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# MONITORING TIMES

Volume 3-Number 6

BRASSTOWN, NORTH CAROLINA 28902

June, 1984

## FLY WITH THE HURRICANE HUNTERS

An MT Exclusive

by Larry Van Horn

The satellite forecaster at the National Hurricane Center (NHC), Miami, Florida pulls the satellite photograph from the processing equipment and notices an area of brighter clouds in the mid-Atlantic, signifying thunderstorms. Various ship reports indicate freshening winds in the area, and the forecaster's computer produced charts of air pressure and other meteorological parameters indicate to his experienced mind the formation of a tropical depression.

But more data--on the spot--of winds, temperatures, pressure, humidity, and the "state of the sky" in this empty part of the ocean are needed before a valid forecast can be made. The forecaster calls the Air Force.

Two active duty Air Force units, the 53rd Weather Reconnaissance Squadron "Hurricane Hunters" and the 54th Weather Reconnaissance Squadron "Typhoon Chasers," are charged with the seasonal job of flying into the most violent weather known to man. They collect the data vital to the forecasters and their warnings, information that can save lives of those unfortunate enough to be in the path of a full-scale hurricane or typhoon.

Stationed at Keesler AFB, Biloxi, Mississippi the 53rd (joined by the 920th Weather Recon group of the USAF reserves) is responsible for storm surveillance in the Atlantic Ocean, Caribbean Sea, the Gulf of Mexico and the eastern Pacific Ocean.

The 54th, flying out of Andersen AFB, Guam performs the same task in the western Pacific Ocean. Both units frequently deploy aircraft and aircrews to forward operating bases closer to the area of interest than their home bases.

There are certain meteorological parameters important for the formation of a tropical depression and its future development. Data that the crews of the 53rd and the 54th investigate are reported to the National Weather Service's hurricane forecasters in Miami; these forecasters can be heard on HF frequencies identifying as Miami Monitor.

The men and women of the Hurricane Hunters fly their WX-130 (W stands for weather) Hercules aircraft as low as 500 feet above the chaotic surface.

The data are transmitted in coded (not encrypted) form on HF to the forecasters at the NHC.

When the storm is far from land or shipping lanes a penetration to the very center, or "eye," is made every 12 hours. The closer the storm comes to landfall, the more frequent the WC-130 aircraft "fixes" are made. Finally, the "fixes" will become hourly until the storm dissipates over land or swerves out into colder waters to die.

The surface pressure is determined by the release of an instrument known as a "dropsonde," a small metal cylinder packed with meteorological measuring equipment coupled to a small UHF radio transmitter. Released at 10,000 feet, it falls to the water below at 5,000 feet per minute and radios back to a receiver on the aircraft information on temperature, humidity and air pressure of the storm that provides a vertical profile.

Data around the storm are as valuable as those found in the eye; for this reason the hurricane hunters fly large X-shaped patterns across the whole storm.

Although each storm is different, most will have moderate to severe turbulence and thunderstorms with large amounts of hail and lightning. The spiral bands of the thunderstorms merge in a circle around the eye, forming a unique phenomena



View of the forward half of the cockpit aboard a WC-130 showing (from left to right) flight engineer, aircraft commander, and co-pilot.

called the wall cloud or "eye wall."

It is the penetration through this formidable rampart of thunderstorms that is the most hazardous part of any Hurricane Hunter mission; the Hercules must be taken right through this wall to reach the center of the storm.

The eye itself--anywhere from 5 to 50 miles in diameter--is cloud-free, calm and serene compared to the periphery of the storm.

Storm reconnaissance missions can last anywhere from eight to 16 hours, depending on how far the crew must fly to reach the tempest. These are extremely fatiguing missions, but after fifteen hours of rest on the ground the crew is called upon to do it again.

The WC-130 requires a six place crew--pilot (the aircraft commander), co-pilot, navigator, weather officer, flight engineer and

dropsonde system operator. The weather officer, a professional Air Force meteorologist, along with the navigator directs the course of the flight during the penetration to remain clear of thunderstorms. It is the weather officer who computes the weather data, encodes the observation in a special format and transmits to Miami Monitor.

Observations are made as set forth in the National Hurricane Operations Plan (NHOP).

According to the NHOP, USAF and NOAA aircraft will normally transmit recon observations through the USAF Aeronautical stations via direct phone patch to Miami Monitor (Atlantic and Eastern Pacific) or Hickam Weather Monitor (Central Pacific). Aeronautical stations then provide a discrete frequency for mission use.

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P.11 - On-Hands Review of Regency's MX5000

# MONITORING TIMES

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Monitoring Times is published by Grove Enterprises, Inc., 140 Dog Branch Road, Brasstown, NC 28902. Phone 704-837-9200. Copyright 1984. Subscription rate: \$10.50 for one year, \$20 for two years, \$30 for three years. Canada and Mexico add \$9.50 per year. Foreign subscribers: surface mail add \$9.50 per year or air mail add \$28.00 per year.

## Military Intelligence



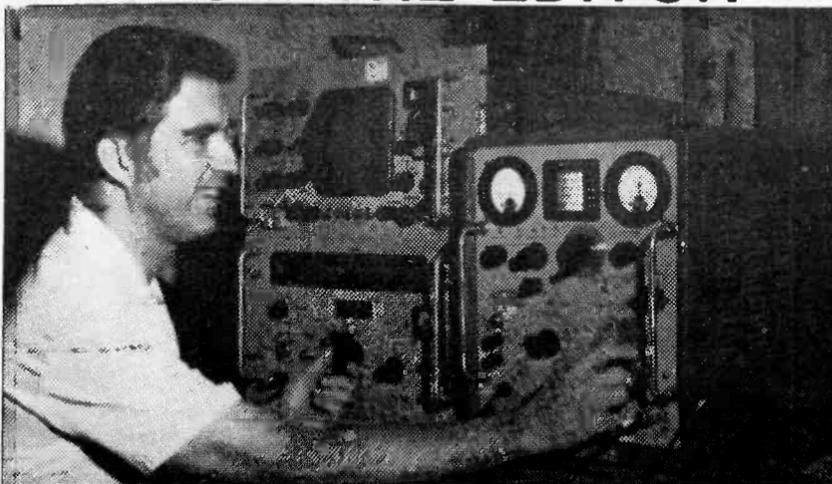
While some wags might argue that the term "military intelligence" is a contradiction in terms, there are, nonetheless, eleven defense organizations with major responsibilities to gather information in preparation for nuclear war.

With a \$15 billion budget and 15,000 personnel, these include:

- National Security Agency
- Central Intelligence Agency
- Defense Intelligence Agency
- Strategic Air Command
- Air Force Electronic Security Command
- Air Force Intelligence Service
- Air Force Technical Applications Center
- Naval Security Group Command
- Naval Intelligence Command
- Army Intelligence and Security Command
- National Reconnaissance Office

Some \$11 billion has been allocated to the military for development of secret programs. A small sampling includes: **ARMY** "Greater Slope," "Grass Blade," "Classified Pro-

## FROM THE EDITOR



### DESIGN YOUR DREAM RIG ...And Get A Reward!

Have you ever sat back and let your mind wander, picturing the ideal receiver or accessory which would complement your listening post or ham shack?

How would you like to share some of your thoughts with us here at MT, and possibly win a prize for your brainstorming?

Many of our readers send in suggestions for products and they are greatly appreciated; all are carefully considered as to their practicality. And now we encourage you visionaries to dream up the ideal piece of equipment. Let your imagination soar!

A DC to daylight receiver? Computer-controlled audio processor? Automated all-band RDF antenna?

The winner will receive a \$100 gift certificate which may be applied toward any merchandise in the Grove Enterprises catalog! Runners-up will receive special books from the Grove library for their efforts.

ject," "Special Programs"; **NAVY** "Retract Yellow," "Pilot Fish," "Retract Silver," "Retract Amber," "Link Cedar," "Chalk Eagle," "Chalk Coral," "Link Ash," "Link Birch," "Special Projects," "Special Processes," "Special Activities," "Prairie Schooner," "Dark Eyes," "Guardian Bear," "Sea Nymph," "Sea Cat," "Bear Trap"; **AIR FORCE** "Classified Projects," "Other Programs," "Special Programs," "Special Update Programs," "Special Support Programs," "Selected Activities," "Special Activities."

It is obvious how tax money disappears into the bottomless military spending pit under the guise of "national security."

We would like to thank the Center for Defense Information (303 Capitol Gallery West, 600 Maryland Ave SW, Washington, DC 20024) for their help in preparing this article.

All entries must be received by June 30, 1984 and will become the property of Grove Enterprises/Monitoring Times. Winners will be announced in the August issue. Send your ideas to Bob Grove, Monitoring Times, P.O. Box 98, Brasstown, NC 28902. Be as descriptive and thorough as possible.

Who knows, your design suggestions may become a futuristic product!

## Monitoring Net Terminated

Begun in the fall of 1983, the North American Monitoring Network met weekly on Wednesday evenings at 8PM Eastern time (0100 UTC Thursday) on 7227 kHz LSB.

Topics discussed included new equipment, identification of unknown stations and other timely topics of interest to the monitoring community.

"The main problem," commented Bob Grove, WA4PYQ net control station, "was in finding an alternate NCS so that I didn't have to tie up every week running the net." No replacement could be found.

With summer months and changing propagation conditions seriously compromising effective communications, it was decided to disband the net.

## REMEMBER! "S.A.S.E."

We at Monitoring Times constantly receive letters from readers which begin, "Please send me everything you have on..."

As much as we would like to help, we are not a public library service. Letters received with a Self-Addressed Stamped Envelope will be answered.

And as always, my telephone line is open for pre-paid calls weekdays 1-5 pm Eastern (704-837-2216)...Bob

## Dayton Hamvention Scores Again

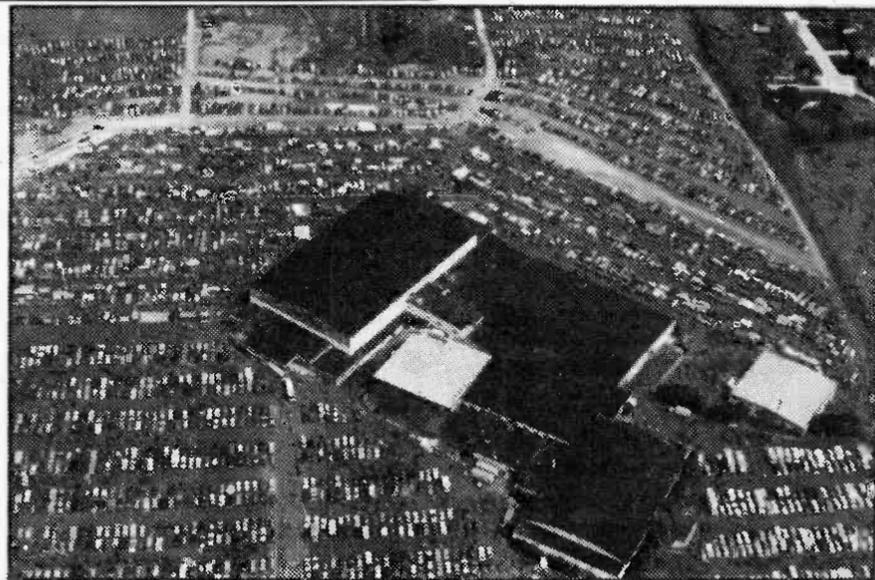
Since 1952 the Dayton (Ohio) Hamvention has grown to assume the enviable status of the world's largest hamfest. This spring (April 27-29), a record crowd of spirited hams, SWL's, computer buffs and other hobbyists and professionals alike arrived in waves to attend forums, see exhibits and shop the dealers and flea market tailgaters.

Some 21,000 visitors toured the immense show at the Hara Arena, encouraged by superb weather and seductive prices on new and used equipment.

Among the well-attended forums was the talk given by Bob Grove, editor of Monitoring Times and president of Grove Enterprises. His spirited presentation, always in demand at hamfests, was informative and enthusiastically-received.

MT readers who have never attended a hamfest are encouraged to take advantage of these interesting fetes; new friendships and old equipment bargains abound.

Congratulations, Dayton, on a job well done!





## Viewpoint

In reply to MT reader Zel Eaton's question (April "Information Please"), the antenna farm on Fla. Hwy 27, 5 miles south of US 27 intersection and north of US 41 is indeed the transmitter site for WOM. The companion receiving site is in a suburb of Ft. Lauderdale called Plantation, and is northeast of the intersection of US 441 and Sunrise Blvd.

The second location you asked about, is on property which used to be known as Richmond Field. I think it is a Coast Guard site, or possibly Navy, but I don't really know for sure. Judging by the site maintenance it is in current use.

A little more about WOM's transmitter site, which is also a regular AT&T microwave repeater location--We have 311 acres in the site, with 39 antennas (HF) in use. Most are full size log periodics, which cover about 4 acres each. We still use some of the old rombs, but they are being replaced as money permits with logs.

We have 21 - 10 KW P.E.P. transmitters at the site. Eleven are R.F.740's (Harris Corp) and ten are Collins HF80 series. These transmitters are remotely controlled by a computer system from the Technical Operators positions at Ft. Lauderdale. **The transmitters are connected through what we believe to be the world's largest transmitting antenna matrix, to the appropriate antenna for each ship as a call is answered. The matrix can expand to 30 transmitters by 40 antennas, and can expand further, if future growth requires it.**

A note on page 10 of this issue (4/84) of Monitoring Times refers to use of CW for traffic lists by our sister station, W00. **WOM also transmits the same basic traffic lists on CW on 8746.8 and continues even if the channel is in use, since the Voice is on the upper sideband. The CW is automatically generated at both stations by the way, not on an endless tape as was stated.**

Frank Womack  
Staff Supervisor,  
Radio Engineering  
AT&T

>>><<<

I am writing this letter with some reservations. I feel that MT is becoming a Canadian publication. All of the Canadian frequency listings seem to get more in each issue.

I realize that our neighbors to the north are very much entitled to their information, but they have access to most of these frequencies through frequency directories that are available from Radio Shack and other sources.

Try to devote some space to Coastal Stations, such as WLO, W00, WSL, KFS etc. and let's not forget CFH. Also some information on the availability of receivers for copying WEFAX. And the availability of video copy for computers.

All in all MT is as I have mentioned in the past, a very fine and timely publication. Keep up the good work.

Henry Ponder  
Lawndale, NC

>>><<<

I can't express how happy I am MT is monthly. Even more happy to see my story run in the May issue. MT has made its splash--I hope ripples spread throughout the world for a long time.

I noticed that even a member of the competition (and a good one at that), Popular Communications, mentioned MT in the May story on numbers transmissions, but was dismayed that right above the mention of MT, the author ran a list of good sources of info on utilities and numbers station loggings and MT was not there. (Havana Moon may wish a spell upon the author.)

MT has a good balance of stories, covering all aspects of communications. It seems not to copy Pop Com, or vice-versa! May sound stupid, but the two seem to complement each other! Well a compliment to you, anyway!

Dan Mulford  
Osgood, IN

>>><<<

### MY VOTE FOR FAVORITE AUTHOR

"MT" is the best of all; I'd never be without it! To all the DX world I'll tell; I'll even sing and shout it!

Even the vignettes are great, Professionally done! They lend an air of interest, And depict the hobby's fun.

It never is too long in scope, It never comes too soon. My vote for favorite author Is cast for HAVANA MOON!

High-Collar Carlos  
Rockford, IL

>>><<<

I am writing in response to your editorial in the May issue of MT. You stated that if anyone at Grove or MT ever was rude, or gave inadequate service, you wanted to know about it.

Well, I am writing to let you know of the prompt and excellent service that I received from your fine group on two occasions.

First, I had a problem with a discrepancy with the expiration date for my subscription to MT. I received a note stating they were glad that I had called it to their attention, and that it would be remedied. When I received my May issue I noticed it had been changed to reflect the correct expiration date.

My second pleasant experience was when I sent in an order to purchase your Skywire ANT 2. The order, along with my money order, was mailed on April 4 and the antenna arrived on my door step on April 13.

I wanted to let you people know when your service was superb, and not just when I had a problem.

I also would like to let you know that they Skywire has been working excellently since I hooked it to my recently purchased R-70.

Thank for a great product and excellent service. I will not hesitate ordering from Grove Enterprises again. Keep up the good work in MT.

William H. Moore  
Alburnett, IA

>>><<<

In this part of the world (New Zealand) the H.F. bands are loaded with many single letter CW beacons.

I have been monitoring the "K" letter beacon for some months now and at last I have heard it transmitting CW other than the letter K itself. This was heard on 4005.2 kHz and three different observations have been made:

1) First, the rate at which the K was being sent suddenly changed, and then..

2) Five figure groups of numbers were sent (CW) for 1-2 minutes. (On one occasion this occurred 4 times between 1700-1815 GMT.)

3) Using two receivers, I have confirmed that the "K" beacon transmissions are operating on several different frequencies at the same time, i.e. they are all being keyed in sync--4005.2, 3978.2, 2843.2 kHz plus numerous others.

Perhaps you could publish this information; maybe your listeners have noticed similar patterns with these rather unusual letter beacon transmissions.

☞ Cont'd p.29

## GILFER'S Ferrell Killed in Accident

The shortwave listening community was stunned to learn of the highway death of Oliver P. Ferrell, founder and president of Gilfer Associates of Park Ridge, NJ.

The accident occurred Easter Sunday morning, shortly after midnight as Ferrell and his wife Jean were returning from visiting friends. The driver of the other vehicle alleged to have fallen asleep at the wheel.

Mrs. Ferrell sustained two fractured ribs and extensive bruises, but was released after 4 days in the hospital. The other driver was reportedly not seriously injured.

Ferrell was an accomplished author and active shortwave enthusiast. His early affiliations as chief editor of Popular Electronics, CQ and Stereo Review paved the way for his founding of Gilfer Associates.

Ferrell's death at 63 years of age adds a sad note to a company which is credited with establishing the hobby of shortwave listening as a serious commercial market. At this writing long term plans for the continuation of Gilfer are undecided.



## Grove to Speak in Atlanta

Again this year Bob Grove, editor of Monitoring Times and president of Grove Enterprises will be a featured forum speaker at the Atlanta Ham Festival, June 16th and 17th, to be held at the spacious Atlanta Civic Center downtown.

Bob will present a talk Saturday on his favorite topic, "Monitoring the Spectrum: The Tools and Techniques."

For additional information write P.O. Box 77171, Atlanta, GA 30357 or call chairman Bernie Wilkerson at (404)451-1384 days, 451-1218 evenings.

FOR A BRIEF REVIEW OF THE MOST POPULAR RECEIVERS SEE P.23,  
BUT FOR NOW,...

# WHAT ABOUT THOSE "OTHER" RECEIVERS?

by Bob Grove

The vast majority of shortwave enthusiasts are familiar only with the standard brands--Kenwood, Yaesu, Sony, Panasonic, Drake, totally unaware that there is an echelon of receiving equipment on the market.

The vacuum of information is understandable: those "other" receivers are targeted to a far more sophisticated clientele, the commercial, government and military market.

Shipboard, airborne and field installations can be brutal on radio gear and specifications for their design are far more stringent.

Probably the most highly-qualified of all receivers are those made to "TEMPEST" requirements, designed to detect incidental radiation from electronic equipment.

An enormous amount of electronic intelligence (ELINT) gathering is performed by monitoring stray electronic signal radiation from a distance. Whether aboard a trawler off the coast, in an inconspicuous hotel room near an embassy,

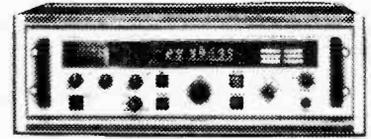
or mounted in a van parked near a military installation, sophisticated receiving gear can learn much about the goings-on within classified and guarded operations by detecting radiation from computer switching circuits, transmitter and receiver oscillators and other frequency-generating circuitry within those walls.

While some of the less elaborate--but high quality--receivers shown here can be bought for a few thousand dollars, TEMPEST receivers start at \$100,000!

What are some of the advantages which you or I would benefit from if we owned these higher-grade radio receivers? Frequency accuracy and stability, reduced image and intermod susceptibility, greater range of selectivity, long-term component dependability and immunity from breakdown (greater "MTBF"--mean time between failure), greater choice of front panel control functions and better pre-production research and development.

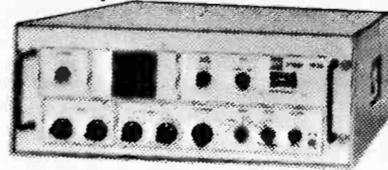
Receivers listed here are merely a random sampling

and do not indicate an endorsement by MT. Prices are approximate, shown only as a guide. For more information, contact the manufacturers directly.



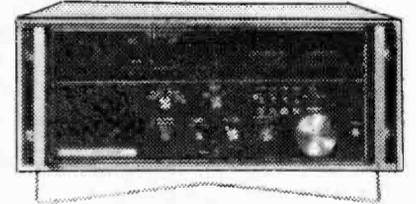
(4)Vigilant SR-511 (\$5000)  
(Hamilton Communications Systems, Suite 4545, One World Trade Center, NY, NY 10048)

\*\*\*



(1)McKay Dymek DR44 (\$2000)  
(111 S. College Avenue, P.O.Box 5000, Claremont, CA 91711)

\*\*\*



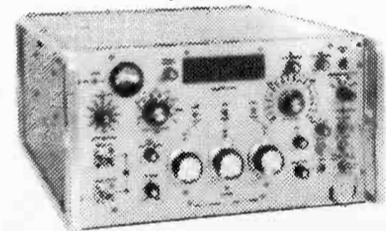
(5)Collins 851S-1 (\$6000)  
(Collins Telecommunications Products, 855 35th St., P.O.Box 728, Cedar Rapids, IA 52406)

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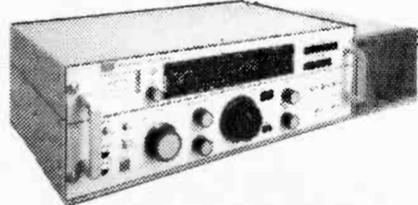
(2)Hagenuk RX 1001 (\$8000)  
(Hagenuk GmbH, P.O.Box 11 49, D-2300 Kiel 1, FRG)

\*\*\*



(6)Raytheon 1150 TEMPEST (\$100,000)(division sold to Dynamic Sciences Corp., Van Nuys, CA)

\*\*\*



(3)JRC NRD-93 (\$6000) (Universal Amateur Radio, 1280 Aida Drive, Reynoldsburg, OH 43068)

## Canadian Government Listens In

We would like to thank Harold Sellers, Chairman of the Ontario DX Association (3 Camrose Crescent, Scarborough, ONT. M1L 2B5) for sharing the following information, excerpted from the Toronto Globe and Mail.

No judicial warrants are required by the Canadian military's top-secret electronic eavesdropping agency, the Communications Security Establishment, Solicitor-General Robert Kaplan said April 3rd.

Mr. Kaplan told reporters that the Department of National Defence's Communications Security Establishment needs no warrant because all it is doing is "gathering electronic impulses from the air, from the public domain, and analyzing them..."

"Those electronic impulses that are floating around are public domain," he said. "Anyone who can pick them up is entitled to do so."

The work of the security group is considered so secret that its existence as part of the department was not officially acknowledged until last year. The size of its budget and its staff are classified information.

It is believed that the

CSE monitors short-wave radio transmissions to and from foreign embassies in Ottawa and maintains listening posts in the Arctic to eavesdrop on Soviet military radio traffic.

It may also monitor microwave transmissions. Most long-distance telephone and Telex communication in North America travels through the air by microwave at some point.

During testimony before the justice committee of the House of Commons, Mr. Kaplan carefully avoided any direct answers about the CSE's mandate or operations.

He also drew a distinction between "wiretapping and bugging, which are illegal in Canada," and whatever it is that the CSE does.

Conservative MP Allan Lawrence, a former solicitor-general, said he was amazed at Mr. Kaplan's answer because he knows from experience that the CSE intercepts private communications, and to do so without a warrant is illegal.

"We have our own law officers," Mr. Kaplan said, "and they go by the definition...(in the Criminal Code) of private communications."

The Code says private communications "means any

oral communication or any telecommunication made under circumstances in which it is reasonable for the originator thereof to expect that it will not be intercepted by any person."

### SPACE CENTER

### HAM CLUBS

### RELAY SHUTTLE COMMS

The Federal Communication Commission has rescinded a previous rule requiring separate special temporary authorizations in advance for each shuttle mission for hams to retransmit official two-way shuttle-to-ground transmissions.

Typical of clubs providing the service is the Goddard Amateur Radio Club at Green Belt, Maryland (WA3NAN). During shuttle flights their rebroadcasts may be heard on or near the frequencies 3860, 7185, 14295, 21390 and 28650 kHz SSB.

Additionally, local coverage will be provided on their 147.45 MHz FM transmitter.

Similar services are offered by the Johnson Space Flight Center in Houston.

## V.A. to Back Up DoD Comms

An item received at presstime indicates that a new public law (97-174) authorizes the Veterans Administration to actively participate in Department of Defense communications, effectively supplementing FEMA (Federal Emergency Management Agency).

FEMA's prime responsibility is to insure continuity in federal government following a major disaster, natural or man-made. After evacuating key executive personnel (President, cabinet members, military brass, etc.) to alternate sites like Mount Weather, a massive HF network assumes priority communications.

The VA will now take part in this network, operating from hospitals and supply depots across the country. Typical of the newly-allocated licenses are KNA204 (Washington, DC) and KNA229 (Bell, CA).

FEMA support communications may be heard during daylight hours testing on many frequencies including 10493 and 14776 kHz upper sideband.

# The RadioSpectrum: A Gift to the Weatherwise

by Bert Huneault

## PART VI

### DECODING CW MARINE WEATHER

For weatherwise folks who can also read the Morse code, the HF spectrum can reward your hobby with a triple gift: marine weather broadcasts from Coast Guard and commercial coastal stations, weather map analysis broadcasts from naval radio stations, and coded ship reports from the high seas. These CW transmissions are heard in several HF bands, and are broadcast for mariners the world over.

(a) Marine weather broadcasts in CW are very similar in contents to the radiotelephony (SSB) broadcasts mentioned earlier. I often copy transmissions from the stations listed in Table 6, but for a more comprehensive listing of CW coastal stations which transmit marine weather forecasts, readers are once again referred to the books previously mentioned in the May issue of MT.

(b) Weather map analyses are a most unique and interesting segment of CW transmissions from some naval radio stations. Coded in order to provide as much map detail as possible in a concise transmission format, this type of broadcast enables the listener to actually plot his/her very own weather map! For a partial list of times and frequencies of stations which transmit these weather map analyses, refer to Table 6A.

In particular, Naval Radió Station NAM transmits its ANALYSIS messages as "Part Three" of its scheduled weather broadcasts. Parts one and two consist of plain language marine weather warnings and forecasts for the North Atlantic, Caribbean Sea and Gulf of Mexico. "Part Three" usually starts about 15 to 20 minutes after the beginning of the three-part broadcast.

The related weather map covers eastern North America and the Atlantic Ocean between longitudes 10W and 100W, from tropical to polar latitudes. The transmitted data enables one to accurately plot the positions of high and low pressure centers, warm fronts, cold fronts, occluded fronts and stationary fronts as well as isobars, i.e. those contour lines of equal atmospheric pressure which give the plotted maps a "professional look," much more detailed

and comprehensive than the oversimplified weather maps often printed in daily newspapers or displayed on TV.

TABLE 6 CW MARINE WEATHER BROADCASTS (HF)			
GMT	CALL	FREQ(kHz)	
0200	VAI	17175.2	
0420	KFS	6348	8444.5
0430	WNU	6326.5	8570
		12826.5	
0530	CFH	4255	6430
		8697	12726
1300	WLO	6466	8474.5
		12704.5	17172.4
1300	CFH	6430	8697
		12726	
1620	KFS	12695.5	17184.8
		22515	
1630	WNU	8570	12826.5
		17117.6	
1700	NAM	8090	12135
1730	CFH	6430	8697
		12726	
2200	NAM	8090	12135
		16180	
2320	WPD	13050	
2330	WLO	6446	8474.5
		12704.5	17172.4

#### STATION LOCATIONS:

VAI Vancouver, BC  
 KFS San Francisco, CA  
 WNU Slidell, LA  
 CFH Halifax, NS, Can  
 WLO Mobile, AL  
 NAM Norfolk, VA  
 WPD Tampa, FL

TABLE 6A CW MAP ANALYSIS BROADCASTS (HF)			
GMT	CALL	FREQ(kHz)	
0030	PWZ	17160	22530
0200	PPO	8520	12840
0430	CFH	4255	6430
		8697	12726
1000	NAM	8090	
1630	CFH	8697	12726
1700	NAM	8090	12135
		16180	
1810	FFT6		12655.5
2200	NAM	8090	12135
		16180	

#### STATION LOCATIONS:

PWZ Rio de Janeiro, Brazil  
 PPO Olinda, Brazil  
 FFT6 Saint-Lys, France  
 CFH, NAM see Table 6

While tuning across the maritime radiotelegraphy bands, if you have ever come across long lists of five-figure CW groups and wondered what that stuff was all about, here is your chance to find out! All you need is the patience to copy Morse code for half an hour or so; this article will enable you to subsequently decode the ANALYSIS data and plot a weather map just like the ship's officer does aboard a naval or merchant vessel.

One point to remember: some naval radio stations, such as CFH, usually observe the "Silence Period" which

begins at fifteen minutes, again at forty-five minutes past each hour; they interrupt their messages for three minutes, to allow radio officers aboard ships to retune their receivers to the International Distress Frequency (500 kHz) and listen for possible distress messages. If right in the middle of an ANALYSIS transmission, the station suddenly stops sending five-figure groups, and transmits .-... by a "marking transmission," don't give up! You'll know that the ANALYSIS broadcast will resume in three minutes, i.e. at the end of the "Silence Period."

#### PREAMBLE

So, for readers interested in this sort of thing, here's how to decode transmissions in the INTERNATIONAL ANALYSIS CODE, also known as Code FM46-IV. The message starts with a three-group preamble in the form of 10001 33388 OYGC<sub>c</sub>G<sub>c</sub>.

10001 always marks the beginning of the message; 33388 means that the points on the map (coordinates) are given in the form QL<sub>a</sub>L<sub>a</sub>L<sub>o</sub>L<sub>o</sub> where Q indicates the octant of the globe (coded as per Table 7), L<sub>a</sub>L<sub>a</sub> is the latitude to the nearest degree, and L<sub>o</sub>L<sub>o</sub> is the longitude to the nearest degree; the hundreds digit is omitted for longitudes 100 to 180 degrees.

OYGC<sub>c</sub>G<sub>c</sub> is a date and time group. It always begins with a zero. YY represents the day of the month (GMT) where 01=the first day, 02=the second day, and so on; G<sub>c</sub>G<sub>c</sub> indicates the time (GMT) of observed data from which the map was prepared (00=0000 GMT; 06=0600 GMT; and so on). So, if this third group of the preamble is coded 02718, for example, the map is valid for 1800 GMT on the 27th of the month.

Now that the preamble is out of the way, let's forge ahead with the nitty gritty of the message--the weather information. An ANALYSIS message normally contains three main sections; each of these sections begins with a "999" five-figure group: 99900 means that an analysis of pressure systems follows; 99911 indicates that an analysis of frontal systems follows; 99922 is followed by an analysis of isobars.

#### PRESSURE SYSTEMS

Each of these three sections contains numerous five-figure groups, each

with its own coding scheme. First, let's have a look at a pressure systems analysis: it consists of a number of data groups; for each pressure system, the groups may be represented in the symbolic form 8P<sub>t</sub>P<sub>c</sub>PPQL<sub>a</sub>L<sub>a</sub>L<sub>o</sub>L<sub>o</sub>ms<sub>s</sub>ds<sub>s</sub>fs<sub>s</sub>fs<sub>s</sub>.

In the first group for each pressure system, 8 is the group indicator; P<sub>t</sub> indicates the type of pressure system, and is coded according to Table 8; P<sub>c</sub> indicates the character of the pressure system, and is coded as per Table 9. PP is the atmospheric pressure in tens and units of millibars; for example, 15=1015 mb, and 92=992 mb.

Note that on weather maps, meteorologists use millibars instead of inches of mercury (for reference, a standard sea-level pressure of 29.92 inches corresponds to 1013.2 millibars).

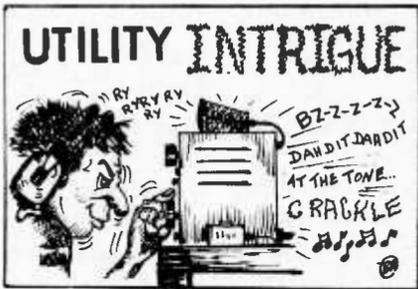
The second group--QL<sub>a</sub>L<sub>a</sub>L<sub>o</sub>L<sub>o</sub>--indicates the actual position (coordinates) of the particular pressure system; it is coded as discussed earlier. Note that in some broadcasts, such as the transmissions from station NAM, the position group is usually repeated, i.e. transmitted twice, for good measure.

The third group--md<sub>s</sub>ds<sub>s</sub>fs<sub>s</sub>fs<sub>s</sub>--contains data relating to the movement of the pressure system. m is a movement indicator figure, and is coded according to Table 10. ds<sub>s</sub>ds<sub>s</sub> indicates the direction, in tens of degrees, toward which the system is moving. For example, 09=090 degrees (east, 36=360 degrees (north); 00=stationary. fs<sub>s</sub>fs<sub>s</sub> represents the speed (in knots) of the system.

(See TABLES 7-9 on p.28)

So, we can now decode the "pressure systems" section of the ANALYSIS message. After the initial 99900 group, let's say that the first pressure system is coded as follows: 81290 05371 00925. In the "8" group, the 1 indicates a low pressure system; the 2 tells us that the central pressure is steady (showing little change); 90 means that the central pressure is 990 millibars.

The second group tells us that this low pressure center is located in position 53 degrees north, 71 degrees west (over central Quebec). The third group tells us that the low is moving towards the east (090 degrees) at 25 knots, with no change in movement specified.



by Don Schimmel

This month some abbreviations and prosigns used in CW are provided, mainly for the newcomer to the SWL hobby. You oldtimers probably have your own lists but perhaps there will be a few here that can be added to your collection. The following list includes the most common abbreviations used on CW.

- |      |   |      |  |
|------|---|------|--|
| AA   | ALL AFTER, UNKNOWN STATN                | IMI  | REPEAT   |
| AB   | ALL BEFORE                              | INT  | INTEROGATORY   |
| ADR  | ADDRESS (or ADDRESSEE)                  | K    | GO AHEAD WITH YOUR TRANSMISSION                      |
| AGN  | AGAIN                                   | KHZ  | KILOHERTZ  |
| ANT  | ANTENNA                                 | MSG  | MESSAGE  |
| AR   | END OF TRANSMISSION                     | N    | NO, NEGATIVE   |
| BK   | BREAK or BREAK IN                       | NIL  | NOTHING, NOTHING FOR YOU                             |
| BT   | LONG BREAK                              | NBR, |  |
| C    | CORRECT or YES                          | NR   | NUMBER   |
| CFM  | CONFIRM                                 | NW   | NOW or I AM GOING TO TRANSMIT                        |
| CK   | SOMETIMES USED FOR GROUP COUNT          | O    | OPERATION IMMEDIATE                                  |
| CQ   | CALL TO ANY STATION                     | OPR  | OPERATOR   |
| CS   | CALLSIGN                                | OPS  | OPERATIONS   |
| CUL  | SEE YOU LATER (on schedule)             | P    | PRIORITY   |
| CW   | RADIO TELEGRAPH MORSE CODE              | PBL  | PREAMBLE   |
| DE   | FROM                                    | PSE  | PLEASE   |
| DX   | LONG DISTANCE COMMO (FOREIGN COUNTRIES) | R    | RECEIVED, ACKNOWLEDGE RECEIPT, ROUTINE               |
| EEEE | ERROR                                   | RCVR | RECEIVER   |
| FM   | FROM or ORIGINATOR                      | REF  | REFERENCE TO   |
| GA   | GO AHEAD                                | RPT  | REPEAT   |
| HR   | HERE                                    | RTTY | RADIO TELETYPE                                       |
| II   | SEPARATOR SIGN                          | SIG  | SIGNAL or SIGNATURE                                  |
|      |   | SINE | OPERATORS NICKNAME or INITIALS                       |
|      |   | SK   | END OF SCHEDULE (Many oprs actually send this as VA) |
|      |   | SKED | SCHEDULE   |
|      |   | SRI  | SORRY  |
|      |   | STN  | STATION  |
|      |   | SVC  | SERVICE  |
|      |   | TFC  | TRAFFIC  |
|      |   | TKS/ |  |
|      |   | TNX  | THANKS   |
|      |   | TO   | ADDRESSEE  |
|      |   | TU   | THANK YOU  |
|      |   | TXT  | TEXT OF MESSAGE                                      |
|      |   | UR   | YOUR   |
|      |   | VE   | Sometimes used in place of BK, BT                    |
|      |   | WA   | WORD or GROUP AFTER                                  |
|      |   | WB   | WORD or GROUP BEFORE                                 |
|      |   | W    | NUMBER OF WORDS IN MSG (Used in place of CK or GR)   |
|      |   | WX   | WEATHER TRAFFIC                                      |

- |      |                             |
|------|-----------------------------|
| XMTR | TRANSMITTER                 |
| Y    | EMERGENCY                   |
| Z    | FLASH                       |
| 73   | BEST WISHES or BEST REGARDS |

In preparation for adding some RTTY intercepts to the UTILITY INTRIGUE loggings, I have been doing some reading on the subject so as to get up to speed on the available equipment. I recently received a copy of "RTTY TODAY" by Dave Ingram, published by Universal Electronics, Inc, 4555 Groves Road, Suite 3, Columbus, OH 43232. The cost is \$8.95 plus \$1.75 for postage/handling.

This book is a plain-talk publication and I particularly appreciated the valuable information in Chapters 3 and 5 which deal with the use of home computers for RTTY reception. Technical data in the book is presented in an easy-to-

digest manner and the tips for tuning a RTTY signal are first class.

I plan to keep this operator aid within reach of my operating position and expect to refer to it many times. I heartily recommend this title for beginning SWL operators as well as for those who are more experienced.

**ERRATA:** In the April column there were two items with a typographical error in the callsign. The items were 4550 kHz and 13512 kHz and the callsign should have been "ZERO Letter A". The first character was printed as Letter O.

A recent Publishers Central Bureau Catalog shows the new price for "JANES MILITARY COMMUNICATIONS 1979-1980" as \$12.98 plus \$2.40 for shipping/handling. (See April UTILITY INTRIGUE) This is \$2 cheaper than previously indicated.

## Long Distance Industrial Communications

The FCC recently made available a large number of frequencies in the 2-8 MHz range for upper sideband voice communications in the Power, Telephone Maintenance, Petroleum and Special Industrial Radio Services.

These frequencies and special notes regarding their use are presented here for MT readers' reference.

7549.1	Day only
7552.1	
7555.1	W. US
7558.1	W. US
7559.1	W. US
7562.1	W. US
7697.1	

**BASE/MOBILE**

Freq kHz	Notes
2289.0	
2292.0	
2395.0	
2398.0	
3170.0	
4538.6	Night Only
4548.6	Night Only
4575.0	
4610.5	
4613.5	
4634.5	
4637.5	
4647.0	

**BASE ONLY**

Freq kHz	Notes
5046.6	E. US
5052.6	E. US
5055.6	E. US
5061.6	W. US
5067.6	
5074.6	E. US
5099.1	
5102.1	
5313.6	
6800.1	Night only
6803.1	
6806.1	W. US
6855.1	Night only; W. US
6858.1	Night only
6861.1	W. US
6885.1	Night only
6888.1	Night only
7480.1	
7483.1	
7486.1	E. US

## FIRST HAM DANISH?

(Associated Press, March 19, 1984)

COPENHAGEN, Denmark - Civil engineer Einar Dessau yesterday celebrated his experimental shortwave radio broadcast 75 years ago, believed to be the first by a "ham" operator.

Assisted by schoolmate John Nyrop, Dessau, who was 16 at the time, chatted for nearly two hours on **March 18, 1909, through his basement transmitter north of Copenhagen to an official at a government radio communications station about six miles away.**

It is considered to be the first two-way transmission by a radio hobbyist. The Association of Danish Experimental Radio Amateurs marked the anniversary with a special award to Dessau, 91, who lives here.

His career as an industrialist took him to the United States, then back to Denmark where he served for 44 years on the board of directors of Denmark's United Breweries, producer of Tuborg and Carlsberg beers.

CW LOG (USB where "voice" shown)		
KHZ	DATE/TIME	IDENTIFICATIONS
3435	3/31 0130	GYA:WHITEHALL,LONDON.NAVAL RADIO ENG
4094	3/27 0305	TBO/2:IZMIR NAVAL RADIO, TURKEY
4220	3/27 0312	LZW:VARNA RADIO, BULGARIA
4241	3/30 0155	4XZ:HAIFA NAVAL RADIO, ISRAEL
4251	3/30 0157	GKC:PORTISHEAD RADIO, ENGLAND
4263	3/30 0151	NO CALLS:5F GRPS
4284	3/27 0331	VCS:HALIFAX CG RADIO,NS,CANADA
6989	3/08 2246	BLA DE TAN
6995	3/11 1351	NO CALLS:5F GRPS
10437	3/26 2236	NO CALLS:5F GRPS
13100	3/27 2146	TIM:LIMON RADIO,COSTA RICA
13255	3/10 1806	NO CALLS:SPANISH MILITARY
13281	3/06 2346	FUF:FORT DE FRANCE NAVAL RADIO, MARTINIQUE
13281	3/27 2150	NR28641 CK 80
13350	3/31 2336	NO CALLS:CUBAN PRESS
13385	3/01 0020	RUZU DE UITT:5F GRPS.MOLODEZHNYAYA USSR BASE, ANARCTICA
13418	3/31 1422	CALLUP:THEN 5F GRPS
13434	3/31 2342	CLQ QSX 6300/12624 KHZ.HAVANA,CUBA
13446	3/31 1431	NO CALLS:PROB TAPACHULA, MEXICO
13450	3/11 1338	NO CALLS:5F GRPS
13980	3/08 0028	BLA DE TAN.CALLUP FOLLOWED BY SPANISH
14440	3/11 1342	GERMAN FEMALE VOICE.5F GRPS
14554	3/26 2305	NO CALLS:SPANISH,PROBABLY CHILE
15920	3/25 1430	CFH:MARITIME COMMAND RADIO, HALIFAX, NS,CANADA
16005	3/25 1433	IDR6:ROME NAVAL RADIO,ITALY
16714	3/25 1446	NO CALLS:SPANISH,75 MILES AT SEA FROM LA GUAIRA, VENEZUELA THEN SHIFT TO USB VOICE
18620	3/31 2346	NO CALLS:SPANISH, CUBAN PRESS
20823	3/26 2244	PSN:5F GRPS

# - SCANNING -

## ANTENNA CONFERENCE on HAM RADIO

"Multiband, Broadband, and Frequency Independent Antennas, an Overview" presented by Dr. John S. Belrose (NE2CV) will be the subject of the North American Teleconference Radio Net (T.R.N.) Thursday, June 21, 1984. Access to T.R.N. is provided by over 180 gateway stations, mostly VHF repeaters, linked together to cover virtually every metropolitan area in the U.S. and much of Canada.

The antenna is, arguably, the single most important element in radio station effectiveness, contributing as it does to both transmit and receive performance. This alone makes a talk on antennas immensely popular in the radio community. However, radio amateurs will be particularly interested in Dr. Belrose's talk because they will need new approaches to antenna design to accommodate the additional bands recently allocated to them.

Dr. Belrose is a worldwide respected authority on antenna design. He is professionally involved with antennas as Director of Radio Communications at the Canadian Department of Communications, Communications Research Center, Ottawa, Ontario.

The national program begins at 7:30 p.m. Central Daylight Time June 21 (that's 0030Z next day). Local nets may begin earlier.

Remember, you don't have to travel to hear top experts and leaders discussing the technology and issues of concern to radio amateurs and the radio communications community including full two-way Q&A from amateurs across North America. Just tune into T.R.N. at home, in your car or walking down the street with your handheld radio. Scanner owners, too, will enjoy and learn by tuning into the net.

### TRN Stations

WINNIPEG	MAN.	147.270
FREDERICTON	N.B.	146.760
BANCROFT	ONT.	147.240
BANCROFT	ONT.	224.840
COLLINGWOOD	ONT.	146.790
DWIGHT	ONT.	146.820
GEORGETOWN	ONT.	147.735
HAMILTON	ONT.	145.490
LONDON	ONT.	147.180
LONDON	ONT.	444.400
OTTAWA-HULL	ONT.	147.360
SHELBURNE	ONT.	146.685
TORONTO	ONT.	145.350
TORONTO	ONT.	145.370
TORONTO	ONT.	147.060
TORONTO	ONT.	224.980
UXBRIDGE	ONT.	29.620
UXBRIDGE	ONT.	53.030
UXBRIDGE	ONT.	442.100
WHITNEY	ONT.	147.000
MONTREAL	QUE.	147.000
ANCHORAGE	AK	147.090
MOBILE	AL	147.390
LITTLE ROCK	AR	146.940
APACHE JUNCT	AZ	147.120
PHOENIX	AZ	147.240
TUCSON	AZ	146.820
TUCSON WIDE AREA		146.880
BIG BEAR	CA	147.330
KING CITY	CA	52.525
LOMPOC	CA	145.110
LOS ANGELES	CA	224.040
OXNARD	CA	146.880
PACIFICA	CA	439.750
SACRAMENTO	CA	145.190
SALINAS	CA	146.685
SAN DIEGO	CA	146.265
SAN JOSE	CA	146.760
SAN JOSE	CA	224.260
SAN JOSE	CA	224.600
SAN LORENZO VAL.		147.120
SANTA BARBARA	CA	147.945

THOUSAND OAKS	CA	147.885
DENVER	CO	147.225
DENVER	CO	448.250
AVON	CT	224.780
BURLINGTON	CT	147.150
MILFORD	CT	146.925
WASHINGTON	DC	147.210
CLEARWATER	FL	145.470
CLEARWATER	FL	224.940
CLEARWATER	FL	449.250
EUSTIS	FL	147.255
FT. LAUDERDALE	FL	146.790
GAINESVILLE	FL	146.820
MELBOURNE	FL	146.850
NAPLES	FL	146.670
ORLANDO	FL	146.760
PENSACOLA	FL	146.760
PINELLAS PARK	FL	147.360
PINELLAS PARK	FL	223.940
ST. PETERSBURG	FL	147.000
ST. PETERSBURG	FL	449.200
TAMPA	FL	147.240
TARPON SPRINGS	FL	29.600
TARPON SPRINGS	FL	448.800
ROSWELL	GA	145.470
DES MOINES	IA	146.940
STATE CENTER	IA	147.555
CHICAGO	IL	147.150
DECATUR	IL	147.100
GURNEE	IL	147.240
PONTIAC	IL	146.640
WOODSTOCK	IL	145.410
BLOOMINGTON	IN	147.180
FT. WAYNE	IN	147.855
INDIANAPOLIS	IN	146.700
KOKOMO	IN	146.910
LINTON	IN	147.240
PLAINFIELD	IN	147.300
RUSHVILLE	IN	147.000
SOUTH BEND	IN	147.330
WINSLOW	IN	147.000
WICHITA	KS	146.820
LOUISVILLE	KY	147.180

MURRAY	KY	146.940	MONTCLAIR	NY	224.000
BATON ROUGE	LA	147.790	NEW YORK	NY	145.190
NEW ORLEANS	LA	146.610	NEW YORK	NY	145.450
SHREVEPORT	LA	147.030	NEW YORK	NY	224.700
BILLERICA	MA	147.120	NEW YORK	NY	443.950
SHARON	MA	146.865	PLATTSBURGH	NY	147.150
BALTIMORE	MD	147.105	ROCHESTER	NY	145.110
ANN ARBOR	MI	29.640	ROCHESTER-LOC	NY	146.790
ANN ARBOR	MI	146.970	CINCINNATI	OH	146.670
CALUMET	MI	147.330	CLEVELAND	OH	146.940
DETROIT	MI	147.150	COLUMBUS	OH	147.240
FLINT	MI	147.270	DAYTON	OH	146.910
GRAND RAPIDS	MI	147.765	EAST LIVERPOOL	OH	146.700
KALAMAZOO	MI	146.790	LIMA	OH	147.030
BRAINARD	MN	147.030	REPUBLIC	OH	147.855
FISHER	MN	146.700	TOLEDO	OH	147.375
MINNEAPOLIS	MN	146.640	CHEROKEE	OK	147.900
ROCHESTER	MN	146.820	OKLAHOMA CITY	OK	3.900
KANSAS CITY	MO	146.700	OKLAHOMA CITY	OK	147.030
KANSAS CITY NE	MO	146.430	TULSA	OK	146.910
LIBERTY	MO	145.430	BEAVERTON	OR	147.320
SPRINGFIELD	MO	146.640	KING MTN.	OR	146.940
ST. LOUIS	MO	146.970	KLAMATH FALLS	OR	146.610
ST. LOUIS NW	MO	146.670	MEDFORD	OR	147.300
JACKSON	MS	146.880	BEAVER FALLS	PA	145.310
CHARLOTTE	NC	145.350	BLUE KNOB MTN.	PA	147.150
GOLDSBORO	NC	146.850	CHERRY HILL	PA	146.760
MT. MITCHELL	NC	145.190	HARRISBURG	PA	147.470
RALEIGH	NC	146.880	MEADVILLE	PA	145.130
WINSTON SALEM	NC	146.640	PHILADELPHIA	PA	147.060
KEARNEY	NE	146.910	PITTSBURGH	PA	146.610
LINCOLN	NE	146.760	DOWNLINK	SA	145.957
OMAHA	NE	147.000	CHARLESTON	SC	147.270
BRADLEY BEACH	NJ	145.110	GREENVILLE	SC	146.610
CATFISH MTN.	NJ	145.390	KNOXVILLE	TN	147.300
CHERRYVILLE	NJ	147.375	NASHVILLE	TN	146.940
MT. HOLLY	NJ	147.150	COLLEGE STA	TX	146.820
WEST ORANGE	NJ	146.415	DALLAS-FT. WOR	TX	146.880
ALBUQUERQUE	NM	146.310	DENTON	TX	147.300
CAPILLO PEAK	NM	146.970	HOUSTON	TX	145.450
MT. TAYLOR	NM	146.940	LUBBOCK	TX	146.940
RENO	NV	147.030	PLAINVIEW	TX	146.730
BEACON	NY	146.970	PORT NECHES	TX	145.470
BUFFALO	NY	146.730	SAN ANTONIO	TX	146.700
BUFFALO	NY	224.100	SALT LAKE CITY	UT	146.620
FARMINGVILLE	NY	145.310	SNOWBIRD	UT	147.180
LONG ISLAND	NY	147.375			

Cont'd p.29

# MONITOR



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**736RMT**

73: Amateur Radio's Technical Journal, PO Box 931 Farmingdale NY 11737



by James R. Hay

ARCTIC UPDATE

This month being the beginning of the Arctic DX season is a good time to bring up to date the information which was published in the July/August issue of MT last year.

There are two additional Canadian Coast Guard Ships; the first is a new ship which made her first trip to the arctic last year - the **CCGS Des Groseillier** (callsign CGDX). The other ship is a veteran icebreaker which made many trips to the arctic, but had a severe fire in the bridge area and thus missed the winter of 1983 and part of last year's arctic season. The **CCGS Louis S. St. Laurent** (CGBN) is now back in service and will undoubtedly be heard this year from the north.

The following Soviet vessels have been heard and reported through the Arctic

DX column in the Canadian International DX Club MESSENGER:

- UISZ Nis Akademik Sergey Korolev
- UZGH Misp Passat
- UMAY Akademik Shirshov
- EREV Misp Ernst Erenkel
- EREA Misp Musson
- EWVS NPS Professor Mesyatsev
- UUYG Morzhovets
- UUYZ Nis Menel'
- UHQS Akademik Korolev
- UIVZ Nis Kosmonaut Vladislav Volkov
- UZZV Nis Kosmonaut Georgiy Dobrovolskiy
- USPO MPS Akademik Knipovich
- UKFI Nis Kosmonaut Yuruy Gregarin
- EWJWJ Arktika
- ERET Nis Georgiy Ushakov

The frequency of 4125 kHz has proven to be fruitful for hearing Alaskan ships, including:

- WYT9878 Icelander
- WY6698 Alaska Star
- WYM9377 Clipper
- WX9305 Kodiak Queen

Among some of the other ships which were reported last year, but which were not included with last year's article on the northern scene are:

- VSBB3 Cast Musk Ox
- VPDC United Effort
- VRCW Fort Fraser

SQML m/s General Dabrowski  
Once again this year I must give credit to the Canadian International Club MESSENGER, from whose pages the above information was gleaned. For more Arctic and Antarctic activity, inquire: CIDX, 6815 - 12th Ave., Edmonton, Alberta, Canada T6K 3J6, and mention Monitoring Times.

VOYAGE OF THE TALL SHIPS

Quebec City is planning a grand celebration this summer to commemorate the 450th anniversary of the arrival of Jacques Cartier. This should provide some interesting listening on the marine frequencies as one of the events planned involves a fleet of about 60 tall ships.

In mid-March the picturesque fleet left Saint Malo (where Cartier began his voyage) to sail in a race via the Canary Islands to Bermuda to meet the South American ships which will have raced from Puerto Rico.

The conjoined fleets then race to Halifax, being joined on the way by North American ships. Ceremonies from June 10 to 13 mark the arrival of the tall ships in Halifax.

The ships will then sail to Gaspe to mark the arrival of Cartier, and on June 20 (or thereabouts) they will sail to Quebec. From June 25 to 30 various celebrations will take place involving the tall ships.

Not only will the voyage of the tall ships to Quebec generate some interesting listening on the maritime bands, but for those in the Quebec area VHF traffic will be interesting as well.

The Canadian Coast Guard is planning to set up a special communications centre for pleasure craft, record numbers of which are expected during the summer. The communications center will undoubtedly be using new frequencies and the search and rescue agencies will be coordinating activities by radio.

For anyone planning to visit Quebec this summer, a scanner or shortwave radio would make for some interesting listening.

Your correspondence is welcome. Please direct any correspondence to: James R. Hay, 141 St. John's Blvd., Pointe Claire, P.Q., Canada H9S 4Z2.

ANARC 1984

...BOB GROVE TO LEAD FORUM

This coming July, hundreds of listening hobbyists will be gathering in Toronto, Ontario, Canada to talk about radio. The Association of North American Radio Clubs sponsors its annual convention each summer for DXers who listen to all modes of broadcasting and communications from longwave through UHF. It's an exciting weekend for anyone interested in the world of radio.

This year's convention will be sponsored by the Ontario DX Association from July 20 to 22 at the Ramada Renaissance Hotel in Toronto. Included in the weekend's activities are seminars on all kinds of radio listening, displays from manufacturers of hobby equipment, forums with broadcasters from around the world, along with an emphasis on seeing the sites of beautiful Toronto.

Bob Grove, editor of Monitoring Times and president of Grove Enterprises will present a special forum entitled, "Monitoring the Spectrum: the Tools and the Techniques."

For registration information and a schedule of activities, write to ANARCON

84, P.O. Box 232 - Station Z, Toronto, Ontario, Canada M5N 2Z4. When you write, send a self-addressed envelope and a first-class stamp (do not affix the stamp to the envelope). For those outside North America, please include 3 IRCs.

Another Numbers Station Found

With the exclusive story in MT's April issue revealing the location of the 4-digit numbers transmitter, newspapers around the country have been reprinting the information.

Hot on the heels of this discovery, another location has come to light: the five-digit Czech transmissions reported simulcasting on 3767 and 4030 kHz. The station has been tentatively identified as being in Vratislawice, Czechoslovakia.

We would like to thank our intrepid reporter John Demmitt for researching this one for fellow MT readers.

WASHINGTON, DC LISTENERS:

"Adopt A Class":

Share Your Hobby with Foreign Technicians

The United States Technical Training Institute and several American telecommunications companies are presently offering a series of technical training sessions for technicians from developing countries in Washington, DC.

Seven courses are scheduled involving over 100 individuals (the largest class is about 24). Would you like to invite one or more groups to tour your

listening installation? Perhaps attend a club meeting or special communications event?

A list of courses, sponsoring organizations and dates is provided below. If you would like to host a group, please contact the ARRL Washington, DC coordinator Perry Williams, WIUED, Suite 401, 1302 18th St., NW, Washington, DC 20036 or call 202-296-9107 or 297-9100.

COURSE	SPONSORING ORG	DATES
High Frequency Broadcasting	Voice of America	May 31-June 22
Uses of Micro-computers in Telecommunications	Academy for Educational Development	July 30-Aug 3
Satellite Communications Management & Technology	COMSAT	Sept 6-21 Clarksburg, MD
Satellite Systems for Rural Development	AID, Academy for Educational Development	Sept 24-28
Radio Spectrum Management	FCC & Nat'l Telecom. Info. Svc.	Sept 27-Oct 19
Spectrum Management for Land Mobile Radio Svc.	Motorola, Inc.	Oct 22-26
High Freq Broadcasting	Voice of America	Oct 25-Nov 16

# SIGNALS FROM SPACE



by Larry Van Horn

RCA Americom has announced that a new regional sports network inaugurated service on April 4. The **New England Sports Network**, a joint venture of the Boston Red Sox, the Boston Bruins and the New Boston Television premiered on SATCOM 1R transponder 17.

The network's studios, located in Boston's Fenway Park, are connected via microwave to a 10-meter satellite uplink facility at Needham, Mass.

The new service will carry 90 home and away Boston Red Sox games in the 1984 season and is also supplying all 40 Bruins home games next season. NESN will also provide extensive coverage of sports-related material including live talk shows, magazine sports shows and other sporting events.

NESN will have a full-time dedicated transponder on SATCOM 1R that will allow continuous coverage of sporting events even if they are re-scheduled or rained out.

SATCOM 1R is located at 139 degrees west and listeners will find this network on 4040 MHz vertically polarized.

Those of you with TVRO setups are encouraged to send **your reports** on video/audio services you are monitoring currently on the birds. Let's let everybody know what they are missing by not having a TVRO dish at their QTH! Be sure to indicate the satellite, transponder, audio subcarriers, any scrambling that you might have experienced and any other details that viewers will find important.

I can really use good lists of video/audio for all the birds, domestic and international. Please send your contributions to: **Signals from Space**, 1111 N. Carrier Pkwy, B-107, Grand Prairie, TX 75050.

I will supplement your actual intercepts with information from the different aerospace manufacturers and we should have the most complete information on TVRO, sooner than the slick cover TVRO magazines. Another service of MT, the leader.

A problem with a cold 2

meter oscillator has put a temporary chill on the exuberance of a perfect launch of UOSAT-B into orbit March 1. The launch from Vandenberg AFB on the California coast was letter-perfect. At precisely 17:59 UTC the sleek Delta 3920 rocket lifted into the azure California sky trailing a plume of white, wispy exhaust trail. Aboard were the primary vehicle, Landsat-D (84-21A) (transmissions-2287.5/2265.5 MHz) and UOSAT-B (84-21B) (transmissions-145.825, 435.025, 2401.5 MHz).

The two meter beacon was commanded on during orbit 2 and 3. A shock came to the University of Surrey team when **hams reported that the two meter beacon could not be heard.**

Fears of catastrophic failure gave way to reasoning out a failure mechanism. A malfunction with the two meter beacon occurred during thermal vacuum testing; the beacon was found to represent too large a load for the current limiter on the power distribution system.

The fix implemented at that time was to increase the current "foldback" threshold so that the oscillator would "cold-start." The present theory holds that the cold-start problem has reoccurred.

AMSAT officials are hopeful that the problem can be fixed and the satellite will be fully operational by the time you read this column.

**Soyuz T-11** was launched on April 3 at 1408 GMT. On board were two Russians, Yuri Malyshev and Gennady Strekalov, and the Indian cosmonaut Rakesh Sharma. About 5 hours after launch telemetry signals (PDM) were heard from the Soyuz T-11 on 20.008 MHz. Listeners from California, Texas, Florida and Washington all reported the PDM TM's. Listeners might want to make note of this for future Soviet manned missions.

Very little voice comms have been monitored on 142.4 MHz due to descending node type orbits occurring during crew sleep periods.

The Direct Broadcast Satellite Corp. has awarded

a contract to Ford Aerospace for two direct broadcast satellites that will transmit in the Ku band (11.7 to 12.2 Ghz). These satellites will be launched in March/September 1987 by ESA on the Ariane launch vehicle.

Each satellite will contain six 200-watt channels as well as twelve 45-watt channels for spot metropolitan coverage. Dishes as small as 2 feet will receive these satellites. Signals from Space will have more on DBS satellites in the coming months.

Those of you who are equipped to monitor the Inmarisat transponders on the Intesat satellites might want to watch out for tests to be conducted by Mitre and COMSAT. These tests will be conducted on the Inmarisat transponders 1535-1542.5 MHz for an airborne two-way satellite communication link.

The airborne L-band equipment will operate at a data rate of 200-400 bits per second which should be suitable for transmitting routine ATC messages to transoceanic flights.

The tests are scheduled to begin in 1985.

Dyed-in-the-wool space buffs looking for space information might want to give "Space Press" a try. Al-

though no specific frequency information is given, diagrams of spacecraft, mission information and interesting tidbits are presented in this offset produced newsletter. Subscriptions are \$15.00 US and \$35.00 worldwide.

Send payment to: The Space Press-3B, Vernuccio Publications, 645 West End Avenue, New York, NY 10025. Be sure to tell Frank Vernuccio you saw it in MT's "Signals from Space!"

MT listeners equipped with 225-400 MHz equipment might want to aim your beams toward 105 degrees west and look for signals from the DSCS-3A (82-106B), launched October 30, 1982 by a Titan 34D from launch complex 40 at the Cape.

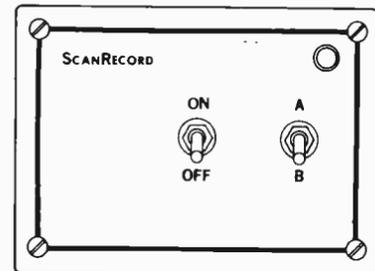
I have not seen any reports of traffic or frequency plans for this new series of satellites, but the U.S. has registered a 225-400 MHz transponder in addition to the 7 Ghz downlink with the ITU.

An educated guess is that this satellite is probably carrying an AFSATCOM transponder similar to those on the FLEETSATCOM's. But with the wide range given by the ITU report, 3A could be carrying a wideband DOD transponder.

Cont'd p.29

## While you were out... SOMETHING HAPPENED!

Now you can record all the scanner action that occurred while you were away for playback later. The Scan Record recorder coupler will automatically turn on your tape recorder when your scanner is receiving a message and route the audio from the scanner to the recorder.



The recorder runs only when a message is received. It does not run when the scanner is just scanning. This lets you record a lot of traffic on one tape. In addition to scanners, it will work with any receiver that has a squelch control.

The easy to use ScanRecord features user selectable drop-out delay, adjustable sensitivity, activity indicator and recorder control switch. The unit is all solid-state with no relays to stick or wear out. It operates on 9 to 15 volts DC and can be powered by a 9 volt battery or AC adapter.

All you'll need in addition to your scanner and the ScanRecord is a tape recorder with a microphone jack and a remote control jack. The ScanRecord comes complete with all connecting cables.

Your complete satisfaction is guaranteed. Order your ScanRecord today for only \$35.75 plus \$2 shipping and handling.

Mail and phone orders are welcome. Send check or money order or we can ship via UPS COD. We also accept VISA and MASTERCARD. Please include your card number and expiration date.

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# BEHIND THE DIALS

## THE BEARCAT 250 vs.

### THE JIL SX-200: A Comparison

(Editor's Note: Few suggested topics for articles reach MT as often as, "Please write an article comparing receivers." While both the Bearcat 250 and J.I.L. SX-200 have been around for several years, both represent a level of flexibility and sophistication worth comparing. Author Haas does this for fellow MT readers here.)

by Pete Haas

The Bearcat 250 and HIL SX-200 scanners are roughly the same price and are about the same size but are quite different in features and performance. Here is a basic comparison chart:



BEARCAT 250	JIL SX-200
Circular volume and squelch controls	Slide controls
NA	Has fine tuning +3 kcs
Low band searches in 10 kcs steps	Low band (to 108 Mcs searches in 5 kc steps
Priority channel option	NA
0, 2 second delay	0, 2, 4 second delay
1 squelch mode (See text)	3 modes of squelch: 1-signal 2-audio 3-signal + audio
50 channel memory	16 channel memory
Built-in AC power supply	External AC adapter (supplied)
Red LED display	Blue fluorescent display
Speaker front-mounted	Speaker top-mounted
Unlimited scanning combination of 50 channels through lockout control	2 scanning modes - 1 programmable
Non-volatile memory	Memory requires 2 AA cells
Sensitivity: .4uv VHF Selectivity: -60 db+25 kcs (See text)	SAME
Auto squelch option (factory pre-set)	NA
Frequency detector circuit--keeps radio from unsquelching in presence of strong adjacent (7 kc. or more signal	NA
Search/store feature (Text)	NA
FREQUENCY COVERAGE: 32-50 MHz 146-174 MHz 420-512 MHz Total of 138 MHz	FREQUENCY COVERAGE: 26-88 MHz 108-180 MHz 380-514 Total of 268 MHz

Here are the major differences between the two scanners in a nutshell: the Bearcat has 50 channels of memory, the JIL only 16. The JIL covers nearly twice the frequency ranges as the Bearcat and it has the ability to receive AM or FM signals throughout its entire range.

The biggest difference in my opinion is the Bearcat's search/store function which allows you to leave the scanner unattended in the search mode; it will store up to 64 frequencies it discovered and allow you to recall them later. This is a handy feature for the scanner enthusiast who is in search of all receivable traffic in his/her area.

The selectivity and sensitivity of both units is identical according to the manufacturer's published data, but the Bearcat seems to have a bit more sensitivity and much cleaner audio in actual use.

I personally prefer the rotary volume and squelch controls on the Bearcat; the JIL has slide controls which are more difficult to return to a preselected setting. The JIL's squelch (at least on my particular unit) does not cut out the audio nearly as cleanly as the Bearcat. You have to turn it up rather high to get good noise-free reception and then you miss weak signals. For most listening the preset audio squelch mode on the Bearcat works quite nicely.

The JIL has a versatile squelch system that operates in three modes. The first mode is a normal carrier-operated squelch circuit. In the second mode scanning is stopped by any received signal but the audio is silenced until modulation is actually present; this is good for some telephone channels although many of them now inject a tone into the carrier when they aren't in use. In the third mode scanning will stop only when a carrier with modulation is received. This squelch mode is for use when doing a frequency search and birdies (oscillator products) are to be avoided. The fine tuning control on the JIL is a nice perk, but most scanner signals are right on the money these days when it comes to frequency accuracy.

Which scanner is the better unit? This is a very difficult question to answer, not because of performance but because what one scanner lacks the other makes up for.

The Bearcat's lack of AM aircraft band reception is a serious drawback. The

JIL has excellent coverage but its noisier reception and smaller memory capability are drawbacks. And you can't mix AM and FM modes on its 16 channels--they are all one or the other!

One tip after you buy any programmable scanner: Fill up its memory immediately with a variety of signals and put it to work scanning continuously. When you don't wish to listen just turn down the volume--but keep it scanning; not all the scanner's IC's are "burned-in" at the factory and if they are going to fail they probably will within a week. Many scanner dealers give customer a trial period so you can return the radio for replacement in case of failure. O

### "THE NEWS FROM HUGHES"

Following are two items supplied to the military by Hughes Aircraft Company:

#### COMMUNICATIONS ANTI-JAMMING:

NATO early-warning aircraft are being equipped with a communications system that uses four primary encoding techniques to hamper enemy eavesdropping or jamming. The Joint Tactical Information Distribution System (JTIDS) provides E3A AWACS aircraft and NATO ground command centers with secure voice and digital communications.

One encryption technique is spread spectrum, in which a signal is expanded over a large bandwidth. With frequency hopping, frequencies are changed many times a second.

Another technique, time division multiple access, assigns certain users to specific time slots no longer than a fraction of a second. Finally, to verify messages, JTIDS repeats messages automatically.

#### POSITION REPORTING:

A network of small "smart" radios will let U.S. troops and their commanders know where they and friendly forces are located at all times. With the Position Location Reporting System (PLRS), combat troops will no longer have to seek landmarks to pinpoint their location. PLRS automatically supplies position and navigation data in digital form through a computerized communications network that displays data on a small hand-held box.

PLRS units can be mounted on vehicles, aircraft, and helicopters. All units serve as automatic relay stations. ●

# NEW ARRIVALS

## THE MX-5000: REGENCY'S NEWEST SCANNER ENTRY

Late in 1983 the Japanese firm A.O.R. began shipping their new AR2001, a 20-channel, wide-frequency-range 25-550 MHz), multi-mode (wide, narrow FM and narrow AM) scanner.

An exclusive import agreement with Regency Electronics of Indianapolis has made the product available in the United States as the MX-5000. How well does it work? MT recently purchased a unit off the shelf to take a first-hand look.

### FIRST IMPRESSIONS

The MX-5000 is compact (5-1/2"W x 3"H x 8"L); not much larger than a brick. A membrane keypad allows a wide selection of features including search (up or down), scan, priority, channel lockout, 24 hour clock, mode, 5/12.5/25 kHz search increment selection, scan delay and speed.

An audible annunciator ("tone beep") confirms keypad entries. Finger pressure needed for entries varies somewhat from key to key and a time lag on some commands makes the "beep" a comforting reassurance!

The plastic case makes the receiver somewhat vulnerable to environmental electrical noise; radiation from the internal multiplex circuitry is clearly audible when using the plug-in antenna, especially in the AM mode when the hand is on the keypad.

A BNC connector may seem non-standard to scanner enthusiasts, but it is clearly superior to the damnable Motorola plugs found on all other scanners, especially at UHF and above. Perhaps Regency will start a trend.

### TECHNICALLY SPEAKING

Scanners are vulnerable to strong-signal overload and the MX-5000 is no exception. Its wide-open (untuned) front end (RF amplifier circuitry) has excellent weak-signal sensitivity (0.2-0.5 microvolts) throughout its tuning range; a 10 dB attenuator switch may be activated in dense RF environments to avoid intermodulation interference and desensitization.

Up-conversion of the first IF to 750 MHz virtually immunizes the scanner from image interference; undesirable product response is better than 50 dB down.

Triple conversion is accomplished via two more steps: 45.0275 (quartz filter) and 455 kHz (ceramic filter); an alternative 5.5 MHz ceramic filter is used during wideband FM reception (TV audio and FM broadcast).

Selectivity at the 6 and 60 dB attenuation points are 7.5/20 kHz (NBFM); 50/250 kHz (WBFM); and 5/10 kHz (AM).

Slow scan and search rate (3 channels per second) is aggravating, especially if a wide swath of frequencies is being covered. The search function does not have a hold, and pressing search to restart resets to the lowest limit. Search delay affects all channels; it is not individually selectable for each channel.

Although the liquid crystal display is large and clearly visible in good light, nighttime viewing with the edge light is very poor.

Audio is crisp, although the bottom-mounted speaker works best when the scanner is suspended in a mobile mount. For tabletop operation a set of rubber feet elevates the unit for reasonable audio.

The DC cable is non-standard (although the AC adaptor and DC power cable are included) making replacement a problem; no provision is made for a ground wire on the chassis.

There is no auxiliary function for tape recorder activation, although there is a rear-apron jack for an external speaker.

### THE MANUAL (?)

The instruction manual which accompanies the unit is rife with errors in spite of an errata sheet which is included. Fortunately, MT readers have been sending in corrections which will be included in a later installment. We invite others to do the same.

Nonetheless, even with the poor manual, all functions of the scanner may be employed.

### IN CONCLUSION

The Regency MX-5000 is an outstanding scanner in two respects: frequency range and uniform sensitivity; preliminary measurements show excellent rejection of spurious oscillator products throughout its wide coverage as well (although there are



a few).

While dyed-in-the-wool scanner enthusiasts spoiled by rapid-search/scan receivers will be disappointed at the slow speed of the MX-5000, the ability to enter any frequency from 25-550 MHz and choose the mode is an outstanding tradeoff.

Although the recommended resale of the MX-5000 is in the \$600 range, it is available at a discounted \$399 plus \$5 UPS shipping from Grove Enterprises.

## THE INCREASING ROLE OF SATELLITES

Fully seventy percent of all military communications are now routed through earth satellites. That percentage is likely to grow continuously.

## Northern HF Communications

Due to the expansive nature of the northern Canadian provinces and Alaska, high frequency networks are often used for safety as well as convenience.

MT reader Ron Tull shares with us this month a few key frequencies which are worth monitoring; all are upper sideband. Frequencies are in kHz.

- 4441 VGK526, Alkan Air Ltd; Air Northern Ltd; Whitehorse, Yukon
- 4520 FGK526
- 4925 CJP516, Carl E. Diamond Drilling Co; Whitehorse, Yukon
- 4696 ZE8600, Tyee Airlines (Ketchikan, AK)
- 4125 WRA9497, Krystal Star (Homer, AK); WI8480 Nanuk (Flyum's Barge Service (Homner, AK); WHG806 The Message Center (Kodiak, AK)

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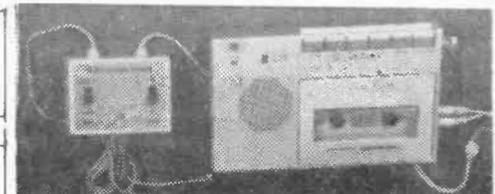
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# RTTY/FAX

## Monitor These RTTY Frequencies

MT reader Bill Kirchner has been enjoying his new Kantronics Radiotap and has a list of RTTY stations he has uncovered which he would like to share with fellow listeners.

A few CW stations are thrown in for good measure!

Thanks, Bill for sharing this fine list of loggings with fellow Monitoring Times readers.



FREQ(MHZ)

- 3.287 MILITARY?
- 3.600 HAM NET
- 3.624
- 4.059 NEWS AND MIXED LANG
- 4.152 MILITARY?
- 4.250 "
- 4.515 MARS
- 5.215 MARS ARMY NET
- 5.460 MILITARY?
- 5.460 S AMERICAN NEWS
- 6.234 SHIPS
- 6.376 SHIPS
- 6.444 GULF OF MEXICO WX
- 6.444 SHIPS
- 7.090 SALE
- 7.092 ,
- 7.705
- 8.120 NEWS, ENGLISH
- 8.200 "
- 8.230 "
- 8.306 MILITARY?
- 8.342 RTTY
- 8.407 CW
- 8.416 CW
- 8.444 NEWS, ENGLISH
- 8.484 SHIP TO SHORE,ATLNTC
- 8.584 "
- 8.614 WX
- 8.665 HOUSTON SHIP TO SHORE CW
- 8.805 MILITARY?
- 9.888 WX, RTTY
- 10.464 NEWS, ENGLISH
- 10.948 S AMERICAN PROPAGNDA
- 11.010 S AMERICAN NEWS
- 11.435 MILITARY
- 11.453 MILITARY
- 11.475 NEWS,MIXED LANG
- 11.649 RTTY TEST TAPE
- 13.032 NEW YORK SHIPPING CW
- 13.062 MILITARY
- 13.636 MILITARY
- 14.240 NEWS, ENGLISH
- 14.300 "
- 14.329 "
- 14.342 "
- 14.616 RANDOM MSGS
- 14.820 NEWS, ENGLISH
- 14.874 "
- 14.900 "
- 14.900 PROPAGANDA
- 14.908 SAN SALVADOR PROPAGANDA
- 15.480 NEWS, ENGLISH
- 15.908 SAN SALVADOR NEWS
- 16.106 NEWS, ENGLISH
- 16.108 FRENCH NEWS
- 16.132 FRENCH NEWS
- 16.136 CUBA PROPAGANDA,ENG
- 16.165 FRENCH NEWS,ENGLISH
- 16.185 S AMERICAN PROPAGNDA
- 16.211 NEWS, ENGLISH
- 16.348 NEWS, ENGLISH
- 16.425 FRENCHNEWS

- 16.440 FRENCH NEWS,ENGLISH
- 18.190 PERSONAL EXEC MSGS
- 18.193 SHIP TO SHORE CW
- 18.265 USCG
- 18.276 NEWS, ENGLISH
- 18.542 SHIP TO SHORE CW
- 18.604 USCG
- 19.067 MILITARY CW,ENG
- 19.067 NEWS, ENGLISH
- 19.532 AEM,-1-USA,NEWS
- 19.614 KDL,ZTSEE-TEST
- 20.019 NEWS, GERMAN
- 20.078 FRENCH NEWS
- 20.170 NEWS, GERMAN
- 20.226 WX, CW
- 20.318 S AMERICAN NEWS
- 20.328 NEWS, ENGLISH
- 20.351 FRENCH NEWS
- 20.083 TRP,FRENCH NEWS
- 20.583 TRP,FRENCH NEW
- 20.785 TRP,FRENCH NEWS
- 21.400 CW, ENGLISH
- 22.146 CW, ENGLISH
- 22.255 CW,SANTA CRUZ(DOS)
- 22.396 DIPLOMATIC CW, ENG
- 22.425 PORTLAND SHIPYARD
- 22.545 WEATHER,AIRCRAFT & MISC
- 22.557 CW, ENGLISH
- 22.781 NEWS
- 22.783 CW, ENGLISH
- 22.845 FRENCH NEWS
- 22.885 NEWS, ENGLISH
- 23.715 S AMERICAN NEWS
- 23.717 CW, ENGLISH
- 23.770 CW, ENGLISH
- 24.159 TRP,FRENCH NEWS
- 25.383 CG CW



HAM RADIO COMPUTER NETS

- APPLE
- 14.300-900 SUN 0100 Z
- 14.329 SUN 1700
- 7.260 SAT
- 3.900 SAT 0200
- 8.230 SAT 0900
- ATARI
- 14.320 SUN 1600 Z
- 3.965 WED ?
- 7.235 SUN 1830
- 7.230 MON 1800
- 7.230 SUN 1800
- COMMODORE
- 14.240 SUN 0500 Z
- 14.240 MON 1730
- 3.825 ? 0400
- TIMEX/SINCLAIR
- 3.917 ? ?
- 7.225 ? ?
- 7.228 SAT-SUN 1300Z
- 7.240 SUN 1100
- TRS80
- 14.342 SUN 2000 Z
- 7.270 SUN 2200
- OTHER COMPUTER NETS
- 14.320 SUN 7000 Z
- 3.965 WED ?
- 7.235 SUN 1830
- 7.230 MON 1830
- 7.235 SUN 1100
- 21.400 THUR 2330

### RTTY PROPAGANDA

The propaganda encountered on RTTY is often strong as exemplified by this item from TASS, the official Soviet news agency.

"MOSCOW APRIL 5 TASS THE U.S. RULING ELITE WOULD LIKE TO USE THE OLYMPIC GAMES IN THE UNITED STATES TO FURTHER ITS PROPAGANDA GOALS, THE NEWSPAPER "SOVETSKYHYPOT" SAYS TODAY. THESE GOALS WILL BE PURSUED IN THE FOLLOWING WAY: FIRST, UN-BEARABLE CONDITIONS WILL BE CREATED FOR MAJOR RIVALS, FIRST AND FOREMOST, ATHLETES FROM SOCIALIST COUNTRIES; ...; AND, FINALLY IT IS NECESSARY TO SMEAR IN EVERY WAY THE SOVIET UNION,..."

### Tall Tales of Tapes

Over the years, many types of permanent records of transmissions have been attempted. Remember the old "ticker tapes"? This month Donald K. de Neuf of Southbury, Connecticut treats us to a sampling of tapes through the ages.

- 1)Submarine cable transmitting tape. Block signals ...dots "up" ---dashes "down".
- 2)Outgoing syphon recorder tape showing block signals.
- 3)Syphon recorder tape of

incoming signals from France. Signals are extremely "rounded" due to the low-pass filter effect of the long cable. Skilled operators had little difficulty in translating the undulations.

- 4)Radio Telegraph Wheatstone transmitting tape. Perforations on the top side of the tape create "mark" or key-down conditions. Holes on the bottom release the mark condition.
- 5)Radio Telegraph receiving syphon recorder tape. Dots and dashes are clearly indicated by the pen moving "up" for "mark" and "down" for space.
- 6)Facsimile tape employed by Press Wireless, Inc., to bring ideographic news reports for Japanese and Chinese newspapers in the United States. Strip is in Chinese and reads..."formal diplomatic relations between two countries. The Government of the Republic of China..."
- 7)Hell Schreiber tape. Highly successful on radio telegraph circuits. Synchronization was no problem--as one line of print began to slide off the tape a second line above or below began to print. Transmission was by means of a commutator keyboard and received by a spiral scanner drum.

Cont'd p.29

# Logging 170 Meters

by Craig Healy (66 Cove St., Pawtucket, RI 02861)

I remember reading recently that there is some doubt that the stations we hear around 1635, 1637 etc. are really fishing buoys. Anyone care to share some thoughts on that?

Decca, the makers of the "HiFix" navigational system is now Raycal in Houston, TX. Anyone have any contacts there? I doubt they would just up and send us their customer/frequency list as theirs is a most competitive business. I will send a letter and try for whatever info they'll give. If we had a contact in their company it would be easier.

Of course, if any of you government types reading this decide to send me the info to solve the secrets of the 1600-1800 kHz universe, I'll be glad to have it. Anonymous tips gratefully accepted, hi.

All in all, we have a lot of mysteries up here. Even efforts such as made by Vincent Pinto in his work with the FCC monitoring stations has not really pinned down who or what most of these stations are. Is it a case of simple lack of knowledge, or a coverup of military stuff that we might be better off not finding out about? I hate to think cloak and dagger on these beacons we hear, but someone somewhere must know about these things.



NOTE: Author Healy would be happy to provide a free copy of his "Top End Yearbook," a collection of loggings throughout 1983 in the 1600-1800 kHz spectrum. Send an SASE (self-addressed, stamped envelope) for your copy. And if you have any loggings to contribute please send them as well.

LOGGINGS	
1610	Tumwater, WA (PM)
1614.2	KA83309 (CH)
1616.9	Cubic Argo (GT)
1618.7	lpip/4secs (GT)
1619	"RRP" 30secs on/off (GT)
1620t	Hobart, Tasmania.7RPH w/pop mx.Male EE (PM)
1620	"SBT"beacon (GT)
1628.5	Cubic Argo (GT)
1630	SS male,LSB (GT)
1632	Cubic Argo (GT)
1640	KA83694 (AP)
1646.6	Cubic Argo (GT)
1662	Cubic Argo (GT)
1674	Cubic Argo (GT)
1690t	Kaosuing,Taiwan;music (PM)
1700	"ZM" beacon (GT)
1714	Cubic Argo (GT)
1714.5	"IH"nights,"TS"days (GT)
1716	"NSS"days only (GT)
1729	"D7K" (CH)
1740	"NAH223K" (GT)
1745	Decca HiFix "J"(GT)
1746	Decca HiFix "K"(GT)
1747	Decca HiFix "-,----" day only (GT)
1748	Decca HiFix (GT)
1754.4	lpip/4secs (GT)
1762	"FRB" (CH)
1764.3	"SEI"cricket (GT)
1766.3	"IH"cricket,day only (GT)
1767.4	Cubic Argo (GT)
1769	Cubic Argo (GT)
1770	Cubic Argo (GT)
1771	Cubic Argo,day only (GT)
1772	Cubic Argo (GT)
1775.5	Cubic Argo,very slow (GT)
1776	lpip/2secs (GT)
1780	CW stations,nights (GT)
1790	CW stations."JW" is one.(GT)

CH=Craig Healy - R7A & 125 foot loaded LW  
 PM=Pat Martin - Seaside, OR  
 GT=Gerry Thomas-Pensacola, FL-R70 & 80 meter dipole  
 AP=Art Peterson-Richmond,CA

SOME LAST-MINUTE LOGGINGS	
Made in one hour April 24th.	
1610	Anguilla, Caribbean Beacon
1619	Cubic Argo
1628.5	Cubic Argo
1635	V276
1646.8	Cubic Argo
1685	Mercaderes,Colombia
1709.5	Decca (Raycal?)HiFix
1716.2	Cubic Argo
1746	Decca HiFix
1748	Decca HiFix
1762	FRB
1762.5	Cubic Argo
1765	Cubic Argo
1785	Like fast Cubic Argo

## Warning of Attack

"Seaman Z," whose tale of radio interceptions indicated President Franklin Roosevelt had evidence in 1941 of an impending attack on Pearl Harbor, has been identified - after four decades - as Robert D. Ogg, a retired businessman from Kentfield, CA. Ogg's identity was made public when the text of his interview with naval intelligence last May was turned over to the naval historian's office by the National Security Agency. Seaman Z's experiences first were described in historian John Toland's Doubleday book last year, "Infamy: Pearl harbor and its Aftermath."

## DXER's DIRECTORY

Most radio listeners are undertaking their hobby in a vacuum ... out of contact with other listeners in their locale. Few would argue that the DXing hobby is more enjoyable and productive when you know other listeners in your area with whom you can discuss mutual interests. The problem has always been; How do you find other listeners with similar interests in your area?

Universal is pleased to present a solution! We are presently compiling a directory of listeners. This computer-based list will offer accurate and current information on active listeners, including name, address, phone number, type of listening, and club affiliations. The directory will also include a list of all large and small listening clubs.

We need your help to make it happen! WE WANT TO INCLUDE YOU IN THE NEXT EDITION. Please send a SASE to receive your free registration form. Your listing will be without charge. You will be notified when the directory is available, but you are under NO OBLIGATION to buy one. It costs nothing to be listed. We will even include a photo of you and/or your "shack" if you care to send one! We would like your information whether you wish to buy the directory or not. So help us bring DXers together! Send a SASE for full info.!



### UNIVERSAL SHORTWAVE RADIO

Div. of Universal Amateur Radio, Inc.  
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# CLUB CORNER

**Paul Swearingen**  
**7310 Ensign Ave**  
**Sun Valley, CA 91352**

Welcome to another edition of MT's Club Corner. We'll examine one of the oldest radio clubs in the hobby this month and list some of the upcoming club activities. Remember, if your club's activities are not listed, it's probably because your officers did not send them in!

\*\*\*\*\*

**THE NATIONAL RADIO CLUB** founded over Labor Day weekend, 1933, has been serving broadcast-band DX enthusiasts for over a half-century. DX News, the club bulletin, is mailed to over 725 members worldwide, and its various publications, such as the NRC Domestic Log, the Night Pattern Book, various receiver, antenna, and miscellaneous manuals and reprints, are well-known in the hobby.

The various columns and departments edited by volunteers in DX News attempt to cover the broadcast band radio spectrum, roughly from 520-800 kHz. Broadcast band DX'ers consider their hobby the most difficult and challenging of all DX and have developed much new hardware

and techniques to combat increased QRM and crowded channels.

Twenty years ago, a BCB DX'er could count on hearing 1 kw stations testing any Monday morning from across the continent; nowadays, with the filling of the clear channels by regional and local stations, he may be lucky to hear a 50 kw'er a couple of states away!

NRC'ers have been at the forefront in developing sophisticated antennas, including loop, beverage, and others; modifying receivers for better selectivity and sensitivity; and creating new techniques for hearing elusive DX. These are shared 30 times a year in the pages of DX News.

Publishers Mike and Sue Knitter of Cambridge, Wisconsin as well as other NRC editors, have been experimenting with the use of computers in an attempt to cut down on the time lag involved with conventional transmittal of information. The new Domestic Log, to be in print this summer, is entirely computerized, and

many of the columns are set on word processors.

Mike would like to see DX information available in a central bank so that DX'ers who own computers could access information as fresh as a few hours, rather than several weeks old.

Although the club bulletin concentrates on domestic and foreign DX, more feature-oriented material has been added with newspaper clippings as well as columns which profile individual stations and radio people. Equipment reviews are another important part of DX News.

The next NRC convention will be held over Labor Day weekend in Colorado, probably in Colorado Springs. NRC will also host the ANARC convention in Milwaukee, WI in July, 1985.

For information about the NRC, write P.O. Box 24, Cambridge, WI USA 53523. If you'd like to join immediately, send \$20.00 US to the NRC Membership Center, P.O. Box 118, Poquonock, CT USA 06064.

Inquiries about publications and reprints go to the Publications Center, P.O. Box 164, Mannsville, NY USA 13661.

The **INTERNATIONAL RADIO CLUB OF AMERICA**, another club for broadcast band enthusiasts, will hold its annual convention in Toledo, OH August 17-19. An SASE to the headquarters (IRCA - P.O. Box 21074, Seattle, WA USA 98111) will bring you convention and club information.

\*\*\*\*\*

The **ASSOCIATION OF NORTH AMERICAN RADIO CLUBS (ANARC)** will hold its 20th annual convention in Toronto, Ontario July 20-22. Bob Grove, editor of MT and president of Grove Enterprises will be one of the featured speakers.

For registration information, send a business-size SASE and a loose first-class 20¢ stamp IN the envelope OR 3 IRC's to ANARCON '84 - Ontario DX Association, P.O. Box 232, Station Z, Toronto, ON M5N 2Z4 Canada.

\*\*\*\*\*

**Would you like to visit HCJB?** That venerable station is sponsoring two tours, featuring visits to the station and to Ecuador, July 14-28 and September 22-October 6, 1984. For information, write Tours - P.O. Box 553000, Opa Locka (Miami) FL USA 33055-0401.

## The Wonderful World Of Amateur Radio

by Wells Chapin W8GI  
 507 Franklin  
 Kingsley, MI 49649

(ED. NOTE: While MT is not an amateur radio publication, a number of our readers go on into ham radio after their initial exposure to the fascinating world of radio communications.

We present this short introduction to ham radio by Wells Chapin W8GI, well known to the amateur fraternity for having written nearly 2000 articles in his many years as a ham.)

You would think that having spent 63 years in Ham Radio that one would be tired of it; to the contrary, it is just as fascinating to me as ever. I have two degrees in the chemical field, but my life's work has been in electronics due strictly to the stimulation and training of the ham radio hobby.

Amateur radio has something for everyone. You can travel throughout the world and have the pleasure of meeting many of your DX friends. You can rub shoulders with some famous names and never know it. Many famous hams are just like "old shoes" to meet and know. Titles and high busi-

ness positions are not even mentioned.

In an article, "Who is Who in Amateur Radio" there are listed senators, mayors, state executives, high ranking military officers, royalty, famous musicians, sports personalities, network announcers, corporate executives, entertainers and others too numerous to mention.

Ham radio is a very popular hobby as there are 433,921 licensed amateurs (at this writing) in the USA and an additional 421,714 throughout the world. Age or sex is no deterrent in entering ham radio, as persons from the ages of 7 to 80, men, women, boys and girls, have successfully taken the amateur radio license examination.

The Federal Communications Commission has devised a simple easy way to enter ham radio with a series of progressive licenses starting with the Novice, thence to the Technician, to General, to Advanced and then to the highest, the Extra Class.

There is plenty of material available that will help you to get the licenses. Local hams are more than willing to help you with

your study and selection of equipment.

You can find just about any type of operating activity you desire. In the technical field you build your own equipment or buy it and add home-made peripheral equipment. You can experiment with antennas, use AM, FM, SSB, CW, slow scan tv, facsimile, RTTY and now there is great interest in the use of computers.

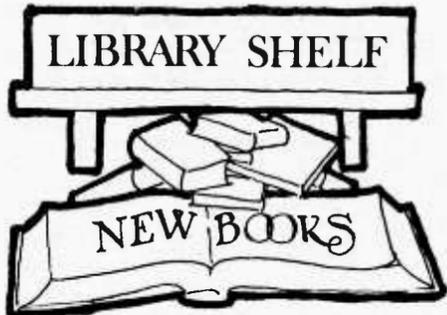
You can chase DX, operate teletype and slow scan television, just plain old "rag chew" with other hams and help out in severe storm or other emergencies. Various network activities include eye bank, military groups, YL (young lady)

nets, regional nets like the WX (weather) net, Post Office net and various professional nets. There are contests going on in all areas.

One flexible activity is the amateur radio use of repeaters, many of which have phone patch facilities. You can travel the USA and Canada and always be in the range of some very fine repeater systems, thus enabling you to get help, find directions and be entertained while you ride.

Try ham radio - I'm sure you'll like it! Look up your nearest ham and get acquainted, and get yourself into the most fascinating - and useful - hobby that has ever hit the pike.





Games for the Commodore 64 RAINBOW QUEST

by Bill Grove

(ED.NOTE: When I purchased my Commodore 64 computer for personal use, I should have expected that it would be commandeered by my 12-year old son. In return he has promised to review a few good games for our readers. This is the first...Bob)

When my Dad got a Commodore 64 he said that I would be able to get some games; when I saw this one it was "programming at first sight!"

The name of this game is RAINBOW QUEST by Richard Ramella and it is available from Wayne Green Books, Peterborough, NH 03458 at a cost of \$24.97.

In the game you try to help two other characters through 25 tests; if you are new at this game and cannot find instructions, read the storybook which comes with the set.

After each test you will be given an entry code to start the next game.

RAINBOW QUEST has good graphics; for sound, most all you get are beeps and clicks, but good ones at that!

I found this game very easy to operate. For some sections you will require a pencil and paper. Beginners should use the lowest number in "Skill Level," but most games are self-explanatory and I would recommend this game for all skill levels.

RAINBOW QUEST is also available for the TRS-80 CoCo, IBM PCjr, Apple II, II plus and IIE.

Miller Publishing's PROGRAM GUIDE:

A Review by John Demmitt

Finally there is a publication that meets the needs of the serious shortwave listeners in North America: THE INTERNATIONAL SHORTWAVE LISTENER'S PROGRAM GUIDE. The format is much like a TV Guide as the programs are listed by the day of the week, time, program and frequencies. The neatly-arranged columns in the PROGRAM GUIDE are easy to read.

The listings will be expanded in the future according to the interest of the readers. The front half

of the 32 page PROGRAM GUIDE is filled with interesting and informative articles concerning programming of the various international radio stations. Articles by such well known and respected people of the shortwave community as Dr. John Santososso, Dr. Richard Wood, Clayton Howard, A.M. Peterson and Ken Macharg insure the readers that they are getting top quality information.

The PROGRAM GUIDE includes Roger Legge's English Language Broadcasts to North America, detailing selected programs, with editorials by Jeff White and more.

To start your subscription send \$19.95 to: Miller Publishing, 424 West Jefferson St., Media, PA 19063.

COMSEC LETTER is a monthly publication which deals with keeping information and communications secure. Primary emphasis is on commercial, as opposed to government, interests. The newsletter provides information on new equipment and also reviews related books and periodicals.

A six month trial subscription to the COMSEC LETTER will be entered at no charge for any organization which requests it on its letterhead.

The publisher of this newsletter is Ross Engineering Associates, a technical surveillance countermeasures (TSCM) consulting and service firm located in the Washington, DC area. In addition to providing consulting and TSCM service, Ross Engineering also presents the Electronic Spying and Countermeasures seminar several times each year at various locations throughout the United States.

For further information, contact Jim Ross, Ross Engineering Associates, 7906 Hope Valley Ct., Adamstown, MD 21710. Phone: 301-831-8400.

THE HANDBOOK OF RADIO COMMUNICATIONS by Joseph J. Carr (1048 pages, 7-1/2" x 9", paperback; \$29.50 from TAB Books, Inc., Blue Ridge Summit, PA 17214).

Rather than a technical reference or construction cookbook, HANDBOOK attempts to cover virtually all aspects of hobby communications (ham radio emphasis) in a tutorial fashion.

The work evolves logically from basic electron theory through inductive/capacitive/resistive laws, on into components and simple circuits.

Virtually every imaginable subject likely to be encountered by the radio hobbyist is presented, some areas in considerable depth

while others are more casually introduced.

Of particular interest to the non-amateur are the sections on radio receiver design and characteristics, accessories, antennas and feedlines, and interference reduction.

A handy appendix provides a reprint of the FCC table of frequency allocations, 10 kHz-300 GHz. A special chapter on limited-space antennas is of particular significance to apartment dwellers.

We view HANDBOOK as an overview of radio communications--a "course in brief"--intended to inform the serious hobbyist about all the aspects of his avocation, providing him with a background to more fully understand the scope of his equipment.

BETTY BEARCAT FREQUENCY DIRECTORY (Eastern US Edition) (420 pages, 8-1/2" x 11", softbound).

A publication in two volumes (eastern and western USA) compiled by contributions from SCAN (Scanner Association of North America) members. Entries are only as good as the accuracy of contributions, and there are errors. Nonetheless, they are not debilitating errors and the directory is quite comprehensive for its areas of coverage (in and

around major cities).

The directory is essentially divided into two major parts: a listing by city and a cross-reference by frequency. Users include public safety, marine and aircraft, conservation and military agencies, weather, schools, news media, businesses, mobile telephone and some federal law enforcement.

Some introductory information on scanner antennas, ten codes, logging and frequency allocations in general is provided.

(\$14.95 from Bearcat dealers or Electra Company, P.O. Box 29243, Cumberland, IN 46229).

UP STATE SOUTH CAROLINA SCANNER FREQUENCY DIRECTORY (63 pages, 5" x 8", softbound; \$6.95 from Radio Research, 10 Elf Lane, Greenville, SC 29611).

This new publication from Radio Research is an interesting collection of the most-sought public safety and business channels as well as ham, aircraft and marine assignments in South Carolina. One page of popular-statewide North Carolina and Florida listings are included.

A special section on out-of-band programming of scanners and choosing an appropriate antenna makes for good reading as well.

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# BROADCASTING...

## HANK BENNETT ON SHORTWAVE

FIELD DAY - 1984

For most of us it has been a long winter. The coming of spring always signals a renewal of many outdoor activities that have been put off during the cold months. Yards have to be cleaned up, bushes trimmed, gardens started, houses painted, and a multitude of other chores.

One of the surest signs of spring is a flurry of activity involving antennae. Joints have to be examined to make sure that they are still clean and tight; perhaps resoldered here and there. The overall antenna wires and feed lines have to be checked to assure that there are no breaks anywhere.

Another sure sign of spring--summer would be more like it considering the dates involved--is the annual Field Day outing that is sponsored by the American Radio Relay League. This event, which this year is June 23rd and 24th, is held on a nationwide basis by radio clubs, groups and individuals who operate for 24 hours using emergency power, simulating operating conditions as they might occur during an actual emergency.

This doesn't mean that everyone has to use emergency power but for those who do operate in this manner, extra credit is given when it comes time to count the points.

In years past your editor operated with the South Jersey Radio Association (K2AA) and as an individual from my home station W2PNA.

So how come all of this ham radio activity is being written in an SWL column? Simple. Most Field Day stations will openly welcome SWLs to take part in Field Day activities--keeping a log, grounds keepers, helpers on antennae and so forth. You don't need a ham license to help set up the equipment, to assist with antenna work, to keep a log or to keep the coffee brewing!

If you want to get in on Field Day but aren't near a club, check around with your buddies in the area who share an interest in shortwave listening. You can set up and operate your own listening station and have as much fun as the guys who are actually on the air.

Often times a group of local SWLs will pitch a tent in one of their backyards

(making sure that it is waterproof; summer afternoons and overnights are often subject to sudden showers!). Have a table or bench for the equipment, a chair or two, perhaps a sleeping bag for anyone who really wants to leave home for 24 hours, and a good supply of paper and pencils. Add the listening equipment and you have the basics for a good Field Day weekend.

Unlike the ham stations, who rely mainly on gasoline generators or other forms of emergency power, your best bet would likely be a heavy extension line run out from your house. Make sure that it is heavy enough to accommodate all of the pieces of equipment that will be operating off of it. A hot plate and a possible space heater can really burn up the amperes and you don't want any blown fuses or circuit breakers.

Practically all of the schedules can be set up ahead of time. Get your group together and determine how many will be present for the entire time and how many part-timers you will have. Plan a schedule that will enable everyone in your group to have an equal chance at tuning. You should have a logkeeper on hand, especially during the busier hours.

The main function of the SWL Field Day station, therefore, is to try and log as many stations as you can, keeping an extra ear open for stations from states that you haven't logged or verified before. This is one time when the shortwave broadcast stations can take a back seat -- your log-filling will be far more dependent on DX stations from the ham band frequencies.

You will stand a good chance of hearing stations from those more exotic and rarely-heard places: Hawaii, Guam, Alaska, the Virgin Islands, Puerto Rico and other U.S. possessions, all of whom will be operating in Field Day, too.

Should you be one of many who will have to take part in the SWL version of Field Day as an individual, rather than with a group or club, not to worry. You can still do all of your tuning and listening from your shack.

In all cases, whether you are operating from your home, backyard tent, by



PHOTO FEATURE: BBC WORLD SERVICE

BBC World Service's New Ideas program, which each week features news of new British products, inventions and processes, recently reached its 25th anniversary edition. During its quarter century on the air, the program has received an estimated 70,000 letters from all parts of the world enquiring about the featured products and processes. The program, jointly presented by Casey Lord and Maureen Galvin, is broadcast on BBC World Service as follows (all times GMT): Saturdays at 0530 and again at 2230 with further broadcasts on Wednesdays at 1725 and 1115. Pictured in the New Ideas studio at Bush House, London are (left to right): Co-presenter Maureen Galvin, producer Trish Williams and program secretary Diana Taylor.

Margaret Howard is the popular host of the BBC program "Letterbox" which answers listeners' questions on the air.



## DX The Lowest-Power SW Broadcaster

by Al Smith

With only ten watts effective radiated power on 6080 kHz the Vancouver, Canadian transmitter CKFX is the world's least powered licensed shortwave broadcast service, and marks an anachronism in Canadian broadcasting.

Due to a change of transmitting sites and the past couple years' declining sunspots, however, this shortwave simulcast of Vancouver's "CKWX Country" is filtering through to quite a few attentive DXers around the world.

A unique situation among shortwave broadcasters has resulted for CKFX/CKWX: QSL correspondence cost often exceeds the costs of electricity and maintenance for their tiny transmitter!

But CKFX's weekly incursion of less than \$10 into the budget of its full-time 50 kilowatt broadcast band parent is hardly noticed. CKWX 1130 kHz draws heavy ad revenues for its excellent regional coverage. To DXers most anywhere CKFX on 6080 kHz is a far rarer bird than CKWX 1130 kHz.

Although the original British Columbian listener-

ship to the CKFX simulcast is almost gone, the 6080 kHz license is maintained by the station since Canada's DOX is as reluctant as is our FCC to allocate HFBC channels to private operators. At its inception after WWII the CKFX signal was beamed northwest of Vancouver for lumber and fishing camps and fishing vessels around the Queen Charlotte Islands and upper Vancouver Island; at that time most of those people had only shortwave receivers with no local alternative to the CBC.

Additionally, the mountainous terrain between Vancouver and the upper coast left gaps in the coverage of the 980 kHz 5 kilowatt transmitter which CKWX used in the 40's and 50's, and the short skip (E and F, reflection) coverage of CKFX's then-adequate 10 watts filled most of the gaps.

Until 1980 the 6080 kHz emission was to the northwest by a two element end fed vertical array. Then in

Cont'd p.29

Cont'd p.29

# BROADCASTING...

LISTENING TO THE WORLD

by Roger N Peterson

## ENGLISH LANGUAGE BROADCASTS

by Tom Williamson

Propagation conditions continue to fluctuate widely these days, with a few weeks of good HF propagation followed by after-dark fade-outs.

The two countries most affected by this have been Argentina and Brazil, with periods of excellent reception of their English broadcasts on the 19 meter band, 15345 and 15290 kHz respectively (0200-0300 UTC).

### UPDATE

The 19 meter RADIO NACIONAL DEL ECUADOR transmission of folk music, heard previously on 15350 around 22.30 UTC, seems to have disappeared; if anyone can hear this please let me know. A pity; the signal was good here, quality and music excellent.

The transmitter was one of HCJB's but the studio source and program material was from Radio Nacional. RADIO HAVANA CUBA seems to have revamped their English language broadcasts with two (new?) announcers performing in what they imagine is a "hip" style "with-it" snappy dialogue...presumably to be more to the liking of North American audiences. To my mind this is quite phoney and grates on my nerves! What do you think? Let me know!

### "NEWS ANALYSIS"

Various terms are used ("news commentaries," "background to the news," etc.) to introduce an "in-depth" explanation of the news of the moment, be it political, economic, cultural, sport... and so on.

This is not to be confused with straight news reporting; although in some cases, stations tend to mix up their factual reports with an "on-the-spot" short report from a correspondent.

The technique is common on domestic TV news and certain stations such as CBC Canada in their domestic news. I find it somewhat irritating, but perhaps better than nothing.

Simple bald "factual" news is important, but can be made much more understandable by a more leisurely (and INTELLIGENT!) commentary at a later point in the program.

Unfortunately, the commentaries are not always well chosen, opening the way to blatant, lying propaganda! One of the best examples is from Libya (RADIO JAMAHIRIYA 11815 kHz)...If

you haven't heard this take a listen around 1800-2100 ---You will probably hear some of the readings from the Colonel's "Green Book" also!

Let us take a look at some of the serious attempts to analyze the news in detail with some reasonable balance to the views.

I would like to start with the two main Western sources of news broadcasts which represent certainly the official establishment attitude to the political events at least: Britain (BBC) and the USA (VOA).

**BBC LONDON** (see Box summary): News analysis programs include the following: "Twenty-Four Hours"-a week-day program heard four times daily with analysis of the days news; usually presented by Alistair McClean. This is truly an excellent, informative program, sometimes a little "imaginative" in trying to guess future developments...but that's part of the game!

"Radio Newsreel" and "Newsdesk" are daily presentations of current events with reports from BBC correspondents and others around the world and in the U.K. Both of these are very good and are often updated while they are being read on the air!

If you want some of the very best background information on the events leading up to the news, the BBC has some unequalled items: "The World Today" (thorough examination of one international scene), "Commentary" (several specialists share their knowledge and comment on news situations), and finally, a rare gem--"From Our Own Correspondent."

In my humble opinion this program produces some of the most intelligent comment to be found anywhere. BBC correspondents who have lived in the regions concerned (and may be there at the time) know what they are talking about! This one is heard on Saturday and Sunday only.

That's a pretty hard act to follow, isn't it? The BBC has considerable experience in specializing in news bulletins and a vast network of qualified correspondents. However, don't overlook the VOA!

**VOICE OF AMERICA:** The venerable -- and often



At this writing, many of the shortwave broadcasters around the world are in the process of changing their frequencies and "on-the-air" times. This is because of the innumerable changes in time that take place in the spring--our Daylight Saving Time, for example.

Since any frequencies I would report in my column will be out-dated by revised schedules, I'm going to change my style a bit this month and discuss the shortwave broadcasters' printed schedules and how you can get them. If you're a QSL card collector, most of the addresses given below are also applicable for that as well.

Why go to the trouble and expense of getting a shortwave broadcaster's printed program in the first place? It all depends on your listening habits. I have a friend who likes music and discovered that West Germany's Deutsche Welle excels in this type of program. Consequently, he got on their mailing list so he could be sure not to miss any future broadcasts of his favorite type of listening.

Another friend loves to listen to dramatic plays on radio--a throwback to his youth when there was no TV and this type of program was popular on local radio. On shortwave radio today, his best bet is the BBC. Thus, he is happy to pay for a subscription to "London Calling," the BBC's excellent monthly program magazine.

For those of you who send in reception reports for QSL cards, you may already be on the receiving end of some schedules as stations attempt to build their listening audiences.

Your name may remain on the receiving list for some time even when you don't respond. Most broadcasters, however, demand a certain amount of response - once every year or two - to keep your name on the list.

Here are the addresses of some of the most popular international broadcasters that issue printed schedules regularly. Unless otherwise noted they are free and your letter of request will require a U.S. overseas postal stamp (40¢).

**Australia** - AUSTRALIAN BROADCASTING COMMISSION, 1 Rockefeller Plaza, New

York, NY 10020 (Reg 20¢ stamp)

**Austria** - AUSTRIAN RADIO, Shortwave Service, A-1136, Vienna

**Belgium** - BELGISCHE RADIO EN TELEVISIE (BRT), Shortwave Service, P.O. Box 26, B-1000 Brussels

**Canada** - RADIO CANADA INTERNATIONAL, P.O. Box C.P. 6000, Montreal, Canada H3C 3A8, PQ. (Reg 20¢ US stamp)

**China** - RADIO BEIJING, People's Republic of China

**Czechoslovakia** - RADIO PRAGUE 2, 12099 Vinohradska 12

**Ecuador** - VOICE OF THE ANDES, Casilla 691, Quito

**Finland** - FINLAND INTERNATIONAL RADIO, P.O. Box 10, SF-00241, Helsinki

**France** - RADIO FRANCE INTERNATIONAL, B.P. 9516, 75762 Paris, Cedex 16

**Germany (West)** - DEUTSCHE WELLE, Postfach 100444, D-5000 Koln 1, Federal Republic of Germany

**Hungary** - RADIO BUDAPEST, Brody Santoutca 5-7, 1800 Budapest

**Israel** - KOL ISRAEL, Israeli Broadcasting Authority, P.O. Box 1082, Jerusalem 910-10

**Italy** - RAI-RADIOTELEVISIONE ITALIANA, Viale Mazzini 14, 00195 Roma

**Netherlands** - RADIO NEDERLAND, P.O. Box 222, 1200 JG Hilversum, The Netherlands

**Norway** - RADIO NORWAY INTERNATIONAL, N-Oslo 3, Norway

☞ Cont'd p.30

**1983-84 Program Schedule**  
 Winter: November 6 - March 3  
 Spring: March 4 - May 5

**Programme horaire**  
 Hiver: du 6 novembre au 3 mars  
 Printemps: du 4 mars au 5 mai

**Radio Canada International**



Radio Canada International  
 P.O. Box / C.P. 6000  
 Montreal, Canada  
 H3C 3A8

This station is one of many international broadcasters who issue free program schedules several times a year.

☞ Cont'd p.30

# PIRATE RADIO



by  
**John Santosuosso**

**PIRATE BUST:** Word has just been received that on April 9 the Chicago Field Office of the FCC busted Indiana-based Radio Free Insanity. As a result of this action a major decline in pirate activity over the next few months is likely.

**NICARAGUA:** A confidential source close to the Nicaraguan Contra movement has informed us that the transmitter site of RADIO QUINCE DE SEPTIEMBRE, station of the Fuerza Democratica Nicaraguense (FDN), is actually on the Nicaraguan side of the border. This contradicts most previous speculation that the location was on Honduran soil. However, the site is in an area where the boundary is ill-defined and subject to dispute.

This same source also indicates that RADIO MISKUS, which broadcasts to the Miskito, Suma, and other Indians of eastern Nicaragua, has been using the facilities of Radio Quince for its transmissions. However, about six months ago it either obtained or began planning its own broadcasting site.

Another confidential source has confirmed for us that suspected RADIO IMPACTO, located in Costa Rica, does indeed have ties with the anti-Sandinista Democratic Revolutionary Alliance (ARDE). It is either controlled by Comandante Cero's Frente Revolucionario Sandino (FRS) or another group in the ARDE.

Excellent reception of Radio Impacto on 6150 is possible during morning hours. Look for Radio Quince on 5565, 5920, 6900, 7000 and other frequencies. Radio Miskus has been heard on 6965 kiloHertz.

**RADIO DEMOCRATICA:** The Commander of RADIO DEMOCRATICA states that this station will begin transmissions in August. The tentative schedule is GMT Sundays at about 0400 on a frequency

in the vicinity of 7400 kiloHertz. Power will be 100 watts. The station will QSL and we hope to have the address later.

**RADIO 91:** RADIO 91, the Voice of the Southeast, is a pirate running 60 watts on 6910 (do not confuse with Radio Dublin). Look for him weekends around 0000 GMT. The operator says he can also operate on 6200, 6220, 6225, 21600 and in the near future on 7345.

**TANGERINE RADIO:** This is a relatively new station looking for listeners. It is running an old Hallicrafters HT32 into a DeltaLoop on 3440, 6940 and occasionally on 7425-7450. Reports can be sent to Box 5074, Hilo, Hawaii 96720.

**CORRECTION:** In our March column we ran a list of pirates who could be QSLed through Box 982, Battle Creek, MI. Unfortunately, this writer listed the wrong zip code. (The correct one is 49016.) Please use it in the future. Your mail has been arriving but has been delayed. We apologize for the inconvenience.

**SURINAME:** Mr. Mohammed S. Nasrullah of the Radio Department of the Council for the Liberation of Suriname has again brought us up to date on developments at RADIO FRIE SRANAN. Recently, this clandestine has been active only on an irregular basis.

The Council is trying to install a more powerful transmitter but is hampered at present by a lack of funds. The station may still be heard occasionally on 6850 around 0100 or 0130.

**PUBLICATIONS:** We would like to mention two publications we have recently seen which we think will be of interest to clandestine listeners.

Gerry Dexter's excellent newsletter, "Clandestine Confidential" is \$10.00 a year (six issues) and includes frequencies, schedules and background information. Subscriptions go to RR 4, Box 110, Lake Geneva, WI 53147.

The current Clandestine Intelligence Network's "Newsletter" contains background material and transcripts of English language broadcasts by the Nicaraguan clandestine La Voz de Sandino, the station of Comandante Cero, Eden Pastora. If there is sufficient demand additional issues will be published, possibly including translations of Spanish transmissions.

The one published copy can be ordered for \$4.00 from Vito Echevarria, 648 Amsterdam Avenue, New York, NY 10025.

**CENSORSHIP:** Holland's Michiel Schaay has brought to our attention a matter which should be of concern to all radio enthusiasts. This is the nasty problem of censorship which Michiel encountered when he recently wrote an article on clandestine broadcasting for the Benelux DX Club. The article is well written and well researched. It is difficult to understand why the editor of the Benelux DX Club objected to any of it. If some of our readers are members of this much-respected club, we hope they will voice their objections to the editor and urge other members to do the same.

We ask all our readers to oppose censorship in club bulletins whenever it rears its vicious head. In the past some clubs have prohibited or limited the printing of information about pirates. It seems strange that organizations dedicated to informing their members about radio communication would impose upon themselves a censorship which the general media does not and which at least no American governmental agency, including the FCC, has ever requested.

Michiel's article contains much useful clandestine material. Since Benelux DX Club would not print it, we would like to include several items which we think are of particular importance.

**REPORT FROM MICHIEL SCHAAY:** Workers from various Dutch broadcasting organizations, including RADIO NEDERLAND WERELDOMROEP, are in the process of donating four complete studios to RADIO FREEDOM. Two studios have already been installed, at least one in Madagascar.

Oliver Tambo, President of the African National Congress, was symbolically presented one of the studios in a ceremony conducted by the contributing Dutch workers. A staff to operate the new facilities is being trained in Hilversum.

The Dutch feel that such measures are necessary because of censorship at the SOUTH AFRICAN BROADCASTING CORPORATION and the right of the black opposition in that country to present its views.

Evidence has been uncovered which reveals that South Africa was responsible for the VOICE OF FREE AFRICA, or as it is now known, LA VOZ DE RESISTENCIA NACIONAL DE MOZAMBIQUE. At least some programs have been recorded in South Africa. However, the recent treaty between South Africa and Mozambique may have

ended this involvement. In any case, the South Africans have also been responsible for the jamming of some RADIO NACIONAL DE ANGOLA transmissions.

A Dutch journalist, Fritz Eisenloeffel, was able to journey to Eritrea where he managed to visit the extensive broadcasting complex of RADIO VOICE OF THE BROAD MASSES OF ERITREA. The "information city" from which this station operates is an extensive underground community of bunkers and other structures.

The people of Eritrea have been in revolt against Ethiopian rule for twenty years, while Radio Voice of the Broad Masses of Eritrea has been broadcasting since 1980. Although difficult to hear in North America, it is not impossible. Jamming has sometimes added to the problem.

Frequencies which have been used in the past include 3717, 3760, 6233, 7421, 9935, 14334 and 14340 kHz.

European sources claim that a clandestine RADIO GUATEMALA LIBRE has made tests in the 41-meter band. There is also considerable West-European support for the broadcasts of RADIO VENCEREMOS which is hostile to the government of El Salvador.

☞ Cont'd p.30

## Escuche:

# R15

RADIO 15 DE SEPTIEMBRE



## Voz oficial de

# FDN

Fuerza Democrática Nicaraguense

**COMBATIMOS PARA TRIUNFAR**

# "Los Numeros"

32444 69213 88816 52196 63811 94216

Havana Moon



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\*\*\*\*\*

This article is dedicated to John Demmitt

\*\*\*\*\*

### BULLETIN!

A TINY AND REMOTE TOWN IN THE SOUTHEAST CORNER OF VIRGINIA HAS BEEN NAMED AS A PROBABLE "NUMBERS" TRANSMISSION SITE! A top-secret NSA/CIA monitoring and transmitter site located at Northwest, a small town in the southeast corner of Virginia, is alleged -- by a highly credible source--to be a possible site for some "numbers" transmissions that are monitored on a regular basis by a growing number of world-wide SWLs. Language and number of digits was avoided.

My source also says that this "Northwest" site covers over 4,000 acres on the Virginia-North Carolina

border. This site--more or less midway between the Atlantic and Virginia's Great Dismal Swamp--is said to bristle with antennas of every description.

The long-suggested "Norfolk numbers" site could very well be some miles removed from Norfolk proper.

My own investigation revealed that this site was once alleged to have been used by the Pentagon during the Nixon administration to illegally monitor overseas telephone conversations!

My sources indicate that this operation was a part of a major effort to stem the smuggling of drugs into the United States through South Florida.

Other sources indicate that--at one time--one of the functions of this "Northwest" site was to transmit radio signals from ships at sea to Navy headquarters in Norfolk.

Perhaps monitors in this area could provide us with a better location, more details and possibly some photographs.

Havana Moon

MHz BBC frequencies just after sign off.

### SUSPECTED 5-DIGIT SPANISH TRANSMISSION SITES

Several sites have been mentioned continually over the years as being 5-digit likely. They are:

1. Washington, DC
2. New York City, NY
3. Norfolk, VA
4. Charleston, SC
5. Miami/Ft Lauderdale, FL
6. Marathon, FL
7. Havana, Cuba

I'll add to the list a few of my own possibilities:

1. Extreme northwest Washington state
2. Pt Reyes, CA
3. Vallejo, CA
4. Napa/Sonoma, CA
5. Slidell, LA
6. Island of Antigua
7. Guantanamo, Cuba

(More likely than Havana. There is, however, a distinct possibility of ship-board transmissions from a vessel in international waters off Havana.)

There is also the remote possibility that some "numbers" transmissions originate from the Cuban based GRU/KGB monitoring and transmitter site at Lourdes.

This site--in many ways --is similar to the Remington/Warrenton sites.

It's also very inter-

esting that a Lourdes-type facility was allegedly under construction by the Soviets on the island of Grenada at the time of the U.S. invasion.

### "LOOK WELL TO THE RAINBOW"

"...Look well to the rainbow. The fish will rise very soon. Chico is in the house..."

Radio Swan: 1961

It was RADIO SWAN or RADIO AMERICAS that provided the intrigue for countless SWLs of days gone by. What was the real location? Was the photograph of the transmitter site authentic? What did that cryptic message really mean?

"The message was nonsense! It meant nothing!" claims David Phillips in The Night Watch (Atheneum). He says that it was he who composed this cryptic message as those brave and dedicated men of Brigade 2506 were falling in defeat at the Bay of Pigs.

Phillips says that this cryptic message was of the type beamed to resistance fighters by the BBC in World War II.

Next month! Your home computer and the "numbers."

Time now for a Tecate and...

Adios, Havana Moon

### REVELATIONS: Circa 1984 AD

#### PART III

### BEACONS AND INTRIGUE ON THE HIGH SEAS!

One former U.S. intelligence officer refers to them as "sea-going spy ships!" The "them" happen to be those mysterious Soviet trawlers that seem to shadow the U.S. fleet, openly set anchor near U.S. submarine bases and often are noted in international waters off Cape Canaveral and south of Charleston, South Carolina.

The Soviet intelligence community, unlike U.S. intelligence agencies, does not have a widespread system of land-based monitoring sites. Therefore, they are literally forced to "go to sea" for a rather large part of their ELINT and COMINT activities.

And some "beacons" play in important role in the activities of this huge Soviet "spy fleet." Many times in the course of its activities, a trawler will have need of a "drop."

Some of the "beacons" that are often reported to MT and various club bulletins are nothing more than

"cluster" or "rendezvous" beacons that enable Soviet submarine crews to meet with and gather "raw" intercepts from various trawlers. Such "beacons" were once very common in waters off Newfoundland.

It's a sure bet that the trawler that was shadowing the U.S. fleet the day of the carrier/submarine collision had an intercept bonanza with all of the U.S. "communications compromises" just after the collision.

### ANOTHER REVELATION FROM VIRGINIA

Last month Virginia monitor Don Schimmel reported an intriguing transmission: 13 minutes after monitoring a 5-digit Spanish transmission (13428 kHz), RADIO HAVANA CUBA signed on. The carrier abruptly ceased after about 8 minutes of broadcast.

MOST CURIOUS! Over the past few years, there have been many reports of RHC as well as the North American Service of Radio Moscow intermod (?) monitored on many 5-digit Spanish transmissions.

Many times I have also noted 5-digit Spanish on 7

## CORDLESS PHONE MONITORING USED AS EVIDENCE

(Thanks to MT readers Don leFevre and B.A. Thunman for sending us the following Associated Press story which may prove a landmark decision for radio monitors.)

TOPEKA, Kan. - Police can lawfully monitor and record cordless telephone conversations heard over an ordinary FM radio and use the recordings as evidence in court, the Kansas Supreme Court ruled March 24.

In overturning a Reno County District Court judge, the high court decided that cordless telephone conversations are the equivalent of oral communications and not subject to wiretap laws.

Justice Dave Prager, in writing the decision for the court, said, "Owners of a cordless telephone located in a private residence who had been fully advised by the owner's manual as to the nature of the equipment, which involves the transmission and reception of FM radio waves, had no reasonable expectation of privacy."

Prosecutors alleged the defendants used their cordless telephone for drug dealing.

The conversations,

which Judge William F. Lyle ruled were inadmissible as evidence, were recorded in 1982 after a neighbor picked them up while he was randomly tuning a standard AM-FM radio.

The neighbor told police about the conversations and the Kansas Bureau of Investigation provided a tape recorder and tapes and asked the neighbor to record more communications.

A similar case is pending in Rhode Island, but is not expected to be resolved until later this year.

During oral arguments before the court last month, Herbert R. Hess Jr., attorney for the defendants, urged the court not to set an "illogical precedent" by allowing the use of the recorded conversations.

He contended that what occurs in the privacy of the home is protected constitutionally and statutorily and said a 1968 federal law governing wiretaps applies in this case.



# listener's log

## Atlantic Coastal Scanning

by Kevin Johnson  
P.O. Box 7464  
Hampton, VA 23666

(ED NOTE: The following list is the first of an installment series; MT readers

wishing a computer printout of the entire series may send \$5 with your request to the author at the address above.)

### AIRCRAFT

LOCATION	AGENCY	DESCRIPTION	FREQUENCY
CHAMBERS	U.S. NAVY	APPROACH	119.2000
CHAMBERS	U.S. NAVY	DEPARTURE	389.9000
CHAMBERS	U.S. NAVY	DEPARTURE	125.2000
CHAMBERS	U.S. NAVY	GROUND	121.9000
CHAMBERS	U.S. NAVY	M.A.C.	130.6500
CHAMBERS	U.S. NAVY	TOWER	124.3000
CHAMBERS	U.S. NAVY	TOWER	126.2000
CONUS	ARNG	UHF AIR	241.0000
CONUS	COAST GUARD	RESCUE BEAC.	275.1000
CONUS	COAST GUARD	RESCUE BEAC.	240.6000
CONUS	COAST GUARD	SEARCH	237.9000
CONUS	COAST GUARD	SEARCH	282.0000
CONUS	COAST GUARD	UHF AIR	383.9000
CONUS	COAST GUARD	UHF AIR	381.8000
CONUS	COAST GUARD	UHF AIR	381.7000
CONUS	CONTRACTORS	UHF AIR	275.2000
CONUS	CONTRACTORS	UHF AIR	345.4000
CONUS	CONTRACTORS	UHF AIR	314.6000
CONUS	CONTRACTORS	UHF AIR	382.6000
CONUS	DEPT. INTR.	AIR SAFETY	172.6000
CONUS	DEPT. INTR.	FIRE	168.5500
CONUS	DOE	UHF AIR	230.4000
CONUS	FAA	MIL TOWERS	348.6000
CONUS	FAA	MIL TOWERS	257.8000
CONUS	FLEETSATCOM	UHF AIR	240.2700
CONUS	FLEETSATCOM	UHF AIR	261.7000
CONUS	FSS	UHF AIR	272.7000
CONUS	FSS	UHF AIR	255.4000
CONUS	NOAA	HURRICANE	304.8000
CONUS	SAC	UHF AIR	321.0000
CONUS	SAC	UHF AIR	372.2000
CONUS	SAC	UHF AIR	311.0000
CONUS	SAC	UHF AIR	375.7000
CONUS	SHUTTLE	UHF AIR	296.8000
CONUS	SHUTTLE	UHF AIR	259.4000
CONUS	SHUTTLE	UHF AIR	264.8000
CONUS	TAC	TRAINING	252.8000
CONUS	TAC	UHF AIR	381.3000
CONUS	TAC	UHF AIR	378.9000
CONUS	U.S. NAVY	AIR/AIR	385.2500
CONUS	U.S. NAVY	BLUE ANGELS	250.8000
CONUS	U.S. NAVY	TWRS UHF	360.2000
CONUS	U.S. NAVY	TWRS UHF	340.2000
CONUS	USAF	DRCT.FNDR.	305.4000
CONUS	USAF	REFUELING	252.1000
CONUS	USAF	T-BIRDS	273.5000
CONUS	USAF	T-BIRDS	382.9000
CONUS	USAF	T-BIRDS	283.5000
CONUS	USAF	T-BIRDS	322.6000
CONUS	USAF	T-BIRDS	295.7000
CONUS	USAF	TWRS UHF	349.4000
CONUS	USAF	TWRS UHF	236.6000
CONUS	WEATHER	UHF AIR	342.5000
CONUS	WEATHER	UHF AIR	344.6000
CONUS	WEATHER	UHF AIR	239.8000
CONUS	WEATHER	UHF AIR	375.2000
FELKER	U.S. ARMY	TOWER	126.3000
LANGLEY AFB	USAF	APPROACH	120.3000
LANGLEY AFB	USAF	APPROACH	126.7000
LANGLEY AFB	USAF	GROUND	121.7000
LANGLEY AFB	USAF	TOWER	125.1000
LANGLEY AFB	USAF	UNICOM	122.9000
LARC	NASA	TOWER	122.8500

LOCATION	AGENCY	DESCRIPTION	FREQUENCY
NEWPORT NEWS	PAT. HENRY	APPROACH	125.7000
NEWPORT NEWS	PAT. HENRY	ATIS	128.6500
NEWPORT NEWS	PAT. HENRY	CLEARANCE	121.9000
NEWPORT NEWS	PAT. HENRY	DEPARTURE	124.9000
NEWPORT NEWS	PAT. HENRY	GROUND	121.9000
NEWPORT NEWS	PAT. HENRY	TOWER	118.7000
NORFOLK VA		APPROACH	118.9000
NORFOLK VA		ATIS	127.5000
NORFOLK VA		CLEARANCE	118.5000
NORFOLK VA		DEPARTURE	125.2000
NORFOLK VA		GROUND	121.9000
NORFOLK VA		TOWER	120.8000
NORFOLK VA	TRSA	< 23 MILES	257.3000
NORFOLK VA	TRSA	< 23 MILES	118.9000
NORFOLK VA	TRSA	< 23 MILES	379.1000
NORFOLK VA	TRSA	< 23 MILES	124.9000
NORFOLK VA	TRSA	> 23 MILES	249.9000
NORFOLK VA	TRSA	> 23 MILES	360.6000
NORFOLK VA	TRSA	> 23 MILES	372.1000
NORFOLK VA	TRSA	> 23 MILES	132.3500
NORFOLK VA	TRSA	> 23 MILES	127.9000
NORFOLK VA	TRSA	> 23 MILES	126.0500
NORFOLK VA	TRSA	> 23 MILES	119.4500
NORFOLK VA	TRSA	> 23 MILES	353.7000
OCEANA	U.S. NAVY	APPROACH	119.6000
OCEANA	U.S. NAVY	TOWER	126.2000
TIDEWATER		UNICOM	122.9500
DC			
WASHINGTON	ABC		455.7000
WASHINGTON	ABC		450.6500
WASHINGTON	ABC		450.8500
WASHINGTON	ABC		455.3500
WASHINGTON	ABC		450.4125
WASHINGTON	ABC	F1	455.0875
WASHINGTON	ABC	F2	455.5875
WASHINGTON	ABC	F3	450.5875
WASHINGTON	ACTN MOV NWS		453.3000
WASHINGTON	ANDREWS AFB	AIREVAC	141.3750
AQUEDUCT PD	WASHINGTON		150.7250
ASSOC. PRESS	WASHINGTON		455.4500
ASSOC. PRESS	WASHINGTON		450.8000
CAPITOL PD	WASHINGTON	F1	164.8000
CAPITOL PD	WASHINGTON	F2	164.6250
CBS	WASHINGTON		450.5125
CBS	WASHINGTON		450.2125
CBS	WASHINGTON		450.4875
CBS	WASHINGTON		455.8000
DOW JONES	WASHINGTON		452.9750
DOW JONES	WASHINGTON		457.9750
DOW JONES	WASHINGTON		166.2500
EVENING STAR	WASHINGTON		170.1500
EVENING STAR	WASHINGTON		161.6400
EVENING STAR	WASHINGTON		173.2750
EVENING STAR	WASHINGTON		455.0500
EVENING STAR	WASHINGTON		455.5500
EVENING STAR	WASHINGTON		161.7000
FD	WASHINGTON	F1 DISPATCH	154.1900
FD	WASHINGTON	F2 FGRND	154.2350
FD	WASHINGTON	F4 FGRND(HT)	154.2050
FD	WASHINGTON	MOBILES	154.4000
FD	WASHINGTON	MUTUAL AID	154.2800
FT MYER	WASHINGTON	CEREMONY	148.6650
FT MYER	WASHINGTON	CID	412.9550
METRO	WASHINGTON		160.3800
METRO	WASHINGTON		160.6200
METRO	WASHINGTON		416.1250
METROMEDIA	WASHINGTON		161.7300
METROMEDIA	WASHINGTON		152.8700
METRO	WASHINGTON	PD	161.3850
METRO	WASHINGTON	PD	161.0250
NAVAL HQ	WASHINGTON	FD	148.3100
NAVAL HQ	WASHINGTON	PD	150.1100
NBC	WASHINGTON		455.0500
NBC	WASHINGTON		455.7500
NBC	WASHINGTON		455.8500
NBC	WASHINGTON		455.3500
PARK PD	WASHINGTON		172.4750
PARK PD	WASHINGTON		172.7500
PARK PD	WASHINGTON	DOWNTOWN	411.7250
PARK PD	WASHINGTON	DOWNTOWN	411.6250
PARK PD	WASHINGTON	F1	166.7250
PARK PD	WASHINGTON	F2	166.9250
PARK PD	WASHINGTON	F3	167.0250
PARK PD	WASHINGTON	F4	166.8500

# TUNE IN CANADA



by

**Norman H. Schrein**

This month let's take a look into the Department of Communications radio system --DOC for short. It appears that they use a single simplex frequency across the country: 149.080 MHz, using 50 watts. According to the DOC's own microfiche, here are the station calls and locations:

VGA 200	Ottawa, ON
201	"
210	Vancouver, BC
211	"
212	Victoria, BC
213	Prince Rupert, BC
214	Kelowna, BC
215	Prince George, BC
216	Langley, BC
217	Cranbrook, BC
221	Edmonton, AL
222	Grand Prairie, AL
223	Calgary, AL
224	Whitehorse, YT
226	Fort Smith, NWT
227	"
230	Winnipeg, MN
231	"
232	Saskatoon, SK

233	Regina, SK
234	Thompson, MN
231	Toronto, ON
241	"
242	Sault Ste Marie, ON
244	London, ON
245	Hamilton, ON
246	Kitchner, ON
247	Kingston, ON
248	Ottawa, ON
249	Thunder Bay, ON
251	Windsor, ON
260	Montreal, PQ
261	"
262	Sherbrooke, PQ
263	Trois-Rivieres, PQ
264	Quebec City, PQ
265	Chicoutimi, PQ
266	Rouyn, PQ
267	September Lakes, PQ
268	S Remi De Napierville, PQ

270	Moncton, NB
271	"
272	Saint John, NB
273	Halifax, NS
274	Sidney, NS
275	Saint Johns, NFLD
276	Bathurst, NB
277	Corner Brook, NFLD
278	Monaque, PEI
280	S Lambert de Levis PQ
281	Pimosi, PQ
300	Shirley Bay, ON
301	"
301	Kingsmore, PQ
303	Richmond, ON
304	Shirley Bay, ON
CF 21	"
224	"

227	"
228	Gatineau Park, PQ
229	Ottawa, ON
230	"
231	"
232	DOC Communications Research Centr, Ottawa, ON
239	Ottawa, ON
240	"
248	"
249	Holman Island, NWT
250	Sachs Harbour, NWT
251	Snow Drift, NWT
257	Shirley Bay, ON

420.1125	" " "
409.1125	P
420.2125	" " "
409.2125	P
420.3125	" " "
409.3125	P
420.4125	" " "
409.4125	P
420.5125	" " "
409.5125	P
420.6125	" " "
409.6125	P
420.7125	" " "
409.7125	P
420.9125	" " "
409.9125	P
161.115	Canadian Pacific CHB 232
161.475	" " "
163.470	Can Motorola Elec CHC 662
167.130	P
104.300	CBC / CHFA 1

I had a request for listings in the Lethbridge, Alberta area. Here is a sample:

100.100	CBC / CBRXFM
162.300	Alberta Government Phones/CGF542
164.310	" " "
166.350	" " "
168.360	" " "
30.420	" " /CFG 547
149.770	" " /CFG 802
163.380	" " /CGG 620
166.950	P (Paired Freq)
152.510	" " /CGJ 48
157.770	P
152.600	" " "
157.860	P
152.690	" " "
157.950	P
152.780	" " "
158.040	P
420.0125	" " "
409.0125	P

That's all for this time. If I have given a partial list for your area and you wish more information, simply write to me and give me the last listing which appeared and I will continue the list in another column. You can reach me in care of Fox Marketing, Inc., 4518 Taylorsville Road, Dayton, OH 45424.

Until next time---GOOD MONITORING.

## SURPLUS TEST EQUIPMENT: One Dealer's Wares

by Bob Grove

Following the close of World War II an enormous deluge of new and used electronic equipment flooded the hobbyist's marketplace. Receivers were available for a few dollars apiece; transmitters even less.

But with the gradual advancement of technology and the depletion of this early inventory, the bountiful marketplace has all but dried up. The myriad basement advertisers in CQ, QST and other hobby magazines have disappeared.

But some of the stalwarts remain. This month MT takes a look at one surplus dealer whose prices are quite attractive for some of the old, traditional gear which still can be found on the military salvage marketplace.

Norm Litsche, proprietor of **Military Surplus, Lafayette Avenue at Phoenix, Canandaigua, NY 14424** (phone 716-394-0148) provides a list of his used equipment upon request.

A recent list showed quite an assortment of signal generators, scopes and meters, a receiver, and even some RTTY equipment as well. Naturally, much of the equipment is time-worn and

in various states of physical condition.

Equipment which has been checked for operation is so indicated in the descriptive list; we decided to order a signal generator, model TS-497. At only \$100, this 2-400 MHz RF generator, with calibrated output from 0.1-100,000 microvolts, seemed like a good buy.

Upon receipt we examined the packing; fortunately, military surplus gear is ruggedly-encased, affording an extra level of protection within the cardboard packing box.

Norm had also included several reprinted pages of the technical manual, useful for troubleshooting or repairs. The pages contained the circuit diagrams, specifications and other technical information.

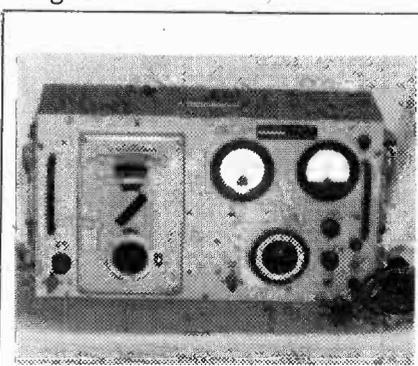
Plugging the unit into the wall, we found the instrument to be in good working order. The calibration of the zero-center meter tracked on all ranges, the modulation meter indicated variable percentage at both 400 and 1000 Hz, and the bandswitch worked solidly.

The frequency-adjust shaft was a little wobbly making finite signal settings at 400 MHz difficult.

Disassembly of the test set, however, was very simple and the placement of a washer over the dial shaft cured the problem.

A few drops of oil later we had the unit tamed down and working very acceptably. The maintenance provided two benefits: The unit worked better and we became more familiar with its construction and capabilities.

Surplus electronics can provide an excellent opportunity to learn about quality equipment without a heavy investment. Remember, much of the equipment is old and technology is often outdated. But if you are an inveterate tinkerer with a thirst to learn more about the insides of equipment, this is one excellent route to go.



TS-497 signal generator: an oldie but a goodie

## Tune In On The Rainbow Warrior

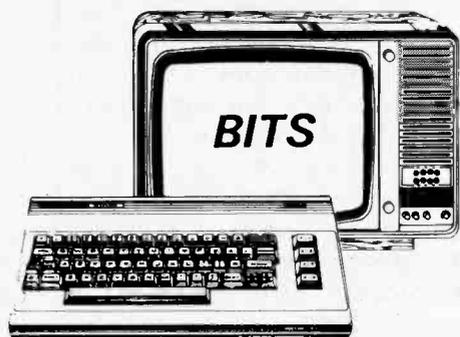
At one time or another most of us have been impressed with the gutsy exploits of the arch-conservationists in the rubber rafts as they resist the slaughter of whales and seal pups, oppose the discharge of toxic wastes into rivers and oceans and demonstrate other heroic efforts to preserve the bounty of nature.

As harpoons thunder over their heads and rifle shots splash about them, their only contact with their mother ship, the **Rainbow Warrior**, and with their headquarters in San Francisco, Greenpeace, is via radio.

Most high seas communication is conducted on simplex ship channels in the 8/12/16/22 MHz bands, a complete list of which is found on p.145 of Grove's Shortwave Frequency Directory. The Rainbow Warrior's registry is GSZY, while the coastal station is KMC237.

Amateur radio is used to support much of the demonstrating activities; look for N6VS on 20 meters using both upper sideband and CW around 14300 kHz.

We would like to thank Dick Dillman of Greenpeace Radio (435 Utah St., San Francisco, CA 94110) for this information.



by Mike Edelson  
P. O. BOX 203  
ROSELLE PARK, NJ 07204

**BASIC's Basics**

For the new few months I hope to be able to help you learn to write your own programs. To do this we'll learn a generalized BASIC. Each vendor incorporates enhancements into the BASIC available for the system he offers. Since it is impossible to know all these enhancements, I will try to educate you in the Basics of BASIC. To learn the idiosyncracies of your particular machine please read your manual.

BASIC allows us to handle many data types. DATA comes in two main forms, text or string data and numeric data. TEXT or STRING DATA is names, words, numbers (such as social security numbers), etc. NUMERIC DATA comes in two forms, INTEGERS and REAL. A REAL number (also called a FLOATING-POINT number) will have an integer part and a non-integer part.

It should be noted that where BASIC is concerned a valid INTEGER can also be a valid REAL number. But integers occupy less memory space. As an example, CBASIC stores four integer numbers in the same space that one real number needs. There are other types of numbers but for now we'll work with REAL and INTEGER numbers.

STRING DATA or LITERALS are strings of characters between a single or double quote (machine dependent). The computer prints literally what is put between the quotes. Most systems have a maximum number of characters allowed between quotes.

Now let's look at a formula all radio experimenters should recognize:  
$$l' = \frac{468}{F.MHz}$$

This formula gives us the length of a 1/2 wave antenna for a given frequency in MHz. In BASIC we could write this formula as: ANTLEN=468/fMHz. It should be noted that the number 468 is a CONSTANT. It does not change. The VARIABLE fMHz, however, depends on what you as the programmer tell it to do. Variables are usually initialized (given a starting value) at the beginning

of the program and altered using a calculation, input statement, etc.

**SYNTAX**

Every language, computer or human, must have a structure (syntax). A BASIC statement must begin with a LINE number, mandatory in all BASICs, except CBASIC. LINE numbers help maintain uniformity; they label statements for GO TO's and other branching statements.

All BASIC statements follow a set format:

Line number, a space, a Verb or Adjective, variable(s) or,

Line number, a space, an arithmetic statement or other expressions.

Now let's look at our BASIC statements. First is the REM (remark) statement. REM allows us to put a comment in a program to document it from within. The computer sees the "REM" adjective and it takes no action. It knows that remarks are of no concern in program execution.

The syntax for REM is:

Line number, space, REM, space, your remarks or comments.

Next is the END statement. The syntax is:

Line number, space, END  
END terminates program execution. Some BASIC compilers and interpreters use a STOP, either instead of or in conjunction with END. In this case STOP either terminates execution or, if it is used in conjunction with END, STOP returns control to the operating system.

Next month we'll work on INPUTing and OUTPUTing data and beginning branching. As always I am available by mail or on the air per the schedule given last month.

**PROGRAMS for the Commodore**

When the smoke from the computer battlefield clears the air, one name continues to stand out: Commodore 64. Offering excellent graphics and sound as well as 64K memory, the C64 is recognized as a cost-effective leader in the home computer market.

Recently, a number of excellent programs have been written around radio hobby uses for the C64; we would like to share a sampling of these with you this month.

**HOME FILEWRITER** (\$59 plus \$5 shipping from Dynatech Microsoftware, Inc.,

**HURRICANE HUNTERS from p.1**

Miami Monitor (KJY74) can also contact aircraft directly on the following frequencies (kHz):  
3407 5562 6673  
8876 10015 13354  
17901 21937

Air-to-air communications are conducted on:

Primary VHF 123.050 MHz  
Secondary UHF 304.800  
Back-Up HF 4701kHz USB

Several call signs that you will hear include:

Gull 53rd weather recon squadron, Keesler AFB, MS("Hurricane Hunters")

Teal 920 weather recon group - Reserves, Keesler AFB, MS ("Hurricane Trackers")

Swan 54th weather recon squadron, Guam ("Typhoon Chasers")



Picture of the WC-130 weather recon aircraft during a hurricane mission.

**CRACKING THE CODE**

The message is divided into sections preceded by a mission identifier (Gull 10, Teal 06, etc.) and observation number.

**SECTION/DATA TO BE PASSED**

- A Date & time of fix(UTC)
- B Latitude of vortex (degrees, minutes N&S)  
Longitude of vortex (degrees, minutes, E&W)
- C Minimum height (millibars and meters)
- D Maximum surface wind (degrees and nautical miles)
- F Maximum flight level wind near center (degrees and knots)
- G Bearing and range from center of maximum surface wind (degrees and nautical miles)
- H Minimum sea level pressure (millibars)

7847 N. Caldwell Avenue, Niles, IL 60648). Part of an extensive "CodeWriter" series, this powerful program allows the user to custom design charts, tables, lists, reports--anything which requires structuring.

Filewriter allows the inexperienced beginner to be a programmer, designing logsheets, QSL/verification forms, frequency lists, library catalogs and other support activities for the monitoring post as well as home and office challenges.

An informative owner's manual includes a handy index (just in case you get

- I Maximum flight level temperature (degrees C)/ Pressure altitude (meters)/Absolute altitude outside the eye (meters)
- J Maximum flight level temperature (degrees C)/ Pressure altitude (meters)/Absolute altitude inside the eye (meters)
- K Dewpoint temperature (degrees C)/Sea surface temp inside eye (degrees C)
- L Eye Character (Closed wall, poorly defined, open SW, tec.)
- M Eye Shape/orientation/diameter; Eye shape--C-Circular;CO-Concentric; E-Elliptical. Orientation of major axis in tens of degrees, i.e., 01-010 to 190; 17-170 to 350. Transmit Diameter in nautical miles.  
Examples: C8 (Circular eye 8 miles in diameter), E09/15/5(Elliptical eye, major axis 090 deg-2/0 deg, length of major axis 15 nm, length of minor axis 5 nm; C08-14 (Concentric eye diameter inner eye 8 nm, outer eye 14 nm).
- N Confirmation of fix (coordinates and time)
- O Fix determined by/Fix level. Fix determined by: 1-Penetration; 2-Radar; 3-Wind; 4-Pressure; 5-Temperature. Fix level: 0-Surface; 1-1500ft; 8-850mb; 7-700mb; 5-500mb; 4-400mb; 3-300mb; 2-200mb; 9-other.
- P Navigation fix accuracy/meteorological accuracy (in nautical miles)
- Q Remarks

This information will inform the listener of the progress of the storm long before the NHC in Miami issues its next bulletin.

When violent seasonal storms come this season, MT readers will be there, following the daring exploits of the Hurricane Hunters.

**SEE p.27 for RECCO Message Code**

stuck!) for quick reference to steps. The manual is easy to read, providing friendly guidance to the programming sequence.

Language is BASIC and prompts are simple to follow. Anyone with only a brief familiarity with computer programming should have no trouble with Filewriter, and beginners (like me!) will find that manual informative and easy to follow.

The program disc and manual are sent in a sturdy, professional vinyl folder for library stacking and quick access.

Cont'd p.31

# GETTING STARTED

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## Receiver Specifications: what do they mean?

by Larry R. Antonuk  
WB9RRT/1

When going through the motions of buying a new scanner or short-wave receiver, the average shopper passes through a gray area. This area is located somewhere after deciding on the number of channels desired, frequency bands needed, etc., and before plunking the money down on the counter. The name usually given to this area is "comparing specs."

Once the field is narrowed down to a few contenders with similar features, our shopper will check over the fine print in order to determine which receiver is the "hottest" or the "sharpest." He's likely to come across something like this:  
SENS: AM, 1uV for 10dB S/N  
SSB, 0.5uV for 10dB S/N  
FM, 5uV for 20 dBq  
SELEC: +3 kHz at 3dB  
+6 kHz at 50dB

Great. More-experienced shoppers know that 0.5uV is better than 1.0uV, or that +3 kHz selectivity beats +5 kHz, but what do all those numbers actually refer to? The answer to this question could fill volumes, but the brief discussion that follows should give the average reader enough information to make a more intelligent purchase when it's time to upgrade his radio gear.

There are several specifications used to measure receiver performance. While it's possible to come across terms like noise figure, adjacent channel rejection, and dynamic range the two most important parameters are sensitivity and selectivity. They're important because they tell a lot about the receiver you're buying, and also because they're likely to be the only two specs the manufacturer publishes! Let's look at each one of them.

### SENSITIVITY

The ability of a receiver to respond to weak signals is called sensitivity; a good sensitivity figure is important when listening to faint, borderline stations. An SWL would appreciate a sensitive receiver, since it might make the difference between copying that weak station or losing it in the mud.

A scanner owner in a rural area would use a sensitive receiver to hear more

distant calls, while an urban scanner owner, closer to the action (and the transmitters), would have stronger signals to work with and could get by with less sensitivity.

Sensitivity is measured as the amount of signal required to overcome the inherent noise in the receiver and produce an increase in speaker volume corresponding to a given ratio of signal-to-noise (noise).

This ratio is measured in dB (decibels), a logarithmic method of finding ratios. For the purpose of our discussion, it's enough to know that 10 dB is a ratio of 3.16 to 1, and 20 dB is a ratio of 10 to 1.

On a receiver the noise at the speaker is measured with no signal at the antenna terminals. A calibrated signal generator is used to apply a signal to the terminals which is increased until the voltage measured at the speaker is (for example) 10 dB greater than the no-signal reading. The amount of signal coming out of the generator at this point is the sensitivity. In our example, 1uV (microvolt) of signal will increase our speaker volume 10 dB (about three times) over the noise heard with no signal applied.

With an FM receiver the procedure is slightly different: The squelch is opened, and the noise in the speaker is measured; a signal is introduced which will quiet the noise by a given ratio. In our example, a 5uV signal will quiet the noise in the speaker by 20 dB (the noise will drop to one-tenth the no-signal reading). The "q" in "dBq" lets us know that it refers to "quieting."

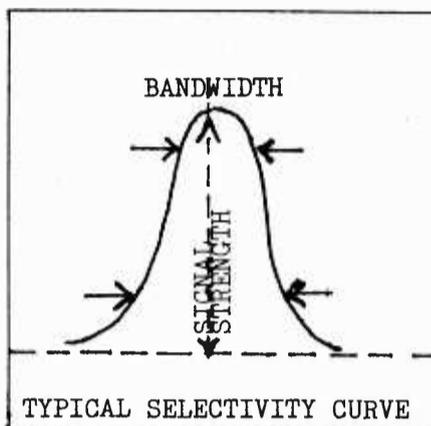
There are two snags to these systems. First, since the signal-to-noise ratio is a ratio, and not referenced to anything else, the output of one receiver could be much louder than another receiver for a given sensitivity figure. Sensitivity does not measure overall receiver gain.

Secondly, these tests don't measure any distortion introduced by the receiver. It doesn't matter if your sensitivity is 0.5uV for 20dBq if the audio is so distorted you can't understand it!

### SELECTIVITY

The ability of a receiver to choose between closely-spaced signals is called selectivity. A highly selective ("sharp") receiver will allow you to tune across a crowded band of CW operators and hear only one at a time. Theoretically, a sharp scanner should give you only the channel you're tuned to, even though there's a police cruiser parked outside transmitting on an adjacent channel.

The selectivity is determined by the "bandpass" of the receiver which, on a graph, resembles a bell-shaped distribution curve.



You can visualize the amplitude of the signal passed through the receiver on the vertical axis, and the frequency of the signal (and nearby signals) on the horizontal axis. The frequency we're tuned to is lined up with the center of the "bell."

A signal somewhat higher in frequency (to the right) of our tuned-in signal will cross the "bell" at a lower point (a lower amplitude). An ideal bandpass would be just wide enough to accept our frequency, then have vertical sides (called "skirts") so that nearby signals aren't heard even faintly in the speaker.

In real life, the bandpass looks more like our bell-shaped example. What our specs are telling us is just how steep our skirts are. The figures in our earlier example tell us that our bandpass is +3 kHz wide at 3 dB down from center frequency (the top of the bell) and +6 kHz wide at 50 dB down. These four points

Cont'd p.30

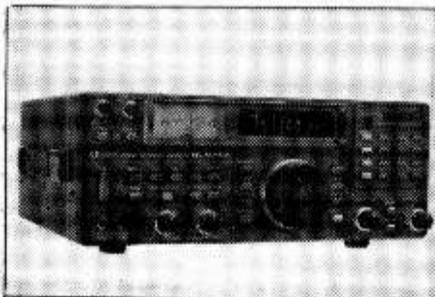
## The Most Popular Receivers: A Thumbnail Sketch

by Bob Grove

The choice among general coverage shortwave receivers is a bewildering experience for many listeners. How can a prospective buyer determine which receiver is best suited for him without paying for functions he doesn't need?

Let's take a look at a few of the current general coverage receivers, arranged in order from best to introductory, with comments on their good and bad points.

Grove discount prices are shown.



ICOM R-71A

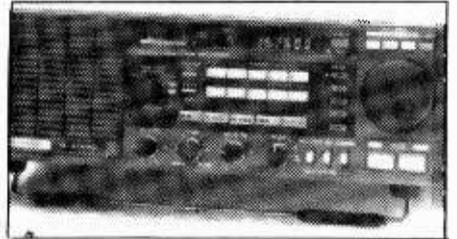
Newest on the market; extremely flexible on all modes; excellent stability and selectivity; high immunity to overload and intermod; vast improvement over its predecessor (R-70).

Recommended for serious broadcast and utilities applications, this receiver really means business. Thirty-two channel memory includes mode: squelch also works on scan; versatile noise blanker; optional computer interface, FM, remote



JRC NRD-515

Formerly king of the hill before introduction of R-71A; professionally built and rugged; passband tuning; reliable, serviceable with quality options available, built along commercial specifications (\$950, UPS shipping included).



KENWOOD R-2000

Very cost-effective considering 10 channel memory, scan ability, dual 24-hour clock/timer, three IF filters, squelch, FM, 100 Hz readout. Handsome, user-friendly. Suffers from intermod (eliminated by Grove TUN-3 Minituner); optional filters available for better selectivity; lack of RIT (fine tuning) makes SSB and RTTY reception a little touchy (RIT mod available); optional 108-174 converter.

Recommended as moder-

Cont'd p.31

# HELPFUL HINTS

## TV Interference Control

by W.S. Westerman N8EOR\*

The expanded use of the frequency spectrum by cable television systems has increased concern by radio amateurs, aviation enthusiasts and SWLs regarding the potential for interference with over-the-air communications. There is good reason for this concern since cable systems often use the same frequencies that are assigned to amateur and aircraft communications.

Recently, a cable system in California was fined \$10,000 for failure to clean up a leakage problem. Several amateur groups have been successful in getting franchise language forbidding the use of amateur frequencies for CATV channels. And the FCC has regularly barred systems located near airports from using frequencies corresponding to aircraft allocations.

As an active amateur and general manager of a cable system, I've found myself in the middle of the subject of leakage control on several occasions in both amateur and business settings. From the cable operator's perspective, deletion of a channel means loss of revenue potential.

In addition, any leaking fittings, splices, cable, or amplifier housings can cause signal "ingress," or signal leakage INTO the system. This leads to unacceptable pictures at the subscriber's set.

Finally, if an RF signal can get in or out of a cable system, water, can also get in, necessitating expensive repairs and shortening plant life.

The simple answer to this potential problem is a good leakage detection program...and cooperation with Hams and SWL's in the community. The first thing I did after taking over as manager of our Roseville, Michigan system was to place an ad on one of our channels soliciting the help of any amateur operators or scanner owners in the community. When several came forward, we set up a leakage control task force to let other electronic enthusiasts know on what frequencies leaking signals could be heard.

The frequency 107.9997 MHz was a channel on which we placed a warbling audio tone generator; scanner owners programmed this frequency into their memories. In one instance where a garbage truck hit a telephone pole, knocking out some electrici-

ty and straining a cable connection, we first heard about the problem from a scanner listener!

But cooperation with listeners is only half the answer; if you live in a cable community, have your city make sure that the company has regular leakage ride-outs of the entire system. Our company covers every inch of cable twice yearly. It's interesting to note that these ride-outs usually produce a number of non-leakage-related items that have saved us expensive equipment replacement.

In addition ask your cable system to set a company standard that's higher than the FCC leakage requirement (less than 20 microvolts per meter at 10 feet). A cable company must run system proof of performance tests yearly. If yours does not they could be encouraging leaks and be subject to stiff FCC fines for each day the problem is not corrected.

Cable television can and should peacefully co-exist with over-the-air communication. But when and if you hear HBO on your scanner, the company should stand ready to correct the situation immediately or face the same consequences any broadcast station would face for running a transmitter out of legal tolerances.

\*General Manager  
Continental Cablevision  
Box 420  
Roseville, MI 48066

Three different frequency plans are currently used in cable television systems. One uses the standard frequencies found in off air broadcasting. The incremental system offsets channels 4, 5, and 6, while the harmonic of HRC system lowers the frequency of each channel by 1.25 MHz.

Scientific-Atlanta Frequency Channel Plan

CATV CH	CONVTR CH	STANDARD		INCREMENTAL		HARMONIC	
		VIDEO	AUDIO	VIDEO	AUDIO	VIDEO	AUDIO
2(-6 MHz)	1	49.25	53.75	-	-	-	-
2	2	55.25	59.75	55.25	59.75	54.00	58.50
3	3	61.25	65.75	61.25	65.75	60.00	64.50
4	4	67.25	71.75	67.25	71.75	66.00	70.50
4+	1	-	-	73.25	77.75	72.00	78.00
5	5	77.25	81.75	79.25	83.75	78.00	82.50
6	6	83.25	87.75	85.25	89.75	84.00	88.50
A	14	121.25	125.75	121.25	125.75	120.00	124.50
B	15	127.25	131.75	127.25	131.75	126.00	130.50
C	16	133.25	137.75	133.25	137.75	132.00	136.50
D	17	139.25	143.75	139.25	143.75	138.00	142.50
E	18	145.25	149.75	145.25	149.75	144.00	148.50
F	19	151.25	155.75	151.25	155.75	150.00	154.50
G	20	157.25	161.75	157.25	161.75	156.00	160.50
H	21	163.25	167.75	163.25	167.75	162.00	166.50
I	22	169.25	173.75	169.25	173.75	168.00	172.50

Scientific-Atlanta Frequency Channel Plan (continued)

CATV CH	CONVTR CH	STANDARD		INCREMENTAL		HARMONIC	
		VIDEO	AUDIO	VIDEO	AUDIO	VIDEO	AUDIO
7	7	175.25	179.75	175.25	179.75	174.00	178.50
8	8	181.25	185.75	181.25	185.75	180.00	184.50
9	9	187.25	191.75	187.25	191.75	186.00	190.50
10	10	193.25	197.75	193.25	197.75	192.00	196.50
11	11	199.25	203.75	199.25	203.75	198.00	202.50
12	12	205.25	209.75	205.25	209.75	204.00	208.50
13	13	211.25	215.75	211.25	215.75	210.00	214.50
J	23	217.25	221.75	217.25	221.75	216.00	220.50
K	24	223.25	227.75	223.25	227.75	222.00	226.50
L	25	229.25	233.75	229.25	233.75	228.00	232.50
M	26	235.25	239.75	235.25	239.75	234.00	238.50
N	27	241.25	245.75	241.25	245.75	240.00	244.50
O	28	247.25	251.75	247.25	251.75	246.00	250.50
P	29	253.25	257.75	253.25	257.75	252.00	256.50
Q	30	259.25	263.75	259.25	263.75	258.00	262.50
R	31	265.25	269.75	265.25	269.75	264.00	268.50
S	32	271.25	275.75	271.25	275.75	270.00	274.50
T	33	277.25	281.75	277.25	281.75	276.00	280.50
U	34	283.25	287.75	283.25	287.75	282.00	286.50

Scientific-Atlanta Frequency Channel Plan (continued)

CATV CH	CONVTR CH	STANDARD		INCREMENTAL		HARMONIC	
		VIDEO	AUDIO	VIDEO	AUDIO	VIDEO	AUDIO
V	35	289.25	293.75	289.25	293.75	288.00	292.50
W	36	295.25	299.75	295.25	299.75	294.00	298.50
AA	37	301.25	305.75	301.25	305.75	300.00	304.50
BB	38	307.25	311.75	307.25	311.75	306.00	310.50
CC	39	313.25	317.75	313.25	317.75	312.00	316.50
DD	40	319.25	323.75	319.25	323.75	318.00	322.50
EE	41	325.25	329.75	325.25	329.75	324.00	328.50
FF	42	331.25	335.75	331.25	335.75	330.00	334.50
GG	43	337.25	341.75	337.25	341.75	336.00	340.50
HH	44	343.25	347.75	343.25	347.75	342.00	346.50
II	45	349.25	353.75	349.25	353.75	348.00	352.50
JJ	46	355.25	359.75	355.25	359.75	354.00	358.50
KK	47	361.25	365.75	361.25	365.75	360.00	364.50
LL	48	367.25	371.75	367.25	371.75	366.00	370.50
MM	49	373.25	377.75	373.25	377.75	372.00	376.50
NN	50	379.25	383.75	379.25	383.75	378.00	382.50
OO	51	385.25	389.75	385.25	389.75	384.00	388.50
PP	52	391.25	395.75	391.25	395.75	390.00	394.50
QQ	53	397.25	401.75	397.25	401.75	396.00	400.50
RR	54	403.25	407.75	403.25	407.75	402.00	406.50
SS	55	409.25	413.75	409.25	413.75	408.00	412.50
TT	56	415.25	419.75	415.25	419.75	414.00	418.50
UU	57	421.25	425.75	421.25	425.75	420.00	424.50
VV	58	427.25	431.75	427.25	431.75	426.00	430.50
WW	59	433.25	437.75	433.25	437.75	432.00	436.50
XX	60	439.25	443.75	439.25	443.75	438.00	442.50

# Abbreviations List

Reprinted from ARRL's RADIO AMATEUR'S HANDBOOK 1984

- A — ampere
- ac — alternating current
- ACC — Affiliated Club Coordinator
- ACNF — AMSAT coordination and network frequency
- A/D — analog-to-digital
- af — audio frequency
- afc — automatic frequency control
- afsk — audio frequency-shift keying
- agc — automatic gain control
- Ah — ampere hour
- alc — automatic load (or level) control
- a-m — amplitude modulation
- A.M. — morning
- AMSAT — Radio Amateur Satellite Corporation
- anl — automatic noise limiter
- AOS — acquisition of signal
- ARA — Amateur Radio Association
- ARC — Amateur Radio Club
- ARES — Amateur Radio Emergency Service
- ARS — Amateur Radio Society; Amateur Radio station
- ASCII — American National Standard Code for Information Interchange
- ASSC — Amateur Satellite Service Council
- ATV — amateur television
- avc — automatic volume control
- AWG — American wire gauge
- az-el — azimuth-elevation
- BASIC — beginner's all-purpose symbolic instruction code (computer language)
- b — byte; a group of bits or binary digits, usually eight
- bc — broadcast

- BCD — binary-coded decimal
- BCI — broadcast interference
- bcl — broadcast listener
- bit — binary digit
- BFO — beat-frequency oscillator
- BM — bulletin manager
- BPF — band-pass filter
- BPL — Brass Pounders League
- bps — bits per second
- BPT — bipolar transistor
- BW — bandwidth
- BWL — loaded bandwidth
- C — Celsius
- CAC — Contest Advisory Committee
- CATVI — cable-television interference
- CB — citizens band
- CCIR — International Radio Consultative Committee
- CCITT — Consultative Committee for International Telegraph and Telephone, a part of ITU
- ccw — coherent cw; counterclockwise
- c.d. — civil defense
- CD — Communications Department (ARRL)
- CMOS — complementary-symmetry metal-oxide semiconductor
- coax — coaxial cable or connector
- COR — carrier-operated relay
- CP — code proficiency (award)
- CPU — Central Processing Unit
- CRRL — Canadian Radio Relay League
- CRT — cathode-ray tube
- CSMA — carrier sense multiple access
- ct — center tap
- CTCSS — continuous tone-coded squelch

- system (PL)
- cw — continuous wave (code); clockwise
- D/A — digital-to-analog
- dB — decibel
- dBc — decibels referenced to carrier level
- dBd — antenna gain referenced to a dipole
- dBi — antenna gain referenced to isotropic; a dipole has a gain of 2.14 dBi
- dBm — decibels referenced to 1 mW
- DBM — doubly balanced mixer
- dc — direct current
- D-C — direct conversion
- DEC — district emergency coordinator
- DEMUX — demultiplexer
- DF — direction finder; direction finding
- DIP — dual in-line package
- DOC — Department of Communications (Canada)
- dpdt — double-pole double-throw
- dpst — double-pole single-throw
- dsb — double sideband
- DTL — diode-transistor logic
- DTMF — dual-tone, multi-frequency
- DVM — digital voltmeter
- DX — long distance
- DXAC — DX Advisory Committee
- DXCC — DX Century Club
- E — voltage
- EAROM — electrically alterable read-only memory
- EC — emergency coordinator
- ECAC — Emergency Communications Advisory Committee

# TECHNICAL TOPICS by Bob Grove

**Q** What single publication will tell me which international broadcasting station I have tuned in? (Elizabeth Curran, Clifton Springs, NY)

**A** The encyclopedic work is the World Radio TV Handbook, published annually for \$17.50. Check MT shortwave advertisers for availability. Other excellent sources are Glenn Hauser's Review of International Broadcasting, Larry Magne's Radio Database International, and many club publications as well. Watch the pages of MT for announcements of these and other publications as well.

**Q** Are there frequency extenders for scanners like my BC-300? Is there any company which can modify my scanner to receive 200-420 MHz? (Bobby Martin, Stuttgart, AR)

**A** In a word, no. There are, however, tricks which can cause many scanners (including the BC-300) to travel a few megahertz outside of their normal ranges. We have discussed these in MT over the years and we will soon be publishing anthologies ("The Best of MT") of popular articles on an annual basis if we have enough interest expressed by

our readers.

**Q** Can the Grove Scanverter be used with a tunable portable aircraft receiver? Will the Grove Multicoupler reduce scanner lockup which I now have using a Radio Shack two-set coupler? (Gary Thomas, Tigerton, WI)

**A** While the Grove Scanverter will allow you to receive 225-400 MHz military aircraft transmissions on any receiver capable of 118-136 MHz AM (or shortwave 10-22 MHz) reception, the plastic cabinet and permanently-attached whip antennas on portable receivers invite images, intermod and feedthrough. Use a scanner with the Scanverter.

Scanner lockup occurs when a harmonic from one scanner's oscillator falls on a frequency received by the other scanner; when two scanners are connected together through an antenna Y-connector, the situation is aggravated. The Grove CPL-1 multicoupler allows one antenna to be used on two scanners but provides about 20 dB isolation between the two scanners, decreasing lockup.

**Q** Does Grove Enterprises

have a showroom where I can see products before I buy? (W.D. Montgomery, Cincinnati, OH)

**A** Due to the high cost of maintaining a staffed showroom, Grove Enterprises remains a mail order firm to keep prices low. An unconditional refund policy as stipulated in their catalog guarantees satisfaction.

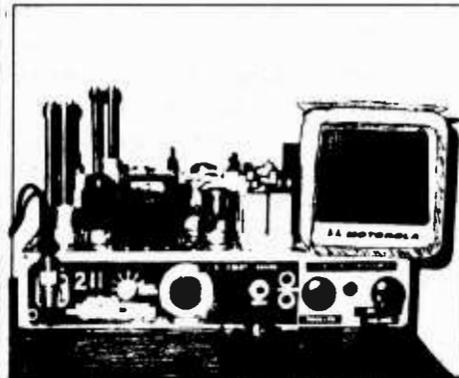
**Q** I have a 200-foot run of RG-8/U coax; how can I connect it to the F connectors on my Grove Signal Amp preamplifier? (Chattanooga, TN)

**A** You may wish to check with a local cable TV company; F connectors for large-size cables like RG-8/U do exist. Next, try reducing down to a short length of low-loss RG-58/U or RG-59/U using appropriate PL-259 connectors, reducers and barrel connectors. The F connectors may be properly affixed to the smaller cables.

Cover the connector splice with a good weather sealant like Coax Seal (part of Grove CK-1 connector kit). The short lengths of smaller cable like RG-58/U will never be noticed, but be sure you choose a cable with plenty of shielding braid.

# PROFILES

## BITS OF NOSTALGIA



Thirty-five years ago, this low band Motorola six-volt receiver with its lock-tal tubes provided single-channel reception for unit 211 of the Ft. Wayne, Indiana Police Department.

Thanks to reader Perry Steckbeck of West Palm Beach, Florida for this interesting historical insight and a view into his monitoring collection.



MT reader Lloyd Scoot of Bartow, Florida recently restored this classic RCA camera, a TK11/31, to mint condition.

Nostalgia is a vital part of radio for many of us, and Lloyd's venture into TV camera restoration is an art in itself!

### ABBREVIATIONS from p.24

ECL — emitter-coupled logic  
 ECO — electron-coupled oscillator  
 eirp — equivalent isotropically radiated power; erp referenced to an isotropic antenna  
 EME — earth-moon-earth (moonbounce)  
 emf — electromotive force (voltage)  
 EMI — electromagnetic interference  
 EMP — electromagnetic pulse  
 EOC — emergency operations center  
 EPROM — erasable programmable read-only memory  
 EQX — equator crossing  
 erp — effective radiated power  
 EUV — extreme ultraviolet radiation  
 f — frequency  
 F — farad; Fahrenheit  
 FAX — facsimile  
 FCC — Federal Communications Commission  
 FD — Field Day  
 FET — field-effect transistor  
 FF — flip-flop  
 FL — filter  
 fm — frequency modulation  
 FMT — Frequency Measuring Test  
 fot — optimum working frequency  
 FSD — full-scale deflection  
 fsk — frequency-shift keying  
 ft — foot  
 g — gram  
 GaAs FET — gallium arsenide field-effect transistor  
 GDO — grid-dip or gate-dip oscillator  
 GHz — gigahertz  
 gnd — ground  
 H — henry  
 HAAT — height above average terrain  
 HDLC — high-level data link control  
 hf — high frequency  
 HFO — heterodyne-frequency oscillator  
 hpf — highest possible frequency  
 Hz — hertz  
 I — current  
 IARU — International Amateur Radio Union  
 IC — integrated circuit  
 i-d — identification, identifier  
 ID — inside diameter  
 i-f — intermediate frequency  
 IMD — intermodulation distortion  
 in. — inch  
 in./s — inches per second  
 I/O — input/output  
 IRAC — Interdepartment Radio Advisory Committee

IRC — International Reply Coupon  
 isb — independent sideband  
 ITF — ARRL Interference Task Force  
 ITU — International Telecommunication Union  
 IW — Intruder Watch  
 J — joule  
 j — indicator for reactive component of an impedance (+j inductive; -j capacitive)  
 JFET — junction field-effect transistor  
 K — kilobyte, Kelvin  
 k — kilo, 1000  
 KB — keyboard  
 kg — kilogram  
 kHz — kilohertz  
 km/h — kilometers per hour  
 kW — kilowatt  
 kWh — kilowatt hour  
 L — inductance  
 lb — pound  
 L-C — inductor-capacitor  
 LCD — liquid crystal display  
 LED — light-emitting diode  
 lf — low frequency  
 lhcp — left-hand circular polarization  
 LMO — linear master oscillator  
 LO — local oscillator, League Official  
 Loran — long-range navigation  
 LOS — loss of signal  
 lp — log periodic  
 lpm — letters per minute  
 lsb — lower sideband  
 LSB — least-significant bit  
 LSI — large-scale integration  
 luf — lowest usable frequency  
 m — meter (distance or band)  
 mA — milliampere  
 mAh — milliampere hour  
 MARS — Military Affiliate Radio System  
 MDS — minimum discernible signal  
 mf — medium frequency  
 mH — millihenry  
 MHz — megahertz  
 mi — mile  
 mike — microphone  
 mini-DIP — dual in-line package, 8 pins  
 mi/h — miles per hour  
 mi/s — miles per second  
 mix — mixer  
 mm — millimeter  
 MO — master oscillator  
 modem — modulator/demodulator  
 MOS — metal-oxide semiconductor  
 MÖX — manually operated switching  
 ms — millisecond  
 m.s. — meteor scatter  
 m/s — meters per second

MSB — most-significant bit  
 MSI — medium-scale integration  
 MSTV — medium-scan television  
 muf — maximum usable frequency  
 MUX — multiplex; multiplexer  
 mV — millivolt  
 mW — milliwatt  
 nbfm — narrow-band frequency modulation  
 nbvm — narrow-band voice modulation  
 n.c. — no connection  
 NC — normally closed  
 NCS — National Communications System  
 ncs — net control station  
 NF — noise figure  
 nH — nanohenry  
 NIAC — National Industry Advisory Committee  
 NiCd — nickel cadmium  
 NM — net manager  
 NMOS — n-channel MOS device  
 NO — normally open  
 NOI — Notice of Inquiry  
 npn — negative-positive-negative  
 NPRM — Notice of Proposed Rule Making  
 NR — Novice Roundup (contest)  
 ns — nanosecond  
 NTIA — National Telecommunications and Information Administration  
 NTS — National Traffic System (ARRL)  
 OBS — official bulletin station  
 OD — outside diameter  
 OES — official emergency station  
 OO — official observer  
 op amp — operational amplifier  
 ORS — official relay station  
 osc — oscillator  
 OSCAR — Orbiting Satellite Carrying Amateur Radio  
 OTA — operational transconductance amplifier  
 OTC — Old Timer's Club  
 oz — ounce  
 P — power  
 PA — power amplifier  
 pc — printed or etched circuit  
 PEP — peak envelope power  
 PEV — peak envelope voltage  
 pF — picofarad  
 PIA — public information assistant  
 PIO — public information officer  
 PIV — peak inverse voltage  
 pk — peak  
 pk-pk — peak-to-peak  
 PL — Private Line (Motorola trademark)  
 PLL — phase-locked loop  
 pm — phase modulation  
 P.M. — afternoon/night  
 PMOS — p-channel MOS device

pnp — positive-negative-positive  
 pot — potentiometer  
 ppd — postpaid  
 PRAC — Public Relations Advisory Committee  
 PROM — programmable read-only memory  
 PRV — peak reverse voltage  
 PSHR — Public Service Honor Roll  
 psk — phase-shift keying  
 PTO — permeability-tuned oscillator  
 PTT — push-to-talk  
 PV — photovoltaic  
 PVC — polyvinyl chloride  
 QCWA — Quarter Century Wireless Association  
 QRP — low power (less than 10-W input)  
 R — resistance  
 RACES — Radio Amateur Civil Emergency Service  
 RAM — random access memory  
 R/C — radio control  
 R-C — resistor-capacitor  
 RCC — Rag Chewers Club  
 rcvr — receiver  
 rev/min — revolutions per minute  
 rf — radio frequency  
 rfc — radio-frequency choke  
 RFI — radio-frequency interference  
 rhcp — right-hand circular polarization  
 RIT — receiver incremental tuning  
 RM-(number) — number assigned by FCC to a petition for rule making  
 rms — root-mean-square  
 RO — radio officer

## Surplus Radio Equipment ...

*Are there any good buys out there?*

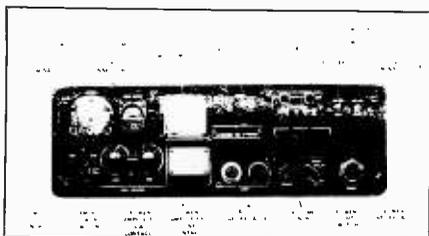
by Al Smith (Box 280, Wamsutter, WY 82336)

(NOTE: Innumerable articles have been written about the surplus classics--R-399 and R-390, PRC-6, etc. but there are more recent solid-state rigs gradually opening up on the surplus market. Author Smith tells us about some of them.)

Our Department of Defense surplus sales program has been a cameo supplier of monitoring materials since WWII; its fans can recount performance from the ARC- and BC- series materials which were surplused in the 1950's and 60's, and in the 70's with later Collins and National receivers and a barrage of other radio equipment.

Now we're reaching the point in time when low current transistorized and integrated circuit designs, which replaced many of the trusty 51J's and R390 series units, have seen more than a decade of use and are joining the surplus procession.

As always there is a wide range of test, avionics and communications equipment, and among the units currently available are three noteworthy HF radios which should get good marks from hobbyists: Collins' AN/PRC-47 transceiver, National's AN/GRR-17 receiver, and ESL's R-902A/L receiver.



### **COLLINS AN/PRC-47**

The Collins AN/PRC-47 was heavily produced in the 60's and saw worldwide service throughout the Vietnam era as a manpack and vehicular HF transceiver. This unit provides simplex USB and CW communications from 2,000 through 11,999 MHz in 1 kHz increments. A five-place digital frequency counter is mechanized by three knobs for MHz selection (2-11 MHz), hundreds and tens of kHz (.00-.99 MHz) and single kHz (.000-

In the transmitting mode there are switch-selected high or low outputs (100 W or 20 W PEP voice operation). The PL177A final amplifier tube does live happier and longer in the low power mode.

## EXPERIMENTER'S



## WORKSHOP

The AN/PRC-47 consists of receiver-transmitter RT-671/PRC-47 and an antenna tuner for 2-12 MHz with 100W RF handling power which is integrated in case #CH-474/PRC-47 and intended for tuning 15 to 50 foot radiators or balanced antennas.

One drawback of the PRC-47 is that its only IF filter is for reception and generation of upper sideband; it may be replaced with its Collins LSB counterpart for amateur 80 and 40 meter conventions. There is also a switch selected 800 Hz source included for sending CW.

850 Hz FSK (space=2425 Hz, mark=1575 Hz) communication from a 60MA/20MA loop is facilitated by the add-on CV-2455/PRC-47 FSK converter which is designed to replace two small plates on the AN/PRC-47 front panel and bolts to the transceiver in this position.

The CV-2455/PRC-47 contains a mini fan to circulate air past the transceiver final during FSK operation; it's not a bad idea to use its fan during any mode of transmission. Some failures have been attributed to insufficient cooling in the AN/PRC-47 case, and without the fan.

Collins recommends a duty cycle of 9 minutes receive/1 minute transmit for one hour in the high power mode (100 W PEP), or 5 minutes receive/10 minutes transmit for one hour in the low power mode (20 W PEP). The low power transmitting mode is the choice for extended communications.

The AN/PRC-47 is operable from either 115 VAC 50-420 Hz or 22-30VDC with the correct power cable. During USB voice transmission average power drain is 320 watts. For reception only, consumption is 21 watts. CV-2455/PRC-47 draws another 12 watts.

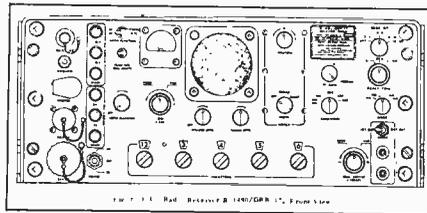
Because there is no vernier tuning (RIT) between 1 kHz increments, no BFO, nor LSB detection, reception is limited to similarly channelized USB, CW, and AM (ECSSB), and military RTTY with the CV-2455.

The AN/PRC-47 with CV-2455/PRC-47 FSK converter is a good choice for aviation and military voice and RTTY monitors and amateur or sur-

vivalist operators. It is field-rugged for backpack use, and is 7" x 21" x 13" and 45 lbs. weight without batteries. Since all input/output connectors are of the PRC/GRC types there is no trouble finding appropriate cables, keys, mikes, headsets, etc. Fair Radio, P.O. Box 1105, Lima, OH 45802 is well supplied in these and AN/PRC-47 equipment.

I've been completely satisfied with my PRC-47's operation; in receiving the front end intermodulation intercept is certainly below 0 dBm but I've had no IMD trouble with the antenna correctly matched. The technical manual is nomenclatured TM-03817A-12/1 and is available from Mike Con-salvo, 7218 Roanne Drive, Oxon Hill, MD 20745.

Many AN/PRC-47 are still in DoD use and the set will continue to arrive on the surplus market for some years.



### **NATIONAL RADIO AN/GRR-17**

National Radio Co.'s AN/GRR-17 HF receiver saw much lower production than the PRC-47--less than one thousand in the late 60's were delivered to the USMC. This is another decadic step tuning unit, covering 2.0000 through 29.9999 MHz in 100 Hz increments, and contains an 850 Hz FSK (space=2425 Hz, mark=1575 Hz) 100 WPM decoder with internally or externally supplied loop output to drive a teletype.

The AN/GRR-17 is another electricity miser, requiring 50 watts of a 115 VAC 50-420 Hz source, or 1 amp from 21 to 27 VOC without FSK operation. It is also one of the first up-conversion receiver designs that was bought by DoD; the synthesizer runs at VHF to drive a patent mixer and 112 MHz first IF.

I haven't measured the front end IMD intercept of the GRR-17 but performance is quite reasonable on all bands. Some may consider the decadic step tuning a drawback for general SWling, but the ability to dial up an exact frequency in seconds is worthwhile for making schedules, frequency diversity reception, checking propagation beacons, etc.

All mixing frequencies in this receiver (except the BFO and frequency vernier whenswitched into variable tuning) are developed from a 3 MHz time base. But the AN/GRR-17's real DX assets are in its IF module which

## Where Did Those Resistors Go?

In the parts list for the inexpensive preselector (May) we accidentally omitted the values of two 1/2-watt resistors, R2 and R3. They are 680 and 1000 ohms respectively.

has sharp skirted 350 Hz, 1 kHz, 3.2 kHz upper and lower sideband and 8 kHz bandpass filters at the 5 MHz second IF, as well as two band-reject type IF notches (500 Hz or 2 kHz width) which are tunable +3 kHz.

ECSSB-AM reception is a dream even with heavy adjacent channel interference. CW/FSK/SSB/AM modes are selectable independently of IF bandwidth, and there is a fixed (1.5 kHz)/variable BFO as well as fixed/variable vernier between 100 Hz frequency increments.

The AN/GRR-17 set consists of receiver R-1490/GRR-17, power cables for AC and DC, and case #D43611-G1 which is 11" x 19" x 14"--total weight: 64 lbs. The case's top may be removed to expose the receiver's face and all necessary connections, or the R-1490/GRR-17 may be extricated and mounted in 7 inches of relay rack space.

As with other field type radios, the correct connectors are needed to power the receiver. Check with Slep Electronics Co., P.O. Box 100, Otto, ND 28763 for AN/GRR-17 availability. It's still quite rare, and commands \$500-1200 used, but few users have been dissatisfied with its performance. The USMC technical manual for this is TM-05866A-15.

### **ESL R-902 A/L**

ESL's R-902 A/L was another early 70's project, this by a TRW subsidiary for the USAF. It is a remote controlled airborne type receiver covering 1.4 through 8.0 MHz in 100 Hz tuning steps, not pictured here because it is simply a 5/8 ATR case 6" x 8" x 16" with input/output connectors. A control head such as ESL C-8829/URC-66(V) and a tightly regulated DC power supply for +5V +0.05% at 1 amp, +15V +1% at 750 mA, -15V +1% at 150 mA, and +36V +1% at 10mA, are required to operate the R-902 A/L receiver.

So far the military versions of both the control head and power supply have escaped me, but a homebrewer can make his own. The original C-8829/URC-66(V) control head's output was 45 bit

☞ Cont'd p.31

# DECODING HURRICANE WEATHER DATA

To increase the monitor enthusiast's enjoyment of the hobby an understanding of the codes used by the Hurricane Hunters can help. The aircraft weather officer uses several codes in transmitting weather information to Miami Monitor.

Center/Vortex data messages and dropsonde coding messages are but two of the coded messages you will hear being passed. **The most commonly used message is the RECCO symbolic message form:**

**SECTION ONE**

9XXX9 GGggi<sub>d</sub> YQL<sub>a</sub>L<sub>a</sub>L<sub>a</sub>

L<sub>o</sub>L<sub>o</sub>L<sub>o</sub>Bf<sub>c</sub> h<sub>a</sub>h<sub>a</sub>h<sub>a</sub>d<sub>t</sub>d<sub>a</sub> ddfff

TTT<sub>d</sub>T<sub>d</sub>w /iHHH

**SECTION TWO**

lk<sub>n</sub>N<sub>s</sub>N<sub>s</sub>N<sub>s</sub> Ch<sub>s</sub>h<sub>s</sub>H<sub>t</sub>H<sub>t</sub> .....

..... 4dfff

**SECTION THREE**

9XXX9 GGggi<sub>d</sub> YQL<sub>a</sub>L<sub>a</sub>L<sub>a</sub>

L<sub>o</sub>L<sub>o</sub>L<sub>o</sub>Bf<sub>c</sub> h<sub>a</sub>h<sub>a</sub>h<sub>a</sub>d<sub>t</sub>d<sub>a</sub> ddfff

TTT<sub>d</sub>T<sub>d</sub>w /iHHH

A breakdown of the RECCO code is as follows:

**9XXX9** RECCO indicator group specifying type of observation (Table 1)

**GGgg** Time of observation (Hours, minutes UTC)

**i<sub>d</sub>** Dew point indicator (Table 2)

**Y** Day of the week (Sunday = 1)

**Q** Octant (Table 3)

**L<sub>a</sub>L<sub>a</sub>L<sub>a</sub>** Latitude (degrees, tenths)

**L<sub>o</sub>L<sub>o</sub>L<sub>o</sub>** Longitude (degrees, tenths)

**B** Turbulence (Table 4)

**f<sub>c</sub>** Flight conditions (Table 5)

**h<sub>a</sub>h<sub>a</sub>h<sub>a</sub>** Altitude of aircraft (nearest decameter)

**d<sub>t</sub>** Type of wind (Table 6)

**d<sub>a</sub>** Method of obtaining wind (Table 7)

**dd** Wind direction at flight level (tens of degrees true)

**fff** Wind speed at flight level (knots)

**TT** Temperature (degrees C)

**T<sub>d</sub>T<sub>d</sub>** Dew point (degrees C)

**w** Present weather (Table 8)

**/** Indicator

**j** Index to HHH (Table 9)

**HHH** Geo-potential Height/D-value or SLP per j index

**l** Indicator

**k<sub>n</sub>** NR of cloud layers

**N<sub>s</sub>N<sub>s</sub>N<sub>s</sub>** Amount of clouds (Table 10)

**C** Cloud type (Table 11)

**h<sub>s</sub>h<sub>s</sub>** Height of base (Table 12)

**H<sub>t</sub>H<sub>t</sub>** Altitude of top (Table 12)

**4** Indicator

**dd** Direction of surface wind (tens of degrees true)

**ff** Surface wind speed (knots)

**TABLE 1 XXX**

222 Section one Observation without radar capability

555 Section three (Intermediate) observation with or without radar

777 Section one observation with radar capability

**TABLE 2 i<sub>d</sub>**

0 No dew point capability/acft below 10,000 meters

1 No dew point capability/acft at or above 10,000 meters

2 No dew point capability/acft below 10,000 meters and flight lvl temp -50 C or colder

3 No dew point capability/acft at or above 10,000' meters and flight lvl temp -50 C

4 Dew point capability/acft below 10,000 meters

5 Dew point capability/acft at or above 10,000 meters

6 Dew point capability/acft below 10,000 meters and flight lvl temp -50 C

7 Dew point capability/acft at or above 10,000 meters and flight lvl temp -50 C or colder

8 Dew point capability/acft at or above 10,000 meters and flight lvl temp -50 C or colder

9 Dew point capability/acft at or above 10,000 meters and flight lvl temp -50 C or colder

**TABLE 3 Q**

0 0 -90 deg W Northern

1 90-180 deg W Northern

2 180-90 deg E Northern

3 90 -0 deg E Northern

4 Not used

5 0 -90 deg W Southern

6 90-180 deg W Southern

7 180-90 deg E Southern

8 90 -0 deg E Southern

**TABLE 4 B**

0 None

1 Light turbulence

2 Mod turb in clear air, infrequent

3 Mod turb in clear air, frequent

4 Mod turb in clouds, inf.

5 Mod turb in clouds, freq.

6 Severe turb in clear air, infrequent

7 Severe turb in clear air, frequent

8 Severe turb in clouds, infrequent

9 Severe turb in clouds, frequent

**TABLE 5 f<sub>c</sub>**

0 Clear

1 Clouds, tops less than 10,000 ft.

2 Clouds, tops 10,000-18,000 ft

3 Clouds, tops over 18,000 ft.

4 Clouds, bases less than 10,000 ft.

5 Clouds, bases 10,000-18,000 ft.

6 Clouds, bases over 18,000 ft.

7 Between layers, no clouds flt lvl

8 In and out of clouds

9 In clouds all the time (continuous IMC)

/ Impossible to determine due to darkness or other causes

**TABLE 6 d<sub>t</sub>**

0 Spot Wind

1 Average Wind

/ No wind reported

**TABLE 7 d<sub>a</sub>**

0 Winds obtained using doppler radar or inertial systems

1 Winds obtained using other nav equip and/or techniques

/ Navigator unable to determine wind

**TABLE 8 w**

0 Clear (less than 1/8 cloud at any level)

1 Scattered (1/8 to 4/8 cloud coverage)

2 Broken (5/8 to 7/8 cloud coverage)

3 Overcast/Undercast

4 Fog, thick dust, or haze

5 Drizzle

6 Rain (continuous or intermittent precip- from stratiform clouds)

7 Snow or rain and snow mixed

8 Showers (continuous or intermittent precip- from cumliform clouds)

9 Thunderstorms

/ Unknown

**TABLE 9 j**

0 Sea lvl pressure in whole millibars

1 Altitude 200 mb surface in geopotential decameters

2 Alt 850 mb surface in geopotential decameters

3 Alt 700 mb surface in geopotential meters

4 Alt 500 mb surface in geopotential meters

5 Alt 400 mb surface in geopotential decameters

6 Alt 300 mb surface in geopotential decameters

7 Alt 250 mb surface in geopotential decameters

8 D-value in geopotential decameters; if negative 500 is added to HHH

9 No absolute altitude available

**TABLE 10 N<sub>s</sub>**

0 None

1 1 okta or less, but not zero (1/8 or less sky covered)

2 2 oktas (or 2/8 of sky covered)

3 3 oktas (or 3/8 of sky covered)

4 4 oktas (or 4/8 of sky covered)

5 5 oktas (or 5/8 of sky covered)

6 6 oktas (or 6/8 of sky covered)

7 7 oktas or more but not 8 oktas

8 8 oktas or sky completely covered

9 Sky obscured

**TABLE 11 C**

0 Cirrus (Ci)

1 Cirrocululus (Cc)

2 Cirrostratus (Cs)

3 Altostratus (As)

4 Altostratus (As)

5 Nimbostratus (Ns)

6 Stratocumulus (Sc)

7 Stratus (St)

8 Cumulus (Cu)

9 Cumulonimbus (Cb)

/ Cloud types unknown

**TABLE 12 h<sub>s</sub>h<sub>s</sub>H<sub>t</sub>H<sub>t</sub>h<sub>i</sub>h<sub>i</sub>H<sub>i</sub>H<sub>i</sub>**

00 Less than 100

01 100 ft

02 200 ft

03 300 ft

etc, etc

49 4,900 ft

50 5,000 ft

51-55 not used

56 6,000 ft

57 7,000 ft

etc, etc

79 29,000 ft

80 30,000 ft

81 35,000 ft

82 40,000 ft

etc, etc

89 greater than 70,000 ft

// unknown

Next time you hear one of these encoded transmissions, write it down and match it against this key to get up-to-the-minute weather information directly from the Hurricane Hunters!



Dropsonde systems operator loading a dropsonde into the release tubes aboard a WX-130 weather recon aircraft.

TABLE 7	
Q - OCTANT OF THE GLOBE	
North Latitude	
0	0W to 90W
1	90W to 180W
2	180E to 90E
3	90E to 0E
South Latitude	
5	0W to 90W
6	90W to 180W
7	-180E to 90E
8	90E to 0E

TABLE 8	
P <sub>t</sub> - TYPE OF PRESSURE SYSTEM	
0	Complex Low
1	Low
2	Secondary-
3	Trough
4	Wave
5	High
6	Area of uniform pressure
7	Ridge
8	Col
9	Tropical Storm

TABLE 9	
P <sub>c</sub> - CHARACTER OF PRESSURE SYSTEM	
0	No specification
1	Low filling, or High weakening
2	Little change
3	Low deepening, or High intensifying
4	Complex
5	Forming or existence suspected
6	Filling or weakening, but not disappearing
7	General rise of pressure
8	General fall of pressure
9	Position doubtful

Those three groups would normally be followed by several other sets of three groups, one set for each pressure system on the map. For example, 85223 15798 01320 identifies a high pressure system with a central pressure of 1023 mb, located at 57N 98W and moving in a southeasterly direction (130 degrees) at 20 knots.

To plot each low or high pressure system on a map, simply locate the coordinates of the system on the map, and mark the spot with a cross or an X. From the cross, draw an arrow in the direction of the indicated movement, and write the speed at the tip of the arrow. In the case of a stationary system, simply draw a circle around the cross. Next to the cross, write down L for low, or H for high, and the central pressure in millibars.

I use blank weather maps (plotting charts) obtained from Environment Canada, and I imagine that similar blank maps may be obtained from the National Weather Service in the USA, but printed blanks are not

essential. Readers can easily construct a suitable plotting map on a plain sheet of paper by drawing a grid of equally spaced horizontal and vertical lines for every 5 or 10 degrees of latitude and longitude (or using coarse graph paper) depending on the scale of the desired map.

Mark your own location on the map (coordinates of your town may be ascertained from an atlas map), so that you will know where the various plotted weather systems are located in relation to you. Once you've got a suitable base map constructed, you can make several photocopies for future use. Of course, official meteorological plotting maps have the added advantage that on the continent, weather stations (airports) are marked and identified by their three-letter designators, making it easy to plot aviation weather reports (such as the ones from VOLMET broadcasts) in the correct locations too.

**FRONTAL SYSTEMS**

Now, on with our ANALYSIS message. Following the last of the pressure groups, the 99911 indicator will be transmitted, telling us that a frontal systems analysis follows. The latter consists of a number of data groups--in the symbolic form 66F<sub>t</sub>F<sub>i</sub>F<sub>c</sub> Q<sub>L</sub><sub>a</sub>L<sub>a</sub>L<sub>o</sub>L<sub>o</sub> Q<sub>L</sub><sub>a</sub>L<sub>a</sub>L<sub>o</sub>L<sub>o</sub> Q<sub>L</sub><sub>a</sub>L<sub>a</sub>L<sub>o</sub>L<sub>o</sub> ...

In the first group, 66 is the group indicator for a frontal system. F<sub>t</sub> indicates the type of front, and is coded according to Table 11; F<sub>i</sub> gives the intensity of the front, and is coded according to Table 12; F<sub>c</sub> indicates the character of the front, coded according to Table 13.

Several Q<sub>L</sub><sub>a</sub>L<sub>a</sub>L<sub>o</sub>L<sub>o</sub> groups then follow, identifying the coordinates of various points along the front.

To plot a front, simply locate each point described by the Q<sub>L</sub><sub>a</sub>L<sub>a</sub>L<sub>o</sub>L<sub>o</sub> coordinates and mark it with a dot on your plotting map. Then, using a colored pencil, join these points with a smooth curve or line. Blue color is normally used for cold fronts, red for warm fronts, purple for occluded fronts, and a line that alternates between red and blue for a stationary front.

Repeat the procedure for each frontal system contained in the message; remember that the data for each separate front begins with a "66" group.

Here is an example: 66420 04969 04370 03979 03888. In the "66" group, the 4 indicates a cold

TABLE 10	
m - MOVEMENT INDICATOR FIGURE	
0	No specification
1	Stationary
2	Little change
3	Becoming stationary
4	Retarding
5	Curving to the left
6	Recurving
7	Accelerating
8	Curving to the right
9	Expected to recurve

TABLE 11	
F <sub>t</sub> - TYPE OF FRONT	
0	Quasi-stationary front at the surface
1	Quasi-stationary front above the surface
2	Warm front at the surface
3	Warm front above the surface
4	Cold front at the surface
5	Cold front above the surface
6	Occlusion
7	Instability line
8	Intertropical front
9	Convergence line

TABLE 12	
F <sub>i</sub> - INTENSITY OF FRONT	
0	No specification
1	Weak, decreasing
2	Weak, little or no change
3	Weak, increasing
4	Moderate, decreasing
5	Moderate, little or no change
6	Moderate, increasing
7	Strong, decreasing
8	Strong, little or no change
9	Strong, increasing

TABLE 13	
F <sub>c</sub> - CHARACTER OF FRONT	
0	No specification
1	Frontal activity area decreasing
2	Frontal activity area, little change
3	Frontal activity area increasing
4	Intertropical
5	Forming, or existence suspected
6	Quasi-stationary
7	With waves
8	Diffuse
9	Position doubtful

front; the 2 tells us that the front is weak and shows little or no change in intensity; the 0 indicates no specification for the character of the front. Then the coordinates follow: 49N 69W, 43N 70W...and so on.

**ISOBARS**

With the frontal systems drawn on the map, we are now ready to plot the isobars. In the transmitted messages, the 99922 groups tells us that what follows is the isobar analysis section. The description of each isobar begins with a "44" group, in the symbolic form 44PPP, followed by several Q<sub>L</sub><sub>a</sub>L<sub>a</sub>L<sub>o</sub>L<sub>o</sub> groups. PPP indicates the sea-level atmospheric pressure along that isobar, and is coded in whole millibars (thousands omitted). For example, 44032 identifies a 1032 mb isobar; 44987 indicates a 987 mb isobar.

To plot an isobar on the map, simply join all the points identified by Q<sub>L</sub><sub>a</sub>L<sub>a</sub>L<sub>o</sub>L<sub>o</sub> groups, by means of a smooth curve (no sharp corners, except where isobars cross fronts). Each isobar should be labelled with its respective pressure, in millibars.

Here is an example of the transmitted data describing an isobar: 44016 02958 03252 03749 03556 02958. Note that this 1016 mb isobar forms a closed loop on the map, because it starts and ends at the same position, 29N 58W.

Finally, after the data for all the isobars has been transmitted, the "End of Analysis" group 19191 terminates the message.

Once you're done plotting all the pressure systems, fronts and isobars, write down the effective date and time on the map--as determined from the OYGC<sub>c</sub>C<sub>c</sub> group--and you'll have a weather map you can be proud of! These things are easy and fun to plot. With a little practice, I am sure many MONITORING TIMES readers will enjoy the exercise...an interesting and useful one at that!

Your weather map may be regarded as supplementary to the weather forecast. We all know that forecasts sometimes fail, but as a rule they do not fail outright. What happens is that weather systems may accelerate or slow down in their path, or change their intensity or direction of movement in a way somewhat different from that which was expected.

When a weather map is available, the user of a forecast has a far clearer picture of the general weather situation and can often understand the reason for a departure from the forecast, and adjust it for the immediate future.

**A FINAL NOTE**

The preceding information covered the main highlights of the ANALYSIS code. Additional sections are sometimes transmitted, such as a 99955 segment (analysis of tropical systems), but the material provided in this article should suffice to decode the great majority of ANALYSIS broadcasts.

For complete details of the code, with an example of

**VIEWPOINT from p.3**

If you or any of your subscribers require a particular HF frequency to be monitored in our part of the world (any mode - AM/SSB, CW, RTTY) then just write and I will do my best to accomodate your requests.

Hopefully the utility side (HF) of the frequency listings can be increased substantially (in Monitoring Times).

Allan Bennett, ZL2BGY  
26 Prospect Terrace  
Johnsonville  
Wellington 4, NZ

>>><<<

I just thought I would write in today, to let you know how much I enjoyed reading your exclusive report on the actual locations of the 4-digit Spanish Numbers Stations. The article is quite informative and quite a revelation. Your April 1984 issue will go down in DXing history, as it brings together all the rumors and more important facts of the past 20 years regarding these "mystery sites." An article like the one in April 84 is what makes the "MT" such a useful and controversial publication. Keep up the good work!

For your information, I have already submitted a 2-year subscription renewal to your firm, for continuation of my subscription thru May 1986. As you can see, I really enjoy receiving your publication regularly as I always find it full of interesting and professionally written items.

Mark Chinsky  
Glen Head, NY

**GIFT TO WEATHERWISE from p28**

an entire ANALYSIS message and a sample of the corresponding plotted weather map, as well as broadcast schedules of coast stations, worldwide, which transmit ANALYSIS messages, I recommend an excellent looseleaf publication titled "MANUAL OF MARINE WEATHER OBSERVING" (MANMAR). Priced at CDN \$5.00, this manual may be ordered from Atmospheric Environment Service, Distribution Centre, 4905 Dufferin Street, Downsview, Ontario, Canada M3H 5T4. Money orders should be made payable to the "Receiver General of Canada."

This book (over 200 pages) is quite comprehensive, and includes all the details of the "Ship's Report" code to be discussed next, as well as the ANALYSIS code.

**NEXT MONTH: "OBS" - SHIP'S WEATHER REPORTS**

**SCANNING from p.7**

GALAX	VA 145.130
RICHMOND	VA 146.880
BURLINGTON	VT 146.850
SEATTLE	WA 145.330
SPOKANE	WA 145.430
MADISON	WI 146.760
MANITOWOC	WI 146.940
MILWAUKEE	WI 145.130
WAUSAU	WI 146.820
CHARLESTON	WV 146.880
NEW MARTINSV	WV 146.940

**SIGNALS FROM SPACE from p.9**

Anyone with any intercepts or thoughts is encouraged to contact this editor on milsat activity you have tagged down.

The Chinese have conducted their first test of a space system designed to launch geostationary COMSAT into orbit. PRC 14 was launched 1/29/84 (84-008A) at 1211 GMT from a new launchsite probably in Tibet (autonomous region of China) into a 31 degree inclination orbit.

From analysis of orbital information supplied by Goddard SFC, it would appear that this was a test of the apogee rocket and station-keeping system for future Chinese COMSATS. COMSAT monitoring buffs should stay tuned for later information on Chinese attempts at placing geo-stationary COMSATS into orbit.

**TALL TALES OF TAPES from p12**

- 8) Old Bunnell Morse inker tape.
- 9) Five level Teletype tape.
- 10) Six level Teletypesetter tape to operate linecasting machines from wire line networks.
- 11) New York Stock Exchange ticker tape. This tape was produced from a Press Wireless shortwave signal over a New York - San Francisco circuit. At San Francisco, the signals were automatically repeated back to New York for confirmation.

**HANK BENNETT from p.16**

yourself or in a group, SAFETY FIRST! Make absolutely sure that your antenna is safe guarded with a lightning arrestor in an approved manner. Make sure that all of your equipment is properly grounded as indicated in the operating manuals. A few more minutes of working time can make a big difference.

All extension cords that are run out from the house should be carefully insulated at connecting plugs and joints. Should a thunderstorm approach your location it might be just as well to close down operations until the height of the storm has passed.

You won't miss much

because the closeness of the static will ruin most reception. It's time then to lean back, enjoy some chow, or catch up on the logbook or reception reports.

When Field Day is over, please take a few minutes to write in and let us know what you did, whom you did it with and your results. If we get some interesting stories, we'll share them with fellow readers. Lastly, don't forget to try and increase your totals in the WDX Honor Roll, details of which can be yours for return postage from Hank Bennett, P.O. Box 3333, Cherry Hill, New Jersey 08034.

In closing this Field Day article, please refer back to the April issue of MONITORING TIMES, page 29, for the article on "Helpful Hints for the Storm Season." This article is particularly useful at this time of year, not only for Field Day, but for all times when there is a chance for thunderstorms.

**DX LOWEST POWER SW from p.16**

the spring of '80, CKFX/CKWX transmitters were moved south of the city of Vancouver to the southern shore of Zulu Island, only nine miles from U.S. waters. The end fire array for CKFX was replaced with an omnidirectional single element vertical, with thirty new radials in the dank, saline shoreland.

Comparing CKFX reception in western North America as it was in the 70's (awful) with what it is in the 80's (quite good at times), it seems the new antenna and site has been a boon to the ten watter. CKFX QSLs have been sent as far as Scandinavia and Australia, and at least a few have been awarded to U.S. DXers every month since their omnidirectional antenna installation.

The CKFX transmitter is a masterpiece of 1945 engineering, employing a single 807 tube final and two 807's

**South Pacific Weather Broadcasts**

Two new NOAA weather facilities are scheduled to begin transmitting by the end of this year or by early next year.

WXM85 will serve Guam on 162.550 MHz and WXM86 will start broadcasting in Saipan on 162.400 MHz.

in push-pull for modulation. Operation is twenty-four hours a day, seven days a week, simulcasting with CKWX which has a country music format and stereo modulation.

As well as being the world's tiniest SWBC voice, CKFX may be one of the very few transmitters effecting AM stereo modulation on HF, and to my ear this improves their intelligibility. Even with 6 MHz/F<sub>2</sub> phase delays, it sounds good here!

CKFX can put in a respectable signal about an hour before and after Vancouver sunset, which in the winter is before Deutsche Welle sits down on 6085 kHz. Listeners should keep trying until the ozone shuttles, this pipsqueak through. Also check 6080 kHz when the 6160 kHz CBC Vancouver transmitter (500 watts) is well above noise level.

The CKWX programming contains plenty of advertising, to constitute a DX report, but don't sweat the weeks it may take their secretary to send the distinctive QSL.

Address reports to: CKFX Radio, 1275 Burrard St., Vancouver, BC V6Z 1Z8, Canada, with a reasonable accounting of their "WX1130" ads and music. There are certainly easier ways to hear Vancouver, but this cameo of "bush radio" can make a star performance when the ionosphere permits.

# SUPER COUNTRY

## CKFX

### 6080 KHz

49 METER BAND - POWER: 10 WATTS

ANT.: 2 ELEMENT VERTICAL ARRAY

1275 Burrard St., Vancouver, B.C., Canada V6Z 1Z8

**ENGLISH LANGUAGE from p.17**

maligned--"Voice" is making a commendable effort to give the world a true picture of world happenings and, even more, to show what we think of events. In order to present a really democratic picture, differing viewpoints are presented in their news analysis.

In many of the VOA programs balance is achieved by discussion-type sessions involving journalists and experts from such specialized organizations as the Brookings Institute and Georgetown University.

Many of these debate situations are very well organized and give the listener a great amount of detailed information and opinion. They are a little heavy on local U.S. talent, however.

Programs of this style include "Press Conference USA," "American Viewpoint," "Issues in the News" and "International Viewpoints."

News broadcasts from the VOA are extensive in coverage--a little less well-defined and organized than those of the BBC, but as I have noted recently, more detailed in respect to Central America.

Programs which relate more directly to current news topics involve the use of correspondents around the world. Those include: "Newline," "Caribbean Report," "Report to the Americas"...all aired Monday through Friday. The latter two programs of course are more specific to the Western hemisphere. An additional program, "Spotlight" (Sunday), is directly related to items of Caribbean interest.

\*\*\*\*\*

**LISTEN TO THE WORLD from p17**

- South Africa - RADIO RSA, P.O. Box 4559, Johannesburg 2000
- Spain - RADIO ESPANA EXTERIOR, P.O. Box 150039, Madrid-24, Espana
- Switzerland - SWISS RADIO INTERNATIONAL, Giacommettistrasse 1, CH 3000, Bern 15
- Sweden - RADIO SWEDEN INTERNATIONAL, S-105 10, Stockholm
- Taiwan - VOICE OF FREE CHINA, International Service, 53 Jen Ai Road, Sec. 3, Taipei 106
- USSR - RADIO MOSCOW, World Service, Moscow
- United Kingdom - BRITISH BROADCASTING CORP., 630 Fifth Avenue, New York, NY 10020 (Need only 20¢ stamp for this one but ask for a free copy. A year's subscription costs \$17.50! It's worth it, if you're a regular BBC listener.)

The above list represents those broadcasters which your writer thinks have the best programs. Not everyone will agree. All of the stations are easy to tune to from any part of the U.S.

If I were going to pick five to write for they would be BBC, R. Canada Int., West Germany, South Africa and Switzerland. That would cost less than \$2.00 in stamps, but give you many hours of enjoyment.

We will continue to look at this subject next month, but meantime here is a summary for your record purposes:

**PIRATE RADIO from p.18**

Our thanks to Michiel Schaay for a job well done! We hope to hear more from him in the future!

**THE MAILBAG:** Hawaii's John T. Arthur checks in again with some excellent pirate loggings. On March 17 John heard KQRP on 15052 at 2200. QQSB was heard the same day on 15051 at 2301. The 17th was a very good day, indeed, because the VOICE OF LARYNGITIS signed on 15049 at 2329, while RADIO FREE INSANITY showed up on 15061 at 2210. Not to be outdone, the legendary RADIO CLANDESTINE made it to Hawaii April 1 on 7410 at 0439.

John uses a Collins R388 with a 3 kHz mechanical filter, a RME DB22A preselector, and a 41-meter dipole facing North America hung at 35 feet.

What are you hearing? Let us know!

**RECEIVER SPECS from p.23**

(+3 and +6) let us plot the bandpass graph.

The point to remember about selectivity is that the width of the bandpass at the top of the bell should equal the width of the signal you're interested in. While a sharp bandpass of 500 Hz is great of CW reception, it's too narrow for voice. An SWL who wants to listen to both voice and CW should consider a receiver with switchable selectivity.

**IN CONCLUSION**

The sensitivity and selectivity of a receiver are its most important aspects. The next time you walk into an electronics store, check the specs before laying your money down. You'll be much more prepared to handle that fast-talking salesman, and you'll wind up making a better purchase.

**LISTENERS LOG from p.20**

		DESCRIPTION	FREQUENCY
WASHINGTON	JFK CENTER	PARK PD	489.0500
WASHINGTON	JFK CENTER	PARK PD	411.3250
WASHINGTON	VISITORS CTR	PARK PD	411.9250
WASHINGTON	BASE RPTR	PD	158.7000
WASHINGTON	PD	CID	159.3000
WASHINGTON	PD	DIST 2 PTRL	460.2500
WASHINGTON	PD	DIST 7 PTRL	460.0150
WASHINGTON	PD	DIST 4 PTRL	460.4750
WASHINGTON	PD	DIST 6 TAC	460.4250
WASHINGTON	PD	DIST 5 PTRL	460.2500
WASHINGTON	PD	DIST 2 TAC	460.1000
WASHINGTON	PD	DIST 4 TAC	460.2000
WASHINGTON	PD	DIST 7 TAC	460.4250
WASHINGTON	PD	DIST 3 TAC	460.1000
WASHINGTON	PD	DIST 1 TAC	460.1500
WASHINGTON	PD	DIST 5 TAC	460.2000
WASHINGTON	PD	DIST 6 PTRL	460.0250
WASHINGTON	PD	DIST 1 PTRL	460.5000
WASHINGTON	PD	DIST 3 PTRL	460.4500
WASHINGTON	PD	F1 CITYWIDE	460.3250
WASHINGTON	PD	F2 TRAFFIC	460.4000
WASHINGTON	PD	MOBILES	155.3100
WASHINGTON	PD	MOBILES	154.8900
WASHINGTON	PD	MOBILE RPTR	488.3125
WASHINGTON	PD	MOBILE RPTR	453.5500
WASHINGTON	PD	MOBILES	155.2500
WASHINGTON	PD	PARAMEDIC	462.9500
WASHINGTON	PD	PARAMEDIC	462.9750
WASHINGTON	PD	PORTABLES	156.0300
WASHINGTON	PD	SPECIAL OPS	460.2750
WASHINGTON	POST NWSWK		450.2125
WASHINGTON	POST NWSWK		455.9500
WASHINGTON	POST NWSWK		450.3500
WASHINGTON	RKO		161.7300
WASHINGTON	RKO		161.7000
WASHINGTON	RKO		161.7600
WASHINGTON	RKO		161.6700
WASHINGTON	UPI		452.9750
WASHINGTON	UPI		457.9750
WASHINGTON	WALTER REED	SECURITY	165.0850
WASHINGTON	WASH		161.7300
WASHINGTON	WASH	PLANE	450.2500
WASHINGTON	WDVM		450.2125
WASHINGTON	WDVM		450.7500
WASHINGTON	WETA		455.3875
WASHINGTON	WETA		455.2875
WASHINGTON	WETA		455.1875
WASHINGTON	WJLA		455.1125
WASHINGTON	WJLA		455.5500
WASHINGTON	WMAL		455.2125
WASHINGTON	WMAL		455.1125
WASHINGTON	WMAL		455.5500
WASHINGTON	WOLFTRAP		417.9750
WASHINGTON	WRC		161.6700
WASHINGTON	WTOP		450.3500

**BBC WORLD SERVICE**

5975 6120 6175 7325 9515 11750 11775 15070 15215 15260

TWENTY-FOUR HOURS	Mon-Fri: 05/07/13/20 at H+9
THE WORLD TODAY	Mon-Fri: 1645; 2200
COMMENTARY	Mon-Fri: 1609/2309
	Sat-Sun: 1309/2009
RADIO NEWSREEL	Daily: 0015/1500
	Mon-Sat: 1200
FROM OUR OWN	Sat: 2209
CORRESPONDENT	Sun: 0315/0715/1615
NEWSDESK	Daily: 0400/0600

**VOICE OF AMERICA**

0000-0400 to Caribbean & Americas: 5995 6130 9650 11740 15205 17640 17730  
 1600-2200 to Africa: 6040 6045 7195 9575 9620 15205 15410 15445 15580 15600 17785 17870 21485 21680 21840 26000 26040  
 0300-0800: 3990 5995 6035 6080 6095 6125 7170 7280 9530 9670 9745 11835 11915 15240 15600 (Variable frequencies during time period stated.)

PRESS CONFERENCE USA	Sat: 1930/0230
SPOTLIGHT	Sun: 0130
AMERICAN VIEWPOINT	Sat: 1810/0210
CARIBBEAN REPORT	Mon,Fri: 0010
ISSUES IN THE NEWS	Sun: 0230
NEWSLINE	Mon,Fri: 0010/0400/0500/0700
INTERNATIONAL VIEWPOINTS	Sun: 2110/0010
REPORT TO THE AMERICAS	Mon-Fri: 0110

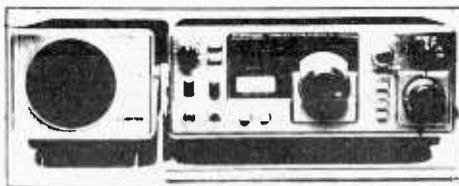
**MOST POPULAR RCVRs from p.23**

ate-cost all-mode receiver (\$499, UPS shipping incl.).

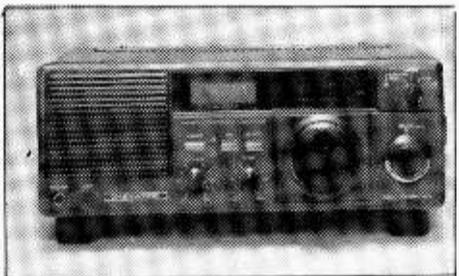
**BEARCAT DX-1000**

Electra's initial entry into the shortwave market; pushbutton panel rather cumbersome; severe intermod with outside antenna eliminated by Grove TUN-3 Minituner; excellent audio; excellent noise blanker; memory won't scan or memorize fractional kilohertz; all modes including FM; dual time zone 24-hour clock; three IF filters; built-in battery pack and whip antenna for portability; built-in RIT; very stable.

Recommended for international broadcast listening and general purpose utilities reception (\$450, UPS shipping included).

**KENWOOD R-1000**

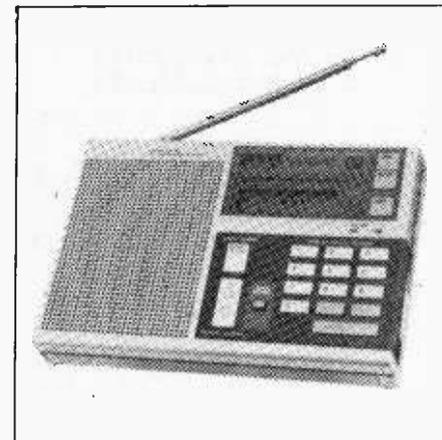
Still the standard for AM/SSB without frills; basically same electronic performance as R-2000, but without memory, scan or 100 Hz readout. Nice anti-backlash gear drive mechanism; clock/timer, wide/narrow filter, (\$399, UPS shipping included).

**KENWOOD R-600**

Scaled-down version of R-1000 with plastic gears; no clock/timer; some backlash in tuning; recommended for international broadcast listening predominantly and casual SSB reception (\$330, UPS shipping included).

**UNIDEN CR2021**

The best value in a low-cost, digital frequency display portable; 88-108 MHz FM band delivers clean fidelity for music; 12 channel memory, excellent short-wave AM/SSB, battery or AC power, telescoping whip, excellent stability, search, wide/narrow selectivity, fine tuning and keyboard frequency entry all combine to make this a fine, low-cost receiver (\$189, UPS shipping included).

**SONY ICF-2002**

Small size is the primary attraction; has clock and sleep timer, FM band, 10 memory presets, LCD frequency display, SSB with thumb-wheel; low sensitivity and oscillator instability on strong SSB signals. Recommended only where true compact portability is the prime requisite (\$239, no longer in stock).

**ABBREVIATIONS from p.25**

ROM — read-only memory  
RS — Radiosport Satellite (USSR)  
RST — readability-strength-tone  
RTL — resistor-transistor logic  
RTTY — radioteletype  
s — second  
s.a.e. — self-addressed envelope  
s.a.s.e. — stamped s.a.e.  
SCM — section communications manager  
SCR — silicon-controlled rectifier  
SEC — section emergency coordinator  
SET — Simulated Emergency Test  
SGL — state government liaison  
shf — super-high frequency  
SM — section manager  
S.M. — silver mica (capacitor)  
SNR or S/N — signal-to-noise ratio  
spdt — single-pole double-throw  
spst — single-pole single-throw  
SS — Sweepstakes; spread spectrum  
ssb — single sideband  
SSC — Special Service Club/AMSAT  
Phase III special service channels  
SSTV — slow-scan TV  
STM — section traffic manager  
SWL — shortwave listener  
SWR — standing-wave ratio  
sync — synchronous, synchronizing  
SYNCART — synchronous satellite carrying  
Amateur Radio transponder  
TA — technical advisor  
TC — technical coordinator  
TCA — time of closest approach  
TCC — Transcontinental Corps  
TE — transequatorial (propagation)  
tfc — traffic  
THz — terahertz  
THD — total harmonic distortion  
tpi — turns per inch  
T-R — transmit-receive  
T-T — Touch-Tone, trademark of Bell Telephone Co.  
TTL — transistor-transistor logic  
TTY — teletypewriter (from Teletype, trademark of Teletype Corp.)  
TV — television  
TVI — television interference  
uhf — ultra-high frequency  
UJT — unijunction transistor  
UoSAT — University of Surrey educational/research satellite (Great Britain)  
usb — upper sideband  
UTC — Universal Coordinated Time  
V — volt; voltage  
VCO — voltage-controlled oscillator  
VCXO — voltage-controlled crystal oscillator  
VFBO — variable-frequency beat oscillator  
VFO — variable-frequency oscillator  
vhf — very-high frequency

vlf — very-low frequency  
VMOS — vertical power FET  
VOM — volt-ohm-milliammeter  
VOX — voice-operated switching  
VR — voltage regulator  
VRAC — VHF Repeater Advisory Committee  
VSWR — voltage standing-wave ratio  
VTVM — vacuum-tube voltmeter  
VUAC — VHF-UHF Advisory Committee  
VXO — variable crystal oscillator  
W — watt  
WAC — Worked All Continents  
WARC — World Administrative Radio Conference  
WAS — Worked All States  
wbfm — wide-band fm  
wpm — words per minute  
wVdc — working voltage, dc  
X — reactance  
xcvr — transceiver  
xmtr — transmitter  
xtal — crystal  
Z — impedance  
Z — see UTC  
5BDXCC — Five-Band DXCC  
5BWAC — Five-Band WAC  
6BWAC — Six-Band WAC  
5BWAS — Five-Band WAS  
° — degrees  
 $\alpha$  — alpha; angles; common-base forward current-transfer ratio of a bipolar transistor  
 $\beta$  — beta; angles; current gain of common-emitter transistor amplifiers  
 $\gamma$  — gamma; angles  
 $\Delta$  — delta; increments  
 $\delta$  — gamma; angles  
 $\epsilon$  — epsilon; base of natural logarithms (2.71828)  
 $\theta$  — theta; angles  
 $\lambda$  — lambda; wavelength; longitude  
 $\mu$  — mu; micro ( $10^{-6}$ ); amplification factor; permeability  
 $\mu P$  — microprocessor  
 $\pi$  — pi; 3.14159  
 $\Sigma$  — sigma; summation  
T — tau; time constant; time phase displacement  
 $\phi$  — phi; angles; latitude  
 $\psi$  — psi; angles  
 $\Omega$  — omega; resistance in ohms  
 $\omega$  — omega; angular velocity, 2 $\pi f$

**SURPLUS EQUIPMENT from p.26**

serial code to control R-902 A/L frequency, mode, bandwidth, and internal test functions. With another command generator and power the

R-902 A/L is adept at frequency hopping, scanning, or any other function you might invent.

Tuning in the R-902 A/L is in four auto selected ranges of 1.4-2.0, 2.0-3.0, 3.0-5.0 and 5.0-8.0 MHz with autotracking four-pole RF filters. Front end selectivity is around 10% of tuned frequency at 3 dB down, and RF skirt selectivity from 3 dB to 60 dB is better than 8:1 shape factor. Noise figure is 13 dB, IFs are at 455 kHz and 2.2 MHz, and IF bandpass filters are for 360 Hz, 1.5 kHz and 6 kHz. IF and image rejection both exceed 80 dB throughout the tuning range.

Although the R-902 A/L has detectors for AM and CW/FSK emissions, a first IF output facilitates the use of external SSB converters such as were used with Collins' R-390 series receivers.

Unlike AN/PRC-47 and AN/GRR-17 which are field-rugged units, this one is in a light gauge ventilated case for airborne use and weighs less than 15 pounds. There are only front panel connectors for command telemetry, power, antenna, IF, LO and AGC outputs, audio, and a PL-55 jack and local gain control.

The R-902 A/L is based on mono DAC-1, 760B, uA 741, uA 796 and other ICs which did yield good AGC response of A6dB-AF / A100dB-RF from -114 dBm threshold, and third order intermodulation intercept around -7dBm.

Fewer than thirty were manufactured for the USAF and **Windsor, P.O. Box 280, Wamsutter, WY 82336** has unused R-902 A/L receivers, but as far as I know there are no control heads or

power supplies available. This unit should interest homebrewers who want to make an RS-232C run receiver. Its technical manual is ESL-IM41 and R-902 A/L has federal stock number 10-106570-1.

**PROGRAMS FOR COMMODORE from p.22**

**PREFIX LOCATOR and ANTENNA DESIGNER** (\$14.95 each from RAK Electronics, P.O. Box 1585, Orange Park, FL 32073). For the radio ham or SWL, the Prefix Locator program provides a handy directional guide for key cities, states and countries around the world. Simply substitute your latitude and longitude in the BASIC program's line 30, and all data within the program automatically changes for your location.

The target area may be called up by country or city, callsign prefix coordinates. A pair of local/24 hour clocks read out at the top of the screen.

An MUF (maximum usable frequency) forecaster is included in the locator program, allowing the user to select the optimum frequency for successful communications with the location chosen.

The Antenna Designer disc cleverly includes all mathematical computation for a wide array of antennas: dipoles, verticals, logs, Yagis, quads, inverted Vs and even arrays. An ERP calculator allows calculation of that field parameter as well.

Variations of the program for the VIC-20 and cassette versions are both available at reduced cost. Write to RAK for the latest prices and a recent catalog.

# STOCK EXCHANGE

## PERSONAL

NOTE: Monitoring Times assumes no responsibility for misrepresented merchandise.

SUBSCRIBER RATES: \$.10 per word, paid in advance. All merchandise must be non-commercial and radio-related. Ads for Stock Exchange must be received 45 days prior to publication date.

FOR SALE: YAESU FRG-7 communications receiver. Mint, with Gilfer IF Filter mod. and BFO pitch control kit. Mike Freeman, 532 Clinton Rd., Lexington, KY 40502 (606)268-4742.

FOR SALE: BEARCAT 100, \$250; BC-350, \$350; REGENCY M-400 w/out of band alignment, \$250; REGENCY D-810, \$225; GROVE CVR-1A, \$50; FTR-3, \$30. Harry McCabe, 8140 Willowdale Court, Springfield, VA 22153

FOR SALE: YAESU MU-7700 12 channel Memory Unit for the FRG-7700. Excellent condition. \$60.00. Jeff Elvis, 5856 Chapman, Garden Grove, CA 92645.

TV DECODERS, parts list schematics, building instructions, parts, suppliers, 48 pages of data. \$10 ppd. Don Kostecki, 6245 N. Fairfield, Chicago, IL 60659.

REGENCY 30 channel programmable D310, new, \$167. BEARCAT 200, \$175. Other related equipment for sale. Write for price. Dan Mulford, Box 5, Hunt Street, Osgood, IN 47037.

FOR SALE OR TRADE: UMP/84 SPECTRUM ANALYZER, 10MHz-40.88 KMc. TEKTRONIX 531A SCOPE with two plug ins 1L-20 & 53/54/B. MARCONI TF1066B SIGNAL GENERATOR, FM-AM-CW 10-470MHz; just calibrated by Tucker. CUSHMAN CE4 COMMUNICATIONS MONITOR Model 317; 0-1000MHz; FM deviation scope, signal generator, 40 db pad and TE 64 Tone generator. Calibrated January by Cushman. HAL TELEREADER Model 6750. KENWOOD R2000, all filters. ASTRO SURVEILLANCE RECEIVER SR201-207; AM, FM, CW, Pulse, Video. NEMS-CLARKE RECEIVER 40-270 MHz. 20 WORKING RADAR UNITS with antennas, used by State Police. RAVOFONE PROIDX SYSTEM 1. LEA bug detector with all accessories. REALISTIC PRO 2002 SCANNER. IM-37/PRMI FIELD INTENSITY METER, .150-25 MHz. NM 50A RADIO INTERFERENCE AND FIELD INTENSITY METER, 375-1000 MHz. APR 14 30-1000 MHz, APR 5AX 1000-6230. TT 63A-FGC TELETYPE REPEATER. Call 502-633-0753 Donald.

NEEDED BADLY: 455-kc IF TRANSFORMER number V-3427 for 1954 WESTINGHOUSE radio model H-113. Contact Stan Whitman, 246 Baltimore St., Waterloo, Iowa 50701 (319)233-0561.

FOR SALE: BEARCAT 210XL, excellent condition, \$150 ppd. Money order only. A.R. Nygren, 3129 Merritt Parkway, Sinking Spring, PA 19608.

FOR SALE: KENWOOD R-600, \$250; R-1000, \$350. SEARS CB \$50. "HANDS-FREE" 49 MHz transmitter pair, \$90. All

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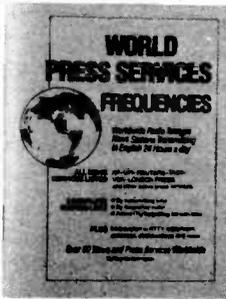
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# BEARCAT (Electra) UP FOR SALE

In a surprise announcement, MT learned that the Masco Corporation of Taylor, Michigan has been negotiating with Uniden for the sale of Masco's subsidiary, the Electra Company, manufacturer of the world-famous Bearcat line of scanner products.

Preliminary agreement had been reached by mid-April, but a series of serious questions regarding final arrangements stalled the sale in early May.

Masco is primarily an industrial firm, specializing in metal-bending equipment for the automotive industry as well as the home building industry through another subsidiary, Delta Faucet.

While the scanner market is of prime interest to MT readers, it is considered a minor market to an industrial giant like Masco; the sale of the company to Uniden, a prominent Japanese electronics firm, could prove financially sound.

Uniden is well known for their cordless phones, their popular CR-2021 (and Radio Shack DX-400) portable receivers and other consumer electronics items. A successful scanner manufacturer would make a complimentary acquisition.

A spokesman close to the industry reported that a successful agreement between the two firms would certainly terminate any new products presently under development by Electra, but that the present (and highly-successful) product line would remain, as would warranty service for products sold.

MT will provide additional information on the prospective sale of Electra as details become available.

# INFORMATION PLEASE

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new. Money order only. Harold Ort, Army PA0, 663 5th Avenue, New York, NY 10022.

FOR SALE: KENWOOD R-2000 in warranty, \$450. Phone 217-224-9624 after 5 p.m.

FOR SALE: SONY ICF-6500 Shortwave Receiver, Rechargeable batteries, AC adapter \$80. GROVE CVR-1B Scanverter \$70. RTTY to ASCII CONVERTER - from SW to Serial Printer/Port \$80. (614)772-2051 Ask for Paul.

FOR SALE: BEARCAT III. Works fine. With antenna, AC/DC power cords. \$60. Write to: Jim Stroika, 4817 N. Elkhart, Whitefish Bay, WI 53217.

WANTED: Radio station bumper stickers for my collection. Arnold Feldman, P.O. Box 700, Jessup, MD 20794.

Does anyone have a schematic for a PANASONIC RF-2800 receiver that I could borrow? Neil Iverson, 2640 S. 133, Seattle WA 98168.

I want to buy a D.O.C. CANADIAN MICROFILM concerning the REPORT #20 Callsign Assignments and I'm interested in UFO frequency observations. Michel LeCompte, Box 33, St. Sauveur, Quebec City, P.Q. Canada G1K 6V7.

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