



# MONITORING TIMES

Volume 4-Number 7

BRASSTOWN, NORTH CAROLINA 28902

July, 1985

## "TOWER--WE HAVE AN EMERGENCY"

by The Interceptor

SOUTHWEST AIRLINES flight 803 from Albuquerque to Amarillo is a short hop from one southwestern city to another. Regular commuters can tell you that, at most, the flight is uneventful. But flight 803 on the night of April 28 was anything but that.

The 128 passengers boarding the "Spirit of Kittyhawk" didn't know that lying in their flight path were numerous severe towering thunderheads. Heavy storms like these pelt the high plains of West Texas with large hail, torrential rains and an occasional tornado.

The pilot knew of the storms, though; he had made a required weather check with the flight service. Their news was not comforting. A tornado watch had been placed over the Amarillo area and heavy rains, turbulent winds and hail could be expected along 803's route. It was going to be a rough ride.

As the sun began to set behind the desert mesas of Albuquerque, the Spirit of Kitty Hawk lifted off to the east and Amarillo. In the darkened underground complex known as Albuquerque Center an air traffic controller sat bent down over his radar screen. He did not have good

news. A heavy cell was dumping rain on a saturated runway which was covered with about an inch of rain.

Southwest 803 was asked if he would like to circle to burn off any excess fuel before landing. "Roger that!" the pilot replied. The stewardess announced to the passengers what was going on; nervous chatter arose among the 128 aboard. The seat belt sign lit up and the captain advised all passengers to take their seats. Flight 803 was beginning its descent into the storm. The seat belt sign lit up and the captain advised all passengers to take their seats. Flight 803 was beginning its descent into the storm.

Turbulence rocked the jet as it entered the cell. Hearts skipped a beat as a jagged bolt of lightning snaked too close to the craft and shook it with a jarring boom. After what seemed like an eternity, 803 finally descended low enough to drop below the clouds. The runway lights suddenly made their appearance. The captain of the craft eased the Spirit of Kitty Hawk down on the runway.

As the nervous passengers felt the landing gear meet the earth they all let out a collective sigh of relief, then they applauded the crew that had brought them out of the angry sky. But the ordeal had just begun.

As the commander of the jet applied the brakes to



CIVIL AIR PATROL SEARCH AND RESCUE team member using a direction finding receiver to home in on a downed aircraft's E.L.T. (EMERGENCY LOCATOR TRANSMITTER). These beacons can be heard on 121.5 MHz VHF and 243.00 MHz UHF aero bands. (All photos by the author.)

slow the bird down the back of the 737 began to fishtail on the rain soaked runway! The pilot tried to compensate and it swerved back the other way. The jet was not rolling on the runway but hydroplaning on the water!

The pilot stood on the brakes and reversed engines in a desperate attempt to slow the jet down. The stewardess shouted to those on board to brace themselves and assume the crash position. The jet then veered off the runway, taking out six landing lights--then

Cont'd on p.4

## The Remington Numbers Broadcasts (A Complete Summary)

by R. F. Heard

It was slightly over a year ago that this publication reported that certain numbers broadcasts originate from "NCS Station C" near Remington, VA (See MT April 1984 and July 1984, p.3). Those broadcasts continue to this day.

Although the facility is identified by signs as being that of the U.S. Army, from various reliable sources it has been confirmed that these broadcasts are those of the Central Intelligence Agency (CIA) to foreign operatives.

Mention of the Warren-ton Training Center/Remington facility was deleted by court order from p. 64 of The CIA and the Cult of Intelligence by Victor Marchetti and John D. Marks, due to Marks' former CIA employment secrecy agreements.

Some people in the hobby claim that this facility is "too open" or that the "CIA would use more secure methods." The response to those claims is "Why?". If the transmission is securely encrypted there would be no such need.

Statistical analysis (Chi-squared goodness-of-fit tests) show the digits to be random (the null hypothesis that they are cannot be rejected at the 5% level).

Cont'd on p.5



SOUTHWEST FLIGHT 803 mired in west Texas mud after the 737 slid off the runway at Amarillo International Airport.

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# MONITORING TIMES

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## MT To Assist FCC In Spectrum Enforcement



### WHO ARE THE TARGETS?

In an historic meeting with two officials of the Federal Communications Commission, Bob Grove, editor of *Monitoring Times*, offered the services of his network of listeners to help provide information regarding serious misuse of the radio spectrum.

There are many violations which occur on a daily basis throughout the spectrum. Of least interest to the commission are the non-recurrent irritations like accidental interference, vulgar language, brief out-of-band transmissions, and unidentified government or military operations.

The FCC officials indicated that such input would be very useful, but cautioned that the Commission could not recognize *MT* on any official basis, only that they would welcome the effort of those serious listeners to provide useful data which could assist their enforcement activities.

While any of those emissions may cause temporary disruption, the likelihood of tracking them down and prosecuting them is virtually nil.

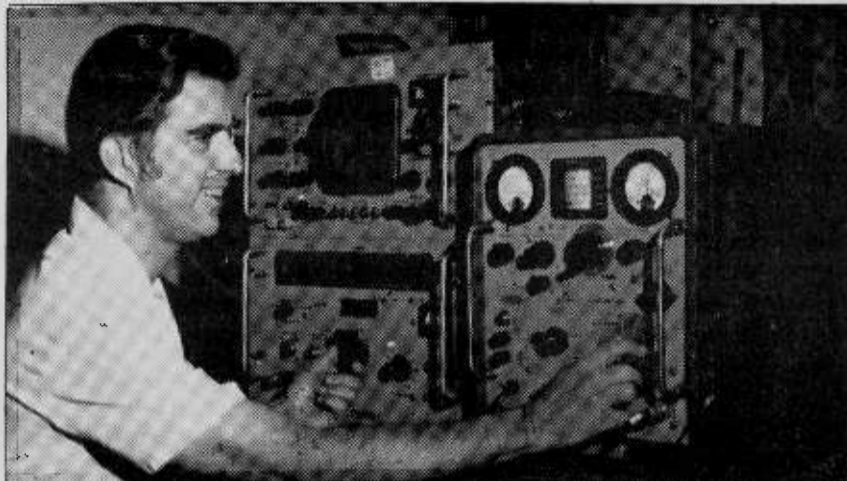
However, with some ten thousand *MT* readers, not all would use the information pool with discretion. A safeguard system should be implemented to screen prospective registered monitoring stations in the *MT* network.

But there are many bigger fish in the sea, and those violations which specifically affect international relations or large numbers of licensees are prime candidates for enforcement. Let's take a look at a few of these:

*MT* is aware of the enormous amount of expertise and talent among its subscribers and we request our readers to recommend procedures by which we can implement this historic technical assistance program and, at the same time, eliminate the "ringers" who might attempt to use the system to provide false information or to extract vital data in an effort to elude their own apprehension.

1. Unlicensed intrusion into the HF aeronautical and maritime bands. These are usually voice operations, typically SSB, but some RTTY is encountered as well.
2. Deliberate jamming of international broadcasters such as the notorious "diesel motor" sound with Morse identifiers of Soviet jammers, and the two-tone warblers from Iraq. The FCC needs inside information on the transmitters such as equipment used, specifications and geographical coordinates.
3. Pirate broadcasters. While these stations are a source of amusement to many and a refreshing alternative to commercial broadcasting to others, they are a serious violation of international law to the FCC. Specific details of locations, frequencies and schedules

## FROM THE EDITOR



### The Market Slows Down

Don't let them kid you--business is down. Not just in electronics, but all over. I'm not an economist, but the indicators are still depressing.

It is difficult to know just where to place the blame, but with typical reports from fellow entrepreneurs of sales being down as much as 40% as compared with last year, and with the traditionally-slow summer months now upon us as well, it is a force to reckon with.

#### THE STRONG DOLLAR

Some experts suggest that the growing strength of the U.S. dollar in a worldwide market is one culprit; why buy high priced goods at home when imports are available at considerable savings?

In the home electronics marketplace we see this on a daily basis. At one time domestic brands like National, Hallicrafters and Hammarlund were the short-wave receivers to buy. Even relative newcomers like Drake were encouraged to compete in the foray. Now they are all gone; even Drake has capitulated to pressure from off-shore high tech, building satellite TV systems instead of radios.

#### VIDEO

There are many alternatives to the radio hobby; one of the strongest influences is, of course, the home video market. Satellite dishes are springing up like daisies on lawns all over the country. Here

is a way to get high tech, entertainment (?) and satisfy the entire family with the expense.

And with prices plummeting in that marketplace as well, the temptation opens more and more pocket-books. Video cassette libraries, exchanges, clubs, and pirates provide packaged entertainment made to order.

#### COMPUTERS

Nowhere has action been more swift than in the home computer industry. The bandwagon mentality has dominated electronics over recent years, and now it is time to pay the piper.

Personally, I blame the home computer market for most of the present home electronics depression. Manufacturers have abandoned radio for the quick-buck computer gamble. The competition has been fierce, the public bewildered, and now the companies, large and small, are dropping out like flies.

Machines and programs were incompatible, instructions were poorly written, the price war took its toll in credibility, the enormous selection overwhelmed the public, the media blitz left the public recoiling in saturation, and the promise of computers doing everything was a deliberate oversell.

Now computer sales are way down; *Time* magazine reports that 1983 sales gains of 104% fell last year to only 11%. The battle for survival has seen 200 computer manufacturers dwindle

to 150 in two years; major software producers have dropped from over 200 to about 50. Computer magazines have gone down from 150 to 40.

Apple, the shining star of the home computer marketplace, has shut down four factories in the last two months and cancelled their MacIntosh XL--the Lisa. Many senior managers and engineers have resigned and top Apple executives have been selling out their company stock. There is talk of a takeover from AT&T or Xerox.

And where does all of this leave the radio monitoring enthusiast? Certainly, this is a good time to buy that piece of equipment you've been holding off for. Summer sales abound--just look at the new Grove catalog. And with the home computer industry tumbling all around us, perhaps the fallout will result in future concepts in monitoring equipment. Time will tell.

**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

**MT TO ASSIST FCC cont'd**

which can be learned by long-term monitoring are sought by the FCC.

4. Single-letter high frequency beacons (CW beacons). Although the majority of these transmissions come from the Soviet Union and Soviet Bloc countries, the FCC would appreciate any knowledgeable details on equipment, specifications and geographical coordinates.

While these transmissions do not generally cause serious interference to licensees, their positive locations can provide valuable test bearing for the FCC radio direction finding network.

5. Illicit use of satellite transponders. Unauthorized access to satellites for personal communications is a growing threat. Ready availability of uplink equipment and technical know-how is all that is needed to utilize unused transponder channels.

The FCC would welcome any information regarding unauthorized satellite use.

6. TV decoders. Theft of services is a growing problem among cable TV companies. While the Goldwater Amendment guarantees the right of the listener to tune in on satellite

transponders, the broadcaster may scramble his programming and make available at reasonable cost a descrambling device or sell the programming for cable distribution.

Many clandestine electronic manufacturers are selling illicit decoders. The FCC would appreciate names and addresses of manufacturers and dealers who market these contra-band satellite and cable TV descramblers.

7. VHF/UHF occupancy studies. Not really any violations here, but the land mobile industry insists on more and more spectrum using the argument that all allocations are presently filled in the 150, 450 and 800 MHz bands. Are they really?

The FCC would welcome scientific studies of actual channel usage in various regions of the country to determine just how valid these claims are.

MT headquarters will serve as a clearing house--a liaison--between reporting monitors and the FCC. Information received will be carefully classified, collated and distilled into useful data for the Commission.

Let's hear from our readers with suggestions, then let's get going! ●

arms conflict but commonly are just practice messages and provide a means for remote forces to monitor status.

Also the channel name for 5700 kHz is not BRAVO, it is BRAVO QUEBEC. 11220 kHz is SAC's BRAVO frequency.

Other than these very obvious errors I enjoyed the article very much. I just appreciate accuracy.

Tony P. Griffin  
Salem, Oregon

>>>><<<<

In "Eavesdropping on the USAF," I found a couple of errors or incomplete information on what was printed. Also, enclosed is some additional info on "Raymonds" and other calls at Raymond bases.

Fireside is used in at least four locations (Firesides 1-3-4-5). Also only eight "Raymonds" were listed. I know of 18 different Raymonds.

Format 21st AF Ops is at McGuire AFB, NJ. Discard 22nd AF is at Travis AFB, CA.

Here are a few more tactical call signs (not all are AF).

- APACHE - (MAC) Albuquerque Int'l, NM
- GIRTH CONTROL - Castle AFB, CA
- FURY OPS - (NG) Bradley Int'l, CT
- PIKESIDE CONTROL - (ANG) Eastern West Virginia Regional
- GRIFFIN OPS - (ANG) Fresno Air Terminal, CA
- SHARK OPS - (NG) Fresno Air Terminal, CA
- UPSET CONTROL - (ANG) General Mitchell Field (Milwaukee), WI
- DARR CONTROL - (AFRES Ops) Mather AFB, CA
- SPARTAN CONTROL - (NG Ops) Mather AFB, CA
- FOSDICK CONSOLIDATED COMMAND POST, McClellan AFB, CA
- HANGOVER TOWER - Randolph AFB, TX
- BEACH BALL - 442 TAW Richards, Gebaur AFB, MO
- CARD CALL - 202 TAW Rickenbacker AFB, OH
- GUNRUNNER CONS. CP. - Robbins AFB, GA
- EAGLE CONTROL - (Robbins ACC) Robbins AFB, GA
- SHOW ME ZULU - (NG Ops) Springfield Muni., MO
- LIBERTY - (Army Ops) Stewart, NY
- CRISPY CHARIOT - Stewart, NY
- SCHOONER - (NG Ops) Stockton Metro
- CASINO ROYAL - 439 TAW Westover AFB, MA

Philip Humes  
Santa Rosa, CA

**BROADCAST ACCENTS**

I would like to take this opportunity to thank Dave Larsen (Viewpoint - March issue), for updating me on DW announcer Larry Wayne.

I did not intend to question the nationality of announcers, since obviously I could not begin to know their personal backgrounds in any comprehensive way. My point was, and remains, that to me personally a foreign station broadcasting with a North American accented English sounds "unreal," irrespective of the announcer's origin. It would be just the same effect if the person were Australian, English, or whatever...it would not sound representative of the country of origin.

This is, of course, as mentioned in my column, a purely personal opinion, and I may well be a minority! I have the same reaction to Havana and Moscow!

However, I would like to apologize if there were any hurt feelings on the matter; it will NEVER be my intent to give offense in the column. I hope readers will not mind occasional stimulating ideas, however, on the understanding that all of us must have personal reactions to the broadcast

program.

Once again my thanks to Dave.

Tom Williamson, editor  
English Language  
Broadcasts

**PROJECT ELF MONITORING (and other reflections)**

Elementary equipment would be needed--a buried, insulated wire, perhaps a hundred feet long. Any audio amplifier with a reasonable amplification factor. A set of headphones.

It is probable that a problem with 60-cycle hum might be found. At low frequency, it should be possible to "notch out" the power hum with an appropriate filter, even though the desired note is only a few notes higher -- 16/60...8/30...4/15 -- about two notes...

Ground loops are probably the biggest difficulty. I remember how we sweat getting my cousin's lab equipment to register a nymph's pulse. The signal was there, but the AC hum was driving the pen off of the strip..

When operative, ELF must use cut numbers. Anything else is out of question. The numbers would refer to a code book. Groups of five, of course. The simplest possible cut numbers might be dits and pairs of dits, or two and three dits.

The problems of information theory come into play. Morse's "continental" code would probably offer the most elegant solution except you will have a high marine noise level as background.

ELF RTTY, FM, PM or similar encoding would seem too complex. I have heard tapes of marine noise, and can imagine what an electric eel in heat could do to the submarine fleet's communications!

At least Navy electrical systems are no problem to the receiving submarine. They don't have to tear their wigs over the humming dynamo.

\* \* \*

I still think the "reserved lines" at the top of the TV screen should make an excellent article. Access to that data shouldn't be all that hard these days. It's a time-gate thing... multiplexing. Sears' unit might be squeezed a bit to read what executives send down the network to their stations. Maybe we could find out what they think of the trash they put on the rest of the screen...

Bob Russ  
Walworth, WI ●



**Viewpoint**

**EAVESDROPPING**

Regarding front page article of May '85 MT "Eavesdropping on the USAF," SAC has never transmitted any EAM starting with the words "Skybird, Skybird, do not answer." Skybird is not an alert designator for bombers aloft; it is a general call designator for any aircraft calling any SAC communications facility. Likewise Skyking does not indicate attention any SAC station, it is an EAM designator prefix used by Air Force and Naval Command and Control Stations on the ground and SAC Airborn Command Posts directed at all military forces monitoring the HF nets. EAMs (Emergency Action Messages) are routine alert status broadcasts which would contain go-codes in the event of an

**TOWER--EMERGENCY** from p.1

headed for a concrete light standard.

The co-pilot grabbed his mike button and blurted out, "Tower--we have an emergency!" The front landing gear hit the cement runway light box and snapped off; the airliner's nose plunged into the mud. The engines and wing on the right side smashed into the hard landing strip sending showers of sparks up behind the plane. The tower controller hit the emergency alarm alerting the crash crews.

The aircraft finally came to an abrupt halt. Inside someone shouted, "Now's the time for applause," and they did! But the smell of burnt rubber and metal began to drift through the interior of the plane. The PA systems announced, "Please--everyone evacuate the aircraft!" Doors opened and emergency slides inflated. One by one everyone slid down and out of the crippled jet, only to be met by an onslaught of wind, rain and lightning.

"Quick!" the stewardess yelled, "Run away from the plane as fast as you can!" The fleeing passengers began to run towards the terminal building. It would be a long run--the 737 had slid some 6,000 ft.; the terminal was more than a half mile away!

The passengers ran across the runway as speeding emergency crews headed for the stricken craft. They continued running through a field with mud and water up to their knees.

As rescue trucks surrounded the jet they discovered -- much to their relief -- no fire. And other than a few strained necks and backs, a good soaking in rain and mud, and a few frayed nerves, none of the passengers was injured!

But the Spirit of Kitty Hawk did not fare so well;

Muddy slide for life...803 left a 6000 ft. set of skid marks as it slid off the runway and into the mud. Crash crews attempt to lift up the nose after the front gear snapped off sending the nose of the craft into the ground.



the 737 was severely damaged and it would be some time before she would fly again.

• All of the excitement involving Southwest 803 was easily monitored on a scanner; the aircraft communicating with flight centers, the emergency crash crews, and even the F.A.A. inspecting the crash. By keeping in your scanner some select frequencies you too can be on the scene whenever an aero emergency occurs, from the first distress call to the search and rescue to the N.T.S.B. (National Transportation Safety Board) investigators at the crash scene trying to piece together what happened.

Here is a list of some key frequencies to monitor--emergency guard frequencies, search and rescue, crash investigators', and discrete airline company channels as well. Also included are some HF frequencies for your shortwave receiver. Key these in and keep your ears open. Who knows what you might hear?!

**AIRCRAFT EMERGENCY FREQS (VHF)**

CAP=Civil Air Patrol  
SAR=Search and Rescue  
CG= Coast Guard

FREQ MHz	DESCRIPTION
121.5	Nationwide Air Emergency Guard
122.9	Multicom SAR
123.1	SAR unicom
120.850	CAP SAR
130.150	MAC helicopter SAR
148.150	CAP primary rpters
143.900	CAP (backup)

**MILITARY UHF AERO FREQS**

243.00	Emergency Guard
282.2	CG SAR primary
381.8	CG SAR secondary
282.0	SAC SAR
383.9	Navy SAR
383.3	TAC SAR
349.4	MAC SAR

**HF SAR FREQS**

CAP HF Network; Scott A.F.B. controlling all ops.

4.627 USB primary  
4.630 USB secondary  
4.664 USB (backup)

**AIR FORCE HF SAR**

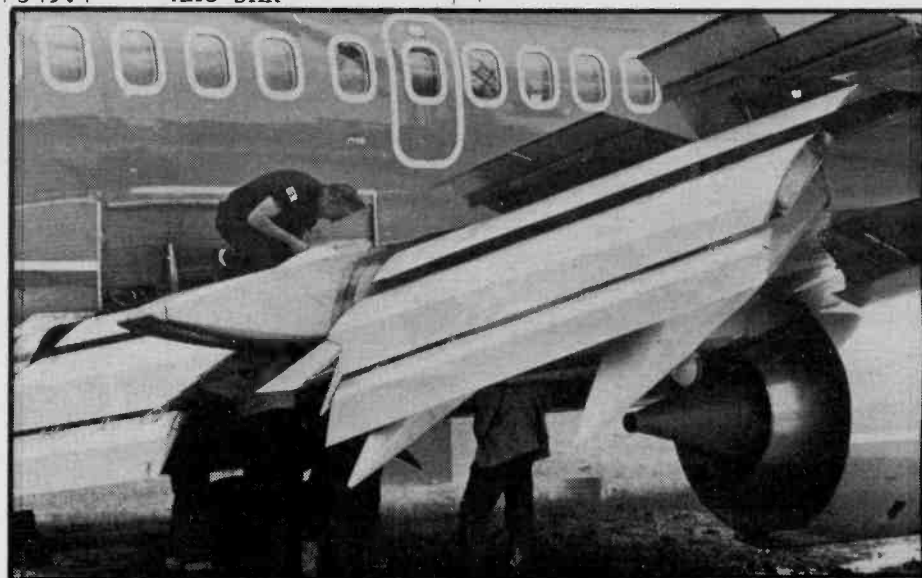
5.680 Primary ops  
5.685 Secondary Rescue ops  
5.696 CG SAR primary aero ops  
8.984 CG SAR secondary  
6.723 USB Navy SAR

**PRIVATE AIRLINES COMPANY FREQUENCIES**

129.2 American Airlines  
129.5 United Airlines  
129.55 Delta Airlines  
130.9 Continental Air.  
130.95 Eastern Airlines  
131.75 Republic Airlines  
131.925 Federal Express  
460.775 Air France  
129.700 Pan American Air.  
129.250 Southwest Airlines  
130.100 West Airlines

**CRASH INVESTIGATORS (FM)**

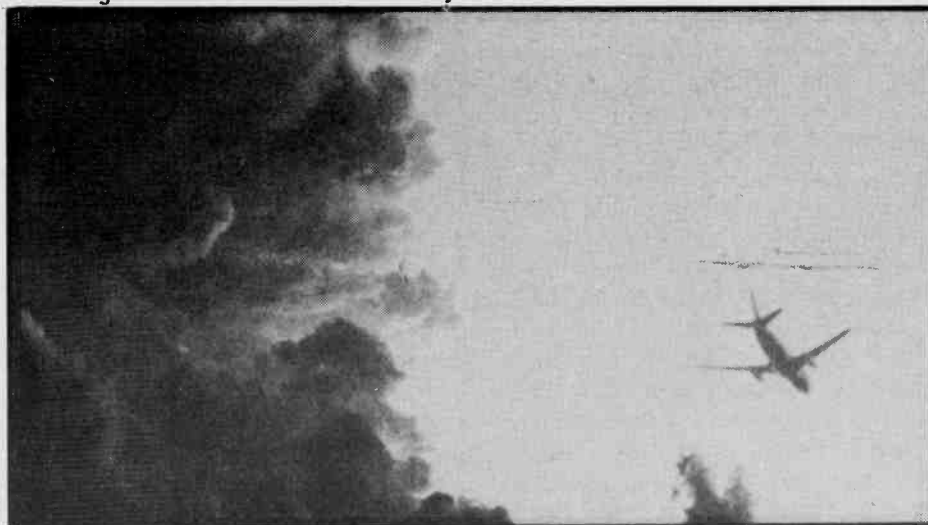
165.750 NTSB  
165.175 NTSB  
163.5625 TAC  
149.475 NAVY



NATIONAL TRANSPORTATION AND SAFETY BOARD CRASH INVESTIGATORS investigate the damage to flight 803 after its crash landing. The engines and wings were severely damaged on this jetliner which was only 4 months old.



The Spirit of Kitty Hawk with its crippled front end loaded onto a flat bed trailer. This is the only way the huge airliner could be moved off the runway after it was discovered that the nose gear was destroyed.



WHEN STORMY WEATHER THREATENS it's a good idea to crank up your scanner and listen to the aircraft flying in the storms. You'll hear up to minute weather reports from pilots on 122.00 MHz, 122.200 MHz, and 122.650 MHz in the VHF aero band.



**CAP SPOTTER PLANE** flies over wreckage of a small plane that was just located by DF'ing the craft's ELT. There were no survivors in this one. Special satellites are now equipped to monitor air distress frequencies.

**REMINGTON NUMBERS** from p.1

This indicates probable use of the one-time pad and that decoding by someone without the key is absolutely impossible.

The numbers broadcasts appear in reduced carrier upper sideband (often mistaken as AM, but you will not understand it on a receiver tuned for lower sideband) and CW. The voice broadcasts are four digit Spanish or 3/2 digit English.

The CW groups use shorthand which equates as follows: A=1, U=2, V=3, 4=4, E=5, 6=6, B=7, D=8, N=9; and T=0. This CW is tone modulated by simultaneously keying a 1-kHz USB tone. Both four and five digit CW groups are used.

Each broadcast (whether USB or CW) is transmitted on two (rarely three) frequencies simultaneously, but not all transmissions sounding like Remington are Remington. Many similar frequencies in mode/format have been determined to originate from the same agency at other locations.

Additionally, other number or phonetic transmissions that have been heard on or near Remington frequencies have been determined not to be from Remington.

The following is believed to be a complete list of Remington frequencies (kHz);

**SET I (SSB ONLY):**

4307	6802	10665	14421
4670	8418	11532	15651
5238	9074	11624	16450
5812	9222	13452	18621

**SET 2 (SSB/CW):**

5090	9958	11491	15810
6840	10324	11605	16310
7725	10570	13808	17693
7836	10665	14750	18737

The above frequencies are exact; frequencies near them published in many magazines and hobby newsletters are the result of receivers with poor frequency readout or measuring in the AM mode rather than USB mode.

Note that the frequencies have been divided into two sets of 16 frequencies each. Simultaneous transmissions always use frequencies of the same set; thus 5090 is sometimes parallel with 6840, but never parallel to 9074 (in the other set).

There is some evidence that some frequencies (including 5090 and 6840) in Set 2 were used in the joint CIA/DEA anti-drug Nicaragua operation. Some frequencies in Set 2 are also used for the short USB and CW messages that are repeated from 30 to 40 minutes after certain hours.

What follows is a list of Remington numbers transmissions monitored over the last year. Some transmissions have ceased and other many have been added. All times are UTC (GMT). After each frequency pair is the day(s) of the week on which that transmission occurs, language or mode, and characters per group.

REMINGTON SCHEDULE						
0000-9074/11532	TWThF	SS4	1300-5090/6840	SuWSa	SS4	(ceased)
5090/68404	TTh	CW5	10570/13808	W	SS4	
0100-6802/9074	T	SS4	8418/11532	Sa	SS4	
9074/11532	WThSu	SS4	1400-9074/11532	TF	SS4	
9222/11532	F	SS4	8418/10665	Sa	SS4	
6802/9074/11532	Sa	SS4	5090/6840	WTh	EE	
0200-4670/5812	MSa	SS4	14750/15810	T	SS4	
6802/9074	TTh	SS4	1600-8418/10665	Su	SS4	
5812/8418	F	SS4	11532/16450	WTh	SS4	
5090/6840	Th	EE3/2	13808/14750	Th	EE	
0230-6840/9958	Daily	SS4	1700-15651/16450	MF	SS4	
0300-4307/4670	MTh	SS4	11532/16450	WTh	SS4	
9074/11532	TWSu	SS4	1730-9958/18737	Daily	CW4	
0330-6840/11605	Daily	CW4	1800-10665/13452	MTh	SS4	
0400-8418/11532	M	SS4	11532/16450	F	SS4	
6802/9222	TF	SS4	7836/9958/13808	Sa	CW	
9222/11532	W	SS4	1900-9222/11532	T	EE	
9074/11532	Th	SS4	15810/17693	Sa	SS4	
5812/6802	Su	SS4	2000-4670/6802	SuT	SS4	
0500-8418/11532	M	SS4	11532/16450	M	SS4	
6802/8418	WSa	SS4	11491/16310	TThSa	SS4	
5812/6802	F	SS4	10665/11532	F	SS4	
0600-4670/6802	MW	SS4	5090/6840	Daily	SS4	
8412/9074	Th	SS4	(ceased)			
(ceased)			2100-11532/16450	W	SS4	
5812/6802	ThF	SS4	18621/16450	W	SS4	
(once//11624)			2200-15651/16450	T	SS4	
5090/6840	Daily	SS4	9074/14421	W	SS4	
(ceased)			11532/13452	Th	SS4	
0700-5812/6802	T	SS4	5090/6840	Daily	SS4	
1000-5238/5812	M	SS4	(ceased)			
(now 5238/6802)			230-9074/11532	TTh	SS4	
5812/6802	T	SS4	15651/16450	F	SS4	
5238/6802	Th	SS4	Note: Sometimes Remington just runs 10-counts with "545" in SS or EE with no message.			
1030-7725/10324	Daily	SS4	SS = Spanish; EE = English			
1100-11532/14421	Su	SS4				
5238/6802	MTh	SS4				
(now 5238/5812)						
9074/13452	TF	SS4				
9074/10665	W	SS4				

**SWLing THE HAM BANDS: 1.8 to 29.7 MHz**

by **Ike Kerschner N3IK**  
RD 1 Box 181A  
Kunkletown, PA 18058

**PART II**

**GETTING THE QSL**

Now you have logged a handful of amateur stations and you want a QSL. First--Be accurate in your report; use the RS/RST reporting system--don't use SINPO! Time should be in UTC (GMT). If you want a direct reply you should enclose an SASE (self-addressed, stamped envelope) for domestic replies, and the correct number of IRCs to a DX ham. You may wish to use a photo postcard of a scene from your area or have a neat SWL card printed to send your report on.

Let me suggest this format for your report--

"SWL (your name) has received signals from amateur radio station (N3IK) on (March 30, 1985) at (0211 UTC). Your (1.8 MHz SSB) signal was (R5-S7) at this location. You were in contact with (WB5JLJL).

Your QSL card would be appreciated--Txn and 73--"

The fastest way to get a report to a station is by direct mail. In the USA this is not too bad, but if you send a lot of reports overseas and include IRCs you will soon find costs getting out of hand. A better way to send cards to DX stations is to use the ARRL overseas DX QSL service.

For \$1.00 you can mail one and a half pounds of cards anywhere in the world. To use this service you must be a member of the ARRL; contact them at 225 Main St., Newington, CT 06111 for info on how to join and the other services they offer.

The ARRL sends the cards in bulk to the various DX QSL bureaus throughout the world; it does take longer, but you will be sure of having your report arrive. Sending cards via the bureau is the only way some amateurs can receive a card.

To receive cards via your local bureau can be a bit more difficult than sending them. Local bureaus are run by volunteers and they may not want to handle SWL reports; contact them and inquire. If they don't handle SWL reports then you

will need to find a friendly local ham and have him act as your manager.

When you send your report to the DX station just say on your card, "Please QSL via K1XXX"; give the ham manager several of the correct size envelopes with two stamps on each to send to the bureau, and when he receives his cards yours will be there too. You will have a higher average return via the bureau than from direct mail even if you include IRCs.

Overseas hams usually have a lot of empathy for the SWL because most of them spent much time SWLing before being allowed to obtain their amateur licenses.

Something else you should be aware of is the fact that a DX station will give frequent QSL information during his operating periods: Listen carefully; if he says "QSL via bureau" he wants his cards to come that way. Should he say "QSL via N3IK" then you should send your report to N3IK along with an SASE and you will in due time receive your card (as soon as N3IK verifies your report from the DXers log).

This is a fairly fast method of QSLing. Or the

**SWLING HAM BANDS cont'd**

station may say "Please QSL to box xxx in (city, country)"; that means that he has a P.O. Box in a major town and wants his cards to come there.

The best way to obtain the address of a given station is by using the CALL BOOK. There are two CALL BOOKS published: one for USA, Canada and Mexico, and another for DX stations. The books cost about \$20.00 each from any amateur radio dealer or book store. If you use the bureau system you will need only the USA version; if you are lucky you can share the cost with a friend or maybe borrow a local ham's.

**Using Ham Propagation Beacons**

by Bob Grove

*It is often a relatively simple matter to determine what part of the world is open to "skip": simply tune in one of the frequencies listed adjacent and if you hear the automatic CW beacon, you can be sure that other signals near that fre-*

I hope this information gets more of you tuning the ham bands; I'm sure it will add more pleasure to your SWL activities. If you want more information feel free to write. I sure would like to get a big batch of SWL reports!

*quency may be heard from that region as well.*

*For example, if you can copy DKØTE on 28.257 MHz, there's a good possibility that Deutsche Welle will be heard broadcasting on a nearby international allocation. You say VE3TEN is loud and clear on 28.175? Might be a good time to tune in Radio Canada International or the CBC on the high frequencies.*

*The same goes for utilities transmissions. Would you like to listen for communications from some hot spot on the globe? Listen for a ham beacon near that region and you are likely to hear skip from other communicators as well.*

**HF Band Beacons**

Frequency (MHz)	Call sign	Location
10-144	DKOWCY	W. Germany
14-100	CT3B*	Funchal, Madeira
14-100	JA2IGY*	Ise City, Japan
14-100	KH60/B*	Honolulu, Hawaii
14-100	OH2B*	Espoo, Finland
14-100	W6WX/B*	Stanford, California
14-100	ZS6DN/B*	Pretoria, RSA
14-100	4U1UN/B*	New York
14-100	4X6TU/B*	Tel Aviv, Israel
28-175	VE3TEN	Ottawa, Canada
28-202	ZS5VHF	Durban, RSA
28-205	DLOIGI	Salzburg, W. Germany
28-207	W4ESY	Florida
28-210	3B8MS	Mauritius
28-212	ZD9GI	Gough Island
28-215	GB3SX	Crowborough, UK
28-217	VE2TEN	Chicoutimi, Quebec
28-220	5B4CY	Cyprus
28-222	HG2BHA	Tapolca, Hungary
28-225	VE8AA	Canada
28-228	EA6AU	Spain
28-230	ZL2MHF	Wellington, New Zealand
28-235	VP9BA	Bermuda
28-237	LA5TEN	Oslo, Norway
28-237	ZS3HL	Tsumeb, S.W. Africa
28-240	OA4CK	Lima, Peru
28-242	ZS1CTB	Cape Town, RSA
28-245	A92C	Bahrain
28-250	Z21ANB	Bulawayo
28-252	VE7TEN	Vancouver
28-255	LU1UG	Argentina
28-257	DKØTE	Konstanz, W. Germany
28-260	VK5WI	Adelaide, Australia
28-262	VK2RSY	Dural, Australia
28-264	VK6RWA	Perth, Australia
28-266	VK6RTW	Western Australia
28-270	ZS6PW	R.S. Africa
28-272	9L1FTN	Freetown, Sierra Leone
28-275	VE3TEN	Canada
28-277	DF0AAB	Kiel, W. Germany
28-280	YV5AYV	Caracas, Venezuela
28-284	KA1YE/B	Henrietta, New York
28-285	VP8ADE	Adelaide Islands
28-287	H44SI	Solomon Islands
28-287	W8OMV	Tuckasegee, North Carolina
28-290	VS6TEN	Mount Matilda
28-295	VU2BCN	New Delhi, India
28-296	W3VD	Laurel, Maryland
28-300	PY2AMI	Sao Paulo, Brazil
28-302	ZS1STB	Still Bay, RSA
28-312	ZS6DN	R.S. Africa
28-888	W6IRT	Hollywood, USA
28-894	WD9GOE	USA
28-992	DLONF	Nuremberg, W. Germany

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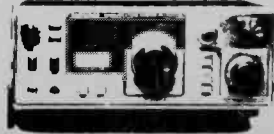
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**Radio Hams Suffer from Radiation?**

Many studies have been made over recent years regarding the influence of electromagnetic radiation on the human body. Results often conflict, but one report from Dr. Samuel Milham, Jr. in the *Lancet* is particularly disturbing.

Dr. Milham studied the death certificates of 1,691 amateur radio operators in the states of Washington and California who died between 1971 and 1983. The incidence of Leukemia was nearly double the expected rate for the population sample.

Certain kinds of leukemia--myeloid and a few others--were sharply higher among the hams, while lymphatic and monocytic types were on the norm for the general population.

# Ham Repeaters Worldwide

by Bob Grove

As with all VHF/UHF services, amateur low power communications often find range limitations which can be expanded by the use of repeaters. A repeater is a transmitter/receiver combination which detects signals being set to it on one frequency and rebroadcasts them on another.

Obviously, if it attempted to transmit the signals on the same frequency as it received them, all it would hear would be its own high power signal!

Repeaters are typically located on high points in order to maximize range of both reception and transmission. In order to avoid interference with other repeaters in range, repeater councils and associations have been formed to voluntarily comply with band planning which is to mutual advantage.

We would like to thank the American Radio Relay League (ARRL) of Newington, Connecticut, for the following international band plans. In addition, we would like to thank the Southwestern Virginia Wireless Association of Roanoke, Virginia, for the accompanying maps showing repeater locations in some neighboring states.

## BAND PLANS

### 29.300-29.700 MHz

29.300-29.500	Amateur Radio Satellites
29.520-29.580	Repeater Inputs
29.600	Simplex
29.620-29.680	Repeater Outputs
Repeater frequency pairs (input/output):	
29.520/29.620	29.560/29.660
29.540/29.640	29.580/29.680

### 50-54 MHz

50.000-50.080	CW & beacons
50.080-50.100	CW only
50.100-50.600	SSB & AM as follows:
50.110	SSB international calling frequency
(Note: Suggest QSY up for local and down for long distance)	
50.400	AM National Calling Freq
50.600-51.100	Experimental and Special Mode as follows:
50.700	RTTY calling frequency

Radio Control (R/C) channels recommended practice: Use odd number channel until 1990 and all channels there-

after. Other services should restrict their usage of this region to avoid R/C interference.

50.800	R/C 50-1
50.820	R/C 50-2
50.840	R/C 50-3
50.860	R/C 50-4
50.880	R/C 50-5
50.900	R/C 50-6
50.920	R/C 50-7
50.940	R/C 50-8
50.960	R/C 50-9
50.980	R/C 50-10

51.000-51.100	South Pacific SSB DX window
51.100-52.000	FM simplex
52.000-52.050	South Pacific SSB DX window
42.050-54.000	FM repeater and simplex

Repeater frequency pairs (input/output):

52.010/53.010	52.350/53.350
52.030/53.030	52.430/53.430
52.150/53.150	52.550/53.550
52.150/53.150	52.550/53.550
52.170/53.170	52.570/53.570
52.250/53.250	52.650/53.650
52.270/53.270	52.670/53.670
52.330/53.330	

Simplex frequencies:

52.490	
52.510	
52.525	National simplex frequency

### 144-148 MHz

144.00-144.05	EME (CW)
144.05-144.06	Propagation beacons
144.06-144.10	General CW and weak signal SSB
144.20	National calling freq.
144.20-144.30	General SSB operation
144.30-144.50	New OSCAR sub-band
144.50-144.60	Linear translator inputs
144.60-144.90	FM repeater inputs
144.90-145.10	Weak signal & FM simplex
145.10-145.20	Linear translator outputs
145.20-145.50	FM repeater outputs
145.50-145.80	Misc and experimental modes
145.80-146.00	OSCAR subband
146.01-146.37	Repeater inputs
146.40-146.58	Simplex (146.40-146.46~)
146.61-146.97	Repeater outputs
147.00-147.39	"
147.42-147.57	Simplex
147.60-147.99	Repeater inputs
Repeater frequency pairs (input/output):	
144.61/145.21	146.22/146.82
144.63/145.23	146.25/146.85
144.65/145.25	146.28/146.88
144.67/145.27	146.31/146.91
144.69/145.29	146.34/146.94
144.71/145.31	146.37/146.97
144.73/145.31	146.40 or

144.73/145.33	147.60/147.00*
144.75/145.35	146.43 or
144.77/145.37	147.66/147.06*
144.79/145.39	146.46 or
144.81/145.41	147.66/147.06*
144.83/145.43	147.69/147.09
144.85/145.45	147.72/147.12
144.87/145.47	147.75/147.15
144.89/145.49	147.78/147.18
146.01/146.61	147.81/147.21
146.04/146.64	147.84/147.24
146.07/146.67	147.87/147.27
146.10/146.70	147.90/147.30
146.13/146.73	147.93/147.33
146.16/146.76	147.96/147.36
146.19/146.79	147.99/147.39
*local option	

146.205/146.805
146.235/146.835
146.265/146.865
146.295/146.895
146.325/146.925
146.355/146.955
146.385/146.985
147.615/147.015
147.645/147.045
147.675/147.075
147.705/147.105
147.735/147.135
147.765/147.165
147.825/147.225
147.855/147.255
147.915/147.315
147.945/147.345
147.975/147.375

In most heavily populated areas, the following list of "splinter" frequency pairs are being used for repeater operation. Please note that these pairs may be either low input and high output or high input and low output depending upon local agreement. For example, in one area 146.025 MHz may be a repeater input with an output at 146.615 MHz, while in another area, 146.625 MHz may be the input with an output at 146.025 MHz.

Also, in many parts of the country many repeaters use 1 MHz spacing in conjunction with the frequencies 146.415, 146.43, 146.445, 146.46, 146.475 and 146.49 MHz.

146.025/146.625
146.055/146.655
146.085/146.685
146.115/146.715
146.145/146.745

Simplex frequencies

146.40*	147.42
146.43*	147.45
146.46*	147.48
146.49	147.51
146.52**	147.54
146.55	147.57
146.58	

\* local option (also used as repeater inputs)

\*\*National simplex frequency

Several regions of the Pacific Northwest have chosen to re-align the 146-148 MHz band, using 20 kHz spacing between channels. This choice was made to gain additional repeater pairs.

The transition from 30 to 20 kHz spacing is taking place on a case by case basis as the need for additional pairs occurs. Typically the repeater on an odd numbered pair will shift 10

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## HAM REPEATERS cont'd

kHz, up or down, creating a new set on an even numbered channel. For example, the pair of 146.13/.73 would change to 146.12/.72 or 146.14/.74, while the pairs of 146.10/.70 and 146.16/.76 would be left status quo.

### 220-225 MHz

The following bandplan has been proposed by the ARRL-UHF Advisory Committee.

- 220.00-220.05 EME (Earth-Moon-Earth)
- 220.05-220.06 Propagation beacons
- 220.06-220.10 Weak signal CW
- 220.10 Calling freq
- 220.10-220.50 General weak signal, rag chewing and experimental communication
- 220.50-221.90 Experimental and control links
- 221.90-222.00 Weak signal guard band
- 222.00-222.05 EME
- 222.05-222.06 Propagation beacons
- 222.06-222.10 Weak signal CW
- 222.10 Calling freq
- 222.10-222.30 General operation CW or SSB, etc.
- 222.34-223.38 Repeater inputs
- 223.34-223.90 Simplex and repeater

- 223.94-224.98 Repeater outputs (local option)
- Repeater frequency pairs (input/output):
- 222.34/223.94 222.90/224.50
- 222.38/223.98 222.94/224.54
- 222.42/224.02 222.98/224.58
- 222.46/224.06 223.02/224.62
- 222.50/224.10 223.06/224.66
- 222.54/224.14 223.10/224.70
- 222.58/224.18 223.14/224.74
- 222.62/224.22 223.18/224.78
- 222.66/224.26 223.22/224.82
- 222.70/224.30 223.26/224.86

- 222.74/224.34 223.30/224.90
- 222.78/224.38 223.34/224.94
- 222.82/224.42 223.38/224.98
- 222.86/224.46

### Simplex frequencies

- 223.42 223.70
- 223.46 223.74
- 223.50\* 223.78
- 223.54 223.82
- 223.58 223.86
- 223.62 223.90
- 223.66

\*National simplex frequency

### 420-450 MHz

- 420.00-426.00 ATV repeater or simplex with 42.25 MHz video carrier, control links and experimental
- 426.00-432.00 ATV simplex with 427.250 MHz video carrier freq
- 432.00-432.070 EME (Earth-Moon-Earth)
- 432.07-432.08 Propagation beacons
- 432.08-432.10 Weak signal CW
- 432.100 70-cm calling frequency
- 432.10-432.125 Mixed mode & weak signal work
- 432.125-432.175 OSCAR inputs
- 432.175-433.00 Mixed mode & weak signals
- 433.00-435.00 Auxiliary/repeater links
- 435.00-438.00 Satellite only (internationally)
- 438.00-444.00 ATV repeater input with 439.250 MHz video carrier frequency and repeater links
- 442.00-445.00 Repeater inputs and outputs (local option)

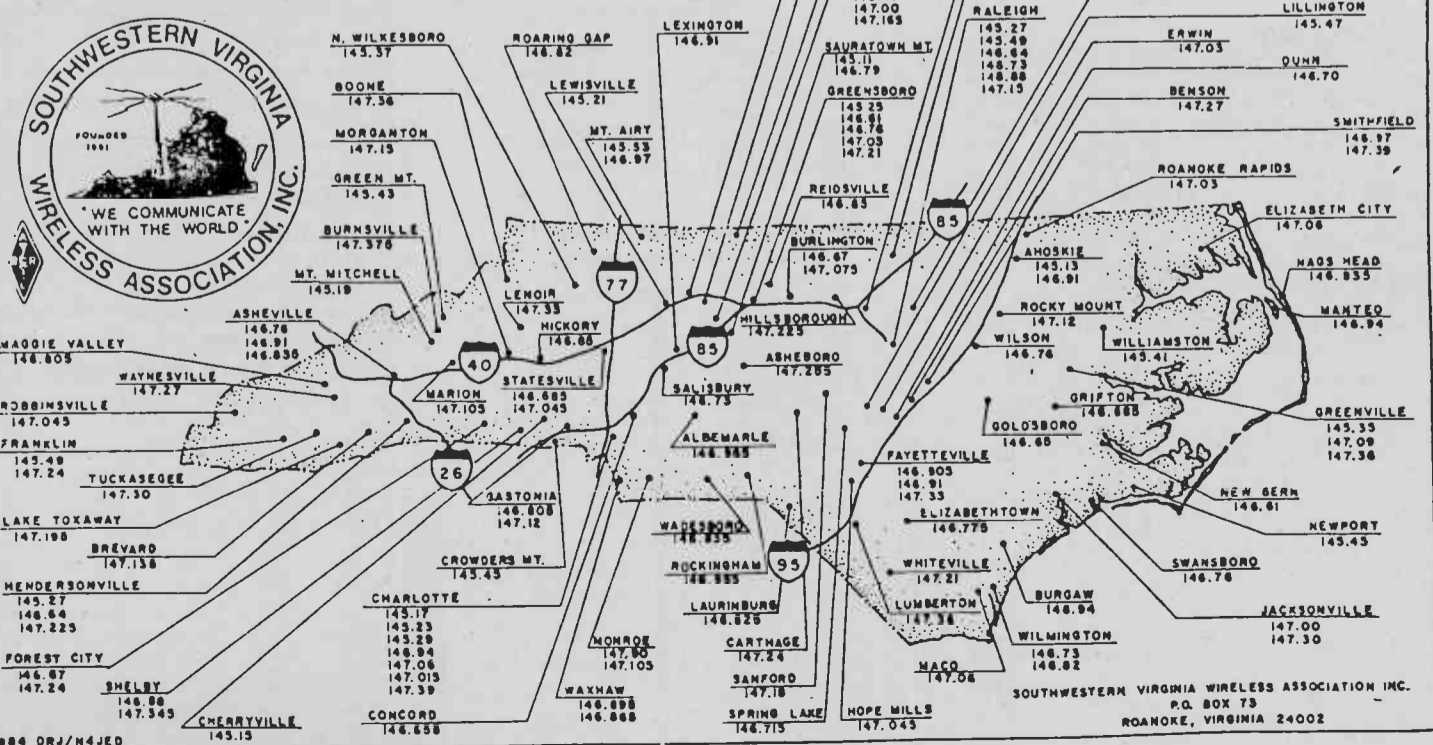
- 445.00-447.00 Shared by auxiliary and control links, repeater and simplex (local option); (446.0: National simplex freq)
- 447.00-450.00 Repeater inputs and outputs (local option)

Repeater frequency pairs (input/output) are spaced by 5 MHz with 50 kHz spacing between channels.

### 1215-1300 MHz

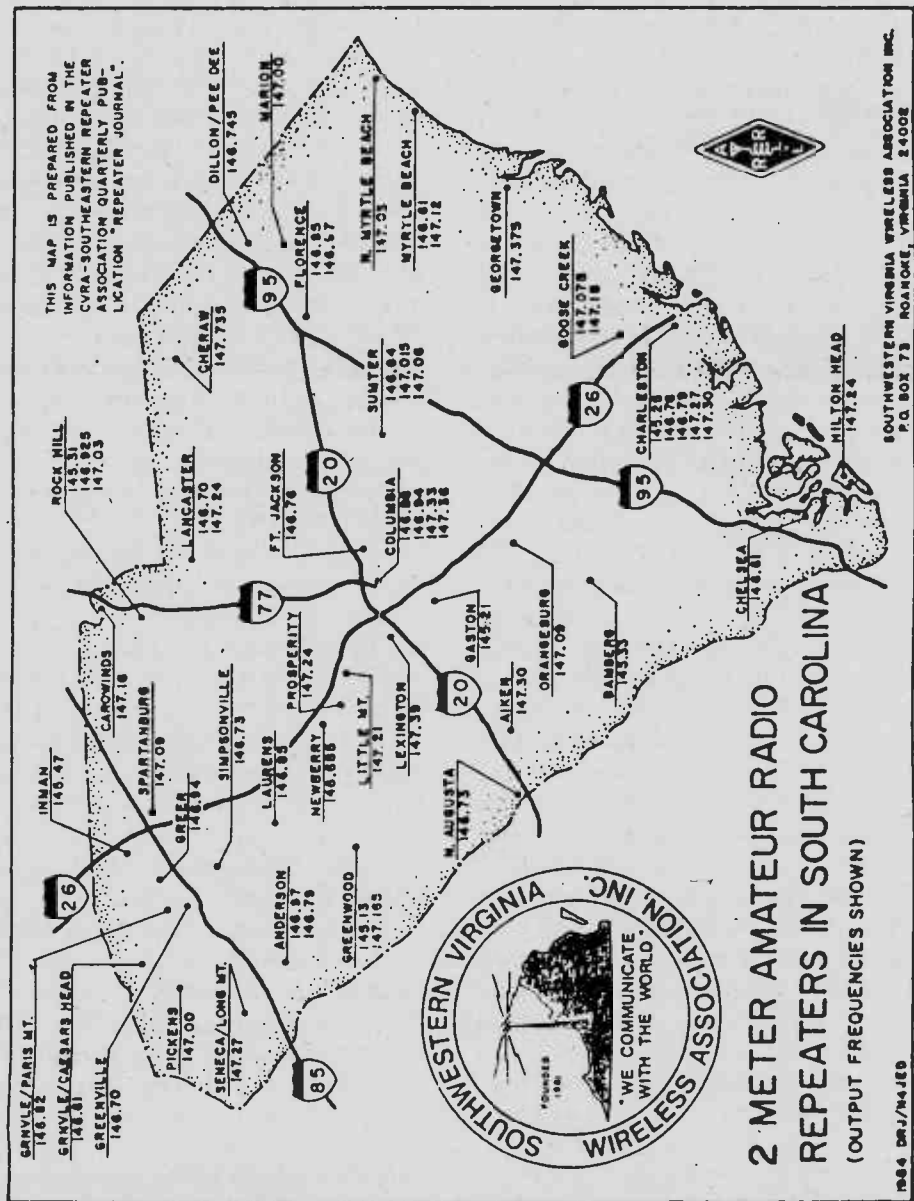
- 1215-1240 General; expected to be lost as a result of WARC
- 1240-1246 ATV Channel 1; Video carrier at 1241 MHz vestigial sideband filtering required
- 1246-1252 FM relay & links #1; (standards under development)
- 1248-1258 ATV Channel 2; Video carrier-1253 MHz
- 1258-1264 FM relay & links #2; (standards under development)
- 1260-1270 Satellite uplink; Reserved per WARC '79
- 1260-1270 ATV Channel 3; Video carrier-1265 MHz
- 1270-1276 FM relay & links #3; (standards under development)
- 1272-1282 ATV Channel 4; Video carrier-1277 MHz
- 1282-1288 FM relay & links #4; (standards under development)
- 1284-1294 ATV Channel 5; Video carrier-1289 MHz
- 1294-1295 FM relay & links; (standards under development)

## 2 METER AMATEUR REPEATERS IN NORTH CAROLINA (OUTPUT FREQUENCIES SHOWN)



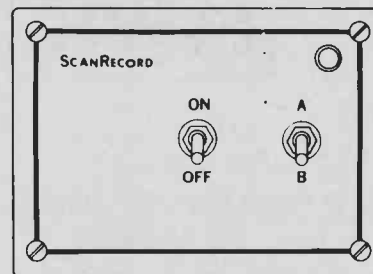


HAM REPEATERS cont'd



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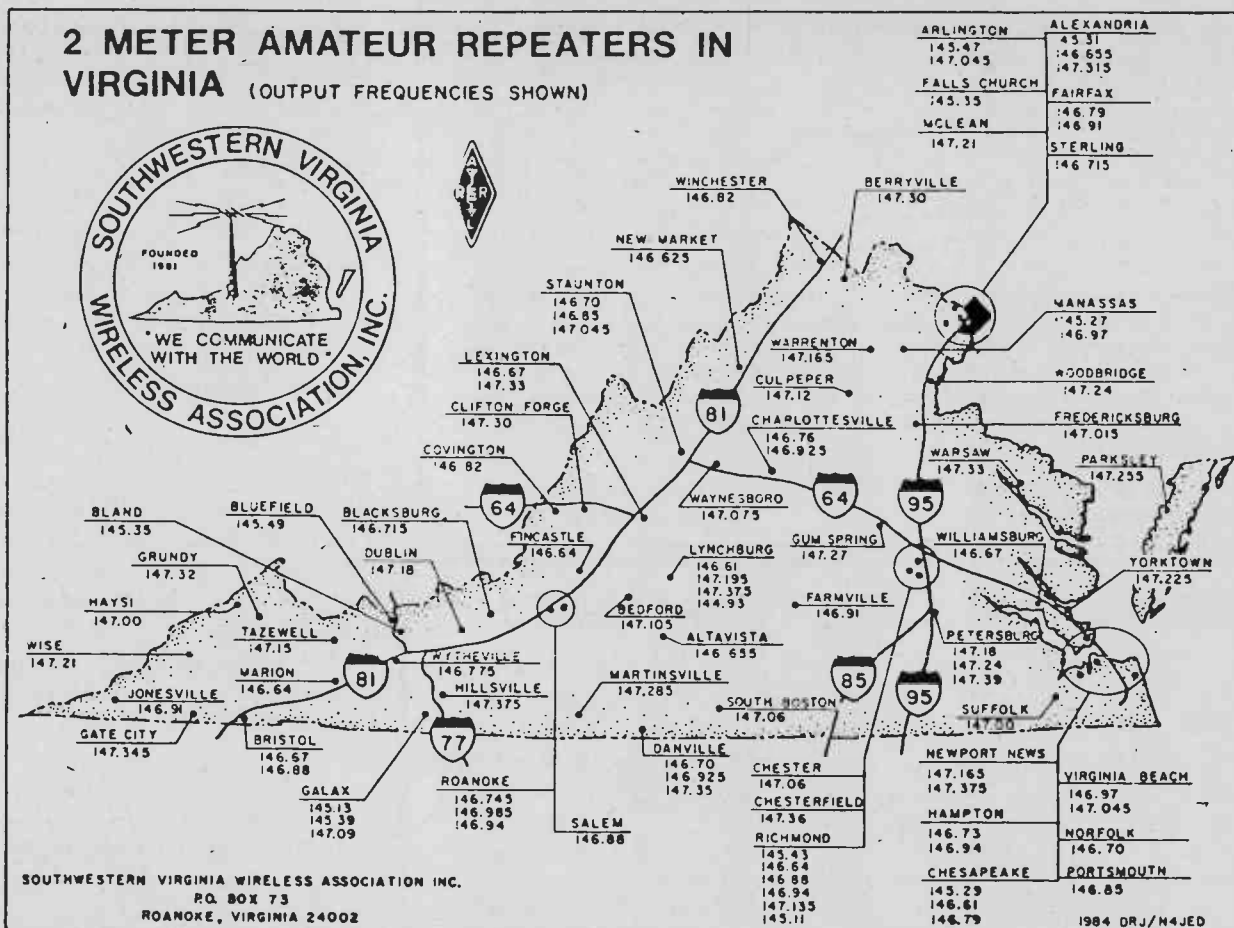
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1295-1297 Weak signal guard band; 1296.0 calling freq.  
1297-1300 FM relay & links; (Standard under development)

ITU REGION 1 (EUROPE AND AFRICA) 144-146 MHz BAND PLAN

- 144.00-144.01 EME
- 144.05 CW calling
- 144.10 CW random meteor scatter
- 144.15 Upper limit CW exclusive
- 144.20 SSB random meteor scatter
- 144.30 SSB calling, once contact established move off frequency
- 144.50 SSTV calling
- 144.60 RTTY calling
- 144.70 FAX calling
- 144.90 Regional beacons
- 145.00-145.225 Repeater input. R0-R9
- 145.60-145.825 Repeater output
- 145.845-146.00 Space communications

- Repeater input
- 145.00 S0 R0
- 145.025 R1
- 145.05 R2
- 145.075 R3
- 145.10 R4
- 145.125 R5
- 145.15 R6
- 145.175 R7
- 145.20 R8
- 145.225 R9



- 145.15 R6 Simplex channels
  - 145.175 R7
  - 145.20 R8
  - 145.25 S10 established, move off frequency)
  - 145.275 S11
  - 145.30 S12
  - 145.325 S13
  - 145.35 S14
  - 145.375 S15
  - 145.40 S16
  - 145.425 S17
  - 145.45 S18
  - 145.475 S19
  - 145.50\* S20
  - 145.525 S21
  - 145.55 S22
  - 145.575 S23
  - 145.60 S24 R0
- U.K. & European repeaters require a 1750 Hz ( $\pm 25$  Hz) tone burst of about 300 ms to open the repeater and in practice it is best to transmit this tone at the start of each transmission, especially in the U.K.



by  
**Don Schimmel**  
 516 Kingsley Rd SW  
 Vienna, VA 22180

I spent a day at the Hamvention held in Dayton, Ohio, in April of this year and was pleased to be able to listen to the SWL Forum given jointly by Fred Osterman of Universal Shortwave and Bob Grove of Grove Enterprises. Both speakers gave very informative and interesting presentations. Fred talked about RTTY intercept while Bob covered various aspects of other types of SWL targets.

While at the Hamvention I also had an opportunity to stroll around visiting some

of the dealer exhibits and I saw several equipment demonstrations. It was time well spent and I wish I had been able to attend the entire three days of the affair rather than just one day.

Upon my return home I learned of a local ham who had a Collins 51S1F which he decided was surplus to his needs. I purchased the receiver which is in excellent condition and it makes a fine addition to the UTILITY INTRIGUE monitoring position. During my government service I spent many hours with this model receiver and so I am very happy to have this old friend as part of my receiving capability.

I am aware that many SWLers turn up their noses at "that old tube type radio," but I recall the reliable performance of the 51S1 and am glad I was able to pick one up. Its excellent stability (after a brief warm-up) make it a natural for RTTY reception. With this receiver plus some valuable tuning tips from Fred Osterman, I no longer see a need to install a scope in the position for determining the correct shift of RTTY signals.

Some months ago I listed a source of technical manuals for surplus military equipment. I have since learned that part of the address has been changed, perhaps due to postal zone reasons. Here is the complete correct address: Mike Consalvo, 7218 Roanne Drive, Oxon Hill, MD 20745. Remember to enclose an SASE when writing him requesting availability information on a TM for a particular piece of equipment.

I have been checking for activity but have not seen it since I first noted in on 7 April at 1205Z. The frequency was 13289 kHz and the entire CW transmission was VVV CQ 515 AAA 464. This was repeated over and over. I could not stay with it to see if any traffic was passed.

The CW activity controlled by callsign OA continues to be observed frequently. On 8 April at 1954Z Zero A was calling EM on 13216 kHz. Traffic believed to be associated with this activity has been four, five and six figure groups and there was one instance of a French PT message passed on 29 September 1983 at 2050Z on 13444 kHz. Other callsigns noted include 69F, 72, 54, 21M, and 48.

Some weird looking CW transmissions were copied during April on 13463 kHz;

on 8 April at 2149Z groups TAR RGTIT NGWTR were repeated frequently. This was followed by a brief period of silence and then TIU RDTUT NRTMT TIU DRTUT NDAWT was sent. Then nil more heard.

On 9 April at 2114Z the same station was noted with RUM IIMUT IANTR sent five times. A short period of silence was followed by the same 13 letters sent another five times. After approximately two minutes of no signals, a different set of 13 letters, UDD RTRNT DRTUT, was transmitted six times and then the station went down at 2119Z.

You will note only ten letters are used in the transmission so it would certainly appear that these letters are, in fact, cut numbers.

During April and May I again intercepted the odd sounding tones I have previously reported. It certainly seems to be some form of RTTY and some of the transmissions have appeared to be hand poked and other times it sounds even and mechanical as if it were a TTY tape.

The most recent loggings were 3 April at 1804Z on 18142 kHz and 4 May at 1252Z on 14535.1 kHz; then again on 12 May on 14539 kHz for the period of approximately 1800Z-1900Z. I did record this last transmission and hope to have the signal identified in the near future.

Mixed figure/letter traffic was copied on 13299.9 kHz on 11 May at 1236Z. This CW activity started out with callsign OFY calling HYA for a long period of time. Without any response from the other station, OFY went from the callup right into the message heading and then into the text. The groups were four characters in length and consisted of cut numbers and full numbers. The letters were A D U N T and the full numbers were 3, 4, 5, 6, 7.

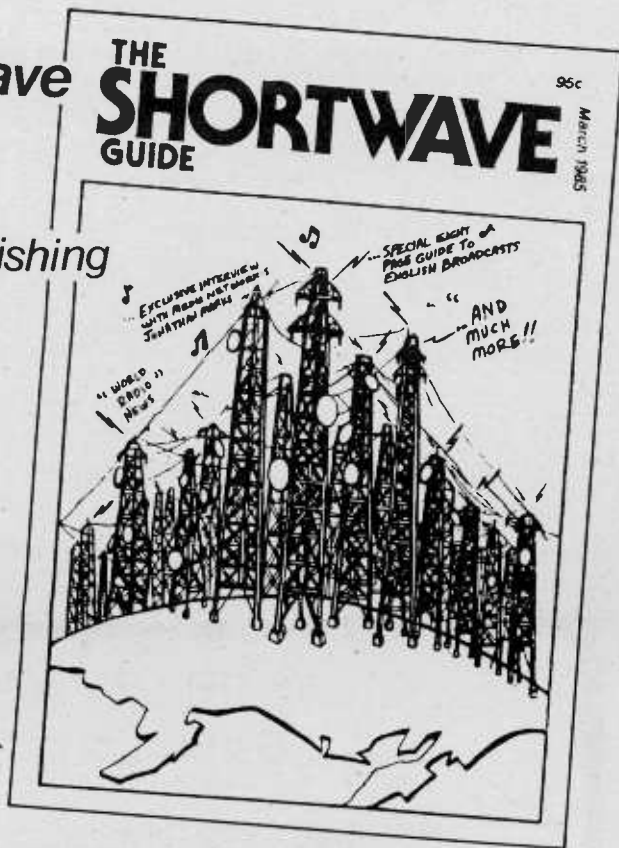
On 6850 May 11 at 0304Z a CW station was noted passing cipher traffic. It was impossible to determine the length of the groups because all characters were sent in one continuous string. Special characters AA OE OT and IM were observed so it is possible this was a Soviet transmission.

Very similar to the above was the transmission on 6281.7 kHz on 7 April at 1216Z. Here again there was no spacing for groups and it sounded like a continuous string of characters. The traffic was quite brief and I did not note any special

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## Hams Get One New Band

At the World Administrative Radio Conference (WARC) in 1979 three new HF bands were assigned to the amateur radio service. Implementation has been long in coming.

The first set of frequencies, 10.100-10.150 MHz has been operational for a couple of years now but the second set, 24.890-24.990 MHz, was not authorized until June 22, 1985.

This leaves one more band at 18 MHz unavailable yet and it will probably remain so for several more years.

### ...AND LOSE OTHERS

Several reductions in spectrum for the hams are

also on order. While the FCC has granted additional modes in the 160 meter band (1.8-2.0 MHz), the hams will lose half of the allocation (1.9-2.0 MHz) when the AM broadcast band is expanded to 0.54-1.7 MHz.

One other loss appears to be the impending assignment of portions of the 421-430 MHz range to the land mobile service some time over the next few months.

The proposal to give the hams a chunk of spectrum in the 902-928 MHz range has met with considerable commercial opposition; if such use is granted it almost certainly will be non-exclusive, shared with other users.

UTILITY INTRIGUE cont'd

characters in the text of the message.

I could not identify the next item even though I stayed with it for a long period. The transmission was RTTY and the unidentified station was running a continuous RY tape when the tape was stopped and Spanish PT chatter indicated the station was experiencing transmitter problems. The frequency was 10234 kHz and the transmission was noted on 11 May at 0019Z. Possibly this is another Cuban MINREX

(Ministerio de Relaciones Exteriores) frequency.

This last item to be commented upon is another one which falls into the category of mystery items. A RTTY 50/850 transmission was monitored on 6793 kHz on 11 May at 0039Z. The print-out of the RTTY was garbage (enciphered); however, right underneath that signal, I detected a CW taped transmission which repeated DTTN BUV6 over and over. This latter looks like it could be a cut number system. No further identification data was obtained and the CW signal went down at 0041Z.

KHZ	DTOI	MODE/IDENTIFICATION/COMMENTS
17361	162001	RTTY 75-425/CODED WX
18333.4	091328	RTTY 50-850/UNIDEN SOVIET STN WITH TEST TAPE, KALINGRAD APPEARS IN TAPE
18524.3	091334	RTTY 50-850/SAME TAPE AS PREVIOUS ENTRY
20348.2	091842	RTTY 75-850/PT SPANISH TEXT
22533	161651	CW/DE EAD6-ED27 (ARANJUEZ, SPAIN)
22592	161647	CW/DE ZSD (DURBAN, SOUTH AFRICA)
22781	161638	RTTY 75-425/PRESS IN ENGLISH
23074.7	161629	FSK CW/DE WFI77 WFK50 WFL35/WFK49 WFN23 (AP STATIONS NEW YORK) CALL TAPE

LOGGED MAY 1985		
KHZ	DTOI	MODE/IDENTIFICATION/COMMENTS
3053.8	090058	CW/XMK DE YLN (?) / 5 CHARAC GRPS, LTRS & NERS 2 3 8 PLUS SPANISH NYEH (MW)
4254.8	090113	CW/NO CALLS/PT ENGLISH WX ATLANTIC OCEAN
4273.5	090115	CW/DE GKB2(FORTISHEAD, ENGLAND)
4428	110237	VOICE USB/WTED FROM NMN/RDO CHECK BETWEEN SHIP AND COMMSTA PORTSMOUTH VA
4487	110400	RTTY 50-425/CODED WX
4704	111107	CW/U MARKER
4781	111111	CW/6 GRPS OF 5L/FEMA
6282.1	041231	CW/CLJ(CAIBARIEN, CUBA) DE ULUA, UUXV (UNIDEN RUSSIAN SHIPS)
6284	082149	CW/VCS (HALIFAX CG RDO, NS, CANADA) DE ICOW (ITALIAN SHIP)
6326	091130	CW/DE WNU32 (SLIDELL, LA)/CALL TAPE
6328	161943	RTTY 75-850/CODED WX
6351	161945	CW/DE WMH (BALTIMORE MD) CALL TAPE
6369.1	041237	CW/DE KLC(GALVESTON, TEXAS) WX IN GULF OF MEXICO, IN ENGLISH
6378	110316	CW/72JKL(?) 2 4 6 8 13 RG/CALL TAPE
6430.3	181210	CW/DE CFH(MARITIME COMMAND RDO, NS, CANADA) 5L & 4F GRPS PLUS PT ENGLISH TFC
6462	091153	CW/DE VIS (SYDNEY, NSW, AUSTRALIA)
8828.8	091210	VOICE USB/HONOLULU RDO WITH WX IN ENG.
10380	110036	RTTY 50-850/CODED WX
10406.4	100159	RTTY 50-425/DE 6VU (DAKAR SENEGAL) TEST
10436.5	100056	RTTY 50-425/TANJUG(YUGOSLAVIAN NEWS AGENCY) PRESS IN ENGLISH
10970.2	160024	RTTY 75-425/PRESS IN ENGLISH
11139.2	160015	RTTY 50-850/WX IN SPANISH
13061	091216	CW/HIGH SPEED MORSE, 5L GRPS, SPEC CHARACS IM AA OE OT
13177	161938	VOICE USB/CONVERSATION IN FRENCH
13280	111114	VOICE USB/CONVERSATION IN SPANISH
13364.6	092209	RTTY 50-850/FOSS 5YD (NAIROBI, KENYA)
13400	172217	RTTY 50-425/CLN405(HAVANA CUBA) RY'S
13425	102142	CW/321 1/5F GRPS DOWN WITH TTT AT 2153Z
13434.4	091220	RTTY 50-425/5L GRPS/FREQ HAS BEEN NOTED IN USE BY EAST GERMAN STATION
13578	111127	RTTY 50-425/PRESS IN SPANISH/APPEARS LIKE PRENSA LATINA TRAFFIC
13621	172121	RTTY 75-850/WX IN ENGLISH FOR CARIBBEAN FOLLOWED BY CODED WX MSGS
13663	172118	RTTY 50-425/CODED WX
13996	172109	RTTY 50-425/PRESS IN FRENCH
14456	111130	CW/5L GRPS/SPEC CHARAC OT OE AA IM
15738	162132	CW/OPR CHATTER IN SPANISH, MSG TEXT IN FRENCH
16323	111209	RTTY 50-425/PRINT-OUT LOOKS LIKE IT IS ARABIC TEXT
16459.6	161925	VOICE USB/CONVERSATION IN SPANISH/FORTS OF CALL MENTIONED IN CONVERSATION
16465.6	161915	VOICE USB/CONVERSATION IN UNIDEN LANGUAGE
16483	161917	CW/X5H DE LTR (?) QSC QRK INT K
16646.7	162115	VOICE USB/CONVERSATION IN GREEK
16982	162113	CW/DE NMR (COMMSTA SAN JUAN PR)
17073.9	162118	CW/DE LGW LGU LFU LGB LFN LGJ LFI LGX LFT LFX (ROGALAND, NORWAY) CALL TAPE
17094.5	162111	CW/DE SVA (ATHENS, GREECE) CALL TAPE
17175	092034	CW/DE VAI (VANCOUVER CG RDO, BC, CANADA)
17184	091855	CW/DE KFS (SANFRANCISCO, CALIF)
17218	091854	CW/DE GKY (PROB FORTISHEAD, ENGLAND)
17230.4	091852	CW/DE GKQ (FORTISHEAD, ENGLAND)

**Tune In  
The Cuban Hotline**

**A UTILITY INTRIGUE SPECIAL**

by Don Schimmel

The following compilation of information was gathered over the past 18 months and itemizes the various call signs with locations (where determined), and frequencies observed in use of the Cuban Ministerio de Relaciones Exteriores (Ministry of Foreign Affairs) in communications with the various Cuban Embassies.

For those of you holding a copy of the GROVE SHORTWAVE DIRECTORY (Second Edition) this material will furnish you with updated listings for inclusion with the entries on page 78 of the Directory.

Recovery of call signs with locations was based on

the appearance of the location in a message heading coupled with the copying of the call signs which were observed in use for that particular communication.

Earlier this year all correspondents were notified that two new frequencies would be utilized for a listening watch by the control station (Havana). These were 16405 kHz for the period of 1300-2200Z and 12295 kHz for the period of 2000-1200Z. These were later replaced with two different frequencies, 16335 kHz during 1300-2100Z and 12225 kHz during 2200-1200Z.

CW and RTTY (50 baud/425 Hz shift; 75 baud on 13878.4) will be seen in use and recently a new twist was encountered when RTTY transmissions were noted with sections of text apparently enciphered and those portions were enclosed by multi-repeats of the letter Z. This feature may serve as

SHORTWAVE CATALOG

UNIVERSAL SHORTWAVE CATALOG

HUGE 70 PAGE

HUGE 70 PAGE

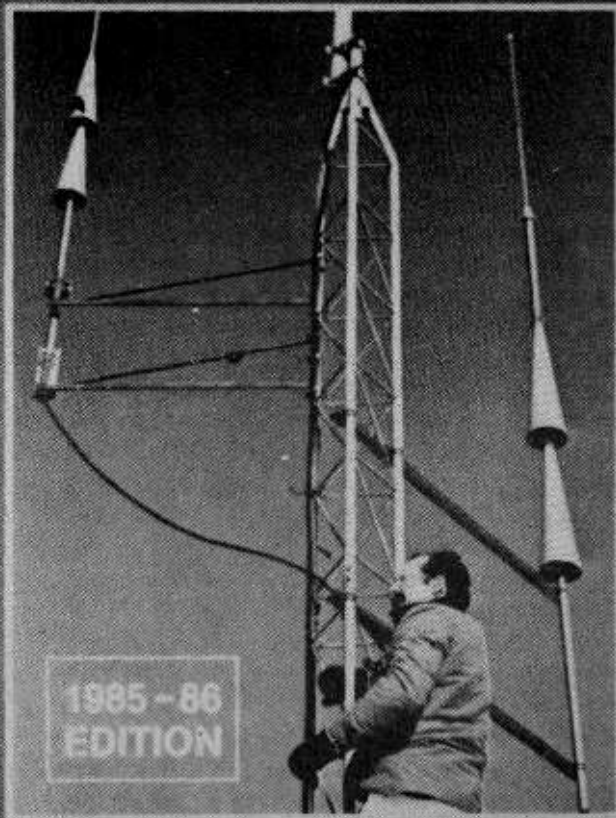
Send \$1.00  
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**CUBAN HOTLINE cont'd**

some type of synchronization for the tape or for an associated crypto device used with the TTY machine. The traffic mentioned was sent from Havana to the Cuban embassy in India.

KHZ	MODE	CALLSIGNS
8815	CW	CLP2
12115	CW	CLP25
12230	CW	CLP55
12290	CW	CLP13
12344	CW	CLP2
12979.6	CW	
13115	RTTY	CLP55
13284	CW & RTTY	CLP1
13311	CW	
13315.9	CW/RTTY	CLP16
13322	CW	(CLP5?)
13333	CW	
13340	CW	CLP1
13345	CW	CLP55
13350	CW	CLP1
13371.2	CW	CLP5
13375	CW	CLP45
13385	CW	CLP1
13388.6	RTTY	CLP1
13390	CW	CLP1
13878.4	RTTY	CLP1
13925	CW	CLP1
13940	CW	CLP65
13945	CW	CLP1
13955	CW	CLP1
13975	CW	CLP1
13981	CW	CLP1
13989	CW	CLP1/CLP16

13991	CW/RTTY	CLP1
14920	CW	CLP1
14989	CW	CLP1/CLP55
14995	CW	CLP55
16010	CW	CLP1
16335	CW	CLP1/CLP45
16424.5	CW	
16470	RTTY	CLP1
17894	CW	
18040	CW	CLP55
18112	CW	
18115	CW	
18236	CW	CLP1
18454	RTTY	CLP1
18650	CW	CLP1
19060	CW	CLP1
19785	CW	
19945	CW	
10043.7	CW/RTTY	CLP8

Here are a few more identified call signs to be added to those in the Grove directory. You will note a conflict with the location of CLP8 with that given in the listing of the directory; my identification was based on the reference to Conakry in a plain text message where it seemed to relate CLP8 to the Conakry location.

CALLSIGN	LOCATION
CLP2	Panama
CLP4	Bissau, Guinea
CLP8	Conakry, Guinea
CLP38	Paramaribo, Surinam
CLP55	Georgetown, Guyana
CLP65	Managua, Nicaragua

## - SCANNING ->

### 800 MHz:

#### The New Frontier

by  
 Robert Kelly  
 Mobile Radio Resources

Regency Electronics has broken the frequency barrier with their new HX2000, MX4000 and MX7000, three 800 MHz scanning receivers that introduce monitoring enthusiasts to a new world of system monitoring. Now the upper spectrum of conventional, trunked, slow-growth, and cellular mobile telephone systems is as easily tuned in as the more commonly accessible lower frequencies.

#### DESIGN AWARD CANDIDATE?

The compact MX4000 stands out uniquely with its universal carry-about design, excellent features, and good performance characteristics. The product could easily win best new design awards if it were not for serious flaws that take away from otherwise fine design features.

Measuring a mere 2 x 5.75 x 6.5 inches, containing a rechargeable nickel-cadmium battery good for about seven hours per charge, and sporting a bold LCD display in its lightweight 25 oz. shell-case design, the MX4000 provides full scan/search functions in a receiver suitable for scanning buffs, system operators, and service technicians.

Features include broad frequency range from 30-60, 118-75, 406-526, and 800-1000 MHz; fast 15 channels per second scan; and 5/10/12.5/25 kHz programmable search increments (except at 800-1000 MHz). In addition, tactile keyboard switches, scan delay, search

As yet, no callsign has been equated to Zambia nor have locations been recovered for CLP16 and CLP23.

As can be noticed from the frequency listings, the stations tend to shift a few kHz above or below the specified frequency to avoid interference.

The traffic you will see passed on the network includes cipher traffic, some PT Spanish messages and official Cuban press items.

delay/hold, priority, and internal memory battery round out this full-feature receiver.

#### EXCELLENT PERFORMER

Performance exceeds published sensitivity specification; modulation acceptance bandwidth maintains a tight  $\pm 9$  kHz, and intermod/spurious-response attenuation measures around -50 dB as determined by California State Communications Division evaluation tests.

A disturbing real-life characteristic not identified in bench tests is severe FM broadcast overloading below 175 MHz, dependent upon antenna and proximity to source. The writer found his receiver useless with an outside antenna under these conditions although 406-1000 MHz performance remained remarkably unblemished. Regency advises they have a "fix" for the defect that affects sensitivity insignificantly.

#### FUNCTIONS SERIOUSLY BLEMISHED

That was the Good News - now for the Bad News.

Product planners really blew it on this one by failing to identify U.S. frequencies in the 800 MHz band. The MX4000 rounds off entries to 25 kHz from 800-1000 MHz and must be offset downward 12.5 kHz with a shift switch to fall on assignments. The display reads the rounded frequency, forcing the user to mentally subtract to read actual frequency.

Although the offset frequencies are still receivable, the only area where U.S. frequencies read correctly is within 65 miles of the Mexican border where 25 kHz channel spacing is found.

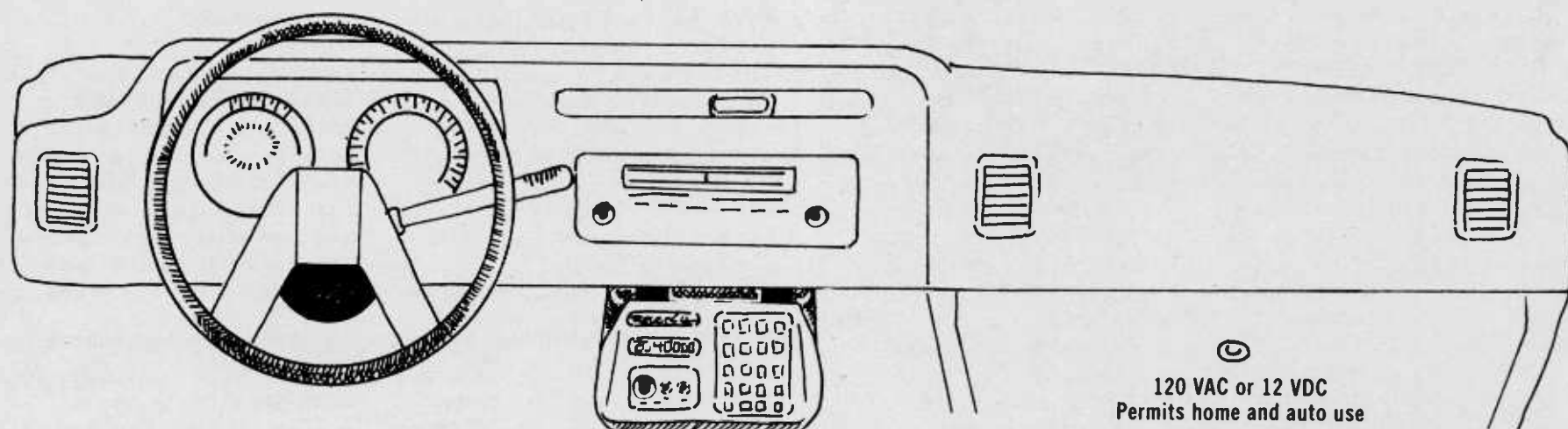
Nor will the unit program most of the 30 kHz spaced cellular mobile telephone channels that use wideband modulation. You are stuck with 25 kHz increments at 800-1000 MHz, whether in manual or search mode, and can only shift down with the offset switch to hear the assigned channels.

#### CHANNEL HOPPING

Another functional shortcoming results when receiving in scan or search

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### Regency HX-2000

Finally a hand-held programmable with the 800 MHz band! This feature-packed new entry sports 20 channels of memory, each individually selectable for AM and FM mode. Continuous frequency ranges include: 118.0-174.995, 406.0-525.9875, and 800.0-999.975 MHz. AM or FM. Selectivity is a sharp 15 kHz (-6 dB) on FM. Scan and search speed is a fast 15 channels per second. An LCD display provides accurate readout as well as status indication of control functions.

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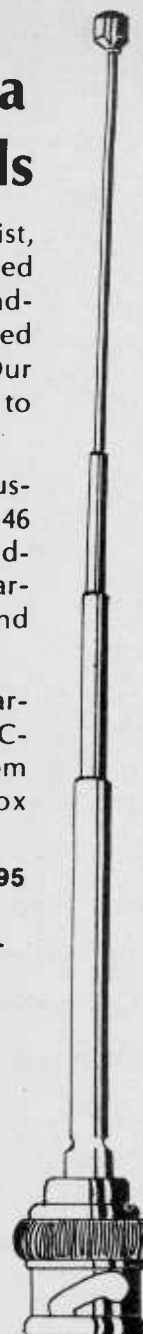
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800 MHZ cont'd

and you want to stop and lock in manual. Pushing manual advances the receiver to the NEXT channel, forcing the user to manually step forward through all 20 memory channels to get back to the beginning. No direct access to memory channels exists. This can be overcome in the scan mode by pushing PROG but that starts the channel prompt flashing on the display.

Anytime the receiver is switched from scan or search to manual, the frequency or channel prompting flashes, suggesting something is to be entered before one may continue--which, indeed, is not the case.

Display lamp illumination is so poor it is totally useless. Despite a bold, highly legible LCD display, external light will be required at night.

Audio output sets a new low for scanning receivers at 120 milliwatts, 1/4th the EIA standard for land mobile personal radio equipment. This may be adequate in some quiet environments, but can be substantially improved with a more efficient external 8 ohm speaker when increased level is required.

CONNECTORS

The MX4000's antenna connector is the phenolic-insulated Motorola auto radio type, a puzzling incongruity that has survived extinction beyond all common sense. A space was provided in the housing for an SO-239 coax connector, but it was removed because of 800 MHz sensitivity degradation according to a Regency representative.

Why a BNC connector was not used as in other modern scanners marketed by Regency drew the answer, "We don't make it, we just market it." The MX4000 is not imported from Japan's AOR as are Regency's MX5000 and MX7000; I suspect it is Azden-manufactured in Japan.

Another puzzle is identical power connectors on the rear surface, one for DC 6v charger and the other for DC 13.2v automobile power. Will anyone who mistakenly connects incorrectly let me know what happens? I'm not adventurous enough with a new radio to risk creating the acrid odor of experimentation.

Product support for the MX4000 appears to be nonexistent at present. There are no service manuals available, therefore field



service stations will not perform repairs and units must be returned to the manufacturer for attention.

OVERALL: A GOOD PRODUCT

MX4000 displays potential for industrial design awards for packaging, innovative product, and keyboard facility. The receiver

section excels at 800 MHz but needs corrective work, below 175 MHz.

Functional discipline falls short, especially in 800 MHz frequency entry, stopping on manual, direct entry, and false prompting.

It is an exceptionally good design concept, opening a new area of monitoring and system analysis.

(Robert Kelty is a Mobile Radio Consultant who uses a variety of scanners for system monitoring and signal analysis. He publishes Government Radio Systems, a comprehensive directory of California public safety systems.)

800 - 1300 MHZ LISTENING GUIDE

\* Repeater out

806 - 810	BUSINESS RADIO SERVICE Conventional systems mobile in
810 - 816	PUBLIC SAFETY RADIO SERVICE Slow growth systems mobile in
816 - 821	BUSINESS RADIO SERVICE SMR trunked systems mobile in
821 - 825	LAND MOBILE SATELLITE SERVICE mobile in
825 - 835	CELLULAR MOBILE TELEPHONES nonwireline systems mobile in
835 - 845	CELLULAR MOBILE TELEPHONES wireline systems mobile in
845 - 850	CELLULAR MOBILE TELEPHONES expansion reserve mobile in
850 - 851	RESERVED
851 - 855	* BUSINESS RADIO SERVICE Conventional systems base out
855 - 861	* PUBLIC SAFETY RADIO SERVICE Slow growth systems base out
861 - 866	* BUSINESS RADIO SERVICE trunked systems base out
866 - 870	* LAND MOBILE SATELLITE SERVICE output
870 - 890	* CELLULAR MOBILE TELEPHONES nonwireline systems base out
890 - 896	* CELLULAR MOBILE TELEPHONES wireline systems base out
896 - 902	PRIVATE LAND MOBILE RADIO SERVICE PS I T blocks mobile in
902 - 928	AMATEUR RADIO SERVICE RESERVE
928.0125 - 928.3375	DOMESTIC PUBLIC RADIO SERVICE Private multi-address systems
928.3625 - 928.8375	DOMESTIC PUBLIC RADIO SERVICE Reserved
928.8625 - 928.9875	DOMESTIC PUBLIC RADIO SERVICE Wide area paging
929.0125 - 929.7375	DOMESTIC PUBLIC RADIO SERVICE Reserved
929.7625 - 929.9875	DOMESTIC PUBLIC RADIO SERVICE Radiotelephone Utility paging
930 - 931	DOMESTIC PUBLIC RADIO SERVICE Advanced technology paging
931 - 932	DOMESTIC PUBLIC RADIO SERVICE Common carrier paging
932 - 935	GOVERNMENT PRIVATE SHARED Operational fixed systems
935 - 941	* PRIVATE LAND MOBILE RADIO SERVICE base PS I T blocks base out
941 - 944	GOVERNMENT PRIVATE SHARED Operational fixed systems

944 - 947	BROADCAST RADIO SERVICE Studio-transmitter link Intercity relay
947 - 952	BROADCAST RADIO SERVICE formerly STL IR
952.100 - 952.700	PRIVATE MICROWAVE SERVICE Omnidirectional control
952.800 - 956.100	PRIVATE MICROWAVE SERVICE Operational fixed systems
956.2625 - 956.4375	PRIVATE FIXED SERVICE signalling and control
956.500 - 959.800	PRIVATE MICROWAVE SERVICE Operational fixed systems
959.8625 - 959.9875	COMMON CARRIER RADIO SERVICE Wide area paging
960 - 1215	AVIATION SERVICES Nav aids DME
1215 - 1300	AMATEUR RADIO SERVICE Some repeaters in service

25 kHz CHANNEL SPACING > 65 miles north of Mexican border

.0125	.0375	.0625	.0875	.1125	.1375	.1625	.1875
.2125	.2375	.2625	.2875	.3125	.3375	.3625	.3875
.4125	.4375	.4625	.4875	.5125	.5375	.5625	.5875
.6125	.6375	.6625	.6875	.7125	.7375	.7625	.7875
.8125	.8375	.8625	.8875	.9125	.9375	.9625	.9875

12.5 kHz CHANNEL SPACING as proposed for future use

.0000	.0125	.0250	.0375	.0500	.0625	.0750	.0875
.1000	.1125	.1250	.1375	.1500	.1625	.1750	.1875
.2000	.2125	.2250	.2375	.2500	.2625	.2750	.2875
.3000	.3125	.3250	.3375	.3500	.3625	.3750	.3875
.4000	.4125	.4250	.4375	.4500	.4625	.4750	.4875
.5000	.5125	.5250	.5375	.5500	.5625	.5750	.5875
.6000	.6125	.6250	.6375	.6500	.6625	.6750	.6875
.7000	.7125	.7250	.7375	.7500	.7625	.7750	.7875
.8000	.8125	.8250	.8375	.8500	.8625	.8750	.8875
.9000	.9125	.9250	.9375	.9500	.9625	.9750	.9875

MEXICAN BORDER CHANNEL SPACING includes San Clemente & Tucson

.0000	.0250	.0500	.0750
.1000	.1250	.1500	.1750
.2000	.2250	.2500	.2750
.3000	.3250	.3500	.3750
.4000	.4250	.4500	.4750
.5000	.5250	.5500	.5750
.6000	.6250	.6500	.6750
.7000	.7250	.7500	.7750
.8000	.8250	.8500	.8750
.9000	.9250	.9500	.9750

CELLULAR MOBILE TELEPHONES	BASE OUTPUT FREQUENCY
870-880	333 Nonwireline channels Radiotelephone Utilities
880-890	333 Wireline channels Telephone Companies
	33 channels/mHz

NONWIRELINE BLOCKS		WIRELINE BLOCKS	
CHN	FREQ	CHN	FREQ
1	870.030	334	880.020
34	871.020	367	881.010
67	872.010	401	882.030
101	873.030	434	883.020
134	874.020	467	884.010
167	875.010	501	885.030
201	876.030	534	886.020
234	877.020	567	887.010
267	878.010	601	888.030
301	879.030	634	889.020

30 KHZ CHANNEL SPACING

870	873	876	879	882	885	888	mHz
.030	.060	.090	.120	.150	.180	.210	.240
.270	.300	.330	.360	.390	.420	.450	.480
.510	.540	.570	.600	.630	.660	.690	.720
.750	.780	.810	.840	.870	.900		
.930	.960	.990					

# VHF SKIP REPORT

by Chuck Robertson

Welcome to the July VHF Skip Report. This month we'll take a look at the 38 to 38.25 MHz radio astronomy band and the unexpected business and military transmissions found there.

Radio astronomy observations take place from about 10 MHz to just below infrared wavelengths. The lower threshold is set by the earth's ionosphere which reflects lower frequencies back into space.

In the U.S. and its possessions, only military mobile or transportable stations used for tactical and training purposes are allowed to use the 38 to 38.25 MHz band.

Other countries like Canada may assign both fixed and mobile services, including business and military.

### LIST A U.S. RADIO ASTRONOMY BANDS

25.55	-25.67
37.5	-38.25
73.00	-74.60
406.1	-410.0
608	-614
1400	-1427
1660	-1670
2655	-2700
4990	-5000
10680	-10700
15350	-15400
22210	-22500
23600	-24000
31300	-31800
51400	-54250
58200	-59000
64000	-65000
86000	-92000
105000	-116000
164000	-168000
182000	-185000
217000	-231000
265000	-275000

Observatories receiving interference from these services may contact the offending station directly and ask that they change frequencies or in some other way stop interfering with the ongoing observations. Of course, first the observatory must know who is causing the interference!

Here's a list of stations using the primary 8 meter radio astronomy band, 38-38.27 MHz.

### 800 MHZ cont'd

871	874	877			880	883	886	889	mHz
.020	.050	.080	.110	.140	.170	.200	.230	.260	.290
.320	.350	.380	.410	.440	.470	.500	.530	.560	.590
.620	.650	.680	.710	.740	.770	.800	.830	.860	.890
.920	.950	.980							
872	875	878			881	884	887		mHz
.010	.040	.070	.100	.130	.160	.190	.220	.250	.280
.310	.340	.370	.400	.430	.460	.490	.520	.550	.580
.610	.640	.670	.700	.730	.760	.790	.820	.850	.880
.910	.940	.970	.000						



by James R. Hay

This month's column will take a look at the area around India and what that part of the world has to offer the maritime listener. First from India are the following stations:

VWB Bombay Radio		
CW (kHz)		SSB (kHz)
4316	12966	8756.1
8514	17034	13128.7
8630	22551	
12710		

VWC Calcutta Radio		
CW (kHz)		SSB (kHz)
4286	12745.5	8777.8
8526		

VWM Madras Radio		
CW (kHz)		SSB (kHz)
4301	12718.5	8722
8674.4	16975	13150.4

### LIST B

All emissions are narrowband FM unless otherwise stated.

- 38.00 Newfoundland Container Lines, Ltd; 3 mobiles, 6 watts; St. Johns, Newfoundland, Canada
- 38.00 Alkali Lake Ranch, Ltd; 2 mobiles, 5 watts; Alkali Lake, British Columbia
- 38.00 Latin American business, location probably Mexico; Spanish language
- 38.00 U.S. military, Ft. Drum, Watertown, NY; used by MP jeeps; wideband FM
- 38.02 Three-tone telemetry; may be used for water or oil flow rate or pressure metering; origin is probably Latin America
- 38.02 Foothills Municipal District #31; three mobiles and base, 55 watts; XJI 401; High River, Alberta
- 38.025 Spanish language business; origin may be Argentina (Note: In Argentina and Uruguay the band segments 36.65-36.85, 41.15-41.35, and 45.65-45.85 are allocated to

Cont'd on p.32

Moving east along the Bay of Bengal, Bangladesh has two stations to offer:

S3D Chittagong Radio	
CW (kHz)	SSB (kHz)
8694	4125
13056	6215.5

Channels			
402,	404,	411,	416,
421,	601,	602,	603,
606,	801,	806,	810,
821,	827,	1202,	1205,
1208,	1221,	1223,	1230,
1603,	1617,	1622,	1628,
1632,	2202,	2207,	2214,
2217,	2219,	2223,	2233

S3E Khulna Radio	
CW (kHz)	SSB (kHz)
4231	4125
8658	4125
13024	6125.5

Channels			
413,	416,	421,	602,
604,	605,	606,	817,
821,	822,	829,	1218,
1220,	1221,	1226,	1606,
1624,	1635,	2202,	2210,
2226,	2228		

Next comes Burma which has one station: it operates only on CW.

XYR Rangoon Radio	
CW (kHz)	
4292	17189.6
8441	22375
12867	

Thailand has a few offerings:

HSA Bangkok Radio	
CW (kHz)	SSB (kHz)
8573.5	12800
8686	6215.5

Channels  
401, 605, 814

Moving back towards India, Sri Lanka has a number of stations which might prove to be of sufficient challenge to the DXer of maritime stations. Here are the Sri Lankan stations - good luck!

4PB Colombo Radio	
CW (kHz)	SSB (kHz)
8473	4390.2
12925.5	6515.4
17045.6	8751.2

All of the following stations operate CW and SSB on 4068 and 4283 kHz:

- 4ST27 Bandarawela Fisheries
- 4ST5 Batticaloa Fisheries
- 4ST41 Beruwala Fisheries
- 4ST23 Chilaw Fisheries
- 4ST2 Colombo Fisheries
- 4ST3 Galle Fisheries
- 4ST8 Jaffna Fisheries
- 4ST42 Kalmunai Fisheries
- 4ST22 Kalpitiya Fisheries
- 4ST26 Kandy Fisheries
- 4ST25 Kurunegala Fisheries

## GALAXY ELECTRONICS

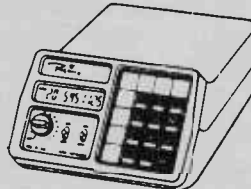
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(216) 376-2402

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20ch, covers 25-550 mhz CONTINUOUS COVERAGE, AM/NFM/WFM Modes, Scan, Delay, Priority, Search UP/DDWN, LCD Display, Dual Speeds, Lockout, Display Light, AC/DC, MUCH MORE!!!

\$374.50



### KENWOOD R-2000

100 khz-30 mhz, 10 Memoris, Store Frequency & Mode as it scans/searches. Covers AM/FM/USB/LSB/CW, Digital Readout, 3 speed band scanning & tuning, electronic band switching, MUCH MORE!!!

\$469.50

### REGENCY HX-1000

30ch, covers 28-59, 118-180, 350-515 mhz (FM). Scan, Search, Delay, Priority, LCD Display, DNE WATT AUDIO!! W/Charger, Ni-Cads, Antenna, Earphone, Case, Belt Clip.

\$239.50

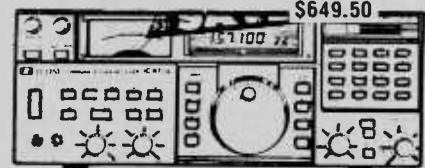


WE PRE-TEST

### ICOM ICR-71A

100 khz-30 mhz, has 32 programmable memories, covers AM/USB/LSB/CW/RTTY, Manual or Keyboard Frequency Entry, PBT, Pre-Amp, Scans, 2.3ssb Filter, 3 tuning speeds, AGC, Notch Filter, OPTIONAL REMOTE CONTROL, MDRE!!!

\$649.50



### REGENCY HX-2000

20ch, covers 118-136, 144-174, 406-512, 800-950 mhz. Has Scan, Search, Priority, LCD Display, Delay, Selectable AM/FM Modes, AC/DC, W/Charger, Ni-Cads, Antenna, Case, Belt Clip. IN STOCK!

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### SHORTWAVE RADIO

- ICOM ICR-71A 100 khz to 30 mhz, Digital, 32 Memoris. 649.50
- SONY-2010 AM/FM/Aircraft/Shortwave/Memoris. 279.50
- KENWOOD R-2000 150 khz-30 mhz, Digital, 10 Memoris. 469.50
- R-1000 200 khz-30 mhz, Digital Receiver. 389.50
- R-600 150 khz-30 mhz, Digital Receiver. 309.50
- YAESU FRG-88CD 150 khz-30 mhz, Dig/Memoris. 538.50
- BEARCAT DX-1000 10 khz-30 mhz, Dig/Memoris. 469.50
- PANASONIC RFB-300 1.6-30 mhz, AM/USB/LSB/CW Digital. 214.50
- RFB-600 1.6-30 mhz, All Mode, Digital, Memoris. 449.50
- RF-3100 31 bands, 1.6-30 mhz, Digital. 266.50
- SONY 2002 AM/FM/SW, Digital, Memoris, Scans. 219.50
- SONY AN-1 Shortwave Active Indoor Antenna. 79.50
- RADSO TAP CW/RTTY Decoder Vic-20/Comm-64. 139.50
- MFJ-959 Antenna Tuner, Pre-Amp, Dual Outlets. 89.50
- MFJ-1040 Pre-Selector, Pre-Amp, Dual Outlets. 99.50
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### SCANNERS

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- HX-2000 20ch, Prog,118-174,406-520,800-999 mhz359.50
- MX-7000 20ch, Prog,25-550 & 800-1300 mhz. 449.50
- MX-5000 20ch, Prog,25-550 mhz Straight Thru. 374.50
- MX-4000 20ch,30-59,118-174,406-525,800-999 mhz409.50
- MX-3000 30ch, Prog,30-50,138-174,406-512 mhz219.50
- Z-60 60ch, 30-50,88-108,118-174,406-512 mhz. 274.50
- Z-30 30ch, Prog,30-50,144-174,406-512 mhz. 179.50
- Z-10 10ch, Prog,30-50,144-174,406-512 mhz. 159.50
- D-310 30ch, Prog,30-50,140-174,406-512 mhz. 149.50
- Q-810 50ch, 30-50,88-108,118-174,406-512 mhz214.50
- BEARCAT BC-100 16ch, Prog,30-50,138-174,406-512 mhz. 229.50
- BC-201 16ch, 30-50,118-136,138-174,406-512 mhz. 199.50
- BC-210 18ch, Prog,30-50,144-174,421-512 mhz. 224.50
- BC-250 50ch, Prog,30-50,144-174,420-512 mhz. 249.50
- BC-260 16ch, Prog,30-50,138-174,406-512 mhz. 249.50
- BC-300 50ch, 30-50,118-136,144-174,421-512 mhz. 359.50
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4ST7 Mullitivu Fisheries  
 4ST9 Pesali Fisheries  
 4ST4 Tangalle Fisheries  
 4ST6 Trincomalee Fisheries

While these stations are quite far away, and many of them have lower transmitter powers, it is still possible to hear them from time to time, as well as the ships communicating with them. The stations listed this month should provide an interesting challenge, and it is hoped that some of you will give them a try.

As always, any correspondence for this column should be sent to me directly at the following address: James R. Hay, 141 St. John's Blvd., Pointe Claire, P.Q., Canada, H9S 4Z2.

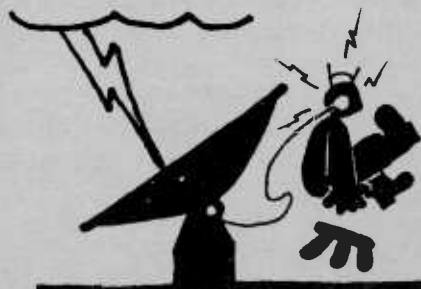
### WOM Authorized New Coastal Frequencies

Coastal station WOM in Ft. Lauderdale has been granted permission to open up some new spectrum for ship to shore communications according to MT reader P. Mohazzabi of Kalamazoo, Michigan.

He has reported that WOM would not comment on the authorization, but that the FCC admitted licensing the common carrier on the following frequencies (kHz):

COAST	SHIP
4538.0	5088.0
4535.0	5085.0
4532.0	5082.0
4529.0	5079.0
7398.0	7980.5
7395.0	7977.5
7392.2	7974.5

## SIGNALS FROM SPACE



by Larry Van Horn

A recognized expert on space intelligence, Jeffrey Richelson, has released a paper on U.S. space intelligence. The paper was presented at a recent International Studies Association conference in Washington, D.C. Richelson is on the faculty of American University in Washington. The paper adds insight into the U.S. space intelligence gathering satellites and was unclassified:

"The U.S. operates fourth-generation area surveillance imaging satellites - the KH-9 'Big Bird' - and third generation 'close look' KH-8 satellites, as well as a first generation real-time digital imaging satellite, the KH-11," said Richelson. "KH-9's weigh 30,000 pounds, are 50 feet long and 10 feet wide and carry four returnable film capsules."

The KH-9's are launched into sun-synchronous polar orbits with apogee/perigee of 155/100 miles. The KH-9 repeats its ground track every 3.5 days; the KH-8, the oldest U.S. imaging satellite, offers the greatest resolution, flying 80-day missions with apogee/perigees ranging from 215 to 77 miles. This satellite returns film in two reentry capsules.

Richelson continued, "The KH-11, first flown in December 1976, transmits

real-time imagery to two 'probable' locations - a Ft. Belvoir, Virginia, facility (publicly identified as the Defense Communications Electronics Evaluation and Testing activity) and the Defense Special Missile and Astronautics Center, Ft. Meade, Maryland (also the site of the NSA)."

He said, "The satellite relays its data through the Satellite Data System, although the KH-11 can also use the Tracking and Data Relay Satellite (TDRS). With a lifetime on the first system a record-breaking 770 days and subsequent flights of 760 and 555 days, the KH-11 is the longest-lived photo/imaging system." Richelson added that the KH-11 has frequently been used and repositioned to cover crisis areas.

According to Richelson, follow-ons to the KH-8, 9 and 11 will include the KH-12, a 32,000 pound satellite with resolution equal to current KH-8's that is scheduled for early 1986 launch. Shuttles launching the KH-12 would also retrieve its predecessors for refurbishment on the ground. Plans for the Super-KH and KH-X were cancelled, he says, due to belated realization of the enormous processing load its sensors would generate.

Richelson said another successor is an imaging radar satellite, planned for

coverage of Soviet and Warsaw pact targets. It will also use the TDRSS (Tracking & Data Relay Satellite System) which has a White Sands, New Mexico, ground site. Richelson said such satellites go back to a 1962 Air Force proposal for a recoverable payload satellite with a high resolution radar for ground mapping.

Richelson said signals intelligence (SIGINT) can also involve space sensors. He includes in this category RADINT (radar intelligence) for sensing both imaging and non-imaging radars; TELINT (telemetry intelligence); FISINT (foreign instrumentation signals intelligence), including telemetry, beaconing, electronic interrogators, video data links, and tracking, fusing, aiming and command systems.

Richelson also mentioned two other areas listed under a proposed 1980 NSA charter: "nonimaging infrared (IR), involving remote sensing, and coherent light signals," apparently a reference to laser communications, including blue-green laser satellites for communications with submarines.

Richelson says the U.S. operates two classes of SIGINT satellites. One is in geosynchronous orbit, including the TRW-made Rhyolite which has ground stations at Buckley Field, Colorado, and Alice Springs, Australia. This satellite can be targeted against telemetry, C<sup>3</sup>, radar, and telephonic emitters across the VHF, UHF, and microwave spectrum.

Richelson, quoting Australian analysts, says the CIA-operated Rhyolite can also intercept INTELSAT commercial traffic, as well as VHF-UHF traffic between air controllers and aircraft.

Richelson says its primary mission, however, is TELINT. The Soviet's missile tests use 50 FM telemetry channels ranging from 150 MHz to 3 GHz. One pair of Rhyolites is stationed over the Horn of Africa to catch telemetry from Soviet launches from Tyuratam toward the Kamchatka impact zone, with another pair further east to catch launches out of Plesetsk.

Another SIGINT satellite, apparently the geosynchronous Chalet, was reported in 1979 to be undergoing modifications to give it TELINT capabilities. This would give the U.S. the ability to cover Soviet missile telemetry under the SALT 2 agreements. Richelson says that SIGINT capability may also be a secondary role for the Satellite Data Sys-

tem (SDS) relay class. Yet another SIGINT may be a revised version of the ARGUS, which Richelson says may already have been launched--apparently a reference to a well-publicized January 23 launch of shuttle mission 51-C.

(Next month, the second and final installment on U.S. milsat as reported by Jeffrey Richelson--the Navy's ocean surveillance satellites and space nuclear detection.)

● The latest U.S. Geostationary Spacecraft status report from NOAA/NESS has crossed my desk and I will share it with you.

GOES-EAST (GOES-5): Direct readout of stretched VISSR data (from GOES-6) is on 1687.1 MHz and WEFAX is on 1691.0 MHz. The spacecraft is located at 76° west and its inclination angle is near zero.

GOES-CENTRAL (GOES-2) - WEFAX services are on 1691.0 MHz. The spacecraft is located at 112.5° W and its inclination angle is 3.2°. There is not sufficient fuel remaining to correct this inclination angle and the angle should increase with time.

GOES-WEST (GOES-3) - Direct readout of stretched VISSR data (from GOES-6) is on 1687.1 MHz and WEFAX is on 1691.0 MHz. The spacecraft is located at 136° W and its inclination angle is 2.0°.

GOES-6 is the imaging spacecraft. There is no WEFAX or stretched VISSR data services on this spacecraft. Stretched VISSR data from GOES-6 is relayed through GOES-5 in the east and GOES-3 in the west. The spacecraft is located at 108° W and its inclination angle is near zero.

GOES-4 is not operational. The spacecraft is located at 139.5° W. Starting April 17th, GOES-4 commenced a move westward through the Pacific and Indian Oceans, across Africa to a position between 10° and 15° W. By the time this column is in your hands GOES-4 should be on its new geostationary position.

The spacecraft will be used to support the data collection services of the European Space Agency that is normally relayed via METEOSAT. However, METEOSAT-1 does not have sufficient fuel to maintain position and GEOS-4 will temporarily replace it until another METEOSAT spacecraft is launched in 1986. It will be controlled from the Wallops CDA.

GOES-1 is not opera-



**SIGNALS FROM SPACE cont'd**

tional. It is located at 126° W with an inclination angle of 5.2°. Provided there is enough fuel on board, plans are to lift the spacecraft out of geostationary orbit sometime later this year to make way for newly launched spacecraft. The next GOES spacecraft is scheduled for launch in late 1985 or early 1986.

• While copying Miami Metro RTTY broadcast recently, I noted that APT prediction bulletins for NOAA 6/9 are being broadcast. I noted these bulletins around 1800 UTC. Those of you who need up-to-date prediction bulletins might want to copy WBR70's broadcast using 850 Hz shift, 100 wpm normal sense on the following frequencies: 3235, 4061, 5925, 8105, 8130, 8140, 10950, 12175, 13624, 14395, 14853, 16440 and 18765 kHz.

In addition to the latest prediction bulletins the following frequency information was given for the recently launched NOAA-9 spacecraft:

APT 137.62 MHz  
HRPT 1707.0 MHz  
Beacon DSB 137.77 MHz

• John Klaff in Connecticut has sent along a nice list of UHF aircraft frequencies for MT readers in CT/NY/MA. John is using an MX5000 scanner and a Channel Master antenna mounted on his roof. Thanks for the fine list, John.

**Sikorsky Aircraft - Stratford, CT**  
233.0, 275.2, 305.8 (Tower), 314.6, 345.4, 359.4, 380.4, 382.6, 383.4, and 257.8 (Tower)

**Orange, CT, Air National Guard**  
238.7, 251.25, 259.4 ("foot-rope"), 267.8, 275.9, 283.8, 301.6, 303.0, 314.2, 340.8

**United States Navy, New London, CT**  
266.7, 275.7, 283.4, 284.4, 300.3, 320.5, 336.3, 348.1

**Syracuse, NY, Air Force (Syracuse Hancock)**  
228.7 ("Huntress"), 258.0, 261.0, 262.0, 266.5, 278.4, 288.0, 297.7, 308.0, 321.2, 325.6 ("Target Ops"), 360.8 ("Incognito"-NORAD), 364.2 ("Incognito"-NORAD), 369.9

**Plattsburg, NY, Air Force Base**  
239.8 Metro  
255.6 Tower  
275.8 Ground  
318.0 Refueling ops

**United States Coast Guard**  
237.9 Search & rescue  
282.8 Nationwide search & rescue  
381.7 USCG aviation  
381.8 USCG aviation  
383.9 USCG aviation

**New York Air Force**  
251.9 Suffolk City ANG-rescue ops  
287.5 "  
242.4 Long Island ANG  
340.4 New York  
355.6 New York  
261.9 New York ANG  
379.5 New York ANG-"Carnival"  
321.7 West Point, NY, aviation

**Miscellaneous**  
349.7 CT ANG command post  
269.2 FAA ATC/Shelton, CT  
317.7 "  
386.8 Andrews AFB Command Post  
371.8 "  
351.2 USAF Reserves  
296.0 Army Medivac helicopters  
268.8 Calverton/Bethpage, NY-flight test  
306.6 USAF "TAC"  
255.0 USN "Giant Killer"  
397.1 Hanscom Field, MA, Command Post  
233.7 USN "Giant Killer"  
225.7 Lakehurst, NJ, "VIP" aircraft  
255.7 Lakehurst, NJ, Army ops  
376.0 USAF "dispatchers"  
353.9 USCG enforcement ops  
321.7 Stewart Field, NJ, Army ops  
374.8 Cape May, NJ, USCG  
261.7 Fleetsatcom  
240.270 "

**Nationwide Listings**  
344.6 USAF weather  
311.0 USAF SAC  
321.0 USAF SAC  
243.0 Emergency/distress  
342.5 USAF weather  
319.4 USAF MAC  
241.0 Army national guard  
282.8 USCG search & rescue  
252.1 USAF refueling squadrons  
292.1 USAF TAC  
381.3 USAF TAC "Golden"  
275.2 USAF weather  
242.2 USAF TAC  
364.2 NORAD  
236.6 USAF military control towers  
257.8 Military control towers  
375.7 USAF SAC  
378.9 USAF TAC  
282.5 USAF TAC  
237.9 USCG search & rescue  
372.2 USAF dispatchers  
340.2 USN towers  
360.2 "  
348.6 Military control towers  
255.4 FAA flight service stations  
252.8 USAF TAC training  
272.7 FAA flight service stations  
385.25 USN air-to-air discrete

• The Navy's Fleet Area Control and Surveillance Facility (FACSFAC) mission is to provide scheduling, communications links, control containment, coordination of search and rescue, and a variety of other services to all military and civil aircraft operating in warning areas and off-shore operating areas (OPAREAS) along the U.S. east, west and Gulf coast and around Hawaii.

Technical control of platforms operating within warning areas/OPAREAS is accomplished by radar, processing equipment, displays, and various communications links. The facilities are operational in all weather conditions and support day and night operations.

Special mission support includes: positioning aircraft for exercises, research, development testing and evaluation support, event recording, event sequencing, and back-up shore based command support.

The following FACSFAC are in use with frequencies as illustrated:

**FACSFAC Vacapes, VA** (Call sign "Giant Killer")  
127.650 Arr/Dep, 233.7 Arr, 350.0 Dep for areas W-50, W-72, W-110, W-386, W-387  
Arr/Dep 135.875, 251.6, 310.1 for area W-122  
Arr/Dep 135.725, 249.8, 255.0 for areas W-107 and W-108  
Arr/Dep 135.225, 338.1, 305.0 for areas W-105 and W-106

HF frequencies are 2252 and 4373 USB (KHz)

**FACSFAC Jacksonville, FL** (Call sign "Sea Lord")  
Sea Lord (pri)- 120.95, 257.6  
Jacksonville (sec) - 134.65, 284.5  
Beauford (sec) - 135.925, 313.7  
Patrick (sec) - 135.825, 369.9  
ATIS - 265.2  
HF - 3130, 6723, 6742, 11252 USB (kHz)

**FACSFAC Pensacola, FL** (Call sign "Seabreeze")  
313.2, 118.425, 275.6, 303.4, 280.7, 383.8, 274.2, 306.8, 346.5, 353.2, 385.2, 382.0, 362.8 MHz and 6835 kHz

**FACSFAC San Diego, CA** (Call sign "Beaver")  
VFR Arr/Dep 301.1(pri)  
289.9, 285.7, 120.85  
IFR Arr/Dep 314.7, 266.9, 118.65, 272.6, 273.1, 308.1, 315.3, 344.1 354.0, 376.8 MHz and 6723 kHz

• I would like to remind MT readers that the new Communications Satellites

can be ordered directly from Grove Enterprises or your local Grove distributor. If you would like to contribute to Signals from Space, send your contributions to SIGNALS FROM SPACE, 160 Lester Drive, Orange Park, FL 32073. If a personal reply is desired please include a #10 SASE.

**Hams to Rebroadcast Space Shuttle Communications**

Shortwave listeners, scanner enthusiasts and amateur radio operators will be tuning in this month when a space shuttle astronaut operates an amateur radio station on board CHALLENGER. Plans now call for Tony England, W00RE to transmit

**HEAR THE NEW BANDS ON YOUR SCANNER**

Converts out-of-band signals to vhf or uhf scanner bands. Cables provided. Simply plug into scanner.



**5 MODELS AVAILABLE:**  
806-894 MHz New Land Mobile Band  
400-420 MHz Federal Government & FBI  
240-270 MHz Navy/Air Force Satellites  
135-144 MHz Weather Satellites  
72-76 MHz Industrial & Radio Control  
**ONLY \$88 + \$3 S & H**

**DIG OUT WEAK SIGNALS**

Get clearer distant reception using ACT-1 POWER ANTENNA instead of scanner's built-in whip. This compact 21 - inch antenna has integral preamplifier, gives up to 15 dB gain (30 times as strong), plus all the advantages of a high antenna away from noise pickup. Often outperforms much larger indoor antennas! Easy to install on any vertical surface indoors or out. No mast required. Covers all bands: 30 - 900 MHz. Complete with 50 ft. cable, ready to plug into scanner.

**ACT-1 POWER ANTENNA ONLY \$79 + \$3.40 S&H**

**REJECT SCANNER INTERFERENCE BOOST DESIRED SIGNALS**



Do away with i-f feedthrough, images, cross-modulation, and other interference. Tunable 3-band VHF trap plus fixed i-f trap eliminate undesired signals. Low-noise preamp digs weak signals out of the noise. Adjustable-gain preamp can be used alone or with traps, giving you complete signal control freedom for 110-960 MHz bands.

**SA-1 SCANNER AMPLIFIER ONLY \$79 + \$3.00 S&H**

• Order by phone or mail. Use VISA or MC, check, COD. Or send \$1 for complete catalog by return mail.

**hamtronics, inc.**

65-K MOUL ROAD  
HILTON NY 14468-9535  
Phone: 716-392-9430

**SPACE SHUTTLE cont'd**

slow-scan television pictures in an automatic mode when he's busy with shuttle experiments, and also to try and contact earthbound hams via two-way voice communications.

The NASA/Goddard Amateur Radio Club so far has the most comprehensive retransmission schedule proposed. Listen for WA3NAN in Greenbelt, Maryland on:

- (MHz)
- 3.860 SSB (evening/nite)
- 7.185 SSB (daytime)
- 14.295 SSB (continuous)

- 21.390 SSB (as available)
- 147.450 FM (continuous)

The NASA/JPL Amateur Radio Club will retransmit space shuttle audio to the Los Angeles/Pasadena region on:

- 224.040 MHz FM
- 145.460 MHz FM

The Marshall Space Flight Center Amateur Club will operate a VHF station serving greater Huntsville, Alabama on:

- 145.430 MHz FM

For those in the San Francisco Bay area, NASA/AIMS Amateurs offer:

- 145.580 MHz FM

## BEHIND THE DIALS

### The J.I.L.C. SX-400 System

After several months of anticipation, the SX-400 scanner and accessories are now available. A few months back we took an overall look at the basic receiver mainframe.

#### THE SX-400

The scanner itself is somewhat of an enigma; while offering features not available on competitive products, it does so awkwardly. For example, the frequency increments in the 180-520 MHz range may be either 10 or 12.5 kHz in five factory selected blocks; unfortunately, they would not be the same blocks if user selected. The same shortcoming applies to the 5 or 7.5 kHz one-only choice between 26 and 180 MHz (seven blocks).

While a data interface is available we are advised by the distributor that it must be specially ordered and there is a wait of many months, and the computer

must be the offshore NEC 8801A, not readily available here.

Sensitivity is very good (0.5 microvolt) and adjacent channel selectivity is excellent (60 dB); image rejection is above average (40-50 dB).

Scan rate is '8 per second and search rate is 16 per second; the delay time is infinitely adjustable from 0 to 4 seconds. The florescent display provides excellent visibility.

Power required is 12 VDC; for 120 VAC operation an optional P-1A power supply must be purchased. At first power-up it is necessary to open a front panel compartment and reset the microprocessor for the 20 channel memory.

Modes receivable are AM and wide or narrow FM; when using the SX-400 with the optional RF-1030 100 kHz-30

## NEW ARRIVALS

### NEW SCANNERS FROM BEARCAT, REGENCY AND RADIO SHACK

The Consumer Electronics Show in Chicago usually holds a few surprises; among them this June were several new programmable scanners from Uniden (Bearcat) and Regency.

#### BEARCAT

**BC-50XL** Hand held, LCD display, 10 memory channels, FM mode only, 29-54, 136-174 & 406-512 MHz (available Sept; suggested retail \$189.95)

**BC-175XL** Base unit, 16 channels, scan & search speed of 5 or 15 increments/sec, 29-54, 118-174 & 406-512 MHz (Sept; \$249.95)

**BC-210XW** Base or mobile, similar to former BC-210XL, but with weather channels added to ROM memory (July; \$339.95)

MHz converter, SSB and CW modes may be received over the entire system frequency range.

While the S meter is a welcome addition to a scanner, our test unit provided ambiguous readings; sometimes stronger signals made it read higher, sometimes lower when it was near the top of the scale.

Memory backup is provided for up to 36 hours by a capacitor; thus, no memory battery change is ever necessary. A 12 hour AM/PM clock is included, but not 24-hour. Separate squelch controls are provided for wide and narrow selectivity, and a mute switch eliminates background noise when no modulation is present on a detected carrier.

An audio noise limiter may be switched in to help reduce electrical pulse noise. An RF attenuator switch may be used to reduce signal overload in metropolitan areas.

I.F. outputs (10.7 MHz and 455 kHz) are available on the rear apron in case the user has access to appropriate accessories which can be used with the receiver, none of which is available from J.I.L.C.

#### THE CONVERTERS

All converters may be connected together and controlled by the external NEC computer or manually by pushbuttons. Each requires a 12-volt power supply, but the P-1A cable will have to be cut and spliced to accommodate the accessories since there are no provisions for powering additional equip-

**BC-800XLT** Base or mobile, usual high, low, UHF coverage plus 800 MHz cellular band (August; \$499.95)

#### REGENCY

**R-1060** Desk top unit, 10 channels, 30-50, 144-174 and 440-512 MHz

#### RADIO SHACK

A low-cost hand-held scanner can be expected from Tandy with normal low, high, UHF coverage but no aircraft.

**AND ONE NEW SATELLITE TV TERMINAL**-Tandy is expected to enter the satellite TVRO foray this fall with an under \$2000 system. Anticipated for years, the Radio Shack earth terminal is expected to boast a variety of unique features.

MT will announce details on these and other new products as they become available.

Although attaching the converters to the SX-400 mainframe receiver will extend the receivable frequency range, the frequency display will remain the same; thus, mental arithmetic will be required to add or subtract the amount of IF required by each converter band.

RF interconnect cables are included with each converter and separate rear-apron connectors allow common interconnection as well as separate antenna inputs for various frequency ranges.

One one converter may be attached at a time to the SX-400 unless the optional ACB-300 antenna control box is also purchased.

Frequency ranges for the converters are as follows:

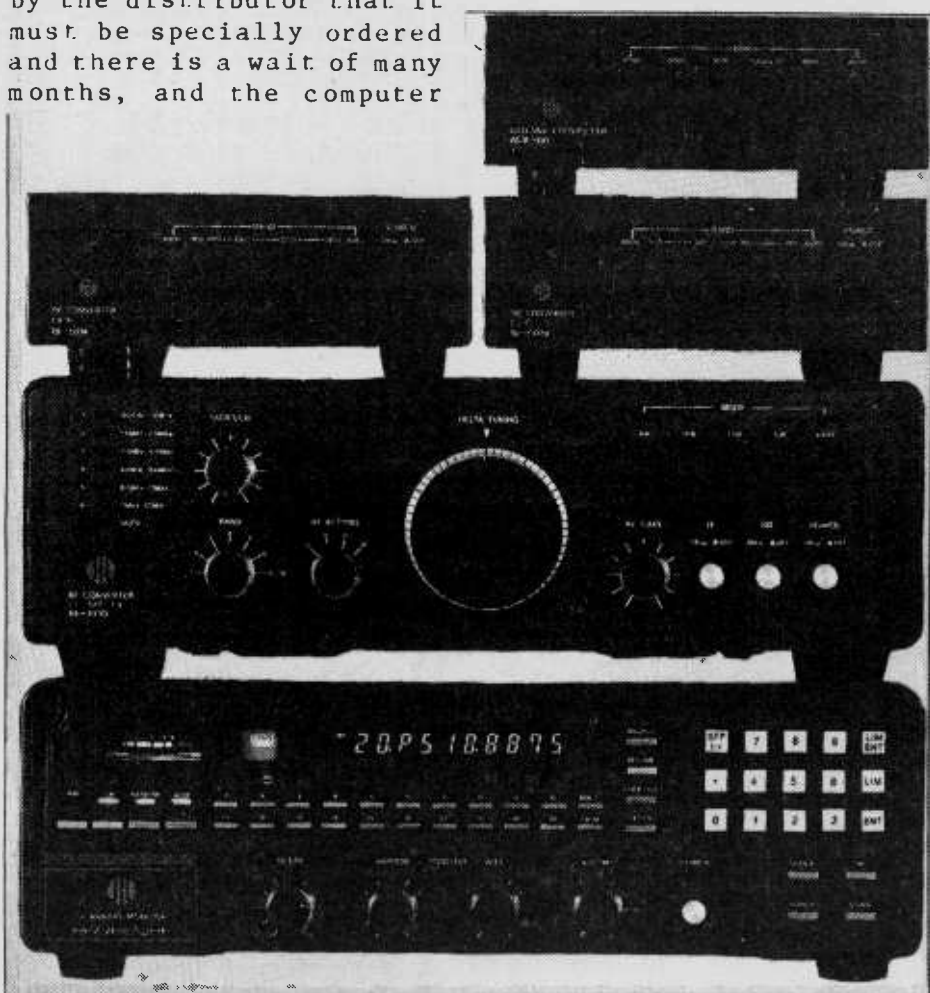
**RF-1030** 100 kHz-30 MHz in six switched increments; 40 MHz offset from SX-400 dial reading

**RF-5080** 500-800 MHz in three switched increments; 300/400 MHz offsets

**RF-8014** 800-1400 MHz in three switched increments; 500/700/900 MHz offsets

J.I.L.C. scanners and accessories are now available from Grove Enterprises as the following prices which include shipping (accessories must be purchased with SX-400 for free shipping).

- SX-200 scanner \$179.95
- SX-400 scanner \$499
- RF-1030 converter \$268.90
- RF-5080 converter \$223.90
- RF-8014 converter \$233.90
- P-1A AC adaptor \$33.90
- ACB-300 switcher \$83.90



## CLUB CORNER

**Paul Swearingen**  
**P.O. Box 4812**  
**Panorama City, CA 91412**

Club conventions seem to be the main topic in bulletins as many clubs make final plans for their annual get-togethers starting in July this year and running through early autumn. I plan to make at least one myself, and maybe even more if time and my checkbook permit me. I hope to be able to meet many of you this summer!

Preregistration and hotel reservations are recommended for the ANARC convention (July 19-21) in Milwaukee. It promises to be a first-rate affair. Clayton Howard, formerly of HCJB, will be the banquet speaker, and joining him as seminar speakers will be other well-known radio hobbyists. Bob Grove has had to cancel his plans to attend due to a family wedding.

The convention site is within walking distance of the Milwaukee airport, restaurants, and other attractions. Send an SASE (39 cents) to ANARCON '85 Committee - P.O. Box 24 - Cambridge, WI 53523-0024 for information, including that for equipment dealers. Perhaps I'll bump into you there!

The host club of the ANARC convention, the National Radio Club, will hold its own convention over Labor Day Weekend (Sept. 6-8) in Portsmouth, RI. Send your SASE to Craig Healy - 66 Cove St. - Pawtucket, RI 02861.

As E-skip heats up this month, the FM and TV DX'ers of WTFDA are making plans for their convention in New Orleans August 2-4. One of

the highlights of the week-end will be a tour of the WRNO facilities. If you'd like more info, send an SASE to Ron LeBlanc - 4052 Lemans Drive - Marrero, LA 70072.

IRCA's convention will now be held in Portland August 23-25, and an SASE to Bill Block - c/o Byers Photo - 6955 Southwest Sandburg St. - Portland, OR 97223 will get you more details.

CRRRL '85 for Canadian radio amateurs will take place Sept. 27-29 in London, ON. Send an envelope and an IRC (or Canadian postage) to Box 73 - Hyde Park, Ontario N0M 1Z0 and they'll send more info to you.

Southern California DX'ers will hold a quarterly meeting October 19 from 10am-2pm at Village View School Auditorium - 5631 Sisson Drive - Huntington Beach, CA. Don Schmidt will send you details in your SASE: 3809 Rose Ave. - Long Beach, CA 90807.

The Ontario DX Association convention will be in Scarborough, ON, October 19-20. Send for more information from ODXA at 3 Camrose Crescent - Scarborough, ON, Canada M1L 2B5, and don't forget that IRC.

Members of the All-Ohio Scanner Club have tentatively set August 3 as the date for a get-together, pot-luck and family style, somewhere in the Columbus area. They'll send you the final word if you send them an SASE. Address it to AOSC - 1043 Princewood Avenue - Dayton, OH 45429.

I might mention that I've never attended a DX'ers

GTG which turned away non-members; in fact, they welcome them with open arms (and then try to sign them up, hi). Don't hesitate to drop in if a convention is in your area and you don't belong to the particular club.

DX'ing is like music, the universal language, in that DX'ers from any part of the spectrum have a common bond and point of conversation. Sometimes they even talk about other things! And even the "dullest" convention is great fun. Take a little time off this year and attend a GTG. You won't regret it.

In that same friendly spirit that unites DX'ers, the May 1985 WTFDA "VHF-UHF Digest" listed the addresses of a number of regional clubs, some of which I've already profiled in this column. They're worth reprinting and thanks, Steven Sprachman, for including them in your Update column:

Michigan Area Radio  
 Enthusiasts  
 24500 Union  
 Dearborn, MI 43124

Austin Area Radio  
 Listeners Club  
 P.O. Box 5053  
 Austin, TX 78753

Minnesota DX Club  
 5212 Drew Ave. So.  
 Minneapolis, MN 55410

Central Maryland DX  
 Association  
 726 S. Clinton St.  
 Baltimore, MD 21224

Miami Valley DX Club  
 4666 Larkhall Lane  
 Columbus, OH 43229

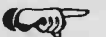
Southern California  
 Area DX'ers  
 3809 Rose Avenue  
 Long Beach, CA 90807

Washington Area DX  
 Association  
 606 Forest Glen Rd.  
 Silver Spring, MD 20901

And Steven reminds us of the RCMA Chicago summer field outing August 18, with Ed Sirovy - 311 S. Williams St. - Westmont, IL 60559 as the contact person.

Dave Browne's column, "News and Notes," in the May ANARC Newsletter, mentions a new club forming in central Florida around Tampa. For details, send your SASE to Dave Sharp - 17602 Meadowbridge - Lutz, FL 33549.

The World DX Club, based in England, has reduced their U.S. dues to \$14.00 (airmail) and \$8.00 (surface). Send your dues to



## WHY?why?WHY?why?WHY?why?

by Bob Grove

A year ago, MT reader Don deNeuf wrote an interesting article entitled, "Who Decided and Why?". In it several questions were asked in an attempt to find the origins of a number of "standard" specifications. None was answered.

Let's take a look at an expanded list of these numbers which we take for granted and see whether any of our newer readers in the growing list of MT subscribers has some inside information to share.

Why were phonograph turntable speeds set at 33-1/3, 45 and 78 RPM?

Why were tape recorder drives set at 3-3/4, 7-1/2 and 15 IPS?

Why was motion picture film set at 8, 16 and 35 mm?

Why is the standard worldwide AC line frequency 50 or 60 Hz?

Why is line voltage typically 120 or 240?

Why are standard U.W. television pictures composed of 525 lines?

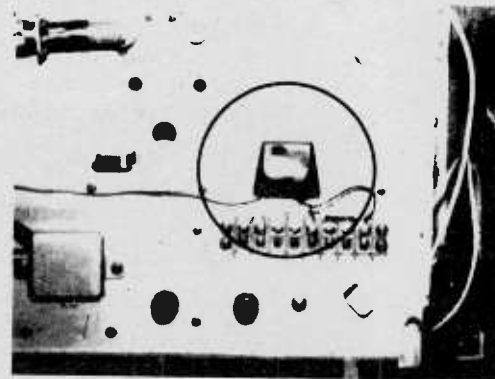
Why was 500 kHz chosen as the worldwide marine distress frequency?

Why are 50, 72 and 300 ohms selected as standard antenna matching impedances?

Why is the commercial motion picture frame rate 24 per second?

The first entry with all correct answers, or the closest to being correct, will receive a free book (my choice!) from the infamous Grove library as well as revel in the glamour of seeing his name in real print!

## ATTENTION R390 AND 390A OWNERS



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THIS ADAPTER WILL INCREASE THE CAPABILITY OF YOUR RECEIVER SO YOU CAN RECEIVE SSB, CW, AND RTTY WITHOUT DISTORTION.

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- Completely sealed
- Money back guarantee

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 963 Birch Bay Lynden Road  
 Lynden, WA 98264  
 (206) 354-5884



the new North American rep, Richard D'Angelo - 2216 Burkey Drive - Wyomissing, PA 19610.

As I don't receive bulletins from all clubs, I may have missed some GTG's. I do appreciate the bulletins sent to me gratis by club presidents; most of these I pass along to a foreign DX club, many members of which can't afford to pay the dues of their own club, let alone acquire bulletins from North American clubs. I've also received some donations of recent WRTH's for them, which have been appreciated.

Finally, even the cancelled stamps on correspondence to me go to a handicapped DX'er. It's all part of that friendly DX spirit, and I hope it grows to help unite all the factions to a true world community some day.

One of the topics of discussion this previous year among National Radio Club members has dealt with disposal of collections of verification letters, tapes, and radio equipment after the death of a member who may have spent decades in accumulating these items, only to see them tossed out into the garbage by a family member who fails to appreciate their historical value.

Some members subsequently have included in their will specific instructions as to what should be done with items. I've specified in my will, for example, that most of my collection should be donated to a certain club for dispersion at their discretion.

Although an uncomplicated will drawn up by an attorney should cost under \$100, some states have standard forms which are acceptable, as are holographic (handwritten) wills in some states (be careful; improper working may invalidate your intended provisions).

Lest you think I am getting a little morbid as I begin my second year of editing this column...I've seen the collections of a close personal friend discarded by family members. I would hope that individuals who care what happens to their collections would make plans for the inevitable.

And while I'm exploring this vein...quite a number of small (and large) clubs are tied very closely to one individual. What happens to the club if this person should become incapacitated

### Tesla Rides Again

Echoes of Nikola Tesla's giant electric discharges are still heard in lecture halls nearly a century after his experiments in high voltage RF currents were conducted.

That Tesla was an eccentric genius, there is little doubt; his demonstrations in which he lighted banks of incandescent lamps tens of miles away from his giant transmitting antennas are still legend.

It is understandable that such dramatic demonstrations would build quite a following and the present-day Tesla Society boasts of a very active organization.

This July 6th and second annual meeting of the "Tesla Unconvention" will be held at Gavilan College in Santa Teresa, California. Professional papers and live demonstrations of Tesla-type generators should make for an interesting day!

For further information, contact Pete Lefferts, 1640 Decker Avenue, San Martin, CA 95046 or call him at 408-683-4317.

or die? In some cases, the club expires, also.

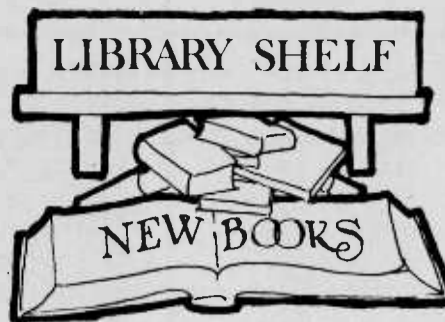
Club members might do well to make plans for orderly transition of club activities. I find it sad that such a large organization as the International DX Club of San Diego should stop cold upon the death of its founder and bulletin publisher, Larry Brookwell.

#### THINGS I LIKE:

I like the basic setup of the National Radio Club, which can best be described as a benevolent-dictatorship-by-committee; the bulletin publisher directs the activities of column editors and they, plus the club treasurer, keep things orderly. The sudden demise of a column editor would not mean the end of that column, as volunteers are always waiting in the wings to take over responsibilities when they are needed.

Quite a few new columns have come into being in the past two years. Finally, a friendly give-and-take spirit pervades each bulletin, with opinions and counter-opinions freely offered in an effort to improve the club. Egotism is almost non-existent, making the NRC a really fun club to belong to.

That's it for this issue. Remember, my deadline for material is the tenth of each month; the deadline for the September issue is July 10. 73.



**THE ILLUSTRATED DICTIONARY OF ELECTRONICS** Third edition by Rufus P. Turner and Stan Gibilisco (7" x 9", 596 pages, paperback; #1866; \$21.95 from TAB Books, P.O. Box 40, Dept. MT, Blue Ridge Summit, PA 17214).

The names Turner and Gibilisco have become synonymous with expertise in electronics; their newest contribution in defining the art is most welcome.

It is often difficult to find a comprehensive reference which adequately defines a new term; this one does it most authoritatively.

A dictionary in the truest sense, the new TAB offering is well illustrated to help punctuate many of the definitions. Special data and conversion tables are listed in the back along with an exhaustive section showing symbols found on schematic diagrams.

With over 27,000 entries, it should take any reader quite a while to think up a legitimate electronic term that ISN'T in this reference compendium!

**SCAN AMERICA'S TRAVELER'S FREQUENCY DIRECTORY** (5" x 8", 50 pages, paperback; available from Scan America, P.O. Box 292711, Dept. MT, Kettering, OH 45429)

If you travel the interstates with a scanner in your car, this handy new VHF/UHF directory is handy to have in your glove compartment.

With listings for all fifty states, the directory concentrates on state law enforcement agencies likely to be heard from the major interstates and roadways.

Agencies are subdivided into zones and units, with typical assignments (aircraft radar, investigative, etc.) indicated as applicable. Many state ten codes are included.

**IC MASTER** published by Hearst Business Publishing, 645 Stewart Avenue, Dept. MT, Garden City, NY 11530 (Two volumes, 8-1/2" x 11", 5294 pages, hardbound)

If you are interested in following the marketplace in state-of-the-art integrated circuits, the IC MASTER is the penultimate

reference. Design engineers utilize this, massive reference set extensively, deriving answers to their complex problems easily.

The volumes are basically divided into digital and analog devices, with subheadings including microprocessors, microcomputers, alternate sources, interface, memory, and custom/semicustom chips.

Cross referencing by manufacturers/distributors, part number and product is included with an extensive index of application notes. The alternate source section is the world's largest with over 65,000 entries.

While the newcomer to this directory is tempted to simply walk through the pages and be awestruck by the contents, the set is actually much easier than that to use. Simply envision the parameters required for the chip and consult the opening pages of the appropriate category.

For example, if you want a 5-watt audio amplifier for a consumer application, a rapid thumbing through those pages reveals dozens of prospects from National, Hitachi, Motorola, SGS, Siemens, Sprague, Telefunken, Sanyo, and TI.

The initial investment is not cheap, but neither is engineering time. At \$97.50 (plus \$5.50 handling and postage) the time saved by professionals will more than make up for the cost quickly. And it has a money-back guarantee.

**GUIDE TO UTILITY STATIONS** by Joerg Klingenfuss (427 pages, 6-1/2" x 9-1/2", paperback; price is DM 60--\$18 US; airmail anywhere in the world from the author at Panoramastrasse 81, Dept. MT, D-7400 Tuebingen, FRG).

Joerg Klingenfuss has earned a worldwide reputation as being a leader in amassing accurate, comprehensive frequency lists of short-wave utility stations. Now, his former utility guide and radioteletype guide have been combined into one giant reference, all in English language.

Covering the 3-30 MHz spectrum the GUIDE lists RTTY, CW, FAX and SSB over 14000 listings by frequency, all monitored since 1984.

Other chapters include abbreviations, RTTY press schedules, METEO RTTY lists, Q and Z codes, signal reporting, and utility addresses.

Without a doubt, this is one directory that utility listeners won't want to miss!



**LIBRARY SHELF cont'd**

**RECEIVER SHOPPING LIST**

8th edition, compiled by Radio Netherlands (free 28 page pamphlet available by writing Radio Netherlands, P.O. Box 222, 1200 JG Hilversum, The Netherlands)

Just published, this handy reference lists the major short-wave receivers now available to the public. Specifications and general over-all ratings are also included to help guide the prospective listener to the best buy.

Valid information is included on what specifications mean, dealer lists, caveats on the grey market, and even a quick-look-up table of receivers at a glance is provided.

A handy little booklet at just the right price!

**SCANNER RADIO DATA**

(Western NY Counties) by Jim Sutton (24 pages offset printed, 8-1/2" x 11", stable bound; \$6 plus \$1 postage from the author at 2508 E. Lake Road, Dept. MT, Livonia, NY 14487)

This list is a collection of frequencies, unit numbers and codes used by licensees to be heard on scanners in the counties of Allegany, Cattaraugus, Genesee, Livingston, Monroe, Ontario, Orleans, Seneca, Wayne, Wyoming, and Yates (New York State).

Included are public safety, aviation, marine, conservation, railroad, schools, utilities, amateur repeaters, media, and business.

**THE SPOTLIGHT DIRECTORY**

by John A. Parnell (7" x 9", 135 pages, paperbound; \$9.95 from Spotlight Publications, P.O. Box 3047, Dept. MT, Greenville, NC 27836-3047)

Billed as a nationwide police radio frequency listing, other services include fire and rescue, railroads and aircraft, new media, local government, and transportation.

There is no question that law enforcement is the major thrust and the book is arranged alphabetically by state and county to reflect those services. Separate tables and charts show band-planning for other services as listed above.

**BOOK REVIEW**

**AM STEREO AND TV STEREO:  
NEW SOUND DIMENSIONS**

by Stan Prentiss, Tab Books  
1985 - \$12.95

It has been a long time coming and it may well be

arguable whether it has really arrived since only about five percent of the AM broadcasters in the United States have so far converted to AM stereo. They are the first few raindrops splattering the sidewalk before the downpour begins.

Stan Prentiss, who has authored over twenty books for TAB on various electronic subjects and has written hundreds of magazine articles as well, has presented a ground-breaking book. Really, it is two books in one since it deals not only with AM stereo but stereo for television as well, even though the latter really has not yet arrived.

AM STEREO AND TV STEREO: NEW SOUND DIMENSIONS covers everything from the early development of AM stereo systems and their initial tests to the FCC's decision to leave the burden of deciding which system to make standard up to industry forces.

The second half of the book deals with FM-TV stereo, more often termed multi-channel TV sounds, and includes studies of the early tests and problems involved with transmission via cable TV systems, FCC technical standards and multi-channel TV transmitters and receivers.

The book is filled with informative block diagrams and schematics but even those who can no more read a schematic than they can Sanskrit will still acquire much useful information.

The appendix contains FCC standards for AM stereo, FCC evaluation criteria, FCC definitions and regulations, and a listing of AM stereo outlets.

Prentiss believes that AM stereo may very well eventually rival or even surpass FM stereo in popularity although, at present, most receiver manufacturers are hedging their bets, awaiting the time when one system rises to the surface as the industry standard. With three systems already in use that is difficult to envision.

Delco (General Motors), Chrysler and very likely Ford will soon have AM stereocar radios available, all using the Motorola C-QUAM (for Compatible Quadrature Amplitude Modulation) system.

Prentiss, in a last-minute addition before the book's publication, notes that Sony has two new integrated circuits capable of automatically selecting between the transmitted systems. One circuit will even indicate to the user which system is being received.

As for TV stereo, Prentiss believes it will be a demand item on the part of consumers within two years.

For the non-technical mind, the log of stations broadcasting in AM stereo is of particular interest. It would, however, have been a more useful listing had the stations been listed by location rather than divided by which systems each is using.

A brief study of that listing shows about 100 stations using the Harris system, some 150 with Motorola's C-QUAM and 50 or so using the Khan/Hazeltine method. A surprising number of smaller market broadcasters have already adopted AM stereo, as have stations as geographically diverse as South Africa, Paraguay and Australia.

This is a readable, highly informative book on a subject that has not yet really taken hold of America's passion for electronic wizardry.

Anyone who has a general interest in AM stereo, wants to know if there are any on the air in the area through which he is traveling, has just added an AM stereo receiver, or is looking towards the time when Cagney speaks from one direction and Lacey from another will find this book an informative and useful addition to the personal library.

**TUNE IN**



**WITH Ed Noll**  
*(ED.NOTE: We are pleased to add the name of another well-known author in the field of radio communications. Ed Noll is a respected writer with rare insights into radio and MT readers will enjoy his contributions.)*

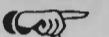
**TOUR YOUR STATE WITH A**

**CAR RADIO**

by Ed Noll

Broadcast station logging in your state can start out easy enough but difficulties mount as you approach final ID objectives. Station searching can be done in a series of levels - all stations in your county - all counties in your state - all county seats in your state.

Some auto touring may be an enjoyable and instructive way of catching-up on some of the tough ones. Here you have an opportunity to learn more about your state, photograph points of interest and perhaps visit some of the stations.



**Good News for RTTY Fans**



**FDM Demodulator**

Expand your RTTY enjoyment with this new Info-Tech Model M-605 Demodulator. Use it with our RTTY to Video Converter M-600 or M-200 to pick up previously unreadable Frequency Division Multiplexed and Very Narrow Shift signals.

It's microprocessor controlled, with 8 separate modes (3 shifts) of operation, including special mode to decode the 50-channel FDM signal from Westar 3.

Available from Factory or Select Dealers Only

Write or call for Complete Information.

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Manufactured by:  
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1633 Wisteria Court • Englewood, Florida 33533  
813-474-9518

**ED NOLL cont'd**

If your interest mounts, try all stations in your state. And keep after them as new stations come on the air. When you finish the job take on county-chasing your adjacent states.

The first level is an easy one you can do in your radio room. Some of the stations occupy local frequencies and BCB listeners in other state counties will have to arrange a trip in this direction. In doing so they learn about your county.

The second level for you is to copy stations from far counties. To do so you must put your own mobile listening post on the road and learn about your state. Even if you are not able to travel about your state in this station search, you can work away on all reception levels and do as much as possible from your home listening post.

The third level is to copy a station from each county seat of your state. Wouldn't you enjoy visiting each county seat, large and small, in your own state? The final level is every station in your state. If you live in a small state you may be able to accomplish various or all levels from your home listening post.

◆ To get started, dig out your road map, state atlas and NRC Domestic Log to prepare an objectives table. List counties in alphabetical order. Set down the county seat for each county next to it. Add check-off columns to indicate which counties and which county seats have been received. Appropriate call letter and frequency should be indicated.

There may be a small number of counties and county seats that have no radio station; keep a watch on FCC station allocations because new stations may go into operation in these counties, especially if they are growing.

When you are in each county pay some attention to the radio programming. Later a short note to the station manager or chief engineer might be appreciated. You can do this when you return home. Take in the county sights and, if possible, attend an event or two. Perhaps the local radio station will even be doing a remote broadcast!

Many car radios lack in sensitivity and selectivity and have a tendency to "spill over" in the presence of a strong signal. Nearly

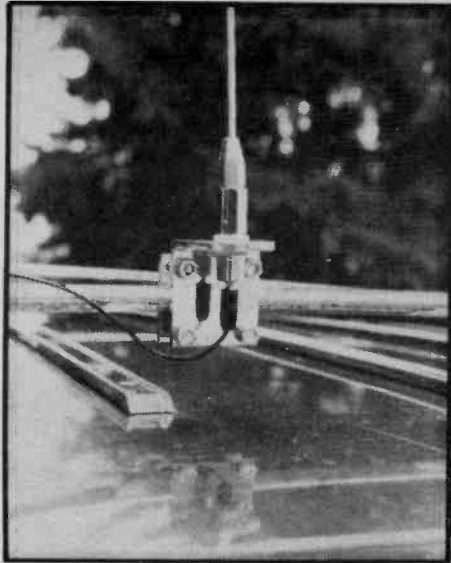
all of them have a very coarse dial calibration. Despite these limitations travel does permit you to pick up additional call letters.

A business trip or vacation for the BCB listener can be made more enjoyable with a step-up in receive capability. Take along a quality portable with a radio-frequency amplifier and sensible dial calibration.

Plan to do some field reception at high and favorable locations. Look over the car and decide how you can set up a convenient listening post. Maybe you can operate inside, or open a wagon tailgate. A small folding table might be appropriate. One or two folding lawn chairs provide a comfortable essential. A map and compass are helpful. Remember to bring log sheets and schedule. And don't forget a flashlight for night reception logging.

**A BETTER ANTENNA**

In planning an appropriate antenna you can make economical use of CB radio accessories. A CB antenna luggage mount, bumper mount or others can be used with a CB whip which can be fastened very quickly when you wish to stop and give a listen.



Luggage rack mount and CB whip with banana plug lead-in connection.

The whip may be too long for in-motion use. However, it can be replaced by a shorter steel whip for in-motion reception. A bumper mount would permit you to use the long whip in motion.

To obtain additional height you can fasten the luggage rack mounting bracket atop an appropriate length of PVC piping. For field reception take along a metal fence post and a short sledge hammer that will permit you to drive the fence post into the ground and slip the PVC piping mast over it.

Two types of connec-

tions can be made between the antenna and the receiver. One method is to use a coaxial line because the coaxial plug can be inserted into the coaxial output connector of the luggage rack mount. Spade-lugs should be connected to the other end of the coaxial line to attach to the portable receiver.

A preferred alternative plan is to use single-wire feed because its length adds to the antenna length. Run a section of hook-up wire between the whip antenna proper and the receiver. A banana plug can be inserted into the center conductor of the mount's coaxial output. Connect a spade-lug at the other end of the single-wire lead that can be connected to the random wire input of the receiver.



Luggage-rack mount attached to PVC piping.

# BROADCASTING...

## HANK BENNETT ON SHORTWAVE

As we were preparing to start this column, we received a telephone call from Joe Turner, K8CQF, in Saginaw, Michigan, informing us of the big five-county Swap And Shop Program that will be held in their city on August 25th. This event is being sponsored by the Saginaw Valley Amateur Radio Association, the Genesee County Radio Club, the Bay Area Amateur Radio Club, the Lapeer County Amateur Radio & Repeater Club, and the Shiawassee Amateur Radio Association.

The location will be in the Saginaw County Historical Museum at 500 Federal Avenue, corner of Jefferson, and for travelers, just off exits 2 or 2B of I-675.

Joe informs us that the normal fee is \$1.00 donation to the museum, but that visitors to the Swap And Shop will be admitted at no charge. They hope to have displays of all phases of radio, from SWL right through ham radio. Yours truly will be unable to be present in person although we have promised them a few words on tape.

In addition to the program on the 25th, there will be a historical display available in the museum from the first week in August to September 30th.

Should you be in the area, the doors will be open from 0800 to 1500; drop in and say hello to Joe Turner and his workers who obviously are putting a great deal of time and effort into this program.

◆ It's a small world and we've recently come across

another good reason to think just that. For the past twelve years our family has been doing pharmaceutical business with the Westmont Pharmacy in Westmont, New Jersey. Dr. Larry Bulk has proven through the years to be not only a good friend but a dedicated professional man in his own field. He has accurately filled our prescriptions, offered medical advice when asked for, discussed new products, and shown us his collection of antique medicines, medical products and bottles.

Visitors to his store are often amazed to see his sideline of what is probably South Jersey's largest collection of classical records and albums for sale. This will probably explain why you'll nearly always hear Philadelphia's good music station, WFLN, when in his store.

But in spite of our long standing friendship, it wasn't until just a few days ago that we found out, quite by accident, that Doc Larry is also a devoted shortwave listener. Nor did he realize, while reading my columns in Popular Electronics through the years that Hank Bennett, editor, and Hank Bennett, customer, were one and the same.

He does no listening during store hours, of course, but after hours you'll find him with his Lafayette HE-10 and Realistic DX-400 receivers or perhaps with his Hitachi portable. His favorite hobby magazine, until now, has been Tommy Kneitel's Popular Communications and we're now

**HANK BENNETT cont'd**

introducing him to Monitoring Times.

◆ A story in the Sri Lankan magazine Forum, passed on to us by Radio Sweden, says that the new Voice of America relay station in Sri Lanka will be a cover for a secret communications center and electronic listening post operated by the United States Navy.

The magazine claims that the station will include a long wave ELF station for communications with American submarines under water. In a contradictory mood, Forum also says that the base will include sophisticated electronic listening devices to monitor all forms of communications in the region.

Radio Sweden's DX editor points out that by locating a listening post at a transmitting site would seem to be inviting interference.

◆ In another information release from Radio Sweden, and credited to Christian Zettl, a Mexican resident, the Voice of America continues its worldwide expansion with a new relay station under construction in Belize. According to reports in the Mexican press, two transmitters are being built at Punta Gorda and will be in operation by the end of this year. They should cover all of Central America.

Radio Belize is already carrying some VOA programs. Under the \$42 million treaty, the United States has promised to increase Radio Belize's power and modernize its equipment.

◆ Serious broadcast band listeners will be interested in the new Solvesborg, Sweden, transmitter on 1179 kHz. One of the most powerful medium wave voices in Europe, it is rated at 600 kW. The station reports an experimental service called "Radio Sweden Europe" which has been, and possibly still is, on the air Fridays, Saturdays, and Sundays with special programs in French at 1800, German at 1900, and English at 2015-2200 following a short Swedish segment at 2000-2015.

The programs are said to contain a mix of Nordic popular music, live studio interviews and phone-in programs as well as tourist features. Your editor suggests that you won't be able to hear this station during our summer and autumn late afternoons but as the days grow shorter there is every

reason to believe that extreme east coasters could hear that English transmission.

And for the serious shortwave devotee, as we have reported before, Roger Legge's "USSR High Frequency Broadcast Newsletter" is probably the best available source for information on virtually every known Russian short-wave station on the air. His four-page publication lists schedule changes, frequencies, transmitter locations and other items.

You can subscribe to this newsletter by contacting Mr. Legge at Box 232, McLean, Virginia 22101. It is published eight times yearly and the cost is \$3.00 North America, \$4.00 overseas.

**SWL WORLD WATCH**

by Ken Wood

Summertime...and the DX isn't quite as easy! Jeeves and I have been plagued by localized electrical QRM for much of the time over the past month. We haven't been able to trace it yet and the local power company hasn't even tried so the DX pickings have been rather slim as a result.

Radio Nacional de Venezuela has returned to the air, on 5.020, and there's still no progress towards an identification on the 7400 "Nat King Cole" music mystery station, still being heard at very good strength in early evenings.

**TOP O' THE LINE**

Armed Forces Antarctic Network, McMurdo, tentatively noted on 6.012 after 0800, but very weak and fady. Seems a mix of pop and country music and American-sounding announcer.

Voice of Arab Lebanon noted weakly (and tentatively) at 0400 sign-on in presumed Arabic on 6.233.

3.399 Radio Republik Indonesia at Singaraja at poor level in Indonesian with Jakarta relay at 1200.

**AFRICA**

**BURKINA FASO** - National Radio of Burkina heard in French at 0625 on 4.815 with talks and high-life type music. Often quite good even with warm weather static.

**CHAD** - Radio Nationale Tchadienne at D'djamena on 4.904.5 from 0505 tune-in, all French. Believe sign-on

◆ During this period of the so-called summer doldrums, it's a good time to check your equipment over and get it into top shape for the coming autumn DX season. It's a lot easier, too, to work over your antenna and to re-solder those joints. It's also a fine time, as we mentioned about this time last year, to set up a monitoring station in your backyard tent, with or without friends, for some fine overnight DX'ing.

And above all, be sure that all of your radio equipment is protected against lightning. Even nearby lightning strikes can cause serious damage to your set. Take a minute to be safe!

time is around 0445.

**CONGO** - RTC Brazzaville in French at 1938 tune-in on 15.190, weak to fair.

**MADAGASCAR** - Radio Madagasikara on 5.010 from 0255 sign-on and heard almost every evening, though at varying strengths.

**MALI** - Radiodiffusion Television du Malienne at Bamako, weak on 4.783 with ID at 0000 and off. All French. Lost now to later sunsets.

**NAMIBIA** - Radio Southwest Africa heard in English with popular music and announcements at 0305 tune-in on 3.295. Usually at good level.

**SUDAN** - National Broadcasting Corporation on 5.039 signing on at 0400 with Koran and music.

**TUNISIA** - RTT, Tunis, all in Arabic from 0430 tune-on 7.225. Listed as a relay of the national service. Usually good.

**UGANDA** - Radio Uganda on 5.027 at 0340 ending English and into local language. Fair at best.

**ZAIRE** - La Voix du Zaire, Kinshasha, with English beamed to Europe at 1900 on 15.245.

**ASIA, NEAR AND MIDDLE EAST**

**BANGLADESH** - Radio Bangladesh heard in English on 11.935 at 1231 but with deep fades and generally quite poor despite higher power.

**CHINA** - PLA/Fujian Front Station at 1200, all Chinese with Chinese music on 4.380.

**INDONESIA** - Voice of Indonesia in Indonesian at 1215 on 11.790 with Indonesian popular music.

**IRAQ** - Radio Baghdad in English on 9.610 at 2100 with anti-Iranian talks, war news. Consistently heard better than English from Iran.

**NORTH KOREA** - Radio

◆ Does anyone remember the old so-called "Kiss Me Honey" pirate station that once operated somewhere in the 11 megahertz band as a jammer? It was given that name due to the recording it played continuously of "Kiss Me Honey." I've been told that this was a record made by a well-known female singer whose name escapes me, but this isn't so; the recording is strictly instrumental and I have good reason to want to obtain a recording or tape of it.

Does anyone remember this station and can anyone identify the orchestra? Your editor is Hank Bennett and I'm at the same location - P.O. Box 3333, Cherry Hill, NJ 08034. ●

Pyongyang with music and talks in Korean at 1150 on both 9.745 and 9.977. Fair.

**SAUDI ARABIA** - Broadcasting Service of the Kingdom of Saudi Arabia on 7.195 in Arabic at 0300 sign-on. Often with good signal strength but also often with QRM.

**SYRIA** - Radio Damascus in English from 2005 on 12.085.

**UNITED ARAB EMIRATES** - Voice of the UAE at Abu Dhabi is now scheduled to North America at 0400 to 0600 on 15.330.

**EUROPE**

**ALBANIA** - Radio Tirana 7.120 at 0135 with funeral music, praise for the late leader Hoxha. Good signal.

**DENMARK** - Radio Denmark on 15.165 at 1310 with English ID and usual all Danish programming.

**HUNGARY** - Radio Budapest to North America on 6.025 at 0300 English, and the usual stuff.

**LUXEMBOURG** - Radio Luxembourg on 15.350 in French at 1825 with pop music, jingles, American-style format.

**MONACO** - Trans World Radio with English at 0730 on 7.160 and parallel 9.495.

**NORTH AND CENTRAL AMERICA**

**CLANDESTINE** - Radio Quince de Septiembre now on new, additional frequency of 4.950, noted at very strong level to variable sign-off around 0550.

**COSTA RICA** - Radio Casino, Puerto Limon, 5.954; all in Spanish at 1230 tune-in.

**HONDURAS** - La Voz del Junco, Santa Barbara, on 6.076 heard in Spanish around 1100. Sign-on time reported to be 1045.

**MEXICO** - XEWW, La Voz de la America Latina, relaying XEW Mexico City on

**SWL WORLD WATCH cont'd**

15.160 around 1500, all Spanish with Bank of Mexico ads.

XEPP Radio Educacion on 6.185 now back on the air and heard around 0130 with classical music.

**NICARAGUA** - Radio Zinica, Managua, 6.120 excellent, all in Spanish with Latin pops at 0800.

**COOK ISLANDS** - Radio Raratonga, 11.760 audible again in the late, late evening hours. Island music etc.

**GUAM** - KTRW on 9.590 in Chinese at 1230, presumably with a religious program.

**SOUTH AMERICA**

**BOLIVIA** - Radio Nuevo America on 4.797 at 0135, all Spanish, advertisements, station IDs.

**BRAZIL** - Radio Anhanguera, Goiania on 4.915 at 0600 all in Portuguese with Brazilian pops, announcements.

Radio Poti, Natal in Portuguese and with good signal at 0145.

**CHILE** - Radio Agricultura, Santiago, 9.630 at 1025 all Spanish with many station identifications.

**COLOMBIA** - La Voz de Guaviare, San Jose de Guaviare, 6.035, sometimes slightly higher, at 1000 in Spanish.

**ECUADOR** - Radio Omega, ex Radio RJ1, Guanchanama on 6.578 at 0100, all Spanish and usually very weak if there at all.

**PERU** - Radio El Sol, Lima on 5.970, excellent at 1003, all Spanish.

Radio Universo in Pacae, San Ignacio, Cajamarca on 6.815 weak to fair from around 0130, all Spanish.

9.988 Estacion dos Mil is often strong of late around 0130, all Spanish with some clear IDs noted.

Radio Union, Lima, 6.115 excellent level with Latin pops, commercials, IDs, all Spanish. On very late and perhaps all night.

**VENEZUELA** - Radio Turismo, Valera with vocals, ID announcements in Spanish at 1050.

5.020 Radio Nacional, reactivated and on this frequency until 0300 sign-off, all in Spanish. Variety of music and very strong levels.

**JEEVES SAYS:**

What's going on with Radio Beijing and their considerable cutback in broadcast hours for North America? If anyone writes the station about this and gets an explanation Ken and I would like to know.

Things to watch for this summer: Regular operations from new U.S. stations WMLK in Bethel, Pennsylvania; KVOH at Rancho Simi, California; and KCBI in Dallas, Texas. They're all due on sometime before fall, at least that was the story the last I heard.

Keep an ear out for the new high power transmitters from Kenya as well. Hopefully that will finally bring reliable reception to us from Nairobi.

And, don't forget to keep us advised of your activity with your logs, clippings and program schedules. Your contributions help Ken provide more information.

Time to tend the roses. Ken and I will be back with you again next month. 'Til then, 73. ●

-- and if you are listening later (0430 +) then 9510 is a possibility.

Now let's take a look at **EUROPE** - updating some of the English language services.

**SWITZERLAND**

SRI now has the following schedule for North & Central America:

0200-0230: 12035 11925 9885  
9725 6135 kHz  
0400-0430: 15305 12035 9725  
6135 kHz

Of these channels the 9725 is the high power 500 KW transmitter; the others are listed as 250 KW.

You might also manage to pick up off "the back of the beam"-or "around the world"--transmissions beamed in the opposite direction to us; for example SRI may be heard in our morning hours on the HF bands--1330-1400 on 17830 15585 15570 11955 kHz, dependent on propagation.

With regards to programming, SRI has two main programs; DATELINE, the current affairs program on the news and what's behind it in Switzerland and the world. This has been through more than 4000 editions since its beginning on May 4th 1970. Now it is expanded to include Saturdays and, incidentally, the news service is now a 24 hour, 7 days service.

Sundays there is THE GRAPEVINE, a sort of "keep in touch with Switzerland and our listeners" program. It is also an opportunity to get any questions answered about the country if you write in. This is on the 1st/3rd Sundays. IN PERSON is each 2nd Sunday, and an interview style "meeting" SUNDAY SUPPLEMENT is an in-depth presentation of subjects reflecting different aspects of Switzerland.

I should mention, of course, SWISS SHORTWAVE MERRY-GO-ROUND which will be familiar to many listeners as the SRI DXers show with the two "Bobs." This is now a slightly shorter program but it is on the air EVERY Saturday.

**HOLLAND**

Radio Nederland is on the air to us at these times:

0130-0225: 9895 6020 Flevo station  
0230-0325: 9590 6165 Bonaire relay station  
0530-0625: 9715 6165 Bonaire relay station

You will note that all programs are now 55 minutes long.

The Dutch have long been to the forefront of innovative programming on shortwave and here is an overview of the weekly fare offered over RN:

**MONDAY DOCUMENTARY:** Topical nature program about Holland and some items of international importance.

**TUESDAY-IMAGES:** A new 17 minute cultural program highlighting Holland's active and innovative artistic life.

**WEDNESDAY REPORT:** Examines topics of the moment.

**THURSDAY - MEDIA NETWORK..** the original "DXers program" hosted by Jonathan Marks includes reviews of publications and computer news.

**FRIDAY REPORT -** Background news on topical items.

**SATURDAY - SHORTWAVE FEEDBACK -** A listener contact program hosted by Nevil Gray, to whom you may write with questions and suggestions, or **PHONE** on the listener answer line (011-31-35-18700).

**SUNDAY -** The famous **HAPPY STATION** program...so well known that no further comment is needed!

Apart from programming, Radio Nederland offers the shortwave listener many other services including interesting and useful pamphlets on a variety of radio subjects such as antennas and receivers. I would strongly urge you to write to them asking for the **LISTENERS SERVICES CATALOGUE** which lists all available material (mostly free on request). The address is **ENGLISH SECTION, RADIO NEDERLAND WERELDOMROEP, P.O. BOX 222, 1200 JH HILVERSUM, THE NETHERLANDS.**

**RADIO MOSCOW**

The U.S.S.R. in its regular shortwave program fare seems to be trying to emphasize the description of Soviet daily life to the North American public. A multiserial show called "LIFE WITH THE STAROZHILETS FAMILY" includes such topics as "The Home," "The Food We Eat," "Who Wears The Pants in the Family?" (do the Russians really have a phrase like that in their language?!), and "How We Feel About Americans"...This is Tuesdays at 2330/0130/0430/0630 U.T.C.

They also say they are attempting to build a "radio bridge" between the U.S. and U.S.S.R. by asking you to tape questions, statements, etc. and send the cassette. They will then interview the person(s) you are interested in and record--with a trans-

**ENGLISH LANGUAGE BROADCASTS**

by Tom Williamson

This sure is a season of change. With the spring-like weather, and the clocks going to daylight time, and the SW broadcasters changing frequencies, and the propagation conditions wildly variable..what more can you ask?! Let's take a look at some updated news on more important stations.

First we should pause in consternation at the difficult state of reception these days from the BBC London. The evenings have become a horrendous experience trying to get a decent signal. The old standby reliable channel-of 6175 is badly clobbered by France (or is it the Guiana relay? No one seems certain about this, but the signal seems to compare with 9800 French

Guiana.).

A further problem has arisen with morning reception on 1175 kHz, normally a reliable channel; now there seems to be background noise here, possibly a "jammer" station.

It may be that propagation conditions have made this seem more of a problem of late and it probably depends where you are located on the North American continent as to how bad it sounds.

In general, however, the 31 meter band has many evenings of good reception possibilities for the BBC broadcasts, and I have noted periods of good reception from 9915 kHz. I generally aim for this band around 2300-0200 with 9590 included



**ENGLISH LANGUAGE cont'd**

lator--the answers to your comments, and add some questions of their own! Well, well! We'll see how that goes!

Radio Moscow schedule:

**EAST COAST NORTH AMERICA**  
2200-0000: 15420 15240 11710  
11730 11750 11770 11780  
11850 12050 12060 9530  
9610 9680 9720 9740  
9760 9820 9880 7100  
7170 7190 7320 7400  
0100-0300: also 6170

**WEST COAST NORTH AMERICA**  
0300-0700: 15420 13600 11710  
11770 11790 12030 12050  
9580 (15420 is dropped  
at 0500)

**BRITAIN BBC**

The Sunday phone-in programs continue in May but are not listed for June; I think they are likely to resume in the future, however. A popular program--it is quite impressive to be able to talk on the BBC to world leaders!

For reference, you may dial your local international code, followed by 44 1 580 4444 to get the BBC program (either at 0900 Sunday or during the program). Here is a rundown on the best bets for BBC reception, beamed to North America unless otherwise stated:

0000-0500: 11750 9915 9590  
9515 7325 6175 6120  
5965  
0400-0900: 9510 6175  
1100-1300: 21660 (Africa)  
21550 17885 (S.Africa)  
17790 15215 15070  
(Africa) 11775 6195  
5965  
1500-1900:  
21660+17885 (Africa)  
17705 (S.Africa) 15400  
(W.Africa) 15260 15070  
12095 (N.Africa) 11750  
9740 9515  
2100-0000: 15400 (S.Africa)  
15260 9915 9590 7325  
7160 6175 6120 5975

Please note that some of these times are approximated for the quoted frequency--it may open or close about half hour earlier or later.

Also note that we get quite fair reception at times from channels beamed to various parts of the African continent. This compares with the comments above on Swiss Radio International.

The BBC is in the process of modernizing its installations with the introduction of higher powered transmitters in England; relay stations, including the construction of a station at Hong Kong and a larger complex in the Seychelles are also getting attention.

Good listening! ●

this band. First, almost every home has at least one receiver capable of receiving at least the broadcast portion of the band (A recent survey indicates that the average home has FIVE such receivers!). Therefore, the initial investment is nil. There are many stations to be heard, and rapidly changing events in the broadcast industry promise even more variety in the future.

Of course, advantages are balanced by certain disadvantages. During the warmer months, the band can be noisy with thunderstorm-generated static. Fading (QSB) can be a problem with Murphy's Law prevailing--the station you are trying to identify will fade out during their identification! Conditions can change with amazing rapidity; what may be blasting in one minute will be gone the next.

◆ To listen to the entire band you will need a general coverage receiver. A standard table radio will only cover the 535-1600 kHz segment. The receiver should have a BFO to make the Morse code signals audible.

The antenna may be one of several different types. You may use the built-in ferrite rod. A random long-wire - the longer the better - will provide good, multi-directional coverage. If the far end is grounded through a resistor it becomes a directional Beverage antenna with the direction being strongest towards the grounded end.

Loop antennas, varying from several inches to several feet in diameter, with or without electronic "boosting," also provide directional reception. At lower frequencies, a good ground system is ESSENTIAL.

◆ The best time to listen for long-distance signals is at night. A path of darkness between transmitter and receiver is usually required for long-distance propagation. The periods around sunrise and sunset are also very productive.

At sunset, many daytime-only stations are signing off for the day. This, combined with the enhanced propagation of the time, gives you a chance to hear many lower-powered stations as they leave the air, usually to the west of your location.

At sunrise many stations are allowed to transmit with reduced power between sign-on at 6:00 A.M. until local sunrise. Powers of from 500 watts down to less than 4 watts are

authorized depending on many factors, allowing you to hear stations to the east of your location sign-on before the rising sun eliminates the enhanced reception conditions.

◆ The broadcast band in North America is divided into three types of channels. Local ("Graveyard") frequencies (1230, 1240, 1340, 1400, 1450 and 1490 kHz) are intended to provide local service; stations here are limited to 1,000 watts day and night, but some stations still operate with even lower power.

At the other end of the power scale are the "clear" frequencies (540, 640-780, 800-900, 940, 990-1140, 1160-1220 and 1500-1580 kHz). Many of these frequencies have at least one station with the maximum allowed power: 50,000 watts. It is on these frequencies you are most likely to hear long-distance domestic signals.

The remainder of the frequencies are "regional" channels, used to cover a larger area than the local channels. Maximum power here is 5,000 watts.

◆ Propagation is better in the winter months; a combination of poor atmospheric reflectivity and storm-generated static in the summer reduces usefulness of the band. The rapidly changing sunrise/sunset times in spring and fall also help produce good DX conditions. Listeners in the eastern part of the country may find trans-Atlantic reception possible around the time of local sunset; western listeners should try for trans-Pacific DX around their local sunrise.

While stations in North America generally operate with a 10 kHz spacing between channels, European/Asian/African/Pacific stations operate with a 9 kHz space between channels, allowing DX stations to be heard between domestic stations.

◆ Verifications are usually rather easy to obtain. Utility stations (beacons, coastal stations, etc.) will usually verify if a prepared form card and self-addressed stamped envelope or other form of return postage is enclosed. Many BCB stations (but not all) will also verify correct reports. ALWAYS include return postage! You might be inclined to enclose a PFC. While it may increase your chance of verifying a "tough" verifier, most

## WHO'S ON FIRST?

by Patrick O'Connor  
Plain Road  
Hindsdale, NH 03451

**PART II****MEDIUM WAVE 500 kHz-1800 kHz**

Of all the frequencies in the radio spectrum, the best-known by far is the medium wave (MW) band. Running from 500 to 1800 kHz, it is the residence of the standard AM broadcast band (BCB).

Here is a quick overview of frequency allocations in this band:

kHz	
500-510	Maritime stations; aero distress
510-535	Radionavigation beacons; government & mobile services
535-1610	Broadcasting - worldwide
1615-1800	Radionavigation; maritime; remote broadcasting links; cordless phones

On the band from 500-535 kHz the signals are in Morse code. These include

ship-to-shore transmissions, distress signals and non-directional aerobeacons for air navigation. Low powered Travelers Information Service (TIS) stations on either 530 or 1610 kHz provide short-range information on specific traffic conditions, parking availability, etc.

Between 535 and 1610 kHz are broadcast signals. Although intended mostly for local or regional coverage, stations can be heard over great distances. Some listeners have heard over 100 different countries on this band; others have logged over 2,000 different stations!

1610-1630 kHz is one favored band used by illegal "pirate" broadcasters. This band is also used for remote broadcast links to radio stations. Cordless phones may be heard from 1650-1795 kHz but these frequencies are being phased out in favor of the 46 MHz band. Navigational beacons may also be heard between 1600-1800 kHz.

There are certain advantages to listening to

**WHO'S ON FIRST? cont'd**

stations that verify will do so with either a letter or their own QSL card.

You might also receive different "goodies" - various promotional items used by stations. Among those received by the author are T-shirts, bumper stickers, various other types of stickers, buttons, pins, booklets, whistles...station promotions people can be very unusual in their ideas!

When reporting a utility station, remember: NEVER report the message heard - only station ID's or marker signals! On the other hand, reporting BCB stations requires as much program detail as possible. Tape recording your receptions may be of great help with this.

Addresses of UTE stations may be rather hard to come by; some club publications include these addresses on an occasional basis. Addresses of broadcasting stations are much easier to obtain.

The WORLD RADIO-TV HANDBOOK has addresses of foreign stations. BROADCAST YEARBOOK has addresses of U.S. stations. The NATIONAL RADIO CLUB DOMESTIC LOG has

addresses of all U.S./Canadian stations, along with information on their hours of operation, network affiliation, power, etc. (Available for \$10 from National Radio Club Publications Center, c/o Ken Chatterton, P.O. Box 164, Mannsville, NY 13661). There is also a cross-reference section by call sign.

There are two clubs exclusively for MW DX'ers. They are the National Radio Club (NRC Membership Center, c/o Ron Musco, P.O. Box 118, Poquonock, CT 06064) and the International Radio Club of America (P.O. Box 26254, San Francisco, CA 94126). 75¢ to either will get you a sample copy of the club bulletin and membership information.

Other clubs, including American Shortwave Listeners Club (ASWLC) and the Association of DX Reporters (ADXR) also have BCB columns. If you are at all serious about MW DX'ing, membership in one of the MW clubs is a definite "plus."

Even if you have never thought of the broadcast band area as good DX territory, give it a try. I'll bet you'll be surprised at what you may hear! ●

# PIRATE RADIO



by  
**John Santosusso**  
P.O. Box 1116  
Highland City, FL 33846

**MYSTERY STATION:** Since late March a very strange music station with powerful signals but no voice announcements has been heard. In Florida we are receiving local level signals. The station maintains an almost nightly schedule between exactly 0000 and 0200 GMT on 7400 kilohertz. In the mornings it transmits between 1300 and 1500 GMT on 9920 kilohertz. No change in the schedule took place with the switch to Daylight Saving Time.

Programming consists entirely of musical selections, many in Spanish, but some in English as well. A

number of artists are heard, but Julio Iglesias is a favorite along with quite a few old Spanish recordings by Nat King Cole.

Some have noted the similarities between this station and past transmitter tests for anti-Sandinista Radio Monimbo and anti-Castro La Voz del CID. However, one would have to ask, "Just how many tests are necessary?" Perhaps the choice of music for a particular broadcast conveys a message.

At the beginning and ending of every transmission, and also on the hour, one particular Nat King Cole song is always played. David Crawford has tentatively identified the title as, "Mas de se Quiere" ("More of What One Desires"), and after listening to it numerous times I can come up with nothing better.

FCC monitors informed Crawford the station was located slightly south of Guatemala City. While it is dangerous to speculate on the basis of signal strength, the clarity and strength of the signal make the FCC claim at least subject to question. In fact Dade County, Florida, should not be ruled out as a possible site.

In the April Monitoring Times this column reported that a new CIA-sponsored Contra station was supposed to begin transmitting to Nicaragua in either March or April. Whether there is any connection between the mystery station and the proposed CIA operation is not known.

Since the mystery station first began transmissions on 7360, that frequency may also be worth watching along with 7400 and 9920. All three of these frequencies have a close proximity to those used by anti-Castro la Voz del CID, and 7400 is currently in use by that organization.

Ohio's George Zeller notes, however, that the mystery broadcasts do not originate from the 7400 CID transmitter, since that signal will sometimes QRM the last few minutes of the evening transmission from the mystery station. Reports of loggings or other information pertaining to this station would be most welcome.

**CHILE:** From Holland's Michiel Schaay comes the following news. De Waarheid, the Dutch Communist newspaper, reported on April 17 that the Amsterdam Committee Radio Liberacion is organizing fund raising events for

## SEVERE WEATHER NETS Good Monitoring

by Dan Mulford (Osgood, IN)

The spring season has passed and replacing it is a dreaded associate, the summer storm. For those of you who are not amateur radio operators actively participating in severe weather nets, a gentle reminder is in order to insure that some fascinating monitoring is not missed.

Many of the major cities have Warn or Skywarn nets that become active with the approach of severe weather. This activity is prominent in the midwestern part of the U.S. due to the number of tornadoes and severe thunderstorms occurring in the spring and summer seasons.

Coastal areas have emergency networks for hurricanes as well as the normal Warn-type activities in severe weather occurrences. Some of the hurricane monitoring can be done in the marine HF bands as Coast Guard stations and commercial stations try to relay word of impending hurricane movement and request ships to leave these areas.

One frequency to watch for hurricane activity in

the amateur bands is 14.325 USB; it's been known to be very active in the past, both before and during a hurricane. More than one monitor has spent all night listening instead of sleeping and ended up poking toothpicks in the old eyelids to prop them up the next day at work!

Some of the Skywarn nets are held on HF bands, as is the Kentucky Skywarn net on 3.960 MHz. Some are held simultaneously on a state net frequency as well as through local repeaters on two or six meters or higher bands.

Here in Indiana the ARES (Amateur Radio Emergency Service) state net during tornado activity is heard in Indianapolis on the 146.70 repeater. A ham radio operator is at the weather bureau throughout the net, and local Warn people as well as other central Indiana groups are kept informed through this means. Other parts of Indiana are in constant communication through the state net frequency, 3.910 MHz (LSB).

Warn-type nets are activated by the weather bureau itself upon the determination that severe

weather will move into the net's area. Spotters are requested to confirm and add to the radar information the weather bureau is receiving.

Many times it is a spotter who tells the weather bureau what the storm is actually doing, as the radar operators will readily admit that they can not tell everything about a storm by the display on the 'scope.

The ham station at the National Weather Service provides up-to-the-second radar plotting of storms to requesting stations, especially for relay to police, fire or Civil Defense officials needing this information for public safety.

Nets are usually very orderly, and 1/2 inch (or larger) hail winds over 30 to 50 MPH, heavy rains, and damage information is fed directly to the ham at the NWS office for use in formulating warnings.

If you don't have the information about your local severe weather net, ask a local ham. Learn what frequencies to listen to on your scanner and SW receiver and, if you're a ham, join in on the action. Warn is always in need of another pair of eyes. ●

**PIRATE RADIO cont'd**

the Chilean clandestine Radio Liberacion which opposes the dictatorship of General Pinochet.

In December the police raided the station, killing one person and seizing the equipment. A cultural festival was to be held in Amsterdam April 20 to obtain financial support for the station.

**PROGRAMMING PERSPECTIVE**

**BY JOHN T. ARTHUR:** Jethro Tull on 41 meters? It's got to be Radio Woodland International on the air again, to bring you songs from the woods. On RWI, "The Voice of Nature," laid-back-host Jack-in-the-Green plays relevant comment or mood music and facetious requests.

"From a cave somewhere far North of the South Pole" Jack speaks out for the idyllic life with Nature and without pollution. Radio Woodland has been operating for about one year from a favorable location and has already built a small following among conservationist listeners.

RNI will not only verify correct reports, but promises a different QSL for every broadcast. Send your report and three mint first-class stamps to Radio Woodland International, Box 5074, Hilo, HI 96720.

**LASER 558:** New York's Dave Alpert sends along a report by Joel Denver from the March 22 edition of Radio and Records. Laser 558, the popular offshore commercial pirate anchored off England's southeast coast about fifty miles from London, now has an audience of five million in Britain and another four million in Belgium and Holland. At night it has a potential audience of over 140 million throughout Europe.

While it is illegal for British companies to advertise on the station, many do through affiliate companies in the United States. Because of the Strasbourg Convention Treaty, the MV Communicator from which Laser broadcasts, must be supplied from Spain, the only European country which did not sign the treaty. This international agreement imposes penalties on both advertisers and suppliers of pirate operations.

Despite the protests of a hostile British government and the dangers of North Sea storms, Laser 558 is alive and well. It broadcasts 24 hours a day and, at the present time, all its disc jockeys are Americans.

**QSL DIRECTORY:** Here are the remaining addresses from the 5th edition of John Arthur's Directory: Voice of Redemption, Box 1411 Calumet City, IL 60409; Radio Heartland, Box 6024, Chicago, IL 60680; Voice of Tomorrow (1616 kHz and short wave), Box 20039, Ferndale, MI 48220; Fantasy Broadcast Station, Box 23792, Phoenix, AZ 85063.

The following can be reached via Box 40554, Washington, D.C. 20016: WBST (666 kHz and short wave), Pirate Radio New England (1616 kHz and short wave) and Radio Bag.

The following can be reached via Box 5074, Hilo, HI 96720: WEAK, WKUE, WMAD, WROT, WQTU (1620 kHz), WYMN, KEXJ (105.9 MHz and short wave), KFAT (1560 kHz and short wave), KFRO, KQSB, KSOS (88.0 MHz), KTEL, Radio Sine Wave, Radio USA, Radio Woodland International, Rolling Thunder Radio, Secret Mountain Laboratory, Tangerine Radio, Toynbee Radio, Union City Radio, Voice of Bob, and Voice of the Rainbow.

**LOGGINGS:** The mail has definitely dropped off, but from Ohio George Zeller has sent a number of fine loggings. On April 28 George heard Radio Sine Wave on 7475 from 2126 until 2142. The station was doing a parody of a clandestine complete with ads for the recruitment of guerillas.

WYMN was logged April 13 at 0005 until 0103 on 7427 with folk, rock and country music. This station is unusual among pirates in that the operator is a woman.

April 8 found George listening to WMTV from 0302 until 0407 on 7425 kilohertz. The program featured rock music and two DJs. George states they gave a Delray Beach, Florida, address for reports, but that these are going unanswered. Another classic Voice of Laryngitis program was monitored April 7 from 0036 to 0107. There were parodies of several well known DX personalities as well as a vision from VOL's Rev. Billy Bob Huxley.

George includes some clandestine loggings. On April 15 from 1830 to 1904 on 15650 he heard anti-Khomeini Radio Iran with a definite ID. He is also regularly hearing a station from 0100 to 0245 on 7425 kilohertz. Many claim this is another transmission from Radio Iran, but there has been speculation that it is an anti-Afghan operation. As previously noted, George has been hearing our mystery

station on 7400 and 9920.

From Florida David Crawford notes that anti-El Salvadorean government Radio Farabundo Marti can be heard on 3500 kilohertz, but signal level has been poor.

Clandestine Radio Friesland (Radio Free Surinam) is being logged on 9940 or 11680 at 1930 over the facilities of La Voz del CID. Look for this one in Dutch and local languages.

Pirate reception has not been good at this writer's location for quite a few months but recently, several did manage to put out a signal that reached here. Radio North Coast International was heard briefly for the first time May 4 from 2358 to 0002 GMT on the approximate frequency of 7430.

Secret Mountain Laboratory was logged May 5 from 0230 to 0315 with a delightful program of comedy and the somewhat-off-the-wall music for which the station is noted. The approximate frequency was 7412.

On May 5 anti-Sandinista clandestine Radio Quince de Septiembre was logged from 0512 until 0532 on 5563 and 5690 kilohertz with a particularly interesting program featuring numerous sirens, screaming announcers and machine gun fire.

That's it for now. Please don't forget us over the summer months. Your loggings and other news are needed at this time of the year more than any other. Let us hear from you.

<p><b>"Los Numeros"</b></p> <p>32444 69213 88816 52196 63811 94216</p> <p><i>Havana Moon</i></p>	
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**WHAT HAS BEEN LEARNED**  
(continued from last month)

- \* At least one pair of 5-D Spanish frequencies is active only once a week. The frequencies of 4030 and 3080 kHz are active only at 0300 and 0330 respectively on Thursdays. The message group count on these frequencies is often only ten or fifteen. Little meaningful information other than frequency lists? (Could frequency lists and schedules account for identical crypto messages often weeks or even months apart?...ed)
- \* Some other frequencies are active twice weekly. One such pair is 3445 kHz at 0400 and 0500Z on Saturday and Sunday. Repeats are at half-past on 4445 kHz. These active at other times, but not same transmitter or YL.
- \* The so-called "walking-man cadence" or "footsteps" that once preceded 4-digit Spanish transmissions also preceded many of the early evening 3 and 4 MHz 5-digit Spanish transmissions. This anomaly disappeared on both types of transmissions at the same time.
- \* A rather large "traffic dump" appears to occur just after 0500Z on many 7 MHz frequencies. As many as four

separate transmissions often noted at the same time on four different frequencies!

\* Saturday and Sunday 5-digit Spanish transmissions are seldom monitored on 3 and 4 MHz frequencies after 2300Z.

\* There are many more message repeats on 3 and 4 MHz frequencies than other frequency segments. Some 3090 and 4030 kHz 5-digit Spanish messages will repeat up to three times in a 12 hour period.

\* What one might hear on 3090 and 4030 kHz in one section of the U.S. after 2300 hrs. is not always what another monitor in another part of the country might hear. SAME FREQUENCIES AND TIMES BUT DIFFERENT TRAFFIC! This anomaly noted on several occasions with the aid of a highly qualified source.

\* High placed sources with impeccable credentials-speaking on the condition that anonymity be respected-have and continue to state that 5-digit Spanish stations are located near Havana as well as in the United States! These sources, unfortunately, refuse to go into further detail.

\* For years the audio level on many 5-digit Spanish transmissions has been so low that it would be nearly impossible for those

**LOS NUMEROS cont'd**

on the receiving end to recover any meaningful portion of transmitted messages.

\* There are some few nights when there are just no 5-digit Spanish transmissions to be found. This anomaly does not coincide with any U.S. or foreign holiday.

\* I have monitored NO numbers transmission that adjusted transmission times for daylight savings time.

\* SOME 5-DIGIT GERMAN TRANSMISSIONS--IN THE PAST--HAVE ORIGINATED FROM SITES NEAR WARRENTON/REMINGTON, VA. This from two independent sources in a position to have knowledge of such matters. (NOT 3/2-digit German).

\* Another U.S. government official tells me that there are some 5-digit Spanish transmissions that originate from various sites in Latin America.

**R<sub>x</sub> FOR INTRIGUE**

"...to pigeonhole all "numbers" transmissions as merely "spy" is -- in my opinion -- a gross oversimplification..."

Name withheld

**WELCOME ABOARD, FRED LEHMAN**

This Ohio reader and "numbers" monitor checks-in for the very first time with some nice intercepts. Among them:

04/16/85 2335-49Z 10125 kHz USB YL; Phonetic alphabet transmission with several very short crypts. Five groups in first two intercepted crypts.

Fred says that this group of 5-element phonetic alphabet transmissions terminated with "end of message" repeated three times at 2349Z. "Charlie India Oscar" was repeated several times after termination of transmission.

04/19/85 0300-20Z 4900 kHz LSB OM; Fred reports that four Spanish speaking males exchanged 5-letter groups on this frequency for several minutes.

Fred is a member of the Miami Valley DX Club and has been in SWling since 1975. He is a student and listens in on utilities and military stations with a Drake TR-7A and a Signal Corps R-174/URR with a delta loop/

Thanks very much, Fred. Let's hear from you again.

**HAVANA MOON'S MAILBAG**

The very much appreciated ZEL EATON of Missouri checks in with information on what appears to be some excellent reading material. Zel says that a very excellent article on psychic warfare and secrets and spies appears in the May 1985 edition of Combat Arms. How about sending us the address, Zel?

**YOU DON'T LIKE TECATE?**

A very interesting and informative letter has just been received at this QTH. There will be no hint as to the identity or location of this writer.

I would appreciate it very much if this non-Tecate reader would forward more information in regards the UZI protected site. Very interesting, ---!

**CRYPTO MADNESS**

Remember the last code groups published in "Los Numeros?" They were --well, nothing more than randomly selected zip-codes. A graphic reminder that random-appearing crypto groups may be nothing more than they appear.

**NUMBERS FREQUENCIES**

Continue to watch the following frequencies for Spanish, German and English "numbers" transmissions:  
3075 3080 3090 3445 4010  
4015 4025 4030 4045 4055  
5015 5670 and 5692 kHz.  
Other frequencies are:  
6802 6810 6825 6835 6840  
6997 7380 7445 7527 9075  
9222 9355 and 9455 kHz. All frequencies are  $\pm 2$  kHz.

**INFORMATION PLEASE**

"Los Numeros" is very interested in any type "numbers" transmissions between 25 and 30 MHz. If you do intercept such traffic, be sure to forward the 3-digit identifier and group count. It is not necessary to provide any part of the crypt.

**IT'S BEEN A LONG TIME**

It was well over 25-years ago that Neal Alexander (not his real name) grew tired of tuning in Hunter Hancock and The Moon-glows and "Sincerely." Just a few weeks later, Neal tuned in a "numbers" transmission on his dad's Halli-crafters.

The "numbers" have been with us a very long time.

**THANKS TO**

ZEL EATON, CHARLES JOHNSON, FRED LEHMAN, CONNIE RAMOS, BOB RUSS, JOHN SANTO-SUOSSO and THE PERSON THAT DOES NOT LIKE TECATE. Ever try Moxie?

**ATTENCION!**

Monitoring Times readers are invited to share their "numbers" and findings with "Los Numeros" and "R<sub>x</sub> For Intrigue."

**A REMINDER**

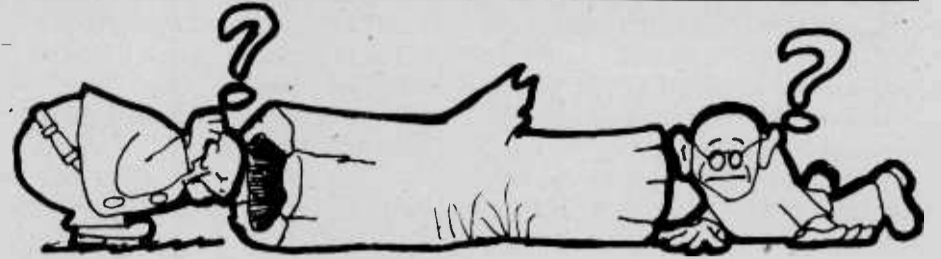
All correspondence directed to this column will be assumed to be intended for publication unless otherwise indicated.

Was I ever wrong about Radio Marti. Look out for the Cuban jammers!

Time now for a Tecate and...

Adios,  
Havana Moon y Amigas

The views expressed in this column are those of Havana Moon and do not necessarily represent the views of the Monitoring Times management, staff or readers.



**listener's log**

**A LISTENER**

**SURVEYS HIS AREA**

When we moved to the mountains of North Carolina, we figured that we might as well sell our VHF and UHF receiving equipment; after all, with widely separated towns and the nearest large city more than 100 miles away, obviously, nothing would ever be heard there again!

How wrong we were. Literally hundreds of signals arrive daily from all directions, and we are in a valley!

Philip Humes of Santa Rosa, California, decided to follow his own compulsion--to list virtually every source of potential radio communications in his immediate listening area. The results were impressive and Philip has contributed his findings to share with fellow MT readers.

His persistence has paid off and serves as an example to other listeners who may be discouraged. Don't conclude that there is nothing to be heard until you actually take some time to listen!

**SELECTED MILITARY BASES, CALIFORNIA**

**NAS ALAMEDA (Nimitz Field)**

ATIS	284.2 NGZ
Navy Alameda Radio	376.8 6723 kHz
Bay Approach Control	354.1 351.8 135.4 135.1
Navy Alameda Tower	384.4 360.2 340.2 127.05
Alameda Ground	352.4
Clearance Deliv.	352.4
Bay Departure Control	323.2 207.2 124.4 120.9
Stage I Radar	354.1 135.4
Navy Universal A/G Voice	6723 kHz.

**ALMADEN AFS - JSS Radar (Joint Surveillance System)**

No frequencies available

**BAKERSFIELD - in 1985, soon to be activated "GWEN" Ground-Wave Emergency Network**

**BEALE AFB (Marysville) - HQ 14th Air Div SAC Intermediate; HQ U2's, SR71, etc. 100th ARIDC. Refueling wing, etc.**

ATIS	273.5
Tower	390.8 236.6 126.2
Ground	275.8
Sacramento Approach	327.5 285.6 383.1 363.8
	353.7, 285.6 271.6 269.6
	124.5 134.1 127.4 125.4
Sacramento Departure	327.5 125.4
Stage III Radar	327.5 125.4(25 NM out)
Beale Command Post	311.0

**BERKELEY (Lawrence Berkeley Lab) - DOE (nuclear R&D)**

Defense Nuclear Agency & Sandia Labs at DOE Lab. Regional seismic test network (earthquakes). DOE earth station for comm's (WESTAR).

**BORON AFS - JSS Radar**

**CAMBRIA AFS - JSS Radar**

**CAMP ROBERTS, Paso Robles - Major communications station (Army). West coast entry point. Net control for Pacific defense satellite comm. system linked to Japan, Hawaii, Australia, Phillipines & NORAD (No frequencies)**

**CASTLE AFB KC135's - missiles, interceptor squadron**

**CENTERVILLE BEACH, Ferndale (Navy) - sound surveillance system**

LISTENERS LOG cont'd

**CHINA LAKE**, Ridgecrest - Naval weapons center.  
**CHOLLAS HEIGHTS**, San Diego - LF & HF fleet comm. center.  
 Inactive VLF transmitter for worldwide comm's.  
**CONCORD** - Naval weapons station  
**NAB** - Coronado HQ Navy surface forces, POC; SGAC command unit.  
**DAVIS** - HF transmitter of McClellan AFB supporting Giant Talk, Scope Signal III and Global Command and Control Systems  
**DIXON** - Naval radio transmitter facility (LF xm to PAC)  
**EDWARDS AFB** - AF rocket & propulsion lab. R & D of missiles & spacecraft. SAC bomber test site.  
 ATIS 269.9 116.4  
 Approach 307.2 133.65 127.8 KEDW  
 Tower 318.1 236.6 120.7  
 Ground 390.1 121.8  
 Departure 290.3 133.65 126.1  
 Stage I Radar 307.2 133.65  
 Army Aviation 339.9 141.1  
**GEORGE AFB** - 35th TFW 84th FIS  
 ATIS 273.5  
 Edwards Approach 269.2 133.15 134.1  
 Tower 348.4 118.35  
 Ground 275.8  
 Edwards Departure 133.15  
 Clearance Deliv. 225.4  
 Stage I Radar 269.2 133.15 (25 NM out)  
 Command Post: RAYMOND G 381.3  
**HAWES AFS** (Hinkley) - AF operated VLF/LF transmitter/receiver. One of two sites in the Survivable Low Frequency Communications System (SLFCS). 1,260 ft. tower; receiver & antennas buried & protected.  
**HONDA RIDGE** - FAA long range radar  
**IMPERIAL BEACH** - Navy radio receiver facility  
**KLAMATH AFS** (Crescent City) - JSS Radar (FAA owned)  
**LAGUNA PEAK** (Pt. Mugu) - C&C site for Vandenberg AFB missiles  
**NAS Lemoore** - HQ light attack wing, PAC  
 ATIS 267.6  
 NAVY Lemoore radio 6723 kHz SSB  
 Approach 279.2 286.0 134.1  
 Departure 318.8 124.1  
 Lemoore Tower 340.2 360.2 126.2  
 Ground 305.2  
 Expanded Radar Suc (40 NM out) 279.2 or 286.0  
**LINCOLN** - HF receiver McClellan AFB (Giant Talk/Scope III & Global Command & Control Systems)  
**LOS ANGELES** - AFS HQ SPDCE Div. DOD. NAVSTAR (Satellite) joint program office  
**LOS BANOS** - OTH Radar (Over The Horizon)  
**MARCH AFB** - HQ 15th AF SAC alternate command post; 22nd air refueling, KC135 & KC10A tankers; NORAD ADW&CC, 26 NORAD Reg., 26th Air Div. Giant Talk/Scope III, receiver (xmtr at Mira Loma); Nat'l Emergency Airborn Command Post (NEACP) ground entry point  
 Ontario Approach 259.1 119.65  
 Tower 253.5 127.65 113.4(transmit only)  
 Ground 335.8  
 Ontario Departure 278.3 134.0  
 Stage III Radar 351.1 269.3 125.5 119.65  
 AFRES Ops (452nd Aerial Refueling Wing) 252.1  
 Back-up on Skybird 311.0  
**MATHER AFB** - BSD & KC135 Nuke aircraft. 940th Air Refueling Group (AFRES) (KE135 tankers)  
 ATIS 270.1  
 Sacramento Approach 259.1 372.8 363.8 340.9  
 285.6 284.0 253.5 133.1  
 127.4 124.5 119.1  
 Tower 348.4 236.6 126.7  
 Ground 275.8  
 Sacramento Departure 285.6 127.4  
 Command Post 321.0 311.0  
 AFRES Ops (DARR Control) 351.2  
 NG Ops (Spartan Control) 41.0 MHz FM  
 Stage III Radar. (25 NM out) 285.6 127.4  
**McCLELLAN AFB** Sacramento - Air Logistics Center; Early Warning Surveillance & Radar System; Strategic comm's including SLFCS & VLF and Green Pine; Global Command & Control Station, Giant Talk/Scope III station (sites at Davis & Lincoln); Defense meteorological satellite program repair facility; standby dispersal base for B-52's from Mather AFB.  
 McClellan Consolidated CD 377.8 (Fosdick)

ATIS 269.9  
 Sacramento Approach 271.3 381.2 363.8 353.7  
 340.9 320.1 285.6 284.0  
 253.5 127.4 128.6-128.25  
 124.5  
 Departure 285.6 127.4  
 Tower 369.2 236.6 124.6  
 Ground 225.4  
 USCG Sacramento Air 383.9  
 USCG COMSTA SF(AFSSB) 5696 8984 11201 3123  
 Stage III Radar (25 NM) 285.6 or 127.4  
 HF (RTTY clear/secure on these as well as voice SSB) 1600-0400: 18023, 15031  
 24 Hr: 11239, 8989  
 0400-1600: 6738, 4746  
**MIDDLETOWN** - Coast Guard long range aids to navigation LORANC station & control site  
**MILL VALLEY AFS** - missile warning site; JSS radar  
**MIRA LOMA** - SAC transmitter site (Giant Talk/Scope III)  
**NAS MOFFITT FIELD** - Recon & patrol force 3rd fleet. TACAMO (Radio Relay Aircraft Fleet)  
**MONTEREY** - Fleet numerical oceanography center; provides DMSP & weather broadcast for Naval forces  
**MT. LAGUNA AFS** - JSS radar  
**MT. PINOS** - Microwave relay for cruise missile testing  
**NAS NORTH ISLAND** - HQ Naval Air Forces, PAC INC. ASW wing. San Diego Air Patrol & recon group; ASW ops; carrier group one.  
 ATIS 283.0  
 North Island Navy Radio 6723 kHz (SSB-HF)  
 San Diego Approach 285.2 125.15  
 Departure 285.2 318.3 125.15  
 Tower 336.4 340.2 135.1  
 Ground 352.4 121.85  
 North Island Ops 355.5  
 Stage II Radar (24 NM out) 285.2 125.15  
 Clearance Delivery 356.8  
**NORTON AFB** - Missile development  
 Ontario Approach 318.2 127.0  
 Departure 327.5 119.65  
 Tower 320.1 119.45  
 Ground 289.4 121.8  
 Command Post 349.4 130.65 (military contractor's)  
 Stage III Radar 269.3 318.2 259.1 295.7  
 351.1 119.65 127.0 134.0  
 135.4 or 125.5  
**OAKLAND NAVAL SUPPLY CENTER** - Nuclear weapons supply center (Navy USMC & PAC Fleet)  
**OWENS VALLEY AF GEOPHYSICS LAB** - Very long baseline interferometry observatory  
**PILLAR POINT**, Half Moon Bay - Tracking radar, telemetry, & command & control site for missile launches from Vandenberg AFB. Provides side view of ICBM's to minimize flame attenuation of radar & telemetry signals  
**PINION PEAK** - Microwave relay (AFFTC & cruise missile testing)  
**PT. ARENA AFS** - JSS radar  
**PT. ARGUELLO** - Offshore Navy gunnery range used by SAC bombers. (Listen to discrete frequencies.)  
**PT. CABRILLO** - CG LORAN-C monitor station  
**PT. LOMA** - Naval weapons station (submarine & ships in San Diego)  
**MT. MUGU** - Pacific Missile Test Center; DT&E of Naval & DOD weapons (Trident, MX, etc.); satellite monitoring control center. President Reagan uses Pt. Mugu to come to his California ranch (SAM 27000 or AF1)  
 ATIS 277.2 125.55  
 Mugu Approach 325.0 128.65 124.7  
 Navy Mugu Tower 382.8 340.2 127.55 126.2  
 (discrete freq.)  
 Clearance Delivery 339.4 118.10  
 PMSU-PLEAD 13 341.3(?)  
**PT. PINOS** - CG LORAN-C  
**PT. SUR** - Navy Facility processing station for SOSUS  
**PT. HUENEME** - Naval ships weapons systems engineering (backscatter)  
**RIMROCK LAKE**, Alturas - Future receiver site for OTH radar  
**SAN CLEMENTE ISLAND**, NALF (Frederick Sherman Field) - Launch point to Tomahawk cruise missile; tracking radar supporting missile tests for Pt. Mugu; Sea Echo HF radar reasearch facility by the Naval Research Lab  
 San Clemente Navy Radio (HF) 6723 3109 kHz (USB)  
 Navy SCIS Tower 278.8 340.2 126.75  
 Radar 265.1 305.3 385.1 134.1  
 127.05

**LISTENERS LOG cont'd**

**SAN DIEGO NAVAL STATION** (32nd ST) - Pacific fleet; amphibian group; submarine group five; ASW training center

**SAN FRANCISCO HQ FEMA** (Federal Emergency Mgt. Agency) - Reg. IX; command control at Santa Rosa

**SAN NICOLAS ISLAND** - Navy SOSUS processing facility; principal instrumentation site supporting missile launches from Pt. Mugu & Vandenberg AFB. Known as "The Inner Sea Test Range." It is the most heavily instrumented area in the world.

**SAN PEDRO HILL** - JSS radar

**SANTA CRUZ ISLAND** - Inst. site for missile launch.

**SANTA ROSA** - FEMA Region IX command center; Underground Civil Defense Center HF 7880 kHz SSB  
KPA 67

Other frequencies 10493 20062 167.975(FM)

**SANTA YNEZ PEAK** - Large-aperture optical tracking system supporting missile launches

**SEAL BEACH** - Naval weapons storage (non-nuclear)

**SIERRA ARMY DEPOT** - Major west coast nuke weapons storage

**STOCKTON NAVAL COMMUNICATIONS STATION** - HF fleet comm & fleet satellite comm. system (FLTSATCOM) net control station

**STYX** - GWEN relay station (activated 1985)

**SUNNYVALE AFS** - Air Force sat. control facility; control, tracking & recon. of satellites from 7 locations; DSCS III ops control, network control center for DSCS Pacific satellite, etc.

**TRAVIS AFB** - HQ 22nd Air Force (call Discard) MAC 307th aerial refueling group KC135 tankers

ATIS 116.4 271.8  
Approach 371.2 119.9 126.6  
Departure 395.8 119.9 126.6  
Tower 255.9 120.75  
Ground 289.4 121.8  
Clearance Delivery 335.8 127.55  
Command Post 349.4 141.9 130.65

**MCAS TUSTIN, Santa Ana** - Marine aircraft group 16, CH46 and CH53E heavy helicopters

ATIS 384.3  
Coast Approach 380.2 133.35  
Departure 323.1 124.1  
Marine Tustin Tower 340.2 344.2 126.2 41.95FM  
Ground 380.8  
Clearance Delivery 274.9  
Orange Co. Tower 379.9  
Marine El Toro Tower 271.7  
Stage III Radar (APP con) 380.2 133.35

MCB, 29 Palms - HQ 7th Marine Amphibian Brigade & others  
Radio 122.1 R 114.2 T  
MCB 29 Palms Tower 338.1  
Ground 272.4  
Radar 381.7 362.3 124.7 (call Bearmat) 340.2 126.2

**VANDEMBERG AFB** - WSMC Air Force command; manages Western Test Range inc. launch tracking, telemetry and command & control of development & operational ICBM's (MX, Titan II, Minuteman) & cruise missile test. 98,400 acres with 35 miles of Pacific shoreline. 1st SAC missile crew. AF satellite tracking facility; NAVSTAR master control & monitor station.

Approach 339.1 363.8 118.0  
Departure 324.3  
Tower 326.2 124.95 111.8 T  
Ground 275.8  
Stage II Radar (25 NM out) 339.1 118.0  
Command Post 321.0 311.0 Abnormal 10  
Range Control (Pt. Arguello) radar 296.5 386.6 121.4

**REFERENCES:**

1. CALIFORNIA April 1985 article "Preparing for Nuclear War, Some Things You Ought to Know." Pp. 69-75, 129.
2. DOD-Flip Publication IFR supplement.
3. Miscellaneous information in my own HF/VHF/UHF directories of accumulation of data from here and there.
4. A recent issue of Air Force Magazine showing the Air Force commands.

NORTHERN WEATHER BEACONS		MA	Mayo, YT	365	
(North of 60° Latitude)		OCC	Yukatat, AK	385	
contributed by		RR	Resolute, NWT	350	
Ron Tull, Yukon		RWO	Kodiak, AK	394	
		FDV	Nome, AK	239	
ID	LOCATION	KHz	FR	Ft. Resolution, NWT	274
ACE	Homer, AK	277	FS	Ft. Simpson, NWT	375
AES	Northway, AK	400	HHM	Kotzebue, AK	356
AK	King Salmon, AK	400	ILI	Iliamna, AK	239
ANI	Aniak, AK	359	IWW	Kenai, AK	379
BZP	Golena, AK	371	MA	Mayo, YT	365
CB	Carthage Bay, NWT	245	OCC	Yukatat, AK	385
CD	Cold Bay, AK	341	RR	Resolute, NWT	350
CMQ	Anchorage, AK	338	RWO	Kodiak, AK	394
CUN	Fairbanks, AK	349	WY	Wrigley, NWT	222
CYT	Yakataga, AK	209	XY	Whitehorse, YT	302
DA	Dawson City, YT	214	YCO	Coppermine, NWT	372
DB	Burwash, YT	341	YCS	Chesterfield Inlet, NWT	341
EV	Inuvik, NWT	254	YFY	Frobisher Bay, NWT	206
FDV	Nome, AK	239	YQH	Watson Lake, YT	248
FR	Ft. Resolution, NWT	274	YSY	Sachs Harbour, NWT	321
FS	Ft. Simpson, NWT	375	ZF	Yellowknife, NWT	356
HHM	Kotzebue, AK	356	ZS	Coral Harbour, NWT	362
ILI	Iliamna, AK	239	ZW	Teslin, YT	269
IWW	Kenai, AK	379			



**TUNE IN CANADA**

by

**Norman H. Schrein**

FOX MARKETING, INC., 4518 Taylorsville Rd.,  
Dayton, OH 45424

This month we are going to take a look into scanner frequencies in the Ottawa and Hamilton, Ontario, areas. First we begin with Ottawa:

FREQ.	CALL	IDENTIFICATION
42.060	XJB 62	OPP
166.680	XJC 283	Securet Provinciale du Quebec
171.210	"	"
41.820	XJD 48	RCMP
138.050	"	"
155.010	"	"
155.670	"	"
156.090	"	"
142.485	XJF 83	Ottawa P.D.
138.465	"	"
142.725	"	"
138.705	"	"
142.995	"	"
138.975	"	"
154.370	XJG 67	Ottawa F.D.
154.830	"	"
159.390	"	"
153.830	XJH 495	Glouster Twp. F.D.
154.070	"	"
153.140	XJI 26	Ottawa Hydro Electric
153.470	"	"
169.110	XJJ 301	Nepan Twp. Engineering Dept.
142.335	XJJ 937	Nepan Township P.D.
138.315	"	"

142.770	"	"
138.750	"	"
142.230	XJL 545	Ottawa P.D.
138.210	"	"
155.400	XJM 715	Ottawa P.D.
155.940	"	"
149.290	XKC 367	Skyline Hotel
165.570	XKC 392	JJMP Innovation Enterprises
464.125	XKC 446	Xerox of Canada, Ltd.
27.265	XKC 703	Commonwealth Holiday Inns
451.800	XKC 719	IBM Canada, Ltd.
454.300	"	"
149.020	XKC 727	Dept. of External Affairs
27.235	XKC 741	Nepan Township, Ontario
154.280	"	Nepan Twp. F.D.
30.420	XKD 25	Ottawa Civic Hospital
27.245	XKD 523	Inn on the Providence
149.020	XKD 524	Queensway Carleton Hospital
149.290	XKD 528	Carleton Towers Hotel, Ltd.
149.260	XKD 722	Arron, Stanley Arnold
35.240	XKD 724	Time Communications, Ltd.
414.262	"	"
141.300	"	"
414.987	"	"

After quite a while in limbo, work has once again begun on researching frequencies for a future "Scanner Radio Listings" for the Toronto area. Part of the project was looking up frequencies for the Hamilton area. Follow-

**TUNE IN CANADA cont'd**

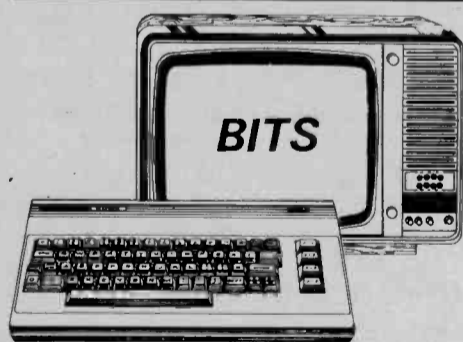
ing are a few of the frequencies identified in that area.

31.420	XKC 24	St. Joseph's Hospital
49.500	XOH 530	Ontario Hydro
123.000	VYY 54	Hamilton Flying Club
142.485	XJF 359	Hamilton P.D.
138.465	"	"
140.730	XJL 23	RCMP
139.980	"	"
143.235	XMJ 430	Ministry of Correctional Services
153.650	VCY 488	Hamilton Street Railway Co.
148.585	"	"
149.080	VGA 245	Department of Communications
149.770	XKE 941	Bell Canada
153.500	XNB 738	McMaster University
155.670	XNH 662	Hamilton Harbour Commission
155.700	"	"
162.210	XNC 219	Hamilton S.P.C.A.
411.812	XMJ 232	Ontario Dept. of Immigration
416.812	"	"
463.575	XNB 78	Yellow Cab of Hamilton
468.575	"	"
464.687	"	Hamilton General Hospital

Finally, let's take a look at some information from the DOC's "Table of Frequency Allocations."

FREQUENCIES	ITU ALLOCATION TO SERVICES (Region 1,2,3)	CANADIAN ALLOCATION TABLE
27.500-28.000	Meteorological Aids, Fixed, Mobile	Mobile, Fixed
28.000-29.700	Amateur, Amateur Satellite	Amateur, Amateur Satellite
29.700-30.005	Fixed, Mobile	Mobile, Fixed
30.005-30.010	Space Operation (satellite identification), Fixed, Mobile, Space research	Mobile, Space Research, Fixed
30.010-37.500	Fixed, Mobile	Mobile, Fixed
37.500-38.250	Fixed, Mobile, Radio Astronomy	Mobile, Fixed, Radio Astronomy

That's it for this time. Next column will once again concentrate on frequencies below 30.000 MHz. Until then-- Good Monitoring.



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**A PC TO RECEIVER LINK**

**PART I**

"Handy" is one key word to describe a communications receiver controlled by a personal computer. And before you get the idea that "Well, my little Keystuck IV isn't capable of controlling a receiver," let's take a look at what the job might entail.

Imagine a servant that you could instruct to monitor a given band for three hours, then move to another band, monitor for an hour,

and then move again. Sounds like a servant that might get tired quickly. If that servant happened to be your personal computer, you wouldn't need to worry about it getting tired.

Your computer, with the proper interface, could take full control of a scanner, for example. You would have to have some technical know-how to make such a connection, but the job is not impossible. In fact, there are kits on the market now that will attach a communications receiver to a variety of home computers and allow the computer to display the received Morse, RTTY (teletype) or ASCII (computer) codes.

What is needed is a connection from the computer to the receiver in such a manner that the computer can actually control the receiver. Try to envision the steps that you go through when you are setting up a scanner to sweep a given portion of the spectrum to see if you can spot any

transmissions.

First you enter the start frequency, then the stop frequency (or low and high limits as some are called); then you start the search or sweep mode. The receiver then scans from the low limit selected through the band until the high limit is reached.

If a transmission is detected, the receiver is stopped, the transmission is heard, and the frequency displayed. From this point on, receiver operation varies among models. Some just resume scanning when the transmission ends; others remain stopped. Some will store the frequency and resume scanning.

How convenient it would be if your computer would log the frequency, time and date stamp it, store it for later recall, and then restart the scan. Later, the computer could change the portion of the spectrum to be scanned. All of this could be done for you and you wouldn't even need to be present for it to happen!

With a cassette recorder attached, the remote control could be actuated by either the computer or the receiver, the audio recorded for later playback, and stations identified and correlated to the frequency log.

So how do we approach such a hookup? First, look at the schematic of the receiver. Note how the various functions are accomplished. For example, is a normally open switch used to pull an IC pin to ground or a voltage to start the scan? Is the keyboard a matrix switch? The luckiest configuration you could run across is a TTL (digital) control section.

The receiver I am contemplating taking a hatchet to is a Bearcat 210. This receiver's keyboard is probably a fine example of the world's hardest to convert.

The seven-segment display outputs consist of a pulse train. Each segment output is turned on in sequence to enable one of the seven segments in a digit.

When not actively displaying a digit, the seven segment outputs can be tied to key inputs on the microprocessor chip to tell the micro which key was depressed. For instance, the ENTER key might tie segment 5 to key input line 3. This would be decoded by the microprocessor as the ENTER key.

That is a simple solution, since seven segment lines times four key input lines results in 28 differ-

ent key inputs, and the keyboard requires only 20.

So, how do I interface to such a keyboard? The solution took a while, but resulted in ordering some digitally controlled analog switches. These devices look like op amps with a digital on/off line.

I hook one in parallel with the individual key I want the computer to push, letting the computer apply a digital signal for a portion of a second to the digital gate line. This causes the input to the switch to appear on the output, just as if I pushed the switch. The result is the same. It works just like a relay, except smaller, and it is actuated by a digital signal.

If I install one of these analog switches everywhere I have a mechanical switch, I can cause the computer to press any switch in any sequence. This solves the problem of the computer being able to "press" the keyboard. Once the computer can do this, it can enter any frequency, press the enter key, etc. In short, the computer can enter anything you could manually.

Now the only thing left to do is figure a way to let the computer know when a transmission is detected and then pass the frequency of the detected transmission to the computer. Normally, the scanner will lockup on the frequency being received and display the frequency being received in the scanner display.

So all we have to do is convert the display signals into a digital form that can be transmitted to the computer. I am currently looking into some converter chips that will recognize when a display segment is activated and output a digital signal.

Since the difference between an activated segment and a non-activated segment is about 0.8 volts and is not referenced to ground, converting such a signal to a digital level can be tricky.

With the receiver wired to receive digital signals to push keys and pass frequencies to the computer, all that remains is to add a small amount of TTL logic to defeat the circuitry just added.

This circuitry is wired to a toggle switch that allows normal receiver operation and, at the flip of the switch, enables the computer to take over the operation of the receiver.

All of the circuitry is constructed on one circuit



**BITS cont'd**

board which is added to the receiver and fitted with the appropriate multi-pin connector. Sometimes finding a place for the added board is a challenge in itself!

The above description of receiver modification is very general in nature and is intended only to outline the steps needed to do a conversion. I cannot give detailed information in this column because there are many home computer models in use and many receivers of various brands.

The easier models are the earlier solid state receivers and, of course, most home computers use the TTL (digital) signals on the interface. This interface is referred to by many names.

On a Commodore VIC-20 it is called the user port. On an IBM PC it can be a parallel port, a serial port, or a game adapter card, to name a few. The VIC-20 also supports an RS-232 cartridge. There are as many adapters for as many computer models as there are fish in the ocean.

In most cases, however, if a device to be controlled can be set up for TTL level input and output for the required function, half the battle is won. Most computers can be made to handle such an interface.

Next month we will take a look at the other end of the hookup and see what a typical computer port looks like. Later, perhaps, we might even take a look at a control program, how the logging might be achieved, and so forth.

Should anyone have a question on this or any other BITS column, I will

**VHF SKIP from p.12**

radio astronomy, and no base or mobile operations will be assigned to these band segments. If you hear Spanish on any of these frequencies, it won't be coming from Argentina or Uruguay.)

38.03 National Research Council, Experimental Station; 500 watts, AM emissions; VE9 BAS; Churchill, Manitoba

I'm not sure what sort of experimental station this is. Maybe some of our Canadian readers will shed some light on this high powered operation.

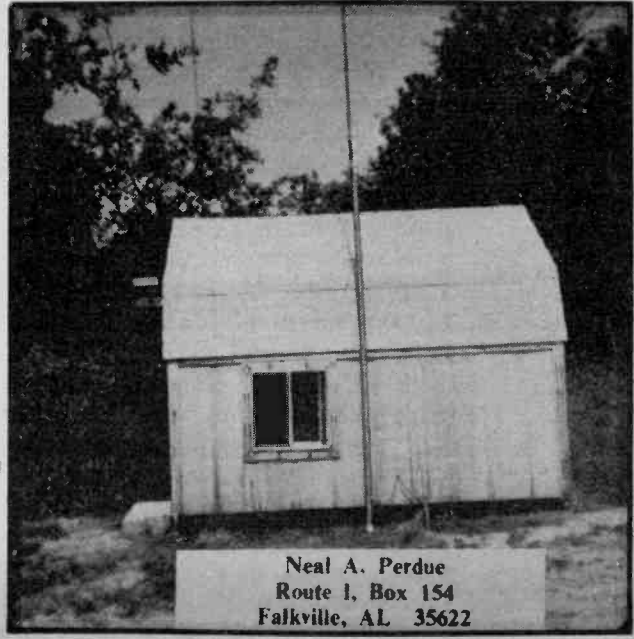
The National Research Council is also in charge of radio astronomy assignments for Canada. I wonder if the experimental station at Churchill could be an observatory involved in radar astronomy, beaming strong signals at objects

try to answer if possible. Please do not ask me to do a complete design or conversion as the time alone would make it impossible. I will try to answer any technical question, provided it is accompanied by a stamped self-addressed envelope. ●

Ernie Rice of Hamilton, Ohio, surrounds himself with vintage gear including a Bearcat 210XL, Radio Shack DX160, CB SSB rig, CR2021 receiver, GE World Monitor, Grove TUN-3 MiniTuner, surplus BC-342 receivers, and his TI 99/4A computer to log his intercepts.

Neal Perdue of Falkville, Alabama, has his very own "radio shack."

**MONITORING POST**



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Neal A. Perdue  
Route 1, Box 154  
Falkville, AL 35622

within our solar system, then switching off the power and listening for the echo. Details about meteors, moons, planets and gas clouds can be gained, details which visual astronomy cannot provide.

Oddly enough, the sun has proven the most difficult target for radar astronomy. It produces intense radio noise over a wide range of frequencies and the solar atmosphere is highly ionized, thus reflecting most radar beams before they can penetrate to the solar surface.

38.08 Thibodeau-Finch Express, Ltd; 22 mobiles and base, 50 watts, X00516; Montreal, Quebec; both French and English languages used

38.08 McMullens Refrigeration and Heating, Ltd; 5 mobiles and base, 50 watts, XOX254; Red Deer, Alberta (Note: The frequency 38.08 is also monitored at Ft. Davis, TX, for radio astronomy observations.)

38.10 National Veterinary Clinic, Ltd; 2 mobiles and base, 100 watts, XOW544; Nanton, Alberta

38.10 U.S. military, Ft. Drum, Watertown, NY;

mobile and occasionally base units on range are heard; wideband FM.

38.15 U.S. military, mobile units heard loading and unloading materials; location unknown; wideband FM.

38.20 Allen Carduner; 3 mobiles, 5 watts; Swiftcurrent, Saskatchewan

38.22 Department of Commerce; some telemetry reported in the past; a base/mobile operation at Rockville, MD, KCU 727, is licensed for 5 watts.

38.22 Department of Health and Human Services; 1 watt paging

**AMATEUR RADIO ASTRONOMY**

There are several radio sources the amateur radio astronomer can monitor with only a minimum of equipment.

**JUPITER**

What, you may ask, does listening to Jupiter have to do with VHF skip? Not much, but it certainly is long distance propagation!

Jupiter emits powerful bursts of radio waves from about 10 to 38 MHz, but mainly between 18 to 21 MHz. Emissions usually take place on several frequencies at once.

Through a loudspeaker, the Jovian broadcasts sound

strange, indeed; chirps, staccato noises and seashore sounds make it a most unusual radio source. Even those not involved in the hobby or radio astronomy are certain to find these signals interesting.

The emissions are less intense during the sunspot maximum, indicating that the Jovian ionosphere becomes more ionized and so reflects the radio emissions back to the planet's surface. This makes the next few years the best time to monitor these signals, since we are now in the low point of the 21st solar cycle.

The Jovian moon Io also enhances these radio emissions as it passes through Jupiter's "Van Allen" radiation belts once every seven days.

The origin of the radio source is unknown, but it appears to be coming from an area less than one-thirtieth (1/30) of the visible disk of Jupiter; therefore, signal intensities vary roughly with Jupiter's ten-hour rotation rate.

If you don't hear the Jovian emissions the first time you try wait a couple days and try again. It may be that the radio source is



**VHF SKIP cont'd**

on the far side of the planet. To monitor these Jovian broadcasts, point your antenna skyward toward the signal source.

Jupiter follows the same general path across the sky as the sun and at night it is one of the brightest objects in the sky. Refer to astronomy periodicals for the position of Jupiter on any given day or night.

**THE SUN**

Many DX'ers are aware of the 2800 MHz solar flux numbers recorded at Ottawa, Canada, and the significance they play in predicting F<sub>2</sub> skip openings. But the sun produces radio emissions over a wide range of frequencies, thus allowing the amateur astronomer to record sunspot activity and the progress of solar flares with very simple equipment.

Sunspots produce Type 1 radio bursts, short-lived intense pips lasting only a fraction of a second. When a series of these occurs over a period of hours or days it is called a noise storm and is very easy to monitor over a wide range of frequencies.

Occasionally, solar flares occur on the surface of the sun, mostly at sunspot maximum. These solar explosions shoot clouds of particles upward into the outer atmosphere of the sun, the corona, generating radio waves of successively longer wavelengths (see figure 1.)

As these expelled particles move through the layers of the corona, they disturb the electrons in that region in such a way as to cause the electrons to oscillate at a rate determined by the density of the region. Since the density of the sun's atmosphere decreases with distance from the surface, progressively lower frequencies are generated.

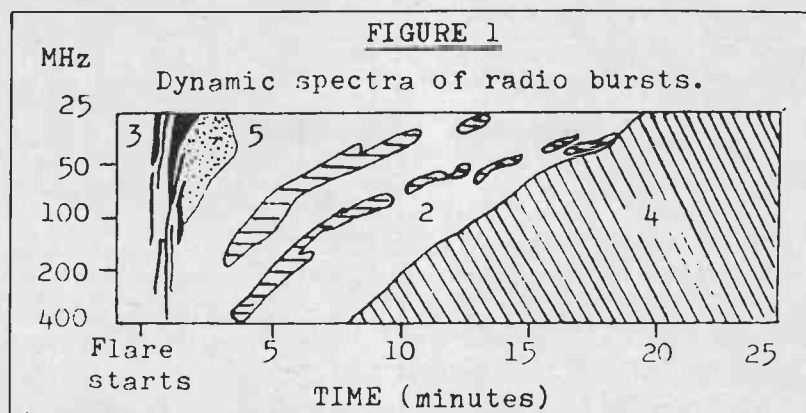
Type 3 radio bursts are produced at the commencement of most flares and occur as a series of spikes, each lasting a few seconds.

Type 5 bursts occur next and last much longer than the Type 3.

Type 2 bursts last even longer, usually five to thirty minutes.

Type 4 radio bursts occur after the maximum of the flare and cover frequencies from microwave to HF.

(Note: The numbering of these bursts was derived from the order in which they were originally discovered and have no other significance.)

**OTHER RADIO SOURCES**

Other radio sources with emissions in and around the 38 MHz band include Cassiopeia A (Tycho's Star) and Taurus A (the Crab Nebula). Both are supernova remnants--stars which exploded.

Cygnus A is an exploding galaxy called a radio galaxy because of the intense radio emissions occurring in two lobes around its center. Cygnus A is a strong radio source even though it's over 550 million light years (3 quintillion miles) away!

Galactic radio noise from the Milky Way is easily monitored by pointing the antenna toward its center, known as Sagittarius A.

Detection of radio emissions from the Milky Way might be said to have marked the beginning of radio astronomy. In 1932, Karl Jansky, a Bell Telephone Laboratory technician, found that an increase in his receiver noise occurred when he pointed his antenna toward the Milky Way. Jansky was also the first to detect radio emissions from the sun (see photo A).

**RECEIVERS**

Receivers used for amateur radio astronomy can be off-the-shelf short-wave radios and scanners with AM ability. A sensitivity of at least 1 microvolt is considered necessary, easily met by most of today's radios. Preamps can be used for receivers with poor sensitivity.

**ANTENNAS**

For the "serious" amateur radio astronomer, the antenna used should have a minimum of 10 dB gain. At frequencies below 100 MHz

such antennas are quite large. Several yagis, quads or circular quads can be stacked to form an array of adequate gain.

For strong radio sources like the sun or Jupiter, simple directional antennas such as the single element circular quad can be used (see photo B).

It consists of a circular element one wave length in circumference, mounted 1/4 wavelength from the reflector. For frequencies below 100 MHz, the loop can be made from any sort of metal tubing between 3/8 to 3/4 inches in diameter. The reflector is made of screen wire, aluminum foil or sheet metal. Reflector dimensions are 1/2 wave by 1/2 wave.

For monitoring applications, impedance matching of the antenna to the feed line is not critical. The actual impedance of the antenna is 200 ohms. Fifty or 75 ohm coax may be used, and 300 ohm twin lead is even better. A standard TV balun transformer between the antenna and coax will provide best matching.

At low frequencies this antenna is quite large. It may be better to use a 1/2 or 1/4 wave element mounted 1/8 or 1/16 wave away from the reflector, respectively. The reflector can also be reduced accordingly, from 1/2 wave to 1/4 or 1/8 wave, respectively.

The circular quad I built in photo B is 1/2 wave at 38 MHz. The element has a circumference of 12-1/2 feet, and is adjusted for a velocity factor of 97%. The element is mounted 39 inches from the reflector.

Coincidentally, this antenna is also resonant at 19 MHz (1/4 wave) and is also a full wave antenna at

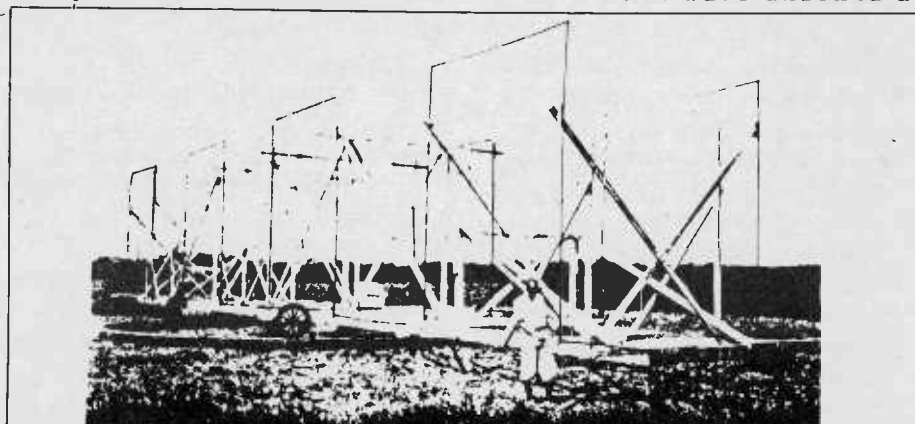


Photo A: K.G. Jansky with his rotating array (courtesy Bell Laboratories) Frequency range, 15-30 MHz

76 MHz which is very close to the 73-74.6 MHz radio astronomy band!

For details on how to add director elements to this antenna for increased gain, see Reference 7.



Photo B

**KEEP LOOKING UP!**

For the serious amateur radio astronomer, there are new discoveries to be made! Much of the sky is still "unmapped" at certain frequencies, usually because professional observatories don't have the time or equipment to do it all.

For those who are patient and hardworking, there is a very real chance of finding new radio sources in the depths of our universe! "Space, the final frontier."

**NEXT MONTH:** Back to earth! I've discovered several more German language VHF channels in use and another pirate taxi cab operation in New York--Spanish, no less! And several Canadian fishing fleet channels have been netted; speech inversion scrambling is used on some of the frequencies.

Sporadic E ionization should be very intense and widespread in July. Set your scanner on "search" and reel in the catches. See you next month!

**REFERENCES**

1. Radio Astronomy for the Amateur, by Dave Heiserman
2. Introduction to Radio Astronomy, by John Potter Shields
3. Radio Universe, Second Edition, by J.S. Hey
4. The Invisible Universe, by Gerrit L. Verschuur
5. Our Changing Universe, The New Astronomy, by John Gribbin
6. The Evolution of Radio Astronomy, by J.S. Hey
7. VHF Antenna Handbook, edited by Alex Barvicks, a 73 publication.

**TECHNICAL TOPICS** by Bob Grove

**Q** I just heard on the radio today that a bill is under consideration in California declaring cellular telephone conversations "private" and making it illegal to listen to their conversations. The bill also makes it illegal to manufacture, sell or buy equipment capable of receiving cellular telephone frequencies!

What can be done or is being done on our behalf? What privileges are next? (John R. Freeman, Rancho Palos Verdes, CA)

**A** Although I am not experienced in law, I do believe that such a bill is doomed. First, it would appear to be in violation of the new section 705 (the Goldwater Amendment--formerly 605) of the 1934 Communications Act.

Secondly, state laws are not allowed to take precedence over federal laws which presently allow the monitoring of any communications.

**Q** I have a Bearcat 160 scanner which just isn't loud enough to be heard in the next room. Is there a simple modification to make it louder?

**A** Generally speaking, it is inadvisable to change circuit components which increase power levels of receivers; this can cause them to run above their ratings and self destruct.

It is a better idea to add an extension speaker. This could be on a long cord to the adjacent room if

necessary, but a large, enclosed speaker should add considerable audio clout!

**Q** What is "Trenton Military"? I have heard weather reports from them on 6755 (AM) and 6753 (USB) kHz at 30 minutes after the hour. (Don Hoos, Evanston, IL)

**A** Trenton, Ontario, is home for many Canadian Air Force operations; their regular broadcast of flight weather conditions is intended for aircraft in flight.

VOLMET (A French acronym) means "flight weather," and it's commonly used by civilian and military agencies around the globe. A comprehensive list of these frequencies can be found in Grove's Shortwave Directory.

**Q** My Regency HX1000 handheld scanner works great except for one problem: When turned on again after charging, it reads 1.233 and emits a steady whistle. I can reset it with the lower switch, but it will eventually give me a problem again. Regency fixed it once, but does anyone have any suggestions? I also have a bad hum on 460.500 when it is in the charger. (A.C. Hall, Jr.; Wake Forest, NC)

**A** Since neither problem is normal you should get back to Regency for warranty re-service immediately. Micro-processors are complex integrated circuits and are common failure points in programmable scanners.

was provided for this eventuality.

In a vehicle this speaker may be placed near the driver's head, above the corner of the windshield, for example, for greatest efficiency. You will be surprised at just how much reserve sound is waiting to be unleashed!

**More On The R71A Frequency Extension**

In an article by Bob Parnass (April '85 MT) a simple series of commands was detailed to get the ICOM R71A receiver to tune below 100 kHz. In that procedure, however, only upward tuning from 0 kHz could be accommodated; an attempt to tune downward would immediately revert the receiver back to its normal range.

Now MT reader Herman Plew has a fix for that. The procedure is as follows: 1. Switch power on; select USB mode; Press VFO/M to

M-CH; rotate MEMORY-CH switch to channel 1 or 2; set TS to slow speed.

2. With left hand on tuning dial and right hand on MEMORY-CH switch, rapidly jiggle memory switch between channels 1 and 2 while simultaneously jiggling tuning dial back and forth; stop when 0.000.0 display shows and whistle is heard from speaker (heterodyne from 1.5 kHz USB).
3. Press WRITE, M-VFO, then VFO/M to display VFO.
4. Rotate manual tuning dial upwards in frequency (clockwise) and press SCAN to reverse autotune direction downward in frequency.

If you accidentally turn the tuning knob counterclockwise 29.999.9 will appear; simply press M-VFO to restore 0.000.0.

The downward SCAN sequence may be stopped at any time either by pressing the SCAN button again or by moving the tuning dial.

Any frequency tuned may be placed into memory by rotating the MEMORY-CH switch to the desired channel and pressing "WRITE."

**Looking For Surplus Gear?**

Although progress in electronics has left much military surplus equipment--once revered--high and dry, many hobbyists still enjoy tinkering with radio and electronic equipment obsoleted by the military.

An illustrated catalog for \$2 is available from the Davilyn Coporation, 13406 Saticoy St., Dept. MT., North Hollywood, CA 91605-3475. A free illustrated catalog is available from Fair Radio Sales, P.O. Box 1105, Dept. MT., Lima, OH 45802.

**Free Color Spectrum Chart**

We commonly receive requests for a wall chart showing the primary users of the spectrum. Until MT produces a chart of its own, we like to direct inquiries to similar charts already on the market.

Recently, we received the 1985 Land Mobile Frequency Chart from International Thomson Communications Company, P.O. Box 5208 TA, Dept. MT, Denver, Colorado 80217-85208.

The full-color wall chart measures approximately 32" x 20" and shows VHF/UHF land mobile allocations in the 25-54, 150-216, 450-470, and 614-960 MHz ranges.

Although there is no

charge for the chart, we would recommend that you enclose \$.37 in postage as a courtesy.

**SCA Kits Available**

Previous articles MT has presented on monitoring subsidiary carrier authorization (SCA) services on the FM broadcast band have always brought inquiries from interested readers and experimenters as to where adaptors might be found.

We are aware of at least one source, FM ATLAS (Dept. MT, Adolph, MN 55701-0024); send for their catalog of kits, wired units and even FM radios which owner Bruce Elving makes available to his customers.

**EXPERIMENTER'S**



**WORKSHOP**

**ONE BEVERAGE YOU WON'T WANT TO DRINK**

by W. Clem Small

Anyone who investigates DX antennas for any length of time is sure to hear of the famous "Beverage," or "wave" antenna. In the 1920s and '30s this antenna was popular for its ability to dig transoceanic signals out of the static and other interference. L. J. Chu, writing in 1962, tells us that: "The most significant discovery of the capability of the wave antenna was made by Beverage. With a no. 14 rubber-covered wire, six miles long, laid in the scrub oak and sand of Long Island, he observed a significant increase in the signal-to-noise ratio from Europe..."<sup>1</sup>

Paul Godley used a wave antenna in the well-known first transatlantic amateur radio contact. This was one of the feats which first showed the value of the short-wave bands. Prior to Godley's feat, the short waves were thought to be useless for any serious communication and had been "given" to the amateurs.<sup>2</sup>

The DXing capabilities of this antenna are so extraordinary that it was used by both the United States and her enemies in the second world war to

**HELPFUL HINTS**

**Extension Speakers Help**

A note from MT reader Terry Harbough prompted this hint to MT readers. Generally, the speakers built into short-wave and scanner radios are not of the highest quality. They commonly have a tinny sound which frequently degrades into distortion as the audio level is raised to overcome background noise.

Nowhere is the problem more acute than in mobile situations, and if a handheld scanner is the radio in question, the condition is often unbearable.

The fix is simple: Acquire an extension speaker from Radio Shack or the electronics department of a discount store and, with an appropriate plug (usually a 1/8"--35 mm.--earphone plug) hook it to the radio's external speaker jack which

**EX. WORKSHOP cont'd**

"eavesdrop" across the oceans. German intelligence agencies used it to monitor U.S. east coast medium wave stations, and the U.S. used it in Hawaii and Guam to monitor low-powered Japanese broadcast stations, thus keeping informed of that country's internal affairs.<sup>3</sup>

The most extensive use of Beverage antennas was in an array of four units for overseas reception on the first transatlantic radio-telephone system operating at 50 and 60 kHz.<sup>4</sup>

This antenna has had a very productive history indeed!

The Beverage is still used today, by those who have the necessary minimum half-wavelength span to run it at its moderate three-to-twelve feet (one-to-four meters) above the ground. Actually, you can even lay it directly on the ground with some loss of signal and still have a very usable, highly directional antenna.<sup>5</sup>

Although the Beverage antenna has less gain than an ordinary dipole or a ground-plane antenna, it has a high degree of directionality which gives it such a good signal-to-noise ratio. With the signals from the preferred direction brought above the noise level, this antenna can routinely outperform many higher-gain antennas.

The Beverage is primarily a receiving antenna and is seldom used for transmitting where its high directionality does not compensate for its very low gain. Its main application nowadays seems to be in the area of broadcast band DXing, although serious amateur radio operators sometimes use a Beverage for their long-haul contacts on the lower frequency short-wave bands. I would suppose that it is still occasionally used in commercial installations for some receiving applications also.

Perhaps you'd like to give a Beverage a try but feel that you don't have the necessary real estate; well, you don't need the six-mile path which Beverage used for his first antenna! A functional wave antenna can be constructed with a length as short as one-half wavelength at your operating frequency. Of course, the longer the better, up to perhaps three wavelengths long.

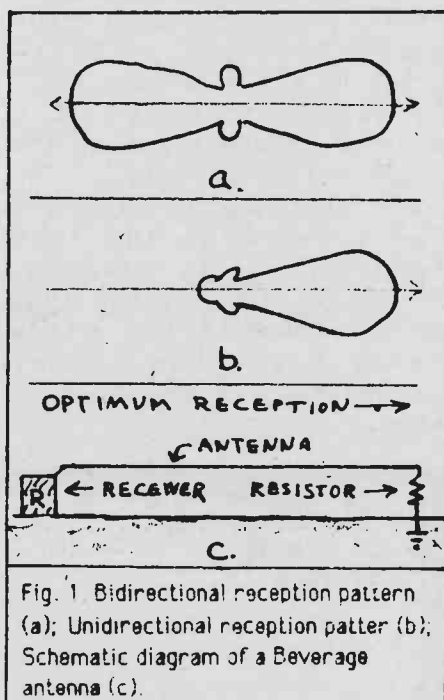
You can use a run as short as 260 ft. (60 m.) on the 160 meter amateur band, as short as 312 ft. (95 m.) at 1500 kHz near the high end of the broadcast band,

or as short as 850 ft. (260 m.) at the lower frequency end of that band. And you don't have to have an ideal location either; I once ran a Beverage down a hill into a small canyon, with good results.

To quote the International Radio Club of America's A DXer's Technical Guide, "...in spite of theory, the Beverage antenna is very forgiving. You can string out wire at varying heights over a conductive ground, let it zigzag slightly and leave it unterminated and you will probably still get some pleasant surprises in stations heard."<sup>6</sup>

Speaking of termination of the antenna, you need not terminate it if you want a bidirectional reception pattern of the sort shown in figure 1-a, but if you want your antenna to be unidirectional like the pattern in figure 1-b, you must terminate the antenna to ground at the end nearest the station you wish to receive (with the receiver at the other end of the wire). The value of resistance needed is determined by trial and error; start with 500 ohms and vary it up and down until you get the best reduction of signals off the undesired direction consistent with good strength of stations from the desired direction.

Figure 1-c shows a unidirectional Beverage installation. To make the antenna in figure 1-c bidirectional, just remove the terminating resistor.



"The natural continuation of the development of wave antennas was carried out by RCA, Bell Laboratories, and the International Telephone and Telegraph Company, in the forms of V and rhombic antennas."<sup>1</sup> The non-resonant V\* and the rhombic antennas are, like the Beverage antenna, well-known

for their high degree of directivity. Unlike the Beverage, however, they also offer considerable gain. But, as the saying goes: "You never get something for nothing," and these two antennas require considerably more area than the Beverage to construct.

So maybe it would be a good idea to keep the Beverage in mind, even if you don't have the necessary real estate to mount one. The next trip to the woods, mountains, or even to the farm, carry along a coil of wire and keep an eye out for a row of trees, bushes or supports of any sort, and don't forget the "no-tower technique" of laying the antenna directly on the ground (Do take care not to put the wire where someone will trip, or "break their neck" by running into it!).

The best location is said to be where the wire runs over a desert (poor soil conductivity) with the terminating resistor grounded in a swamp (good soil conductivity)! However, at the medium frequencies, the soil conductivity under the antenna is not as important as it was during the early days when much lower frequencies were in use. ●

\* Not to be confused with the popular "inverted V" antenna which is neither high gain nor highly directional.

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4. Laport, Edmund A. "Long Wire Antennas," Antenna Engineering Handbook, 2nd ed., Johnson, Richard C. & Jasik, Henry. McGraw-Hill Co., New York, 1984, pp. 11-17.
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1st ed., National Radio Club, Cambridge, MA, 1982, pp. 27.

Another handy manual, see reference 3 above for source.

6. A DX'er's Technical Guide, Nick Patch-Hall, Ed., The International Radio Club of America, 1980, pp. 70. Available from International Radio Club of America, P.O. Box 21074, Seattle, WA 98111.



## ANY PORT IN A STORM, or... If an antenna works, use it!

by Kenneth Hand, WB2EUF

About two years ago I got a job as a security guard at a construction project in a nearby town and, being a ham radio operator, I thought it would be nice to have my radio transceiver with me on the job. There were many lonely night hours between making rounds at the construction site so I brought my rig with me. But there was no way to put up an effective antenna.

Next to the trailer office where I was stationed was a large tractor trailer truck; could this large metal body act as an antenna? The truck body was insulated from the ground by its large rubber tires, so I attached a wire from the metal part of the truck to my antenna tuner which was, in turn, connected to my radio transceiver.

After adjusting the tuner for the lowest SWR on 80 meters, (I am located on eastern Long Island) I heard a station calling "CQ" from Florida. I reached for my hand key and tapped out a call, still thinking he would not hear me because of the weird antenna I was using. Much to my surprise he came right back to me with a solid 579 signal report from Tampa! You can imagine his reaction when I described my antenna--a large tractor trailer truck body. ●

# STOCK EXCHANGE

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Monitoring Times will print at no charge (as space permits) announcements and questions of a non-commercial service nature.

WANTED: GROVE SCANVERTER. Please, only good workable one! Drop me a price quote. M. J. Hatten, 2721 Riverview Ave., Huntington, WV 25702.

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WANTED: SCANVERTER made by Grove Enterprises to receive the 225-420 MHz band. Write to: Terry Harbaugh, 8149 Grail, Wichita, KS 67207.

>>>><<<<  
WANTED: Manual and schematic (whole) for S-40 HALLICRAFTERS. I will gladly pay for copying costs and postage. Jim Morgan, 1343 Ohio St., Lot 56, Bangor, ME 04401.

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NEEDED: Signal codes used by state police and rescue squad units in Southwestern Virginia and Eastern Kentucky, we'll trade for list of frequencies in same area. Contact Donald Powers, Rt. HC-05, Box 544, Coeburn, VA 24230.

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ADDITIONAL COMMENTS: \_\_\_\_\_

## FCC Frequency Updates Delayed Again

Ordinarily, the Federal Communications Commission reissues their frequency data base each spring, often providing updates at mid-year. But this year the schedule has been drastically delayed because of a massive reformatting of the computerized records.

The latest estimate for the release of the 1985 frequency file is September; in the meantime, the 1984 microfiche in the Grove catalog are the latest available from the Commission.

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