



# MONITORING TIMES

VOLUME 2 - NUMBER 2

BRASSTOWN, NORTH CAROLINA 28902

MARCH/APRIL, 1983

## Monitoring Nuclear Shipments

An unmarked tractor trailer rig winds through a desolate road in the American southwest. Suddenly, a brightly-burning flare and a uniformed officer appear in front of the truck; a van, seemingly disabled—possibly wrecked—sits at the side of the road.

The truck driver rolls to a stop as the uniformed individual walks to the cab.

"Anything wrong, officer?" asked the concerned trucker.

In a flourish, the "officer" pulled out his service revolver; another individual jumped on the cab, snipping the coaxial transmission wires to the elaborate antenna array atop the cab.

A shipment of weapon-grade uranium has been hijacked.

This imaginary scenario, written by Monitoring Times editor Bob Grove, first appeared in Communications Magazine, June, 1976.



Rigorous "SWAT"-type training exercises prepare armed couriers to repel would-be hi-jackers

Within weeks, the elaborate communications network of the Department of Energy (DOE) changed its procedures to beef up secure communications (SECOM).

Well over 100 couriers deliver more than 1200 shipments of high grade fissionable materials each year throughout the 48 contiguous states.

Safe Secure Trailers (SST's) with walls of steel armor, deterrent and denial features, as well as virtually-impenetrable insulation provide sophisticated safeguards against unauthorized entry.

Escort vehicles, manned by highly-trained personnel, are fully equipped with emergency communications equipment as well as formidable weapons.

**COMMUNICATIONS** Short-range communications are conducted via VHF high-band FM radio; both CB and commercial radiotelephone equipment is also available.

Long-haul communications are conducted by SSB voice and data, with convoys checking in an average of every thirty minutes.

The following list of HF SSB channels is extracted from the **SHORTWAVE FREQUENCY DIRECTORY** by Bob Grove.

★ Active Channels

CH.	FREQ. USB
1★	3336.5
2	5309.5
3★	5752.5
4	5948.5
5★	7701.5
6	8015
7	9919.5
8★	11556.5
9	14658.5
10	17398.5

**CALLSIGN/CONTROL POINT**

KRF263	Albuquerque, NM
KRF264	Iona Butte, ID
KRF265	Belton, MO
KRF266	Cheltenham, MD
KRF267	Savannah River, SC

It is expected that this HF net will be phased out in the near future to be replaced by a low-band (30-50 MHz) meteor burst packet system.



DOE couriers must take driving simulation to anticipate actual duty hazards.



The Safe Secure Trailer (SST) is packed with armor plate, insulation, electronic locks, automatic encapsulants and two-way radio to render them virtually invulnerable.



Couriers in the escort vehicle are instructed to use whatever force is necessary to thwart an intercept of hazardous nuclear materials. An armory of weapons backs them up.



SECOM net control at Albuquerque tracks nuclear convoys nationwide



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TIMES**

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Bob Grove ..... Editor  
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**EDITORIAL**

**Those Lousy  
Antenna Connectors**

One of the most remarkable inconsistencies in our high technology era has been the stubborn refusal of scanner manufacturers to change over from the ancient "Motorola" automotive antenna connector to a modern high performance device.

Invented half a century ago for low frequency broadcast band reception, the Motorola plug has remained with us ever since. Ironically, as communications frequencies have gone higher and higher, the performance of the venerable old automotive connector has gone lower and lower. It is time for someone to take the bull by the horns and let evolution take its course!

Many weak signal problems encountered by scanner listeners, especially on the UFH bands, could be improved by the use of a more effective antenna connector.

What's wrong with the old Motorola connectors at high frequencies? Let's take a look:

- Flimsy construction
- Loose fit in jack provides erratic contact, resulting in soaring SWR and signal loss.
- Vulnerability to wear from repeated insertions and removals
- Susceptible to water penetration and corrosion when exposed to weather
- Net result? Lost signals at the receiver.
- Is there an alternative? I would propose the type "F", now standard throughout the television industry for low-cost, high-performance receiving installations.
- Lower cost
- Rugged, low-loss construction
- Constant impedance through 1 GHz
- Easy, solderless installation
- Compatible with existing adaptors and cables
- Small size
- Easily weatherproofed
- Single-hole mount jack
- Withstands repeated connects and disconnects
- Won't work loose with vibration
- More readily available
- ....Is anyone out there listening?

**...A New Game In Town DX'ing Broadcast Harmonics**

By Dave Beauvais KB1F  
I'm pleased to call your attention to a whole new variety of "illegal" signals to DX, log and verify! Not strictly speaking "clandestine" stations, (and "illegal" only by technical accident), there is nonetheless an absolutely THRIVING market in long-distance SECOND HARMONIC signals of regular broadcast stations, especially in the band 2400 to 3000 Khz. They make for most interesting listening.

During the week December 25 to January 1 ('82-'83), no less than eight B.C. stations were logged on their second harmonics in this band. From our listening post in Massachusetts, stations as far south as Virginia, and as far west as Ontario were heard at good strength; and in most cases.

Positive identifications were tape recorded and sent on to the stations for verification purposes. A ninth station was logged on its fourth harmonic!!

In no case was any of these stations audible on its fundamental frequency at the time harmonic reception was noted. This rules out any possibility of receiver imaging as the cause of the reception. It also makes them unique loggings for the clandestine, pirate and "bootleg" specialist!

And now a few particulars about time and place to DX these spurious harmonics. Propagation is best from an hour before, to an hour after, sunrise at the transmitter, which remains in the (favorable) path of darkness as the sun is rising at the receiver location.

Evening hours also offer some possibilities for logging broadcast harmonics. There is, however, greater competition (QRM) from utilities and navigation beacons at these hours. And there is another factor to consider: most of these stations logged on their harmonics are low-power, daylight-only broadcasters, who sign off at sunset. Stronger, clear-channel stations are almost never noted on their harmonics.

There seems to be a reason why the "daylighters" are prone to spurious emissions. Since their signals are not on the air during most of the hours at which ionospheric propagation occurs, their harmonics (under daylight conditions) probably die out within a few miles of the transmitter site. As a result, no one has

**In Memoriam**

Word has reached Monitoring Times of the death of one of our authors.

Fred Simon, syndicated columnist of the Cincinnati Enquirer and Gannett newspaper authored several nostalgic and forward-looking articles in MT during 1982.

We will miss his insights and are grateful that we could share his writing with our readers during the brief time of his association.

ever complained about the interference, and the transmitters in question have never been "buttoned down."

Only during those two or three hours at which a partial path of darkness remains between transmitter and receiver sites, with those harmonics propagate ionospherically for hundreds or even thousands of miles.

It's a bizarre phenomenon--but it's your golden chance for some very challenging games of it's your golden chance for some very challenging games of DX skill!

A few mandatory requirements for the game are: 1) a good communications receiver covering 1.7 to 3.2 Mhz. (we use an R-390-A and an HQ-145A) 2) a long-wire antenna, preferably 150 or more feet in length (those harmonics are very weak, and your receiver will need all the help it can get); 3) a relatively quiet location (free of power line noise and appliance "hash"); 4) a comprehensive directory of U.S. broadcast stations, cross-referenced by call letters, fre-

quency and transmitter location (White's Radio Log. or equivalent); 5) patience, patience, patience!!!

A further observation we've made is that stations in the 1200 to 1400 Khz range seem to be most prone to harmonic propagation. Seven of our eight loggings were of stations operating in that frequency range. A possible factor here may be the fact that a reasonable-sized broadcast tower (150-200 ft.) becomes an almost perfectly resonant half-wave antenna at 2.5 Mhz (while it presumably operates as something closer to a quarter-wave at its fundamental frequency). Any harmonic energy reaching the tower has a good chance of getting radiated!

Here's a list of the stations we've logged in the first week of searching. Try your hand at these--and keep probing for new entries! Don't forget to write to each station informing them of your reception. Enclose a (cheap) cassette of the harmonic signal to spur their interest, and enhance your own credibility!

FREQUENCY	FUNDAMENTAL	CALL	LOCATION AND REMARKS
2480	1240	WCOU	Lewiston, Maine. 1000 watts. City I.D. positive, local commercials.
2500	1250	CHWO	Oakville, Ontario. 10,000 watts. Zero-beat with WWV!!! FCC will have a bird if they ever hear this. Station confirmed by letter, is taking "corrective action."
2560	1280	WBRX	Berwick, Pennsylvania. 1000 watts. Bombs in like a local! One of the strongest signals on the band.
2580	1290	WQIN	Lykins, Pennsylvania. Listed at 500 watts. Very strong, positive I.D.
2660	1330	WASA	Havre de Grace, Maryland. 5000 watts. Positive callsign--D.J. repeated it slowly, one letter at a time. Does this guy know something?
2800	1400	WXAM	Charlottesville, Virginia. 1000 watts. Local news, commercials, positive city I.D.
2820	1410	WDOV	Dover, Delaware. Listed at 5000 watts. QSB, weak signals, I.D. by jungle but not much else.
3100	1550	WXVA	Charles Town, West Virginia. City I.D. positive. Listed 5000 watts.
4920	1230	WBME	Belfast, Maine - on their FOURTH harmonic! Nothing on the second or third harmonic, but they bomb out on this frequency. Belfast is the home of an FCC monitoring station too!!! Nothing like living dangerously...

...and what about those Cordless phones?

As long as you've got a good receiver and antenna operating in the ballpark, why not drop down to 1755 Khz and DX those "cordless" telephone base units? People don't seem to realize that a fraction of a watt into the household wiring (as a makeshift antenna) is capable of getting out like a bandit!

At this location (which is very rural), 1755 Khz sounds like a CB channel during a band opening! Dialing pulses, dial tones, and conversations are sometimes layered four-deep; and since the nearest small city, the probably

source of this activity, is a good 12 miles away, the sky (or sky-wave!) is literally the limit on how far those little transmitters can reach.

One sleuthing tip on DXing the cordless phones: see if you can count the dialing pulses when a call is placed. This should give you information about the telephone exchange (hence the city or town) to which local calls are being placed. (Long distance calls, of course, will be preceded by a "1" or an area code.) From that exchange information you can probably tell where the transmitter is located.

Keep your ears on!

## Visiting Far Away Places (Via Ham Radio)

By Harry (Bill) Brashier  
Kansas City, MO

Ham Radio is a hobby which I have long aspired. An enjoyable occupant of idle hours. Especially now - That I'm retired. Sitting here in my shack. Tuning the world around. Marveling all the interesting people. On the airwaves I have found. I can journey to far away places. As through voices I pretend I am there - My fantasies aware. To some beautiful land - I can transcend. To the snow covered slopes of Fujiyama. The marbled beauty of Taj Mahal. Both these I've seen in person and now again - The Ecstasy - All. Oh! I return to reality when we sign - Bid 73. Being only a ploy - I ever enjoy. Never leaving the shack - here at WDØALE

## Teaser Of The Month

### FREQUENCY TRIVIA QUIZ

Why is 13560 kHz populated by strange beeps and buzzes?  
What is the probable source of the rapid tones on 40.64 MHz?  
What is the intriguing recent history of 14968 kHz?  
What is the constant on-off keying on 4759 and 5734 kHz?

The reader submitting the best list of answers will receive a free book (our choice!) from the Grove library. Answers next issue!

Last issue we asked how the value of impedance for common coaxial cable was selected as 50 or 75 ohms. Congratulations to Fred Chappell of Windsor, Ontario for submitting the first correct answer! Fred, your book is on the way.

Coaxial cable is designed to represent a perfect match (unobstructive path for radio waves) between an antenna and the receiver or transmitter.

To design a practical configuration for the coax, a commonly-shared property of antennas must be defined. It just so happens that a half-wave dipole in free space exhibits a feed-point impedance of 75 ohms, while a quarter-wave ground plane is measured as 50 ohms.

These are ideal figures, seldom achieved in conventional installations; nevertheless, they provide the bases for transmission line impedance characteristics.

A folded dipole (two parallel wires with each end shorted) has a characteristic center feed-point impedance of 300 ohms and is frequently attached to TV-type ribbon.

Balun (balanced to unbalanced) transformers may be used to transform impedances so that dissimilar antenna and feedline characteristics may be matched.

## Synthesized Communications

### Receiver From Comer

The Comer R30K is a compact handful of receiver sporting 10 KHz-30 MHz pushbutton frequency synthesis in a 2" x 4" x 6" package.

USB, LSB, AM and CW modes are receivable with 50 Hz stability and 1 microvolt sensitivity. IF bandwidths of 6 dB at 3 KHz, 40 dB at 5 KHz (SSB) and 6 dB at 6 KHz, 40 dB and 10 KHz (AM) are provided.

Image rejection of 60 dB and IF rejection of 70 dB are claimed,



and AGC limits output audio to within 6 dB for an input variation of 70 dB (above 20 uV).

The 1 KHz pushbutton intervals are clarified by a panel-mounted interpolator.

R30K receiver, \$395 from Comer Communications, 609 Washington Drive, San Marcos, 92069.

## On A More Serious Note

The largest pay-TV judgment in history has been awarded to a Des Moines, Iowa MDS distributor in a suit against MWH Enterprises who sold 410 MDS antennas "with the awareness that the units would be used illegally to pick up HBO signals".

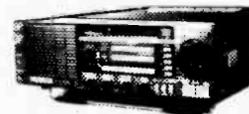
The \$476,000 award to Movie Systems, Incorporated cited lost revenue, punitive damages and legal fees, but it will probably never be collected—MWH filed for bankruptcy.

The outcome sets federal precedent, however, for similar actions around the nation.

# SWL HEADQUARTERS

ELECTRONIC EQUIPMENT BANK THE NAME IN SHORTWAVE LISTENING

### KENWOOD R-2000



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- 10 Memories (Memorizes Mode)
- Memory Backup
- Memory Scan
- Programmable Band Scan
- 24 Hour Clock-Timer

NET \$599.95  
EEB \$549.00

Optional filters—call for a quote. Optional RIT to be announced. EEB now provides an extended 90-day warranty.

### YAESU FRG-7700\*



- Our Best Seller!
- 150 KHz-30MHz
  - All mode AM-CW-SSB-FM
  - Digital Frequency and clock

- Options:
- FRA-7700 Active Antenna \$59
  - MU-7700 12 Channel Memory \$135
  - FRT-7700 Antenna Tuner \$59
  - FF-5-VLF Low Pass Filter \$20
  - DC-7700 12 VDC Kit \$8
  - FRV-7700 VHF Converter \$135

LIST \$549  
SALE \$439

\*EEB now provides an extended 90-day warranty, effectively doubling your warranty, 6 months parts and labor at NO COST TO YOU.

### KENWOOD R-1000 & R-600

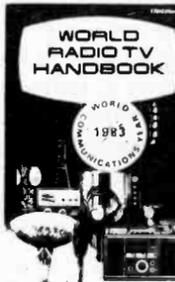
#### COMMUNICATIONS RECEIVERS



AM, SSB, and CW modes Built-in noise blanker. PLL synthesizer covers 30 bands between 200 kHz to 30 MHz. Ideal 3-stage. IF filters for receiver mode. Power requirements 100, 120, 220, 240 VAC, 50/60 Hz-12 VDC option.

R-600 Sale \$329  
R-1000 Sale \$429

### WORLD RADIO TV HANDBOOK 1983



Now in the 37th edition! The Shortwave listeners' Bible. A MUST! Over 70 pages listing the long and medium wave stations throughout the world. Over 30 pages devoted to a listing of all the shortwave stations throughout the world. Over 45 pages listing worldwide television stations with addresses and names of key personnel. Annual review of shortwave receivers. Listing of English shortwave broadcasts.

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You have read the details on this revolutionary receiver. It's getting rave reviews.



LIST \$749  
SALE \$669

The Best Just got Better

\*Now EEB offers an EXCLUSIVE upgraded R-70 SWL with AM bandwidth of 6 and 2.3 KHz giving you that sharp filter for crowded band conditions. \*EEB now provides an extended 90-day warranty, effectively doubling your warranty, 6 months parts and labor AT NO COST TO YOU.

#### ANOTHER EEB EXCLUSIVE!

\*EEB is ICOM's mid-Atlantic authorized service center.

#### Options:

- R-70 SWL AM Wide/Narrow \$50 with purchase/\$75 after SALE
- FL-63 CW Narrow Filter (250 Hz) (call for quote)—installed (call for quote)
- FL-44 SSB 455 KHz Crystal Filter \$159—installed \$179
- DC-70 13.8 DC option—installed \$45

### G.E. WORLD MONITOR II



Best Buy under \$250

- 6 Bands 3.5 to 31 MHz-SWL-MW-FM
- World Power 120/220 V 50/60 Hz
- DC operation from internal batteries
- EEB test results show this receiver to be superior to many selling up to \$250. Physical layout and electrical specifications similar to the popular Panasonic RF-2900.

SALE \$169.96

### SONY ICF 2001



Microcomputer and Synthesizer offer best value in its class.

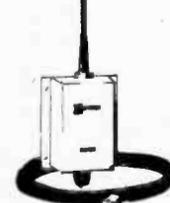
Features quartz crystal locked PLL frequency synthesizer and dual conversion super-heterodyne circuitry plus "standby-reception" capability. The microcomputer gives you four tuning methods: direct access, memory, auto scan, and manual tone. Much, much more.

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### DA-100 D MCKAY DYMEK

ALL WAVE RECEIVER ANTENNA



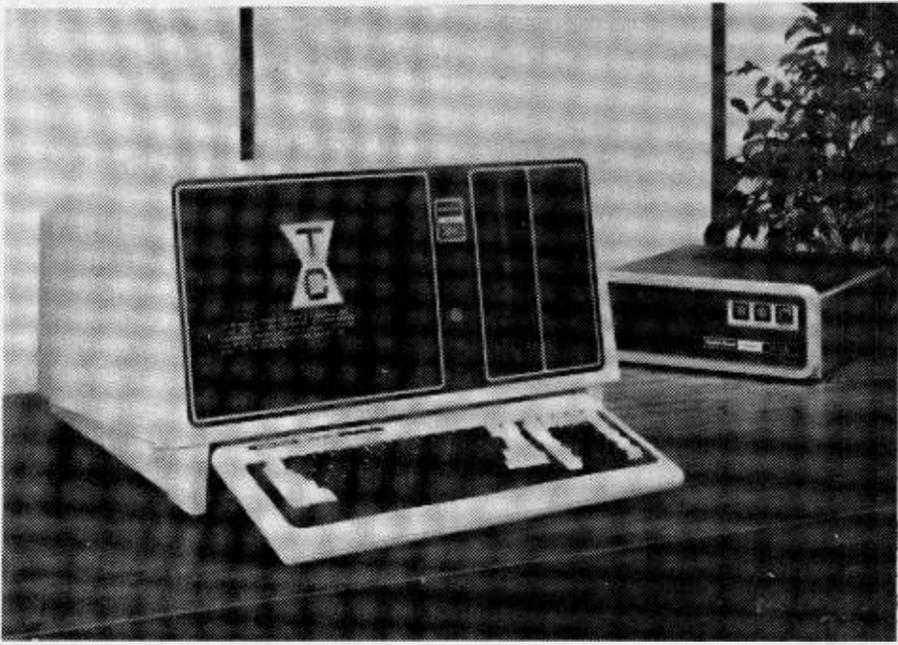
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Radio Shack's newest entry: The Model 12 with a 12 Megabyte hard disk drive.

Monitoring Times column welcomes Mike Edelson, a graduate computer programmer who will be taking the helm of a regular computer

Don't worry; we won't let our readers down and become another computer magazine! Mike will be confining his in-

formative writing to using the computer the way all of us would like, presenting programs and helpful hints for the listener.

## Bits By Mike Edelson

This article begins a new column in Monitoring Times. In this column we will work together to use home computers to do things to make our radio hobby activities easier, more enjoyable, and more satisfying.

We will hear how computers are making life easier, safer, challenging, the "magic genie" to bigger and better things!

People are getting more and more involved with computers, and in some cases, they don't even know it! The video arcade game the kids got for Christmas (or Chanukah), is a computer-based system and is the most obvious system.

The checkout counter at many supermarkets is part of a computer network that calculates your grocery bill, updates prices, and even keeps track of the stock so when a certain product requires restocking, the computer can issue a shipping order to the warehouse.

There are many reports that can now be done hourly and daily that tell managers how they are doing. These used to be done primarily weekly, or even monthly...and by hand.

Around the home, personal computers have many uses. A good personal computer can teach children virtually any subject. Computer-Assisted Instruction (CAI) can help them with any tutoring they require as well as help them get their homework done.

A computer can make homework fun and get the kids away from the TV. When they tell you they are bored, they can try their skills at any of a series of games (some of which are educational!), most of which can help develop eye/hand coordination and other skills.

In today's (and future) society, every citizen will need some computer literacy; programming will be a universal skill. By the time a child gets to college, he will need to know the basic rudiments

of programming. In many colleges it is now mandatory--as a prerequisite for graduation--for students to know how to program and use a computer.

In the home, the computer already has many duties. It can be the home burglar alarm system, timer, temperature/environment regulator, and message handler among other jobs.

The lady of the house will find that the system can provide her with an inventory system for household goods. If this system is programmed correctly and updated it can then print out a shopping list.

A recipe file can also recommend quantities to prepare a recipe for various size groups of people. After this, the recipe with adjustments can be printed.

If the updated inventory is used the system can tell the housewife if those ingredients are in the family larder. If they are not, they can be placed on the shopping list.

But we, as radio hobbyists, have uses of our own. For example, using the computer we can keep track of our log, send or receive CW or RTTY, rotate antennas to get optimum reception; the uses of the computer to the radio hobbyist abound. It takes only the mind to develop them.

The programmer will have to write the needed software, but there may have to be some hardware design, too.

Over the next few months, with your help, I hope to present insight into computers and computing in the hope that you will find new uses for this new technology.

In our next article we will take a brief tour of the computer including its history.

I invite readers to write me with questions, at: P.O. Box 203, Roselle Park, N.J. 07204.

If you wish a personal answer, please enclose self-addressed stamped envelope.

# Visual Monitoring -- The World of Amateur Television

## (Part I)

By John Edwards

Imagine this: as you're watching the increasingly grim fare on TV one evening, you rise from your chair in disgust and switch the set's channel selector to your local amateur radio repeater frequency. There, you see a fellow named Jack showing the schematic of a new filter he just built. The repeater identifies, and the face of a newcomer flashes on to the screen. As a get-acquainted demonstration, he runs a videocassette tour of his shack and home. He then tops it off by playing some tapes of his last antenna-rising party and an imaginative montage of his QSL collection. As you flop back in your chair you quietly exclaim, "Wow, ham TV sure beats listening to Radio Moscow any night!"

Another description of monitoring of the future? No, not if you live near any kind of metropolitan area--this kind of activity is going on all around you and you probably don't even know it!

It's not that amateur television buffs are a secretive lot, it's just that they're having such a great time they rarely get around to telling friends much about their obsession. After all, how are you going to keep them down on 2-meters after they've seen ATV?

All joking aside, ATV activity is picking up almost daily. What was once the realm of a few technically proficient hams is now calling within the reach of many beginners. Today, it's possible to equip your shack with ATV monitoring equipment without touching a single piece of surplus gear or homebrewing a single thing. What's even more remarkable is that the cost for an entire transmitting station--should you be inclined to get into the act--can be less than some synthesized scanners. If you just want to watch, you can adapt a home TV set to receive ATV with no more effort than installing a video game.

What is ATV?

Well, it's not the slow-scan television you may have heard or read about. While SSTV is fun and has a large following on the high-frequency bands, one can hardly consider eight separate frames, or "pictures," a minute to be television in the conventional sense. ATV, however, is broadcast-quality television with the same standards as any commercial station--even down to the "living color," in many cases.

With all the advantages of normal motion, better resolution, simple receivers and the like, you may wonder why you don't hear ATV signals all over the short-wave bands. The answer is simple and devastating: television is a

frequency hog. So much so that it consumes a minimum of six megahertz of spectrum space! Needless to say, such a signal would cause incredible damage anywhere except on UHF. For this reason, the FCC has limited ATV signals to 420 MHz and above. But this limitation does pose at least one oddball advantage. Unlike SSTV, where users require at least a General-class amateur license to transmit on the highly popular 20-meter band, ATV requires only a Technician ticket. The range of an ATV signal may not be worldwide, but at least transmitting participants don't have to study so hard to get on the air.

### First Steps

Monitoring enthusiasts, of course, don't require any license to look in on the action. And, as mentioned earlier, looking in on ATV is a snap. A number of sources have information on converting the tuner on a regular TV set to amateur frequencies (the ARRL Handbook is one such publication), but unless you have a junk set you're willing to sacrifice, you'll probably want to buy one of the relatively inexpensive ATV receiving converters currently on the market.

What these units do is to make use of a vacant TV channel spot (usually channel 3 or 4), and use that space to inject converted 420 to 450 MHz signals. One uses a small tuning dial mounted on the front of the converter to scan across the band. If you're old enough, you may remember the old UHF converters that hooked up to VHF-only TVs. Except for the frequency difference, those units were identical to today's ATV converters.

Two of the more popular converters are the Science Workshop (P.O. Box 393, Bethpage, NY 11714) ATVC-10, which sells for \$49.95, and the Xtronix (2206 Renfrew Court, San Jose, CA 95131), which goes for \$89.95.

Your next step, after hooking up the converter, is to install an ATV antenna system. You may be able to use a regular UHF-TV antenna if you live close to a group of active amateurs or an ATV repeater, but nothing beats an antenna specifically tuned to ATV frequencies. In any event you'll have to get a regular UHF antenna if you ever decide to start transmitting. The bright side is that at ATV frequencies even a multi-element beam isn't very large and can be easily stacked on your present antenna system with few weight or wind-loading problems.

In the next issue of MONITORING TIMES, we'll look at the flip side of the issue--ways of transmitting ATV.

**WHAT DO THE CIA,  
RUSSIAN EMBASSY,  
MILITARY INTELLIGENCE  
HAVE IN COMMON?**

**Excellent  
For All  
Hobbyists!**



**NEW! RADIO AMATEUR'S HANDBOOK.** Now in its 60th edition, the Radio Amateur's Handbook continues to be the most widely-accepted, comprehensive guide to experimenter-oriented technical radio communications in the world. The new 1983 edition is the largest in history, containing additional material—an satellites, TVI, ATV, computer and calculator programs and even an updated list of parts suppliers. Chapters include in-depth in-

formation on electrical fundamentals, radio design and terminology, solid state circuitry, power supplies, transmitters and receivers, antennas, CW, RTTY, SSB, radio wave propagation, specialized communications techniques, FM and repeaters and much more. 640 pages of well-written, easy-to-understand text revolving around amateur radio lends itself particularly well to all aspects of hobby electronics. BOK-16, \$12.

**COMMUNICATIONS MONITORING** by Bob Grove (117 pages, 5 1/4" x 8 1/4"). Written for the shortwave listener and scanner buff, this fast selling book describes all facets of radio listening from VLF through UHF.

scrambling, bugs, antennas, receivers, accessories, clubs and publications, frequency allocations and more.

And as a special bonus, a special home projects section: Antennas, amplifiers, power supplies, receivers, converters, filters and other useful, easy-to-build items.

Paging, telemetry, voice

BOK-2, \$6.<sup>00</sup>

## Scanning

**THE COMPLETE ACTION GUIDE TO SCANNERS AND MONITORS** by Louis A. Smith II (256 pages, 6" x 9"). A thorough, easy-to-read handbook on public service monitoring, including systems and accessories. Explains frequency allocations, scramblers, speakers, antennas and more.

Rules and regulations are stressed to help you understand the law. An excellent guide to questions and answers about scanner listening.

BOK-9, \$9.<sup>95</sup>

**THE TOP SECRET REGISTRY OF U.S. GOVERNMENT RADIO FREQUENCIES** by Tom Kneitel (4th edition, 120 pages, 6" x 9"). An extensive collection of government and military frequencies, many

considered highly-sensitive, from 25-600 MHz.

Includes many locations, call signs, code names. Articles on surveillance, monitoring in the 1930's bugs, scramblers and pictures of federal QSL cards.

BOK-11, \$9.<sup>95</sup>

## Rtty

**WORLD PRESS SERVICES FREQUENCIES**, by Thomas Harrington, 3rd Edition. 72 pages, 8 1/2" x 11". An up to date comprehensive manual covering the field of radioteletype news monitoring. Contains three different lists of worldwide radio teletype frequencies used for transmitting news services in the English language.

plus all needed information on antennas, receivers, terminal units, monitors and how-to-receive hints. Master lists include Transmission times, frequency, shift and speed, service (AP, UPI, TASS, REUTERS and other.) location and reception ratings. Highly recommended for all those interested in RTTY monitoring. BOK-5, \$7.95.

**RTTY CALLSIGN DIRECTORY** (52 pages, 5 1/2" x 8 1/2"). Worldwide collection of some 3000 call signs to help you identify those elusive RTTY stations encountered on the air.

The list includes call sign block allocations, common abbreviations and ITU identification regulations.

A handy reference guide for every RTTY enthusiast.

BOK-14, \$6.<sup>00</sup>

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(George Jacobs, W3ASK, Board of International Broadcasting.)

The directory is a great deal of Utility data in a neat and easy to read format, all in one handy publication. It compliments the data contained in my copy of the FEDERAL FREQUENCY DIRECTORY. It is another fine publication of Grove Enterprises, Inc. which every Utility DXer should have in his or her library! (Mark Chinsky, Flushing, NY.)

The Shortwave Frequency Directory arrived...Thank you! It's a most comprehensive book, well worth waiting for. (Peggy Thompson, LA Crescenta, CA.)



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## The Voice Of South Africa

By Roger N. Peterson

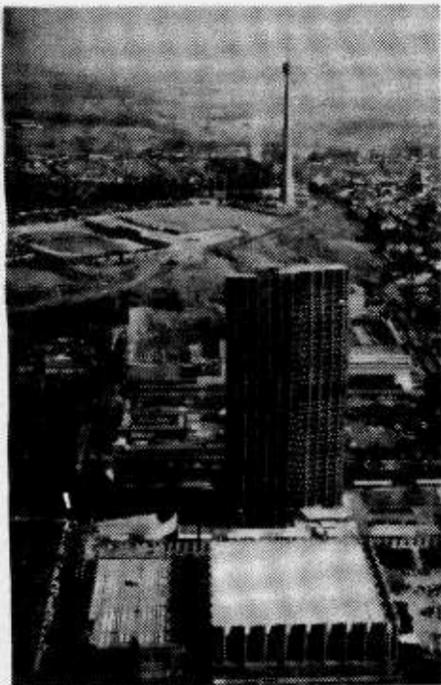
There are a lot of solid reasons to listen to Radio RSA from South Africa on a regular basis. First of all, they have some of the most interesting programs on the air today. Secondly, the country itself is a very exciting one - perhaps one of the last frontiers left in the world today.

And finally, from a political standpoint, this is "where the action is" and probably will be for some time to come.

I have had the opportunity to visit South Africa twice in recent years and I can tell you it is a country worth seeing.

It has some of the world's most beautiful scenery - wonderful ocean coastlines, pretty mountains, a vast desert and, in the north, hot lands where the wild animals run. Radio RSA programs are set against these backgrounds.

All Radio RSA programs start off with news. If you are at all interested in listening to or DXing any part of Africa, you won't want to miss this news because it



Broadcasting complex of South Africa. The tall tower at the rear is for FM radio. Television and shortwave broadcasting facilities are in the large building in the foreground.

covers not only South Africa but also events in other surrounding nations like Zimbabwe, Uganda, Mozambique, etc.

A recent survey among African delegates to the UN in New York indicated at least 1/4 of them listened to the news on Radio RSA every night. This despite the fact that the majority of them were probably opposed to the current South African government!

After ten minutes of news, the feature programs come on. On Sundays at 0200 GMT (Our Saturday nights) there are two excellent programs. One is called "Touring RSA". This might bring you on a climb up Table Mountain which looks out over Capetown, the most beautiful city I have ever seen. Another radio town might take you to the famous Kruger National Park where you drive around in a Land Rover and watch the lions hunt game, the elephants trample down trees and the hippopotamuses sun themselves in the rivers!

In fact, it was by listening to this program that got me interested in visiting South Africa in the first place.

The other program on that night is "DX Corner" with host Pieter Martin, one of the principal engineers of the station. Pieter covers a lot of ground on the African DX scene and often has guest editors to help him.

If you are into DXing the African scene, you won't want to miss this program which is repeated at 1300 hours on Thursdays on 25790, 21535 and 15220 when the broadcast is aimed at Europe. It can often be heard well here in the U.S. as well.

On Mondays (our Sundays) at 0200 RSA has a program called "Conversation Corner". Despite its controversial status, South Africa is visited by a steady stream of famous people - politicians, authors, actors, military men, etc. Many of these world-famous names are interviewed on this Monday night program.



A Broadcasting Studio at Radio RSA, the Voice of South Africa, Johannesburg.

For those of you interested in the fluctuations of gold, diamonds and other mineral prices, Tuesday (our Monday) is the time to listen when the program "Business Front" is aired.

Look forward to other fine feature programs on the other nights of the week. Friday features the latest on science - and they are a very advanced nation in this category - remember that the first heart transplant was made in Capetown!

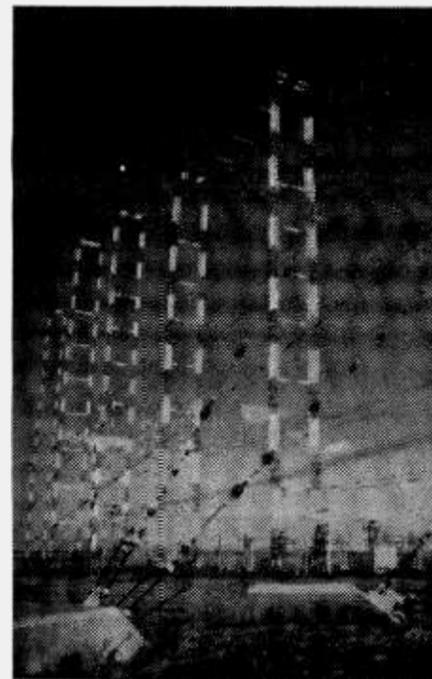
The broadcasting facilities in Johannesburg are among the most modern I have ever seen. In fact, it is like a giant university campus with all broadcasting - TV, FM as well as shortwave broadcasts coming from this complex.

The antennas are located some 15 miles outside the City and, thanks to the efforts of my host, Pieter Martins, the DX Editor, I was rewarded with a full escorted tour of both studios and antenna installation two years ago.

Regardless of your political views, Radio RSA makes an interesting station to listen to; that is, after all, the name of the game.

TIME UTC ( K H Z )	FREQUENCIES
0200	5980, 9615, 1190, 15325
1100	25790
2100	5980, 9585, 1190

RSA SPRING SCHEDULE



Antenna used by RSA to broadcast to North America.

## FM And Squelch On Shortwave Receivers?

Some of our readers are bound to react to the presence of unfamiliar functions on the new general coverage shortwave receivers with dismay. After all, why pay for features that aren't useful in their tuning range?

While it's true that the prime intent of the manufacturers is to provide a flexibility for later add-on VHF and UHF converters, there really is FM to be found on shortwave!

Frequency modulation, due to its inordinately-wide bandwidth, is normally confined to scanner frequency ranges. However, it is legal to use it on specific allocated frequencies above 25 MHz with one exception: cordless telephone

base units transmit FM in the 1.7 MHz range.

The petroleum industry uses FM for their field explorations; look for their communications from about 25.0 to 25.6 MHz along with FM telemetry and seismic soundings.

Hams are authorized to use FM above 29 MHz; their activity is concentrated in the 29.4-29.7 MHz part of the spectrum.

From 29.0-30.0 MHz, US federal government agencies including the CIA have discrete allocations, often on a shared basis.

And finally, tactical FM communications of the National Guard may be found from about

20 MHz on up through VHF. It is required that such communications be subordinated to a non-interference secondary basis. But it can be there.

### SQUELCH

A number of incredulous readers have reacted to the presence of squelch on a shortwave receiver with suspicion. The

### VLF Frequency Correction

Several sharp-eyed readers caught an obsolete entry in the VLF listings we ran in MT a few months back.

Naval station NLK at Jim Creek, Washington, formerly on

fact of the matter is that it does work, and on all modes!

Next time you sit back and complain about the static you have to tolerate between single sideband transmissions, you may wish you had the squelch feature found on the new genre of general coverage receivers. It is quite effective.

18.6 Khz shifted up to 24.8 khz last fall.

We would like to see a comprehensive listing of VLF frequencies in MT; any of our readers have an up-to-date list to share?

# Monitoring Times Shortwave

*Monitoring Times is honored to present the first in a series of articles on international shortwave by noted author Hank Bennett.*

*Hank has many books to his credit including "How to Tune the Shortwave Spectrum" and many more.*

Hank Bennett W2PNA

Welcome to the fascinating world of international shortwave broadcasting. This is the first of, I hope, many columns that will be appearing in future issues of MONITORING TIMES. Let's take time here to explain a bit about the future column and what YOU can do to help it.

International shortwave broadcasting involves those radio stations that are on the air for the specific purpose of providing programs of news, commentary, entertainment, sports, the arts and cultures, and general listening beamed, for the most part, to other countries around the world. Many of them broadcast in English, some only partially so, and others may have no English whatever.

The purpose of this column is not so much to inform you as to when you MIGHT be able to hear a particular station but, rather, to let you tell others when you HAVE heard any particular station. We could include schedules of stations all over the world but they won't do you any good if propagation conditions and/or your own available listening time make it impossible to hear those stations. So we're going to try to set this column up based on what YOU are hearing. It follows, then, that for your information to get into print, you have to write in and tell us about it. Address your letters and reports to MONITORING TIMES SHORTWAVE, P.O. Box 3333, Cherry Hill, New Jersey 08034. But please - any information requests should be accompanied by return postage.

A brief word about the editor. I've been in radio since 1938 and a licensed radio amateur operator since 1940. I've written columns in the past for the Newark News Radio Club and for Popular Electronics Magazine and currently am writing the shortwave column for the Association of DX Reporters. My first column was in May 1949 and that was somewhere around 619 columns ago! My equipment includes a Hammarlund HQ-129X, a Hallicrafter S-20R, a National HR050-T1, an original 1910 Westinghouse crystal set in perfect working order, and numerous pieces of portable or semi-portable equipment.

There are two ways that I could write this column but I'm going to see which way the wind is blowing among those who report. One is to list stations by frequency, as I usually do with the club column. The magazine column was written with stations listed by country and the frequency information was buried inside the item. This first column will have a

bit of both and you can tell us which you prefer. The times shown in this column will be Greenwich Mean Time which is five hours ahead of American Eastern Standard Time. When you report in, please state what time you are using in your report so that we can calculate to GMT, if necessary.

This first column is based on reports received within the past few days from members of the Association of DX Reporters (address available upon request). All of these listings are stations which have actually been heard; not of stations which MIGHT be heard. Please keep in mind that stations may change frequency and/or schedules with little or no advance notice so it is impossible to guarantee 100% listening ability. What we may list here today could actually be outdated by the time this material appears in print even though compilation and publication dates may be very close. All of the following listings are in English unless otherwise indicated, and all frequencies are in kilohertz (kilocycles).

25650 1405-1530 BBC, London; England, noted with music of Henry Mancini and stories by Charles Dickens.

21655 1615-1640 United Arab Emirates, Dubai, heard during this time period with home and world news, a historical picture of Palestine, a talk on the U.S. and Israel and an identification by a girl.

21620 1600-1655 Radio France International, Paris, logged with news, musical interludes, and listener letters.

21615 1400-1428 Radio Sweden, Stockholm, with Nordic news and a survey on the attitudes of Swedes towards a defense system. December 13th was their "Lucia Day" and programs on that day featured the festival of lights, names of Nobel prize winners, and a children's chorus singing Santa Lucia.

21615 1350-1400 Radio Moscow, Riga, Latvia, heard with a request program of Ukrainian folk tunes. This was also carried by Radio Havana (Cuba) on 11840 kHz.

21465 1533-1538 Radio Berlin International, East Germany, noted with a man and woman commenting on missile development in Europe.

17755 2125-2132 Nippon Hoso Kyokai (Radio Japan), Tokyo, logged with news and "The Japan Scene"; at 2300 with news and commentaries (also on 15235 and 15195 kHz); and at 0300-0330 with news, commentaries, and current topics.

17715 0020-0029 BBC Far Eastern Service, Singapore, has "Radio Newsreel" at this time. It's also carried on 15435 kHz and sign-off is at 0029.

15425 0030-0227 The All Asia Service of Sri Lanka Broadcasting Corporation, Colombo, is often good with pop music, news,

and "Back To The Bible" program.

15375 2148-2155 Radio Espana, Madrid, Spain, was noted with their Lesson #64 in the "Spanish By Radio" series.

15300 1600-1617 Radio France International, Paris, is often heard here with African news in their "Paris Calling Africa" transmission which is also beamed on 21620 kHz.

15160 2000-2026 Radio Algiers, Algeria, may be tough to log. Try for it at this time with news and some pop music. It's been heard on the east coast mixing with several other signals.

11955 0350-0355 BBC World Service, London, is relayed on this frequency by their outlet in Oman (on the Arabian Sea) and was heard at this time with a science program.

11900 0957-1040 KYOI, Saipan, Northern Marianas, has a fully automated operation here with only occasional announcements. The only station ID given was on the hour as "It's Super Rock, KYOI, Saipan".

11655 2000-2030 Kol Israel, Jerusalem, has news and "Thank Goodness It's Friday" at this time. From 2230-2300 they have news, "Sunday Scene", a mailbag, DX Corner, and closing news (also on 9815 kHz). At 2300 they switch to Hebrew. More English is aired at 0215-0226 with a discussion program.

9744 2145-2155 Radio Baghdad, Iraq, was found with a political commentary by a woman; Arabic music was aired at 2148.

9495 0744-0953 Trans World Radio, Monte Carlo, Monaco, has been heard at various times during this time period with religious programs. News can be heard at 0900.

7065 0000-0030 Radio Tirana, Albania, heard during this half hour with their anthem, ID, news, usual commentaries, anthem, and sign-off.

5950 1015-1030 Guyana Broadcasting Corporation, Georgetown, has lots of time checks and IDs, jewelry store ads, pop music, and other features. You may find it battling it out with a Harbin, China, station which had a girl giving a talk in Chinese.

5055 0324-0350 TIFC, The Lighthouse Of The Caribbean, San Jose, Costa Rica, is often heard with a Billy Graham program and hymns.

5025 0228-0255 Radio Borema, Campina Grande, Brazil, in an all Portuguese transmission with music and vocals, a long commentary, then more music including some U.S. western tunes. A station ID was given at 0253.

4920 0900-0919 ABC, Brisbane, Australia, has been heard here on the East Coast and in midwestern areas with time pips, ID, world and home news, local music, and a program review of "Sentimental Journey".

4890 1230-1320 Another Pacific Ocean station that is often well

heard in many areas is Radio One, Port Moresby, Papua New Guinea. At this time you may find it with news, varied music, and time checks.

4770 0438-0516 Radio Nigeria, Kaduna, in their home service with a morning wake-up and inspirational type of show and a mixture of religious, native, and rock music; time checks; an ID at 0515, then world news.

3970 0453-0500 BBC, London, was heard here with the weekly commodities exchange results. You may find a lot of interference from 75 meter ham radio operators here.

3285 0255-0310 Radio Belize, Belize (formerly British Honduras) was heard here with music and an ID at 0300; at 0402 with news; and at 1117-1205 in a combined English-Spanish transmission with pop music.

Now we'll try a few in the country listing style.

ARGENTINA - RAE, Buenos Aires, was heard on 9690 kHz at 0120 with a mailbag, news headlines, and into German at 0130; again at 0235 with news, music at 0240, cultural notes at 0245, and into Spanish at 0300. The outlet on 11710 kHz has been logged at 0130 with a talk and ID, then into German; at 0254-0302 with a weekly program for DXers before going into Spanish at 0302; and at 0400-0430 with a mailbag.

FRENCH POLYNESIA - Radio Tahiti, Papeete, is often good on 15170 kHz around 0300 with local music; at 0400-0435 with island tunes and some listener letters; and at 0500-0630 with island music. The dual outlet on 11825 kHz was found at 0530 with Polynesian music. Be advised that their is very little English here; most of the programs are in Tahitian or French.

GABON - Radio France International, Paris, has a relay station in this African country. Look for it on 15435 kHz around 1855 with pop music or at 2020 with news but in all French. Africa Number One is also located here and operates on 4811 kHz from 0500 sign-on with news, ballads, some rock music, and some big band music. This one is also on 11940 kHz where it is being reported at 0505-0520 with hi-life music, and at 1938-1958 with European pop music and a listing of the Top Ten songs. Sorry kids, again it's all French.

ITALY - RAI, Rome, has English to North America on 9575 kHz at 0100-0120 with news and light music, and French to Canada on the same channel from 0120. Two rarely reported stations: Radio Milano International, Milano, 6221 kHz, at 0613-0710 in English and Italian and apparently relaying an FM service. Some reports indicate that World Music Radio will use this as a relay. The other station, also in Milano, on 6275 kHz, at 0411-0419, was heard with country

Continued on page 8

SHORTWAVE . . . from page 7

and pop music and a disc jockey with an English accent. This is said to be a very low powered operation, being rated at only 100 watts.

**NETHERLAND ANTILLES** - Trans World Radio, Bonaire, has "Caribbean Night Call" at 0600 on 9535 kHz, with religious and folk music. The same program is also reported earlier at 0445-0510 on the same frequency, with a short newsbreak at 0500. Radio Nederland also has relay facilities on Bonaire and is generally heard well on 17695 kHz at 2030 sign-on with news and an interview program; on 21685 kHz at 2035 with a news summary, then "Newline" and on Sunday at 2115 with "The Happy Station Program"; and on 15560 kHz at 2050 with "Media Network" to 2120 sign-off; this latter is dual to outlets on 21685 kHz (Bonaire), 17695 kHz (Bonaire), and 15220 and 9715 kHz (both Madagascar).

**NEW ZEALAND** - Radio New Zealand, Wellington, was found with a classical concert at 0340 on 15485 and 17705 kHz. Another classical music program, including some beautiful oldies, was noted at 1000-1030 on 11960 kHz.

**NORTH KOREA** - Radio Pyongyang, Pyongyang, 9977 kHz, has a program at 1215-1250 featuring historical talks, Korean music, talks on Korean art and commentaries. Schedules are given, the anthem is played and English closes at 1250. Another outlet on 15230 kHz has news and musical interludes at 2305-0050.

**SOUTH AFRICA** - Radio RSA, Johannesburg, was noted on 25790 kHz at 1410-1416 with a report on science research in

South Africa followed by world news, and on 25790 and 21535 kHz at 1500-1547 with news, comments, some light jazz, and "Africa Today".

**SOUTH KOREA** - Radio Korea, Seoul, 9750 kHz, has talks and a "Listener's Corner" at 1335-1415. Radio Echo of Hope, 6348 kHz, was logged at 1132-1142 in Korean with Korean songs and talk and a poor signal. This latter was heard on the east coast but it probably won't be an easy one anywhere.

**SWITZERLAND** - Swiss Radio International is often well heard. Try for them on 21570 kHz at 1810-1830 with sign-on and "Sunday Supplement" or on 25780 kHz at 1330-1345 with talks, Swiss music, and news.

#### CREDITS

The preceding column was brought to you through the unsuspecting efforts of the following members of the Association of DX Reporters:

Art Fiore, Waldwick, New Jersey  
Donald Stidwell, Baltimore, Maryland  
Charles Edwards, Philadelphia, Pennsylvania  
Ernest Burton, Graham, North Carolina  
John Santosuosso, Lakeland, Florida  
Russell Lay, Virginia Beach, Virginia  
Stewart Mac Kenzie, Huntington Beach, California  
Gene Purdum, East Lansing, Michigan  
John Wilkins, Wheat Ridge, Colorado  
Reuben Dagold, Baltimore, Maryland

## FBI To Go Scramble

The Federal Bureau of Investigation has requested \$12 million from the Reagan administration to implement the Motorola Digital Voice Privacy (DVP) into the Bureau's existing high-band radio networks.

The Justice Department cited numerous examples of criminal monitoring which interfered with legitimate law enforcement and in many cases resulted in assaults on law officers and cooperating citizens.

Los Angeles is slated to have one of the first systems, considered essential for the adequate protection of the 1984 Olympics. Other cities slated for DVP include New York, Chicago, Miami, Washington, Boston, San Francisco and Detroit—all sites of ongoing crime and drug task force

activities.

Commonly-available books like Tom Kneitel's "Top Secret Registry of US Government Radio Frequencies" (Grove Enterprises BOK-11) are a wealth of information about the communications frequencies of federal agents like FBI, Secret Service, Drug Enforcement Administration and others.

The Justice Department speculates—quite probably correctly—that the new scramblers will render FBI communications virtually impregnable to casual eavesdropping.

Monitoring Times would like to thank the readers who sent in clippings from their local newspapers of this information to share with fellow readers.

## FBI Upgrades

### Field Office Radios

In the wake of reports of vulnerability of FBI radio communications to casual and criminal monitoring, the Federal Bureau of Investigation has begun purchasing for installation new Motorola radio systems.

Five field offices will have Digital Voice Privacy (DVP) capability with new equipment as follows:

1494 VHF multichannel mobiles  
1065 VHF multichannel handhelds  
33 VHF multichannel base stations

33 VHF single-channel repeaters  
12 voting comparators  
38 VHF single-channel portable repeaters  
19 UHF/VHF crossband repeaters, multichannel VHF  
17 UHF single-channel receivers

6 main consoles  
33 Resident consoles  
1 Microwave link

We would like to thank the anonymous contributor who sent in this news item which appeared in the Commerce Business Daily, 19 January 1983.

## Choosing The Right Coaxial Cable

There are more myths about antennas and feedline than about any other phase of communications. Let's take a look at some cold, hard facts about transmission line for receiving purposes.

1. Whether you choose 50 ohm or 75 ohm cable is totally irrelevant. No antenna made, nor any receiver made, maintains a constant impedance over its useful range. Thus, attempting to match the impedance is futile.

2. Low loss is the only criterion for choosing coax. Generally speaking, RG-58/U (Belden 8219) or even tiny RG-174/U (Belden 8216) may be used for shortwave reception.

3. In actual use, there is virtually no noticeable difference among RG-6/U (Belden 8515), RG-8/U (Belden 8214), RG-11/U (Belden 8213) or RG-59/U (Belden 8212).

4. The new "mini" coaxial cables (RG-8/X, etc.) have loss characteristics nearly identical with their larger counterparts and are perfectly suitable alternates.

5. Published attenuation (loss) curves for coaxial cables are usually flattering; measured losses may be 25-50% worse. Still, this lesser figure may not result in

a user-noticeable difference in reception.

6. Coaxial cable has a lifetime. Ultraviolet radiation from the sun coupled with temperature and humidity extremes and acidic or salty air takes its toll. Whether suspended or buried, coax should be replaced every 5-10 years.

7. Connectors and fittings must be protected from the weather; use a quality dressing like COAX-SEAL (Universal Electronics).

8. Although TV-type twin lead has very low loss when dry, it is extremely lossy when wet, thus accounting for marginal TV reception during inclement weather. It is also 300 ohms impedance, requiring a balun (balanced-to-unbalanced) matching transformer for scanner use. Another disadvantage is its lack of shielding, making it unsuitable for runs near metal siding, window frames and the like. This same shortcoming makes it susceptible to electrical noise interference from power lines, passing vehicles and household appliances.

9. Lead-in for shortwave receivers may be a single wire or

coax. It makes little difference where on the antenna wire it is connected for general-coverage reception.

If coax is used, the wire antenna may be cut at any point and the coax center conductor connected to one side, the shield to the other.

If the antenna wire is not to be cut, connect the coax center conductor to a convenient point of attachment; do not connect the shield at the antenna end of the cable, only at the receiver (to the chassis or ground terminal).

10. An actual earth ground is desirable primarily to reduce electrical interference; it will not result in greater signal strength. This is true with all receivers on all frequency ranges.

Secondarily, it may provide protection from electrical hazard should the equipment—and its operator—accidentally come in contact with a "hot" wire.

11. For shortwave and longwave receiving purposes, all wires perform equally well, whether insulated or bare, stranded or solid, thick or thin, aluminum or copper, hollow or filled. Insulated wire may retard corrosion, however.

12. Coaxial cable may be coiled, bent reasonably sharply (without creasing) and run within a few feet of the shortwave antenna wire without noticeably degrading the signal.

## Oops! Sarsat Frequency Correction

In the January 1983 issue of Monitoring Times we notified our readers of the new multinational Search and Rescue Satellite (SARSAT). In that story, we gave the downlink frequency as being in the 406 MHz band; that should have been the tracking beacon. The actual downlink frequency for the 121.5 and 243.0 MHz distress inputs is 1544.5 Mhz.

Thanks to Larry Van Horn, the RCMA Space Communications editor, for bringing this correction to our attention.

The better resolution provided by this higher frequency makes doppler tracking much more accurate than if the signals were merely repeated at VHF or UHF.

# Survival Communication... Are You Ready?

By Mark W. Johnson

Practitioners of survival skills have long advocated advance preparation, including storage of food, water and munitions, that will insure the safety and survival of those in the disaster area. One important aspect of advance preparation that is often overlooked is the area of survival communications.

The ability to maintain two-way communications between members of a survivalist base while, at the same time, monitoring the communications of the various civilian, military and government agencies is a vital part of any survivalist effort.

In developing a survivalist communications system several factors must be taken into consideration. First, in spite of the importance of two-way communications capabilities, it is even more vital to be able to monitor the communications of other organizations or agencies.

No communications system should be developed without providing the means to monitor public safety agencies, military tactical groups and governmental offices and agencies.

Second, the type of emergency situation anticipated should be

considered when developing a communications system. If nothing more serious than an occasional storm or power failure is expected a simple system will be adequate. This might include a battery-powered AM/FM transistor radio and a handheld scanner with the appropriate crystals installed.

However, if something more devastating such as a total collapse of law and order or an all-out nuclear war is expected, a more complex system will be needed.

Third, the type of information required will influence the development of a communications system. If only general news and information is needed an inexpensive transistor radio will work nicely. For detailed weather information a Weatherradio or handheld scanner with the proper crystals installed will provide continuous broadcasts from the National Oceanic and Atmospheric Administration (NOAA).

If the NOAA broadcasts are unavailable or reception is poor, a communications receiver capable of tuning the low frequency range (190 to 400 kHz) can be used to monitor the many stations pro-



Military activity peaks during survival missions -- (US Army photo)

viding transcribed weather broadcasts.

In order to obtain more detailed information, such as the activities of public safety and military personnel, more complex equipment will be required.

It is assumed that most people will have an AM or an AM/FM radio, so the first piece of equipment to consider is a scanner. While handheld crystal units are ideal for portable operation, they are limited in the number of frequencies they can accommodate and most require a different crystal for each frequency. A larger programmable scanner is more desirable for survival communications systems.

A unit covering the VHF high and low bands, the aeronautical band and the UHF band will provide adequate coverage of public

safety agencies, amateur radio operators, aircraft communications and a variety of other services.

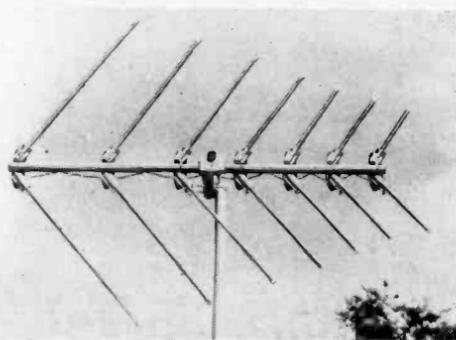
By using a scanner the survivalist will also be able to monitor highway maintenance crews, power and telephone company repair crews, railroads and other groups that will be performing special functions during an emergency.

Government agencies such as the Department of Interior and the Forest Service can be heard with interesting communications whenever a large forest or range fire is burning.

After a scanner the well-equipped survivalist will want to include a communications receiver in his monitoring station. Most of these receivers cover the

Continued on page 10

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Could not ask for a better antenna. (M.F., Green Bay, WI).

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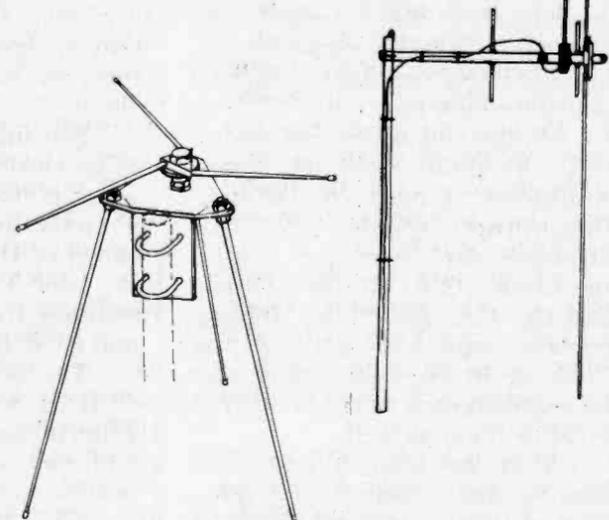
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# Panoramic Receivers: An Eye On The Radio Spectrum

By Rick Ferranti WA6NCX/1

An intelligence officer stands watch over several green oscilloscope screens; here and there a trace is broken by the telltale pip of a friendly and familiar radio transmission.

Suddenly, his eye is caught by a small bobbing line on the far left-hand display; his arm instinctively swings over to twist a knob to center the picture a little better.

Soon the officer brings up his AR-88 shortwave receiver on the intruder's frequency; German code-words pour out of the ear-phones as he alerts a direction-finding team to home in on the transmission.

The time and place: England, 1944.

Nearly forty years later, a U.S. communications aircraft sweeps the frequency spectrum from DC to daylight. Microprocessor-controlled surveillance receivers acquire previously-identified signals; within milliseconds they have characterized the frequencies, signal strengths, modulation patterns, and general direction of the sources. Recorders are activated for later decryption.

Across the ocean, a Japanese engineer makes the final adjustments on a single-sideband modulator prototype soon to be incorporated into the latest hf amateur radio transceiver. Before him sits the CRT of a spectrum analyzer, faithfully showing him critical performance parameters and allowing for easy alignment of his complex cir-

cuitry.

What do these scenarios have in common? All are concerned with the visualization of radio signals, a feat accomplished by a device known as a panoramic adaptor or spectrum analyzer.

Imagine your listening post outfitted with such a gadget-- you could set it to sweep a whole band of hot hf or vhf frequencies and, even if your receiver were tuned elsewhere, you could immediately observe new signals popping up on the screen and zoom in on them with a twist of the dial.

In effect, you're no longer limited to the narrow tunnel-vision of your normal receiver, but can observe the radio spectrum over many frequencies on either side of the one you've tuned in for the moment.

A utility station dx'er, faced with finding the many fleeting stations sporadically transmitting on unpublished frequencies, need only set his panoramic adaptor on the range of interest and watch for a new pip to appear before he catches his prey.

Ham radio operators can scan the band for a dead spot for a schedule or CQ. Scanner enthusiasts can find new "secret" channels that slower band-search methods may miss.

The unit can even be used to analyze the types of modulation, (AM, FM, SSB, etc.) used by the station you've found!

By now you're wondering how all this magic is accomplished -- what makes a spectrum analyzer/panoramic adaptor tick? The idea is fairly simple--

you're graphically displaying signal strengths and frequencies for a chosen band of radio spectrum.

To do this, imagine that you had a very narrow-band filter (a filter that lets only one signal through at a time) and you can tune this filter rapidly through the band of frequencies you're interested in viewing. Every time you tune through a signal, the output of the filter rises; when there's no signal, you get no output.

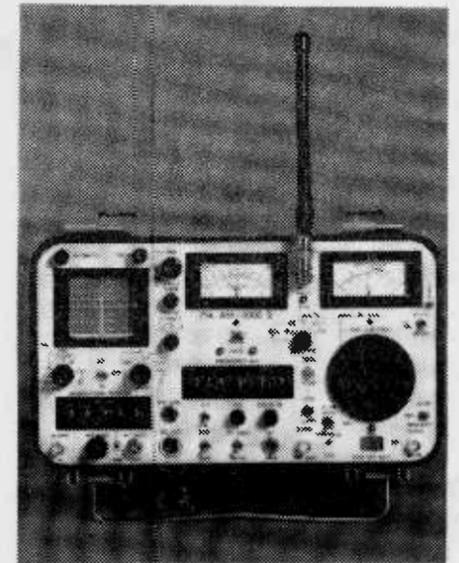
Now imagine that you've connected the tuning knob of the filter to a pen so that as you scan back and forth across the band you move the pen back and forth on a piece of paper. If you then arrange to make the pen move up and down on the page as the filter's output goes up and down (when it tunes through a signal), you've got the hard-copy version of a spectrum analyzer.

Practical machines replace the pen with an electron beam, the paper with an oscilloscope screen, and arrange for an electronically tuned filter, with results as you see in the illustrations.

Commercial panadaptors have superheterodyne circuitry very similar to that of your shortwave receiver or scanner, with sweeping local oscillator and a scope display.

Now that you know some of the things a spectrum analyzer can do and the basics of how it does it, you're probably wondering how to get one for your station.

Both Kenwood and Yaesu make rather expensive versions for their top-of-the-line equip-



A popular spectrum analyzer: IFR's FM/AM 1000S

ment, but if you look hard enough at an electronic equipment flea market or in the ham ads, you may spot a vintage panadaptor for under \$100.

These oldies were made by Hallicrafters (the SP-44), Panoramic Radio Co., and Heathkit (HO-13). Most come with details on how to hook them up to your receiver, though you may need to build a simple converter if the IF frequency of your receiver differs from the input range of the panadaptor.

Alternatively, you can build your own -- issues Ham Radio, QST, 73 Magazine have had articles on them.

Build or buy, the spectrum analyzer/panoramic adaptor will greatly enhance your monitoring pleasure, giving you a wide-ranging eye on the signals forever popping in and out of the radio spectrum.

## SURVIVAL COMMUNICATION ... from page 9

frequencies between 150 kHz and 30 MHz in several bands and are capable of receiving all major transmissions modes, including FM on some models. It is possible to monitor low frequency weather broadcasts, amateur radio transmission, the standard AM broadcast band, international broadcasters, military stations and other services.

Military communications of note are those from the North American Aerospace Defense Command (NORAD), the Strategic Air Command (SAC), the Tactical Air Command (TAC) and the U.S. Air Force. During certain local emergencies the Civil Air Patrol (CAP) may also be involved so it would be well to monitor them as well.

After the scanner and communications receiver are purchased, the survivalist should give some thought to antennas. In most cases a scanner comes with a retractable antenna that is suitable for reception of stations within a few miles of the receiver.

For more reliable reception of distant stations an external antenna will be required. High performance antennas are available from Grove Enterprises and scanner dealers nationwide.

Antennas for communications receivers are available commer-

cially or they can be constructed by the Survivalist. The simplest antenna for receiving purposes is a 100 foot length of 16 gauge insulated, stranded wire.

Other configurations such as the dipole are usable, but the random is the easiest to erect and maybe hooked directly to the receiver without using coaxial cable.

The final piece of equipment to be considered is an accessory which is really a necessity! This is a converter which extends the range of the scanner and allows the user to monitor the various military frequencies between 225 and 400 MHz.

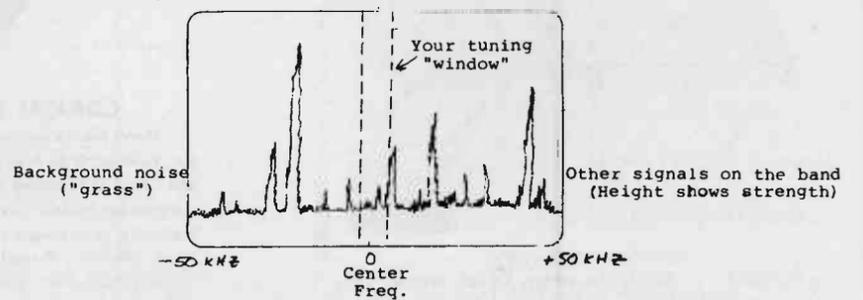
The best unit for this is the CVR-1B Scanverter from Grove Enterprises which can be used with any scanner that covers the aeronautical band.

With this revolutionary new frequency converter it is even possible to use a communications receiver instead of a scanner to monitor such services as SAC on 311 MHz and TAC on 381.3 MHz.

With only a modest investment in communications equipment the survivalist will be able to stay in touch with the area around him, no matter what the situation. This ability is important in good times but it is crucial during an emergency.

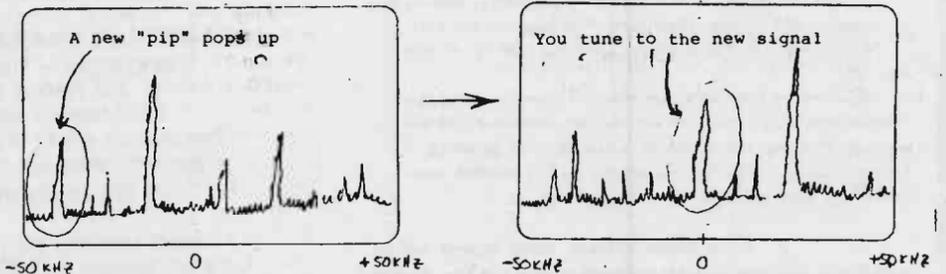
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### HOMING IN ON A PANORAMIC DISPLAY



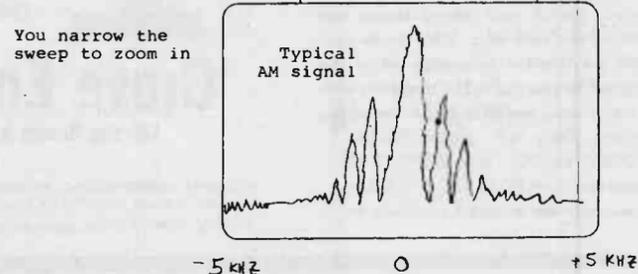
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### CATCHING A NEW SIGNAL



③

### MODULATION ANALYSIS



## Tuning In On The St. Lawrence Seaway

By James R. Hay

Of the many uses to which radio is put in the maritime service, perhaps none is overlooked and underestimated more than the vessel traffic management (VTM) system. This involves the use of one or more coast stations, usually on VHF, which communicate with all ships in a given area, or with participating ships where the system is voluntary. Essentially, this is the marine version of Air Traffic Control. (ATC)

Monitoring Vessel Traffic Management Systems offers a wealth of information to the radio listener. Locations of ships, destinations, and other general information can be obtained. All manner of information regarding the safe navigation of ships is exchanged between ships and between coast and ship stations.

A closer examination of one system might give a good idea of what can be heard by those who live within 50 to 75 miles of waters covered by these systems.

### ST. LAWRENCE SEAWAY

The St. Lawrence Seaway is a joint venture of both the United States and Canadian governments. It consists of two sections, the Welland Canal between Lakes Ontario and Erie, and the Montreal-Lake Ontario section.

The Welland Canal has eight locks, and the Montreal-Lake Ontario section has seven. In order to control the movement of ships through the system, and avoid long waits at each lock, a system of radio stations was set up to regulate the movement of ships so that delays are kept short, and the locks can operate efficiently.

The Seaway has three centers where information is kept about each ship in the Seaway System. The first is at Montreal, the second at Massena, N.Y., and the third is at St. Catharines, Ontario.

These three centers control the eight radio stations operated

by the Seaway. This control is done by landline, with the radio operator located at the appropriate centre.

The eight radio stations are: Seaway Beauharnois (156.7 Mhz), Seaway Eisenhower (156.6 Mhz), Seaway Iroquois (156.55 Mhz), Seaway Clayton (156.65 Mhz), Seaway Sodus (156.65 Mhz), Seaway Newcastle (156.55 Mhz), Seaway Welland (156.7 Mhz) and Seaway Long Point (156.55 Mhz).

Each of these stations also maintains a listening watch on channel 16, 156.8 Mhz, and can occasionally be heard there.

A ship travelling up through the Seaway would work each station in the order given until he left the sector covered by Seaway Long Point. At that time he enters another traffic management system, and reports to other stations.

On her return trip, the ship would report to the same stations in reverse order.

The nature of communica-

tions with these stations is navigational. This information gives an indication of the traffic pattern, and in the Seaway this is what governs the operation of the locks.

If any ship has a problem which will affect its ability to travel through the system, or if it might endanger other ships, this must be transmitted to the appropriate station. This would include information about steering problems, engine failures, groundings, winch failures, and other problems.

When major problems occur a great deal of activity can be heard on the appropriate Seaway channel, as other vessels must be advised of the problem and instructions issued to each ship about what action to take: i.e. whether to anchor, or if the affected ship can be safely passed.

Similarly, information about the condition of the ship will be transmitted to the Seaway station so that action can be taken to summon a tug if necessary.

During the navigation season a wealth of information about ships and shipping can be gained

from both the "Ship Movement Service" and the "Port Operations" services. Although only one system is described here, similar systems are in use around the continent, particularly on inland waters.

Frequencies to watch in various areas are: 156.55 Mhz, 156.6 Mhz, 156.65 Mhz, 156.7 Mhz, and 156.725 Mhz for ship movement. Port operations can also be heard on 156.275, 156.325, and 157.000 Mhz. In addition 156.45 and 156.5 Mhz are also used occasionally, as are some other spot frequencies in the VHF maritime band.

### St. Lawrence Seaway VTM System stations

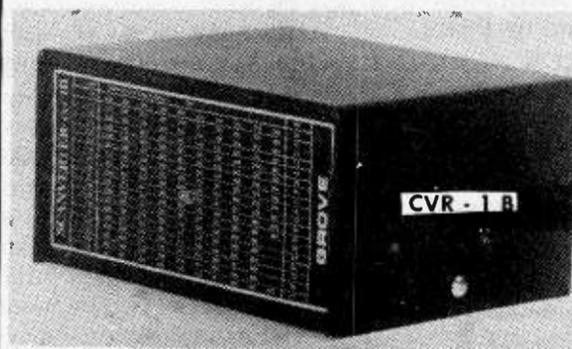
A	Control for 1 and 3
1	Seaway Beauharnois
2	Seaway Eisenhower and control for 4 and 5
3	Seaway Iroquois
4	Seaway Clayton
5	Seaway Sodus
6	Seaway Newcastle
7	Seaway Welland and control for 6 and 8
8	Seaway Long Point

Continued on page 21

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I am writing to say thanks for the Scanner; and for the time and phone calls. Without your help and products I would still be in the dark. I am glad there are still people in the USA who care about the products they sell and the people who buy them. An F-16 just flew over my parts store...it's closing time and I'm going home to see what he is up to! Thanks again. (Clair Frew, N. Ogden, UT).

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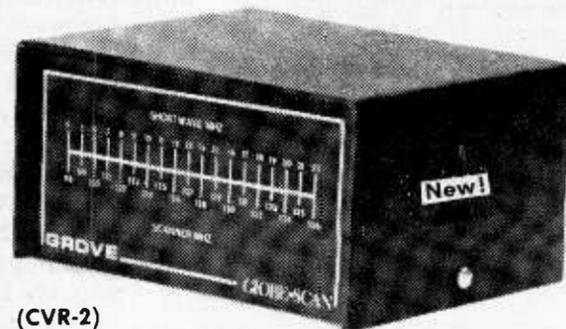
Amateur Radio Supply, Seattle, WA  
Commsoft, Palo Alto, CA  
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# A History Of Marine Radio On The Great Lakes

By Brian Bernard  
Hamilton, Ontario

The Great Lakes chain is one of the world's largest sources of fresh water. Every year millions of tons of ore, coal, grain are carried by Great Lakes freighters.

The Great Lakes are also the worst place in the world to be caught in a storm; huge waves can develop quickly. The waves are much shorter and strike a vessel very quickly; it is well known for lake sailors to become violently seasick.

While early Great Lakes cargo vessels were not required to carry wireless, by 1908 three merchant ships were equipped and by 1913 this increased to 40.

By 1935 195 ships carried wireless equipment, Morse code of course; the sending operator had to convert the words to code and the receiving operator had to convert the code back to words.

In 1933 three men representing the president of Lorain Telephone Company went to the Federal Communications Commission to discuss with the director of Marine Communications to ask for a license for ship to shore radiotelephone at Lorain, Ohio to serve the great Lakes vessels and set up a station to be known by 1934 as WMI-LORAIN.

The first Great Lakes vessel to be equipped with the radiotelephone was the SS WILLIAM C. ATWATER, owned and operated by Wilson Marine Transit Company.

The early radiotelephones in-

stalled on board had only four channels; one intership and three public correspondence. The ship's equipment included a dial type telephone; the channel was selected by dialing the digits "10", "20", "30" or "50" (the intership channel).

Ships called other stations by tone signals consisted of short and long whistle signals transmitted by dialing the digits "2" or "8".

It soon became noticeable that a common channel was needed for both ships and stations, a channel in which distress calls could be heard at all.

In 1936 the Lake Carriers Association asked the firm of Jansky and Bailey to develop a safety and distress radiotelephone system for the Great Lakes. Congress asked the FCC to prepare a study of Great Lakes communications with a report to congress by Dec. 31, 1939. During this time the FCC met with officials of the Department of transport in Ottawa, Canada during which an agreement was made to use the Commission's selected frequency of 2182 as well as shore stations.

After several accidents occurred the Lake Carriers Association asked the FCC that rules governing ships with 2182 khz be changed so as to allow safety messages after indentifying with the word "SECURITY" repeated three times.

On November 13, 1954 the US/CANADA Great Lakes Treaty was ratified and became law. This treaty required all ships navigating the Great Lakes to carry 2182 khz and 2003 khz; the later was the intership safety channel. This Treaty also required that radio installations be inspected every twelve months.

Unfortunately on November

29, 1966 the SS DANIEL J. MORRELL sank in Lake Huron during a major storm. The vessel broke in half and of the 36 crew members aboard, only one member of the crew lived to tell the story.

The survivor told investigators that when the ship broke in half the power cables snapped and the pilot house which is located on the bow had no power, and thus no distress call could be sent.

Within days of the disaster Great Lakes shipping companies ordered and installed battery-powered radiotelephones in lieu of their standard equipment, and within two years all ships were required to carry the battery powered radiotelephone.

By the mid-1940's the AM 2-9MHz frequencies were becoming severely congested. At this time the Lake Carriers asked the FCC if the untried VHF (FM) could be used for communications. The FCC was supportive and initiated new rules.

In the early 1950's Lorain County Radio Corporation (now Lorain Electronics Corporation) developed an 8-channel VHF Radiotelephone for the Great Lakes.

The new VHF radio centered around the 156.800 mhz (Channel 16) for emergency and distress calls. This radio also had intership and public correspondence channels. Soon shore stations all over the Great Lakes offered the new VHF service along with their regular AM 2-9mhz service.

In 1955 The VHF Marine radio which was developed on the Great Lakes was the International Telecommunications Union's basis for developing VHF Marine

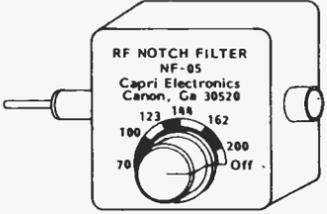
Continued on page 13

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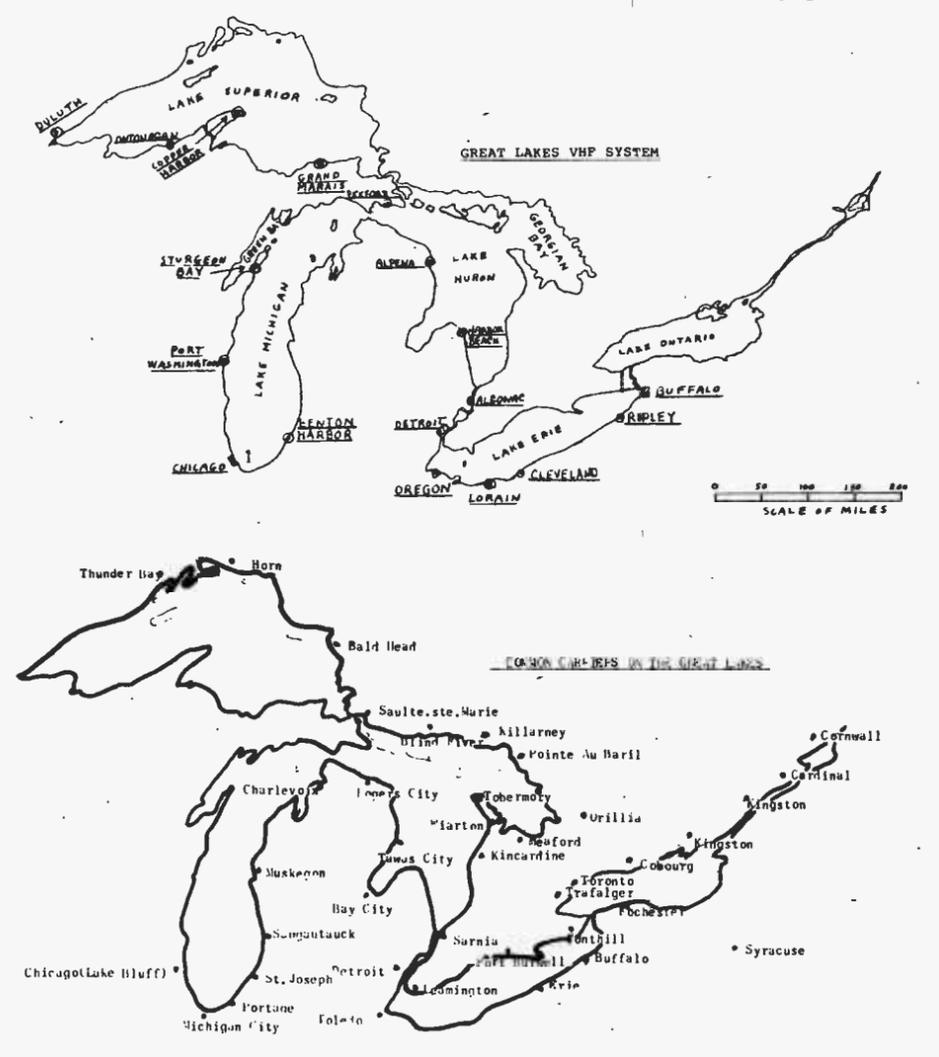
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MARINE RADIO . . . from page 12  
communications for other parts of  
the world.

During 1974 channel  
16(156.800) was officially made  
the distress and safety channel of  
the Great Lakes. By January 1,  
1977 the old AM channels on the  
Great Lakes (57)2514  
khz, (82) 4415.8 khz and (96) 8783.2  
were replaced with the new  
single sideband Marine channels  
which now are used on the Great  
Lakes: (57) 2514 khz SSB, (405)  
4371 khz SSB, (409) 4383 khz SSB,  
(418) 4411 khz SSB and (826) 8798  
khz SSB.

During the 1974-76 shipping  
seasons the Lorain Electronics  
Corporation installed the  
automatic computer remote-  
controlled Great Lakes VHF  
system. The Great Lakes VHF  
SYSTEM consists of 14 stations  
along the shores of all the Great  
Lakes except Lake Ontario. The  
system is controlled from WMI-  
Lorain, Ohio.

All of the stations are con-  
nected to the national land  
telephone network via a regular  
subscriber business line to the  
nearest telephone central office.  
Each station is connected by  
another specially-leased circuit to  
the control center over which  
data, control signals and operator  
voice signals are carried. Each  
station has a Mini computer  
which controls station functions  
and temporarily stores the call in-  
formation until it can be released  
to the main computer at Lorain.

This computer interrogates  
once every two seconds.

The GREAT LAKES VHF  
SYSTEM consists of the following  
stations:

CALL SIGN	LOCATION
KVY-601	Duluth, Minnesota (84, 17)
KIL-922	Ontonagon, Michigan (86, 17)
KVY-602	Copper Harbour, Michigan (87, 17)
KVY-603	Grand Marais, Michigan (84, 17)
KIL-923	Pickford, Michigan (86, 17)
KVY-604	Sturgeon Bay, Wisconsin (87, 17)
KVY-605	Port Washington, Wisconsin (85, 17)
KIL-924	Benton Harbour, Michigan (17)
KIL-925	Alpena, Michigan (84, 17)
KIL-926	Harbour Beach, Michigan (87, 17)
KIL-927	Algonac, Michigan (86, 17)
KIL-928	Oregon, Ohio (84, 17)
KQU-440	Cleveland, Ohio (87, 17)
KIL-929	Ripley, New York (86, 17)

84,85,86,87 are public cor-  
respondence channels only and 17  
is the weather channel which con-  
sists of the MAFOR broadcast at  
0002 AM/PM EST, 0602 EST, 1202  
EST, 1802 EST and the LAWEB  
Broadcast at 0230 EST, 0830 EST,  
1430 EST and 2030 EST

WMI-Lorain uses 26, 409, 826;  
26 and 409 SSB are the public cor-  
respondence and weather chan-  
nels the MAFOR and LAWEB  
times are the same; 418 and 826  
are correspondence channels on-  
ly.

Other stations on the Great  
Lakes are:

WAY-Chicago	26, 27
WLC-Rogers City,	26, 28, 57,
405, 826	
WLC-Tawas City	26
WLC-Charlevoix	26
WLC-Saulte, ste. Marie	26
SOO Warehouse	13
The stations WLC broadcast	
MAFOR on 26, 57, 405 and at 0017	
EST, 0617 EST, 1217 EST and 1817	
EST.	
Erie Marine	25
Detroit Marine	26
Toledo Marine	25
Portage	28
Michigan City	28, 25
St. Joseph	24
Saugatauk	25
Muskegon	26
Bay City	28
WBL-Buffalo	26, 28
Rochester	25
Syracuse	25

VHF MARINE Channelization plan	
6	156.300
11	156.550
12	156.600
13	156.650
14	156.700
16	156.800
17	156.850
21	161.650
24	161-800
25	161.850
26	161.900
27	161.950
28	162.000
57	2514 kHz USB
83B	161.775
84	161.825
85	161.875
86	161.925
87	161.975
88	162.025
405	4371 kHz USB
409	4383 kHz USB
418	4411 kHz USB
826	8798 kHz USB

### CANADIAN COAST GUARD RADIO STATIONS OF THE GREAT LAKES

Location/Channels  
Cardinal 26,27,85,21  
Kingston 24,26,85,83B  
Cornwall 26,27,85,83B  
Port Burwell 24,26,85,21  
Sarnia 26,27,88,21  
Leamington 26,27,88,83B  
Kincardine 26,27,88,83B  
Saulte, Ste. Marie 26,27,83B  
Bald Head 26,27,21  
Blind River 26,27,21  
Thunder Bay 24,26,21  
Horn 24,26,21  
Fonthill 26,27,88,83B  
Cobourg 26,27,88,21  
Orillia 26,21  
Trafalger 24  
Warton 26  
Meaford 6,24,85,83B  
Tobermory 24,26,85,21  
Killarney 24,26,85,83B  
Pointe au Baril 26,24,21

## The Kenwood R-2000... Bad Press, Good Receiver

It is, perhaps, unfortunate  
that the new Kenwood R-2000 was  
released so quickly after the  
ICOM R-70 appeared on the  
market. The two receivers are  
considerably different, each with  
a specific niche in the  
marketplace.

Here in the Monitoring Times  
receiving laboratory, we just con-  
cluded side-by-side listening tests  
between the two receivers the  
results were very interesting.

The IC-R70 is a communica-  
tions receiver, equipped for inter-  
facing with a transmitter. As  
such, it is designed for com-  
petitive signal slicing in crowded  
conditions. It is not a casual SWL  
receiver and requires a more  
sophisticated user. And it costs  
more (\$749 retail).

The R-2000 is "user friendly",  
with many features not found on  
low cost receivers—10 memory  
channels with scan and search  
capabilities; clean, transparent  
audio from a large front-mounted  
speaker; continuous tuning  
capability from 100 kHz-30 MHz  
without bandswitching; three  
speed tuning rate; dual 24-hour  
clock/timer; pushbutton selection  
of modes and functions; attrac-  
tive styling; and rock-stable  
driftless tuning with digital  
readout to 100 Hz. And it costs less  
(\$599 retail).

So what are the advantages of  
one receiver over the other? On  
RTTY reception, the Kenwood's  
50 Hz ultimate frequency resolu-  
tion was perfectly adequate,  
although the ICOM's 10 Hz resolu-  
tion felt smoother. The early con-  
census that the R-2000 could not be  
used for RTTY is totally unfound-  
ed.

As a matter of fact, the output  
level from the Kenwood's  
"record" jack was excellent for  
driving 3 different RTTY  
demodulators; that of the ICOM  
was marginal, working only on  
the strongest signals. A connec-  
tion to the earphone or external  
speaker jack was necessary,  
disabling the internal speaker.

Both receivers are equal in  
frequency stability and squelch  
sensitivity. But that's where the  
similarities stop. Let's look at  
them side by side.

CHARACTERISTIC	IC-R70	R-2000
Frequency range	approx 18 kHz-30 Mhz	100 kHz-30 MHz
Audible spurs through tuning range (varies with band)	8-17 (2-3 serious)	1-5 (none serious)
Dynamic range	Clearly superior; no detectable intermod even with preamp turned on. Overall sensitivity better	Rampant intermod; cured by using 10 dB attenuation setting (slightly reduced sensitivity)
USB/LSB reversing	Requires retuning of main dial	Automatic dial compensation
IF selectivity	Clearly superior; IF notch filter, Passband tuning and filters with better shape factors	Poor selectivity on SSB, CW and RTTY. AM good
Memory	None; two VFO's	10 channels including scan and search capability
Clock	None	Dual 24 hour clock/timer
FM reception	Optional at extra cost	Included
Fine tuning	Superior; 10 Hz resolu- tion; excellent ECSSB AM reception	Adequate; 50 Hz resolution may leave some vestigial beat note on ECSSB AM and SSB
Bandswitching	cumbersome; slow and erratic response of manually-pressed pushbutton	Clearly superior; automatic stepping pushbutton or continuous end-to-end tuning
RTTY reception	Superior; RTTY filter included, frequency offset display compensated; low record level output is a disadvantage (see article)	Adequate
Scope output	Accommodates panadaptor	None provided
Noise blanker	Reduces sharp-rise-time electrical noise	Ineffectual on most noise

### IN CONCLUSION

Both the Kenwood R-2000 and  
ICOM R70 are excellent choices  
for the shortwave listener,  
superior to other receivers in  
their price ranges.

For the experienced, stalwart  
utilities hunter, the IC-R70 is a  
better receiver. For the less  
demanding general listening en-  
thusiast who enjoys hunt-and-  
peck target shooting at the spec-  
trum, the R-2000 is a dream come  
true.

The most serious drawbacks  
of the Kenwood are its vulner-  
ability to intermodulation and  
poor selectivity. While custom  
filters can be provided by  
specialists, no Kenwood-  
manufactured filters are  
available. And nothing can be  
done about the intermod except  
reduce receiver sensitivity or use  
an external passive preselector.

In actual use, the 10 dB at-  
tenuation totally cured the pro-  
blem without seriously lowering  
effective sensitivity. Replacing of  
the filters must be the choice of  
the user; only on-the-air listening  
will disclose whether it will be  
necessary for your style of recep-  
tion.

The most serious drawbacks  
of the ICOM are its awkward pro-  
gramming requirements and  
harsh-sounding internal speaker  
(an external speaker can be used,  
of course). The wide AM band-  
width may be simply remedied by  
the addition of a switch to cut in  
the narrow filter in that mode;  
such a modification is available  
commercially from Electronic  
Equipment Bank (see ad  
elsewhere this issue).

ICOM filters are available for  
other modes to suit the user.  
**THE BOTTOM LINE.**

# Common Complaint:

*I don't trust mail order companies!*

# Remedy:

Order from  
**GROVE  
ENTERPRISES!**

*Here are just a few of the comments we have received.*

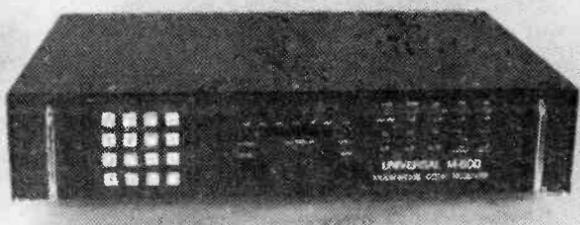
I hesitated to order from you. After learning your policy and prompt attention to customer's needs, I wish to order further equipment. (Richard Lucas, Frewsburg, NY.)

I really appreciate how you educate us new people in the hobby. You are a great asset to us. We respect your products and knowledge very much. (Rich Newbould, Pittsburgh, PA.)

Am pleased at your service. (L.L. Branch, Cape Girardeau, MO.)

You folks are to be commended for the prompt response to order input (8 days total using the mails, money order, and UPS shipment. (John Arendt, Oswego, IL.)

Thank you for the good service I have received. (Paul Beerbower, Montpelier, OH.)



**M-600 UNIVERSAL RTTY/MORSE CRYPTO DECODER**

Copy scrambled radioteletype messages never before readable with standard demodulators and readers. Bit inversion. TOR/SITOR, weather text--formerly garbled on other decoders, now perfectly clear on the revolutionary M-600! Simply attach to your shortwave receiver's external speaker jack and connect a printer or video monitor and copy government transmissions, ship-to-shore messages, public correspondence stations and much more. A sophisticated microprocessor automatically sorts out the encryption for you; sit back and watch what you could never see before! The magnificent M-600 provides scrolling, page recall, speed readout, unshift on space, white on black video, 64 character upper-case ASCII, 36 or 72 character lines, 16 or 25 lines per page, selective call, buffered printer out put, isolated loop, and many other deluxe features. The M-600 copies ASCII (110, 150, 300, 600, 1200 baud), Baudot (60, 67, 75, 100, 132 WPM), Morse code (up to 60 WPM), in both standard and non-standard shift. Demand is heavy for this revolutionary new decoding system, so order now! Operates from 120/240 VAC, 50/60 Hz. **\$799 plus \$10 UPS.** (No discount allowed on this item).

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Unbeatable performance at an unbeatable price! Just plug this handy Morse/RTTY display terminal into the external speaker jack of your shortwave receiver and watch those signals write as plain text across a brilliant 10-character fluorescent screen! Copy ship to shore messages, weather reports, news transmissions, ham communications received either as CW or RTTY. No other accessories or equipment required except your receiver! RTTY speeds of 60, 67, 75 or 100 words per minute selected at the press of a button! Morse signals at virtually any speed tracked automatically! Even computer ASCII (110 or 300 baud) can be displayed. Additional features include code practice display, 24 hour clock, speed display, audio frequency counter and lapsed time chronometer! Even the accessories are included--AC adaptor, tilt stand, interconnecting plugs--at this new low price! Retail Price: \$249.00; Grove's Price \$249.00. **MONITORING TIMES SUBSCRIBERS PAY ONLY \$241.00!!** Plus \$3.50 UPS or \$7.50 USPS



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If you own one of the popular general coverage communications receivers and are using an outside antenna, YOU NEED this extra measure of selectivity! A simple turn of the dial will totally eliminate images, intermod and phantom signals which plague Kenwood, Yaesu, Sony, Panasonic, Radio Shack and similar receivers. No power required; simply connect to your receiver's antenna and enjoy reduced-interference reception from 100 kHz through 30 MHz. All accessories are included. \$54 - MONITORING TIMES SUBSCRIBERS PAY ONLY \$48.60!! - plus \$2 UPS or \$5 USPS.

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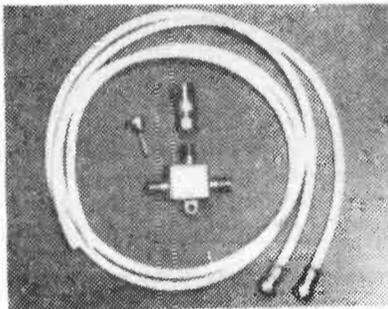
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Patterned after our popular CPL-1 Scanner Multicoupler, the CPL-2 is designed to operate two short-wave receivers simultaneously from one outside antenna.

No more antenna switching, no compromise antennas. Maximum coupling efficiency without the interaction of a splice. Low insertion loss.

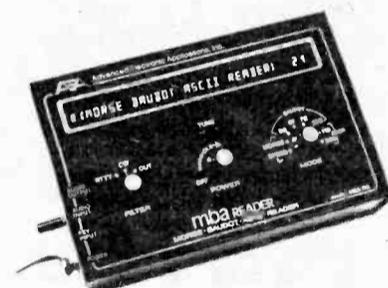
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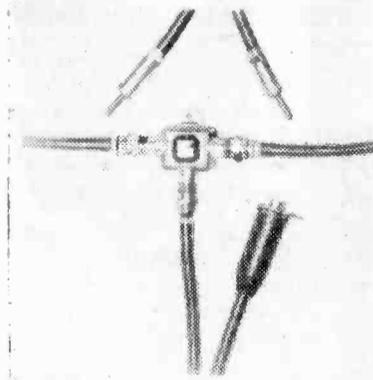
YOUR FTR-3 FILTER IS THE BEST ANSWER TO ANYONE'S INTERFERENCE PROBLEMS. (Robert Werne, N.Hollywood, CA).

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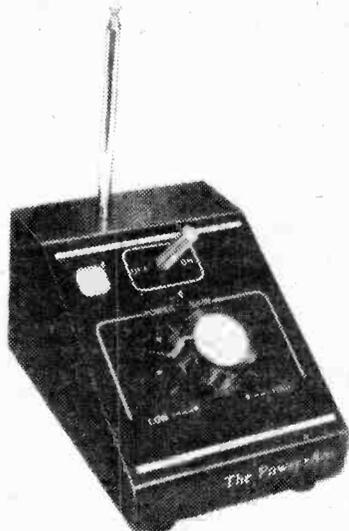
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# CW For Shortwave Listeners

## (Part II)

Continued from Jan./Feb.

Monitoring Times)

By Sam W. Lambert

Naval Radio Broadcasts

In addition to all the commercial ship-to-shore c.w., there are military coastal stations operated by the U.S. Navy and Canadian Forces as well as by the navies of other nations. These stations, such as CFH (Halifax, N.S.) and CKN (Vancouver, B.C.) in Canada, and NAM (Norfolk Naval Radio, VA) in the U.S.A., schedule frequent broadcasts to NAWS and NUKO (NAWS: Notice to Allied Warships; NUKO: message to all ships). This unclassified "Official Correspondence" ranges from Notices to Mariners (NAVAREA and HYDROLANT messages) to storm and sea warnings for various parts of the world, marine weather forecasts, surface weather map analyses, ice reports, Gulf Stream analyses, and even Morse code drills, some at very low speeds.

The Notices to Mariners are particularly interesting, as they often include reports of gunnery exercises, overdue or missing vessels (here's your big chance, Bermuda Triangle buffs!), drilling rig movements, navigational aids reported inoperative or out of position, as well as other dangers to navigation.

The following are frequencies on which some of these naval radio broadcasts can be heard:

CFH: 4255, 6430, 8697, 12726, 16926.5 kHz

CKN: 4268, 6946, 8463, 12125, 16960 kHz

NAM: 5870, 8090, 12135, 16180, 20225 kHz

### INTERPOL

Another source of very interesting listening for c.w. fans is the INTERPOL frequencies. A whole slew of those are listed in the SHORTWAVE FREQUENCY DIRECTORY and the CONFIDENTIAL FREQUENCY LIST, but I've had my best success—from my Great Lakes area listening post—on 18087 and 15738 kHz. The latter frequency is that of AYA26, Buenos Aires, Argentina, which broadcasts INTERPOL bulletins in Spanish, apparently to police agencies in South American cities. The other frequency (18087) is that of JPA24, Tokyo, Japan, which serves as a distribution point to law enforcement agencies in Australia and Asia. From my location, reception of JPA24's signals is best in the evening hours during the winter months. Even though the signals are weak—generally below S4 on the S-meter of my Kenwood R-1000 receiver—I can generally enjoy solid copy of these c.w. messages even at levels below S1 because I've never heard any QRM on this frequency.

Although I cannot give examples of the actual contents of these police dispatches for fear of violating the Communications Act, I highly recommend listening

to JPA24; most messages are in English, with occasional ones in French. Take it from me, these INTERPOL bulletins are very descriptive and absolutely fascinating stuff!

I chose the above-mentioned examples of c.w. "utilities" (ship-to-shore, naval radio and INTERPOL) to give the unfamiliar reader an idea of the variety of interesting information readily accessible in the HF spectrum. But that's only part of the total picture, because there is a wealth of other c.w. too, as mentioned at the beginning of this article.

### LF/MF C.W.

For listeners whose receivers cover the LF/MF spectrum below the AM broadcast band, there is also a lot of c.w. to be heard there, including several U.S. and Canadian coast stations and countless aero and marine navigational beacons. However, below 500 kHz, many receivers unfortunately suffer from intermod and other spurious signals which severely interfere with the reception of these lower frequency c.w. stations. This QRM is caused by powerful local AM broadcast stations. In my case, the solution to this problem was provided by my XYL at Christmas last year, when she spoiled me with a Grove Enterprises antenna tuner (model Signa/Match Tun II). Connected to my Kenwood receiver, it works wonders! Those broadcast band ghost signals have disappeared, enabling me to enjoy solid copy from coast stations from the Atlantic Ocean to the Gulf of Mexico in the band between 400 and 500 kHz. Although they are quite weak, I even pick up LORAN-C signals on 100 kHz!

An updated version of the Grove tuner is offered now as the TUN-3 Minituner.

### REFERENCES

The reference books mentioned earlier may be obtained from the following sources: SHORTWAVE FREQUENCY DIRECTORY, by Robert B. Grove: Grove Enterprises Inc., 140 Dog Branch Road, Brasstown, NC 28902.

CONFIDENTIAL FREQUENCY LIST, by Oliver P. Ferrell: Gilfer Associates Inc., P.O. Box 239, 52 Park Ave., Park Ridge, NJ 07656. LIST OF COAST STATIONS, Volume I, published by the International Telecommunication Union may be ordered from: The General Secretariat of the ITU, Place des Nations, CH-1211, Geneva 20, Switzerland. It is a large format book with over 800 pages and contains full details on all coast stations of the world, including name of station, call letters, transmitting and receiving frequencies, transmitter power, class of operation (A1, A2, A3H, A3J, F3, etc.) type of service, operating hours, geographical coordinates of transmitting antenna, station charges for handling traffic, and miscellaneous

remarks including time schedules for traffic lists, etc. This volume is a bit expensive (about \$36. CDN), but it's a super book for listeners interested in tuning-in the maritime mobile service (radiotelephony as well as c.w.).

### EVEN AIRCRAFT USE C. W.

Now this one will probably come as a real surprise to some readers, so I've kept it for dessert! ...The piece de resistance, so to speak, before concluding this article. Would you believe that in this day and age, in-flight c.w. is still in use by one of the world's well known airlines?...This is rather peculiar, when A3J (signal sideband suppressed carrier) is virtually the universal rule on long distance over-water flights. But sure enough, Aeroflot, Russia's national airline, uses c.w. for in-flight position reports, ETAs, flight levels, etc., during flights between Moscow and Havana, Cuba!

Aeroflot aircraft are usually identified by five-digit numbers; Moscow Aeradio's call sign is RFNV, while that of Havana Aeradio is COL.

The airborne radio operators use a lot of Q-code signals to report such things as position (QTH), departure time (QTN), ground speed (QTK), time of next position report (QRX), etc., but a trio of Q-signals that baffle me are QAF, QAG and QAH. Do any readers out there know the meaning of these three Q-signals?.. If

so, I would appreciate it if you let me know, via MONITORING TIMES. If you want a piece of this c.w. action, here are the frequencies I've had good luck with: 8842, 15024 and 17935 kHz.

COL (Havana) is especially strong, generally above S-9!

### CONCLUSION

So get with it, Morse code fans! Have a go at those c.w. "utilities", if you haven't done so already. Once you try'em, I'm sure you'll like'em.

And to you SWLs who do not read Morse but are the proud owners of these newfangled microprocessor-based Morse/RTTY readers frequency advertised in the pages of Monitoring Times, all I have to say is: "You lucky dogs...I had to learn that Morse code stuff the hard way!!!"

Dit dah dit dah dit

### Erratum

A line was inadvertently left out of the first part of this series in the January/February issue. On page 23, line 30 should read "This is followed by the text of the message, and finally by the signature. After the end of message signal (dit dah dit dah dit), the ship operator is likely .... (etc.)."

We regret the omission and hope this will clarify Sam's excellent article.

## PRINT THE WORLD

Stay in touch with world events, monitor weather, ship traffic, news, and radio amateurs. Connect to your receiver external speaker jack and display shortwave radio teleprinter and Morse code transmissions. Two models for the shortwave listener—the "deluxe" CT2100 and the compact CWR6700.



CT2100

- Baudot or ASCII RTTY—45 to 1200 baud • 5-100 WPM Morse Code
- 4 RTTY Demodulators • Receives High Tones, Low Tones, 103, and 202 Modem Tones • 2 or 4 Page Video Display—72 or 36 Characters per Line • ASCII Printer Output • RS2100 Accessory RTTY Tuning Scope
- 120 or 240 VAC, 50/60 Hz Power • KB2100 Keyboard Available for Transmit • Requires External Video Monitor (KG12NU Shown)



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HAL has a full line of RTTY and Morse code equipment and accessories. Write or call for our catalog. See the CT2100 and CWR6700 at your favorite HAL dealer.



HAL COMMUNICATIONS CORP.

BOX 365  
URBANA, ILLINOIS 61801 217-367-7373

# "Los Numeros"

32444 69213 88816 52196 63811 94216

Havana Moon



By Havana Moon

OK, readers, it's time to get serious again about the "numbers" transmissions. It's an old issue, but certainly not a dead one. Emphasis this column will center around comments by our very own U.S. Government.

First: Let's welcome a new kid to the block. As the Country 'n Western singers say: "Let's all give a big hearty welcome to A★C★E--The Association of Clandestine Enthusiasts.

Inside their nifty bulletin you'll find a section devoted to the so-called "spy-numbers" transmissions. This column goes by the dark and sinister name of "SPY CENTER." It's edited by a young lady by the name of Lani Petit. It's sure to be a real winner. WELL DONE, Lani!

See John Santosuosso's column for the address of this informative new club bulletin.

Second: All comments in regards "numbers" transmissions are the result of Freedom of Information Act petitions filed a few years back. During this time period, a small group of monitors filed petitions with numerous U.S. Government agencies in regards the 3060 and 3090 KHz night-time transmissions. Information in regards to location and identity was sought by all concerned.

I have been most fortunate in being allowed to personally examine and publish these replies. Some restrictions, however, were imposed.

In no way are names or home towns to be used. Also, none would consent to the full replies being published. Obviously, some sanitization has been required.

Oddly enough, only one of this group is a member of a monitoring club. All, however, are highly competent and possess state-of-the-art monitoring equipment.

\*\*\*\*\*

NATIONAL SECURITY COUNCIL (NSC)

"-----in which you request, under the provisions of the FOIA, information pertaining to "encoded radio transmissions" in the ---- area. The NSC Staff has conducted a thorough search of the files and was unable to locate any documents concerning the information outlined in your letter."

\*\*\*\*\*

UNITED STATES COAST GUARD (USCG)

"This letter is in response to your ---- FOIA request concerning radio transmissions. The frequencies you have listed are not assigned for use by the Coast Guard and we have no information pertaining to your request. Suggest you contact the FCC for

possible assistance."

\*\*\*\*\*

DEFENSE INTELLIGENCE AGENCY (DIA)

"The Defense Intelligence Agency does not possess the communications data you are seeking."

\*\*\*\*\*

ARMY SECURITY AGENCY (ASA)

"This is in response to your letter ----. A search of files maintained at this headquarters failed to reveal any information concerning the radio transmissions you described in your letter. The National Security Agency was also queried but could not supply any of the information you desire."

A short time later, a second and rather strange reply was received by the person filing the original request to the ASA. The interpretation of this reply is open to debate.

"In response to your letter to ---- reference is made to Army Regulation (AR) 380-13. Department of the Army policy prohibits acquiring, reporting, processing or storing information on persons or organizations not affiliated with the Department of Defense, except in those circumstances when such information is essential to accomplish Department of the Army missions.

The only cases where this type of action would be authorized are during operations related to the protection of Army personnel, functions and property and operations which are related to civil disturbances when there is a distinct threat of the civil disturbance exceeding the law enforcement capability of state and local authorities.

Because of this policy, US Army resources cannot be used to assist you in acquiring data in the manner you have requested. If we can be of assistance in some other way please contact us ----."

Information regarding Army Regulation (AR) 380-13 may be obtained by writing your Congressman.

\*\*\*\*\*

DEFENSE COMMUNICATIONS AGENCY (DCA)

"----- Your request does not fall under the purview of this Agency, however the following information should assist you in your research." "The frequencies listed in your letter of ---- fall within the frequency bands allocated, on an International basis, for the Aeronautical Mobile Service (Off-Route)."

"The frequency 3060 KHz is an established OR channel, and is

allotted for the use of Brazil, Canada, Chile, Guadeloupe, Hawaii, Mexico and Martinique."

"The frequency 3090 KHz is not an established OR channel; however, the adjacent channels, 3088 and 3095 KHz, are allotted to Brazil, Bermuda, Canada, Chile, Cuba, Greenland, Hawaii, Canal Zone, Puerto Rico and the USA; Argentina, Brazil, Canada, Costa Rica, Dominican Republic, Hawaii, Mexico and Peru, respectively.

"It has been determined that the broadcasts cited in your letter are not emanating from U.S. Department of Defense Sources."

\*\*\*\*\*

OFFICE OF NAVAL INTELLIGENCE (ONI)

"---- was received by this office on ----. The type of information you requested required the tasking of our various field activities for review of their files. Hopefully, we will have a favorable answer for you as soon as possible, but certainly no later than ----."

"Please feel welcome to contact us by telephone in order to facilitate handling your request."

A short time later the promised reply was received by the individual that filed the original petition.

"On ---- you were sent a letter informing you that we were tasking our various field activities to review their files in response to your request of ---- which was made under the provisions of the FOIA."

"This research has now been completed and I regret to inform you that we were unable to locate any information or documents concerning your request."

\*\*\*\*\*

Next issue we'll take a look at responses from CIA, NSA, Naval Security Group and FCC. You'll find the NSA response caustic and interesting.

## RECENT SPY-NUMBERS LOGGINGS BY HAVANA MOON

FREQ. KHZ	TIME UTC	TRAFFIC
4044/5135	nighttime	Schedule erratically replaced by
4052 / 3072		"P" beacon (●-●)
4044	1300	5 digit Spanish
4044	1400	5 digit Spanish
4052	0200	(repeat of 0200)
3073	0230	5 digit Spanish
4025	0300	5 digit Spanish
4052	0300	(repeat of 0400)
3073	0430	CW (repeats at 1315 on 5135)
6772	1300	5 digit Spanish
6825	0500	5 digit English
9052	0100	5 digit English
9052	0300	4 digit Spanish (1/28/83)
9072	1300	5 digit English (1/28/83)
9267	0200	

## ANARC Convention - - 1983

On July 15, 1983 Washington, D.C., plays host to a unique gathering. From all over the United States and Canada, and from many foreign countries, people who enjoy the jobby of radio listening will meet in the Nation's Capital for the 19th annual convention of the Association of North American Radio Clubs (ANARC).

The ANARC convention is the largest event for shortwave radio

\*\*\*\*\*  
The frequencies of 3060 and 3090 KHz continue to be dormant for all practical purposes. On some occasions, however, 3090 KHz is used as a repeat frequency for the primary of 4044 KHz. Other frequencies to watch are: 11,545 KHz at 0100Z for three-digit/two-digit German.

Also, five digit Spanish on: 9368, 8112, 7887, 4027 and 3085 KHz. These circuits are active at various times after 0500Z. Also, 4044 and 5135 Active day and night.

Also not that pure CW transmissions -- not taped CW -- have been noted on 4044 and 5135 KHz at 1200 and 1215Z on various dates. Format is identical to that of the taped CW transmissions.

\*\*\*\*\*

Your comments and contributions are welcome as well as solicited. The most important part of "Los Numeros" is YOU. Let us hear from you.

Time now for a nice cold Tecate and...

YOU READ IT FIRST IN MONITORING TIMES

Adios  
Havana Moon

## ADDITIONAL LOGGINGS BY BOB GROVE

3445	0400	Spanish
4028	0500	English
5762	0600	Spanish
5935	0730	Spanish
6912	0800	Spanish
8802	0345	English
8802	0430	English
8873	0600	Spanish
10020	0630	Spanish
11034	0415	English
11180	0500	German
11635	0500	Spanish
13777	2015	German
13885	0100	German
21750	2100	"RR" beacon (●-●)

• - • )

listeners in the Western Hemisphere. But ANARC is devoted not only to shortwave, but also to people who enjoy listening to the AM broadcasting band (540-1600 KHz), or the longwave band (below the car radio's tuning range), or the very high frequencies of the radio spectrum (VHF and UHF).

Please join us at the Westpark Hotel, Rosslyn, Virginia from July 15-17.

# Listeners Log

Reader Rick Tharrington of North Carolina shares some of his UHF military aeronautical frequencies. Using his Grove

Scanverter with an aircraft scanner, Rick includes the Scanverter conversion frequencies (MHz) for Seymour Johnson AFB and Ft. Fisher.

### Symour Johnson AFB

DI. 372.200-120.200	298.600-118.600
R. 320.100-122.100	311.000-131.000
R. 338.600-122.600	316.900-118.900
T. 236.600-128.600	321.000-123.000
T. 225.600-129.600	347.200-131.200
CP/TAC (Raymond 25), 381.300-129.300	
TAC Falcon 5. 280.500-128.500	349.100-133.100
252.900-126.900	363.800-129.800
276.000-132.000	377.850-125.850
279.700-135.700	(413.150, 413.450 FM)

### Ft. Fisher AF. UHF AM Conversion

228.800-120.800	263.700-119.200	298.500-118.500	338.400-121.400
234.700-126.700	270.400-131.000	302.400-122.400	356.000-122.000
238.500-130.500	278.600-134.600	306.400-126.400	364.200-130.200
251.000-125.000	287.800-125.800	325.500-127.500	369.000-135.000
256.600-130.600	292.700 - 130.700		

### 354th TFW

372.2, 255.9, 259.3, 291.0, 343.6, 3920, 239.8, 343.0, 381.3, 225.4, 236.0, 251.9, 259.0, 262.3, 266.3, 276.8, 280.5, 286.5, 286.7, 289.3, 290.7, 294.5, 304.9, 318.2, 383.1, 3894, 392.0, 413.15 Low VHF (FM) 34.20, 34.35, 34.60, 36.45, 36.80, 38.70, 40.55, 41.70, 46.65, 46.95, 49.75, 49.90, 49.95

Freq.	TAC Name	Conversion
310.100	Giant Killer	130.100
351.700	Jax Center	135.700
364.200	Fertile Control	130.200

(All bases are within 70 miles of my QTH. Also my recp. is good for 12 miles on the ground to 400 miles in the air)

Gilles Thibodeau (3653 Montcalm, Lac-Megantic, Quebec G6B 2H8 CAN) will swap frequency lists with interested readers.

### QUEBEC PROVINCIAL POLICE

Lac Megantic/-166.740	Asbestos/Weedom/
Hatley	St. Gedeon/St. Venant - 166.680
Disraelit. Evariste	Highwater - 166.620
Stornoway/Waterloo - 166.800	Scotstown - 166.830
Sherbrooke/Cookshire - 166.500	St. Isidore - 167.010
Drummondville - 167.340	Richmond/Windsor/
Arthabaska - 167.040	Stoke/St. Bene - 166.650

### LAC-MEGANTIC, QUE

City Police & Fire Dept. 411.600	150.310, 142.725 Autopatch, 142.635
Provincial Police car to car when available - 171.075, 172.025	Autopatch
Quebec Natural Resources - 140.040, 140.490	Canadian Pacific Railway - 161.475
Forestry Conservation - 139.830, 141.300	Lambton County Quebec Natural Resources - 419.325
Ministry of Transportation road (Police) public work dept. - 169.710, 169.710, 414.0375	Megantic Manufacturing - 151.055, 159.480
Quebec Fish & Game - 171.840, 171.960, 414.8375	Megantic Paving - 451.150
Quebec Hydro-Electric - 150.760,	Megantic Communication - 143.190 (pager)
	Megantic Ready Mix - 151.715

### CBS RADIO-CANADA

(contributed by Sam Lambert, Windsor, ONT)

Northern Quebec Service 6065, 9625 kHz (0658-0900 EST)	9625, 11720 kHz (0900-1830 EST)
	6195, 9625 kHz (1830-0109 EST)

QUEBEC contributed by Gilles Thibodeau

### AIRPORT

QUEBEC	Montreal/Dorval Intl.
Comm - Radio 126.7, 122.2	122.200, 126.7
Apr & Dep. 119.5, 322.8	Apr. 125.150, 118.9
TWR 120.3, 122.5R	Dorval TWR 119.300, 119.9
GND 121.9	121.9
Atis 121.0	120.2
VOT 115.7	115.7
Vortac: YQB 112.8	116.3
VDF 120.3, 121.9, 122.5R	125.4
ILS: IQB 109.5	109.9

Montreal Centre 132.35, 133.225, 134.4

### TRENTON ONTARIO (Military Air Force Base)

Communication Terminal:	124.35
Tower	128.7, 126.2
VDF	121.9, 124.35, 126.2, 128.4,
Air/Ground base	268.0, 232.1 Tiger Operations

Province of Quebec Ministry of Transportation (Public Work highway): 169.710 Sherbrooke Regional, 168.750 Drummundville Regional, 169.620 Valleyfield Regional, 170.220 Quebec Regional. Those same frequen-

cies are operated by the same department, but for highway regulation (Police special department) Readers can contact me at 3653 Montcalm, Lac-Megantic, Quebec G6B 2H8 Canada

### U.S. Forest Service

#### Mendocino National Forest (contributed by Gene Sawyer)

169.175 Mendocino National Forest repeater	alternate on AM aircraft band
170.000 U.S. Forest Service Air Tactics channel 4 - helitorch aircraft to spotter aircraft.	122.800 Helitorch refueling at Lakefront Airport believed to be an aircraft contracted by the USFS from Willows Flying Service of Willows, Ca.
119.750 Spotter to helitorch	

#### Bureau of Land Management Ukiah, Ca.

163.375 Simplex	166.975 Repeater on Pratt Mountain
166.375 Repeater on Cotto Mountain	

### WCC (Chatham, MA) Maritime Schedules

contributed by Mike Edelson (Roselle Pk, NJ)

0300GMT Press 4331KHZ, 6376KHZ, 13033.5 KHZ	TRAFFIC LISTS
0830GMT Press Sports Results (Same Frequencies)	0050GMT, 0450GMT, 0850GMT, 436KHZ, 4331KHZ, 6376KHZ, 8586KHZ, 8630KHZ, 12925KHZ, 13033.5KHZ
	1050 GMT, 1450 GMT, 1850GMT and 2250GMT, 8630KHZ, 13033.5 KHZ, 16972KHZ

### Andrews Air Force Base

#### UHF aeronautical frequencies

contributed by Greg Danes, Alexandria, VA

PTD-372.2	255.4 - Radio
ATS-269.9	App. Con. 322.3, 269.0, 338.2, 306.3, 257.6, Tower & GND Con.
APP Control - 294.5	Dep. Con. 343.7, 396.1
Tower - 289.6, 236.6	PATUXENT RIVER NAS
GND Control - 275.8	ATIS 276.2
CLNC Delivery - 393.1	APP/DEP con. 281.8
AFRES OP's - 351.2	Tower - 344.4, 340.2
Wash. Dep. Control - 269.5	GND Con. - 336.4
METRO - 344.6	CLNC Delivery - 384.4
Com. Post (SAM) - 378.1	Advisory Svc. - 354.8
Andrews NAF - 386.8	METRO - 356.2
WASH. D.C. NATIONAL APT	

### New Jersey Scanning

contributed by Tom Power, Jr.

New Jersey State Police:	New Jersey Airports:
Channel 1 - 44.94 MHz	Flanders Valley - 123.00 MHz
Channel 2 - 44.62 MHz	Morristown - 118.10 MHz
Channel 3 - 44.66 MHz	Teterboro - 119.50 MHz
Channel 4 - 44.98 MHz	Newark International - 118.30 MHz
Channel 5 - 44.78 MHz	Atlantic City - 118.90 MHz
Station to station - 155.46 MHz	Essex County (Caldwell) - 126.50 MHz
Walkie Talkies - 154.68 MHz	Mercer County (Treaton) - 120.7 MHz
Narc Inter Agcy - 460.500 MHz	Brunswick NAS - 119.60 MHz
	McGuire AFB - 120.60 MHz
US Government: New Jersey Atlantic City Air National Guard	163.4875 MHz
	163.5125 MHz

Cape May Coast Guard	McGuire AFB Air National Guard
Fire/Medical Net - 171.3625 MHz	Diaster Preparedness - 148.475 MHz
Security - 171.3125 MHz	
Fort Dix	Medical Net - 150.275 MHz
Fire - 38.910 MHz	Police - 149.300 MHz
McGuire Air Force Base	- 149.500 MHz
Medical Net - 163.5375 MHz	Security - 150.200 MHz
Security - 163.4625 MHz	
- 163.5625 MHz	

### Morris/Sussex County Frequencies MHz

Sussex County Road Development - 33.06
Morris County Police System - 39.02
Roxbury/Mt. Olive Police - 39.16
Morris/Sussex Regional Network Channel 1 - 39.24
Morris/Sussex Regional Network Channel 2 - 39.62
Morris County Sheriff Department - 45.90
Sussex County Fire Departments - 46.10
Most Morris County Fire Departments - 46.42
NJ State Highway Department - 47.14
NJ State Highway Department - 47.30
NJ Marine Police (Lake Hopatcong) - 159.30
Delaware Water Gap - 166.95
Tel-Air Communications (Mobile phones) - 159.02

Erie, Crawford and Warren Counties, PA.

Low Band

Police, Fire, Hospitals and Emergency Services

- 33.42 Corry Fire Dept.
- 33.70 Erie County Fire Control Supplementary Channel
- 33.82 Venango/Mercer County Fire Control Network
- 33.8 Erie County (east) Fire Control
- 33.90 Erie County Fire Control Supplementary Channel
- 33.96 Erie County (west) Fire Control
- 33.98 Erie/Crawford/Warren County Fire Control Network
- 33.94 Erie County Rescue Ambulance
- 39.10 Kane/Corry City Police
- 39.18 Warren/Bradford County Sheriff's Network
- 39.36 Sharon City Police Channel B
- 39.42 Edinboro and Edinboro State College Police; also Franklin, Oil City, Warren, Mercer, Sharon, and Grove City Police
- 42.60 Pa. State Police Base to Base Network
- 45.02 Ohio State Police, Ashtabula Base
- 45.10 Erie/Crawford County Sheriff's Network Also: Forest County Sheriff and Greenville City Police (In Erie County some sub-channels such as 45.14 are in use for hand held units.)
- 45.18 Fairview Police
- 46.10 Chataugua County N.Y. Fire Control Network
- 47.46 Meadville/Titusville Ambulance Service

OTHER GOVERNMENTAL AGENCIES

- 37.26 Erie County Government
- 39.10 Corry Local Government
- 39.82 Youngsville Local Government
- 44.64 Pa. State Game Commission
- 44.84 Pa. State Game Commission
- 45.08 Washington, Twp. Local Government
- 45.36 Greene Twp. Local Government
- 47.30 PennDot
- 47.38 PennDot
- 47.88 Erie Water Works
- Some Local Government Channels are also used by the local Law Enforcement Agency.

UTILITIES

- 35.58 General Telephone
- 47.72 Rural Electric
- 48.46 Penelec

DOCTORS

- 47.46 Dr. T. Miller
- 47.62 Dr. F.F. Florek

LOW BAND

Business And Professional Use Includes Paging Services, Oil and Gas Drilling Rigs as well as common business useage.

30.30	33.18	31.055	35.58 "
30.58	33.24	31.16	35.86
30.62	33.26	31.18	35.70
30.70	33.30	31.22	
30.74	33.38	31.32	36.39
30.78		31.36	36.22
30.82	35.12	31.40	
Bennets Arco, Edinboro			
30.85	35.14	31.56	37.18
30.85	35.14	31.76	37.22
30.92	35.22 Paging	31.84	37.26 Erie County?
	35.38 "	32.82	37.40
31.00	35.42 "		37.58
31.035	35.46 "		37.74

During periods of high sunspot activity, the low band will provide you with hours of listening to Police Agencies from the west coast and Mexico. These will be heard on wintry afternoons, and at sun-up and sun-down. Tune these frequencies.

39.02	39.72	39.36	42.08
39.075	39.82	39.48	42.12
39.14	39.92	39.50	42.34
39.20	39.94	39.64	42.44
			42.88

The Business and Professional use frequencies which appear above represent only a fraction of those that are assigned. In each cash above, there is local activity in northwest PA.

HIGH BAND

POLICE, FIRE AND EMERGENCY SERVICES

- 154.115 Vernon Twp. Police
- 154.13 Conneaut Ohio Fire Dept.
- 154.25 Perry Highway Fire Dept.
- 154.31 Meadville City Fire Dept.
- 154.43 Erie City Fire Dept.
- 154.650 New York State Police at Fredonia
- 154.71 Union City Police
- 154.755 PA. State Police Mobile to Mobile
- 154.80 Millcreek Twp. Police, Channel B
- 154.845 Meadville City Police
- 154.89 Ashtabula Ohio County Police
- 155.13 Millcreek Twp. Girard, North East, Edinboro (Channel B) Corry, (Channel B), Harborcreek, Waterford, Lake City, Albion, Titusville Police Depts.
- 155.16 Millcreek Mall Security (possibly 155.18)
- 155.22 Erie, Sharon Ambulance Service
- 155.280 New Castle Ambulance
- 155.355 New Castle Fire Dept.

- 155.37 Ashtabula Ohio County Sherrif, Sharon City Police
- 155.43 Edinboro City Police, Corry, Union City (Channel B) Police
- 155.505 New York State Police, Mobile to Mobile
- 155.535 New York State Police, Base to Mobile
- 155.625 Titusville, Ashtabula and Conneaut Ohio City Police
- 155.58 PA. State Police, Base to Mobile
- 155.670 Lawrence County State Police Base to Mobile

HOSPITALS

- 155.28 Hamot (Erie PA) Hospital
- 155.34 St. Vincent (Erie PA) and Sharon (PA) Hospital

OTHER GOVERNMENTAL AGENCIES

- 143.15 Civil Air Patrol
- 143.90 Civil Air Patrol
- 151.10 Erie Streets Dept.
- 154.98 Erie International Airport Authority
- 155.16 Millcreek Twp. Local Government
- 155.715 Millcreek Twp. Sewer Dept., also Girard, PA
- 156.00 Meadville City Government
- 172.275 Pennsylvania Dept. of Forests and Waters Network Repeater

MARINE INTERESTS

- 156.30 Channel 6
- 156.60 Channel 12
- 156.75 Channel 15
- 156.80 Channel 16 (Calling Channel)
- 156.90 Channel 18
- 157.10 Channel 22 (Coast Guard)
- 157.25 Channel 25 Ship to Shore
- 157.30 Channel 26
- 157.77 Coast Guard
- 156.45 Erie Yacht Club
- 161.650 Coast Guard Continuous Navigation and Weather Bulletins

Ultra High Frequency Band

- POLICE
- 460.05 Erie City Police (Base and Cars)
- 460.20 Erie City Police (Base and Detectives)
- 460.25 Erie City Police (Traffic Control and Wreckers)
- 465.05 Erie City Police (Hand held Units)
- 465.20 Erie City Police (Hand Held Units)
- 465.25 Erie City Police (Hand Held Units)
- OTHER GOVERNMENTAL AGENCIES
- 453.150 Erie Metro Transit Authority (Receive)

- 155.695 New York State Police, Channel C
- 155.79 PA. State Police, Mobile to Base
- 155.850 Lawrence County State Police, Mobile to Base
- 155.895 Lawrence Park, Wesleyville, Police
- 156.03 New Castle City Police
- 156.210 Union Twp. Police, Shenango Twp Police
- 158.85 Preakue Isle Park Police
- 159.03 Fairview Twp. Police
- 159.21 PA. State Police Repeater.

WEATHER INTERESTS

- 161.650 Coast Guard Navigation and Weather Broadcasts
- 162.40 Erie, New Castle NOA Weather Service
- 162.55 Cleveland, Buffalo, State College NOA Weather Service

TELEPHONE AND PAGING

- 151.985 Telephone Maintenance
- 152.63 Mobile Telephone
- 152.73 Mobile Telephone

ANSWERING AND PAGING SERVICES

- 152.030 158.700
- 152.060 158.980
- 152.090
- 152.120 173.46
- 152.145 173.49
- 152.210 173.20

BUSINESS AND PROFESSIONAL SERVICES

- 147.295
- 146.940 Erie County Amateur Radio Repeater
- 152.93 Business and Professional
- 159.78 Trucking Dispatch
- 160.8 Penn Central Railroad
- 161.07 Con Rail (Erie Yard)
- 161.70 Radio and TV Newsmen
- 166.26 Radio and TV Newsmen
- 173.06
- 173.064
- 173.38
- 173.520 Gas well drilling rigs
- 173.80

- 453.200 Erie Metro Transit Authority
- 458.150 Erie Metro Transit Authority (Transmit)
- 458.200 Eve Metro Transit Authority

ANSWERING AND PAGING SERVICES

- 454.025 454.225
- 454.075 455.175
- 454.175 458.2875?

BUSINESS AND PROFESSIONAL USE

- 451.3250
- 455.1750
- 461.3 (Furnace repair)
- 462.1375

DALLAS/FORT WORTH RPU AND TSL FREQ.

- Courtesy Society of Broadcast Engineers and Scanning Dallas/Ft. Worth
- 26.45 KAAM-Dallas
- 151.870 KHBR-Hillsboro
- 153.290 KCLE-Cleburne
- KHBR-Hillsboro
- KZEE-Wxford
- 153.350 KDNT-Denton
- 161.640 KAAM-Dallas
- KDNT-Denton
- KCLE-Cleburne
- 161.670 KFJZ-Ft. Worth
- 161.700 KMMK-McKinney
- 161.700 ENGRS. WFAA-TV-Dallas
- ENGRS. WFAA-TV-Dallas
- 161.730 KXDL-Ft. Worth
- 161.760 KXTX-TV-Dallas
- KVTV-TV-Ft. Worth
- 166.250 NEWS KDFW-TV-Cedar
- 170.150 KWJS-Arlington
- 450.010 KXAS-TV-Ft. Worth
- KLIF (TSL)-Dallas

LISTNERS LOG . . . from page 19

APPL. KEWS-TV (TSL)-Dallas	455.010	KLIF-Dallas
450.020 TSL KESS-FM-Ft. Worth		KTIA (TSL)-Ft. Worth
450.045 KXVI-McKinney	455.020	KMGC (TSL)-Dallas
450.050 KIXK-FM-Dallas	455.050 RI	KLIF/KPLX-Dallas
450.050 KXAS-TV-Ft. Worth	455.087 RI	WFAA-TV-Dallas
450.087 RD/NX WFAA-TV-Dallas		ABC-NET-Dallas
450.112 ABC-NET-Dallas	455.150 RD	KBOX-Dallas
KXAS-TV-Ft. Worth	455.250	KVIL-Dallas
450.150 RD/NX KRLD-Dallas	RD/NX	KXAS-FW/D
450.187 KXAS-TV-Dallas	455.287 RI	KNBN-Dallas
450.250 KVIL-Dallas	455.312 RD/ENG	KDFW
450.287 RD KNBN-TV-Dallas	(VAN) - Dallas	
450.312 RI KDFW-TV	455.350	KTIA-Dallas
(ENG) - Dallas		WBAP-Ft. Worth
450.350 RI KBOX-Dallas	455.387	ABC-NET-Dallas
KIKX-Dallas	455.450	KNTU-Denton
450.387 ABC-NET-Dallas	RD	KWJS-Arlington
450.412 ABC-NET-Dallas		KZEW-Dallas
450.450 KZEW-FM-Dallas	455.487	ABC-NET-Dallas
APPL. WBAP-Dallas	455.550	KAAM-Dallas
450.500 KAAM-Dallas	455.580	ABC-NET-Dallas
450.550 KERA TV/FM-Dallas	455.612 RI	WBAP-Ft. Worth
450.587 ABC-NET-Dallas	455.650 RI	KRLD-Dallas
450.612 RD WBAP-Ft. Worth	455.700 APPL.	KCLE-Cleburne
450.650 KESS-Dallas	RI	WFAA-AM-Dallas
KRLD-Dallas	455.750	KDNT (Civil Def)-Denton
KTIA-Ft. Worth		KTIA-Dallas
450.700 APPL. KCLE-Cleburne	455.800 APPL.	KCLE-Cleburne
RD/NX WFAA-Am-Dallas		KLVU-Dallas
KJIM-Ft. Worth	455.850	KBOX-Dallas
450.750 RD/NX KLIF-Cedar HI		KDNT-Dallas
450.800 APPL. KCLE-Cleburne	RPU	KXOL-Ft. Worth
450.850 KVIL-Dallas		KVIL-Dallas
450.925 KLIF-Dallas	455.925	KTXQ (Group S)-Dallas
450.925 KTXQ-Dallas	455.980	KSCS (TSL)-Ft. Worth
450.980 KTXQ (TSL)-D/FW	455.990	KIXK-DLS/DNT
450.990 KLIF (TSL)-Dallas	455.990	KLIF (TSL)
KLUVU (TSL)-Dallas		TSL-Transmitter Studio Link
		Low Power Telemetry

Emergency Medical Services, Dallas County, Tx.

contributed by Craig Clark

Addison Fire Department	154.010
Balch Springs Fire Dept.	46.380
Carrollton Fire Dept.	46.440
Cedar Hill Fire Dept.	46.540
Dallas Fire Dept.	460.575
	dispatch 154.130
Desoto Fire Dept.	46.580
Duncanville Fire Dept.	45.600
Farmers Branch Fire Dept.	453.950 rptr
Garland Fire Dept.	154.310 rptr
Grand Prarie Careflite	462.975 rptr
Irving Fire Dept.	482.512
	Dispatch 482.537 (Rptr)
Hutchins Fire Dept.	37.180
Lancaster Fire Dept.	46.500
Mesquite Fire Dept.	154.370
Richardson Fire Dept.	453.325 (Rptr)
Seagoville Fire Dept.	46.380
Wilmer Fire Dept.	37.180
University Park Fire Dept.	155.415 (Rptr)
Highland Park DPS	453.150 (Rptr)
Dallas/Ft. Worth Airport	453.050 (Rptr)
Most rescue vehicles also transmit biotelemetry on 462.975 ("MED 9")	

155.340 - Careflight (Air Ambulance)	415.500 - Logistics 3
45.600 - Duncanville Fire Dept.	168.625 - National Air Dispatch
158.790 - Duncanville Police	412.900 - CID (Criminal Investigation Div) US Army
155.460 - Texas Highway Patrol (Base)	413.425 - CID
159.090 - Texas Highway Patrol (Mobile)	413.525 - CID
155.370 - Police Intercity	148.150 - Civil Air Patrol
172.600 - Common Air Safety	149.925 - Civil Air Patrol
166.675 - Air Tactics 1	40.170 - Air Force Special Investigation
169.150 - Air Tactics 2	40.190 - Air Force Special Investigation
169.200 - Air Tactics 3	417.200 - GSA Federal Protection Service
170.000 - Air Tactics 4	165.750 - NTSB Aircraft Crash Investigation
168.050 - Tactical 1	166.175 - NTSB ACI
168.200 - Tactical 2	173.225 - Mobile Press
168.600 - Tactical 3	173.275 - Mobile Press
168.700 - Command 1	173.325 - Mobile Press
168.100 - Command 2	173.375 - Mobile Press
168.075 - Command 3	
414.650 - Logistics 1	
415.400 - Logistics 2	

# Technical Topics

Q. I want to receive one of two stations on the same AM broadcast frequency. Where can I find information on directional loops? (Vincent Dijohn, Cincinnati, OH)

A. Try Ken Cornell's new *Low and Medium Frequency Radio Scrapbook* (See this month's new books column)

Q. Can the Grove Scanner Beam be used for transmitting as well as receiving? (Colbert Robbins, Jr., Randleman, NC)

A. Absolutely, and very effectively on the amateur 144-148, 220-225 and 420-432 MHz bands. The small TV-type balun transformer provided with it limits input power to less than about 25 watts, however. Plenty enough for the majority of VHF and UHF transceivers.

Q. I'm confused by all the manufacturer's literature and spec sheets, How do you upgrade and choose a good receiver? (George F. Mitzel, Deptford, NJ)

A. Choosing a receiver is much like choosing a TV or a car; there are no clear-cut universal choices. I know I'm sticking my neck out, but these are my choices, from top to bottom, of the best receivers presently on the consumer market. An asterisk denotes best values in my judgment (I'm bound to hear discords on this one!).

JRC NRD-515

Drake R-7

Sony CRF-1

ICOM R-70

Kenwood R-2000

Yaesu FRG-77000

Kenwood R-1000

Sony 6800W

Kenwood R-600

Panasonic RF-1900

Sony ICF-2001

NOTE: Omission from this list does not mean unacceptability; this is a sample of the most popular receivers of recent vintage.

Q. When using the Grove TUN-3 Minituner on longwave, grounding the braid of the antenna coax reduces signal strengths; how come?

A. The capacitance of long coax at low frequencies can cause severe losses, that is why it is recommended that only the center conductor be connected to the input of the Minituner. You may tie the braid and center conductor together, then attach to the banana plug provided which is, in turn, inserted into the hole of the coax connector.

Above the broadcast band, use a conventional coax hookup.

Q. Is it possible to copy mobile data transmissions sent on police channels in the larger cities on a simple RTTY converter? (Glenn Card, Middlebury, In.)

A. Some readers say "yes" using the ASCII mode. Try it!

Q. Enclosed is a tape recorded from my scanner after midnight on 154.965. It consists of recorded numbers and high-speed CW. Could it be related to the "spy numbers" broadcasts? (Dan Mulford, Osgood, In.)

A. I suspect the signal you are hearing is a paging service since it is preceded

by a two-tone sequence. The voice recording is undoubtedly provided by one of two manufacturers in Atlanta who specialize on such systems for the telephone industry.

Q. and A. After several attempts in eliminating the hum when recording from a Bearcat scanner I tried the simplest trick of all.

Connect the recorder to the switching circuit of the scanner only and place the recorder near the scanner to allow the recorder's built-in microphone to pick up from the scanner's speaker.

The switching circuitry will turn on the recorder only on scanning channels or channels programmed into "AUX". Recording level can be adjusted by speaker volume or changing distance between the scanner and recorder. (L.E. Parker, Houston, TX)

(Thanks, L.E. for a nifty suggestion!...ed.)

Q. Can the Grove Globescan CVR-2 be modified to operate with an all-mode two-meter ham rig? (Ray Stevens W2BYO, Wellsville, NY).

A. While the popular little Globescan is designed primarily to permit reception of the 4-22 MHz shortwave band on a 118-136 MHz scanner, many other combinations are possible.

One California wide-spectrum listener uses the Globescan with an external bandswitching preselector, permitting a wide array of combinations of input frequencies and output IF's.

The CVR-2's broadband flexibility makes it a real workhorse for the home experimenter. A complete schematic is included to assist in devising conversion schemes.

Q. I'm thinking about putting up a 60-foot wire antenna 25 feet above the ground; would an active antenna give as good or better a signal? (Henry R. Bradbury, Marshalltown, IO).

A. Modern receivers are extremely sensitive. If you can get at least 25 feet of wire up in the air away from power lines and free of large metallic obstructions, it would be hard to beat.

The advantages of active antennas include smaller size, some are frequency-tunable for additional frequency preselection and may be changed in direction (like the Palomar loops).

Disadvantages include expense, requirement of power, possibility of adding noise to the signal, and intermod caused by the internal amplifier an/or excessive signal overload to the receiver.

If you have the room for a passive wire antenna 50-100 feet in length, even if it has to be bent in a couple of places, erect it. Any intermod or images which you may encounter from strong signals may be eliminated by a good passive preselector-type "tuner".

Q. Do you know any of the USSR spacecraft frequencies? (Michal R., Dayton, OH)

A. During a manned mission, check a few KHz either side of 20 MHz WWV for SSB communications and beacons. For a more detailed list, see P. 144 of the *Shortwave Frequency Directory* by Bob Grove (BOK-13).

## Universal Digital Frequency Readout From Torrestronics

One of the common questions received at MT from owners of older receivers is how to convert them to display their frequencies on a digital readout. One answer may be the Torrestronics unit shown here.

Available either in wired or kit form, the display comes with a book illustrating connection to the following receivers and transceivers:

Heathkit HR-1680, HW-100, HW-101

Swan 500

Yaesu FT-101, FRG-7

National HRO-60

Drake 2B, 2C, R4, T4, TR3,

TR4, SPR-4

Hammarlund SP-600, HQ-180

Kenwood TS-520, R-300

Atlas 180, 210, 215

Ten Tec Triton

Ralistic DX-160

Collins KWM-2, 75S

Tempo One

Touting a no-flicker display, the 4 multicolored digits (red and green) respond immediately to dial changes. Time base of the crystal is 2.4576 MHz; sensitivity is 5 mV at 5 MHz, 25 mV at 50 MHz.

Accuracy is 10 Hz at mid-band, capable of counting up or down any IF or oscillator between 100 KHz and 50 MHz. The direct readout is not multiplexed for reduced interference to the receiver.

WTK-1 wired and tested, \$135 postpaid USA; \$100 kit. From Torrestronics, Inc., 4850 Hollywreath Court, Dayton, OH 45424.

## Monitoring Times On Cassette

As a special service to sightless listeners, Monitoring Times has given permission to a representative of the Handicapped Aid Program to provide cassette transcriptions of articles in MT.

For more information send a self-addressed, stamped envelope along with your request for information to Phillip M. Dampier, 3176 Elmwood Avenue, Rochester, NY 14618.

## Preventing Water Intrusion In The Pre-1 Preamp

Harry McCabe of Columbia, SC reported a pronounced decrease in gain of his Grove PRE-1 masthead preamplifier during wet weather. It seemed to clear up when the sun came out.

An examination of his preamplifier revealed that water had, indeed, penetrated the



### Product Panorama

In an effort to inform our readers of new merchandise of interest to the monitoring hobby and profession, Monitoring Times is pleased to present this special section.

Products shown on this page have not been tested by Monitoring Times, nor should their inclusion be considered an endorsement.

Manufacturers of listening-related equipment are invited to send product announcements, and articles glossy photos for future issues. There is no charge for this service.

Manufacturers may wish to contact our advertising department to request information on our new half-price rate policy for commercial display ads.

### Code Star Reader

#### From Microcraft

While many of our readers have seen reviews and advertisements of the AEA MBA-RO and Kantronics Minireader in the pages of Monitoring Times, there is another Morse/RTTY reader which might be of interest.

The Code Star from Microcraft features 8 characters, built-in code practice oscillator and speaker, 12VDC operation (AC adaptor included), and automatic CW speed tracking from 3 to 70 WPM.

The Code Star copies Morse, Baudot (60, 67, and 100 WPM) as well as ASCII for computer applicants. A tuning LED assists in proper adjustment.

Optional serial or parallel ASCII output port may be obtained; digital and analog filtering with 16 dB AGC is provided.

The Code Star is available for \$229.5 factory wired, or \$169.95 in kit form from Microcraft Corporation, PO box 513, Thiensville, WI 53092.

enclosure. A bead of sealant around the seam correct the problem.

Listeners are advised to take the same precaution with your Pre-1 masthead preamplifiers. Enough Coax Seal is provided to fill the joint between the cabinet and cover as well as wrap the two connectors adequately.

## Tune In On Ham Teleconferencing

Amateur radio has made some great strides in technology, and one of its most vital elements is now taking place nationwide.

Repeater interlinking--multipoint teleconferencing--is now a coast-to-coast reality, thanks to the Teleconference Radio Net organized by the Honeywell Amateur Radio Clubs of Minneapolis, Billerica and Phoenix.

Rick Whiting WØTN, national net manager, alerted Monitoring Times to notify our readers that some excellent topics are coming up. Scanner listeners in many areas may be able to listen in and learn a great deal about modern communications technology.

For example, Thursday, March 3, 1983 at 7:15 PM Central time will feature Vic Clark W4KFC, President of the American Radio Relay League (ARRL), the central fraternity of hams worldwide. His topic, "The Future of Amateur Radio" should prove interesting.

June 2, 1983, at 7:15 PM Central those tuned in will be treated to a presentation by Joe Reiser W1JR, a nationally-recognized expert on moonbounce radio propagation, antennas and interference.

Scanner listeners nationwide are invited to tune in with more than 2000 amateurs to share the knowledge passed in these teleconferences.

The following amateur repeaters (among others) are already tied into the network:

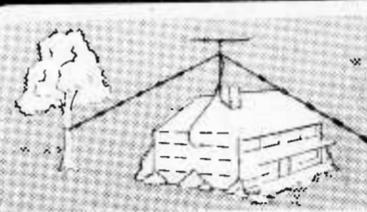
- Phoenix, AZ 147.36
- Avon, CT 224.78
- Roswell, GA 145.47
- Wichita, KS 146.82
- Minneapolis, MN 146.64
- Long Island, NY 147.375
- Beaverton, OR 147.32
- San Antonio, TX 146.70
- Milwaukee, WI 145.13
- Los Altos, Ca. 147.36
- Los Angeles, Ca 224.04
- Washington, DC 147.21
- Chicago, IL 147.15
- Billerica, MA 147.12
- Cherry Hill, NJ 147.375
- Rochester, NY 145.11
- Dallas, TX 146.97
- Madison, WI 146.76
- Baltimore, MD 147.105

For further information about the repeater tie-in, readers may wish to contact Rick Whiting WØTN, 4749 Diane Drive, Minnetonka, MN 55343 (or phone 612-870-2071).



ST. LAWRENCE SEAWAY  
Continued from page 11

## Barker & Williamson new Shortwave Antennas



### ASW-49 Seven Band Trap Antenna

- Only 40 ft. long
- Resonant on the 11, 13, 16, 19, 25, 31 & 49 meter bands
- Patented high efficiency traps
- SO-239 connector for coax feed

**\$37 50**

Plus \$2.00 shipping

An Outdoor Antenna  
for apartments  
and travel!

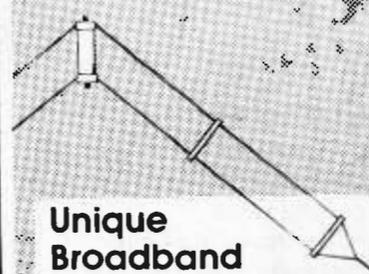


### ASW-10 Window Antenna for SW & Scanners

- Aluminum bracket clamps to window, a secure "no holes" mount
- 10 Ft. coaxial cable supplied
- Receives VHF & UHF scanner frequencies

**\$39 50**

Plus \$2.00 shipping



### Unique Broadband Shortwave Antenna ASW-15, 90 ft. long

This new design (patent pending) provides outstanding coverage of all the frequencies in the shortwave region. With coaxial cable feed, the SWR is less than 2:1 throughout the 3.5 to 30 MHz spectrum. Good MW and LW reception is also provided by this big antenna. Rugged construction with #14 stranded copperweld wire. SO-239 connector for coaxial cable.

**\$79 50**

Plus \$4.00 shipping

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Quality Communication Products Since 1932  
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10 Canal Street, Bristol PA 19007  
(215) 788-5584

# In Search Of The Jolly Bucs

By John Santosuosso

The truth is that hearing stations is not easy. Recently, two operators of bootleg stations informed me that they have never heard any pirate operation other than their own.

The reasons are not hard to find. Free radio stations in North America (there are exceptions in Europe) are noncommercial and thus lack the megabucks for high-power equipment. Station powers of under 50 watts are not at all uncommon, although there are one or two stations running a rather impressive amount of power.

Not only do the vast majority of pirates lack the power to send you a nice fat signal, they also dare not transmit on a regular schedule. To do so is one of the surest ways to guarantee a visit from the FCC. A few stations have ignored this and paid the price.

In 1980 RX4M-The Voice of Cliperton, out of Seattle, was attracting quite a following for its excellent signal, solid news coverage, and especially for its rebroadcasting of old-time radio shows such as the "Jack Benny" program.

You could count on RX4M showing up at the same time on the same frequency every night. That is exactly what Uncle Charlie did, and before long RX4M, despite the fact it was providing solid entertainment, was out of business for good.

The stations that survive have learned that frequent changes of frequency and an irregular schedule are essential. This has always been the policy of popular Radio Clandestine, which has been broadcasting for over ten years without incident.

Of course that sort of policy also adds to the difficulty of your hearing a pirate transmission. So what can you do to increase the odds in your favor?

With the exception of one or two large metropolitan areas such as New York City, there is only one easy way to hear a pirate. That is to know someone who is one, or to be a "friend of a friend" of one. In short, you need a tip in advance that the station is planning to broadcast.

Show me someone who consistently hears pirates, and I will show you someone who knows pirates. Probably at least 50 percent-or even more-of the pirate shortwave loggings reported in DX Club bulletins and other publications are the result of such inside knowledge.

So, if you want to hear pirates, join the clubs and contribute to them. Let people in them know of your interest in free radio. It will not happen for awhile, but eventually some night you just might get a phone call informing you that a buccaneer is about to take to the air waves!

## Part 1

However, one thing the pirate chaser quickly discovers is that DX club publications will not tell you what you need to know. There are several reasons for this. Any logging in a club bulletin is at least several weeks and more likely a month or so old. By the time you read it there is a good chance the pirate, if he is still around, will be using a different frequency or time.

In the case of some commercial publications (but fortunately not Monitoring Times) loggings may even be several months old, and in the pirate business a great deal of change can happen in a few days.

Making matters still worse is the hostile attitude some editors take toward pirates and news about them. In several instances editors or club officers have censored pirate news and unfortunately, this attitude appears to have spread in the past year.

But the chief problem is something else. It is safe to say that every major DX club in the United States has been infiltrated by the FCC and other government agencies. There is even evidence that some of their publications are read by foreign intelligence experts! Almost anything you read anywhere about pirates (including this column!) will also be ready by the FCC.

Most pirate operators are now aware of this. Gone are the days when they used to announce future broadcasts in club bulletins or publicize them on shortwave DX programs. To do so is to invite certain death.

Recently, after information about his station was included in one shortwave DX program, the operator of a Florida FM pirate received a threatening call from a man claiming to be an FCC agent. (see related item elsewhere). The station took the warning as genuine and is no longer broadcasting.

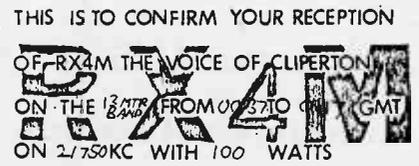
The agents who busted for the third time the now legendary Voice of the Voyager possessed copies of the "Unofficial Radio Bulletin," which specializes in pirate information and operates openly but in unknown to many old-time, experienced DXers.

Another station found itself on the FCC's "most wanted" list after a reproduction of its rather controversial QSL appeared in a major club bulletin.

Uncle Charlie may be sneered at by some, but he does his homework thoroughly, and smart bootleggers never, never underestimate his intelligence.

The recent closings of several stations in the New York area, including Free Radio of North America and KW Radio prove this. Free Radio North America was a relatively new station, but the FCC still seemed to know a great deal about it.

This is not to say that the various club bulletins and commercial publications available cannot be helpful. They can be very helpful. Use them as a star-



## THE VOICE OF CLIPERTON

ting point to get an idea of what stations are active and what frequencies have been used in the past.

Careful study of such material will reveal that pirates often cluster in certain parts of the shortwave frequency spectrum and favor certain times for broadcasting. Armed with this kind of information you have a much better chance of randomly tuning in one of these broadcasts.

Clubs and publications that stress pirate news or cover it exclusively will, of course, be the most helpful. An example of one such club is A.C.E., the Association of Clandestine Enthusiasts. For \$6.95 you get twelve informative, monthly issues. Subscriptions go to P.O. Box 452, Moorhead, MN 56560.

There are two club bulletins we can recommend for European readers and others who wish to keep up to date on the fascinating world of Europirates: FRS, P.O. Box 123, Reading, England, publishes an excellent newsletter for its members. We have no current information on costs, but about US \$1.50 should be enough to get you a sample copy.

Offshore Echoes, La Hamel, Vittefleury, F-76450, Cany, France, puts out a very slick publication, but only part of it is in English, with the rest in French and German. It's 7½ pounds per year for members in Britain and Ireland. North Americans probably should write and inquire about rates, being sure to include several International Reply Coupons, obtainable from your local post office, for a reply.

So get busy and do a little research, and you should soon log your share of pirates. In the next column we will give you some specific suggestions which should make your task considerably easier.

*Editor's note: While Monitoring Times does not condone or encourage illegal use of the regulated airwaves, unlicensed broadcasters, are an interesting population segment of the spectrum.*

*As long as our readers continue to show interest in these "renegade" entertainers, MT will continue to cover their activities.*

## And Congratulations To A Fellow Publisher

As of February 15th, Fred Maia W5YI published his 100th edition of "Dits and Bits", the W5YI Report. We invite MT readers to enjoy FRED's easy and informative style of writing by sending \$1 for a sample issue to: PO Box 10101, Dallas, TX 75207.

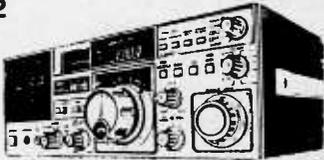
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7 band, 50 channel, programmable, AM aircraft & public service, alpha numeric readout, AC/DC jacks for ext ant, aux. output, audio output, ext. spkr

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High-Performance All-Mode Communications Receiver. 150 KHz 29.999 MHz, SSB/CW/AM/FM Digital readout, LSI clock timer, optional 12 channel memory with back-up, Selectable AGC memory time tuning, noise blanker, variable RF attenuator, built-in speaker 120/240vac 13 1/2" w x 4 1/2" h x 9" d, 13 lbs



**KENWOOD R-1000** 419.95  
General Coverage Receiver 200 KHz 30 MHz, 30 bands, each 1 Mhz wide 5-digit frequency display and analog dial 12 hour quartz digital clock & on/off timer. Three IF filters 2.7 KHz (SSB/CW), 6.0 KHz (AM narrow) & 12 KHz AM (wide) Noise blanker, built-in speaker, three antenna terminals, RF attenuator, tone control, recording terminal, Remote terminal, for access to timer on/off circuit & muting 120/240vac or 13.8 vdc with optional DC kit. 12" w x 4 6" h x 8 7" d, 12 lbs

**SHORTWAVE RADIO**

ICOM-R70 100 khz-30 mhz digital Rcvr. . . . . 679.49

**KENWOOD**

R-600 150 khz-30 mhz digital Rcvr . . . . . 349.95

R-1000 200 khz-30 mhz digital Rcvr . . . . . 419.95

R-2000 150 khz-30 mhz digital Rcvr.-memory 579.95

**YAESU**

FRG-7700 150 khz-30 mhz digital Rcvr . . . . . 439.95

MU-7700 Memory unit-holds 12 freq . . . . . 147.95

FRG-7 SW Receiver w/battery holder . . . . . 298.95

YH-55 Headphones/8 ohm . . . . . 19.95

**PANASONIC**

RF-2200 8-band portable Rcvr. . . . . 179.95

RF-2600 6-band digital Rcvr . . . . . 199.95

RF-2900 5-band digital Rcvr . . . . . 244.95

RF-3100 31-band digital Rcvr . . . . . 266.95

RF-4900 10-band digital Rcvr . . . . . 389.95

**SONY**

ICF-2001 AM/FM/CW/SSB digital Rcvr. . . . . 209.95

ICF-6500W AM/FM shortwave portable Rcvr. 189.95

**UNIVERSAL M-600 Multi-Mode, Crypto-Decoder-Decodes: Bit Inversion, Tor-Sitor, Non Standard Shifts** . . . . . 799.95

**SCANNERS**

**BEARCAT**

BC-100 16 ch programmable pocket scanner. 288.49

BC-150 10 ch programmable scanner . . . . . 169.49

BC-160 16 ch programmable scanner . . . . . 183.49

BC-200 16 ch programmable scanner . . . . . 188.49

BC-210XL 18 ch programmable scanner . . . . . 224.49

BC-20/20 40 ch programmable scanner. . . . . 289.49

BC-250 50 ch programmable scanner . . . . . 268.49

BC-300 50 ch programmable scanner . . . . . 344.49

BC-350 50 ch prog. scanner, Alpha-Numer. 388.49

**BETTY BEARCAT** Freq. Dir., East or West . . . . . 13.99

**REGENCY**

D-100 10 ch programmable scanner . . . . . 164.95

D-300 30 ch programmable scanner . . . . . 189.95

D-810 50 ch programmable scanner . . . . . 259.95

M-100 10 ch programmable scanner . . . . . 197.95

M-400 30 ch programmable scanner . . . . . 224.95

K-100 10 ch programmable scanner . . . . . 144.95

R-1040 10 ch programmable scanner . . . . . 136.95

**JIL SX-200** 16 ch-programmable scanner, covers 26-88 mhz, 108-180 mhz, 380-514 mhz . . . . . 349.95

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• True Discount Prices & Free UPS Shipping To 48 States • Picture Catalog \$1.00 Refundable

Product Review....

**G.E. World Monitor**

Considerable national promotion recently of General Electric's new "World Monitor" (model number 7-2990) portable radio motivated us to secure one for a field test at Grove Enterprises. Discounters list the Unit in the \$170 range.

Initial appearance is neat, massive, with metal (not plastic) knobs. The unit is powered either by 120/240 VAC or internal batteries (six D cells).

A swivel-type telescoping antenna provides reception on all bands, or an external antenna may be affixed to terminals provided on the rear of the cabinet.

Frequency coverage is in six bands: 540-1600 KHz, 3.5-31 MHz and 88-108 MHz (shortwave in 4 bands).

A fluorescent digital readout provides resolution to 1 KHz on AM and shortwave, 100 KHz on FM. An RF gain control is provided to attenuate strong AM and shortwave signals.

Front-panel output jacks are provided for recorder and ear-phone audio. An adjustable BFO is used to refine CW and SSB reception; a separate control permits calibration of the receiver on shortwave.

**BUT HOW DOES IT WORK?**

FM reception provided crisp, clean audio. Not excellent, but good. Separate bass and treble controls permit contouring of sound to personal taste. An automatic frequency control (AFC) switch works well to correct for drift on FM.

Image rejection leaves a great deal to be desired; prominent heterodynes (whistles) could be heard throughout the short-wave and AM bands using only the integral whip antenna.

Frequency drift on SSB and CW rendered the receiver very marginal for this purpose. The condition was aggravated by an erratic bandswitch (wouldn't return to the same frequency when switched) and pulling of the oscillator by strong signals.

A bandwidth control ("narrow/wide") was more cosmetic than functional, refusing to separate adjacent frequency signals noticeably.

Fine tuning is tricky; only the main dial is provided, and its rapid excursion through the spectrum makes accurate adjustment difficult.

No noise limiter is provided. The left-reading S-meter is confusing to anyone used to a normal right-reading indicator. **GENERAL IMPRESSIONS:** A typical mass-merchandise radio not worth serious consideration except for casual listening.

**Tuning In On British Ship To Shore**

*Monitoring Times is pleased to welcome James R. Hay, a maritime radio enthusiast who will share his expertise in monitoring ship to shore transmissions beginning this issue.*

England offers a wide variety of shortwave frequencies of interest to listeners. While there are only three coastal stations (as shown on the map) they offer ample opportunity to be heard.

To the north of Scotland, the United States Navy operates a station which can be heard using Morse code on 3724, 7504.5, and 12691 KHz. The station is located at Thurso, and its callsign is GXH. Also in the north of Scotland, the British Post Office operates a station at Wick on 12709 KHz, using callsign GKR.

Before delving into the specifics of frequencies at Portishead, a word of explanation is in order. The British have a system of assigning callsigns to a transmitter depending on its frequency.

In that system, a number follows the first three letters of the callsign; a number two is used for the 4 Mhz band, 3 for 6 Mhz, 4 to 8 Mhz, 5 for 12 Mhz, 6 for 16 Mhz, and 7 for 22 Mhz.

There are exceptions, but this is the general rule; I have deleted the numbers from the callsigns given below.

Although the callsigns for the radiotelephone stations are shown the name is preferred on the air. Thus, a ship would call "Portishead Radio" or "Wick Radio".

In the radiotelephone bands, Portishead Radio can be heard on the following frequencies (USB) (GKT) 4373, 13100.8, 13130.9, 17236, and 22611.5 KHz; (GKU) 8765.4,

8774.7, 22630.1, KHz, (GKV) 13172.1; and (GKW) 17329 KHz.

Portishead Radio can be heard in morse code using the following frequencies (kHz) and callsigns:

GKA	GKB	GKC
4286	4272	4251.6
6369	6379.5	6397.9
8546	8557.9	6407.5
12822	12835.5	8516
GKA	GKB	GKC
17098	17112.9	13019.8
22467	22449	16956
		22407.3
GKD	GKE	GKG
6428.5	4350.4	6469.3
8468.7	8705.5	8591.4
12778.5	13072	12789.9
16974.6	17198	17072
22431	22561	22503
GKH	GKI	GKJ
6470.8	6473.2	6477.5
8604	8606	8684
12791.5	17151	16918.8
17092		22545
22525.5		
GKK	GKM	GKN
4336	6397	6379.8
6542	8581.6	8580.5
8552	12714	17135.7
13006.5	17136.8	
17167.5		
22494		
GKO	GKP	GKS
8582.5	8711	6402
17137.1		8497.3
		16882.5

With the number of frequencies in use, one is bound to be on the air when you attempt to hear them. Marker transmissions in Morse code can also provide a place for a shortwave listener to get some practice as many of them use slow speed.



Three British coastal stations may be heard worldwide

**New Beacon Frequencies**

**On A More Serious Note**

The Federal Communications Commission has approved a revised list of automatic beacons intended for propagation studies on the amateur radio frequencies. Modulated or unmodulated Morse and RTTY are the only modes permitted in an automatic mode.

The maximum legal power authorized is 100 watts and the signal must be identified once a minute by a callsign followed by "BCN" or "B".

Voice modulation may also be used; an obsolete entry in the "beacon" must be spoken.

Frequencies in megahertz for beacon operation are as follows:

- 28.20-28.30
- 50.06-50.08
- 144.05-144.06
- 220.05-220.06
- 222.05-222.06
- 432.07-432.08

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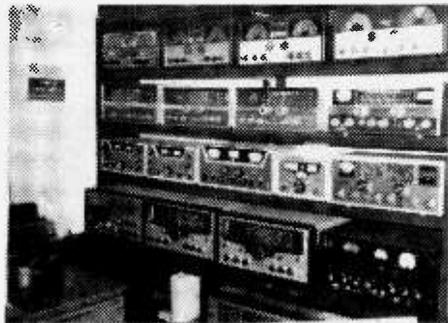
# Relics From The Glorious Past

By Chuck Dachis WD5EOG  
4500 Russell Rd  
Austin, TX 78745

The seeds for my collecting Hallicrafters were planted many years before the actual start of the collection. As a child, in the mid 40's, I much preferred old electronic devices discarded by my neighbors to the usual toys manufactured for my age group.

In 1954 a friend opened a TV-Radio repair shop and was willing to allow me to watch and learn. I spent many hours there learning practical electronics and eventually "falling in love" with the old console radios of the 30's and 40's. The more knobs, dials, and tubes they had, the more I was fascinated by them.

One of my favorite dreams



General Collection 12-20, 1980



General Collection 12-20, 1980

was finding a store which had wall to wall used receivers of that period, priced within my means. Periodically I would find at our local Goodwill store what I called a "super radio", such as the RCA model 816K, for \$5.00! This never happened often enough to satisfy my hunger for old receivers!

My first Hallicrafters receiver was an SX-28 that I found in 1960; I discovered that a "super radio" didn't have to have a big wooden cabinet. The SX-28 certainly was a "super radio", I loved that radio, but sold it a couple of years later.

As I encountered the usual problems in ascending to adulthood and establishing myself in life, my activities in radio and electronics became dormant. Except for an occasional nostalgic twinge, I did little between 1964 and 1975.

In 1975 it occurred to me to start a collection of "super radios" of all brands. I felt that my first one had to be the SX-28 since I had not seen any other models. During my six month search, I came across the S-36 and an S-38B.

The S-36 certainly qualified for the "super radio" classification; The S-38B didn't but the price was right!

At this point I began to wonder how many other receivers Hallicrafters had built, so the collection was begun in earnest on receivers with an "S" or "SX" designation only, I discontinued looking for other brands.

Since Hallicrafters was best known for ham radio gear, the

thought occurred to me that the best way to find them was to advertise in amateur publications.

The response to my ads has been overwhelming. I have finally found my "dream store" in the attics and basements of America's hams!

As the receiver collection grew, I discovered more and more items made by Hallicrafters and decided it would be a real challenge to expand the collection to include all ham radio gear and related items as well as some commercial, military, and home entertainment equipment built between 1931 and 1968.

It is a real challenge, because Hallicrafter was a very prolific company and marketed so many different items that no one seems to know just exactly what was produced.

Documentation was poor in the early days, and I am constantly finding Hallicrafters equipment that no one has heard of, such as the HT-36, the Super Seven", the S-33 and much more.

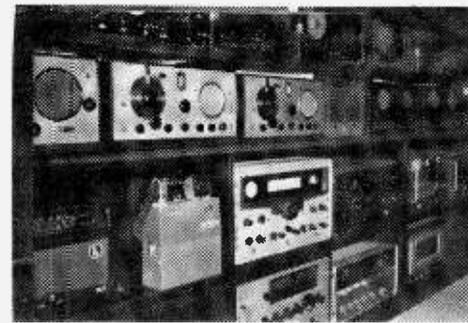
All the gear that goes into the collection is completely restored to its original condition, both physically and electronically. I am also keeping a complete log on each unit--where it came from, cost, work done, results, and so forth.

The biggest problem with the restoration of these units is removing modifications installed by previous owners, cleaning up former repairs and matching paint for panel and case work.

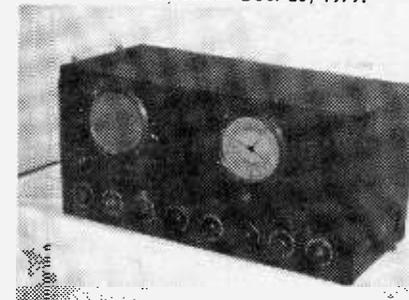
Problems in general with the collection include display space, difficulty in identifying some of the early models that were produced before the model numbers were being put on the unit, and communicating with those people who have these radios, letting them know I want them.

One would think that locating major replacement parts would be a problem; it really isn't too difficult. Many of the Hallicrafter sets use the same parts, so a good stock of spare parts may be had by stocking several units like the S-20-R which is still quite common. Parts can be used in many other models.

At this date, the collection includes one hundred twenty five receivers, three dozen transmitters, a slightly lesser number of transceivers, one TV, A T-54, and



General Collection Dec. 20, 1979.



"Super Seven" no S or SX 1935 Very similar to S-8-A, and both "Super Seven" and S-8-A bear a striking resemblance to the RCA "ACR-175"



This is an S-5 produced 1934-35



SX-9 Early prod. mod. 1936 Note the "Logo" in upper right corner of panel

numerous accessories such as VFO's, panoramic adaptors, speakers, external "S" meters and even some test equipment like the HG-1 signal generator--all of them different!

Interesting side lines on this collection includes helping other people find parts and specific models that they may be looking for and giving technical assistance to other Hallicrafter owners.

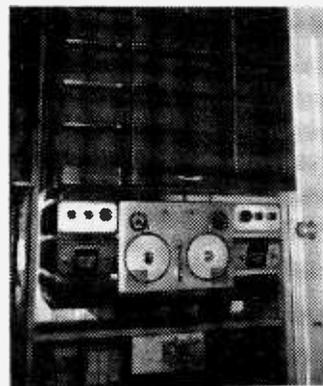
I also enjoy the correspondence with others about Hallicrafters and every response I get is answered.

The rarest units in the collection include the S-5, DD-1, Super Seven, S-8-A, S-9, S-10, and the HT-36 (see photos). Many others are still needed.

At the top of my "want list" is the S-1, (a 4 tube TRF in a wood case), production line data (quantities, dates, etc.) and engineering prototype units.

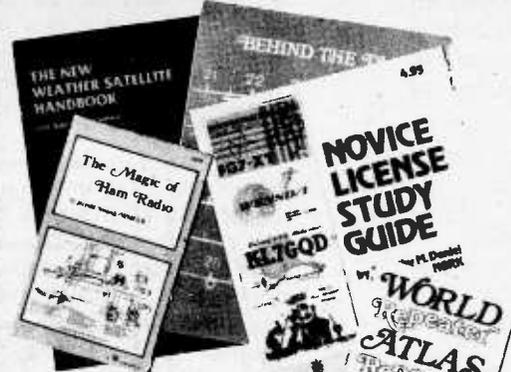
Besides the equipment itself, this collection also includes a nearly complete set of original manuals, correspondence with former Hallicrafters employees and radio historians knowledgeable on the Hallicrafters company, and even memento items of the Hallicrafters company, such as stick pins of the famous SCR 299, and tie tacks with the Hallicrafters Logo.

I would be delighted to hear from more former employees and any one else interested in helping preserve this colorful part of our radio past.



The Dual diversity one (DD-1) 1937-38 25 tubes - audio chokes power supply chokes are located in speaker cabinet which also contains the Jensen 15" coaxial speaker. The tuner chassis is on top of the speaker cabinet.

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**Novice License Study Guide**  
by Timothy M. Daniel  
N8RK  
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N8RK  
Learning rather than memorizing is the secret. This is not a question-and-answer guide that will gather dust when the FCC issues a new test. Instead, this book will be a helpful reference, useful long after a ham upgrades to General. Includes up-to-date FCC rules and an application form.  
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**The Magic of Ham Radio**  
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# Club Corner

While clubs come and go, the need for communication among listeners will always be with us. This month we will take a brief look at some of the organizations and publications at present.

**OHIO RADIO MONITORING ASSOCIATION (ORMA)** Founded recently by several young listeners, ORMA is a broad-interest club with members listening from 100 kHz-30 MHz, CB, TV-DX'ing and scanners.

Contests are held and a monthly newsletter is issued. Dues are \$5 per year. For more information write ORMA, PO Box 12316, Columbus, OH 43212 or PO Box 264, Grove City, OH 43123.

**ASSOCIATION OF CLANDESTINE ENTHUSIASTS (A.C.E)** Although we mentioned this recent addition a few months back, new readers might be interested in this unique group whose specialties include pirate broadcasters, clandestines and spy-numbers.

Membership is \$6.95 per year including bulletins. For more information write A.C.E., PO Box 452, Moorhead, MN 56560

**ALL OHIO SCANNER CLUB (AOSC)** While we are on the subject of my native state, we might mention the largest Ohio club. Catering to the VHF/UHF scanner bands, regional listings are in each bulletin, federal and non-government as well.

Dues are \$14 per year. For more information write AOSC, 10 Avalon Rd., Mt. Vernon, OH 43050

**ONTARIO DX ASSOCIATION** One of the classiest bulletins we have seen is "DX Ontario", concentrating on worldwide short-wave and medium wave broadcasters.

Dues are \$20 per year; for more information write ODXA, 3 Camrose Crescent, Scarborough, ONT. Can. MIL 2B5

## CLUB REPRESENTATIVES TAKE NOTE

If your listening organization would be of interest to MT readers, send in a brief description of your goals, membership dues and newsletter contents.

Monitoring Times readership is expanding explosively, and a large number of our readers don't know about your organization, even if we have included it in our column before.

Send your synopsis to Monitoring Times Club Corner, 140 Dog Branch Rd, Brasstown, NC 28902.

## A Club For Every Interest

Dozens of monitoring clubs, large and small, abound throughout the United States, catering to every interest from broadcast to utilities, VLF to microwave.

We would like to thank the Association of North American Radio Clubs for contributing the following list of member organizations for our readers.

Interested listeners may wish to send \$1 to those clubs from whom you would like to receive a sample bulletin and membership

information.  
**AMERICAN SHORTWAVE LISTENERS CLUB**, 16182 Ballad Lane, Huntington Beach, CA 92649. (SW, MW, Utilities)  
**CANADIAN INTERNATIONAL DX CLUB**, 6815 12th Ave., Edmonton, Alberta T6K 3J6 Canada. (All Wave).

**CLUB ONDES COURTES DU QUEBEC**, 745 Du Chateau No. 24, Sainte Foy, Quebec, G1X 3PY Canada. (SW, Utilities, Ham) Published in French.

**HANDICAPPED AID PROGRAM-U.S.A.**, Route 4, Box 32, Rolla, MO 65401 (Promotes radio listening hobby among handicapped persons)

**INTERNATIONAL RADIO CLUB OF AMERICA**, P.O. Box 26254, San Francisco, CA 94126 (MW-BCB Only)

**INTERNATIONAL DXERS CLUB OF SAN DIEGO**, 1826 Cypress St., San Diego, CA 92154 (non-technical receiver and equipment information)

**LONGWAVE CLUB OF AMERICA**, 45 Wildflower Road, Levittown, PA 19057 (LW Only)

**MIAMI VALLEY DX CLUB**, 4666 Larkhall Lane, Columbus, Ohio 43229 (all wave, with emphasis on SW)

**NATIONAL RADIO CLUB**, P.O. Box 118, Poquonock, CT 06064 (MW-BCB Only)

**NORTH AMERICAN SHORTWAVE ASSOCIATION**, 45 Wildflower Road, Levittown, PA 19057. (SW Only)

**ONTARIO DX ASSOCIATION**, 3 Camrose Crescent, Scarborough, Ontario, MIL 2B5. (SW and MW)

**RADIO COMMUNICATIONS MONITORING ASSOCIATION**, P.O. Box 4563, Anaheim, CA 92803. (VHF/UHF public service bands, SW utilities)

**SPEEDX**, P.O. Box E., Lake Elsinore, CA 92330 (SW, utilities)

**WORLDWIDE TV-FM DX ASSOCIATION**, P.O. Box 97, Calumet City, IL 60409 (TV, FM, VHF-UHF only)

**ANARC ASSOCIATE CLUBS ASSOCIATION OF CLANDESTINE ENTHUSIASTS**, P.O. Box 452, Moorhead, MN 56560. (Clandestine radio)

**CANADIAN HANDICAPPED AID PROGRAM**, P.O. Box 3096, Station F, Scarborough, Ontario, M1W 3P5, Canada. (For handicapped DXers in Canada)

**MINNESOTA DX CLUB**, 5213 Drew Avenue, South, Minneapolis, MN 55410 (SW-MW-Utilities) Limited to residents of Minnesota.

**UNIVERSITY OF MANITOBA DX/SWL CLUB**, Room 517, Box 131, University Centre Winnipeg, Manitoba, R3T 2N2, Canada. (limited to residents of Manitoba)

**WASHINGTON AREA DX ASSOCIATION**, 606 Forest Glen Road, Silver Spring, MD 20901. (SW, MW, utilities)

**ANARC AFFILIATE ORGANIZATIONS**

**EUROPEAN DX COUNCIL**, P.O. Box 4, St. Ives, Huntingdon, Cambs, PE17 4FE England. (European equivalent of ANARC federation)

**NEW ZEALAND RADIO DX**

League, P.O. Box 1313, Invercargill, New Zealand (Federation of New Zealand radio clubs) (MW, SW, TV-FM)

**SOUTHERN CROSS DX CLUB**, G.P.O. Box 336, Adelaide,

South Australia, 5001, Australia, (SW, MW, Amateur)

**WORLD DX CLUB**, 17 Motspur Drive, Northampton, NN2 6LY, England (SW, MW, FM-TV)

## Viewpoint

(continued from page 27)

Add my vote of approval to all the others for the super job you've done on bringing us RCMA'ers and SWL's a paper that doesn't compete but rather adds so much more to the enjoyment to us hobbyists (Charlene Harvey, Redding, CA)

Really do enjoy MT. Hope you can prevail on Sam Lambert to keep up the good work on CW. Found his article Jan/Feb p. 22 very helpful. (Doug Hulén, Birmingham, AL)

In response to a question in Jan/Feb '83 Technical Topics, I know of another source for a digital readout kit: Printed Circuits International, Inc. 1145 Sonora Ct., Sunnyvale, CA 94086 (or) Suite 1, 6350 LBJ Freeway, Dallas, TX 75240.

Perhaps readers should be made aware of two potential problems in adding a digital readout: noise introduced and receiver detuning (corrected by realignment) (David Solliday, Vega Baja, PR)

Please confine your publication to the subject of monitoring or short-wave reception. I am fed up with all the emphasis on computers.

I get approximately ten magazines on the subject of computers and with few exception they are just a bunch of ads. (Theodore E. Deusner, Kennewick, WA)

For ten years of interest in electronics and communications I have been looking for a publication like Monitoring Times. Thanks for coming through and keep up the good work. When will MT become a monthly? (John Fender, Old Fort, NC)

(HMMMM...ed.)

## THE UNKNOWNNS

While it is satisfying to have within reach published lists of identified frequencies, much is to be said for the intrigue to be found in the mysterious unknown.

Let's take a look at some recent loggings (all frequencies in kilohertz):

5718 USB frequency-hopping voice inversion

6355 USB @ 1310 UTC Sunday (lots of profanity!)

20001 USB "Aircraft 278"; "Aircraft 264"

21754 USB @ 0214 UTC (possibly an embassy)

25878 "Bagpipe" tones; warbly carrier other times

29883 Warbling telemetry

Readers with other interesting catches, or with explanations for these, are invited to contact Monitoring Times and share their listening experiences on all frequency ranges including VHF and UHF.



**73 Magazine** is a virtual encyclopedia for radio amateur communications, covering a complete range of topics from A to Z:

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Yet, unlike typical encyclopedias **73** never becomes outdated because it is updated every month. And not only does **73** offer you the practical information you need, it addresses the pertinent questions you want answered: questions about satellite TV, about state of the art listening, about the increasing role of computers in digital communications.

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## VIEWPOINT-- A New Publication For The Home Builder?

Last month we asked our readers if they would like to see another Grove Enterprises publication, this one dealing exclusively with simple home-brew electronics projects.

Responses were very supportive, but some sobering replies came in, too. Let's take a look at some of the letters.

Dear Bob,

I like your idea of a new electronics magazine very much as I too am saddened by the loss of "Popular Electronics." If the new magazine is to be as well done as "Monitoring Times" I can guarantee you at least 1 subscription all ready to be bought. Thanks for remembering us "electronics" buffs, may you never regret it.

Sal Sgroi, Jr  
Frankfort, NY

Dear Bob:

I was disgusted when Popular Electronics phased into Computers and Electronics. I enjoyed the magazine. I see so much of computers in my daily routine that I absolutely reject in my thinking the review of anything else that relates to them in my leisure time.

When this magazine, which was a very good one, expires as a subscription it will not be renewed as I have let others go.

The variety of electronic games, numerous magazines and papers delegated to them, and the constant array of them has completely turned me off and I look upon this sort of thing with disgust.

I am sure that others like all of this, but it sort of gets to me when I can find no magazine which deals with hobby electronics. I for one certainly favor your suggestion that somewhere there be a publication for the radio experimenter, the serious hobbyist who takes pride in doing something constructive on his own, in a learning method.

John W. Trotter  
New Iberia, LA

Speaking for myself, I feel that this market segment is already well covered and can think of six hobby builder sources that I can turn to should I get the urge. The various radio mags. All have their hobby sections and the do-it-yourself mags. have encouraged this trend for donkeys years. Nowadays you can even buy a 'projects' book full of ideas for the soldering-iron buff.

Bob, you have had the nerve and courage to start MT. I am sure it will become a thrashing success. Your publication is a natural for that vast international army of modest radio enthusiasts who often lack expertise. Enthusiasts who don't want to get lost in technicalities and who often feel that the editor of this or that journal is talking 'past' them! I would urge you to stay with an uncomplicated format and so retain your newly won 'niche' in the radio publications market.

A niche that was neglected too

long!

Charles Chenery  
Auckland, New Zealand

Your editorial in the current issue of Monitoring Times really hit a tender spot in the heart of this ole fuddy duddy.

How well indeed I can recall (too) many years ago when CB first became popular, I purchased a Knight Kit and put together my own CB, which after it was aligned by a more knowledgeable person than myself, did one heck of a job for me. A few years later on I put together a Lafayette communications receiver. Many many nights I spent in the attic of my home where I had my shack located, listening to SW, making out reports and mailing them out - I had a pretty good collection of QSL's in those days.

Now that I am retired and trying to get back into SW listening and electronics as a hobby, I too have been surprised to find that many of the old standby publications have either phased out of existence or are leaning toward computers, RTTY, ETC.

I for one vote a big AYE for a publication which would cater to those of us who are very much interested in tinkering with electronics etc, without getting so involved that we would need a college degree in engineering to comprehend.

Bob Hayes  
Albany, NY

Bob:  
In regard to your Jan/Feb editorial, yes, I'm afraid it is too late to save the vanishing breed. Unfortunately, trying to publish a magazine dedicated to home builders is like trying to beat a dead horse.

I have been an electronics home builder—for more than 40 years and not only did I subscribe to just about every American electronics magazine for home builders, I subscribed to several British magazines for years. In fact, in the early 1960's I wrote quite a few construction articles for Electronics Illustrated and Popular Electronics and many others. But that time has long passed. Electronics has simply become too sophisticated to go back to crystal sets.

There are many reasons why I think a home builder orientated magazine would fail today. First, the availability of parts is not what it used to be. In the old days, there were several parts houses in most big cities that would supply just a single resistor if you needed it. Today, if Radio Shack doesn't have what you want, that's about the end of the line. And Radio Shack inventory stinks in my opinion. And the thing that really turns me (and others) off is the fact that you have to buy a "package" of everything even though you need only one. That makes the cost rise unnecessarily.

In the old it was common to find "hams" working in the radio parts stores. Most knew a lot about circuits and could be helpful

if you ran into a problem. Not so today. In most Radio Shack stores (Olson's also) you find teens working part time who know nothing about electronics and care less. So if you are lucky enough to get all the parts together that you need and the finished circuit doesn't work, that's the end of the line.

Another problem is that some of the parts today are so delicate that a wrong connection can wipe out an expensive IC. Or even static electricity from your hands. No. It's not like the old vacuum tube days where the circuits could take a beating. And everything is so small. You need a tweezer and magnifying glass in many cases. And printed circuit boards are just no fun to play with as a beginner. Too hard to correct errors.

Kids today are also too sophisticated. They can go in and buy a working transistor radio brand new for a couple of bucks. Who needs to fool around with building a radio that may not work. I don't think kids today have the patience. I am a high school teacher and I know they

don't have the patience. They want INSTANT gratification.

For those few people around who still like to build their own things, you can't beat Heathkit. All the parts are there and so is help if you need it and they have all levels of kits.

Occasionally Radio-Electronics comes up with something I'd like to build. I take one look at the parts list and I give up. Often you have to send off to a particular company for certain parts and my experience with the mails has been dismal at best.

I could go on for a long time giving reason why I don't think there is a place for such a magazine any longer. And remember, this is coming from a person who still loves to build gadget from magazine articles. I'm a pro at it and I wouldn't tackle it any longer. Just too much trouble.

Ken Greenberg  
Skokie, IL

(How about a couple of pages each month in MT devoted to home projects?..)

(continued page 26)

### New Publications

**RADIOTELETYPE PRESS BROADCASTS** by Michiel Schaay (85 pages, 8" x 12") This new collection of RTTY frequencies and schedules is highly informative and accurate, compiled primarily from official correspondence with the agencies involved.

Sorted first by listening time, then alphabetized by agency, thousands of worldwide press frequencies receivable on standard RTTY receiving equipment are included. Printed in English.

A list of press agencies abbreviations CAP, UPS, etc.) worldwide along with full names and locations assists the listener to identify his intercepts.

Price and availability to be announced in the next issue.

**D.A.T.A. Book** (Reference series, each 400 plus pages, 8-1/2" x 11", softbound). For many years, the exhaustive series of semiconductor reference books from D.A.T.A. have provided engineers the ultimate condensed source of reference information.

Issued annually or semi-annually, more than two dozen volumes are available on IC's, transistors, diodes, opto devices, discontinued types, digital and linear circuits and more.

Each reference work, containing thousands of type numbers from manufacturers around the globe, is cross-referenced by generic product index, type number and device classification (op amp, audio, etc.) (actual classifications vary with subject matter of books).

Circuit drawings and package outlines with pinouts are also included.

While expensive for the average home experimenter (\$43-\$74), each volume is a cornucopia for the serious design engineer and a must for the in-

dustrial library.

(D.A.T.A. Inc, PO box 26875, San Diego, CA 92126)

**EQUIPMENT REVIEW** LARRY BROOKWELL, Editor of the San Diego DX'ers monthly bulletin, has announced the brand new 1983 edition of his Equipment Review Supplement.

The format is in loose-leaf format, 5-1/2" x 8-1/2", 194 pages. The price is \$6.95 postpaid. A quarterly updater is also available for \$7.00 and a leatherette ring binder emblazoned with the club logo is \$3.50. For \$16.50 listeners can get the entire package.

Order from SDDXC, 1826 Cypress St., San Diego, CA 92154.

**THE ILLUSTRATED HOME ELECTRONICS FIX-IT Book** by Homer L. Davidson (TAB 1283, 5" x 8", 359 pages, 1982, \$12.95)

For the home experimenter/do-it-yourselfer, Fix-it is a cornucopia of helpful hints ranging from cassette and 8-tracks to calculators and TV sets, AM/FM radios to phonographs and more.

Davidson speaks with experience; as owner of a radio and TV business and published author of previous books on the subject, his approach to diagnosis and repair is done in a logical, easy-to-read manner.

A convenient appendix of sources for parts complements this useful guide to home and shop electronic maintenance, an excellent companion for the home repairman.

**THE MASTER HANDBOOK OF HOUSEHOLD REPAIRS** by Martin Clifford (TAB 1279, 5" x 8", 404 pages, paperback, 1982, \$9.95)

For the household handyman who takes pride in doing

Continued on page 28

NEW PUBLICATIONS . . . from page 27

everything himself, Repairs is a bible of tips and techniques.

Eloquently illustrated and arranged in a handy alphabetical order (adapter plugs to zinc chromate primer), Clifford's book is great for keeping the home in first class shape.

Faucet repair (that always gives me a problem), wood and metal joints, painting, fuse boxes and outlets, electrical plugs and wiring, radiators, fencing, cracks, floors, plumbing, mildew...it's all there.

LOW AND MEDIUM FREQUENCY RADIO SCRAPBOOK by Ken Cornell (8-1/2" x 11", 119 pages, 1982 \$10 225 Baltimore Avenue, Point Pleasant Beach, NJ 08742

Now in its updated 4th edition, Scrapbook is an outstanding collection of hints and kinks for the low frequencies where successful reception and transmission may be more of an art than a science.

Liberal illustrated and prepared by an author whose name is synonymous with VLF and LF experimentation, Scrapbook is 100 percent solid state, using many of the latest devices to insure high performance from 10 to 500 kilohertz.

Cornell presents step-by-step articles on converters, receivers.

### Stock Exchange

Listen to Ohio at work--RR's, aero, business, federal government PLUS MORE! Sample newsletter \$1 or SASE for details. All Ohio Scanner Club, 10 Avalon Rd, Mt. Vernon, OH 43050.

Do pirate-clandestine broadcasters, numbers stations or even drug smuggler communications interest you? Contact the Association of Clandestine Enthusiasts. Information for SASE, yearly membership \$6.95, which includes 12 issues of our bulletin, THE ACE. Sample \$1. ACE, box 452, Moorhead, MN 56560. An ANARC associate club.

For sale: Realistic DX-200 communications receiver in new condition. Tunes 150 KHz-30 MHz. Price \$125. Realistic DX-302 in excellent condition. Tunes 10 KHz-30 MHz. Price \$250. You pay shipping. Contact C.M. Randall, Box 165Z, Covington, GA 30209.

Urgent Need: Schematic for Gonset 6 meter Comm III (model 3136). Looking for FM kit, manual, and another 3136 in good condition. L.E. Williams, 10 Elf Lane, Greenville, SC 29611.

Allied-Radio Shack SX-190 SW/BC receiver \$150 plus UPS; Yaesu FRG-7 damaged, fair, \$125 plus UPS; Collins R-388/51J3, fair, \$200 plus UPS. M.J. Stutlerheim, PO box 2576, Montauk, NY 11954.

Experimenters' dream! 4 Ch. Peterson aircraft scanner, 4 Unicom crystals. Was working. First \$25 buys, shipping paid. Dan Mulford, box 5 Hunt St., Osgood, IN 47037.

Bearcat 4-6 Pocket Scanner with 6 crystals, Nicads, charger, etc. First \$125 buys it, shipping paid. Dan Mulford, box 5 Hunt St., Osgood, IN 47037.

transmitters, antennas and loops, charts and tables, FCC regulations, even elaborate instructions for a home-built coil winder.

The Scrapbook is a must for low frequency experimenters and listeners.

SECRETS OF SATELLITE TV by Rod Johnson (8-1/2" x 11", 104 pages, 1982, \$20 from Satellite Associated Technology, Interfirst Bank Tower Suite 612, 222 E. Van Buren, Harlingen, TX 78550).

Publications related to TVRO systems seem to be inordinately expensive; Secrets is no exception. Intended primarily as an installers commercial equipment orientation, Johnson's book is approximately 70 percent advertising and reprints of equipment instruction sheets and manuals.

For the prospective dealer who has no other information on equipment, satellite orbits, transponder plans or installation considerations, Secrets may provide some orientation.

For the seasoned TVRO sophisticate, and even the beginner who has begun to accumulate some literature about satellite TV monitoring, Secrets has little to offer.

LIST OF UTILITIES STATIONS BY FREQUENCY edited by Brain W.J. Pimblett, \$2.25 from Canadian International DX Club, 6815-12 Avenue, Edmonton, Alberta, Canada T6K 3J6.

This nicely-printed offset collection of frequency sheets is a goldmine of the most active short-wave utilities frequencies

reported by listeners.

The list is updated and expanded approximately twice a year and is a compilation of loggings submitted by members of the club. These appear on a regular basis in the QSX column of the club newsletter "Messenger".

A fourth edition (\$3) is expected shortly. Write to the address above for more information about the club and its publications.

BASIC COMPUTER PROGRAMS FOR BUSINESS (Vol. 2) by Charles D. Sternberg (Hayden number 5178-6, \$13.95; 376 pages, 7" x 10", softbound)

With BASIC the dominant language in the world of microcomputers, Sternberg's new book is a collection of worthwhile programs.

The book is conveniently arranged by program application: Marketing and Sales, Personnel, Administrative, Statistics and Files.

Topics include customer files, commission computation, employee scheduling and time cards, mailing list, correspondence control, pricing, work processing, publications control, random filing and more.

CRYPTANALYSIS FOR MICROCOMPUTERS by Caxton C. Foster (Hayden number 5174-3, \$14.95; 333 pages, 6" x 9", softbound).

This new publication from Hayden is a goldmine of information for spies, counterspies and gamesters alike!

Cryptanalysis offers programs and code-breaking techniques for transposition ciphers, columnar transposition, substitution, one time pads, random and pseudo-random sequences Chi-square analysis, coincidence index and much more.

Special indexes include tables on letter frequency, common word lengths, word boundaries and other variables which help home in on decryption.

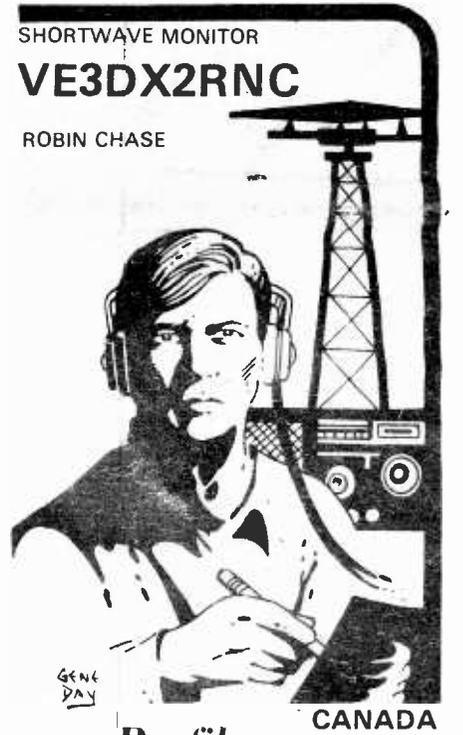
Cryptanalysis is the most comprehensive guide for the layman ever to cross this editor's desk. If you are a spy numbers buff, this is the book for you!

### Information Please

Has anyone modified the BC-210 to receive 144-148, 50 MHz and above, and 174 MHz and above? Where can I get an Ameco R5 receiver, and old Call Book, a Heath HG-10 VFO manual or any Tektronix probes or plug-ins? (Kevin Neal, Rt. A box 221A, Flip-pin, AR 72634)

Persons in Oklahoma who monitor 225-400 MHz to exchange ideas (Terry Lamb, Box 7, Twin Oaks, OK 74368)

Wanted: Frequencies in Chicago area used by reporters and news media. (George Theodore, PO box 48, Elmhurst, IL 60126)



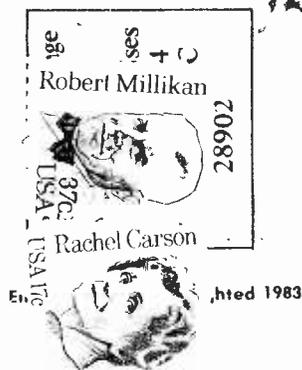
### Profiles

This month MT takes a look at two talented Canadians, Robin Chase and Gene Day, close friends from Gananoque, Ontario.

Robin is an avid SWL who also enjoys writing, reading science fantasy, attending theater and movies, music, hiking and playing chess, hockey and soccer.

With interests in writing and photography, Robin has reported on labor, sports and political events Canadian newspapers.

Gene Day is credited as being the only full-time comic book illustrator in Canada (see his artwork accompanying this article), working for Marvel. His artistic talents with Marvel have included illustrating Star Wars, Star Trek, Savage Sword of Conan, Thor, Spiderman, The Avengers, Captain Marvel, Doctor Who, Fantastic Four, The Master of Kung Fu, and Marvel's recent "western" entry, Caleb Hammer.



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