river in Missouri, and KTGG in Spring Harbor, Mich., which

was mistakenly given a "K" call by an errant FCC clerk.

However, no discussion of this rarity is complete without mentioning one of America's pioneer radio stations: KFIZ in Fond du Lac, Wis.

KFIZ, on 1450 kHz, began operation in 1922, and has served the east central Wisconsin community as its hometown station. Among its most popular voices was local sportscaster Joe Goesser, who also was KFIZ's morning man for 44 years.

Almost from its beginning, KFIZ was owned by the city's local newspaper, *The Fond du Lac Reporter*. The two media operations shared a building (which no longer is standing) at 18 W. First St. in Fond du Lac until 1973, when the *Reporter* sold the station to businessman Don Jones, who later would go on to become one of America's leading cable television moguls.

Jones sold KFIZ in 1987 to Independence Broadcasting, which, at the same time, had purchased FM competitor WFON (107.1 MHz). Independence merged the two stations into WFON's building at 103 W. Scott St. in Fond du Lac. In 1993, Jones repurchased the property, and dropped the WFON callsign, rechristening it KFIZ-FM.

That's right. Fond du Lac, Wis., has the distinction of being home to not one but TWO of those rare eastern "K" calls!

(Note: From 1971 to 1973, while a student in high school, I worked as an announcer at WFON, the future KFIZ-FM.)

Marc Manis, K5NO  
Winter Springs, Fla.  
(via America Online)

*We checked with Alice Brannigan about her article, and she says this:*

*"My comments in the July issue were afterthoughts from the February issue. K5NO observes that KFIZ went on the air in 1922—but keep in mind that my February article states: 'Most misplaced call letters were issued before mid-1923...' Even so, the same article acknowledges that stations near the Mississippi River seem to be granted some leeway to flip-flop between the two prefixes, and a number of other examples were given."*

### How Easy Is It?

I read your editorial, *The Need To Search* (*POP'COMM*, April 1996), and I must say that I agree, to some point, that the listening hobby does seem like it is becoming too easy. However, it is only as easy as a person is willing to make it.

I started the listening hobby eight years ago with scanning and CB, and about a year ago purchased a communications receiver. My communications receiver not only allows me to pick up international SW broadcasts, but some HF amateur bands as well. After copying down some callsigns from a long night of listening to the various DX nets going on, I'm sure it would be easier to find the operators' locations using one of the many callsign programs for my computer. However, I find it much more interesting and "detective-like" to trudge down to the local library and take the time to look them up in their book. I also find it more interesting to engage in the "search-'til-you-find-it" method. While several friends have recommended some of the more popular books and such, I have yet to purchase any of them; self-discovery being the only reason.

In regards about the wealth of information available, I must point out that *POP'COMM* articles tend to add to this "proliferation of information." Please don't get me wrong; I think *POP'COMM* is a fantastic magazine and I never miss an issue. I'm just saying that before you knock on the dispensing of information, I think you should look at what is dispensing it.

Doug Thomas  
Edmond, OK  
(via the Internet)

*OK, Doug, you're right. Guess we better knock off this info we dish out! —Ed.*

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# Where Do Police Hide?

## Know Where To Tune In Exciting Law Agency Surveillance

BY CHUCK GYSI, N2DUP, EDITOR

There has been much written about the secretive communications of federal agencies such as the FBI, Secret Service and the federal Bureau of Alcohol, Tobacco and Firearms. However, you don't need to tune in discreet frequencies in the 162-174 and 406-420 MHz bands to hear exciting surveillance.

Even if you live in a rural or remote location where you figure there are no federal surveillance communications, there may very well be discreet chatter right under your nose by city police, county sheriff deputies or state police. If you know where to tune, you'll hear exciting action each time a stakeout is in progress.

### No Matter Where

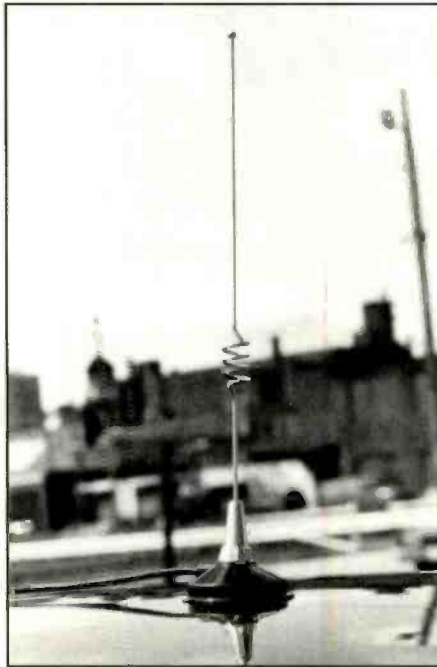
It doesn't matter where you live in the United States. If you require emergency assistance, you receive it from one jurisdiction or another. If you live in a small community or city, your town may very well have its own marshal or police chief responsible for all law enforcement duties within its borders. If you live in a rural or unincorporated area, you may rely on the county sheriff or state police for emergency response.

Even if your town has a police chief and no other law officers, it is very likely that the solo chief interacts with other nearby law agencies, such as the county sheriff's department or state police. And to accomplish that, a regional or statewide mutual aid frequency may be used to provide the necessary link. And don't be surprised that as a common frequency that it occasionally gets used for surveillance-type activities.

### Type Of Comms

How do you know you've tuned in surveillance activity on your scanner? Discreet police activity comes in various forms:

- Stakeouts—This probably is one of the most common usages, and is fun to monitor. During a stakeout, police detectives will be watching suspects' activities as they go about their business. Depending on the scope of the investigation, the stakeout can last for as short as a few minutes to several days or weeks in length.

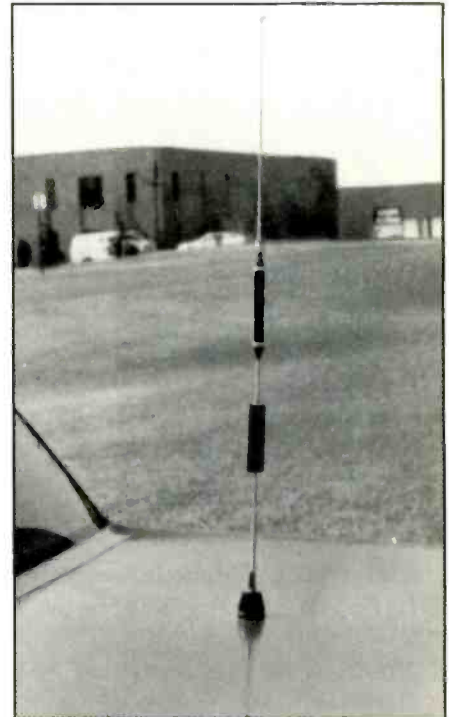


*The above magnetic-mount 800 MHz antenna makes it easy for cellular phones to be used on stakeouts without drawing attention to communications equipment in use. That's because so many vehicles have cellular antennas on them anymore!*

Stakeouts often involve several investigators equipped with two-way radios who keep in communication with each other as they track a suspect's movements. Investigators on stakeout duties may be using portable or mobile radios. Most often, discreet frequencies are used as to not tie up dispatch channels.

Local law agencies on stakeout may not be as formal as federal agents in their communications. More often than not, you will just hear them using their first names on the air as identifiers. However, unit numbers could help ID an agency if they use them. For instance, if you know the detectives in your city use unit numbers in the 200 series, and you hear "202" talking with "213" on a discreet frequency, there is a good chance you have your local agency on a surveillance detail.

Surveillance may range from the bore-



*This unmarked vehicle sports a scanner antenna that has extra gain with its coils. The gain will help a surveillance team monitor wireless bugs with ease.*

dom of units waiting for a two-bit holdup artist to stick up a convenience store, to the excitement of hearing aircraft teams keeping all eyes on a drug dealer making his or her rounds.

The one thing you have to remember with surveillance frequencies is one of the most important: patience. You may not hear any activity at all on a given surveillance frequency for months on end...and then one night, BANG! The activity is right there in front of you. Keep those frequencies in your scanner because they can come active any time when units decide to use a given frequency for their detail.

- Bugs—Unless you are real close to the action, don't expect to hear bugs too often. In fact, if you do hear a bug, it might be somewhat scary because the bug probably is planted in your neighborhood!

Bugs generally are low-power devices



*This 49-MHz hands-free walkie-talkie unit would work for either close-range surveillance or stakeout work and has a low-profile ear-mic unit to be less obtrusive in actual usage.*



*Believe it or not, but some police agencies have taken it upon themselves like other illicit users and fired up inexpensive VHF marine radios for stakeout or chatter communications. There actually is an inland police department in Pennsylvania that has licensed itself on VHF marine channels!*

that serve several purposes. They can transmit room chatter to detectives waiting nearby on a surveillance detail, they can relay telephone conversations whenever a phone is in use, or they can be used to protect an undercover officer when they are in potential danger. They also can be used to track moving vehicles or packages.

Bugs can turn up on all kinds of frequencies. They can show up in various places on VHF low band, the FM broadcast band, TV channels, police frequencies and many other places, too.

- **Protection**—If police are assigned to a detail to provide protection for a certain reason, the detail may use surveillance frequencies to remain off dispatch frequencies. If someone receives a threat of some kind or possibly is under observation for one reason or another, a protective detail may be assigned.

- **Chatter**—This could be the most common usage of so-called surveillance frequencies by law agencies. They may be as common as repeater talk-around channels, or underused road department or local gov-

ernment channels. Additional frequencies may be set aside for the department's exclusive chatter, or car-to-car needs.

In smaller communities, you more than likely will hear officers discussing current calls as they respond or leave the scene. You'll hear their comments about the "perps" or complainants.

At night, frequencies that have special use during the day often have other uses at night. For instance, a local government channel assigned to a municipality may be used during the day for parks and recrea-



*If a low profile is desired for any communications equipment, this inside-the-glass suction-cup cellular antenna can be hidden inside the surveillance vehicle. And with dark glass in therear windows, it would be hard to see it in actual use.*



*It may be a small community, but any of the vehicles on the main drag here could be police performing surveillance by following a suspect. (Photo by Chuck Gysi, N2DUP)*

tion, sanitation and parking control units. However, at night, those units aren't on the air and the frequency may be used off and on by police units that have the channel programmed into their two-way radios, especially if they are in the same band as their dispatch frequencies. When units switch over to this frequency, you may hear the local government channel referred to as "LG," "local" "local government" or perhaps a high channel number, such as F-6 or F-12. Look for use of other municipal frequencies, too, such as road department channels, or even fire and rescue frequencies on odd occasions.

• Raids—Extensive and wide-area raids require the coordination of radios. Often drug raids are carried out in the early morning hours while suspects are sleeping, and more often than not, many drug raids will be carried out simultaneously. When these occur, the raid teams meet at a central point and then fan out to make their arrests, keeping in contact with other members of the team.

Sometimes a raid in an urban area requires neighborhood coordination, and law officers will be stationed throughout a city

## What Can Be Used?

A myriad of radio systems may come into play when a law enforcement agency needs to set up surveillance communications.

Many departments will obtain an additional frequency for such purposes, while others may simply use the repeater's output frequency for mobile-to-mobile chatter.

But, surprisingly, police aren't always above the law when they set up surveillance communications. It's been documented that one suburban Philadelphia police agency uses 151.625 MHz, a popular itinerant business frequency, for speed trap surveillance. What's even more amazing is that the township is licensed to use the frequency as a business! That's when they aren't using the township's road department frequency. But it gets better! This same community is inland from any major bodies of water, but is licensed for base station operations on two VHF marine channels, 16 and 69.

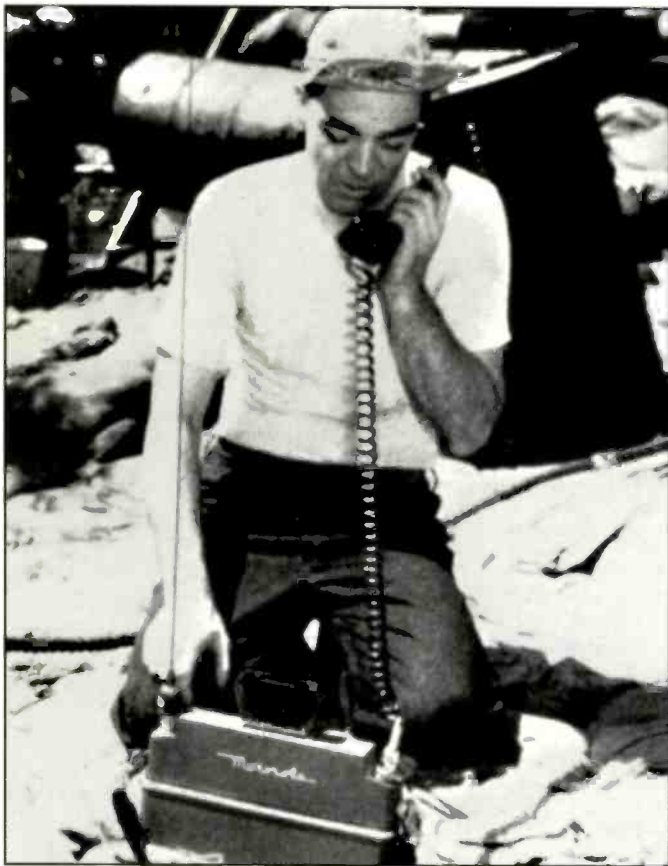
This suburban police force isn't the

first to possibly use VHF marine channels. Other agencies that are far inland from any major bodies of water know they can get away with buying inexpensive VHF marine radios and use them for chatter or surveillance purposes. Think about it: As a scanner listener, you would not be monitoring these channels unless you lived near water. It may be happening right under your nose!

And don't forget other possible bands. Many police cars in rural and suburban locations may be equipped with CB radios. Don't be surprised to hear switch-over activity to "Charlie," as one New Jersey department refers to the CB rigs.

Another New Jersey department obtained UHF licenses years ago in the General Mobile Radio Service to allow off-duty officers on security patrols in town a method of communicating with each other.

And don't forget cellular. Those wireless phones may be carrying a lot of detective chatter, especially late at night.



Imagine how bulky the first surveillance radios were. Back in 1947, this bulky portable Motorola two-way radio weighed between 8 and 22 pounds and was advertised as "smaller than a briefcase." It's not like you could have clipped this rig to your hip!



Special details, such as the usage of drug-sniffing K-9 units, require the use of communications. This federal K-9 team probably can be found on VHF frequencies while carrying out their activities.

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# What's The Frequency, Kenneth?

## Surveillance Frequencies

A number of frequencies may be used by police for low-power and surveillance communications. The following are set aside exclusively for 2-watt maximum power output and typically are licensed in the police or local government radio services to those agencies that use them:

- 39.06
- 453.0125, 453.0375, 453.0625, 453.0875, 453.1125, 453.1375, 453.1625, 453.1875, 453.2125, 453.2375, 453.2625, 453.2875, 453.3125, 453.3375, 453.3625, 453.3875, 453.4125, 453.4375, 453.4625, 453.4875, 453.5125, 453.5375, 453.5625, 453.5875, 453.6125, 453.6375, 453.6625, 453.6875, 453.7125, 453.7375, 453.7625, 453.7875, 453.8125, 453.8375, 453.8625, 453.8875, 453.9125, 453.9375, 453.9625, 453.9875
- 458.0125, 458.0375, 458.0625, 458.0875, 458.1125, 458.1375, 458.1625, 458.1875, 458.2125, 458.2375, 458.2625, 458.2875, 458.3125, 458.3375, 458.3625, 458.3875, 458.4125, 458.4375, 458.4625, 458.4875, 458.5125, 458.5375, 458.5625, 458.5875, 458.6125, 458.6375, 458.6625, 458.6875, 458.7125, 458.7375, 458.7625, 458.7875, 458.8125, 458.8375, 458.8625, 458.8875, 458.9125, 458.9375, 458.9625, 458.9875
- 460.0125, 460.0375, 460.0625, 460.0875, 460.1125, 460.1375, 460.1625, 460.1875, 460.2125, 460.2375, 460.2625, 460.2875, 460.3125, 460.3375, 460.3625, 460.3875, 460.4125, 460.4375, 460.4625, 460.4875, 460.5125, 460.5375, 460.5625
- 465.0125, 465.0375, 465.0625, 465.0875, 465.1125, 465.1375, 465.1625, 465.1875, 465.2125, 465.2375, 465.2625, 465.2875, 465.3125, 465.3375, 465.3625, 465.3875, 465.4125, 465.4375, 465.4625, 465.4875, 465.5125, 465.5375, 465.5625

## Wireless Mics

Sometimes bugs and body wires occasionally show up on wireless microphone frequencies. Often used by fast-food drive-through windows and performances, these frequencies can be used as bugs and body wires at times, too. It never hurts to plug these in to your scanner, but don't expect to hear much unless you are within a mile or less of any activity.

- 169.445, 169.505, 170.245, 170.305, 171.045, 171.105, 171.845, 171.905

## Bugs

Licenses in the Police Radio Service are eligible to operate very low-power, non-voice transmitters, most often tracking bugs, in the following frequency ranges:

- 30.85-32.00
- 33.00-33.07
- 33.41-34.00
- 37.00-37.43
- 37.89-38.00
- 39.00-40.00
- 42.00-42.95
- 44.61-46.60
- 47.00-47.41
- 150.995-151.490
- 153.740-154.445
- 154.635-155.195
- 155.415-156.250
- 158.715-159.465
- 453.0125-453.9875, 458.0125-458.9875
- 460.0125-460.5125, 465.0125-465.5125
- 460.5625-460.6375, 465.5625-465.6375
- 462.9375-462.9875, 467.9375-467.9875

## Mutual Aid

Sometimes mutual aid frequencies are used for surveillance when more than one agency is involved with the activity. Check these common mutual aid frequencies:

- 155.475—most popular nationwide mutual aid
- 866.0125—calling
- 866.5125, 867.0125, 867.5125, 868.0125—tactical

## Special Use

• Police may use frequency-hopping transmitters on any public safety frequency between 37 and 952 MHz. A maximum of 2 watts may be used and at least 20 hopping frequencies must be used and no one frequency may be used for more than a tenth of a second every two seconds.

• When police need frequencies to send video signals from surveillance cameras to remote monitoring locations, they can use the 2450-2500-MHz band for wideband transmissions. Stations operating between 2450 and 2483 MHz must obtain licenses for those frequencies.

• To remote control the direction of surveillance cameras or audio listening devices, non-voice analog or digital transmissions may be made on conventional police frequencies between 37 and 952 MHz.

block to keep watch for fleeing suspects. When the raid goes down, word goes out over the radio so all teams are on alert.

• Special details—Many activities require police to coordinate via communications. These things can range from parade security to event details. Often, you may hear police communicating with allied auxiliary or reserve police officers.

## Where To Look?

The best place to begin looking for fre-

quencies used for surveillance-type activities are in local scanner directories. In most jurisdictions except the nation's largest cities, you often will do well in programming in all the frequencies licensed to the community and wait to see whether other frequencies become alive at night.

The other place to go looking for possibilities are the Federal Communications Commission's rules because there are loopholes. Imagine, if you will, that police

are given broad powers that allow them to use almost any frequency they choose for low-power operations as long as they don't interfere with other licenses.

Basically, the FCC rules for the Police Radio Service state that without special authorization, a law enforcement licensee may use any mobile service frequency between 40 and 952 MHz in the Public Safety Radio Service for communications related to physical surveillance, stakeouts, raids and related activities.



In some rural and suburban communities, an inexpensive way to communicate off police dispatch frequencies is over CB radio. Many patrol cars already have CB rigs, so, it's easy to switch over for close-in chatter.



In big cities, you can tune in surveillance activity almost any given evening if you know where to listen. And those communications typically can show up anywhere on VHF high band, UHF or 800 MHz, not to mention even cellular.

When police use frequencies in that fashion, they do so on a secondary basis to licensed operations on assigned frequencies and the maximum power output al-

lowed is 2 watts. If a police force wants to use frequencies not listed in the Police Radio Service, they need to obtain permission from official frequency coordinators

for the service corresponding to the frequency in question. There are other frequencies available for use, too (see sidebar for list and details). ■

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# Checked Out

BY W.W. SMITH

POP'COMM REVIEWS PRODUCTS OF INTEREST

## Magellan GPS 2000 Satellite Navigator

I make no bones about the fact that I was around when the Russians launched the first Sputnik and got the whole thing started. For all the glitz, glamour and adventure of manned space flight, satellites are how we really do work in space at this point in our development.

While we're waiting for further advances in human space travel, we can make excellent use of this satellite technology today. The last few years have spawned many direct consumer uses of satellites. Technology that once was the exclusive realm of the superpowers now can be had by just about anyone.

Sputnik didn't just signal the beginning of the satellite age, it also upped the ante in world defense appropriation. Since the powers of East and West have calmed down in recent years, several significant swords have been beaten into plowshares. One defense technology that is paying a peace dividend is the Global Positioning System or GPS (see sidebar). This string of satellites makes it possible for regular people like us to have access to highly accurate navigation information, literally right in the palm of our hands.

Access to this exciting satellite base navigation is as simple as getting your hands on a GPS receiver. Recently, the folks at RadioShack sent me the Magellan GPS 2000 for evaluation. This is one of the many products they are making available to the consumer through their RadioShack Unlimited program. This innovative special order program provides anyone with access to unique and hard-to-find personal electronics products, accessories and components. These products can be delivered directly to the customers home, usually in a few days. The Magellan GPS 2000 is just one of more than 100,000 items available through this service.

### What It Is

The Magellan GPS 2000 is a self-contained handheld GPS receiver designed for consumer uses such as general purpose position locating and basic navigation. Its small size and light weight make it ideal for many hobby activities. The receiver is small enough to fit in a pocket, measuring 6-1/2 inches by x 2-1/3 inches by 1-1/3 inches. Its overall weight is 10 ounces with four AA alkaline batteries installed. This standard battery load allows the receiver to operate for a reported 17 hours of con-



**Magellan GPS 2000  
Satellite Navigator**

**Price:** \$229.99

**Manufacturer:** Magellan Systems Corp., 960 Overland Court, San Dimas, CA 91773

**Available:** Through RadioShack Unlimited (800-THE-SHACK), or at your local RadioShack store.

tinuous use. This is more than adequate for most hobby activities. An external power module is available for extended use.

The unit's satellite receiving antenna is built into the case appearing as a wedge-shaped portion blended into the top of the case. The unit also has a safety lanyard to maintain a level of loss protection for the receiver. This can be very important when maneuvering through difficult terrain. In my tests, I ran my belt through the lanyard and this kept things under control while still giving me full access to the unit's abilities. The unit has a multifunction LCD display that includes switchable back lighting for use in low- and no-light situations. The screen also is adjustable for contrast to better operate in high-light situations. Control functions are managed by an 11-key rubberized keypad. While not backlit as the display, the keys do have distinctive shape

and feel that allow their use in darkness with some minimal practice by the user.

### Getting Started

Out-of-the-box setup was a fairly simple process. All that is required is the installation of the batteries and a simple initialization procedure outlined in the manual. The user simply enters some basic information, including a reference to a city within 300 miles of the user's location (available from the Magellan's manual), date and local time. Armed with this information, the Magellan GPS 2000 then can go hunting for the satellites that are most likely to be available for use by the unit. All you need to do at this point is take the unit outside so that it can have a clear, unobstructed view of the sky.

Usually this initialization process will allow the unit to compute a position fix within about three minutes. What the receiver is doing is comparing the information you have entered with its own internal almanac.

Initialization also is possible without inputting the above mentioned data. The unit will search for all of the GPS satellites in sequence until it computes the location of at least four of the birds. This process can take in excess of 15 minutes, so it's usually quicker to input the data. Still it is good to know the process can be done even if you left your manual at home.

Once the unit has been initialized, its use is really quite simple. One or two passes through the manual will give you full access to all of the Magellan GPS 2000's features. Pressing the on-off switch for two seconds (a feature to prevent accidental power up) brings up the unit's copyright screen followed by the "position" screen. At this point, the unit displays the last position the receiver saw when it was turned off and then it proceeds to conduct a search for currently visible satellites. Once it acquires three or more of the birds (usually less than four minutes), the GPS 2000 shows you where you are in degrees, minutes and seconds of latitude and longitude. UTM coordinates also are available by changing the options in the setup menu as is Coordinated Universal Time (UTC) if you don't need local time displayed.

### Features

You can store any position as a "landmark" for future reference and use. One

of the ways this is used is with the "goto" feature. Entering the "goto" mode allows the user to follow a single-leg route from his or her current position to any stored landmark. The "nav" screens display your current position and your progress toward the entered destination. This can be done in several ways:

- By showing the coordinates on the "position" screen along with a small arrow pointing toward your destination.
- There is also a "pointer" screen that shows you the way relative to true north.
- A "navigation" screen that displays bearings and headings. This screen also displays course deviation information.
- Finally a "plotter" screen that gives the user a graphical representation of the user's travel relative to the planned route. This last screen also is capable of showing other stored landmarks that may be near your chosen route.

Now you would think that the information provided above would be more than enough to keep even a second lieutenant from getting lost. The GPS 2000 still has a few tricks up its sleeve. The "route" function allows the creation of a multileg route using any landmarks that are entered in memory. The route may have as many as 29 separate legs, so this feature plots out a complex course from one point to another. Once a route has been created and

## The Global Positioning System — GPS

The Global Positioning System is operated by the U.S. Department of Defense. The system consists of 24 GPS satellites: 21 navigational and three active spares.

These satellites are arranged in a particular pattern to allow for multiple fixes at any point around the earth. Usually between five and eight satellites are accessible, however, some useful information can be had with signals from as few as three.

GPS receivers convert the individual satellite signals into position, velocity and time estimates. Four satellites are required to compute the four dimensions of X, Y, Z (position) and time. GPS navigation receivers are made for aircraft, ships, ground vehicles and for hand carrying by individuals (such as the Magellan GPS 2000).

The Precise Positioning System, or PPS, is reserved for U.S. and allied military, certain U.S. government agencies and selected civil users specifically approved by the U.S. government. To prevent unauthorized use of the PPS, intentional errors called Selective Availability (also known as "dithering" or SA) are introduced to give a slightly less accurate reading. This dithering usually is most apparent on civilian GPS receivers by a random variation in the elevation readings.

Civilian users without PPS clearance (that's you and me) have access to the Standard Positioning System (SPS) without charge or restrictions. Even though the SPS accuracy is intentionally degraded by the DOD, a civilian GPS receiver will produce an accuracy of approximately 25 meters. This may not be "close enough for government work," but it will allow you to find your way home in the fog. There is some current discussion about the DOD removing the dithering because it has been shown that there are several ways that the intentional errors produced by Selective Availability can be overcome to a high degree of accuracy.

stored in memory, it can be activated, deactivated, reversed or cleared and replaced with yet another route.

Another feature is the "backtrack" mode. This function allows the user to instantly create a route using position information that has been automatically stored in the GPS 2000 receiver. Whenever the receiver is on, it stores position fixes every 10 minutes. The unit is designed to store up to 30 such fixes. When a total of 30 fixes have been saved, the next newest fix replaces the last oldest fix. The receiver uses these automatically stored fixes to create a route that is essentially a mirror image of your recent movements out to about 300 minutes.

### Is It Fun?

My practical testing was more fun than I've had with a piece of gear in a long time. First I used the unit to accurately locate my own house. This was more than a novelty because I happen to live right on the edge of a map "grid square." If you follow amateur radio activities above 30 MHz, a radio operator's grid-square location can be an important fact for participating in many contests and other activities. I now had a clear understanding of just where I was standing all along.

Next, I took the unit along for a ride to work. Sitting up on the dash usually allowed for grabbing two or three satellites, but I'm sure the unit would have preferred a cleared field of vision. Still, this gave me a notion about how recently proposed automobile navigation systems might work. All one would need would be a roof-mounted antenna and a GPS receiver referenced to a road-map database and your car could lead

you anywhere. Still, it was fun to use the route and backtrack functions and ponder practical applications of such devices for law enforcement, emergency medical services and anyone who can't figure out how to fold up a road map.

I also performed the most obvious test. I tried to get myself lost. I took a trip to a local state forest and headed out on the trails. I had traditional map and compass in my backpack as a backup but I had no use for them on this day trip. I bushwhacked and turned myself around a half-dozen times. When I was done, I made a guess as to where I thought I was. The GPS 2000 showed me just how wrong I was and then patiently led me back to the "real" world. The manual warns that even though this product is an excellent navigation aid, it does not replace the need for careful orienteering and good judgment. I still think I'd like to have it along if I was boating and the fog rolled in!

But the feature I enjoyed the most may have the least direct practical application. This is the "sat status" screen. When you enter this mode, the unit displays the relative position in the sky of all the satellites it is currently tracking along with their relative signal strength. To me, the idea that I can hold a device in my hand that tracks satellites is thrilling to say the least. During my tests, I often just set the receiver in this mode and watched the movements of the navigational satellites as they came and went from the sky overhead.

If you have a need to know where you are, or where you want to be, a GPS receiver should be part of your essential equipment. Why should the Department of Defense have all the great toys anyway? ■



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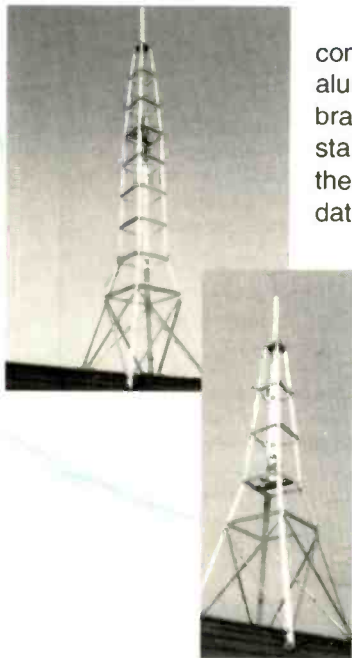
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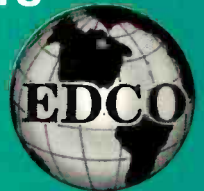
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# Radio of Yesteryear

## We Ponder Some Ticklish Questions

BY ALICE BRANNIGAN

Listeners in Shreveport, La., all know Multimed Broadcasting Co.'s 50-kW station, KEEL, on 710 kHz. Checking KEEL in any standard industry reference reveals that it claims 1922 as its starting date. What does this mean? It means that KEEL traces its origins back to WDAN, a 10-watt station started in 1922 by W.G. Patterson on 832 kHz. In 1923, Patterson upped its power to 150 watts and shifted it to 1190 kHz. Later, Patterson again changed its call to KSBA when he moved it to 1120, then 1450 kHz, and increased its power to 250 watts.

In 1929, S.R. Elliott and A.C. Steere bought the station, upped its power to 1 kW, and changed its callsign to KTBS. In 1942, after moving over to 1480 kHz, the *Shreveport Times* owned the station. They later sold it to George Wray Sr.

The daytime power was increased to 10 kW in 1949, and the frequency changed to 710 kHz. In 1957, when the McLendon Group purchased the station, the call letters KTBS were changed to KEEL. The increase to 50 kW (days) came about in 1962, when KEEL was purchased by Lin Broadcasting. The present owners purchased KEEL in 1975.

This thumbnail sketch of KEEL provides a typical example of how a great modern station traces its roots back over decades, perhaps even to the beginning of broadcasting. Over a long career, many stations usually undergo a progression of call-letter, frequency, power and ownership changes and even mergers with other broadcasters.

Select any 10 stations, each claiming a pre-1941 starting date. Backtracking each to its announced starting date shows that at least nine have gone through various ownership and possibly call-letter changes. But, is there some point where there have been so many changes that a modern station becomes too far removed from its announced origin for it to reasonably claim a direct lineage?

Here's another ponderable: After shipboard pirate Radio Newyork International (RNI) was busted by the FCC for broadcasting without a license, its owners purchased some time each week over Nashville shortwave station WWCR. They put on a program called *Radio Newyork International*. When the RNI program was on WWCR, would RNI have been consid-

**KTBS**  
Tri-State Broadcasting System, Inc.  
P. O. Box 1642  
Shreveport, Louisiana  
March 31, 1931.

Mr. Joseph Hueter  
1610 North 18th Street  
Philadelphia, Pa.

Dear Sir:

This letter will serve to verify your reception of Radio Station KTBS. Our records show that the program you heard was broadcast from this station at the time mentioned.

We hope you will tune in on KTBS often, our regular daily schedule is from 7:15 a.m. to 10:00 p.m. and on Saturday nights we are on the air until 12:00 midnight. We operate on a frequency of 1450 kilocycles using 1000 watts power.

Thank you very much for your communication and we sincerely hope that we may have the pleasure of hearing from you again commenting on our programs.

Yours very truly,  
TRI STATE BROADCASTING SYSTEM

By Milly Kilmer  
Asst. Director.

MRK.

"Tell your Story to the South through KTBS"

*KTBS was one link in a chain of Shreveport, La., stations that began in 1922 and led to the existence of today's station KEEL. This veri dates from 1931. (Collection of the late Joe Hueter in the POP'COMM archives)*

ered a station? Some thought so. But in my opinion, without a transmitter, RNI was only a program. It wasn't a broadcasting station, not even a pirate.

### Why Ask Such Questions?

These questions are exactly the kind of wonderful conundrums often posed by

readers of these pages. More often than not, there does not appear to be any definite answer, though there is plenty of room for opinion, lively discussion and debate. It's all academic because broadcasters have long felt free to liberally interpret their stations' serpentine historic lineages and respective status.

Naturally, nothing you or I say or do will



The BBC's Broadcast House, London, England, as it looked during the war years.

affect any broadcaster's right to relate their present situation to any desired year or past station so that it's possible to draw even the most circuitous link. Most stations prefer to appear to have been continuously operated for as many years as possible. It's standard industry practice. Though confusing at times to archivists and historians, no harm is meant or done. Such claims made by scores of stations don't bother me. Arguably, a modern station occupies the same space as its earliest known predecessor, had it continued to operate intact.

The type of question these matters raise was touched upon in a letter from reader David Bales of Buffalo, N.Y. David commented that in the May issue, he read (on Page 17) that the Voice of America didn't exist until after World War II ended. Included with his letter was a copy of a 1982 QSL card from VOA stating "40 Years of Broadcasting, 1942-1982." David noted that there's a discrepancy somewhere. And so it would appear.

For the record, on Page 17 of our May edition, in discussing the end of World War II, the actual statement was, "You might say this was when the Voice of America (VOA) was born." It was worded that way because the station that (in 1945) became known as the Voice of America in North Africa represented what I felt was the VOA's emergence as a broadcasting entity. To my knowledge, that station issued



Laura Suarez, a Brazilian soprano, appeared on W3XAL for listeners in Brazil.



Spanish-speaking theatrical columnist Carmen Castelo brought show-business gossip to Latin American audiences over W2XE.

the first VOA QSLs. However, the VOA insists it began in 1942, but that's their opinion. It depends on one's definition of a broadcasting station.

Looks like it's a good time to visit the era that gave rise to the creation of the VOA and scope out the VOA's early days.

### Shortwave In The 1930s

In 1930, only three shortwave broadcasters existed in Europe. By the end of 1940 there were at least 40, with more being built all the time. Nazi Germany had

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Here's Professor H. Shapley and Dr. A.E. Kennelley, both of Harvard University, being interviewed by (far right) Dr. Loring B. Andrews of the W1XAL staff. This station featured cultural programs.

constructed eight during the 1936 Olympic Games, and used them as a nucleus of a system that was augmented with each newly overrun nation. Germany's stations were financed by government funds so stations could use up to six transmitters for each program, feeding it out over different bands. In addition, Germany leased time on some South American stations to pick up and relay their signals.

German stations operated around the clock in English, Spanish, Dutch, Portu-

guese and German with signals directed to all continents. Hitler's speeches were broadcast as many as six times by the German radio.

England's government-financed BBC also was a major shortwave presence, easily on a par with Germany. Until the mid-1930s, the stations mainly were used to keep the vast empire in touch with the homeland, and English was the only language heard from Broadcasting House via the shortwave transmitters at Daventry.

Endless blasts of anti-British propaganda by Germany—and especially Italy—compelled England to change its shortwave programming. One Italian station operated in 17 languages and was dedicated to stirring up trouble in British-controlled Palestine and Arabia. In 1938, England began special daily programs in Arabic, with news bulletins and factual surveys of the world picture. Programming in other languages soon followed.

The speeches of King George VI and Prime Minister Winston Churchill were repeated often by the British stations.

In the late-1930s, it was estimated that there were 2 million shortwave receivers in South America. Latin American listeners were pounded day and night with propaganda broadcasts from government-operated stations in Germany, Russia and Italy.

### U.S. Stations

All U.S. shortwave stations were privately owned and allowed to be licensed only as non-commercial experimental transmitters. Since commercials were not

permitted, the costly shortwave operations were viewed as a financial liability by American companies, rather than an asset.

Washington suggested to broadcasters that they step up their programming, with special emphasis on Latin America. Broadcasters complied, and believed they were making headway competing for Latin American listeners. Off the record, they feared the government's suggestions to be the first step leading to eventual government-operated broadcast stations.

Worldwide Broadcasting's 20-kW W1XAL/W1XAR had long provided patriotic and cultural programming, as described in our June issue. Worldwide Broadcasting was hoping to attain three objectives: correct false impressions about the United States, provide uncensored news free of propaganda and provide quality entertainment.

In 1936, NBC's shortwave station, W3XAL received less than 50 listener letters per month from Latin America. Four years later, 2,500 letters per month were coming in; many explaining the barrage of harsh anti-American propaganda pouring in from Europe. German stations were telling Latin Americans that the United States was a nation of machine-gun-toting gangsters and ruthless businessmen.

W3XAL had begun broadcasting to Europe with one hour daily in Italian, German and French, plus five hours in English. These programs were news bulletins and rebroadcasts of network programs replacing the commercials. Latin American listeners received similar programming in Spanish and Portuguese.

General Electric Co.'s Schenectady stations, W2XAD/W2XAF, had service for Europe and South America. When broadcasting to South America, two different programs were transmitted simultaneously, one in Spanish and one for Brazil in Portuguese.

The CBS shortwave station was W2XE. It rebroadcast many CBS network programs with foreign language announcements. In addition, there were special foreign language news commentators providing news summaries. There also was a weekly woman's program in Spanish as well as a theatrical review.

### Too Little, Too Late?

In the summer of 1939, conferences were held between representatives of the State Department, FCC and officials of all privately owned and operated U.S. shortwave broadcast stations. America's role in international broadcasting was re-evaluated due to the changing world situation.

Stations were reclassified as "commercial," so were no longer held back by "experimental" restraints. It was decided that \$2 million in federal funds would be spent on new transmitters for the privately owned



NBC's foreign-language announcers broadcast news bulletins to Latin America's 2 million shortwave listeners in the 1930s.



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stations that would double or triple their power, and allow for the use of more frequencies by each. When work was completed, in the spring of 1941, the plan was to have these stations on an even wattage with European stations in order to compete in Latin America and elsewhere.

Most of the stations were authorized to increase power to 50 kW, with new directional beam antenna systems effectively boosting the strength of the signals beyond that within specific target areas.

Before the construction program, there had been only two U.S. shortwave stations with 50 kW or more. One was Crosley Corp.'s WLWO, Mason, Ohio. The other was WGEO of General Electric Co., South Schenectady, N.Y., which had a 100-kW transmitter but was operating with 65 kW.

The preconstruction power of WNBC and WRCA, operated by NBC near Bound Brook, N.J., (now Piscataway, N.J.), were 35 kW each. CBS' WCBX at Wayne, N.J., operated at 10 kW. WCBAB, operated from Newtown Square, Pa., by Philadelphia AM station WCAU, ran 10 kW. GE station KGEL, San Francisco, Calif., used 20 kW, while GE's WGEA in South Schenectady, N.Y., had 25 kW. Westinghouse Electric, Millis, Mass., operated WBOS with 10 kW, while WPIT, the company's station in Saxonburg, Pa., ran 40 kW.

## The Word Goes Out

With the new equipment, NBC was sending out 15-minute news reports every hour on the hour, 16 hours a day, presenting it alternately in Spanish, Portuguese, French, Italian, German and English. President Franklin D. Roosevelt's major speeches aired in Portuguese and Spanish within a half-hour after being delivered, then repeated many times for listeners in different time zones. Other stations also had stepped up their programming.

Plans for private broadcasters to continue their own programming ended abruptly upon the U.S. entry into World War II in December 1941. The Foreign Information Service (FIS) of the Office of Coordinator of Information (COI) was the U.S. federal agency established to generate government information during wartime. Therefore, in December 1941, the COI began block-booking 15-minute time slots on U.S. shortwave stations.

Beginning Feb. 5, 1942, one of the several FIS programs was entitled *Voice of America*. This originally was only in German, but later also was broadcast in Italian, French and Spanish.

Within a few weeks, the COI, exercising its wartime authority, demanded mandatory leases for all air time on the privately owned shortwave stations run by Crosley, Westinghouse, Worldwide, CBS, NBC, General Electric, etc. The leases provided for governmental programming of the private stations on a full-time basis. The COI assumed this leasing arrangement would make broadcasters happy, however, broadcasters perceived it as a takeover. It served to make them all the more concerned about federal intervention in broadcasting. In October 1942, the COI was abolished and broadcast operations were placed under the Office of War Information (OWI).

The OWI took over programming the stations for the duration of the war, which



President Franklin D. Roosevelt's speeches were put on 16-inch electrical transcription discs for rebroadcast to listeners in different time zones.

lasted until 1945. OWI mainly ran music, news, commentary, major network programs, and programs especially prepared for OWI audiences.

## The Big Question

The September 1944 issue of *Radio News* magazine ran a half-page SWL feature telling about OWI broadcasts, and listed all major frequencies and call letters of stations carrying OWI programs. This was at the height of World War II, yet "VOA" never was mentioned. The only program named was called *Cross-Section*.

Generally, shortwave listings for the years from 1942 to 1945 only showed private U.S. stations as belonging to Worldwide, NBC, CBS, Crosley, and other pri-

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2. 6170 Kc., 48.6 M.
3. 7820 Kc., 38.3 M.
4. 9490 Kc., 31.6 M.
5. 9590 Kc., 31.3 M.
6. 9650 Kc., 31.0 M.

## WCDA WCBN

7. 11145 Kc., 26.9 M.
8. 11830 Kc., 25.3 M.
9. 11870 Kc., 25.3 M.
10. 15190 Kc., 19.7 M.
11. 15270 Kc., 19.6 M.
12. 17830 Kc., 16.8 M.

Thank you for your recent communication.

This will verify your reception of Columbia's short wave program on frequency ~~15200~~ **15200 kc.**

on Sept. 11, 1947

## WOOC

F. 114-6/48

*Tony Kraber*  
Short Wave Dept.—Network Service Mgr.

## WOOW

Many CBS shortwave call letters had OWI use to the end of the war. They are indicated on this 1947 QSL card. (POP'COMM archives)



Schenectady, New York  
1/8/48

Mr. Kneitel:

General Electric's Around-the-World Broadcasting Service acknowledges with thanks your communication reporting reception of station WGEX

WGEX ~~WGEO X~~ operating on a frequency of 17880 kc., on Oct. 1, 1947

WGEX operates on the following frequencies:

11:15AM-2:00PM 21590kc Europe  
2:15PM-6:05PM 11770kc Europe  
8:00PM-10:00PM 11810kc Brazil

WGEO operates on the following frequencies:

11:15AM-6:00PM 15770kc Europe  
7:00PM-12:00M 9685kc S. S. America

**GENERAL  ELECTRIC**  
SCHENECTADY, N. Y., U.S.A.

General Electric shortwave stations in Schenectady, N.Y., used this QSL card through the 1940s. (Courtesy Tom Kneitel, New York)

vate companies, using call letters such as WRUL, WGEO, WLWO, etc. We found no references made to stations identifying as the Voice of America. Reports to stations carrying OWI programs in those years brought QSLs from Worldwide, NBC, CBS, etc., but not from VOA.

So what's your definition of a station? Is a program entitled to be called a station?

### Apparent Birth of VOA

At various times in the 1940s, the VOA had owned or leased several relay stations, including those in Hawaii (KRHO), Manila and Munich. Also, it had made arrangements with broadcasters in other nations for its programs to be rebroadcast.

As noted in our May issue, the OWI and U.S. Army Signal Corps built a powerful station late in 1942 in the city of Algiers, North Africa. The station was AFHQ, or Allied Forces Headquarters, and broadcast shortwave and mediumwave signals into Europe. Briefly, beginning in July 1945, it was identifying as United Nations Radio.

Reader John R. Hall, W5ETK (ex-W1JSV), who was an engineer at this station, recalled that when the war ended, it

passed into the hands of the U.S. Information Agency, under the U.S. State Department, and became known as the Voice of America, with its own QSL.

This was confirmed by an item in the November 1945 issue of *Radio News*. Under the headline *The Voice of America in North Africa*, it read: "United Nations Radio, 9.540, is now off the air. These sta-

tions in Algiers no longer use the United Nations Radio slogan. Reports may be sent to ..."

The digging we did revealed Algiers as the first instance of the VOA truly being an actual VOA station, not merely a program over leased facilities. Certainly, one might consider that VOA dates its lineage back to the start of the OWI, and OWI's programs over privately owned stations. You could say the VOA can trace its history back to OWI-Army station AFHQ, originally was constructed in late 1942. Or, you might say 1945 was when the VOA was born.

Suppose we say there might be a tenuous precedence for VOA dating itself back to 1942. We are more than generous with what we can accept, but maybe they stretched the ball of twine a few inches beyond what we can accept without a few doubts. Well, maybe if they had a transmitter in 1942...

If you wish to read more about the history of the VOA, the following are excellent references: *Radio Warfare*, by Lawrence C. Soley, Prager Publishers, New York, (1989); also *Stay Tuned: A Concise History of American Broadcasting*, by Christopher Sterling and John Kitross, Wadsworth Publishing Co., Belmont, Calif. (1990).

We received a note from Dan Elyea, engineering manager of Family Network shortwave station WYFR. Dan corrected the June issue information that the former WRUL facilities in Scituate had been sold to WCSN. It wasn't WCSN! In 1973, they were sold to WYFR and used by WYFR until November 1979, when all Scituate operations had been completely phased out by WYFR's new site in Okeechobee, Fla. Thanks, Dan.

We always look forward to your provocative inquiries, ideas and suggestions. In addition, we welcome all old-time radio picture postcards, QSL cards and letters (good copies will do), station listings, memories, newspaper clippings and what-have-you. See you on the road to Radioville!

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# Books You'll Like

BY R.L. SLATTERY

## Night AM Patterns

As the mediumwave DX season approaches, we are reminded how tuning a receiver across the band during hours of darkness soon will produce an amazing galaxy of distant stations. For many of us, this surely has served as the introduction to the wonderful hobby of DXing.

One of the most durable listeners clubs serving mediumwave DXers is the National Radio Club. NRC has been operating for more than 50 years. Among the things this mediumwave DXing club does is publish reference material relating to current AM broadcasters.

Recently, the NRC sent us a copy of one of their publications. You will be interested in it if you follow mediumwave broadcasting, that is to say, AM broadcast radio. This book is entitled: *NRC Night-time Antenna Pattern Book, 4th Edition*. Admittedly, it's not a catchy title, and it's doubtful Disney ever will buy the movie rights. But, oh my, there's a lot of information in the 208 pages of computer-produced maps and indexes.

Each frequency has its own map and index of cities hosting stations operating during the night hours. The night signal pattern of each station on the channel is shown on the map for that frequency. Stations in the United States, Canada, Puerto Rico and Mexico are included. All frequencies (540-1600 kHz) are shown except the Class IV local channels (1230, 1240, 1340, 1400, 1450 and 1490 kHz). The six directional Canadian stations are covered on their own special map.

The book is designed in a horizontal ("landscape") format on 8-1/2-inch-by-

11-inch punched three-holed paper for insertion in your ring binder (not supplied).

There is an introductory page offering a few nominal remarks about the production of the book. We would have found it of value to have a few pages of hobby-level discussion about things such as the reasons directional patterns are used, major types of directional patterns employed, seasonal and hourly considerations for directional patterns, transmitter output power level changes during directional operation, etc.

The city index for each channel doesn't specify the call letters of the stations. For instance, there is a pattern shown on 1020 kHz for a station in Oklahoma. The index lets you know the station is in Perry, but it doesn't indicate that its callsign is KASR. That's relevant information and shouldn't have been much trouble to include.

Nevertheless, this book provides an enormous amount of data that is of genuine value to all who prowl the AM band in the wee hours. Wait—is that CKLW coming through the darkness?

The book sells by mail for \$22.95 postpaid in the United States and Canada. New York residents, add sales tax. Make checks payable to: National Radio Club. Their address is: National Radio Club, Publications Center, P.O. Box 164, Mannsville, NY 13661-0164.

## Shortwave On The Road

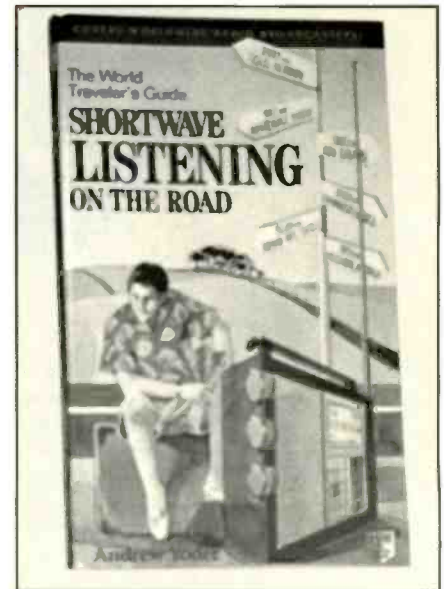
How about all of those nifty shortwave portables? Take one along next time you travel for business or pleasure, anywhere in the world. Not that there aren't things to think about and take into account.

That's where Andy Yoder's new 182-page illustrated book comes in. It's entitled: *Shortwave Listening On The Road: The World Travelers Guide*.

Starting at the beginning, Andy helps you select the best shortwave portable and accessories to meet your specific needs and budget, then suggests where to get choice deals. After that, he advises you how to get the top performance from the equipment by using some quick and dirty tricks and homebrewed antennas that will provide better reception than the stock antennas built into the portables. Andy has been in the hobby a long time and he has some good ideas here.

He then moves on to the art of DXing with a portable, including the special considerations if you intend going mobile. That includes eliminating motor noise and getting a decent mobile antenna. Learn about DXing with the help of your laptop computer, QSLs on the road, and more.

A major portion of Andy's book is devoted



to a nation-by-nation listing of English language shortwave programming, showing the station names, addresses, frequencies and schedules. For many listings, Andy also has added his own personal comments and observations to aid the listener.

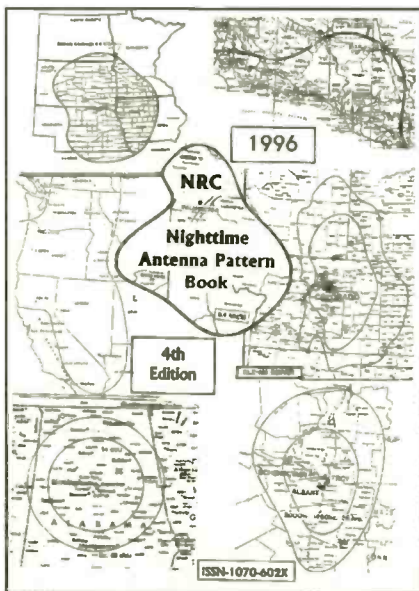
In the back of this book there are several appendices. One shows how to calculate local standard and daylight-saving time (plus or minus hours from UTC) in each nation. Another is an excellent bibliography listing other directories showing shortwave programming information. There is a guide listing worldwide power voltages and line frequencies. Finally, Andy offers a huge directory of Internet and BBS access codes and addresses.

This is a handy volume, and you'll like seeing the photos of equipment, station QSLs, and so much else. We have seen a number of books that are touted as useful to SWLs but turn out to be so much fluff, but not this one. This book really is information-packed, and just right for anyone on the go.

*Shortwave Listening On The Road*, by Andy Yoder, is \$17.95, plus \$4 shipping and all applicable taxes, from TAB Books, McGraw-Hill Inc., P.O. Box 182067, Columbus, OH 43218-2607; phone (800) 822-8158.

## Here's An Odd Duck

*The Spook Book II: A Strange & Dangerous Look at Forbidden Technology*, by Mick Tyner, is a 209-page illustrated curiosity. Looking at the table of contents, you are tantalized with chapters entitled: *The Laser Listener Cookbook, Silicon News, Telltale, Fiberbugging and Spy-*



# SPOOK BOOK II

A Strange & Dangerous  
Look at Forbidden  
Technology

Mick Tyner

boy. Flip casually through its pages; you spot schematics of many electronics devices like parabolic microphones, tape-recorder detectors, super-quiet amplifiers, etc.

On the surface, this appears to be a book offering information about constructing and using interesting electronic espionage and other weird things. On closer examination, you realize that the book is, itself, a riddle wrapped within an enigma.

For starters, many of the schematics and diagrams turn out to have large and possibly important sections deliberately defaced with large black rectangles bearing the word "CENSORED." In addition, the text of the book has individual words and even entire sentences similarly obliterated and replaced with the word "CENSORED." For instance, instructions on Page 109 advise: "Magnetic headphones were found to be tappable from at least CENSORED away, using a modified bias probe feeding CENSORED." That's helpful!

On Page 117, you read: "These alarms prompted CENSORED to develop fiber-taps that don't break the cable. They encircle the cable with a GaAs annulus that CENSORED." Very useful information, to say the very least.

By now, you may be asking yourself what this is all about. Digging through the book, find answers. Near the front of the book, in tiny print, you read that everything mentioned in the book is either a product of the author's imagination, or is used fictitiously or satirically.

On the last page, you are further informed by an anonymous source that the book was censored against the author's expressed wishes. Furthermore, it is stated that most of the book was written three years prior to its 1996 copyright date, and, "all hardware, software and other adjuncts associated with preparation of this text, including those depicted in photographs as well as those whose existence is merely implied, no longer exist. Every word of this book is disinformation." It states the book, "...has been crafted to resemble verity."

We can't figure it out. The publisher claims it is "sold only to entertain." If that's true, we found it as entertaining as falling down a flight of stairs. On the other hand, if the realistic-looking book is about actual items and techniques, then the publisher should have at least stated so, not censored it to the point of uselessness, then claim it's fiction. Other than as a doorstop, what use might there be for such a book?

Readers interested in contacting the publisher of this curious \$34.95 volume may write to: SUS Design Group, 200 Union Blvd., Suite 425, Denver, CO 80228.

## The Real Thing

H. Keith Melton is certainly one of the world's foremost authorities on clandestine espionage and military devices. He has an enormous collection of spy paraphernalia, including radios, code-breaking machines and bugs.

Melton's new book, *The Ultimate Spy*, is a 176-page large-format hardcover volume illustrated with 600 great photos (most in color). This is a highly detailed factual look at the inside world of international espionage, presented with Melton's vast wealth of knowledge of recent and present activities, personalities, agencies, techniques and devices.

If you like communications, you'll like that the book is brimming over with things like suitcase radios, agents' radios, cipher devices, receivers and listening devices and hidden radios. In fact, there's an entire chapter about clandestine communications, hidden messages, codes, message security, communications with resistance groups, KGB radio burst tapes, infrared comms, secret writing and more.

Of course, Melton's book has plenty more, such as spy satellites, spy cameras, weaponry, sabotage, break-ins, dead-drops, hit squads, counterintelligence, microdots and spy techniques. He discusses the requirements for being a professional spy, and explains recruitment, risks and rewards. There is a lot more in this attrac-

tive, well-written and authoritative book.

*The Ultimate Spy* even contains a fascinating and insightful foreword by the late William Colby, former CIA director. There also are introductory words from Oleg Kalugin, former major-general of the Soviet KGB.

Few people can guess what it really means to be an espionage agent. Melton's book does a fine job of explaining the topic, providing hard facts and showing the photos. It's the best view we have gotten yet of the hardware, techniques and personalities of that elusive world.

*The Ultimate Spy* is \$29.95, plus \$5 shipping (\$6 to Canada); New York state residents, add \$2.88 tax; VISA/MasterCard accepted; from CRB Research Books Inc., P.O. Box 56, Commack, NY 11725-0056; orders (800) 656-0056; from Canada, Alaska or Hawaii, call (516) 543-9169.

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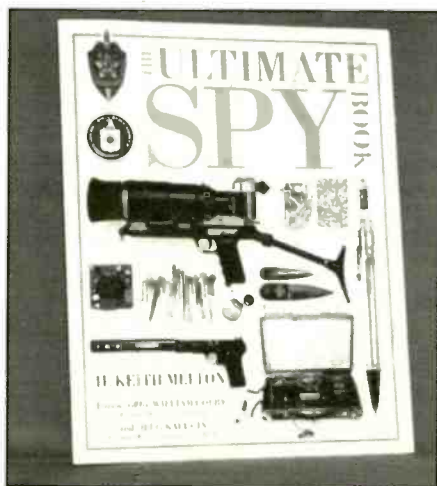
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BY J.T. WARD

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## Scanner Listeners Can See Plenty At Shows

Earlier this year I had the opportunity to attend the Dayton Ohio HamVention; in October, I'll be traveling to Atlanta to attend the Grove Communications Expo. This was my second visit to the HamVention and it will be my third trip to the Grove event.

While these two events are vastly dissimilar in size—the Dayton event draws more than 30,000 antenna-heads, while only 200 to 400 folks attend the Grove Expo—both events should be a "must do" for any dedicated scannerophile.

In Dayton, more than 600 radio and computer equipment manufacturers and dealers displayed room after room of new bells and whistles in the Hara Arena. Outside, on the acres and acres of asphalt, some 2,600 vendors set up shop in the flea market. Some have no more than a handful of components to sell and their "stores" are the open trunks of their cars. Others set up elaborate booths selling everything from ex-military radios to the latest Pentium-based personal computers.

Where else can you find a Desert Storm-vintage Humvee for sale, loaded with military radio equipment? How about a night-scope and a ground surveillance radar set to go with it?

If you're planning to buy new gear and want to see what's available, or if you're looking for a bargain on second-hand (and often rare) hardware, then without a doubt, Dayton during the HamVention is the place to be.

However, the vendors at the Grove Expo don't quite fill one medium-sized banquet room, and most of what's for sale is readily available elsewhere through mail-order firms or even at retail outlets.

The heart of the Grove event isn't the hardware, it's the people. Each year Bob Grove brings together a panel of some of the hobby's and shortwave radio's brightest folks.

Where the emphasis in Dayton is on wheeling and dealing, the folks at Grove have focused on education. For the most part, the seminars held during the three-day event are first rate. And this year Bob and his staff have lined up some field trips that should excite any scanner listener.

Tours have been scheduled for the Delta Airlines communications center, the Atlanta Air Route Traffic Control Center, WSB's radio and TV studios, the Atlanta-Fulton County emergency operations and



This helicopter, operated by Tampa (Fla.) General Hospital, carries both VHF and UHF public safety radios, including trunking-compatible 800-MHz radios in order to communicate with more than a dozen fire and rescue agencies in a five-county area. (Photo by J.T. Ward)

communications center and the MARTA (transit) communications center.

But as good as the seminars and field trips are, some of the best information can be gleaned by talking directly with the factory representatives and dealers present. The pace of the Grove event is slow enough that often you can sit down at a booth and spend a few minutes with the folks that design, market and service the latest scanners and accessories. The crush of the crowds at Dayton makes such one-on-one discussions nearly impossible.

If you've never been to the Dayton HamVention, then by all means, start planning for next year. And it's still not too late to register for this year's Grove Communications Expo to be held Oct. 18-20 at the Airport Hilton in Atlanta, Ga. Both trips are well worth taking.

One programming note: Since starting this column, I've included my e-mail address at the end. Effective Oct. 1, I'm changing online services. My new e-mail address is JTWard99@aol.com.

Don't forget to write!

### Aero Notes

A few months back, Gregory Lay of Clearwater, Fla., provided us with the address of a great web site (<http://www.cc.gatech.edu/db1/fly/airport-info.html>) stuffed with lots of information on U.S. air-

ports. Recently, Greg wrote to mention that the Pinellas County, Fla., Sheriff's Office has joined county fire and EMS on an 800-MHz trunked system. Greg also mentioned that Tampa International Airport has added 126.000 MHz as a new approach-departure frequency, and the St. Petersburg-Clearwater International Airport is using 121.900 MHz for both clearance delivery and ground control traffic.

Greg, thanks for the update, and for your kind words about the column.

### Maryland Mixture

A reader in Maryland whose e-mail identified him only as "Dick J" sent along the following details in response to the June 1996 article *In The Air And On The Air* by Chuck Mankin.

Maryland State Police medevac helicopters: Trooper 1—Martin State Airport (eastern suburbs of Baltimore); Trooper 2—Andrews Air Force Base (eastern suburbs of Washington, D.C.); Trooper 3—Frederick (north central Maryland); Trooper 4—Salisbury (lower Eastern Shore); Trooper 5—Cumberland (western Maryland); Trooper 6—Centerville (upper Eastern Shore); Trooper 7—St. Mary's County Airport (lower Western Shore); and Trooper 8—Olney (northern suburbs of Washington, D.C.).

Dick said he works for the Howard

County, Md., Bureau of Communications (911 and fire and police dispatch) and he included the following Howard County frequencies. All are repeater output frequencies, unless noted as a simplex channel.

154.250—Fire 1, alert and response; 154.220—Fire 2, fireground (simplex); 154.175—Fire 3, fireground (simplex); 154.280—Fire 4, mutual aid (base and mobile simplex); 154.295—Fire 5, mutual aid (base only simplex); 159.090—Police 1, Northern District; 155.595—Police 2, car to car (simplex); 155.370—Police 3, car to car (simplex); 155.475—Police 4, nationwide emergency channel; 155.115—Police 5, Southern District; 151.115—Government 1, public works; 155.925—Government 2, sheriff and corrections (simplex); and 155.820—Government 3, public works.

Baltimore is in the process of going to 800 MHz trunked; Baltimore County and Anne Arundel County already are on 800 MHz; Carroll County to the northwest is in the process and Howard County is actively looking at an 800-MHz system.

### Tone Deaf

John Marshall of Brockville, Ontario, Canada, wants to know whether there are any manufacturers of external CTCSS decoders or if there is anything that he can do to add CTCSS capability to his Pro-43 handheld scanner. He also asked whether any company makes handheld scanners with tone boards built in.

John says his provincial police are all on toned systems and he can't hear anything.

John, several companies make CTCSS decoders, both as accessory hardware and as computer software-interface combinations. The Universal M-400 comes to mind as one example. Please note, however, that CTCSS "decoders" only tell you the CTCSS frequency in use by each user of a frequency. They do nothing to add CTCSS functions to your radio.

However, your comments about your provincial police being on "toned systems" and that you "can't hear a thing" makes me question whether a CTCSS decoder will help you anyway.

CTCSS tones that are transmitted by a two-way radio system activate a tone-controlled squelch circuit inside each of the other radios being used on the system. This tone-controlled squelch allows only transmissions that contain the proper CTCSS tones to pass through to the speaker.

A scanner, on the other hand, allows all transmissions on a given frequency to pass through to the speaker, regardless of whether or not they contain a CTCSS tone.

If you're not receiving your local police radio transmissions, then I'd bet the problem has nothing to do with CTCSS tones. More likely, you're using an old or inaccurate frequency list, or perhaps the police have switched to one of the newer radio sys-

tems, such as an 800-MHz digital trunking radio system, which are impossible to monitor with a scanner. On a digital system, all a scanner listener will hear is a buzz each time there's a transmission. So far, there are no trunking-compatible scanners on the market.

I'm not aware of any CTCSS-capable portable scanners. Uniden does offer at least two models of base scanners (BC-890XLT & BC-9000XLT) and one mobile scanner (BC-760XLT) that have CTCSS capability in the form of an extra-cost option board that plugs into a socket inside the radio. CTCSS capability in a scanner is primarily useful if several agencies share a frequency, or if intermod and images are a problem on a frequency you'd like to monitor. The CTCSS board, when installed in the scanner, will block all transmissions except those from the agencies you wish to monitor.

### Frequency Pops Up

Responding to a question in the April scanning column, Ken Layton of Olympia, Wash., said his local Jack-In-The-Box restaurant uses the frequency 469.0125 MHz for the drive-up window.

Ken also had a couple of questions about the Uniden BC-9000XLT.

The BC-9000XLT will allow you to enter alpha data on any 250 of the radio's 500 channels, not just the first 250 chan-

nels, like the BC-8500XLT. Also, the delay on the BC-9000XLT is channel selectable (as is the attenuator) and not global, like the delay on the BC-8500XLT.

### Shore Thing

Jeff Harvey of West Wyoming, Pa., sent in the following frequencies in response to a request in the May column:

Cape May, N.J.—154.130, fire dispatch; 154.190, fireground; 155.700, police; 153.860 and 153.965, beach patrol; and 453.550, local government.

Cape May County, N.J.—154.085, civil defense; 155.745, public works; 154.785, courthouse F-1; 155.190, courthouse F-2; 156.210, courthouse F-3; 155.010, courthouse F-4; 155.415, courthouse F-5; and 460.225, detectives.

### Write In

Well, that wraps up another one. Keep writing, and please enclose a photo of your listening post or of an interesting radio installation in your area. Send your letters to J.T. Ward, Scanning VHF/UHF, *Popular Communications*, 76 N. Broadway, Hicksville, NY 11801-2909. GENIE online subscribers may contact me directly by addressing e-mail to JTWard. On America Online, the address is JTWard99. Via the Internet, send e-mail to JTWard@genie.com or JTWard99@aol.com. ■



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# Antennas & Things

BY JOE CARR, K4IPV

SIMPLE ANTENNAS AND ACCESSORIES FOR SIGNAL IMPROVEMENT

## Some Antenna Topics—Part 1: Antenna Polarization

From time to time, I like to use this space to discuss some miscellaneous topics that readers have brought to my attention either by mail or in person. This month we will discuss antenna polarity and what it means to you.

### Antenna Polarization

You will hear much discussion about signal and antenna polarization. Understanding this concept requires you to know a little bit about a radio signal as it propagates. These signals are transverse electromagnetic waves (TEMW). Huh? An electromagnetic wave consists of a pair of fields, one electric field (E-field) and one magnetic field (H-field), traveling together in the same line (hence "transverse"), 90 degrees out of phase with each other. Energy in a propagating TEMW is swapped back and forth between the E-field and H-field.

If you were to stand a very long distance from a TEMW, so that its advancing wavefront would look flat, and if you had a pair of magic glasses that would allow you to see the field line of force vectors, then you would see something like Fig. 1. The E-field lines of force and H-field lines of force are at right angles to each other (i.e., they are "orthogonal"). So what's this got to do with polarity? Simple: the polarity of a TEMW (i.e. "radio signal," for those who believe in the KISS—or Keep It Simple, Stupid—principle) refers to the position of the electric (E-) field vector with respect to Earth's surface.

The polarization effect is seen from Figs. 2A and 2B (which we ripped off from a 50-year-old Army radio operator training manual). In Fig. 2A, we see vertical polarization, i.e., E-field vectors are perpendicular, or vertical (KISS), with respect to Earth's surface. The horizontal polarization case is seen in Fig. 2B; E-field vectors are parallel with respect to Earth's surface.

"So what?" you say. One of the practical consequences of polarization is the design of your receiving antenna. There is a signal loss when receiving a signal on an antenna of the wrong polarization. I made some measurements on the high-frequency (HF) shortwave bands and found that the loss of receiving a vertically polarized sig-

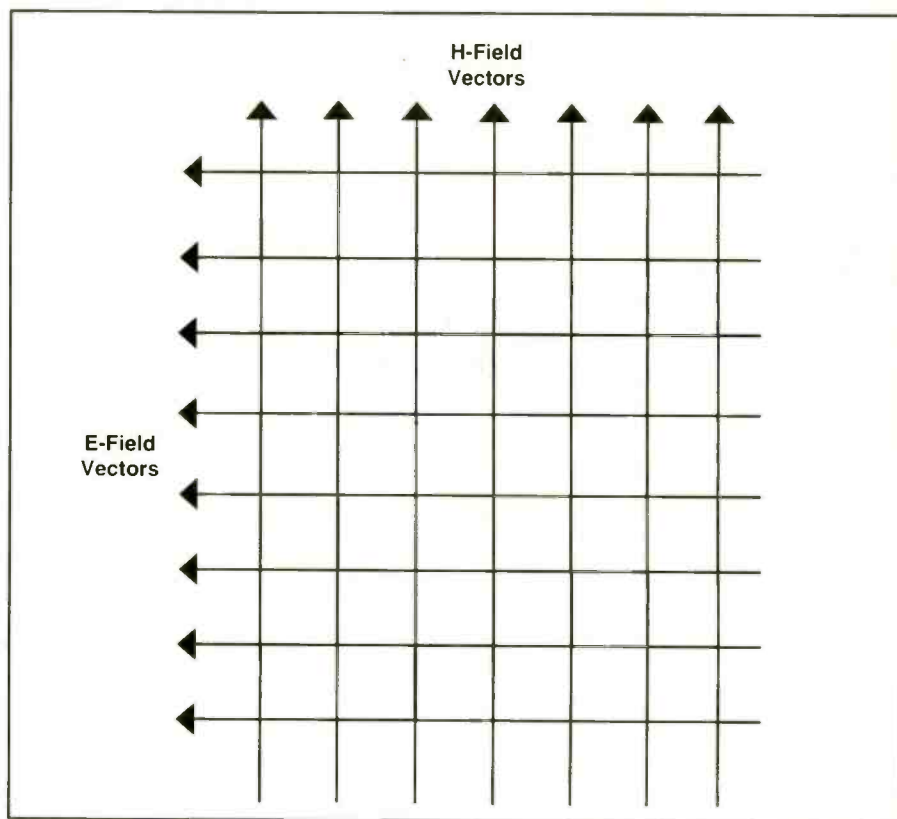


Fig. 1: E-field and H-field vectors for an electromagnetic wave coming straight at you.

nal on a horizontally polarized antenna was -3 to -5 decibels (dB); keep in mind that -3 dB represents a 2:1 signal loss.

These numbers seemed small, and conflicted with what I'd read in the antenna engineering literature. The mystery was explained in a conversation with the engineer at a local television station. On HF, the signals arrive by "skip" communications, which means that there are one or more polarity rotations and possibly multipath effects. These phenomenon mess up any "real world" measurements.

### Going Higher

As frequency is increased into the VHF/UHF scanner bands, however, the effect becomes more pronounced. The loss from cross-polarization can become much more

profound (numbers from -15 to -25 dB have been observed, and one source claims -30 dB theoretical loss). Settling on a midlin' number in this range—say -20 dB—we can see why this is so important: a -20-dB loss is a 100:1 signal strength ratio. In other words, if the antenna polarization were matched to the incoming signal, then it's like:

- Inserting a 20-dB preamplifier in the line.
- Using an antenna with an improbable 20-dB gain.
- Listening to a station that boosted its effective radiated power (transmitter output power times antenna gain) by 100:1.

Basically, using an antenna of the wrong polarization can, under the right circumstances, be equivalent to putting a gigantic, big honkin' resistor in series with your



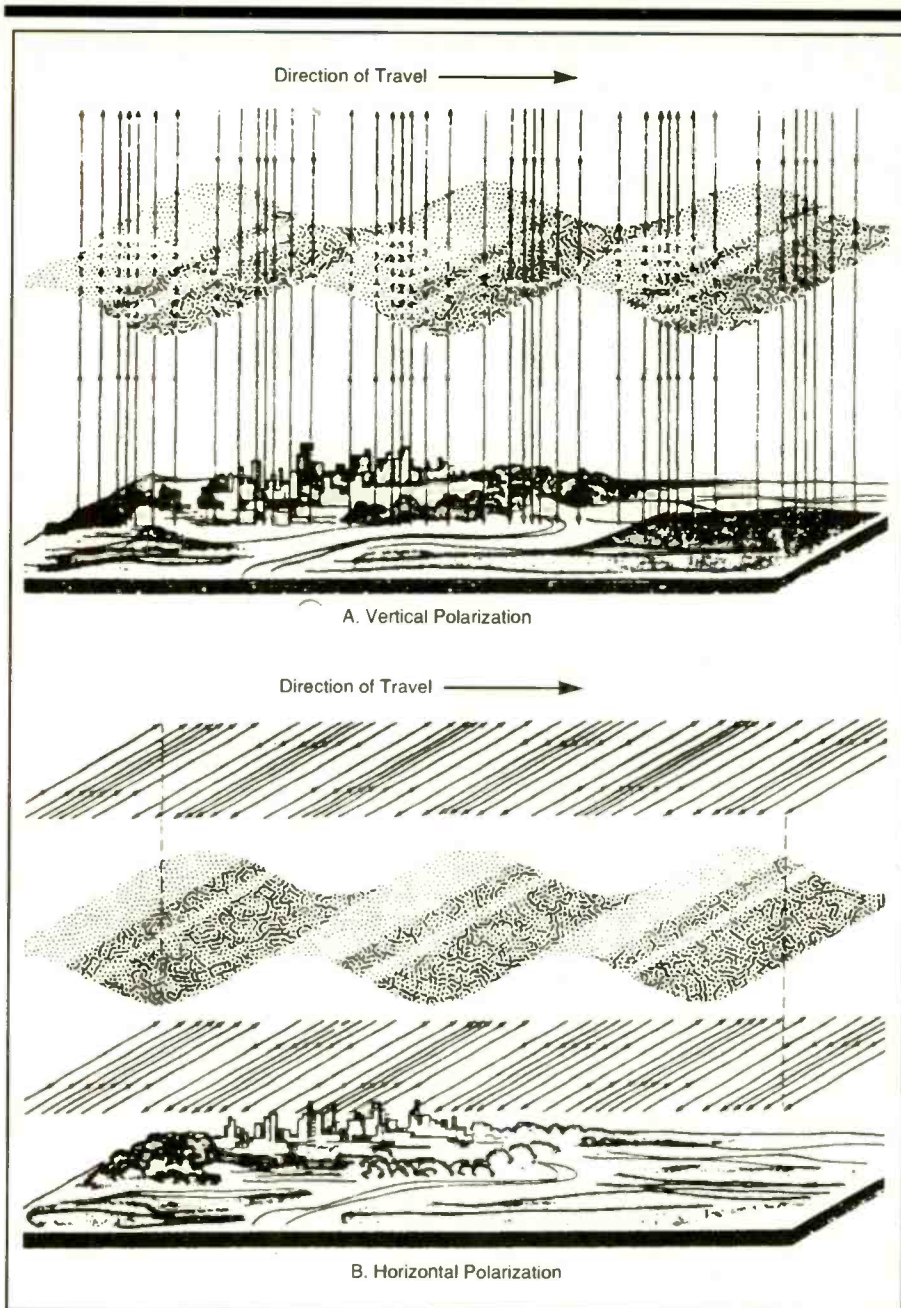


Fig. 2: A) Vertical polarization. B) Horizontal polarization.

antenna lead. It won't always be so profound, but it may become critical when looking for weak, distant stations.

### Signals

The actual loss in any given case depends on the local situation and the signals being received. If you are receiving a lot of multipath, then the loss will be there, but is obscured by the fact that multipath signals tend to flip polarity sometimes (polarity flipping is common on reflected signals).

Even the -3 to -5 dB losses that I noted on HF are significant when detecting weak signals, so it's worthwhile making the antenna and signals match. How? See Fig. 3.

The antenna polarity is set by aligning

the radiator element with the E-field vector on the incoming signal. In Fig. 3A, the antenna element is horizontal with respect to Earth's surface, so it's horizontally polarized. A half-wavelength horizontal dipole is an example of such an antenna. In Fig. 3B, the antenna radiator is perpendicular with respect to Earth's surface, so it's set to receive vertically polarized signals. An example of the vertically polarized antenna is the quarter-wavelength groundplane antenna.

The polarity of other antennas can be set in different ways, but most of them involve aligning the radiator element with the E-field vector, as is done on the half-wavelength horizontal dipole and vertical groundplane cases.

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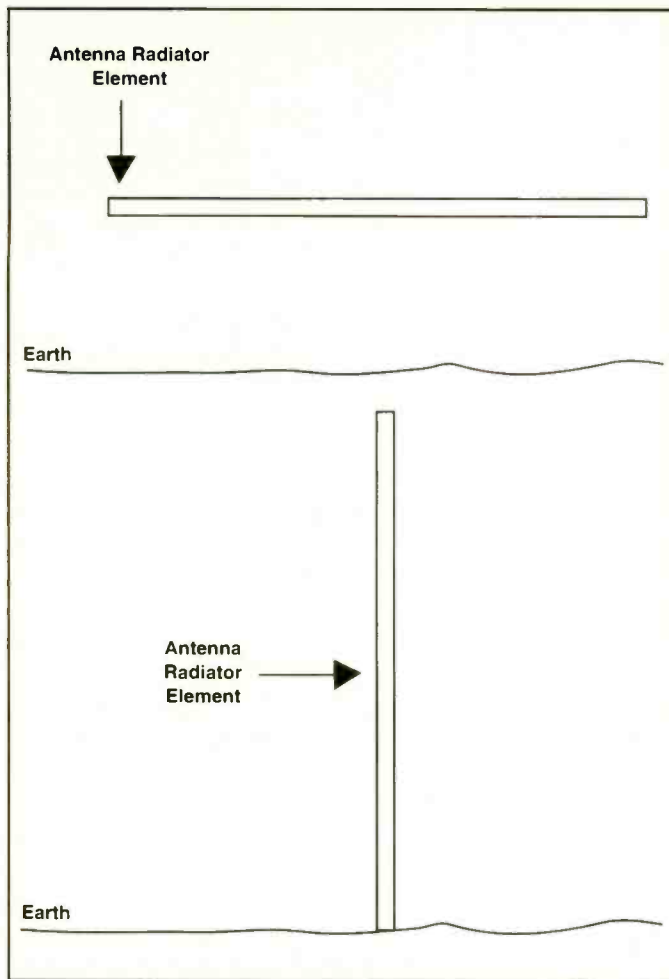


Fig. 3: A) A horizontally polarized antenna. B) A vertically polarized antenna.

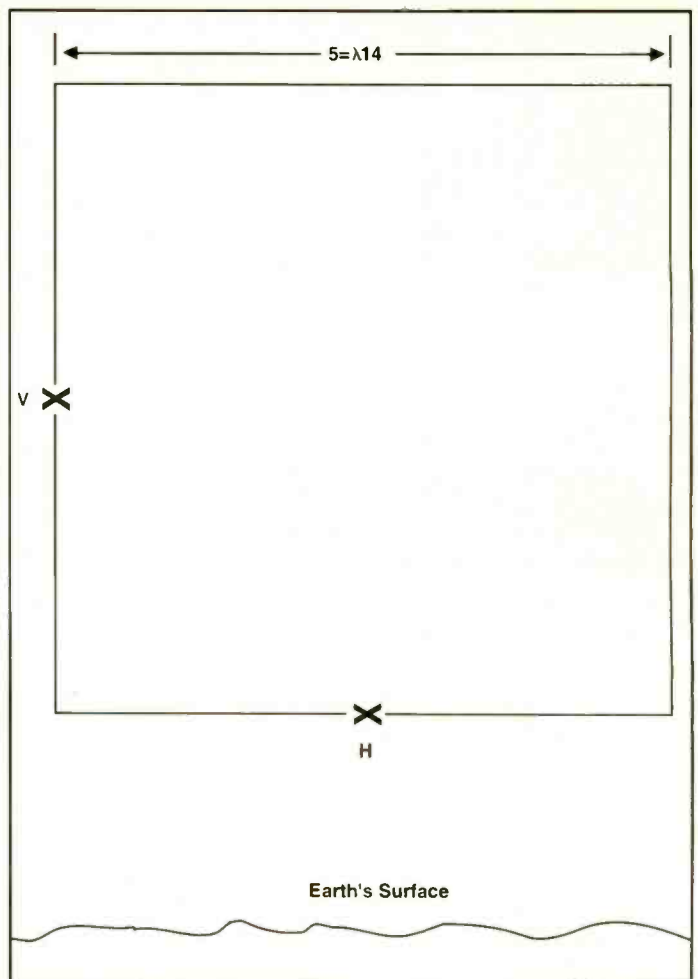


Fig. 4: Antennas such as the quad or bi-d loop are polarized by the location of the transmission line feedpoint.

Antennas where polarization is a little different is the quad beam or the bidirectional one-wavelength loop. Imagine both of these antennas as consisting of one (as in the bi-d loop) or more (as in the quad) square loops of wire, with two sides parallel to Earth, and two perpendicular (Fig. 4). Each side (S) is a quarter-wavelength long, with the overall loop being a full wavelength.

If these antennas are fed along the bottom edge, i.e., at point "H", then the antenna is horizontally polarized. Similarly, if it is fed along the vertical edge (i.e. at "V"), then it's vertically polarized. I've seen at least one article, sometime in the distant past, where a ham operator rigged a couple of relays to change the polarization. I think that's a bit of overkill, but he seemed to like it.

### Switch Niche

Perhaps a better solution is to install two antennas for the same band, one vertical

and one horizontal, and then use a coaxial switch to switch between the two. Actually, a coaxial switch may not be necessary for receiver operators, except above about 150 MHz. The reason is that you can use an ordinary "two-way" AC power light switch (the kind on your wall). These switches are designed for situations where two switches control a light, say at the top and bottom of a staircase, and you want to be able to turn the light on and off from either location. AC light switches cost only a couple bucks each, and the shielded boxes needed to install them are easily available (both at local hardware stores).

So why use light switches? Why not ordinary toggle switches? Switches also cause loss in a system. At VLF, LF and mediumwave frequencies, and possibly into the shortwave region, ordinary toggle switches will work nicely. But they have too much lead inductance and capacitance-to-ground for higher frequencies. Measurements

made by a ham operator showed these effects are minimal on light switches, and they don't become a problem until the frequencies climb into the mid-VHF region (e.g., about 150 MHz). The hams also get another benefit from the light-switch approach: they will handle the RF power, where toggle switches won't.

If you decide to install more than one antenna for the same band, then you may well be quite surprised at the difference in performance, and how it varies with the signal being received. Some of the variation is because of antenna and signal polarization, but other factors also raise their ugly heads. Two factors are the angle of radiation and the relative antenna heights—which we will discuss in a future column.

You can contact me at POP'COMM with questions to be answered in this space, complaints, kudos, suggestions, brickbats, or just about anything you want, or by sending e-mail to CARRJJ@aol.com. ■

# Pirates Den

BY EDWARD TEACH

## FOCUS ON FREE RADIO BROADCASTING

### What's Hot Around 6955 kHz?

There's a nice bunch of logs to pass on this month, the majority provided by Pat Murphy in Virginia. Let's crown him king of the pirate loggers, at least for this month.

FHX, 6958 USB at 0034 to 0100 close with rock, *Major Spook*, fake commercials and ID as "You are listening to a Free Hope Experience shortwave transmission." Also at 0200-0216 close with song *Boobs-a-Lot* and "Your hopes and dreams can come true on Free Hope Experience." Even a Morse code ID: "CQ CQ de FHX." (Murphy, VA)

KGDR, 6955 USB at 2228 to 2350 sign-off. "You're listening to KGDR, Grateful Dead Radio, on 6955 kHz." Nothing but Grateful Dead music. "We'll get one of those QSL cards right out to you." (Murphy) (I presume that was a statement and not a Grateful Dead song title!—Ed.)

Radio Titanic International on 6955 USB from 2150 tune-in to 2213 sign-off with European-sounding man announcer, ID "The oldest European pirate since 1975." And "Good afternoon, this is Mark Brown." Played oldies rock. Also heard at 1745 until 1802 closing with "good night and God bless." (Murphy, VA)

WLIS, on 6954 USB at 1339 to 1350 sign-off with usual variety of interval signals. "We will verify all correct reception reports; I can smell a phony report a mile away." Listed all the different QSLs the station has. Also: "You'll never hear Guns-n-Roses on WLIS." Also heard at 0045-0059 close with (I think) Radio China IS, WLIS ID and then lost to QRM. (Murphy, VA)

Radio Free Speech, 6955 at 1500 to 1540 close; also at 2120 tune-in until 2146 close. "Bill O. Rights" with show having Clinton say "Hillary is bad luck," *Power Hour of Bliss*, funny commercials for "Captain Algae's Seaweed Treats." Gave both the Blue Ridge and Wellsville addresses. Another log at 0200-0241 with fake Rush Limbaugh program, commercial for "Looney Tunes Frozen Dinners." Also 2310-2323 with the show "taken over" by the Amish and became "all Amish all the time." DJ said his name was Sonny Yoder. Also featured the Story Lady. Closed with an alternate version of the national anthem. (Murphy, VA)

Omega Radio, 6950 at 2147 to 2158 close, heavy metal rock, one ID, "this is Omega Radio," noted before lost to QRM. (Murphy, VA)

KAOS, 6955 USB at 0000 to 0043 sign-off with various rock tunes; "Our toll-



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Thanks to Don Mc Clarren in Michigan for sending a copy of this QSL he received from Radio One.

free number has been confiscated by the FCC," spoofs on commercials, *Mister Ed*, post office, etc. (Murphy, VA)

WREC, 6955 USB at 0133 to 0159 close with repeat of its third anniversary program. Also 2300-2325 with *Yo-Ho-Ho* song, *Star Wars* theme, *Benny Hill* theme. Hosted by P.J. Sparx. "This program has been approved by the Federal Communications Commission and complies with all community standards." Also 2220-2300 with *Star Wars*, *Benny Hill* themes, "Radio Free East Coast" ID. (Murphy, VA) 0008 with P.J. doing his third anniversary program, "celebrating three years of trouble-free radio" and offering a limited-edition QSL. Also noted at 1735 and 2320. (Dick Pearce, VT) 6954 at 1950 with a live broadcast, phone-in dedications and reception reports. Everything from the Beastie Boys to Count Basie to comedy items. (Bill Cooper, NY)

Jury Rigged Radio, 6955 at 1453 to 1506 sign-off. A repeat of a previous program including *Mister Ed* and *Lost in Space* themes. Way too much echo making it hard to understand. Also 2323-2343 on 6956 with same themes, blues, bassy, hard-to-copy voice. (Murphy, VA)

Voice of Indigestion, 6955 at 0003 to 0043 sign-off with horn or flute music, "Roses are red, violets are blue, Miss Jamaica." Lots of IDs for "pirate radio Voice of Indigestion," hysterical laughter, close with heavy echo. (Murphy, VA)

Voice of Juliet, 6955, 2333 tune-in until 2351 sign-off. Rock, cat screaming, ID "This is the Voice of Juliet" and YL DJ. "Sorry about that PMS, a couple of Mydol will take care of that," and "Here's a guest, it's He-Man from He-Man Radio," who whimpered, "off with his head." (Murphy, VA)

Action Radio, 6955, 2225 with references to 1992 and not supporting George Bush. Hosted by A.J. Michaels and co-hosted by Radio Animal (who mentioned being in the Republic of Nebraska after being thrown out of Pittsburgh). Said "hi" to East Coast Beer Drinker. (Pearce, VT) 2314 tune-in until 2323 sign-off. Discussion of the "populist political party," what they stood for and about their candidate, Bo Grits. Later two guys talking with another pirate on the telephone. (Murphy, VA)

Midnight Radio, 6955 at 1900 tune-in until 1934 close. "We'll send you a QSL for an accurate report" and "for you computer geeks call the BBS at (number given) and leave your report." Is corporate America controlling your thoughts and choices? The answer is yes." Signed off with "What ever happened to Randolph Mantooth?" (Murphy, VA)

Starshine Radio, 6955 from 1350 until 1421 sign-off. DJ sang and talked over songs. Euro-techno rock. "Starshine Ra-

(Continued on page 74)

# Clandestine Communique

WHAT'S NEW WITH THE CLANDESTINES

## These Tigers Know How To Growl

The on-going war of the Timal Tigers to gain independence from Sri Lanka has surfaced in the mainstream media several times recently. There's been a combination of broadcasting and communications traffic reported on 6825 upper sideband at various hours of the day, consisting of speeches, distress calls and coded messages. Reports say the broadcasts usually are brief and that the frequency jumps around a lot. The transmitter reportedly is located at Batticaloa in the eastern part of Sri Lanka.

Other activity on this scene is very limited, although the Tigers have had somewhat more substantial broadcasting operations in the past. It is believed the Tamil Tiger's operate an FM station somewhere in the Jaffna peninsula in an area controlled by the group. A Voice of the Tigers station is said to have gone off the air after military activity in the area in which the station is located. Whether this is active again is unknown.



Beijing: Is this where those mysterious Chinese numbers broadcasts originate?

### Palestine

Palestinian Arab Radio, also known as Al-Quds, says it no longer operates on shortwave, only mediumwave and FM, and those on a reduced schedule. This station broadcasts from Syria on behalf of various factions that oppose Palestinian leader Yasir Arafat and his move toward peace with Israel.

The station's address is: P.O. Box 5092, Damascus. The station claims it is jammed by Jordan.

### Iran, Iraq

The Voice of Palestine—Voice of the Palestine Islamic Revolution broadcasts from Iran and runs the following schedule: 0400-0430 on 5995 and 9670; 1230-1300 on 11745 and 1820-1930 on 6025 and 7070, all in Arabic.

The anti-Saudi Arabian station Holy Medina Radio, operated by Iraq and carried over its broadcasting facilities, is being aired from about 0400 to past 1530 on 9530. It seems it is being jammed, apparently by Saudi Arabia. This station, or one using that name, first appeared on shortwave during the Gulf crisis in 1990-91. Broadcasts are in Arabic only.

Radio of Jihad, a station opposing the Iraqi government and in support of the

Islamic al-Da'wah Party, has been noted on 6064 at 1500-1600. This station formerly used only mediumwave (1116 kHz).

The same shortwave frequency (6064) also is being used by The Voice of Rebelious Iraq, operated by the Supreme Assembly of the Islamic Revolution in Iraq, between 1200 and 1430. Both of these stations are believed to broadcast from facilities in Iran and thus are almost certainly sanctioned by the Iranian government.

Radio Voice of the Iraqi People is noted at around 2230 on 9568 and 11710 (or 11713) in Arabic. This one is believed to be located in Saudi Arabia.

The Voice of Islam, which supports the Islamic movement within the Kurdistan area of Iraq, is operating between 1700 and 1800 on 4400.

The Voice of Iranian Kordestan, of the Kordestan Democratic Party of Iran, is now on the air daily from 1300-1430 in Kurdish for one hour and Farsi for the last 30 minutes, with a repeat of both segments at 0230. Most recent operations have been in the area of 4190 to 4195. Broadcast times are one hour later during the winter period.

### WRMI

Radio Miami International/WRMI (9955) reports it has dropped its anti-

Castro, (aka Cuban exile) programming during weekday evenings.

### Somalia

A new Somalian station has been noted. It calls itself Holy Koran Radio—The Voice of Ahlu Sunnah Waljama and is using 6545 and is scheduled between 1500 and 1700, carrying Islamic programming.

### Oromo

The Voice of Oromo Liberation now broadcasts via Kiev, Ukraine, Mondays, Wednesdays and Saturdays at 1600-1700 on 5960. Reports on this station may be sent to SBO, Postfach 510 610, D-13356 Berlin, Germany.

### Guatemala

Your editor continues to be fascinated by Voz Popular, the station of the URNG that has a small, off-and-on guerrilla insurgency against the Guatemalan government. Compared to most of the globe, this one is right in our back yard, yet it has been years since we've seen any actual logs of this station. Your editor logged it several years ago, but nothing since.

It claims to be active on or near 7000, (probably between 6970 and 7015) with  
(Continued on page 74)

SANGEAN ANNOUNCES

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# You Should Know

BY CAPT. WILLIAM MAULDIN, WG4R

INTERESTING THOUGHTS AND IDEAS FOR ENJOYING THE HOBBY

## Portable GPS Laptop Computer Mapping

There is an old phrase, "you are never lost if you know where you are coming from or where you are going." That statement certainly holds true today with the many different methods of knowing where you are and where you are going.

Years ago, the hikers on the Appalachian Trail had only a compass and the National Park Service trail markers to help them along. Few hikers today carry just a compass. The portable global positioning system, or GPS units as they are termed, are listed in every catalog from aviation to outside living. Boaters, hikers and others who enjoy the call of the outdoors are joining the pilots and military in their expanding use of the portable GPS units. The major rental car companies are adding GPS mapping systems to the list of options available on rental cars today. Police, fire, taxicabs and others are adding GPS units and position software to communications packages being installed in vehicles.

Vehicle positions are constantly updated and displayed on wall maps in the dispatch centers. Several of the vehicle theft alert systems are adding small, compact GPS units to their theft alarm broadcasters. When the vehicle is stolen, instead of just sending a series of beeps to alert a nearby police unit that a stolen car is close by, the hidden theft alert system can now send out a GPS position report showing the exact location of the car.

Excellent global positioning systems will soon be available to us at a consumer level, making "being lost" a thing of the past.

GPS is now being used by ham operators in a new packet radio system. This new program allows hams to expand their enjoyment of mobile packet radio by attaching a portable GPS unit to their laptop computer or portable packet system, and in doing so, the exact position of the portable packet station is displayed on the screen of those monitoring the packet transmissions. I recently visited the radio shack of a ham friend who is really into packet radio. His large computer screen showed the call signs and positions of several mobile packet stations. As we watched, each of the mobile indication dots moved, and as they moved, the actual position was updated and displayed. Even with no exchange of text, the packet stations continued to receive position updates from the portable-attached GPS, and at regular intervals, the receiving packet station display was updated and refreshed with new positions on each mobile.

As I mentioned, this ham radio operator was really into packet radio. He had two displays in progress during my visit. One was constantly receiving information on HF or shortwave from packet stations worldwide. The screen showed a world map and displayed the position of each station in addition to the callsign of the transmitting station. The second computer display was connected to a local VHF packet system. The local map displayed the position of all local packet operators using the GPS positioning software.

Of course, as GPS use becomes more widespread, positioning hardware and software will become totally integrated. Laptop computers are being manually interfaced today with portable GPS units to do all sorts of things. As with anything new, displays are always impressive. One of the most notable things that I've seen recently has been a new portable GPS unit made by Lowrance. DeLorme, a well-known computer mapping software and publishing company, has some excellent products also. The DeLorme MapExpert CD-ROM, when used with the software interface MapKit, a color laptop, and a portable GPS unit can give you an impressive mapping result. The program display can show you where you have come from, your current position, and with an excellent map display, give you a choice as to how to reach your destination.

In talking with industry users and manufacturers for this article, I found that although millions of dollars are being spent on combination hardware and software units for customers such as national rental car companies, the displays will be limited in geographic area coverage generally speaking. In other words, once installed, you will probably not be able to rent a car with a mapping display in Miami and expect to find a map database of Atlanta in the system. This probably will come in time, probably in the form of computer database plug-in cards.

The GPS portables used in both marine and aviation today with map displays are already using small, snap-in mapping database cards from companies such as C-Map and Jeppesen. Most cards cover a limited area, and are updated frequently as frequencies and other navigational aids are changed, moved, or noted out of service.

Laptop computers using CD-ROM-based programs such as DeLorme MapExpert with the MapKit software interface and a portable GPS unit with a NMEA port

can offer detailed nationwide coverage. The display can be zoomed in or out for desired detail. Tracking can be shown, so you are always aware of where you have come from. This is especially helpful when the user is an off-road vehicle or hiker.

Portable GPS units get their current position from receiving a selected series of satellite signals. The higher-priced units not only tell the position in latitude and longitude, but they can also give you speed of movement and altitude. If you program in a known destination, you can show information on the GPS display on how to get there directly. If you cannot reach the destination from your position via a direct course, then the user must program in "waypoints" that will allow you to go from "A" to "B" to "C" to reach "D" for destination. Marine and aviation users always are using waypoints in their navigation.

I found the laptop mapping display to be much better than most of the displays used on the portable GPS units, even with the added software cards. However, portable displays are getting better as technology improves and the customer demand increases. The display on the new Lowrance AirMap is quite good, and when the optional plug-in local navigational card is added, highways, airports, rivers, lakes, and some selected streets are shown in detail. Of course, this can not be compared with devoted mapping software products such as MapExpert when shown in full color on a large laptop screen. One can honestly say that Lowrance has done an impressive job with their new AirMap unit.

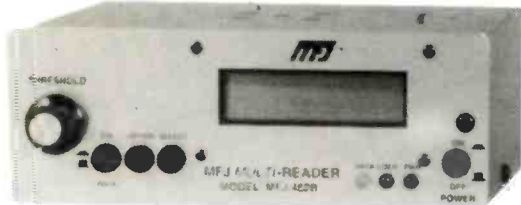
If you find this subject of interest, what should you look for? I would suggest that you select a good GPS unit that is designed to receive a minimum of five satellite signals at once. Some of the more expensive, higher quality units can receive as many as eight. You need a minimum of three satellite signals to establish position. Four signals are needed to calculate altitude. I might also mention here that the satellite signals are line of sight. So, the more signals your receiver can capture, the better the tracking will be. Signals are lost when a building, tree, or other obstruction gets between the GPS antenna and the satellite.

Another thing that should be mentioned is the accuracy of the government satellite signals. The satellites are property of the Department of Defense, and the government does degrade the system accuracy

*(Continued on page 74)*

# Tap into secret Shortwave Signals

Turn mysterious signals into exciting text messages with this new MFJ MultiReader™



MFJ-462B **Plug this self-contained MFJ MultiReader™ into your shortwave receiver's earphone jack.**  
**\$169<sup>95</sup>**

Then watch mysterious chirps, whistles and buzzing sounds of RTTY, ASCII, CW and AMTOR(FEC) turn into exciting text messages as they scroll across your easy-to-read LCD display.

You'll read interesting commercial, military, diplomatic, weather, aeronautical, maritime and amateur traffic... traffic your friends can't read -- unless they have a decoder.

## Eavesdrop on the World

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## Super Active Antenna

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

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

Receives strong, clear signals from all over the world. 20dB attenuator, gain control, ON LED. Switch two receivers and aux. or active antenna. 6x3x5 in. remote has 54 inch whip, 50 ft. coax. 3x2x4 in. 12 VDC or 110 VAC with

**\$129<sup>95</sup>** MFJ-1024 MFJ-1312, \$129.95.

## Indoor Active Antenna

MFJ-1020B  
**\$79<sup>95</sup>**

## 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, \$129.95.

## Compact Active Antenna

MFJ-1022  
**\$39<sup>95</sup>**

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, \$129.95. 3/4x1 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 from hams, military, commercial, aeronautical, diplomatic, maritime -- from all over the world -- Australia, Russia, Hong Kong, Japan, Egypt, Norway, Israel, Africa.

## Printer Monitors 24 Hours a Day

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

Printer cable, MFJ-5412, \$9.95.

## MFJ MessageSaver™

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

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

## MFJ Antenna Matcher

MFJ-959B  
**\$99<sup>95</sup>**



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, \$129.95.

## High-Gain Preselector

MFJ-1045C  
**\$69<sup>95</sup>**



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, \$129.95.

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## Easy Up Antennas Book

How to build MFJ-38 and put up **\$16<sup>95</sup>**

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

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

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MFJ-1214PC  
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Use your computer and radio to receive and display *brilliant full color* FAX news photos and incredible WeFAX weather maps with all 16 gray levels. Also RTTY, ASCII and Morse code.

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

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

## Super Hi-Q Loop™ Antenna

The Super Hi-Q MFJ-1782 Loop™ is a **\$269<sup>95</sup>**



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<sup>95</sup>**



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

## Mobile Scanner Ant.

Cellular MFJ-1824BB/BM **\$19<sup>95</sup>**

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

improves copy on CW and other modes.

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

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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 1/4x5 1/4 inches.

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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 12/24 Hour LCD Clocks

MFJ-107B  
**\$99<sup>95</sup>**



MFJ-108B  
**\$199<sup>95</sup>**

MFJ-105B  
**\$199<sup>95</sup>**

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<sup>95</sup>**



MFJ-1702B  
**\$21<sup>95</sup>**

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  
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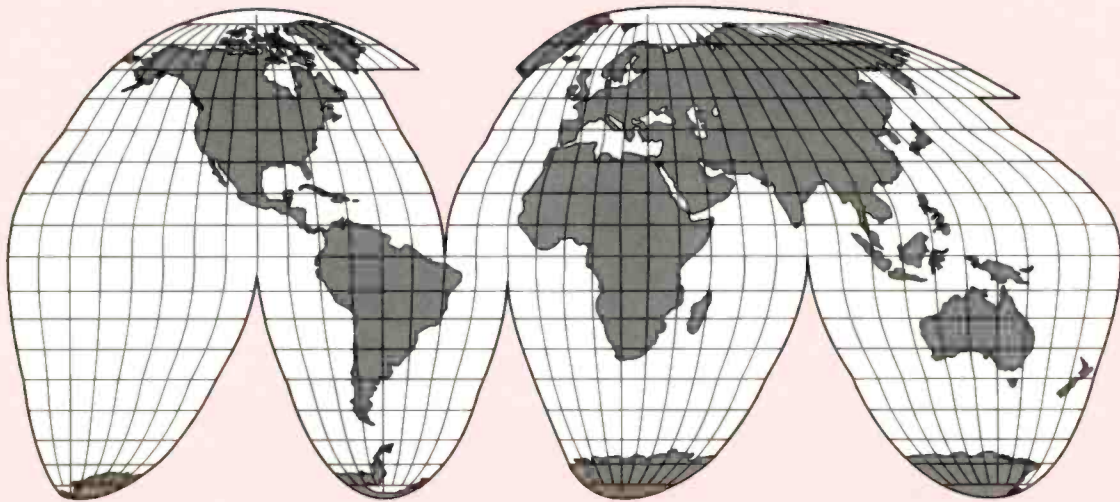
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# POP'COMM's World Band Tuning Tips

September 1996



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

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

Freq.	Station/Country	UTC	Notes	Freq.	Station/Country	UTC	Notes
3220	HCJB, Ecuador	0900		4845	Radio Fides, Bolivia	0430	SS
3225	Radio Exterior de Espana, via Costa Rica	0300	SS	4870	ORTB, Benin	0600	FF
3230	Radio Oranje, South Africa	0400	EE	4875	Radio Roraima, Brazil	0100	PP
3285	La Voz del Rio Tarqui, Ecuador	1000	SS	4890	NBC, Papua New Guinea	1000	Pidgin
3300	Radio Cultural, Guatemala	1030	SS	4905	Ecos del Orinoco, Colombia	0400	SS
3360	La Voz de Nahuala, Guatemala	1100	vern.	4914v	Radio Cora, Peru	0900	SS
3365	Radio Milne Bay, Papua New Guinea	1100	Pidgin	4915	GBC, Ghana	0600	
3380	Radio Chortis, Guatemala	1100	vern.	4920	Radio Quito, Ecuador	0200	SS
3945	Radio Vanuatu	1030	FF	4930	Radio Internacional, Honduras	0200	SS
4753	RRI Ujung Pandang, Indonesia	1200	II	4940	Radio Amazonas, Venezuela	0300	SS
4765	Radio Integracio, Brazil	0130	PP	4955	Radio Nacional, Colombia	0400	SS
4770	Radio Nigeria, Kaduna	0430	s/on	4985	Radio Brazil Central, Brazil	0200	PP
4775	Trans World Radio, Swaziland	0400	GG	4996	Radio Andina, Peru	0500	SS
4779V	Radio Oriental, Ecuador	1030	SS	5009v	Radio Madagascar	0257	s/on, FF
4783	Radio TV Malienne, Mali	0700	FF	5020v	La Voix du Sahel, Niger	0700	FF
4800	Radio Lesotho	0200	s/on	5033	RTV Centrafricaine, Central African Rep.	0600	FF
4820	La Voz Evangelica, Honduras	0230	SS	5035	Radio Aparecida, Brazil	0145	PP
4825	Radio Mam, Guatemala	0100	SS	5047	RTT, Togo	0630	FF
4839	RTVM Mauritania	0700	FF	5077v	Caracol, Colombia	0300	SS



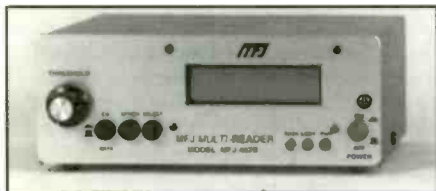
Freq.	Station/Country	UTC	Notes	Freq.	Station/Country	UTC	Notes
5890	Radio Marti, USA	0730	SS	9590	Radio Norway	1300	NN
5900	HCJB, Ecuador	1030		9590	BBC, via WYFR	1500	
5910	Radio Vilnius, Lithuania	0045		9650	Radio Korea, So. Korea, via Canada	1130	
5910	Radio Denmark, via Norway	0030		9655	Radio Austria International	0130	
5920	Croatian Radio	0800		9675	Radio Cancao Nova, Brazil	0030	PP
5925	Radio Canada International	2100		9680	Radio Republik Indonesia, Jakarta	1230	
5930	Radio Prague, Czech Republic	0200		9690	China Radio International, via Spain	0300	
5950	Voice of Free China, Taiwan, via WYFR	0700		9700	Radio New Zealand International	0900	
5960	Radio Canada International	0030		9715	Radio Tashkent, Uzbekistan	1330	
5965	Radio Oranje, South Africa	0441	s/on	9734v	Radio Nacional, Paraguay	0230	SS
5965	Radio Havana Cuba	0030	SS	9770	UAE Radio, Abu Dhabi	2200	
5975	BBC, via Antigua	0400		9830	Radio Havana Cuba	2200	SS
5990	Radio Bucharest, Romania	0200		9855	Radio Cairo, Egypt	0530	AA
6005	RAI, Italy	0100	II	9900	Radio Cairo, Egypt	2246	AA s/off
6015	Radio Austria Intern'l, via Canada	0630		9910	All India Radio	2100	
6020	Radio Netherlands, via Bonaire	0000		9955	WRMI, Florida	2100	
6040	Radio Clube Paranaense, Brazil	0930	PP	10058	Voice of Vietnam	1400	VV
6050	HCJB, Ecuador	0800		11620	All India Radio	2100	
6060	Radio Nacional, Argentina	0930	SS	11650	Radio Sweden	1430	
6070	CFRX, relay of CFRB, Canada	0700		11660	Radio Australia	1430	
6090	Radio Esperanza Chile	0730	SS	11705	Radio Nova Visao, Brazil	2100	PP
6095	Radio Portugal	0200		11720	Radio Norway	1400	NN
6115	Radio Union, Peru	0330	SS	11735	Radio Finland International	1230	
6120	Radio Japan, via Canada	1130		11760	Radio Havana Cuba	2145	
6135	Swiss Radio International	0100		11775	Radio Exterior Espana	2230	
6145	Deutsche Welle, Germany	0100		11780	BSKSA, Saudi Arabia	1600	AA
6150	Radio Record, Brazil	2200	PP	11815	Polish Radio	1300	
6165	Radio Netherlands	0430		11840	Radio Denmark, via Norway	1345	DD/EE
6165	Swiss Radio International	0715		11870	FEBA, Seychelles	1515	
6175	Faro del Caribe, Costa Rica	1100	SS	11895	Radio Japan, via French Guiana	1400	
6185	Radio Educacion, Mexico	0500	SS/EE	11900	Channel Africa, South Africa	0500	
6205	Voice of Russia	0500		11900	Radio New Zealand International	0600	
6280	Voice of Hope, Lebanon	0300		11905	Radio Thailand	0030	
6900	Turkish Meteorological Radio	0500		11915	Radio Canada International	1400	
7085	Voice of Broad Masses, Ethiopia	0326	s/on	11945	Radio Canada International	2200	
7105	Radio Bosnia-Hercegovina	0200	vern.	11965	Radio Record, Brazil	2200	PP
7110	Radio Ethiopia	0300	Amharic	11970	Radio Jordan	1730	AA
7115	Trans World Radio, Monaco	0900		11990	Radio Kuwait	1800	
7143	Radio Altura, Peru	0300	SS	11995	FEBC, Philippines	1300	
7160	Radio Tirana, Albania	0230		12005	HCJB, Ecuador	1200	
7200	Yakutsk Radio, Russia	0330	RR	12065	Voice of Russia	1600	
7205	Voice of Russia	2330		12085	Radio Damascus, Syria	2000	
7285	Radio Thailand	1100	s/on	13625	Radio France Int'l, via French Guiana	1200	
7285	VOA, to Africa	0600		13635	Swiss Radio International	1200	II
7325	BBC	0300		13700	Radio Netherlands	1430	
7355	WRNO, United States	0600		13730	Radio Austria International	1130	
7460	Radio Copan Int'l, Honduras (testing)	0200	SS/EE	15115	Radio New Zealand International	0200	
7465	Voice of Israel	0500		15160	Radio Algiers, Algeria	2030	
7480	Radio Bulgaria	0500		15240	Radio Sweden	1330	
7500	Radio Moldava International	0430		15260	VOIRI, Iran	1200	
8000	Voice of Sudan (clandestine)	1900	AA	15265	Radiobras, Brazil	1800	
9275	Rikisutvarpid, Iceland	2315	Icelandic	15275	Radio Canada/CBC	1930	
9355	Monitor Radio, KHBI, No. Marianas	1400		15325	Radio Canada International	1430	
9425	Voice of Greece	0600	Greek	15345	RAE, Argentina	0000	SS
9445	Voice of Turkey	0400		15395	UAE Radio, Dubai	1330	
9475	Radio Cairo, Egypt	0200		15400	BBC, via Ascension	1630	
9505	Radio Veritas Asia, Philippines	1230	PP/EE	15530	Radio Australia	1100	
9505	Radio Havana Cuba	2230		15650	Voice of Greece	1430	
9510	Radio Romania International	0630		17725	Radio Canada International	1900	
9510	Radio Australia	1200		17745	Radio Romania International	1300	
9525	Radio Republik Indonesia, Jakarta	1130	II	17780	Voice of Russia, via Moldova	1330	
9530	KSDA, Guam	1030	CC/EE	17800	Deutsche Welle, Germany	1100	
9540	Radio Exterior Espana	0030		17870	Radio Exterior Espana, via Costa Rica	1630	SS
9550	Radio Havana Cuba	2100		19374	VOA (USB feeder)	1930	
9560	Voice of Turkey	0445	TT	21455	HCJB, Ecuador	1700	
9560	Radio Almaty, Kazakhstan	0655		21520	RAI, Italy	1320	s/on Sun
				21605	UAE Radio, Dubai	1000	

# Product Parade

REVIEW OF NEW, INTERESTING AND USEFUL PRODUCTS

## It's Not A Secret: New Reader From MFJ

Have you ever watched spy movies and wished you could live the fantastic life of a secret agent? Now you can by tapping into secret shortwave signals with the new MFJ-462B Multireader.



The MFJ-462B Multireader allows SWLs to convert those odd sounds on HF into readable signals on its LCD readout.

You can convert those mysterious chirps, whistles and buzzing sounds on the shortwave bands into exciting text messages with the new MFJ-462B. Many of those chirps, whistles and buzzing sounds on HF are RTTY, ASCII and CW signals that are passing commercial, military, diplomatic,

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When you plug in the self-contained MFJ Multireader to a shortwave receiver's ear-phone jack, you'll see the sounds turn into exciting secret messages as they scroll across an easy-to-read LCD display. Additional equipment is not needed to receive these messages.

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The Shortwave Multireader features a printer port that allows the user to monitor a frequency 24 hours a day, an MFJ MessageSaver, a high-performance modem,

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For more information, contact any MFJ dealer, or MFJ Enterprises Inc., P.O. Box 494, Mississippi State, MS 39762, call (601) 323-5869, fax (601) 323-6551, or order toll-free at (800) 647-1800.

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- TDM342/ARQ-M2/4
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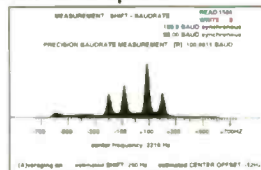
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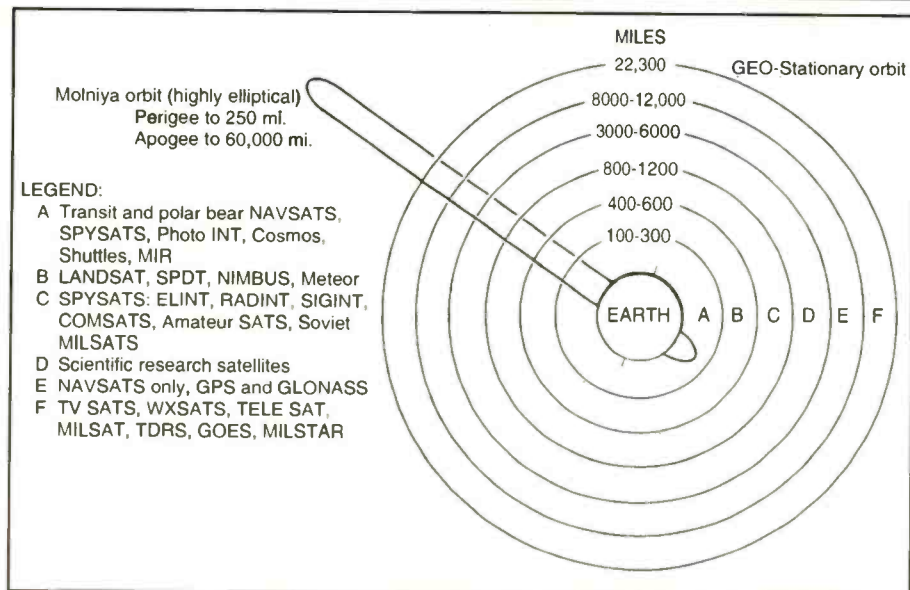
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See You At The Grove Comm. Expo Oct. 18, 19 & 20 1996





packet-type messages and even voice communications.

### 3,000-6,000 miles

Scientific research satellites are the sole residents of this area. Some are passive, and have no radio or other electronic emissions associated with their mission other than TLM. The United States, Russia and Europe have independent and joint mission spacecraft here. Research bands are: 400.150-402 MHz, 1400-1429, 2655-2700 MHz.

### 6,000-12,000 miles

Navigation satellites: This is an area where only navsats operate. The U.S. Geologic Positioning System satellites operate on 1575.42 MHz and 1227.6 MHz spread spectrum. Soviet GLONASS satellites use 1597, 1617, 1250 and 1603 MHz.

### 22,300 miles geostationary

TDRS: Technical Data Relay Sat is a NASA satellite used for shuttle communications on 2217.5, 2287.5 and 15003.4 MHz. This satellite also relays data for deep space and research spacecraft as well as other satellites.

SDRN: The Satellite Data Relay Network is the Russian counterpart to TDRS. Downlink in 10.8, 11.3, 13.7 GHz (10800 MHz, etc).

Milstar: A U.S. military communications satellite. A series of these spacecraft will be placed in orbit to provide a global network. They will use the 20- and 40-GHz bands.

DCSC: Defense Satellite Communications Systems are NATO satellite that use 7.2-7.7 GHz downlink.

Fitsatcom are the most popular satellites for listeners as they use the UHF satellite band and have some unencrypted FM channels. The most active can be heard be-

tween 261 and 263 MHz and another section between 269 and 270 MHz. To supplement this fleet, additional commercial satellites have been leased. Known as Lesat, Gapsat and Marisat, they use the same frequencies as Fitsatcom, 240-399 MHz. Goes and Meteosat weather satellites can be found using 1691 to 1694.5 MHz.

Marisat carry transponders for maritime mobile and aeronautical communications. Maritime mobile uses 1535-1543 downlink and a 1636-1645 MHz uplink. Aero use 1458-1542 downlink and a 1644-1660 MHz.

Intelsat telephone communication satellites use 3.7-4.2 GHz and 10.9-11.7 GHz downlink and 5.9-6.4 and 14-14.5 GHz uplinks.

TVsats—There are far too many TV satellites to list. It should be said that there

are C, Ku and 12-GHz direct broadcast satellites in the Clark belt as Geo orbit is also known as.

### More Info

I strongly suggest a copy of Mark Long's *World Satellite Almanac* for a complete list of international and domestic TV and telecommunication satellites. Write or call Baylin Publications for this and many other satellite titles at 1905 Mariposa, Boulder, CO 80302, or call (303) 939-8720.

For a detailed look at Military satellites I suggest Larry Van Horn's *Communications Satellites*. It is carried by Universal Radio, 1280 Aida Drive, Reynoldsburg, OH 43068, or call (800) 431-3939; be sure to tell them POP'COMM sent you.

The Molniya Orbit is a highly elliptical orbit—during the satellite's orbit it comes extremely close to the earth's surface (as close as 200 miles) on perigee and can reach 6,000 miles on apogee. The Soviets were first to use such an orbit, which explains the name. The Molniya comes in two models: Molniya 1 uses 800 MHz and 1 GHz, and the Molniya 3 uses 4 and 6 GHz. They broadcast TV and carry military and manned space voice communications.

Early Warning satellites warn of nuclear weapon launches. Some spy communications satellites also use this orbit.

The layers of satellites that encircle the planet are not like Saturn's rings, all in the same plane, which you would think from looking at the diagram. Each type of satellite, with the exception of the geostationary, are on different planes. Each orbits the earth at a different angle or degree of inclination, leaving the planet trapped in an invisible web of orbiting spacecraft. See you next month. ■



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### *Adventist World Radio Keeps Growing*

**T**here's a very mixed bag of news on the shortwave scene this month; nothing that will make you want to jump for joy, but nothing that will leave you weeping either.

One shortwave broadcast organization that seems in permanent growth mode is Adventist World Radio. The latest from these folks is that they'll soon have a new station on the air from Peru. The 5-kW transmitter involved was once used by AWR Costa Rica. The new station will operate from the Adventist college near the city of Juliaca, which is near the famous and very beautiful Lake Titicaca. However, it may be a bit of a dicey DX catch as the station will beam its signal to the south. It will operate somewhere in the international bands, rather than in the tropical bands.

Meantime, the new AWR station in Paraguay is moving closer to an on-the-air date. Everything is ready to go; now it is

just a matter of waiting for the transfer of operating funds from the original donor.

#### **Antarctica**

A few months ago we reported on the demise of AFAN McMurdo, which meant there was no chance to hear any shortwave broadcasts from Antarctica because the Argentine outlet there was inactive. Now the word is that Radio Nacional Archangel San Gabriel should be active again. Try their former frequency of 15476. In the past this station has operated during the afternoons, running to shortly after 2330. The broadcasts are Spanish, sometimes with an English ID at sign-off.

#### **Guyana**

Keep checking 5950—very late at night is probably best—for the return of Guyana

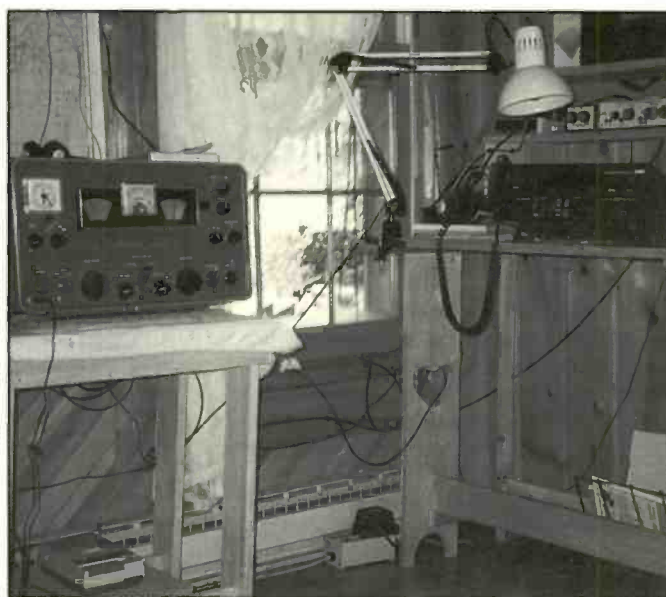
Broadcasting Corp. with its new 10-kW transmitter. Guyana has been absent from shortwave for several years. The 5950 scene usually is busy, but you may find a "window" late in the evening.

#### **Norway**

The Fredrikstad transmitter site of Radio Norway may be closing down unless it can find more use as a relay site for other broadcasters. Relax, though, because Radio Norway won't be out of business if Fredrikstad does close; there are two other Radio Norway transmitter sites: Sveio, which will have a second 500-kW transmitter in operation by the end of the year, and Kvitsoy, which has a pair of 500-kW pumps.

#### **Switzerland**

Swiss Telecom, which operates the transmitter sites used by Swiss Radio In-



*Here's a look at the shack of J.W. Roberts of Brevard, N.C., containing two nice rigs: a Hammarlund HQ-180 and a Drake R8, not to mention some colorful QSL cards!*

ternational, has closed both the Sarnen and Beromunster sites, although the former still is used for mediumwave. Sites at Schwarzenburg, Sottens and Lenk still are in operation, although there is some doubt as to the future of the Lenk site.

## Germany

Germany also is making changes at its transmitter sites. Four new 500-kW transmitters will be in operation soon from the site at Wertachtal and another four new ones are being put into service at Nauen.

## Mediterranean

It looks as though The Voice of the Mediterranean will continue broadcasting. The Libyan-Maltese broadcaster lost its voice when Deutsche Welle closed its Malta relay. But it has run some tests over a shortwave transmitter in Italy, an indication it is seeking a new place to roost.

## Mozambique

One reason Mozambique is not heard very well (to put it mildly) is the sorry state of its transmitters. One recent report said that 12 of the 15 Radio Mozambique transmitters are inoperative because of a lack of spare parts. Even the domestic service isn't able to provide complete coverage of the country and the future of the station is in doubt. Radio Mozambique was most recently reported on 9618v (and drifting) at around 0230 in Portuguese.

## Lebanon

Another rather difficult country to hear is Lebanon. Although there are a couple of private stations on the air (Voice of Hope/Wings of Hope and the Voice of Lebanon), the government's Radio Lebanon hasn't been represented on shortwave in years. It looks like that's going to change. Radio Lebanon has awarded a contract to have new buildings constructed and six new transmitters installed, including shortwave. Just don't ask when!

## BBC

The BBC is discontinuing use of the two 100-kW shortwave transmitters it operates in Lesotho and making up for that loss by renting additional airtime over South Africa's Meyerton site. This change undoubtedly will have an adverse effect on Radio Lesotho because of the government station's agreement with the BBC. In fact, we may even lose shortwave from Lesotho. If you don't have Radio Lesotho yet, check 4800 for their sign-on just before 0300.

## Belarus

There may be a foreign service, however limited, from Belarus in our future. The



This view is of the BBC Far Eastern relay station at Singapore. (Courtesy of L. Mark Lussky, Los Angeles, Calif.)

government plans to put together a radio and TV network that would broadcast to foreign countries. It plans to establish a station called Echo of Belarus (Rekha Belarusi), which would beam programs mostly to the CIS countries, as well as Latvia, Lithuania and Poland.

## VOA Sao Tome

Here is the current schedule for the new Voice of America relay station on Sao Tome: Saturday/Sunday, 0300-0700 on 6080 in EE; 1630-2230 weekdays on 6035 (EE), 1600-2130 Saturdays on 6035 (EE), 1600-2200 Sundays on 6035 (EE), 0500-0530 on 6120 in Hausa, 1630-1730 on 9815 in Swahili, 1700-1730 Saturday/Sunday on 9815 (Swahili) and 1730-2130 weekdays in Portuguese, French and Hausa on 9780.

## RAI Sicily

If you are still trying to hear the RAI outlet at Caltanissetta, Sicily, it is active between 0500 and 2300 (0400-2200 in the summer) on 6060 (3 kW), 7175 and 9515 (5 kW each). The transmitter power has been cut drastically from the 25 kW formerly used.

## Input please

Your loggings and other shortwave material are much appreciated and welcome. The "other" includes program schedules, spare QSLs you don't need returned, station and shack photographs, station information, QSL news (policies, requirements, address changes and the like) and anything else you'd like to share.

Loggings should be listed by country;

and please double space between each so we have room to cut them up easily, and include your last name and state abbreviation after each. We can't use loggings that don't follow that simple format. Thanks for your cooperation.

## Loggings

Here are this month's logs. All times are in UTC. Abbreviations such as SS, PP, RR, GG, etc. indicate the language of the broadcast (Spanish, Portuguese, Russian, German, etc.) Where no language is indicated, the broadcast is assumed to be in English.

**ALBANIA**—Radio Tirana, 7160 at 1927 in EE. (Miller, WA) 0230. (Johns, TX)

**ANTIGUA**—Deutsche Welle relay, 6185 at 0543; places to go and things to see in Bavaria. (Foss, AK) BBC, 5975 at 0602 with news. (Foss, AK)

**ARGENTINA**—Radio Nacional, 6180 at 0030 in SS with ID, news. Gone suddenly at 0035. (Jeffery, NY)

RAE, 11710 at 0256 with music, ID. (Maywoods DX Team, KY)

**ARMENIA**—Voice of Armenia, 9965 at 2024 in FF with talks, frequencies, classical music, IS, into EE at 2030. (Lamb, NY) 2150 in EE to North America; life in Armenia. (Maywoods, KY)

**ASCENSION ISLAND**—RAI-Italy relay, presumed, 11765 at 0201 with Italian pops, mentions of Naples, Garibaldi and Italian history. (Lamb, NY)

BBC relay, 6005/7160 at 0521 with African program stream. (Jeffery, NY)

**AUSTRALIA**—Radio Australia, 6090 at 1730 via Carnarvon site, 9860 at 0712. (Miller, WA) 9710 at 0901 with rock. (Foss, AK) 11800 at 1302 from Shepparton site. (Maywoods, KY) 17860 at 0036. (Jeffery, NY)

ABC/Caama radio, 2310 (Alice Springs) at 1013 with sports event. (Maywoods, KY)

**AUSTRIA**—Radio Austria International, 9850 at 2138 in FF and 9870 at 2136 in GG. (Miller, WA) 15450 at 1430. (Johns, TX)

**BELGIUM**—Radio Vlaanderen International, 9925 at 2212 in unidentified language. (Miller, WA)

**BOTSWANA**—Radio Botswana, 3356 at 0259 sign-on with animals IS, choral anthem, frequencies,

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ID, devotional, unidentified language with pops to 0351 fade. (Cooper, MI) 4830 at 0514 with African music. (Jeffery, NY)

**BRAZIL**—Radio Guaiba, 11785 at 0154 in PP with rap, IDs, slogans. (Lamb, NY)

Radio Anhanguera, 11830 at 0144 In PP with *Radio Jornal*, promos, IDs. (Lamb, NY) 2333 In PP. (Miller, WA)

Radio Nacional Amazonia, 11780 at 0155 in PP with Brazilian pops, Sinatra. Off at 0214. (Lamb, NY) 2350 in PP. (Miller, WA) 15265 at 2032 in German with music and ID. Off at 2048. (Jeffery, NY) 1854 in EE with ID at 1855. (Maywoods, KY)

Radio SentInela da Amazonia, 4865 at 0502 in PP with telephone interview. (Jeffery, NY)

Radio Cancao Nova, 9675 at 0018 in PP. (Jeffery, NY) 0310 with variety of music, ID, mentions of Brazil. (Maywoods, KY)

Radiodifusora Maranhao, Sao Luis, 4755 at 0329 in PP. (Miller, WA)

Radiodifusora Roraima, Boa Vista, 4875 at 0357 in PP. (Miller, WA)

Radio IPB, Campo Grande, 4895 at 0408 in PP. (Miller, WA)

Radiodifusora Amazonas, 4805 at 2344 with promos, IDs, ballads. (Maywoods, KY)

Radio Educacao Rural, 4755 at 0218 with male DJ, ID, mention of Campo Grande. (Maywoods, KY)

**BULGARIA**—Radio Bulgaria, 7115 at 0300 in Bulgarian. 11720 at 1944. (Miller, WA) 9700 at 2200 in EE. (Johns, TX)

**BURKINO FASO**—Radio Burkina, presumed, 4815 at 0557 with African music, possible ID, short talks in FF. (Lamb, NY)

**CANADA**—Radio Canada International, 5960 at 2300. (Spasojevich, IL) 9825 at 1604 with profuse thanks to listeners for saving RCI. 11855 at 1310 weather and sports event. (Wilden, IN)

CFVP, Calgary, 6030, relay CKMX, at 1724. (Miller, WA)

CHNX, Halifax, 6130, relay CHNS, at 1200. (Miller, WA)

**CENTRAL AFRICAN REPUBLIC**—RTV Centrafricaine, 5033.9 at 2130 in FF with African music, lifeline, ID at 2204. (Maywoods, KY)

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

**CHINA**—CPBS, 7620 at 1142 in CC. Weak. (Foss, AK)

China Radio International, 7820 at 1146 in RR. (Foss, AK)

**COLOMBIA**—Radio Nacional, 4955 at 0300 in SS. (Miller, WA) 0425 with Colombian music, chimes, ID, frequencies, thanks to listeners, anthem and then repeat of sign-off. Off at 0454. (Lamb, NY) 4955.8 at 0330. (Maywoods, KY)

La Voz del Rio Arauca, 4895 at 0309 with SS talk, promo, many mentions of Colombia. (Maywoods, KY)

Caracol Bogota, 5076.8 at 0351 in SS with excited announcer, then two of them, ID 0402. (Maywoods, KY) 5075 at 0433 in SS. (Miller, WA)

La Voz del Villavicencio, 6116 at 0614 In SS. (Miller, WA)

Armonias del Caqueta, 4915.3 at 0804 with mix of moody Latin tunes. (Foss, AK)

**COSTA RICA**—Radio Reloj, 4832 at 0440 in SS with music and announcer. (Jeffery, NY)

Adventist World Radio, 5030 at 0340 with SS ID at 0359. (Maywoods, KY) 0441. Also 6150 at 0546 in SS. (Miller, WA) 9725 at 2330. (Spasojevich, IL)

Faro del Caribe, 6055 in SS at 0554. (Miller, WA)

Radio For Peace International, 7385 at 0442. (Foss, AK) 9400 at 1700. (Walleesen, IL)

**CROATIA**—Croatian Radio, 5895 at 0200. (Johns, TX) 7375 at 2301 with five minutes of EE news. (Dybka, TN) 11635 at 2037 in presumed Croat. (Miller, WA)

**CUBA**—Radio Rebelde, 5025 at 0549 in SS (Miller, WA)

Radio Havana Cuba, 6000 at 0101. (Wilden, IN) 9820 in EE at 0030 and 11760 in SS. (Spasojevich, IL) 11970 at 2327 in SS. (Wilden, IN)

**CYPRUS**—BBC relay, 11730 at 2015 in AA to Israel. (Dybka, TN)

**CZECH REPUBLIC**—Radio Prague, 13580 at 1400 in EE. (Johns, TX)

**ECUADOR**—HCJB, 5865 in GG at 0457. (Miller, WA) 5900 at 0749. (Foss, AK) 6125 at 0827 in SS. (Foss, AK) 9745 at 0100. (Spasojevich, IL) 15115 at 1325. (Wilden, IN)

Radio Buen Pastor, Saraguro, 4830 at 0254, unsure whether in SS. (Miller, WA)

Radio Quito, 4919 at 0258 in SS. (Miller, WA) 0842 with 1950s rock. (Foss, AK) 0252 with vocal, ID at 0301. SS. (Maywoods, KY)

Radio Federacion, 4960 at 0240, ID by woman at 0251 with *Grand Canyon Suite* underneath. (Maywoods, KY)

Radio Centro, 3289.8 at 1027 in SS. Talks, many IDs. (Maywoods, KY)

**EGYPT**—Radio Cairo, 9900 at 1745. (Miller, WA) 2200 with Mideast news. (Walleesen, IL)

Holy Qu'ran Radio, 9755 at 2125 in AA. (Dybka, TN)

**ENGLAND**—BBC, 3955 with European program stream at 0403. (Jeffery, NY) 5975 via Antigua at 0520 //6175 15400 via Ascension at 1734. (Miller, WA) 9590 at 1300 via WYFR. (Jeffery, NY) 2206. (Wilden, IN)

**EQUATORIAL GUINEA**—Radio Africa, 15190 at 1928 with listeners' letters, religious music. (Dybka, TN)

# Radio Finland 31.3.1996 - 24.10.1996

Kaikki ajat GMT. All tider GMT. (Suomen kesäaika -3h. Finsk sommardid -3h.)

	Time GMT/UTC:	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
suomeksi på finska	Pohjois-Eurooppa																										
	Nordeuropa																										
ruotsiksi på svenska	Keski- ja Länsi-Eurooppa, länt. Etelä-Eurooppa, Länsi-Afrikka																										
	Västeuropa Västafrika																										
englanniksi på engelska	Itä-Eurooppa																										
	Östeuropa																										
saksaksi på tyska	Lähi-itä, Itä-Afrikka																										
	Mellanöstern, Östafrika																										
venäjäksi på ryska	Pohjois-Amerikka																										
	Nordamerika																										
ranskaksi på franska	Itä-Aasia																										
	Östasien																										
	Australia, Kaakkois-Aasia																										
	Australien, Sydostasien																										
	Lounais-Aasia																										
	Sydvästasien																										

Radio Finland's world broadcast schedule.

**FINLAND**—Radio Finland, 11755 at 0825, believed in Finnish. (Foss, AK)

**FRANCE**—Radio France International, 7305 at 0611 in FF and 11700 at 0732 in FF. (Foss, AK)

**FRENCH GUIANA**—Radio France International, 5920 at 0500 in SS. (Miller, WA)

Swiss Radio International relay, 9905 at 0106 with ID, news, ID with site. (Maywoods, KY)

RFO-Guyane, 5055 at 0513 in FF. (Jeffery, NY)

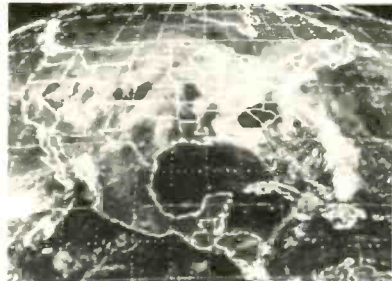
**GABON**—Africa Number One, 15475 at 1728 in FF. (Miller, WA)

**GERMANY**—Deutsche Welle, 5960 at 0135 in

GG (Wilden, IN) 6100 at 0045 and 6145 at 0055 with IS. (Spasojevich, IL) 9735 at 2113 in EE, mix with Paraguay and Golos Rossii. (Miller, WA) 11795 at 0531 in GG. (Foss, AK)

**GHANA**—GBC, 3366 at 0529 sign-on with rooster crows, ID by man, into devotions. (Cooper, MI) 4915

## Get A New Image

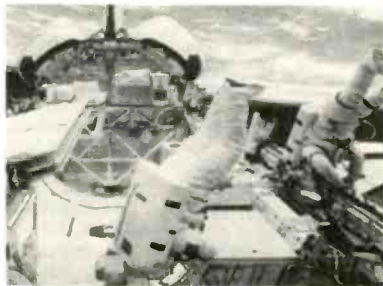


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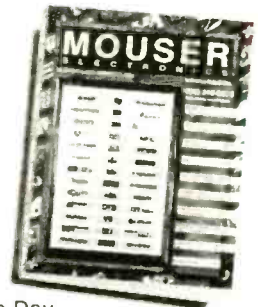
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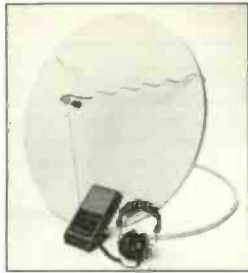
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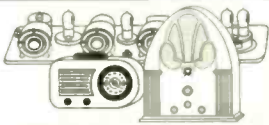
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at 2241 with various music selections; EE. (Maywoods, KY)

**GUATEMALA**—Radio Tezulutan, 3370 at 0209 in SS; lots of marimbas. 4835.7 at 0135 in SS. (Maywoods, KY).

Radio Chortis, 3380 at 0215 in SS with marimbas and vocals. (Maywoods, KY)

Radio Cultural, 3300, 0430, songs, lots of chorales. (Maywoods, KY)

**GREECE**—Radlophonikos Stathmos Makedonias, 9395 at 2257 in Greek with attention signal, ID, music. (Jeffery, NY)

Voice of Greece, 9420 at 1430. (Johns, TX) 0032. (Miller, WA)

**HAWAII**—KWHR, 17510 at 2205 with religious music, ID at 2230. (Maywoods, KY) 0030 with *People to People*. (Jeffery, NY)

**HONDURAS**—La Voz Evangelica, 4820 at 1242 with ID at 1246. (Maywoods, KY)

Radio Internacional, 4930 at 1218 with local news, commercials, ID. (Maywoods, KY)

**HUNGARY**—Radio Budapest, 6120 at 0200. (Johns, TX)

**INDIA**—All India Radio, 9865 at 1526. (Miller, WA) 11585 at 1415 with local music, tentative ID in several languages at 1500. (Maywoods, KY)

**INDONESIA**—RRI Palangkaraya, 3325 at 1227 in II, very weak. (Foss, AK)

RRI Ujung Pandang, 4753.6 at 1105 in II with ID. (Maywoods, KY)

RRI Jakarta, 9525 at 1154 with Instrumental music, ID 1200, news at 1201. (Foss, AK) 9860 at 1522 in II. (Miller, WA)

**ISRAEL**—Kol Israel, 9435 at 1900, news with Jeanette—?, Interview. (Maywoods, KY) 11605 In unidentified language at 1550. (Hallenbeck, ME)

**ITALY**—RAI, 9645 at 0050. (Johns, TX)

**JAPAN**—Radio Japan, 6035 at 1716 and 6120 at 0537. (Miller, WA) 9535 at 1503, ID 1515. (Maywoods, KY) 11705 at 1402 with news. (Wilden, IN) 11725 at 0527; car navigation systems in Japan. (Foss, AK)

**KIRIBATI**—Radio Kiribati, 9825 at 0600 with BBC sports, woman announcer mentioned Kiribati. (Maywoods, KY) 0702 in USB. (Miller, WA)

**KUWAIT**—Radio Kuwait, 11990 at 1525 in CC (you mean Arabic, right?—Ed.) EE ID at 1630. (Maywoods, KY) 2025 with poetry, classical music, *Rebuilding of Kuwait* program, pop and light jazz. (Lamb, NY)

**LESOTHO**—Radio Lesotho, 4800 at 0506 ending EE news, commercials, ID 0510. (Cooper, MI) BBC relay, 3255 to 0430. (Cooper, MI) 0435. (Maywoods, KY)

**LIBERIA**—ELWA, 4760, presumed, at 0620 with Christian country and contemporary music, talks, possible ID. (Lamb, NY)

**MADAGASCAR**—RTV Malagasy, 5009 at 0321 in FF with man-woman talks, religious music, ID, mention of Malagasy. (Maywoods, KY)

**MALAWI**—MBC, 3381 at 0353 with discussion, many mentions of Malawi and Blantyre, IDs as Malawi Broadcasting Corp. (Cooper, MI)

**MALI**—China Radio International via Mall on 11715 at 2050, ID 2056. (Miller, WA)

**MAURITANIA**—ORTM, 4831.8 at 2214 with talk in FF, ID. Frequency shifts. (Maywoods, KY)

**MEXICO**—Radio Educacion, 6185 at 0500 with ID, frequency info in EE, into SS. (Jeffery, NY) 1058. (Maywoods, KY) 0300 in SS with some EE. (Johns, TX) 0851 with Mexican tunes. (Foss, AK)

Radio Mil, 6010 at 1300 in SS. (Johns, TX) 1327 and 0501. (Maywoods, KY)

Radio Mexico International, 9705 at 2348 in SS. (Miller, WA) 2300 in SS and some EE. (Johns, TX)

**MOLDOVA**—Golos Rossii via Moldova, 7125 with bells at 2100, ID in RR and news. (Dybka, TN)

**MOROCCO**—Radio Medi Un, 9575 at 2029 in FF with ID, pops. (Maywoods, KY)

**MYANMAR (Burma)**—Radio Myanmar, 4725 in Burmese at 1136 with IS, chimes. (Maywoods, KY)

**NAMIBIA**—Namibian Broadcasting Corp., 3270//3290 at 0457 with devotion, time checks, ID, news. (Cooper, MI) 3290.6 at 0140 with segued music, dialect. (Maywoods, KY)

**NETHERLANDS**—Radio Netherlands, 6020 at 2330 with bells, time pips, 11655 at 1943. (Wilden, IN)

**NETHERLANDS ANTILLES**—Radio Netherlands relay, 6165 at 2300 (time unclear, Sue) with sports and *Wide Angle* program. (Wilden, IN)

## Abbreviations Used in Listening Post

AA	Arabic
BC	Broadcasting
CC	Chinese
EE	English
FF	French
GG	German
ID	Identification
IS	Interval Signal
JJ	Japanese
mx	Music
NA	North America
nx	News
OM	Male
pgm	Program
PP	Portuguese
RR	Russian
rx	Religious
SA	South America/n
SS	Spanish
UTC	Coordinated Universal Time (ex-GMT)
v	Frequency varies
w/	With
WX	Weather
YL	Female
//	Paralle Frequencies

**NIGER**—La Voix du Sahel, 5019 at 0504 in AA with chants, male announcer, music. (Jeffery, NY) 0510 with drums, talks, singing. In FF. (Maywoods, KY)

**NIGERIA**—Radio Nigeria, Kaduna, 4770 at 0512 with news, ID, and announcement: "Anyone caught spreading false rumors about the government will be dealt with accordingly." (Cooper, MI) 0503 with Nigerian news. (Jeffery, NY)

Radio Nigeria, Lagos, 3326 at 0447 with devotion, ID by woman at 0450. (Cooper, MI)

**NORWAY**—Radio Norway International, 7295 at 0615 with news in NN. (Foss, AK) 11730 at 1500 in EE on a Sunday. (Johns, TX)

**OMAN**—Radio Oman, 15375 at 1250 in AA. (Maywoods, KY)

**PAKISTAN**—Radio Pakistan, 9789.9 with local music. (Maywoods, KY) 11570 at 1856 in unidentified language. (Miller, WA)

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

**PAPUA NEW GUINEA**—NBC Port Moresby, 4890 at 0850 with music. (Foss, AK) 0851 with music, then apparent news. (Jeffery, NY) 1130 with country music, Michael Jackson. (Maywoods, KY)

Radio East Sepik, 3335 at 1147 with talk. (Maywoods, KY)

Radio Manus, 1139 with woman talk, ID, Michael Jackson. (Maywoods, KY)

Radio Sanduan, 3205 at 1109 with time check, pops, country music. (Maywoods, KY)

Radio West New Britain, 3235 at 0807 in unidentified language. (Foss, AK)

**PARAGUAY**—Radio Nacional, 9736 at 2302 in SS with news by man and woman. (Maywoods, KY) 9735 at 0050 in SS. (Miller, WA)

**PERU**—Radio La Oroya, 4905 at 0350 in SS with music, ID. (Jeffery, NY) 0257 in SS. (Miller, WA)

Radio Union, 6115 at 0652 with woman and ID in SS and variety of Latin music. (Foss, AK)

Radio Huanta, 4846.8 at 1057 with preacher in SS. (Maywoods, KY)

Radio Tarma, 4775.4 at 0500 in SS with music, ID, promos, flute music. (Maywoods, KY)

**PHILIPPINES**—FEB, 9400 at 1419 in CC. (Miller, WA)

Radio Veritas Asia, 9520 at 1442 in unidentified language. (Miller, WA)

**POLAND**—Pollsh Radio Warsaw, 11815 at 1159 sign-on with new IS—no more Chopin—ID, frequencies, *Panorama*—*The Polish Scene Today*. Thanks to Ben McNely In Canada for the tip on this one. REE Spain uses this frequency on weekdays but it is clear on Sundays so its a chance for North Americans to hear Poland, which has no broadcast beamed to North America. (Lamb, NY)

**ROMANIA**—Radio Romanla International, 9510 at 0400. (Johns, NY) 9570 in unidentified language at 0201. (Wilden, IN) 9690 at 2136. (Miller, WA)



**RUSSIA**—Voice of Russia, 7180 at 2353. (Wilden, IN) 7270 at 0548 and 0636. 11685 at 1257 and into news in RR at 1300. 12050 at 0540 with *This is Russia* program. (Foss, AK) 15400 at 1530 with news, Russian opera with EE translations. (Walleesen, IL)

Magadan Radio, Yakutsk, 7320 at 0828 with drama in RR. (Foss, AK)

Radio Rossii, 6030 In RR at 2238. (Jeffery, NY)

Radio Odin, 6195 at 2314 in RR. (Jeffery, NY)

**RWANDA**—Deutsche Welle relay, 15270 at 2141. (Maywoods, KY)

**SAO TOME**—VOA relay, 6080 at 0502 with news. (Lamb, NY)

**SAUDI ARABIA**—BSKSA, 9580 at 2010 in AA with QRM from Gabon. (Maywoods, KY) 9730 at 1744 in AA. (Miller, WA)

**SEYCHELLES**—FEBA, 9810 at 1515. (Miller, WA)

**SINGAPORE**—BBC relay, 9740 at 1230 with program about possibility of life on Mars and how we could quarantine any life forms brought back to Earth. (Foss, AK)

Radio Singapore International, 6135 at 1220 with talk, ID. (Maywoods, KY)

Radio One, 6155 at 1300. (Johns, TX)

**SLOVAKIA**—Radio Slovakia International, 5930 at 0100. (Johns, TX)

**SOLOMON ISLANDS**—SIBC, 9546 at 0621 in EE. (Maywoods, KY)

**SOUTH AFRICA**—Channel Africa, 3220 at 0430 with music and Amnesty International programs. (Cooper, MI) 3220//5955 with travel program. (Lamb, NY) 0650 at 1506 in Swahili. (Miller, WA) 15240 at 1642 with news; off at 1655. (Maywoods, KY)

Radio One, 3230 at 0359 with honky-tonk piano, news and into unidentified language. (Cooper, MI)

**SOUTH KOREA**—Radio Korea, 7275 at 0800 with music, ID, into JJ. (Foss, AK)

**SPAIN**—REE, 3225 via Costa Rica at 1138 in SS. (Dybka, TN) 0144 ID. (Maywood, KY) 9540 at 0100. (Johns, TX) 9620 at 0912 In SS. (Foss, AK) 9675 at 2247 in SS. (Halenbeck, ME) 11775 at 2143 with music, ID, times/frequencies. (Jeffery, NY)

**SRI LANKA**—SLBC, 9720 at 1535 in EE. (Miller, WA)

**SWAZILAND**—Trans World Radio 4775 at 0430 In unidentified language and handbell IS. (Miller, WA) 4775//6045 at 0356 sign-on with handbell, ID, GG program with religious talks, choral music. Also 9520 at 2057 in FF. (Lamb, NY) 9510 at 2041 with ID 2056. (Maywoods, KY)

**SWEDEN**—Radio Sweden, 6065 at 0503 in SS. (Miller, WA)

**SWITZERLAND**—Swiss Radio International, 6135 at 0150. (Spasojevich, IL) 9885 at 2138 in GG. (Miller, WA) 9905 at 0400. (Johns, TX)

Red Cross Broadcasting Service, 13635 at 1845. (Johns, TX)

**TAHITI**—Radio Tahiti, 15167.4 at 0210 with rap, man-woman talks, some nice instrumentals. (Maywoods, KY)

**TAIWAN**—VOFC, 5810 via WYFR, 2206. (Wilden, IN) 5950 via WYFR at 0502 in CC. (Miller, WA) 9610 at 1209. (Foss, AK)

**TANZANIA**—Radio Tanzania, 5050 at 0330 In EE. (Johns, TX)

**THAILAND**—Radio Thailand, 9690 at 1802 in Thal. (Miller, WA) 11805 at 2200 with ID "This is HSK9, Radio Thailand" at 2001. (Foss, AK) 11905 at 0030. (Johns, TX)

**TOGO**—Radio Kara, 3222 0527 with IS, anthem, ID, choral music, presumed prayers, headlines, African music. (Lamb, NY)

Radio Lome, 5047 at 0542 in FF with hilife music, ID 0600, news. (Maywoods, KY)

**TURKEY**—Voice of Turkey, 9445 at 2320. (Wilden, IN) 11725 at 2250 In TT. (Miller, WA)

**UKRAINE**—Radio Ukraine International, 9550 at 2128 in EE with ID, music. (Jeffery, NY)

**UNITED ARAB EMIRATES**—UAE Radio, Abu Dhabi, 7215 at 0412 In AA. (Foss, AK) 9695 at 0000 in AA with music, ID, program preview. (Jeffery, NY) 9770 at 2327. (Miller, WA) UAE Radio, Dubai, 11795//13675//15395 at 1938 with Mideast music with disco beat. (Dybka, TN) 15395 at 1324 with EE

ID at 1329, frequency announcement. (Maywoods, KY)

**VANUATU**—Radio Vanuatu, 7260 at 0636 In Pidgin. (Miller, WA) 0649 with mellow South Seas music. (Foss, AK)

**VATICAN**—Vatican Radio, 5880 at 0458 in FF at sign-off. (Miller, WA) 7305 at 0250. (Johns, TX) 7360 at 0526. (Foss, AK)

**VENEZUELA**—Ecos del Torbes, 4980 at 0219 in SS with Latin vocals. (Maywoods, KY)

Radio Tachira, 4830 in SS at 0129; ID 0132. (Maywoods, KY)

**YUGOSLAVIA**—Radio Yugoslavia, 7115 at 0100. (Johns, TX) 0110; ID 0115. (Maywoods, KY)

**ZIMBABWE**—ZBC Radio 3, 3395 at 0438 with hilife music. (Maywoods, KY)

Radio 4, 3396 at 0300 with EE ID. (Johns, TX) 0448 with music, commercials, ID. (Maywoods, KY) 0342. Better than 3306. (Cooper, MI)

A mighty shout of appreciation to the following who came through for all of us this month: David Cooper, Roscommon, JI: the Maywoods DX Group in Kentucky (Jim McClure, Dr. Joel Roitman, Chuck Everman and Loy W. Lee); Marie Lamb, Brewerton, N.Y.; Marty Foss, Talkeetna, Alaska; Elmer Walleesen, La Grange Park, Ill.; John Spasojevich, Chicago, Ill.; Sue Wilden, Columbus, Ind.; Andy Johns, Mansfield, Texas; Jill Dybka, Nashville, Tenn.; Michael J. Miller, Issaquah, Wash.; and Dave Jeffery, Niagara Falls, N.Y. Thanks to each of you!

Until next month—good listening! ■



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27.065	1.45	40
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27.165	1.50	41
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27.315	1.95	57
27.365	2.00	58
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# CB Scene

BY JOCK ELLIOT, SSB-734

## 27 MHz COMMUNICATIONS ACTIVITIES

### Forbidden Practices

As a CBer, sooner or later (probably sooner) you'll encounter certain practices that are, in one way or another, illegal. What follows is a quick tour of forbidden, but common, practices that bring CBers in conflict with FCC rules.

#### Outbanding

Listen for a while on CB, and you'll hear on-the-air references to "going upstairs" or "going downstairs." These people are talking about operating on frequencies that are above or below the 40 channels (from 26.965 MHz, or Channel 1, to 27.405 MHz, or Channel 40) which are legally assigned to CB radio. Sometimes these frequencies are referred as the "extra channels," but make no mistake about it: these are not legal channels.

Legal channels are those designated by the Federal Communications Commission. One of the jobs of the FCC is to regulate the frequencies people may transmit on. Basically, what the folks at the FCC want is people to operate on frequencies they have been authorized to use, and to not use the frequencies where they have no business being. That's one of the reasons, besides the obvious safety problem it creates, why the FCC gets very upset if an unauthorized person decides to transmit on, say, the radio frequencies used by air-control towers.

At one time, all CBers had to be licensed by the FCC, but with the CB boom of the 1970s and the wild, explosive growth of the hobby, the FCC eventually gave up and settled for a practice called "licensing by rule-making."

What this means, in a nutshell, is that by choosing to operate a CB radio on the 40 legal CB channels, you are in effect agreeing to abide by the FCC's rules for CB operation. The FCC, in turn, is granting you a *de facto* license to operate on those frequencies.

But even from the beginning of 27-MHz CB radio—when CB radios had just 23 channels and licenses were required—CBers have been messing with their radios to get them to operate outside the legal frequencies. Back then, CB radios were controlled by crystals. Some operators would reverse the transmit and receive crystals

and—amazing!—an "extra" channel would appear.

When the 40-channel CBs were introduced, operators found a way to manipulate the frequency synthesizers to operate on a wide range of frequencies above or below the legal channels—hence the term, "going upstairs" or "going downstairs." In addition, most ham rigs with broadband receivers can be made to transmit anywhere they can receive after a few simple modifications.

The result of this fiddling around is there is now a large international community of radio enthusiasts who operate in the frequencies above 27.405 MHz or below 26.965 MHz, usually in single sideband mode. There are even international clubs of outband—or freeband, as they sometimes call themselves—operators.

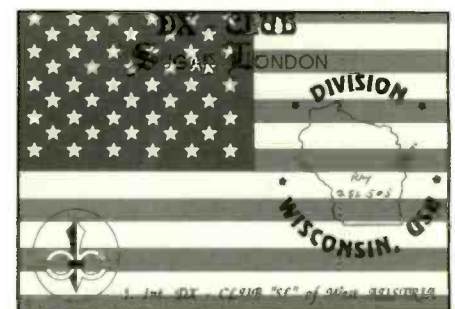
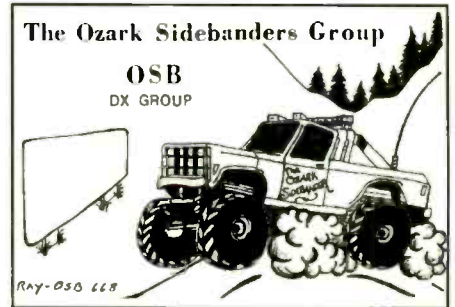
These operators are not licensed—either by rule-making or otherwise—to use these frequencies, so they are illegal. In the United States, there can be a \$2,000 fine from the FCC for outband operations. On the other hand, in years of listening to outband frequencies, I have never heard a legitimate licensee operating there, even though I've seen it reported that some of these frequencies are licensed to various groups, including the Civil Air Patrol and the CIA.

Some argue that outbanding is a bit like a bunch of hotrodders using an abandoned air strip for drag racing: sure, they are trespassing, but what's the harm? That doesn't change the fact, however, that freebanding is illegal, and the monetary penalties for getting caught are substantial.

#### Sliders

Anyone who looks at the listing of CB frequencies included in the FCC rules that came with their radio will notice that most of the channels are 10 kHz apart. A slider is an illegal modification to a CB radio that allows it to "slide" between two legal channels. The reason the modification is illegal is that, according to FCC rules, CBers are supposed to operate on the assigned channels, not between them.

Here's how it works: CB radios equipped with sideband mode have a control called a clarifier that allows the frequency



Ray Raak of Wisconsin sent in these terrific QSL cards.

of only the receiver to shift a bit above or below the assigned channel. This allows the operator to more clearly receive the transmissions of another sidebander whose transmitter is not exactly on the channel frequency. If the clarifier is "clipped," however, suddenly both the receive and transmit frequencies can be moved together above or below the assigned frequency.

Many sidebanders claim that a clipped clarifier, while illegal, makes it easier for a group of sidebanders to operate in a round-table discussion on the same frequency.

But there's more—while most clarifiers are designed by the manufacturer to be capable of perhaps 2 kHz of "swing," it didn't take long for some operators to discover that their radios could be modified to provide 5 kHz to 7 kHz of swing, so that both the receiver and transmitter can slide right down between the channels, creating a kind of "mini-channel." So, if you hear a CBER say, "Let's slide down 5," it means, in essence, let's move—illegally—between channels.

## Export Radios

Since the Garden of Eden, man has had a fascination with "forbidden fruit." Somehow it seems that, if we are not supposed to have a thing, we think it must be really terrific, so we want it even more. So it is with export radios.

These are CB-like radios that are allegedly manufactured for export outside the United States. Frequently, they are equipped with additional frequencies beyond the 40 legal channels and may have higher transmit power than is legal in the United States (4 watts AM, 12 watts SSB). For that reason, these radios do not have "type acceptance," that is, the official blessing of the FCC for operation on CB frequencies, and as a result, they are illegal for CB use.

In case you're thinking, "Well, the FCC just wants to keep us from the really great radios," these export radios are not always all they are cracked up to be. Sometimes they have noticeably less sensitive receivers than type-accepted CBs. Some export radios have very poor quality control—my favorite radio technician has seen some that didn't work at all the first time they came out of the carton. The bottom line: Just because a rig is illegal, that doesn't mean it's necessarily better.

Another kind of forbidden fruit finding its way onto the CB airwaves—and a favorite of outband operators—is the ham transceiver with 25 to 100 watts or more of transmit power. Sometimes these are single-band 10-meter radios, such as the Uniden President HR2510 or HR2600 and the Ranger line, which are modified to run on 11 meters. Others are high-end ham transceivers with general-coverage receivers, like Kenwood, Icom and Yaesu rigs. While the quality and performance of these radios generally are very good, all are illegal because they do not have FCC type acceptance for CB operation.

Even though ham transceivers often of-

fer superior single-sideband performance, sometimes they aren't as good as type-accepted CB radios in AM mode. For example, my Cobra 2010 CB rig has a far superior noise blanker than my Kenwood TS-850 ham rig. As a result, the Cobra is much more pleasant for hour-after-hour operation in AM mode. In short, type-accepted CB transceivers often are very well engineered for the intended purpose!

## DX

It's illegal in the United States to use CB radio to communicate, or attempt to communicate, with a station more than 155 miles away. No kidding—it's right there in the current FCC rules. While I understand that CB is intended for local communications, and I think it is an effective communications tool for that purpose, on this issue I really part company with the FCC.

You might as well have a rule that says, "the sun shall not come up tomorrow morning." DX, or long-distance, communications on 27 MHz is purely a function of propagation. When the sun's excitation of the ionosphere favors long-distance bouncing of CB signals, you're going to talk long distance, whether you want to or not!

A perfect example: A few years ago, my father-in-law was coming to visit, and I had arranged to meet him on Channel 11. The airwaves were dead quiet...no hint of long

distance "skip." I keyed the microphone and said, "Breaker 11, Chuck, you out there?" A few moments later, a voice came back: "How y'all doin'?" I then had a very nice conversation with a gentleman from Georgia (I'm located in New York state). We were both running 4-watt AM signals with ordinary vertical antennas.

When the propagation is right, it's easy to reach across the ocean with an absolutely legal, type-accepted CB station. I know; I've done it. As a result, I think it is really ill-advised and just plain dumb that the FCC has declared DXing to be against the rules. They know as well as I do that the CB frequencies, and those immediately adjacent, are highly variable and often unpredictable. Some days it's easier to talk across the country than it is to talk across town.

## The Bottom Line

For the most part, it's easy to stay within the letter of the FCC rules: run type-accepted equipment on the 40 legal CB channels. Long-distance communications cannot be prevented as long as, under the right conditions, the ionosphere bounces radio waves over the horizon.

Well, that's it until next time. Next time, we'll dip into the mailbag for your cards and letters—and shack photos! Please keep them coming to me here at POP'COMM. ■



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# Washington Pulse

## FCC ACTIONS AFFECTING COMMUNICATIONS

### **FCC Streamlines WRC Prep Process**

The commission has given its International Bureau permission to streamline its preparatory process for World Radiocommunication Conferences (WRCs) by eliminating notice of inquiry proceedings. Scott Blake Harris, chief of the International Bureau, made the announcement at the second meeting of the commission's WRC-97 advisory committee.

The notice of inquiry proceeding duplicated much of the work of the commission's WRC advisory committees, and eliminating this time-consuming procedure will help the commission more effectively promote U.S. interests given the new two-year WRC schedule. The commission now will be able to formulate its draft proposals more quickly and discuss them with other countries as they develop. This streamlined process will help the U.S. build support for its proposals, and allow it to consider the views of other countries as it finalizes its positions.

In the absence of a notice of inquiry proceeding, the FCC still will seek a full airing of views prior to releasing preliminary conference proposals, including views of parties who cannot participate directly in WRC advisory committee meetings. In that regard, the International Bureau staff will develop procedures to ensure the public is given full opportunity to participate in developing preliminary U.S. proposals.

The streamlined WRC preparatory process features the following elements:

- The WRC-97 Advisory Committee will be the focal point for the commission's WRC preparatory efforts.
- A joint FCC-NTIA-Department of State Steering Committee of the advisory committee will review draft proposals as they are received from the advisory committee's working groups and will forward them to the commission for consideration for release as preliminary U.S. proposals for public comment.
- FCC bureaus and offices will review draft proposals and provide input.
- All advisory committee draft proposals will be put on public notice to allow for public comment.
- FCC commissioners will consider the proposals.
- Commission-approved proposals that have had the full agreement of the joint NTIA-FCC-Department of State Steering Committee of the advisory committee will be released via public notice as preliminary U.S. proposals for information.

• The final product of the WRC-97 Advisory Committee will be a compilation of preliminary U.S. proposals to WRC-97, accompanied by a narrative report. These proposals will be forwarded to the Department of State as a basis for final U.S. proposals to WRC-97.

Interested parties should note that input to the advisory committee may be sent at any time directly to the chair of the WRC-97 Advisory Committee; the chairs of the advisory committee's Informal Working Groups; Cecily C. Holiday, the FCC's federal officer of the WRC-97 Advisory Committee, or to Damon C. Ladson, the alternate federal officer. All meetings of the Advisory Committee and its informal working groups are open to the public and are announced in advance.

### **New Experimental Stations**

The Federal Communications Commission has granted the following experimental licenses:

KA2XWP, Aeronautical Radio Inc. Fixed and mobile in Atlanta, Ga. Operating on 136.950 MHz to demonstrate a self-organizing TDMA system.

KF2XDU, CTA Space Systems Inc. Fixed and mobile in Fairbanks, Alaska, and McLean, Va., and non-geostationary satellite.

Operate on 148.900 and 401.400 MHz via SSTI Clark Satellite for demonstrations.

KB2XAQ, E.F.J. Communications Inc. Fixed and mobile in Waseca, Minn. Operating between 380 and 387 MHz to develop equipment for export.

KB2XGQ, State of California. Fixed in Smartville, Calif. Use 401.7025 MHz for remote transmitters used in GOES/DCS satellite data collection system.

KB2XRO, State of California. Fixed in Thornton, Calif. Use 401.7025 MHz for remote transmitters used in GOES/DCS satellite data collection system.

KS2XFP, 3M Corp. Fixed in Phoenix, Ariz.; Miami, Fla.; Cottage Grove, Minn. Use 905 and 5810 MHz for weathering tests of dielectric materials subjected to RF power.

KF2XDA, Alliant Techsystems Inc. Fixed and mobile in continental United States. Operate on 909.750-919.750 MHz to test and develop a system that detects and locates gunfire.

KF2XFD, Texas Instruments Inc. Mobile nationwide in United States. Operate

on 1626.5-1646.5 MHz, INMARSAT, for demonstrations.

KF2XJZ, KFI Inc. Mobile nationwide in United States. Operate on 1626.5-1646.5 MHz, INMARSAT-B, in remote areas.

KF2XFI, AT&T Corp. Mobile nationwide in United States. Operate on 1626.5-1660.5 MHz, INMARSAT-M, in remote areas and in emergencies.

KF2XFN, Charles Stark Draper Laboratory. Mobile nationwide in United States. Operate on 1626.5-1660.5 MHz, INMARSAT-M, in remote areas.

KF2XGK, Borello Mauro. Mobile nationwide in United States. Operate on 1626.5-1660.5 MHz, INMARSAT-M, in remote areas.

KF2XEK, City of Key West. Mobile nationwide in United States. Operate on 1636.5-1645 MHz, INMARSAT-A, during emergencies or disasters.

### **Reallocation Plan For Federal Spectrum**

The FCC has approved a plan for the allocation of 185 megahertz of spectrum transferred from the federal government to the private sector and established the scope and timing of future rulemaking proceedings to assign this reallocated spectrum. In the Omnibus Budget Reconciliation Act of 1993, the Congress required the commission to develop and submit a spectrum plan for the transferred spectrum.

In March 1995, the secretary of Commerce identified 235 megahertz of federal government spectrum for private sector use, 50 megahertz of which had been released earlier. The budget act requires the commission to prepare, submit to the president and the Congress, and implement a plan for the allocation and assignment of the spectrum reallocated from the government, less the frequencies already released. The remaining spectrum is to be allocated and assigned gradually over a 10-year period, with a significant portion to be held in reserve for after the end of the period.

In the spectrum plan, the 12 bands that comprise the total frequency spectrum to be transferred are aggregated into four groups. The commission established a schedule of rulemaking proceedings for each group in accordance with the timetable for the release of the spectrum bands, determined by the secretary of Commerce.

The commission affirmed its paramount goal for the future proceedings to address the remaining 185 megahertz—to ensure that spectrum is put to its best and most

valued use and that the greatest benefit to the public is attained. The commission believes that it achieved its goal in its decisions on the initial 50 megahertz by allocating spectrum both for general, commercial fixed and mobile uses and also for unlicensed services. In addition, the commission noted the variety of commercial, private and unlicensed applications that were addressed at its En Banc hearing on spectrum policy. The commission intends to consider all options for the appropriate use of the remaining 185 megahertz, including, but not limited to, those addressed in allocating the first 50 megahertz.

Among the wide array of services that will be considered in allocating the remaining 185 megahertz is public safety use. The budget act requires that the FCC study public safety spectrum needs and develop a plan that ensures adequate spectrum through the year 2010. These needs were outlined at the En Banc hearing. In future proceedings, the commission will solicit comment on possible use of some of the transferred bands in support of safety-of-life-and-property as part of the national public safety planning activity initiated in 1995. (Last year, the FCC and NTIA chartered the Public Safety Wireless Advisory Committee to advise on operational, technical and spectrum requirements of federal, state and local public safety entities and to make recommendations in a report later this year.) A separate proceeding on public safety issues developed by the advisory committee will be initiated in the near future.

## \$222 Million Budget Proposed For FCC

The president has submitted a budget to Congress that proposes a fiscal year 1997 budget for the Federal Communications Commission of \$222.53 million and a staffing level of 2,255 full-time equivalents (FTEs). This represents an increase of 110 FTEs above the projected FTEs for FY 1996 and an increase in the funding level of \$46.82 million over the FY 1996 level of \$175.7 million, which was approved by the House-Senate Conference.

The increase in funding level includes \$4.3 million for fixed-cost increases (for items such as inflation and mandatory pay raises), \$12.52 million to fund 150 FTEs on term appointments to help implement the Telecommunications Act within mandatory time frames, and \$30 million for the initial costs needed to move FCC headquarters into a consolidated facility.

Of the proposed budget, \$152.52 million would be from regulatory fees collected and \$70.01 million would come from direct appropriations.

The president's budget also includes a provision for additional funds to be made available to the FCC in FY 1996 to provide support for the Telecommunications Act implementation. ■

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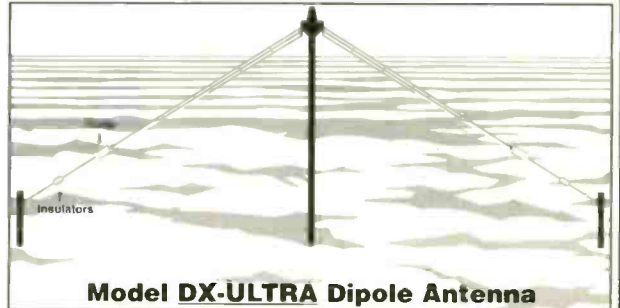


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# Emergency

COMMUNICATIONS FOR SURVIVAL

BY GORDON WEST, WB6NOA

## Stand By For Interference

Emergency radio dispatchers are getting set for another summer of two-way radio interference. The primary operating channel of your emergency radio network will become clogged with radio calls coming in from other areas of the state, and sometimes other areas of the country. Even though you may have been assigned an emergency frequency relatively clear of local interference, summertime brings in distant calls that may come in so strong that they actually override local radio signals.

On VHF low band, 30-50 MHz, summertime interference from distant stations is caused by ionospheric conditions. Skywaves, sometimes called skip, bounce off the ionosphere and come back down about 1,200 miles away. During periods of intense skip conditions, a double-hop might bring in a co-channel user more than 3,000 miles away! The condition always occurs during daylight hours, and may last from a few minutes to a few hours. Interference will cease at about 8 p.m.

Skip conditions on low band occurs when radio signals bounce off of the E-layer of the ionosphere. Even though we are at the bottom of solar cycle 22, sporadic-E skip will always occur every summer, regardless of where we are on the solar cycle.

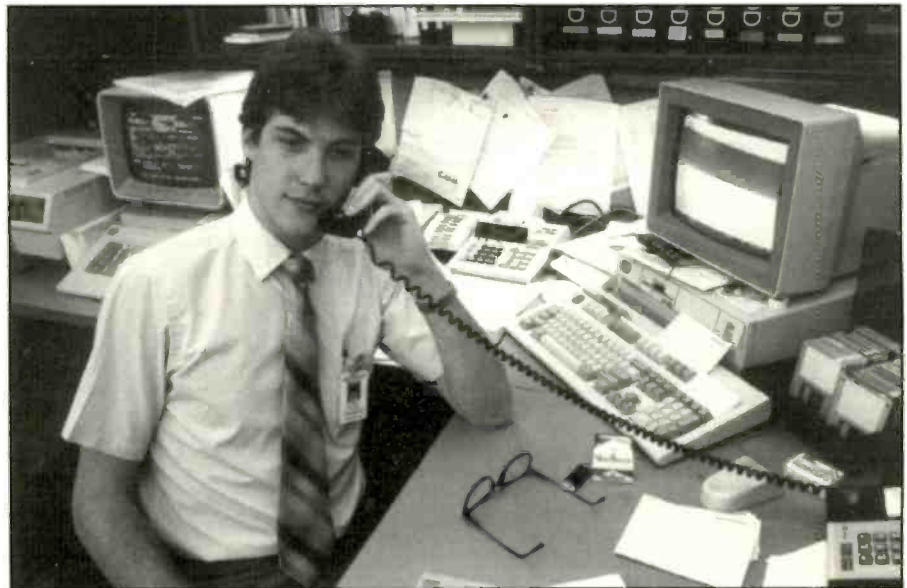
### Sporadic-E Skip

Sporadic-E skip is created in the boundary layer of our upper atmosphere and the ionosphere where intense wind shears create invisible static "clumps" of densely ionized regions. The E clouds cannot be seen, but they can sometimes be heard over VHF radios as a "spitting" sound. As clumps of ionized regions form up in the early morning and late afternoon hours, they become so radio reflective that VHF two-way radio signals reflect off the clouds and come back down about 1,200 miles away.

The occurrence of skip signals may occur within seconds, last for minutes or hours, and then disappear within a few seconds. When the skywave signal is being received, the interfering station may momentarily be stronger than your local mobile units, then quickly dip into the noise but to reappear a few seconds later just as strong. The signal will continuously fade in and out in a rhythmical manner. Sometimes you will hear only the other base station, yet other times you may also hear the mobile units just as well.



← Public safety radio calls on scanners can be interrupted by distant station skip and tropo signals.



A radio dispatcher's dilemma—long-range radio interference covering up local units.

If your emergency comm center uses subaudible tone "decode," you might not hear the stations break squelch unless they are accidentally using the same CTCSS (subaudible tone) code. However, if you notice that all of your local mobile units are coming in with some sort of heterodyne conversations behind the local audio, turn off your tone squelch circuit, and see whether or not the offending signal is coming in skywave. If it is, there is absolutely nothing that you can do about it. The condition may last for a few minutes, but it can last for a few hours sometimes in the month of August.

FCC rules prohibit you from casually conversing with the other co-channel sta-

tion to discuss the phenomena. However, I would encourage you to make a transmission to all units that you are experiencing skywave interference, and every unit should identify with not only their unit number, but their unit ID so emergency medical unit 22 doesn't get dispatched to 2200 Collins in Miami Beach, when you really wanted them to go to 2200 Collins in Houston.

On VHF high band and UHF, sporadic-E skywave interference is almost non-existent until we reach the peak of solar cycle 23 in the year 2003. On VHF high band near 154 MHz, any sporadic-E skip interference should last no more than a few minutes, and be relatively weak when com-

pared to your own local mobile and portable units.

## How's the weather?

Powerful interference can occur because of local weather condition creating havoc on VHF and UHF emergency channels. The weather condition is called tropospheric ducting, and is the result of a high-pressure system compressing into a band of warmer air overlying cool air. The inversion layer can be seen as smoke and smog hanging on the horizon. There is usually little wind, and your local weather forecasters will say that you're in for several days of "muggy weather." VHF and UHF radio waves skim the inside layer of the tropospheric duct and could travel hundreds and sometimes up to 1,000 miles away along the tropospheric duct path.

Some of the most spectacular tropo paths for emergency communicators have occurred between Maine and Florida. When the tropospheric duct is in and affecting VHF and UHF communications, distant signals sometimes will be stronger than the local signals. Unlike skip, the distant stations will continue strong without deep fades. And unlike low-band skywaves, the tropospheric duct conditions will continue 24 hours a day until the high-pressure system blows out of the area. Tropospheric ducting usually occurs where there is almost no ground-level wind movement, and outside temperatures are in the 80s and 90s.

If you have a base station with tone control to squelch out other stations on frequency, you might not hear the effect of tropo ducting until you encounter interference coming in with your own local signals. Turn off your tone squelch, and see what is causing the problem. If it's someone else on your frequency hundreds if not thousands of miles away, make the announcement of co-channel accidental interference, and try to not transmit when the other station is listening for their own mobile units. It's always a good idea to add your emergency name along with your unit numbers to ensure you don't accidentally transmit or receive a wrong call.

Skywaves and tropospheric ducting are common radio phenomena for dispatchers and mobile responders. No emergency channel is interference-free from other stations on the same frequency. Your channel is reused all over the country, and sporadic-E and tropospheric ducting are about the only phenomena that causes a locally clear channel to turn into a chaos of distant-station interference. Learn to understand it, work with it, predict it, and work around it. Cooperate with everyone else on frequency, turn off your tone-control squelch and see from just how far away those distant stations are coming in loud and clear. ■



Tropospheric ducting can be identified by tuning in a distant weather station and hearing how strong it is.

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## ARINC Gains West Coast Sites

A Globe Wireless news release indicates that Aeronautical Radio Inc. (ARINC) now uses the services of two Globe Wireless HF radio sites in California. The transmitter site is near Dixon, the receiving site near Half Moon Bay.

"ARINC will use the HF radio signals from the Dixon and Half Moon Bay sites as part of its voice network that communicates with crews of commercial airliners and private airplanes. It relays routing and traffic information between planes and FAA Air Traffic Control centers. Additionally, flights can communicate with their companies' offices and other parties on the ground.

"The Dixon transmit site is located on 640 acres of land in the central valley of California. Formerly called the Dixon Relay Station, it was used for many years by the Voice of America as a shortwave broadcast location. Radio transmitters and antennas for ARINC are being installed now.

"The Half Moon Bay receive site is located on an isolated, 300-acre cliff top site directly on the eastern shore of the Pacific Ocean. It has been in continuous use since 1932, receiving HF radio signals from ships at sea and land stations in Pacific Rim countries. Radio engineers say the site is an ideal location for radio reception. Signals from the 14 high-gain antennas at the Globe Wireless site are used by ARINC to communicate with aircraft. Radio receivers and associated equipment dedicated to the use of ARINC were installed and placed in operation late last year.

"ARINC, based in Annapolis, Md., has more than 60 years experience in developing and operating communications, information and avionics for the air transportation industry."

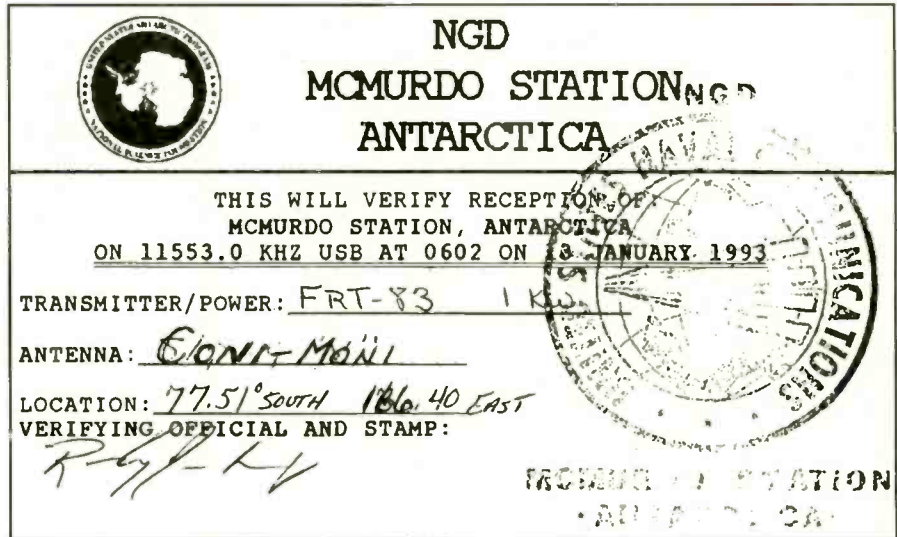
### Cipher And More

Tom Severt of Kansas copied this interesting cipher message on 9458.5 kHz at 0520 in CW. Note the limited digits for the first two positions of each group: 62, 63, 44, 72 and 73, except for the last group, which was a stutter group 19191.

62460 62455 62050 62940 62130  
62520 44018 73573 73072 72972  
72877

62578 62374 62565 62755 62348  
62240 62529 62820 44020 63568  
73375

63280 73177 72978 62775 62573  
62960 62953 62749 62445 62142  
62730



PFC from the collection of Richard Baker of Ohio.

62919 63133 63530 44022 63555  
63152 62845 62654 62542 62736  
63036

63538 44024 63086 62875 62870  
63067 73267 63270 63175 630760  
19191

BT AR SK

This target is a good candidate for additional monitoring. How about some more readers checking this out.

In the June 1996 column, there was an error in the KAWN location indicator chart. The ICAO location indicators are "tetragraphs" and not "telegraphs."

Kevin Tubbs of Vermont discovered an intriguing activity on 16303.6 kHz at 2008 which is sending 5F traffic in a variety of RTTY modes. He encountered 170/45, 170/57 and SITOR-B transmissions. About the time I had alerted several individuals to try and copy the signals, Kevin had again intercepted the activity and it was found to be a U.S. Navy exercise. A note was transmitted that said: "THE TECHNICAL INFORMATION FOR THIS SCENARIO HAS SENT OUT VIA ELECTRIC MEANS."

This was followed by a Plain Text message marked "PRACTICE MSG FOR SCENARIO." The message was from NAVCOMTEL (remainder of heading garbled). The message text was merely an elementary description of how radar works. For recognition purposes, should any readers

run across the transmissions, here is a sample message. Note the use of the space shuttle names as callsigns. ATLANTIS, CHALLENGER, DISCOVERY and COLUMBIA were those observed.

CHALLENGER DE DISCOVERY MSG  
NR 07 BT 66666 48798 87987 78575  
21325 15255 13564 48977 46544  
48585 48564 46548 56465 46544  
45858 54876 54684 46854 46842  
46865 54454 46523 00454 00045

### Beacons

We may be on the verge of hearing more beacon transmissions originating in the Gulf of Mexico. According to an Associated Press item, increased oil exploration in deep waters has shown promise. Discoveries have been made in depths of more than 1,500 feet and there is a reported potential for 3.5 billion barrels of new oil from 35 such discoveries. The drilling platforms are as large as football fields, easily accommodating helicopter pads and thus providing a means of rapid transport of personnel to and from the platforms. These drilling platforms will need beacons to aid chopper navigation.

### TravelTalk

Listeners to Travelers Information Stations (TIS) will be noticing a new format for some TIS transmissions. A recent newslet-



ter of the National Travelers Information Radio Exchange described the format as sounding like a live radio "talk show," with two announcers jovially bouncing back and forth. The TravelTalk Radio format was developed initially for the Milwaukee Convention and Visitors Bureau to be used in their four new TIS stations.

"Interest from chambers, national parks and visitors bureaus has been so overwhelming that as of Jan. 1, Information Station Specialists began providing the program for every new TIS station sold.

"Since March 1, the TravelTalk Radio format has been available for about 50 existing TIS radio operators nationwide."

Another NITRE newsletter item indicated that the nighttime QRM on 530 kHz to the New York and Florida TIS/HAR stations is likely caused by a radio station in the Turks and Caicos Islands, operating on 535 kHz.

## Code Name

In the March and April columns, I mentioned I thought the JCS code name for NEACP was two words, NIGHT WATCH instead of NIGHTWATCH, one word. My reference was *Encyclopedia of the U.S. Military*, published by Harper & Row.

In the acknowledgments section of the volume it states the data was compiled based on numerous requests for official source information including Freedom of Information Act responses.

Readers will recall that I said I would accept the two-word version until I was advised otherwise.

I have learned that a Mr. Tyler in Michigan sent information to the World Utility Network (WUN) that itemized reasons why he believed I was wrong. He possessed decals, patches, a baseball cap and a copy of an Air Force letter plus having seen several other uses of the code name, all showing it as one word, "NIGHT-WATCH."

I stand corrected and can only conclude that the entry in my reference book is in error. I appreciate learning of the proper designation.

I am a bit puzzled as to why Mr. Tyler chose the WUN method of conveying the information. If he had written to me at the POP'COMM address, I could have promptly thanked him for the details as well as possibly informing readers somewhat sooner.

First-time contributor Gerald Fundukian of Illinois writes, "I have a Drake SW8 receiver hooked to a NEC PC. I also have software and hardware from Software Systems Consulting to pick up NOAA weather satellites and radio telex." Welcome to the column, Gerald.

I often receive photos from readers but cannot use them for one of the following reasons: a ballpoint pen is used to write info on the back of the photo and because of the pressure exerted, the front of the photo has visible lines on it; or a marker pen is used for the same purpose and the ink bleeds through to the front; or a group

IRITEL s.p.a.  
STAZIONE RADIOCOSTIERA  
34100 TRIESTE  
DIREZIONE: via Bellavista 4

I Q X

34100 Trieste, 05/10/1993.

Dear Sir,

With much pleasure I confirm the data you wrote on the "QSL" you sent us concerning the reception you got on 8679 kHz.

This Coastal Radio Station belongs to the Italian Ministry of Post and Telecommunications.

We operate in CW mode, on 4296 Khz, 8679 Khz and 12975 Khz all day long, on 17084 Khz from 0600h to 2100h GMT.

Our transmitters sets and conditions are as follows:

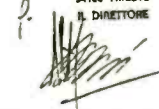
Frequency (Khz)	Transmitter manufacturer	power (KW)	Antenna transmitting
4296	FACE	2	Vertical dipole
8679	COLLINS	5	Wide band monocone Granger
12975	COLLINS	5	Wide band monocone Granger
17084	DANSK	1	Vertical dipole

Our CW identification signal is:

V V V DE IQX IQX IQX K 4 8 12 16 , transmitted continuously.

Best regards,

STAZIONE RADIO COSTIERA  
34100 TRIESTE  
DIREZIONE



Letter QSL received by Hiroshi Saito of Japan.

of photos are placed together before the ink is dry, causing smears in adjacent photos. Please exercise care when preparing photos for the column.

For you world navies buffs, you may be interested in *Conway's All The World's Fighting Ships, 1947-1995*, published by the Naval Institute Press, Annapolis, Md. I must warn you, however, this excellent reference publication is expensive. Even with a 25 percent members discount, the cost plus shipping is \$95. An alternative is to ask your local library if they have a copy; if so, check it when the need arises.

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

**140.3:** DGPS station Mainflingen, MSK mode, 300 baud. This is a test site. Prob also test xmsns. Hrd at 1726. (AB)

**228:** Beacon CPC, Whiteville, NC at 1143. (WP)

**239:** Beacon CFX, Cadiz, OH at 0200. (RH)

**245:** Beacon AN, NAS North Island, CA, 80m, at 1615; Beacon TLR, Tulare Muni, CA, 186m, at 0530. (DT)

**247:** Beacon COI, Cocoa, FL at 1215. (WP)

**248:** Beacon FRT, Spartanburg, SC at 0220. (WP)

**253:** Beacon RHZ, Zephyrhills, FL at 1150. (WP)

**257:** Beacon TBY, Oxford, CT at 0656. (PC); Beacon YXR, Earlton, Ontario, Canada at 0405. (WP); Beacon SQT, Melbourne, FL at 0250. (RH)

**258:** Beacon JH, Jackson, MS at 0035. (WP)

**266:** Beacon DU, Marshfield, WI at 0431. (PC)

**267:** Beacon GN, Gainesville, FL at 1215. (WP)

**272:** Beacon YQA, Muskoka, Ontario, Canada at 0255. (WP); Beacon UCP, New Castle, PA at 2322. (RH)

**276:** Beacon TWT, Sturgis, KY at 0334. (WP)  
**278:** Beacon NM, Matagami, Quebec, Canada at 0332. (WP)

**281:** Beacon ZSJ, San Salvador (Wattling Island), Bahamas, 1222m, at 0521. (AH); Beacon DEQ, Dequeen, AR at 0412. (WP)

**282:** Beacon GWF, Fox Airport, CA at 1630, 73m. (DT)

**283:** Beacon JZI, Charleston, SC, John's Island Executive at 1153. (WP)

**284:** Beacon L, Montreal, Quebec, Canada at 0255. (RH); Beacon DPG, Dugway Proving Ground, UT at 0815, 528m. (DT)

**290:** Beacon TYV, Toneyville, AR at 0538, DSB. (PC)

**300:** Beacon LAP, La Paz IAP, BC, Mexico, 809m, at 0910. (DT)

**308:** Beacon G, Cranberry Island, Nova Scotia, Canada, 1108m at 0527. (AH)

**310:** DGPS Blunts Reef, CA at 0725, 587m. (DT)

**316:** Beacon IAK, u/i at 0421. (RH) Wonder if this is ex-243, Palatka (Kay Larkin Municipal). FL.? (Ed.)

**323:** Beacon GTN, Georgetown, District of Columbia at 0124. (RH) Located 52 miles from Washington National Airport. (Ed.)

**326:** Beacon BHF, Freeport, Grand Bahamas at 0801, 1116m. (AH)

**333:** Beacon HQU, u/i at 0545, 1000 Hz, peaks N/S. (PC)

**338:** Beacon PBT, Red Bluff Municipal, CA, 501m, at 1310. (DT)

**341:** Beacon CQN, Chattanooga, TN at 0416. (RH)

**344:** Beacon JA, Jacksonville, FL (International) at 0232. (WP)

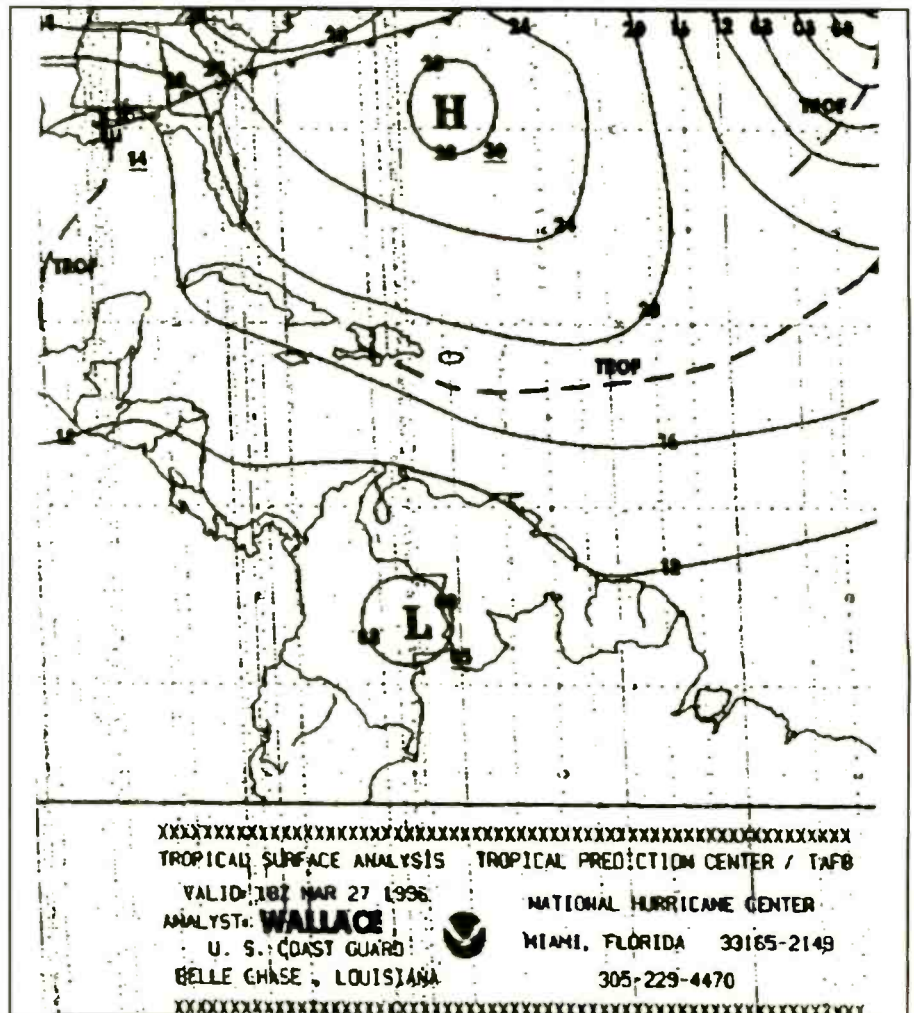
**Abbreviations Used For Intercepts**

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)

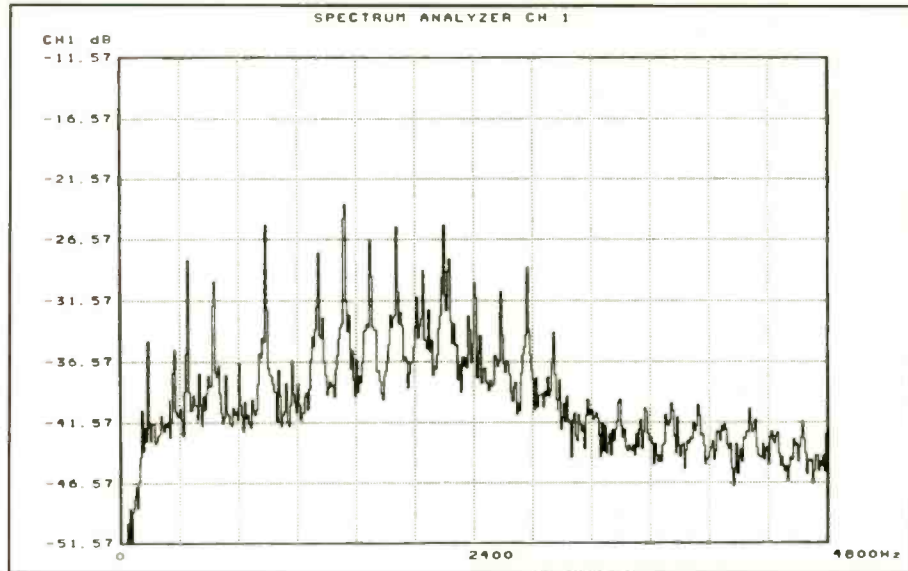
- 346: Beacon JXT, Morristown, TN at 0551. (PG)
- 350: Beacon D7, Kincardine, Ontario, Canada at 0825, 553m; Beacon ME, Chicago, IL at 0927, 861m. (AH)
- 353: Beacon HOT, Higuerote, Venezuela at 0601, 2170m; Beacon JUK, Brunswick, CA at 0547, 910m. (AH)
- 354: Beacon DVZ, Mocksville, NC at 0528. DSB. (PC)
- 356: Beacon TIM, Georgetown, Guyana at 0549, 2550m. (AH) Beacon ZF, Yellowknife, Northwest Territories, Canada at 0904. (RHI)
- 364: Beacon G, Halifax, Nova Scotia, Canada (International) at 0313. (WP)
- 368: Beacon SX, Cranbrook, BC, Canada at 0905, 1128m; Beacon OH, Chicago, IL (O'Hare) at 0102. (THI)
- 369: Beacon ZDX, St. Johns, Antigua, British West Indies at 0344. (RHI)
- 371: Beacon LTD, Litchfield, IL at 0357. (RHI)
- 378: Beacon 2G, Fire Lake, Quebec, Canada at 0650, 768m. (AH)
- 379: Beacon YPQ, Peterborough, Ontario, Canada at 0318. (RHI)
- 380: Beacon UBX, Cuba, MO at 0411. (RHI)
- 383: Beacon D9, Huntsville, Ontario, Canada at 0636, 503m. (AH)
- 393: Beacon VEP, Vero Beach, FL at 0245. (WP)
- 397: Beacon BE, Benton Harbor, MI at 0908, 773m. (AH)
- 398: Beacon TGQ, Elizabethtown, NC at 0213. (WP)
- 404: Beacon IMS, Madison, IN at 1017, 771m; Beacon IUB, Baltimore, MD at 0716, 321m; Beacon OUC, Oracoke, NC, 512m at 1014; Beacon Y, North Bay, Ontario, Canada at 1035, 526m. (AH); Beacon FNB, Falls City, NE at 0818. (RHI)
- 405: Beacon VBI, Boa Vista Int. AP, Brazil at 0324. (WP)
- 412: Beacon UNG, Nueva Gerona, Cuba at 0344. Vy slow CW. (WP)
- 415: Beacon HJM, Bonham, TX at 0205; Beacon CBC, Anahuac, TX at 0205. (WP)
- 420: Beacon TU, Tupelo, MS at 0425. (WP)
- 426: Beacon FTP, Fort Payne, AL at 0741, 944m; Beacon IZS, Montezuma, GA at 0743, 944m. (AH)
- 515: Beacon OS, Columbus, OH at 0749, 630m. (AH)
- 518: NAVTEX, PBK, Netherlands CG in SITOB, 100b at 0858 w/gale warning. (AB); NAVTEX, NMG, New Orleans, LA 1656m, at 0720; NAVTEX, NOJ, Kodiak, AK, 2317m, at 0740; NAVTEX, MNC, Pt. Reyes, CA, 407m, at 0800. (DT)
- 520: Beacon BHZ, Bello Horizonte, Brazil at 0823, 4588m. (AH)
- 1808.95: Swedish Navy Hyper-Fix stations Halshuk, Lange Erik, Kopparholmarna, Stora Hastskar, Ostergarnsholm at 2327 w/pulses. (AB)
- 1975: DGPS station, Aberdeen at 2350 in MSK, 300 baud w/DGPS data. (AB)
- 2163.2: Royal Navy Hyper-Fix station London at 2205 w/pulses. (AB)
- 2461.5: OA, Irish Navy Dublin at 2330 in SITOB, As 100b, w/3 Routine messages. (AB)



On a trip to Europe, Marty Foss of Alaska took this photo of the Police Administration Building (mast on top), located in downtown Frankfurt, Germany.



Ronald Tull, Yukon, Canada, copied this Surface Analysis chart on 12740 kHz. His receiving site is located 855 meters above sea level. His equipment: a DX440, Pro2004, Pro-2006, FT290A, FT411 and FT530; his antennas: a multiband Slinky dipole, V-inverted dipole, phased dipole, discone, double Castus and Vetevital beam.



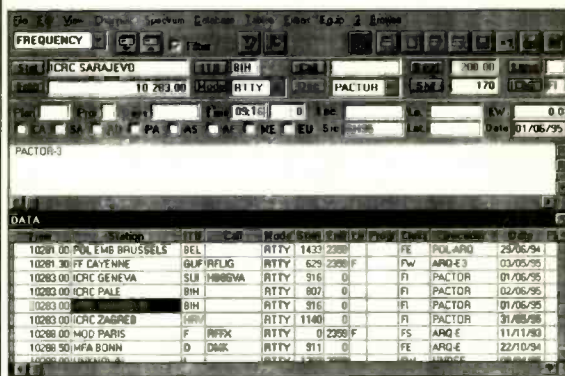
Kevin Tubbs of Vermont copied this signal and performed the analysis. The frequency was 10346 kHz USB, VFT-f8a.

**2473:** U/I CW stn at 2240 w/5L grps. (AB)  
**2477:** SZYA, MV LImon Trader at 2329 in SITOR-A, 100b,w/msgs via Maritex Goteborg. (AB)  
**2549.2:** MOI Bonn at 2259 In ARQ-E, 72b, w/msg to GSP Berlin (GOVHF). (AB)  
**2520:** P3BRG, u/i at 1232 in USB w/Scheveningen Radio who wanted to know if c/s was correct. (It doesn't exist!!!) Station answered "uhh,yes, just testing" but did not say who he was?? (AB)  
**2622:** NRPH, M/V Liberty Star at 0523 in USB wkb BRD, Booster Recovery Director, reporting on station for Try No. 2 of launch of space shuttle Atlantis on m/mission STS-76, this is a Booster Recovery ship. At 0824, wkd BRD, adv left booster and right booster positions and en route for recovery, ETA 50 mins. (RB)  
**2652.9:** U/i CW station at 2350 w/ endless 5L grps, going on for more than three hours! (AB)  
**2670:** NMA21, Coast Guard, St. Petersburg, FL w/wx bcst & Hazard to Navigation info. USB at 1425. (WP)  
**2716:** SAB, Goteborg Radio at 2310 in SITOR-A, 100b w/msg to M/V Kupari via Maritex. (AB)  
**2740:** DLVB, MV Schleswig-Holstein (Customs launch) at 1530 in SITOR-A, 100b w/German CG Cuxhaven. (AB)  
**2789:** FUE, French Navy, Brest, France at 0710, Baudot 75/850, RY's, SG's and Testing. (PS)  
**2806:** IGJ41, Italian Navy Augusta at 2234 in CW w/V mkr. (AB)  
**2842:** OSW, u/i NATO?? Various accents. USB at 2225 w/6KQ, IJZ, 5JC. Rdo cks & track reports; RFFEDFA, French Army Metz (Brigafrancal Mobile) at 2010 in ARQ-E, 72b w/exercise msgs to RFFXCF (Detecoltrans Deux), RFFHCFD (Detecoltrans Quatre), RFFGC (Detecoltrans Un). (AB)  
**3029.7:** DLVL, MV Hohwach (Customs launch) at 2253 in SITOR-A, 100b wkg German CG Neustadt w/posn report. (AB)  
**3282.2:** Portuguese State Police, Portugal at 0709 in SITOR-B, w/weak t/c in Portuguese lang. (RB)  
**3476:** Shanwick, IRE (NAT-F MWARA) at 0430 In USB wkg American 928 w/posn report, selcal ck. (RB)  
**4018:** Army MARS net w/stns AAA7IA, AAM7EIA, & others in FEC at 0150. (TS)  
**4110:** HQDE3, M/V Cavalier Star at 0522 in USB, general cargo vsl, clg/wkg AT&T Coastal Stn WOO (on 4402 kHz) re R/T call to Jacksonville re problem w/vsl, only able make 1 knot, vsl 8 miles North of Lake Cerokee, FL, att make Port Everglades. (RB)  
**4149:** WBN5981, tug Monitor at 0620 in USB clg/wkg WPE, Tug Communications, Jacksonville, FL w/posrep. At 0631 WNB3011, tug Pilot clg/wkg WPE w/same. (RB)

**4176.5:** HO2127, MV Livia at 1518 in SITOR-A, 100b w/msgs to Vertom Rotterdam. (AB)  
**4583:** DDK2, Hamburg Meteo, Quickborn, Germany at 0529 in RTTY 50/425 w/GG wx. (RB)  
**4601.5:** OA, Irish Military Dublin at 1543 In SITOR-A, 100b w/ll Routine msgs. (AB)  
**4604:** KPB644, Indiana Wing CAP at 2359 w/RED FIRE 8 as alternate NCS, w/ck-ins incl RED FIRE 6, 7, 14 & GREAT LAKES 8 for regular net. (RB)  
**4742:** Architect, RAF Strike Command at 0954 In USB w/ Ascot 4201, RAF Transport a/c. (AB)  
**4891:** RG wkg DM in CW at 0108. Used "si" as an acknowledgment. At 0159, REQ wkg RBJ w/rdo ck. (TS)  
**5211:** ARROW 34, CAP Nat'l Capitol Wing at 1810 In USB wkg WGY912, FEMA Special Facility, w/check-in during SHARES exercise. (RB)  
**5227.2:** PANTHER, DEA Bahamas HQ at 0000. USB. PANTHER clg 32C & 93A (helos) w/coordinates for "Mossstown" adv them to get airborne ASAP and detain a/c upon landing. Requested that DEA vehicles and agents be used. At 0400 two suspects left a/c. 1

suspect in terminal a/c is off runway. 32C ordered secure & search SE perimeter of field using lights to find one of suspects. 93A was to secure a/c. There was some discussion re use of clear comms for operation. QSY'd to 350.450 MHz (UHF) Secure. (PS)  
**5299:** IER20, IFG Rome at 0915 in ARQ, 100b w/encrypted t/c. (AB)  
**5320:** WBZ4105 wkg other fishing boats in USB at 1435. (WP)  
**5535:** Lima Radio, Peru (SAM LDOC) at 0506 In USB wkg American 999 w/selcal ck CM-EP. 767 N359AA. At 0603 wkg flt American 2101 w/posn over TBG (Taboga). (RB)  
**5550:** NY Rdo wkg American 624 w/Selcal ck. USB at 2230. Active freq at dusk and beyond. (WP)  
**5598:** Bander wkg Irish 251jw/course coordinates. In USB at 0052. Very active freq after dark. (WP)  
**5680:** Rescue 138 at 1022 in USB w/Edinburgh Rescue. Reports casualties on board. (AB)  
**5687:** DHM91, Cerman Air Force, Munster at 1129 in USB w/ui alc. Wx for several European airfields. (AB)  
**6028:** U/i jammer, extremely loud at 2241. (AB)  
**6303.5:** UYUX, TKH Dmitriy Poluyan, general cargo shlp, at 2245 in RTTY 50/170 w/RV's/DE to UUI, Odessa Rdo w/admin TG's fm Master KM Kovacha. (RB)  
**6327.5:** WOM, Pennsuco, FL in FEC at 0655 w/wx. (TS)  
**6301.5:** DJJ, Manila at 0633 In FEC w/news from the Philippines. (TS)  
**6683:** SAM 203, USAF C-20B (tail 86-0203) at 0428 in USB wkg Andrews VIP w/sig cks. At 1810, Executive 1 Foxtrok wkg Andy on the ground u/i location w/pp Cronin. (RB)  
**6741:** U/i at 0148 in SITOR-A, 100b, periodic xmsns w/TQXK Selcal. (PS)  
**6779:** DRKM, FGS Rhon (A-1443), German Navy replenishment tanker at 0038 wkg DHJ59, Wilhelmshaven Naval, w/1 Priority RTTY msg to send. At 0445, DRDG, FGS U-13 (S-192), German navy attack sub, clg DHJ-59 re RTTY coordination t/c. At 2322, DRKF, FGS Nienburg (A1416) German navy under way replenishment ship wkg DHJ59 w/ZBO, QRV. All in USB mode. (RB)  
**6781:** Nbrs station in AM at 0225 w/5F grps, each grp rptd twice. (TF)  
**6802:** YL/SS in AM at 0300 rptng 706 706 706 & 1-0 count. At 0310 sent 10 tones & 163 grp 3/2F msg. Stn QRM'd by OTH radar. (TS)  
**6856.5:** U/i at 0524 In CW w/5L grps. (PS)  
**6953:** YL/SS 5F stn here at 0200 w/2 diff YLs on at same time. (TS)  
**6955:** OTH radar at 0237 w/CW "O" Id. (TS)

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THE WORLDWIDE STANDARD FOR RECEIVER AND DECODER CONTROL...

**7482:** 5F CW cut nbrs stn at 0303. New freq for this stn. (TS)

**7535:** SESEF Norfolk, Testing/Rdocks: HOPPER 77, U.S. Navy LCAC-77 at 1454 clg SESEF no joy; NNTR, USS Theodore Roosevelt at 1520; NKZI, USS Pensacola (LSD-38) at 1630; NASO, USS L.Y. Spear (AS-36) at 1733; NVVV, USS Normandy (CG-60) at 1813, all modes; NOGB, USS Mount Whitney (LCC-20) at 1903; NRWH, USS Hayler (DD-997) at 1903. Advised by SESEF to QSY 10315 kHz for their testing; NEDO, USS Austin (LPD-4) at 1907; NDWQ, USS Detroit (AOE-4) at 1910; NSVN, USS Nicholas (FFG-47) at 2107. Primary mode is USB. (RB)

**7606.7:** RFHI, French Forces, Noumea at 0642

in ARQ-E3, 100/425 (was 192 baud) w/2 pages of 5LG non-protège t/c on circuit HIJ. (RB)

**7890:** OTH radar at 0606. (TS)

**7983.5:** RFLI, French army, Fort de France at 0120 In ARQ-E3, 48/340. Circuit TJF. "Controle de Voie." (PS)

**8002:** RFTJ, French navy, Dakar, Senegal at 1014 in ARQ-E3, 96/340. Circuit HJL. T/c for /via RFLI, Fort de France. (PS)

**8398:** EAJD, Las Palmas de Gran Canaria, Spanish passenger vsl, at 0415 in SITOR-A in ship to ship comms, auto login showed ID of 08646 EAJD. (RB)

**8408.5:** UWOC, TKH Kapitan Modest Ivanov at 2312 in RTTY 50/170 w/admin t/c to Odessa Radio.

UWOC is bound for Port Beira, Mozambique. (RB)

**8428.5:** VAI, Vancouver CG, British Columbia, Canada in FEC at 0325 w/wx. (TS)

**8540:** 6WW, French navy, Dakar, Senegal in RTTY, 75b at about 0200, test tape transmission. (GF)

**8605:** OTH radar at 0552 alternating quick & slow bursts. Also used the CW "O" id. (TS)

**8810.7:** Egyptian Embassy, u/i QTH, at 2240 in SITOR-A, 100/425, w/ATU-80 t/c. (RB)

**8968:** USAF Lajes, Azores in USB at 1534 w/EAM. (AB)

**9017:** NIGHTWATCH 01 wrk TOP RESPONSE, TOP SPOT, FUSE BOX & ESTIMATE. Also wrks Albrook, Andrews & GRAPEVINE on 7831 (Secondary, W105). Primary is 9017 kHz (X904). GRAPEVINE clg NIGHTWATCH, No Joy. 1935-2007. (AS)

**9320:** OLX, MOI Prague, Czech at 0331 in USB, YL in Czech w/SL grps. (RB)

**9322.8:** RFFXI, French Forces Bangui at 2143 in ARQ-E 72/425 on Circuit XZI (Bangui to Versailles). (RB)

**10548.6:** NEIL CONTROL at 2300 In USB wkg TECG REAR re t/c req, had to shut vehicle down cause down to 2 tank of fuel. At 2311, NLHA, USS Tarawa (LHA-1), wkg NEIL CONTROL re status. At 2317 BOAT RIG CONTROL wkg NEIL CONTROL. Also hrd NEXW, USS Coronado (AGF-11) at 2343. Nightly USMCIUSN "Pacific Joint Task Force Exercise 96-1," exercises hrd for about a week. (RB)

**11079:** (SANA), Damascus, Syria at 1832 in RTTY 50/421 w/nx in EE. (PS)

**11175:** Reach 59411 at 1134 in USB clg MAIN-SAIL for RC. No Joy. (AB)

**11309:** NY radio wkg KLM 771 In USB at 1423. (WP)

**11330:** NY radio wkg AEA 178 w/Selcal check In USB at 1435. (WP)

**12509:** KNIJ, SS Manulanl at 0113 In SITOR-A, container ship, w/BBXX wx observations. (RB)

**13200:** NIGHTWATCH wrk ESTIMATE & FUSE BOX. (AS)

**13270:** NY radio & Gander best terminal wx. Gander underneath & weak. USB at 1345. (WP)

**13306:** NY radio wkg American 156 w/Selcal ck. USB at 1414. Vy active daytime freq. (WP)

**13339:** Aero Mexico LDOC, MEX at 2325 in USB wkg u/i flt in SS comms, Selcal ck. (RB)

**14441.5:** NNNOCHS, USS Vincennes (CG-49) at 2008 in USB clg ASSMS w/beam heading of S., NNN0MCL, USMC Camp LeJeune answers, QSY 14818.5 kHz. (RB)

**14467:** KRn, Location unknown at 1735. A RTTY 75/525 best to KRn of 1386 groups of 5L grps. (PS) Suspected Russian MFA t/c. (Ed.)

**15043:** Cairo, Egypt at 1725 in SITOR-A, 100b. Egyptian MFA w/t/c for Ottawa. (PS)

**16117:** 6VK317, PANA Dakar, Senegal at 1604 in 50/425 RTTY w/FF nx stories, later into EE items. (RB)

**16125.3:** RFQP, French Air Force, Djibouti at 1810 in ARQ-M2, 200b. Circuit QPB. Traffic. (PS)

**16179:** CLPI, Havana, Cuba at 1850 in RTTY 50/519. Cuban MFA circulars for missions abroad concerning the shoot-down of the two Brothers in Arms aircraft. (PS)

**17327.7:** Egyptian Embassy, u/i loc at 2303 In SITOR-A sending 5L grps. (RB)

**16798:** UCBW, Russian trawler RTMS Nikifor Pavlov at 1732 in RTTY 50/170 w/RYRY/DE to UGW, & w/admin TGs to Novorossiysk Radio, incl wx. (NVR/KRH). (RB)

**17020:** UDK2, Murmansk Radio, Russia at 1522 in RTTY 50/170 w/TGs to u/i vsl. (RB)

Our thanks to these contributors: AB—Ary Boender, Netherlands; RB, Rick Baker, NH; PC—Perry Crabill Jr., VA; GF—Gerald Fundukian, IL; TF—Trevor Fletcher, Alberta, Canada; AH—Al Hemmalin, RI; RHI—Russ Hill, MI; WP—Walt Petersen, FL; AS—Al Smith, IL; PS—Paul Scalzo, Quebec, Canada; TS—Tom Severt, KS; DT—Donald Tomkinson, CA; RT—Ronald Tull, Yukon, Canada. ■



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CIRCLE 65 ON READER SERVICE CARD

# How I Got Started



Meet Mekdachi Khalil. It looks like when he is not passing time with his radios, pinball does the trick.

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

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

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



Here are a sampling of Mekdachi's radios.

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

## Our September Winner

This month's winner has done a lot of jumping, though presently Mekdachi Khalil resides in Beirut, Lebanon.

"My radio interest began as I listened to 1973's Yom Kippur/Ramsan War over my Sanyo radio-cassette unit. In 1975, the war caused me to leave Lebanon and go to France. In order to closely follow what was happening in Lebanon, my father sent me a Grundig radio set from Saudi Arabia.

"I became more aware of the shortwave world in 1982 when I bought a Sangean 803 and a Sony AN1. At that time I was studying Japanese, and thanks to the VHK programs I was able to improve my skills.

"My first QSL card was from the WCSN in 1986. Later on in 1992, during a visit to Japan, I went to Akihabara to buy the Icom IC-R72. At that time, I also was using a Mark radio for VHF/UHF. In late 1994, after 20 years in Paris, I came back to my home country.

"Now I use an ATS 803, Icom IC-R72, RZ1 and a vintage Yaesu 7700. My antennas are the ara 60, DDK 15 dipole (21 meters) and ANLI for VHF/UHF. Reception here is quite good, though I miss many pirate stations that I enjoyed listening to in France. I am just happy I can find *POP'COMM* here in Lebanon."

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CIRCLE 54 ON READER SERVICE CARD

# The Ham Column

BY KIRK KLEINSCHMIDT, NTØZ  
AMERICAN RADIO RELAY LEAGUE

## GETTING STARTED AS A RADIO AMATEUR

### Ham Radio And The World Wide Web

If you're one diehard who has yet to check out even a single amateur radio-related Internet site—we need to have a serious talk! You're probably a 160-meter CW-only op, or perhaps your computer still uses a paper tape reader and makes clanking, whirring mechanical noises.

Now, don't get me wrong. I have a lot of respect for nostalgia. I love hand-sent Morse code. My junkbox rivals those of hams three times my age. I even build tube radios for Hiram's sake!

But the Internet—especially the World Wide Web and its friendly graphical interface—adds a dimension to our hobby that already has become indispensable: instant information on any ham topic, megabytes of ham software for instant downloading, online swap meets and even live digitized audio feeds and real-time Packet Cluster feeds. Twenty-four hours a day.

#### Rain or shine. And it's global.

Although I don't have enough space to describe the web and how to connect to it in detail, most hams access the Internet by telephone (if this sounds difficult, it's not. One or more of your ham buddies will know all about it). Their computer modems call a local Internet service provider (ISPs, which typically charge \$10 to \$25 per month for more hours of access than you actually can use!), and when the connection is complete, users fire up their "web browsers" (the software that turns cryptic Internet code into published words, sounds and pictures) and start "surfing" for web sites that look interesting. If you don't want your own Internet account, CompuServe, American Online and Prodigy offer built-in web access. To make things easier, more than a dozen "search engines" will instantly offer up sites and web pages that contain the "keywords" you've specified. Simply scroll down the list and click your mouse on anything that catches your eye. The web instantly sends you to that particular "web page" whether it's across town or across the ocean. Like ham radio, the Internet eliminates geography!

Because it's so easy for individuals to set up their own personal web pages (called homepages), thousands of hams around the world have done so, as have ham radio organizations, magazines and dealers. The sites range from simple one-page person-

al pages to multipage ham radio info centers such as the American Radio Relay League's ham radio supersite: <http://www.arrl.org/> (don't be put off by strange-looking uniform resource locators, or URLs. They're simply Internet addresses for individual web pages. This one's for the league's web site.)

This month's column points out interesting and unusual ham radio web sites and some of what you can find there. By checking out these sites and following their displayed links, you'll soon find yourself happily wandering through thousands of ham radio web pages.

Start at any of this month's featured sites or click onto any of the following search engines and set them to work searching on "ham radio" or other more specific amateur radio terms. You'll soon see a list of dozens or hundreds of sites to explore. Here are the search engines: <http://home.netscape.com/home/internetsearch.html>, <http://www.hotbot.com/or> \*<http://altavista.digital.com/>.

#### Nifty Ham Web Sites

- Don't have access to a U.S. [Callbook] or CD-ROM database? The callsign server at <http://www.mit.edu:8001/callsign/> is updated regularly and will instantly search the FCC's amateur radio database. You simply enter the callsign in question, the web page does the rest! Another excellent callsign server that's updated daily can be found at <http://www.ualr.edu/doc/hamualr/callsign.html>.

- DXers and contesters should check out KA9FOX's comprehensive web site at <http://www.qth.com/ka9fox/>. The DXers resource pages are some of the best anywhere! Included is online info about QSL routes and managers worldwide, national and international callsign lookup gateways (try [http://www.buck.com/cgi-bin/do\\_hamcall](http://www.buck.com/cgi-bin/do_hamcall)), contest calendars, no fewer than nine DX bulletins and newsletters, clubs, DXpeditions, rules for almost every imaginable contest, downloadable software and more. This site will keep you busy for hours!

- Can't connect to your local Packet Cluster? No problem! There are at least a dozen clusters ported to the web. Try <http://www.grfn.org/~ki8w/badx.html> for starters.

- Waiting for propagation and solar fore-

#### Web Tips

- Because the World Wide Web is a power-hungry graphical system, your old 286 PC won't cut it. Use a modern PC or Mac with as much memory, speed and storage space as you can muster.

- Use an up-to-date web browser. Shareware browsers such as Netscape are available for easy downloading.

- Use the fastest telephone modem you can get your hands on. Try a 33- or 28.8-kbps modem if possible; consider 14.4 kbps a bare minimum. Anything slower should be used only in emergencies!

- Keep checking those search engines! New ham pages show up every day.

casts to show up on WWV can be a real drag. Try <http://www.ngdc.noaa.gov/> for the latest "solar scoop." A more comprehensive propagation page can be found at <http://ve7tcp.ampr.org/Propagation/>. The VE7TCP site is Canada's answer to the KA9FOX site—it has lots of goodies!

- Lots of ham equipment manufacturers have web sites. Check out all of the latest gear at <http://www.oz.net/icom/>, <http://www.kenwood.net/> and many others.

- Here's a fun one to try: To listen to real-time digitized audio from a Drake R-8 communications receiver, point your browser to <http://www.chilton.com/scripts/radio/R8-receiver>.

- To set station clocks to the nearest second, try <http://tycho.usno.navy.mil/what.html>, an online display of the navy's atomic clock. No more tuning for WWV!

- To update your DXCC countries list, get the latest at <http://www.systemtechnik.tu-ilmenu.de/ham/hamdxcc.html>.

- Find a huge list of ham radio web links at <http://cbr.iperv.it/hamwww.htm>. Branch out from here and you're in business.

After checking out all of these interesting pages you just might be tempted to put up a page of your own. Go right ahead! Much like ham radio, the World Wide Web encourages everyone to get involved in friendly, international computing.

See you on the web! Keep your photos, letters and column suggestions coming to me at ARRL, Department PCN, 225 Main St., Newington, CT 06111, or send e-mail to [kirk@cloudnet.com](mailto:kirk@cloudnet.com). See you next month.

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# Broadcast DXing

BY TIM KRIDEL

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

## When The Band Gets Crowded, They Start Packing

When people get fed up with the cheek-to-jowl congestion of city living, they move to the country. When AM broadcasters get fed up with overcrowding, they...well, let's just say there aren't a lot of wide-open spaces left in the radio spectrum. So when the dream of expanding the AM band above 1600 kHz became reality in the late 1980s, it came as no surprise that there was something of a land rush for homesteads in the new spectrum. Finally, it now looks as though at least some of those would-be pioneers will get their wish.

Eighty-seven stations have been chosen to migrate to the expanded AM band under the FCC's revised allotment plan, released in late March 1996. The list of stations in 36 states, the Virgin Islands and Puerto Rico comes some six months after the commission scrapped its original allotment plan when flaws and omissions were discovered in the database used to determine which stations could move. That plan, released in October 1994, had 79 stations moving to the 10 new channels between 1605 kHz and 1705 kHz.

Thirty-three stations that had been granted allotments under the 1994 plan were not part of the 1996 list, while 42 stations that had previously been denied channels were added—changes that could lead to petitions for reconsideration by stations not included in the new allotment plan. Since the 1994 plan was released, the commission has faced several such challenges that questioned its criteria and processes used to determine which stations could migrate. Although those petitions eventually were denied, the revised plan may prompt yet another round of challenges to the FCC's expanded-band policies—and send commissioners back to the drawing board to formulate a new, third allotment plan.

A final station list will be released following a 30-day period in which comments and petitions for reconsideration can be made. Stations included on that list then will have 60 days to apply for a construction permit to move to their new channel.

Only two stations are broadcasting in the expanded band—Elizabeth, N.J.'s WJDM, on 1660 kHz, and Vallejo, Calif.'s KXBT, on 1630 kHz. When the 1994 list



Thank you for your reception report of 19 MAR 96.  
We appreciate it very much. KXBT 1640 KCS is the first expanded band station west of New Jersey. First day of regular broadcasting was 3-19-96.

Thanks!

Alan AA6GM

Ralph KA6FDI

Skip WV6F

Engineering Department

Many DXers, including POP'COMM readers Gary Jackson and Michael Carland, logged KXBT during its brief stay on 1640 kHz. The Vallejo, Calif., station used this QSL card—now a collectors item—to verify a reception report from August Miller of Fremont, Calif.

was scrapped, WJDM was granted a special temporary authority to broadcast in the new band. It also was the only station on the list guaranteed a channel under the new allotment plan. KXBT began broadcasting on 1640 kHz a few weeks before the revised plan officially was released, only to be told by the FCC that its channel assignment actually would be 10 kHz lower. That allocation could change again if the database used to formulate the revised list is found to be flawed or if challenges to the FCC's expanded-band policies are successful.

Six hundred and eighty-eight stations originally applied for slots in the expanded band. The FCC then ranked those stations according to the degree to which each move would reduce interference in the existing band. Seven "preclusion factors"—including broadcasting treaties with Canada and Mexico, travelers information stations already operating above 1600 kHz

and the potential for second-harmonic relationships with existing stations—determined which stations could migrate.

Stations that move are permitted to simulcast on their old and new frequencies for a period of five years before they must choose which channel to call home. Power for expanded-band broadcasters is limited to 10 kW days and 1 kW nights, both non-directional.

### Over The Top

WJDM and KXBT aren't the only signals to be found in the top end of the AM band. In fact, many low-power broadcasters above 1600 kHz bring new meaning to term "commercial station." Atlantic Sunset Radio runs a format on 1610 kHz that showcases new releases from its owner, Atlantic Records, as well as promotional giveaways, according to *Los Angeles Radio Guide* (P.O. Box 3680, Santa Monica,



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## Allotment Plans for the Expanded AM Band

Each station listing includes its proposed channel assignment under the October 1994 and March 1996 allotment plans. Any station not part of the 1994 plan that has been granted an allotment under the 1996 plan is listed as new. The stations that were part of the 1994 plan but dropped in the 1996 plan are WFMH, KITA, KKIS, KECR, KFRE, KFRN KQXI, WELX, WPGS, WCCF, WBCI, KYUU, WKCT, KAGY, WNSW, WEBC, KKOJ, KHMO, WGHB, WLNC, WSYD, WRGC, KENN, WNED, WEHH, KTRT, WPJC, KDSX, KPAR, WAGE, KEYF, KCPL and WNNO. Several stations also have changed call letters in the interim.

State	City	Call	Present	1994	1996
AL	Atmore	WGYJ	1590	new	1620
AL	Huntsville	WEUP	1600	1610	1700
AL	Mobile	WKRQ	710	1690	1660
AZ	Douglas	KAPR	930	new	1690
AZ	Phoenix	KIDR	740	1630	1700
AZ	Tuscon	KWFM	940	1700	1640
AZ	Yuma	KBLU	560	1660	1660
AR	Fort Smith	KWHN	1320	1670	1650
CA	Auburn	KAHI	950	1700	1700
CA	Clovis	KOQO	790	new	1640
CA	Costa Mesa	KOJY	540	new	1650
CA	Crescent City	KFVR	1310	new	1690
CA	Merced	KLOQ	1580	1640	1680
CA	Moreno Valley	KHPY	1530	new	1670
CA	Redding	KHTE	600	1650	1670
CA	Roseville	KRCX	1110	1660	1660
CA	Soledad	KQKE	700	new	1620
CA	Vallejo	KXBT	1190	1640	1630
CO	Denver	KRKS	990	1640	1660
CO	Fort Collins	KCOL	1410	1660	1680
CO	Grand Junction	KSTR	620	new	1690
FL	Cocoa	WWHL	1350	new	1640
FL	Marco Island	WMIB	1480	new	1660
FL	Miami Springs	WCMQ	1210	new	1700
FL	Winter Garden	WXTO	1600	1700	1680
GA	Adel	WBIT	1470	1650	1690
GA	Atlanta	WAOK	1380	1640	1650
GA	Augusta	WRDW	1480	new	1630
GA	Warner Robins	WRCC	1600	1670	1670
ID	Blackfoot	KECN	690	1610	1620
IL	Evanston	WONX	1590	new	1700
IL	Johnson City	WDDD	810	new	1690
IN	South Bend	WAMJ	1580	1640	1620
IA	Cedar Falls	KCFI	1250	1650	1650
IA	Iowa City	KCJJ	1560	1630	1630
KS	Junction City	KJCK	1420	new	1620
KS	Topeka	WREN	1250	new	1660

CA 90408), sent in by Louis Mark Lussky of Los Angeles and Michael Carland of Valencia, Calif. The 0.1-watt station can be heard along Hollywood's Sunset Boulevard, between Fairfax and Robertson. In spite of the low power, the station says it receives between 50 and 80 calls a day to its (213) 6-SUNSET phone number. A similar station was set up by Atlantic Records near the entrance to the Holland Tunnel in New Jersey.

Another type of top-end station that's become common in the past year is the Talking House. Real estate agents set up

the 0.1-watt stations at houses for sale, running looped tapes or digital recordings giving information that used to be available only in newspaper ads or from the agents themselves. Prospective buyers driving by are instructed by a yard sign to tune to a frequency—usually 1610 or 1620 kHz—to learn about the house's features. The stations are used mostly in suburban areas, where house-hunters are able to pull off the road to listen.

## The Kids Are All Right

College radio has long been synony-

LA	Monroe	KMLB	1440	new	1680
MD	Lexington	WPTX	920	new	1690
MD	Salisbury	WLVW	960	1670	1670
MI	Kalamazoo	WQSN	1470	new	1660
MI	Muskegon	WSFN	1600	new	1680
MN	Fergus Falls	KBRF	1250	new	1680
MS	Biloxi	WVMI	570	1620	1640
MO	Neosho	KBTN	1420	new	1670
NE	Grand Island	KRGI	1430	1700	1690
NH	Rochester	WZNN	930	new	1700
NJ	Toms River	WJRZ	1550	new	1620
NJ	Elizabeth	WJDM	1530	1660	1660
NJ	Princeton	WHWH	1350	new	1680
NM	Artesia	KSVP	990	new	1650
NM	Hobbs	KKEL	1480	new	1670
NY	Troy	WTRY	980	1640	1640
NC	Charlotte	WGIV	1600	new	1660
NC	Mount Airy	WSYD	1300	1630	1640
ND	West Fargo	KQWB	1550	1620	1660
ND	Manadan	KLXX	1270	1640	1640
ND	Oakes	KDDR	1220	new	1700
ND	Minot	KHRT	1320	new	1620
OK	Enid	KCRC	1390	1690	1640
OR	Astoria	KAST	1370	new	1700
OR	Lake Oswego	KPHP	1290	1640	1640
OR	Phoenix	KTMT	880	1630	1650
OR	Salem	KSLM	1390	new	1680
PR	Camuy	WCHQ	1360	new	1660
SC	Myrtle Beach	WKZQ	1520	new	1620
SD	Rapid City	KKLS	920	new	1650
TN	Jonesborough	WKTP	1590	new	1680
TX	Atlanta	KALT	900	new	1610
TX	College Station	WTAW	1150	1630	1620
TX	Edinburg	KURV	710	1640	1640
TX	El Paso	KBNA	920	new	1680
TX	El Paso	KSVE	1150	1650	1630
TX	Fort Worth	KHVN	970	1660	1630
TX	Fort Worth	KNRB	1360	new	1700
TX	Waco	KRZI	1580	new	1660
UT	Brigham City	KSOS	800	1650	1670
UT	Sandy	KTKK	630	1630	1650
VA	Harrisonburg	WSVA	550	new	1700
VA	Portsmouth	WPMH	1010	1650	1650
VI	Frederiksted	WRRR	1290	1690	1620
VI	St. Thomas	WGOD	1090	1620	1640
WA	Renton	KRIZ	1420	1620	1620
WA	Seattle	KZOK	1590	1680	1660
WI	Madison	WTDY	1480	new	1670
WI	Sussex	WKSH	1370	1700	1640
WY	Fox Farm	KSHY	1530	1620	1630

mous with independence, an almost euphoric sensation that comes with having the facility to play and say whatever you want. But that freedom also requires responsibility, and when it's the school that's supplying the funding, there's always the possibility of having the plug pulled.

In the case of WUSC-FM, school officials were concerned with what they felt was more than "just a bunch of kids playing records," as the student-run station's slogan put it. The Columbia, S.C., station was taken off the air in December 1995 by the University of South Carolina for what

administrators alleged was mismanagement, sexual harassment and FCC rules violations. But some students maintain that the decision to shut down the 2.5-kW station wasn't prompted by mismanagement and unprofessional behavior at all. Instead, they say, it was part of a vendetta by student media director Chris Carrol and student life director Jerry Brewer to revamp the station's musical—and staff—lineup, prompted by the airing of several songs by an openly gay rock group. "(The administration) said that we had created a culture of irresponsibility," one former board

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## Proposed AM Call Letter Changes

<b>New</b>	<b>Old</b>	
WMRD	WENX	Middletown, CT

## Changed AM Call Letters

<b>New</b>	<b>Was</b>	
KILE	KGUL	Las Vegas, NV
KKSM	KKLQ	Oceanside, CA
KLDC	KLTT	Brighton, CO
KLTT	KLDC	Commerce City, CO
KSOU	KVDB	Sioux Center, IA
WBBD	WKWK	Wheeling, WV
WCTJ	WWOF	Camp Lejeune, NC
WFOG	WJQI	Chesapeake, VA
WGPL	WSVY	Portsmouth, VA
WLLZ	WHND	Monroe, MI
WPGY	WINW	Canton, OH
WRTM	WWZN	Pine Hills, TN
WSFZ	WXSS	Memphis, TN

## Permit Granted for New AM Stations

NJ	Hackettstown	1510 kHz	900/230 watts
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## Modified AM Facilities

WKAQ	San Juan, PR	580 kHz	Increased to 10 kW.
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## Seeking Modified FM Facilities

KXAZ	Page, AZ	93.5 MHz	Seeks to change frequency.
------	----------	----------	----------------------------

## New FM Call Letters Issued

KANG	Carrington, ND
KAQB	Omaha, NE
KDTR	Decatur, TX
KOZO	Branson, MO
KSPL	Kalispell, MT
KUHM	Helena, MT
KTBJ	Festus, MO
KTGP	Pawhuska, OK
KWWS	Walla Walla, WA
WAAE	Indian River Shores, FL
WDEM	Demorest, GA
WBCJ	Spencerville, OH
WBSW	Marion, IN
WEDD	Englewood, CO
WKRH	Minetto, NY
WNIE	Freeport, IL
WNIQ	Sterling, IL
WNIW	LaSalle, IL
WRPA	LaPorte, PA
WSMJ	Richmond, VA
WWAX	Hermantown, MN
WYSA	Wauseon, OH

## Applied For Permits to Construct New FM Stations

CA	Camarillo	90.3 MHz	100 watts
IN	Portland	91.7 MHz	2.1 kW
KS	Hill City	101.9 MHz	100 kW
TX	Abilene	91.3 MHz	1 kW
VA	Charlottesville	88.5 MHz	120 watts
WA	Walla Walla	89.7 MHz	5.9 kW

## Changed FM Call Letters

<b>New</b>	<b>Was</b>	
KBKS	KCIN	Tacoma, WA
KGZO	KLOD	Shafter, CA
KHWJ	KBCH-FM	Kings Beach, CA
KIBG	KFIE	Merced, CA
KIGN	KFBQ	Cheyenne, WY
KIOZ	KCBQ-FM	San Diego, CA
KJBR	KERC	Marked Tree, AR
KKFJ	KYAX	Alturas, CA
KKTO	KXXB	Tahoe City, CA
KMTT	KMTT-FM	Tacoma, WA
KMTY	KUVR-FM	Holdredge, NE
KNRV	KLTX	Harker Heights, TX
KOLT-FM	KANG	Gering, NE
KONY	KQNN	Alice, TX
KSOU-FM	KTSB	Sioux Center, IA
KSUA	KUWL	Fairbanks, AK
KXST	KIOZ	Oceanside, CA
KYEG	KRBG	Canadian, TX
KZZP	KVRY	Mesa, AZ
WBSH	WAAE	Hagerstown, IN
WCHG	WBHA	Hot Springs, VA
WCSN	WXAH	Orange Beach, AL
WDXD	WAHJ	Holly Hill, FL
WFOG-FM	WFOG	Suffolk, VA
WHFX	WVVV	St. Simons Island, GA
WJZK	WXTG-FM	Charleston, SC
WLIR-FM	WDRE-FM	Garden City, NY
WMJM	WLSY-FM	Jeffersontown, KY
WRFQ	WJJK	Mt. Pleasant, SC
WRDX	WRGW	Somersworth, NH
WRIR	WHLX	Bethlehem, WV
WRKH	WMYC	Mobile, AL
WRNB	WTRJ	Troy, OH
WWHP	WEZO	Farmer City, IL
WWSY	WRKU	Sharpshville, PA
WZOC	WLTZ	Plymouth, IN
WZZN	WVIB	Patterson, NY

## Canceled

KBBD	Beaver, UT	
KULO	Agana, GU	101.9 MHz
WBYQ	Baltimore, MD	96.7 MHz
WNMT	Garden City, GA	1520 kHz License expired.
WRLD-FM	Valley, AL	95.3 MHz 3 kW
WYSE	Bainbridge, GA	1360 kHz License expired.

member told the national college monthly *U. Magazine*. "I personally believe that (Carrol) had an agenda for at least two years to take over and reformat the station."

When WUSC returned to the air in late January, Carrol was at the helm, along with new DJs and a new student board. But the downtime and change in staff may have hurt the station's reputation, according to its former promotions director: "We were one of the top college stations in the coun-

try. We reported to (two national college music tracking services), and we were very respected in the industry. Now they won't acknowledge us because we aren't who we were a few months ago."

While WUSC has survived at least in some form, Adelphi University's station looks to be gone for good. WBAU-FM—considered by many to be the birthplace of hip-hop music—was shuttered by the school a year ago, and there's little hope

that the Garden City, N.Y., station will return. School officials "changed the locks, removed equipment, pried signs off the doors and nobody was able to enter the station," one former staffer told the industry newspaper *Radio World*. The school also is in an agreement to transfer its air time on 90.3 MHz to Nassau Community College's WHPC, which shared the frequency with WBAU. Adelphi was unwilling to continue funding the station not only because

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**PROGRAM  
GUIDE**

**MONDAY-FRIDAY**  
5 am - 5:30 am America in the Morning  
5:30 am - 6 am WIBV Farming Today  
6 am - 10 am Bill Wilkerson and Wendy Wiese  
10 am - Noon John Carney  
Noon - 12:20 pm Noon Report with Tom Calhoun  
12:20 pm - 2 pm John Carney  
2 pm - 6 pm Kevin Horrigan  
6 pm - 8 pm WIBV Sportswatch  
8 pm - Midnight Dianna Proffitt and Debbi Allen  
Midnight - 4 am Joe Mazza (Monday only)  
Stan Major (Tuesday - Saturday)  
4 am - 5 am First Light

Midnight - 4 am  
4 am - 6 am  
6 am - 6:30 am  
6:30 am - 9 am  
9 am - 10 am  
10 am - Noon  
Noon - 1 pm  
1 pm - 5 pm  
5 pm - 6 pm  
6 pm - 8 pm  
8 pm - 11 pm  
11 pm - Midnight

**SATURDAY**  
Stan Major  
The Best of Mike Walker  
WIBV Farming This Week  
WIBV Saturday Edition with Tom Calhoun  
Swap Shop  
John Carney Comedy Shoppe  
WIBV Sports Saturday  
Saturday Afternoon with Paul Schankman,  
Magazine Talk & Features  
WIBV Sports Weekender  
Working Mom on the Run  
Moneytalk  
Laura Lee

**SUNDAY**  
Laura Lee  
Best of Mike Walker  
1st Church Christian Science  
Winstanley First Baptist Church  
WIBV Sunday Edition  
8:30 am - 9:30 am St. Paul's United Church of Christ  
9:30 am - 1 pm WIBV Sports Sunday featuring White Herzog  
1 pm - 5 pm "Mr. Trivia" David Strauss  
5 pm - 9 pm WIBV Encore Edition  
9 pm - Midnight Money Talk

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**GOOD FRIENDS • GOOD TIMES • GREAT FUN**

KMOX by any other name? That's what the new owner of Belleville, Ill.'s WIBV-AM apparently is hoping after wooing away much of the St. Louis station's talent. Time—and ratings—will tell whether listeners are willing to follow their favorite on-air personalities to their new home.

of the costs involved, but also because its volunteer staff included only a handful of Adelphi students. WBAU supporters counter that the school was unhappy with the format of alternative music, including rap and heavy metal.

The fight to bring back WBAU has thus far met with little success. The Friends of WBAU was organized to keep the station from being dismantled, but a lawsuit against Adelphi was dismissed. At last check, the group was hoping to outbid Nassau Community College, which offered \$30,000 for WBAU's half of the 90.3 MHz air time.

**In Brief**

- More than 2,000 new AM and FM stations will take to the air later this year in Colombia, reports *Radio World International*. A total of 220 commercial FM stations are expected to debut, along with another 2,000 non-commercial AM and FM stations. Other possible changes include moving established stations to new frequencies or increasing their power. The government's aim apparently is to expand the amount of local, public-interest programming available, through allocations for city halls, communities and organizations to operate 250-watt, daytime-only stations in the AM and FM bands, as well as local-coverage, 24-hour FM stations.

- Paducah, Ky.'s WDXR-AM and sister station WDXR-FM in Golconda, Ill., have been sold, according to a *Paducah Sun* article from Jeffrey Yates of Gilbertsville, Ky. "KOOL 94.3 FM" will keep its format of 1950s, 1960s and 1970s rock, while "Sportsradio 1450" will expand its format to include sports-related talk shows. The 1-kW AM carries college basketball from Murray State and Western Kentucky.

- The city of Anaheim, Calif., has shut-

tered its travelers information station on 1700 kHz, reports Donald Tomkinson of Huntington Beach, Calif. The city's TIS outlet on 1500 kHz remains, however, as does the city of Lakewood, Calif.'s "community radio" on 1620 kHz.

- Portage, Ind.'s WNDZ-AM will double its power to 5 kW this summer, according to a *Chicago Tribune* article sent by Elmer Wallesen of La Grange Park, Ill. The Chicago area station carries a morning drive-time program called *LesBiGay Radio*, and if ratings are strong, plans are to start a similar afternoon show and syndicate the programming to stations in other markets.

- Vancouver, British Columbia's CKWX-AM has dropped country music for all-news, reports Eric Calhoun of Inglewood, Calif. The new format for "WX 1130" includes business news from *The Wall Street Journal* and Bloomberg at :25 and :55. Meanwhile, down the Pacific Coast,

Los Angeles' KXED-AM is now KXMG, "Mega 1540."

**Thanks**

Several readers have asked what bands and types of stations are covered by Broadcast DXing, especially now that the AM band has been expanded in the United States. This column covers all stations—including commercial and non-commercial broadcast, travelers information, subcarrier, experimental and pirates—that transmit in the AM and FM broadcast bands currently in use throughout the world. What isn't covered is cordless phones, beacons and other "utility" stations, except when they affect the aforementioned stations, such as through interference. If the station you've heard or read about falls into a gray area or if you're in doubt, send it in and we'll decide which column it best fits. Your questions and comments are always welcome. ■



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## You Should Know (from page 38)

civilian and foreign users. As this article is being written, the government is talking about removing the accuracy degradations from the system, but it has not taken place yet. At present, the system is accurate to 100 meters horizontally 95 percent of the time, and plus or minus 100 meters in altitude measurements. The Federal Aviation Administration already has allowed the publication of instrument approaches based on GPS navigation, so accuracy certainly will be improving. No pilot wants to be flying an instrument approach with built-in degradation.

If you are considering the purchase of a portable GPS unit and plan to interface the unit with a laptop mapping program, make sure you buy a unit with the NMEA0183 interface port. This seems to be the standard at this time. The NMEA port will allow you to use a cable to connect to your laptop computer. Data in NMEA format comes in two versions, 1.5 and 2.0. The serial port defaults are presently set at 4800 baud, no parity and 8 data bits.


This magazine could be filled with information on this subject. GPS is just starting to become one of the most useful tools in navigation today. We haven't scratched the surface of the potential use. When Department of Defense accuracy restrictions are removed, the pinpoint accuracy of GPS will open a whole new world of uses. We will try to keep you informed on the improvements, uses, tools, hardware and software that will be flooding the marketplace.

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## Pirates Den (from page 35)

dio, now in its third year; Europe's most powerful pirate station." (Murphy, VA)

Radio One, 6950 at 0010 until 0046 close with oldies rock with Paul Revere and the Raiders, Monkees, Marty Robins. "Radio One—playing America's rock heritage." Also 0200-0216 close with songs *Double Shot of My Baby, I Fought the Law and Wild Thing*. Mentioned "we're talking into a 1940s ribbon microphone, but the quality is lost on shortwave, isn't it?" Pro-sounding jingles. (Murphy, VA)

KDED, 6955 at 0213 with a long "jam" in progress, new QSL available for a three-minute tape of anything you want to talk about. Narrative on the "summer of love" and the Manson murders. (Pearce, VT)

VOID Radio, 6955 at 2059 with ID "Voice of Idiot Drivel." BBC-sounding time pips and very accurate time announcement "21 hours Greenwich Mean Time." Several Morse IDs. Said it was the "Voice of the Virgin pirate program" and a test broadcast. Also, 13910 LSB at 1604, but very weak and couldn't make out much. Seemed to be the same program on 6955. (Pearce, VT) 6953, 2100-2127 with rock, mention of Merlin and Pittsburgh mail drops, "we'd like a cassette of the show to see how well we're getting out, but it's not mandatory. CW ID and sign-off. "Portions of this program were recorded at WIOD, Miami." (Murphy, VA)

WPN, 6954.9, just caught an ID at 2005. (Pearce, VT)

Altered States Radio, 6955 USB at 2149. Music that sounded like Neil Diamond and station ID. (Pearce, VT) 2142-2231 close. *Outer Limits* TV theme, funky blues/rock. (Murphy, VA)

RBCN, 6955 USB at 0000 plus. 20th anniversary of *Mr. Bill* show with Bill hang-gliding off the World Trade Center. (Pearce, VT)

Voice of Garlic, 9656 at 1225-0310 and 0415-0445, hosted by "The Supreme Garlic." Included parody phone calls, sound bites of grade-Z movie trailers, then off or fade. Return at 0415, yelling at some Spanish-speakers to "get off our frequency" and returned with 25 minutes of Pink Floyd. (Don D. Hicks, Hometown, ID)

Mystery Radio, 6955 USB at 0200 to 0237 close with classical and ethereal music, flute, new age. One ID: "This is Mystery Radio" and lost to QRM. (Murphy, VA)

WHO, 6955 at 1713 to 1720 close. Could copy only the *Dr. Who* theme music and some garbled speech before lost to noise. (Murphy, VA)

KNBS, 6955 at 2000-2038 sign-off. Had mailbag with Phil Musik, mentioned Scott Gentry in questionable terms, tribute to Radio Animal. "This is the station with your mind in mind." (Murphy, VA)

Terrific! Let's keep it rollin'! Catch you all next month; until then, keep pursuing those pirates!

## Clandestine (from page 36)

regular broadcasts on Tuesdays and Fridays only, from 2315-0020. It claims to broadcast from the Sierra Madre mountains in Guatemala, with programs in Spanish and Mayan. Try and check this out and let's see what we can come up with?

## Afghanistan

Radio Message of Freedom, one of the Afghanistan clandestines, is operating now on 6240 at 0230-0400 and 0730-0900. This station broadcasts in support of the Hezb-e-Eslami, the Islamic Party of Afghanistan, and is believed to have first gone on the air in early 1992.

## New Star

There are further reports of activity by the New Star Broadcasting Station, which beams so-called coded messages and brief segments of music to Taiwan from the mainland. It's still active on 8300 with a broadcast noted sometime after 1600. It's probably on at other hours, too. The 1600 release will be of little use to North American DXers except in the dead of winter. But there's a fair chance these broadcasts also are aired at various times after 1100, which gives us a better chance of picking them up.

These broadcasts have been going on for decades and, still, no one seems to know exactly where they come from, who they are designed for or for what purpose—all of which makes this puzzle one of the more fascinating ones on the clandestine scene.

## Bougainville

Radio Free Bougainville apparently is still active, reportedly signing on at 1000 on 3850, although activity depends on the availability of fuel to operate the station's generator. The station supports the interim government of Bougainville, which declared its independence from Papua New Guinea in 1990.

The station, which runs very low power, broadcasts in English and Pidgin. Radio United Bougainville, a counter station run by the Papua New Guinea government, is on the air daily from 0900-1100 on 3880v (often using a frequency very close to that of its competitor), as well as 6010.

## Is It True?

We'll close this month with this rather-off-the-wall item: The Sandinista-run newspaper in Nicaragua claims that plans are in the works to move the U.S. government's Radio (and television) Marti operations to Nicaragua!

That wraps things up for this time. Your input to this column is always welcome, whether you have loggings of clandestine stations or broadcasts, schedules or other information about clandestine and related broadcasts or information about the groups and organizations that back them.

Until next month, good hunting!

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**Please take note: As of May 1, 1995, we are no longer accepting free subscriber ads.**

**LOOKING FOR crystals for Drake 2B receiver.** Also need information on restoring cellular capacity to Realistic Pro-46 scanner. Sue Wilden, 2204 6th Street, Columbus, IN 47201.

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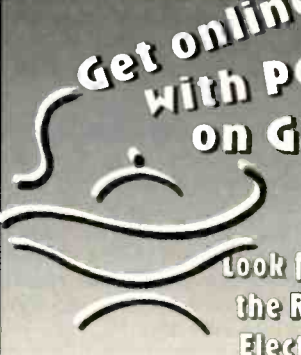
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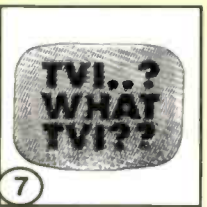
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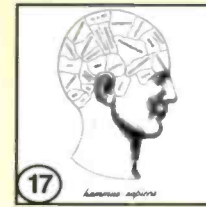
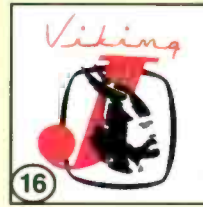
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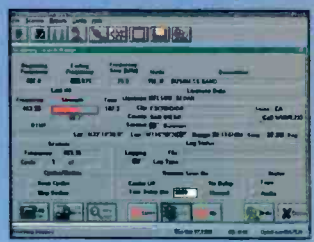
Scanner not included

**NEW**



PER CON Visual Wave Links

Turn your Radio Shack 2005/2006 or 2035/2042 scanner into something more than a box with a display. The OptoScan 456/535 will transform your scanner into a powerful computer controlled



Scanner Wear

scanning machine. With an applicable scanning software program your OS456/OS535 becomes capable of displaying a wealth of information like, frequency, scanning speed, signal strength, frequency log, spectrum analysis and much more. In addition, the OS456/535 will decode & display all CTCSS tones, DCS codes, and DTMF characters associated for each frequency.

Creating frequency logs is easy. While scanning, single frequencies can be downloaded into logs you create by name. While away, the computer acts as an automatic logging system keeping track of all activity the scanner locks on to. All frequency logs can be later reviewed with the number of hits per frequency and time of transmission.



ScanCat Gold

To make your scanning experience more enjoyable you can download DBF files from the optional Spectrum CD Rom database. The OS456/OS535 will display all database information for each frequency it locks on to like, company name, city, state, callsign and latitude/longitude. With an OptoScan installed you can also scan specific banks such as Business, Emergency, Fire, Police, and many more. Call now to take full advantage of your scanners capabilities.

**\$199.**  
Limited Time Only

**FACTORY DIRECT ORDER LINE: 800-327-5912**

# OPTOELECTRONICS®

5821 NE 14th Avenue • Ft. Lauderdale, FL • 33334

Visa • MasterCard • COD • Prices and Specifications are subject to change without notice or obligation

Tel:954-771-2050 Fax:954-771-2052

Internet: <http://www.optoelectronics.com>

Software support by ScannerWear for Windows (shown), Scan Star (not shown), ScanCat Gold (shown), Probe (not shown), and Wave for Mac (shown).

CIRCLE 151 ON READER SERVICE CARD

**MADE  
IN  
USA**

# TRIDENT



**Receiver Amp Filters and Filters**

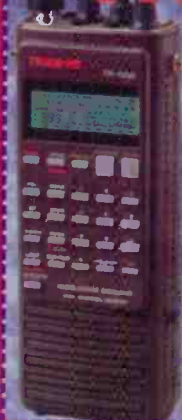
Three different units can increase the signal available at your antenna port or filter out undesired frequencies. Model GW-2 covers 500KHz to 1300MHz with gain from -3 to +25. \$79.00. The GW-3 covers 2MHz to 3GHz, variable gain, and filters for broadcast bands \$99.00. The WPIF covers broadcast, paging and cellular. \$49. All 9VDC powered. Fax back #805

# SANGEAN

The New Sangean AT9909 offers a whole host of features. New to a budget priced receiver, including auto RDS station ID, Fax Facts #504. Also check out our special values on the Sangean AT9808, AT9818, plus the AT98486S. (Fax facts 508,506,505). We have Grundig specials on the Sat 700 and YB400. Get fax facts 521 and 522.



# TRIDENT



**TR2400RX**  
100KHz-2060MHz±1KHz steps VFO, BFO/USB, LSB, Signal Strength Meter. \$499 Features 1000 channels, 10 Search banks, Triple Conversion, Attenuator and VFO control along with scan and shortwave freq coverage. Also has WFM mode for Broadcast. Mod & Option info included Fax #580



## Bearcat

BC230XLT95200 Ch with Turbo Scan. Now with TWO batteries, plus lockout on search. Full mod info available. A great buy!  
Fax facts No. 450. \$129.95

Other hand held scanners  
SC154 100 Ch 138.99 \$169  
BC80490Ch 470 \$149  
BC121 100Ch #465 \$129

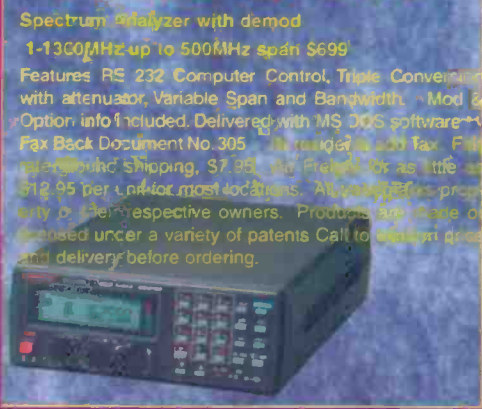
Also available a full line of hand held accessories, spares and performance improvements.



## FREE

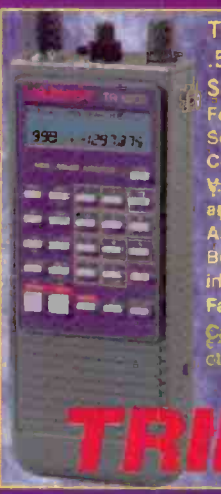
Portable Shortwave Antenna. Improves shortwave reception performance, yet is easy to carry and easy to set-up. Simply clip slotted end over your telescopic shortwave antenna and un-roll the full 23 foot wire. Now for a limited time, it's free on Popular Communications readers when you order a Sangean AT9909, TR2400 or TR1210, and ask for your free antenna.

# TRIDENT



**Spectrum Analyzer with demod**  
1-1300MHz up to 500MHz span \$699

Features RS 232 Computer Control, Triple Conversion with attenuator, Variable Span and Bandwidth. Mod & Option info included. Delivered with MS DOS software. Fax Back Document No. 305. In register a add fax. Free ground shipping, \$7.95. Free Freight for as little as \$12.95 per unit for most locations. Always takes property of their respective owners. Products are made or licensed under a variety of patents. Call to obtain price and delivery before ordering.



**TR1200RX**  
.5-1300MHz  
\$399

Features 1000 channels, 10 Search banks, Triple Conversion, Attenuator and VFO control along with scan and shortwave freq coverage. Also has WFM mode for Broadcast. Mod & Option info included with every unit. Fax Back Document No. 205. Call about these and all of our other radio products.

# TRIDENT

## Extra Protection for Road Warriors

BCT Pre-Promed w/800MHz #691..... \$199  
BCT10 Pre-Promed w/shield mnt #592..... \$149  
TR3VLT Pre-Promed with Radar, Laser #580. \$299  
In residents and fax. Flat rate ground shipping \$7.95. Free Freight for as little as \$12.95 per unit for most locations in the U.S.A.



# Bearcat

BC 9C00XLT 25-1300MHz with 500 channels of memory. Fax Facts No. 475. \$379.00

Other base/mobile Bearcat Scanners:  
BC890XLT 25-950MHz 200 Ch. #477..... \$249  
BC76C 800MHz 100Ch. #550..... \$199

Use our fax facts faxback, service or install, always over your fax.



# Cobra

We offer a full range of CB's, 10 Meter Units, and Business Radio transceivers. Fax facts 775, 777 and 350 for more information.

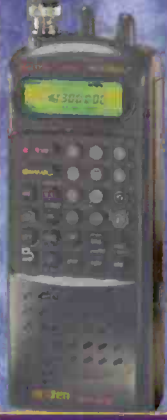
Cobra 2010.....	\$319	Uniden Dash.....	\$199
Cobra 148F.....	\$229	Uniden Grails.....	\$149
Cobra 29.....	\$199	Uniden ES38.....	\$69
REL M MHS 150.....	\$299	Ranger 100.....	\$129
REL M 256.....	\$299	Ranger 256.....	\$239



# Bearcat

**BC3000XLT42**  
25-1300MHz  
\$369

Features 400 channels, Twin Turbo, 10 Pr channels, Triple Conversion, Attenuator and data skip, along with freq. copy and count, and search LFO. Also has WX and WFM modes. Mod & Option info included. Fax Back Document No. 475. Technical manual on all units. All units carry factory warranty.









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# THE ALL NEW Xplorer

HEAR IT, SEE IT, DECODE IT, MAP IT\*, RECORD IT...  
 The all new Xplorer, everything you ever asked for in a handheld instrument.

## FEATURES

- High Speed FM Communications Nearfield Receiver sweeps range of 30MHz to 2GHz in less than one second
  - Two line character LCD displays Frequency and either All Mode Decoding (CTCSS, DCS, DTMF), LTR-Trunking, Relative Signal Strength, Latitude and Longitude, or FM Deviation with automatic backlight
  - NMEA-0183 GPS Interface provides tagging data with location for mapping applications\*
  - CI-V compliant Serial Data Interface with both TTL and RS232C levels
  - Frequency Recording Memory Register logs 500 frequencies with Time, Date, Latitude, and Longitude information
  - Real-Time Clock/Calendar with battery back-up
  - Frequency Lock Out, Manual Skip, and Auto or Manual Hold capability
  - Tape Control Output with Tape Recorder Pause control relay and DTMF Encoder for audio data recording
  - Rotary Encoder for easy selection of menus for setup
  - Internal Speaker, Audio earphone/headphone jack
  - Miniature 8-pin DIN Serial Interface port for PC connection
  - Relative ten segment Signal Strength Bargraph Mode
  - Numerical Deviation Mode with 1-10kHz and 10-100kHz ranges
  - Includes Built-in Rapid Charge NiCad Batteries with 8 hour discharge time and a Universal Power Supply
- \*Software for mapping applications is planned by third party Software Design Companies. Inquire about the availability and specific Companies to contact.



The Xplorer offers All Mode Communications Decoding.

461.725 MHz  
 CTCSS: 103.5 Hz

CTCSS Mode

461.725 MHz  
 DCS: 047

DCS Mode

461.725 MHz  
 DTMF: 8003275912

DTMF Mode

### Additional Display Modes:

- Latitude/Longitude Mode
- Signal Strength Mode
- Deviation Mode
- LTR-Trunking Mode



INNOVATIVE PRODUCTS  
 FOR A MODERN  
 PLANET

INTRODUCTORY PRICE

**\$899.**

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