SMUGGLERS BLUES:
The DEA and Customs War on Drugs

by The Interceptor

"You see it in the headlines, you hear it every day, they say they're gonna stop it but it doesn't go away. They move it through Miami, and sell it in L.A., they hide it up and tell you right I mean it's here to stay. It's poppin up the governments of Colombia and Peru, you ask any DEA man he'll say there's nothing we can do, from the office of the President right down to me and you. It's a losing proposition, but once you can't refuse, it's the politics of contraband, it's the smugglers blues..."

"SMUGGLERS BLUES"
Glenn Frey, J. Tompkin

As the song goes, the Drug Enforcement Agency and the U.S. Customs Service have a monumental task: to try to stop the illegal river of drugs from flowing into this country. Each year billions of dollars worth of cocaine from South America, heroin from the Far East and marijuana from Mexico are smuggled into the United States.

There are a myriad modes used for smuggling contraband: It's brought in by illegals on foot sneaking over the Tex/Mex border; high tech aircraft fly low over the Bermuda Triangle to avoid being picked up on radar. Smugglers use many dirty tricks to avoid unwanted detection. The DEA drew some attention to itself recently when an agent was killed in Mexico by Mexican secret police. President Reagan called on the Mexican government to launch an investigation into what happened. Colombian drug smugglers boldly warned that for every Colombian arrested for smuggling and deported by the DEA to stand trial in the U.S., five Americans would die.

As the smugglers' methods get more sophisticated, so do the DEA's methods for catching them. The U.S. Navy has cooperated with the DEA through the loan of several pieces of high tech gear including a Grumman E-2C "Hawkeye" AWACS aircraft and a Bell AH-1T Cobra close-support attack chopper.

THE E-2C HAWKEYE...
Specially built as a carrier-based AWACS platform for the Navy, the Hawkeye is an extremely useful tool for aiding the federalals to find and track aircraft trying to fly drugs into the U.S. A dual, prop-driven aircraft, topped off by the round flat disc of the rotodrome, the E-2C has a strange appearance in flight, looking suspiciously like an airplane being ratted by a flying saucer.

But what the Hawkeye lacks in beauty it makes up in its electronic wizardry. Inside the aircraft is the sophisticated APS-125 ADVANCED RADAR PROCESSING SYSTEM which can "look down" and spot with its probing radar any smuggler aircraft trying to fly low over the sea to escape land-based radar detection. The Hawkeye can even detect small boats and surface craft running drugs. Smugglers don't stand much of a chance trying to sneak by a Hawkeye.

Also onboard is the ATDS (AIRBORNE TACTICAL DATA SYSTEM), the nerve center of the aircraft. From this electronic center the air control officer and radar officer are presented with readouts and displays, not only from the radar but also from some 30 other electronic sensors which include passive detectors (infrared cameras for night spotting) to the UHF, VHF and HF communications systems.

All these electronic gizmos combine to give a complete picture of targets, tracks trajectories and any communication emissions of the smugglers being followed. Also the Hawkeye is

Season's Greetings

As we enter the holiday season, we are pleased to share with you our newly expanded Monitoring Times, now with 40 full pages of timely features on communications monitoring, worldwide frequency lists, equipment reviews, articles by world-renowned authors and, of course, extensive reader contributions. At Grove, we are committed to offering you "a lot for a little," and that is why our 48-page publication will cost you no more than before. So subscribe or renew now! And order a special gift subscription for a friend! It's easy to do, inexpensive—and you'll be introducing him or her to the best communications news source available!

(See reverse side of this ad for prices and ordering information)
Radio Swan Flies Again

An MT Exclusive

U.S. technicians recently installed a new radio station on Swan Island for use by the Honduran Navy. Although the island had some old equipment left over from the days when the CIA-backed clandestine "Radio Swan" broadcast anti-communist propaganda to Cuba, most of the equipment was beyond repair and the Honduran Navy base there had been without a working radio for almost a year.

The modern station now includes a new antenna and a more powerful transmitter. In addition, an aeronautical V beacon has been set up on the island.

MT would like to thank our anonymous contributor for this excellent news tip.

Viewpoint

CHRISTMAS OF '86

The gnomes are humming all through the house. A computer, a joystick and even a mouse. The CD is playing, its tunes fill the air. White robots serve crackers and cheese here and there. Dad's under the headphones and Mom's on CB. Junior's making a video, Sue watches TV. But what is that terrible ringing and clatter? The home security system! What could be the matter? Be calm, gentle techies, no reason to fear. It's just Santa, bringing electronic gear.

Joe Buday

WOODPECKER REPORT

About 15 Monitoring Times readers signed up for the Woodpecker Project. Thanks for the publicity! Overall we got enough volunteers for three full days of monitoring, with good turn-out from England.

NEED TECHNICAL HELP?

We are always pleased to offer assistance to our readers who need more information about our products and services. All we ask is that you include a self-addressed stamped envelope to help offset the cost of return postage. Please add $1.50 for article reprints.

If you would like to speak with Bob Grove directly, call 1-704-837-9200 Monday through Friday, 8am-5pm.

Our Holiday Gift to You: MT Grows Again!

It is always a pleasure to share our successes with our readers, a large percentage of whom have been with us for our entire four year lifetime now. The good news this time is that we have added another four pages!

Perhaps even more exciting is that there will be no increase in cost! Yes, it will cost us more to print, but the continued growth of our subscription list and increased support from advertisers who recognize the selling power of MT will cover our additional expenses—at least for the present.

Along with the increased page count will be additional columns and feature articles. Prospective writers are contacting us after having read our invitation in a previous issue. Let us know what regular features you would like to see that aren't already covered.

Of course we all know that prices are going up all around us; we certainly can't guarantee that our subscription rates won't increase in the future, so this would be an excellent time for you to renew your subscription for up to a total of three years at the present low price. Or remember—we will send your MT gift and card with your holiday wishes.

Monitoring Times will continue to bring our readers the most accurate and up-to-date information on the broadest range of topics in the publishing industry.

We wish all of our readers a festive holiday season and a prosperous and enjoyable new year.

Joe Buday

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and Japan due to local publicity. In addition, Tektronix has lent us a 4292 spectrum analyzer, an amazing and versatile tool. I'll write an article for MT about our use of the spec'an.

Robert Horvitz

SPEAKING OF MONITORING TIMES...

John Santosuosso's column is nearly my favorite.

Havana Noon is entertaining, but his "man of mystery," "I know the REAL story," act is getting old. Come on, Havana," when you have something to say just lay it out on the table without the frills. (What is a "milshake Mademoielle" anyway?)

I prefer a monthly MT. Twice monthly wouldn't provide that much more timely information. A better way would be a totally separate bulletin, sent out monthly.

Contents would be only sensitive items, such as predicted propagation, real or imaginary. Advice on how to tune in the world's latest trouble spot. The bulletin would be newsletter format, only two or three (at most) letter-size pages stapled together.

Larry D. Loper
Sugarland, TX

Here is some reader input and a renewal check.

My most highly liked column is TV Viewpoint, Scanning 300, Behind the Dials, Technical Topics.

My most disliked column are: Los Numeros, Pirate Radio and Tune In Canada.

May I suggest some changes of format? Utility Intrigue! In a major coastal area, more voice intercepts and less RTTY, FX, CW, etc. Scanning columns should have more information on how to intercept non-FM modes. Signals from Space should, in addition to telling what is up, tell how to intercept the communications.

You need to do an article on the performance of inexpensive computers used with inexpensive SSB radios (WP) used with indoor whip antennas to decode RTTY and CW. I feel you could save some of your readers from a possible waste of money.

My experience with the above set-up yields the following results:

RTTY—not-existent reception CW—variable coastal shore stations copiable

Hams—only if 59 or greater

on scale

I use an MFI receive-only interface.

Certain columns I would like to see only every other issue. Examples are Pirate Radio, Los Numeros, Tuning, Canada and High Seas Radio. This way new featured columns might be test run in the off issue, columns like Ham Radio, a column on who has free or cheap info for the asking.

Finally, I would like to see a twice-monthly paper from the-WHITING shop. I would be willing to pay 20-25 dollars per year.

Mark Papel
Cajon, CA

I really enjoy MT, particularly your technical comments and articles. Please write some articles on interference, the know and cures (EMI, EMC, RFI, solid state ignitions, computers, etc.) It would be especially helpful if you could tell us where to get help from auto manufacturers.

Ken Proctor
Fl. Nonomuth, NJ

(Excellent topic, Ken. Who about it, writers?...Bob)

Some thoughts for your consideration. I enjoy construction projects but I have been badly burned by them in the past. I have gone to unbelievable lengths to obtain small parts from electronic parts to build projects only to have them go up in smoke or at best not work at all. These were, of course, projects. The hardware and projects in electronics magazines. Months later a blurb would appear telling that the green wire from the fritids should have been connected to C6 instead of 220 volts. I guess that info was for the survivors.

By this time I usually had 40 dollars in parts and 55 dollars in postage and shipping. Point is if you are going to do construction projects in Monitoring Times I hope you will have an outside party assemble parts and build the item to see if it works from the actual sheet you print. I would build an MT yet but I am very pleased you are moving in the project direction. I am sure in your time you have experienced what I am speaking of.

I would like to see several things, like a tuner you could build at home with variable rf (an becomes a situation and variable gain that could be dialled in and out.

My favorite though would be a SW converter for my car radio for 49 and 31 meter bands so I could ride down the road listening to the BCB brookwell also I think I would like to see would be involved in finding a 12 volt car radio that would do something regularly well. I'm in the house for BCB DX, with a 110/12 power pack of course. I have done one or two, and car radios are usually hot in third receiver while in first. Indoors, hotter even than the current communications receivers I have seen. A simple 49 meter band converter with a 12 volt radio from a wrecked car could get someone new into radio in a big (and fun) way for minimum bucks.

I do want to say how very impressed I am with what you have done with Monitoring Times. The paper is always packed with interesting information on a broad range of topics. I am not interested in ham radio, as I find hams and what they have to say very dull. Most of the time, however, (my opinion) you toaster, plug it in, and do a higher type (half notch higher) ten-four good buddy act. However, the ARRL Amateurs Handbook and ARRL Antenna Handbook are price less for anyone who wants to find out how things work.

Larry Brookwell materials I got from you (82 and 83 Equipment Reviews and supplements and "Tail Gunner") are priceless. I've built a monotuner III is just great. The three year anthology of MT is also great. I have been in on MT almost from the start; I think I still have issues one and two.

Overall I am very pleased with what you do and what you have been able to accomplish in a very short time. Too bad Larry Brook well is not here now to applaud you also.

R. L. Adams
Charlotte, NC

HAMS:
We Win Some, We Lose Some

A new ham band has been added to the amateur spectrum but another has been lost—at least to northern U.S. hams.

The FCC, in the face of vigorous opposition from the commercial radio communications industry, has granted the hams virtually any mode of operation in the new 35 meter band, 902-928 MHz. Lost, however, to all U.S. hams north of a line 150 miles from the Canadian border, including some major U.S. population centers (Seattle, Detroit, Cleveland, Buffalo, etc.) is the 420-430 MHz subband of the amateur 420-450 MHz allocation.

The loss was not totally unexpected; a U.S. federal court ordered on April 12, 1982, guarantees the Canadians protection from U.S. interference on that band, a prime Canadian UHF land mobile allocation.

The American Radio Relay League (ARRL) has recommended a band plan for use by hams in the new 35 cm spectrum; it is printed below:

902-904 MHz Band Plan

902-904 Narrow Band Weak Signal...-8 SSTV, FX, AC8S, Experimental

902-903.0 EM, CW Expansion

903.0-905.0 EM (Earth-Moon) Earth

902.07-902.08 CW Beacons

903.1 CW, SSB Calling Frequency

904.0-904.3 Crossband Linear Translator Inputs

904.6-905 Crossband Linear Translator Outputs

904.9-905.0 VHF No. 2 Beacons

904.9-905.0 Digital Beacons

905-906.0 Narrow Band FM Simplex Channels

906.5 National Simplex Frequency

906.5-907 FM Repeater Inputs

907-908 FM Repeater Outputs

908-910 Amateur Television

916-918 Digital Beacons

918-919 Narrow Band FM Simplex Channels

919-922 FM Repeater Outputs

922-928 Wide Band Experimental, Simplex ATV, Spread Spectrum

Hams are permitted to use their new band beginning September 28, 1985.

On another note, a recent release of amateur licensee statistics from the FCC shows that in the first half of 1985, licenses were granted to one new ham four years of age and another at the age of 103!

Amateur radio license count is, however, continuing to decline. Following a large exodus from CB to amateur radio a few years ago, the licensed amateur population reached an all-time high of approximately 450,000; it has dropped now to 410,000 and the loss is expected to continue.

www.americanradiohistory.com
WHO'S ON FIRST?

by Patrick O' Connor
Plain Road
Hinsdale, NH 03451

PART VI
30MHz and Above - VHF and UHF

The frequencies above 30 MHz--the new frontier of the DX'er--are normally broken into two sections:

- Very High Frequency (VHF), 30 to 300 MHz; and
- Ultra High Frequency (UHF) 300 MHz and up.

Although this spectrum is far too large to cover completely in one-or even several--articles of reasonable length, here are some of the band breakdowns.

BROADCASTING:

- TELEVISION occupies three separate band sections: VHF LOW (channels 2-6) 55-87 MHz; VHF Hi (channels 7-13) 175-215 MHz; and UHF (channels 14-83) 471-889 MHz. The transmission mode used for sound is frequency modulation (FM).

Even if the culprit tries to outrun the Cobra, he had better have a lot of horsepower on his side; the Bell AH-1 has a top speed of 207 mph, more than enough to catch your heavy loaded drug transport. And once the smuggler has landed the Cobra flies above the scene to support the DEA agents on the ground.

- Even with all this impressive hardware, tons of contraband slip into the U.S. every day. You can listen in on the action with your home short-wave receiver.

FREQUENCIES

HF NETWORKS (US) 4,378 4,500 5,680 6,512 7,572 8,019 8,786 9,802 10,770 11,076 12,222 13,150 14,371 18,666 MHz

FM RADIO occupies 88-108 with 200 Khz channel spacing on the "odd-numbered" frequencies (ie. 88.9 MHz, 106.1 MHz). The first few megahertz in the band contain many low-powered, non-commercial stations, with the high-powered stations generally taking the upper portion.

AMATEUR:

- Ham radio occupies several bands in the VHF/UHF spectrum, notably 6 meters (50-54 MHz), 2 meters (144-148 MHz), 1-1/4 meters (220-225 MHz), 3/4 meters (75 MHz), and many others even higher in frequency.

- Almost all possible means of transmission are used--AM, FM, PM, Morse code, facsimile, slow- and fast-scan television, data, etc. The pioneering work of radio amateurs has helped to open this range for commercial exploitation.

UTILITY:

- Many, many, MANY divisions here! You can hear police, fire, highway and other public-service agencies in 37-46, 154-159, 453-512 MHz); aircraft to ground communications (118-136 and 225-400 MHz--it should be noted that communications in this band are in the AM mode; almost all other users are limited to FM above 30 MHz); satellite signals (136-138, 406-406.1, 2287.5 MHz). [S-band, used by the Space Research program (1200 MHz); and many other fixed and mobile service applications.

- Why would people want to listen to these bands? Curiosity. These are popularly called the "action bands"; here you can listen to real-life cops going up against crooks, [sometimes more exciting than watching reruns of "Dragnet" or "T.J. Hooker"]! Firemen fighting to save a building; railroad crews working to get a delayed train back on schedule; an aircraft-hijacking emergency--the possibilities are endless.

- Many amateur operators prefer the higher frequencies as they provide low-noise local communications; and of course FM radio and television are a large part of our entertainment time at home (I'll bet you never thought of watching TV as "DXing", did you?)

- There are disadvantages. Outside of occasional unusual conditions, listening range is limited to "line-of-sight"--about 100 miles or so for VHF TV & FM, even shorter for the higher frequencies (the transmitting and receiving antennas have to be able to "see" one another). The exception to the maximum range rule is the satellite over 22,000 miles. Still, there has to be a clear path between the satellite and the "dish" antenna.

The technique used to DX the VHF/UHF spectrum is quite varied, ranging from common FM & TV sets to complex, microprocessor-controlled scanned radars. Rapidly advancing electronic technology has advanced the scanner from the first crude, four channel, crystal-controlled units to the new microprocessor-based sets that need no crystals and can scan from 30 MHz on up, utilizing technology that was once classified as science fiction just a few years ago.

In DXing VHF/UHF spectrum, the crucial element is the "Beam" antennas are the rule, with the antenna aimed in the direction of the transmitter. For the highest frequencies, dish antennas, aimed with great precision, are needed.

Random or long-wire antennas simply don't cut it here; you need an extremely precise beam that you can get. Also, the lead-in from antenna to receiver is important; high quality commercial cable is necessary to avoid minimum signal loss.

Unlike the lower frequencies, VHF/UHF is virtually unaffected by day-time or seasonal variations. On FM, there is a phenomenon called "sun-up tropo" occurring at sunrise that can enhance the reception of VHF signals a little, but otherwise there is no time-related DX system.

Despite the regular variations in propagation on the lower frequencies, long-haul signals are rather unpredictable on VHF (there are virtually NO long-distance propagation modes for UHF). These include "sporadic-E skip" caused by solar ionization in the lower atmosphere; "tropospheric ducting," a weather-related phenomenon; and various "bounce" modes--meteor trails, aurora, aircraft, and the moon.

Many amateurs are actively involved in EME (Earth-Moon-Earth) "Moon-bounce" experiments using gain antennas, arrays and high power.

Sporadic-E skip is seasonal--better in the spring and early summer--and cyclical--better at the peak...
of the 11-year sunspot cycle. Tropics are weather related and sometimes can be predicted by watching for varying-temperature weather fronts.

Auroras occur mostly toward the peak of the sunspot cycle, while meteor showers are quite predictable (a good almanac will have the days for major meteor showers listed). Aircraft bounce is an exceedingly rare--and lucky--catch.

Terrain can have a major effect on reception. Those listeners on hilltops will have much better reception than those in valleys. VHF/UHF is very terrain sensitive: hills, trees, buildings--any tall obstruction can block reception. If you happen to live in a deep valley and want the DX on the VHF/UHF bands, you have three options: 1) move to a better location; 2) erect a very high antenna to "see" over the hills; and 3) develop another interest.

Unless you live way out in the boondocks, utility signals are available around the clock. Many fire departments usually don't shut down, aircraft are always coming and going at the larger airports, and the military is a part of life. Due to more people being awake at night, many FM and TV stations are on 24-hour schedules. There is almost always something to hear.

**VERIFICATION:**

Television and FM stations generally will verify a long-distance report and sometimes take an interest in the phenomenon. VHF/UHF hams are not the best verifiers, but many will verify a correct report according to the ARRL Public-service (police, fire, etc.) stations also aren't the best verifiers, but you may get lucky.

Some agencies used to occasionally send unit shoulder patches to listeners: I don't know if this practice still exists. Airports and ships, providing you can find an address, are fair verifiers.

Most government agencies will NOT verify reports, neither will most military stations. Since almost all military traffic on VHF/UHF uses tactical call signs, you probably have no one who can make it out anyway. The Coast Guard, however, will usually verify a correct report.

With all except amateurs, preprinted form cards and self-addressed stamped envelope are prerequisites for a reply. You should also enclose postage for airmail, though this is rarely needed, as most have their own QSL cards.

Of course, when you report to a utility station, you should report the name of the transmitter and the frequency. Call signs, and stations in contact are all right, but the traffic is private and may not be divulged to anyone. If you call your pal down the street to tell him you just heard that Joe Jones was arrested for drunk driving, that is a violation of privacy. However, there has never been a prosecution for this...yet.

Addresses will be very hard to come by. The FCC (Federal Communications Commission) license records may be of help: the Grove Enterprises catalog shows several types of microfiche which list radio station addresses. Some club bulletins occasionally list addresses. Libraries and telephone directories are additional sources for addresses.

**CLUBS:**

The monthly bulletin of The World-Wide TV-FM DX Association (WFTDA, P.O. Box 514, Buffalo, NY 14205) covers TV, FM and VHF/UHF activity, logos, etc. The Association of DX Reporters (ADXR, 230 Plymouth Rd. Baltimore, MD 21208) has an FM-TV column; the utility column reports the members' loggings of VHF/UHF use stations and lists the QSL columns reports VHF/UHF QSL's and their addresses. $1 to either club will get you a sample copy of their bulletin and membership information.

These and other clubs are mentioned on a monthly basis in Paul Swearingen's Club Corner column in Monitoring Times. VHF/UHF DX'ing isn't everyone's cup of tea. For those who like it, however, it is an exciting and varied

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**UTILITY INTRIGUE**

by Don Schimmel

516 Kingsley Rd SW

Vienna, VA 22180

A different type of NUMBERS broadcast was encountered on 13372 kHz on 30 September at 1719Z. This CW transmission was automatic Morse 3F groups with all numbers sent full and BT was sent after every two groups.

Another new one to me was some number groups sent between 1245-1345Z on 10 and 11 October. The brief message consisted of a 2F group followed by a 2F group and these two groups were repeated for approximately five minutes. The two groups would then be changed and this new combination would be sent for about five minutes. This procedure continued for an hour and then the transmitter left the air.

The 11 October transmissions were not the same group as those on the October schedule. Again, two groups would be repeated for about five minutes and then they would be changed to two new groups and so on until 1345Z.

A possible Latin American military activity was on 4179.5 kHz on 12 October at 1000Z. NEPTUNO was called by MARTE on USB voice requesting a signal check. The stations shifted back and forth between RTTY and CW, and the transmission resulted in garbage for print-out so it was apparently an enciphered RTTY. The stations then went off the air for a few moments and then back to RTTY again.

The next time they went to voice, one station indicated the traffic could not be copied on RTTY back to RTTY they went for another try. I stayed with the circuit for a while but was unable to come up with anything that might lead to identification.

Some strange traffic was on 4119.5 kHz on 9 October at 0018Z. The message appeared to be in code and a sample of the text looks like this: 42 AAA 327 412 AAA AAA AAA 300 AAA AAA 421 AAA 40 AAA 320 AAA 415 AAA 42 AAA etc.

Throughout the entire message, a 2F group was always followed by two 3F groups. The unidentified station would call NJH and then later the same station would call CQ. The only process designs noted were QSV, OK, and possibly a Spanish word (or maybe Portuguese) COPIA.

A new transmitter was heard on 10 October sending the call CQ but he was very sloppy sending it like NJH so it did not look to be the same operator as the previous evening. I did not note any traffic sent on the second evening.

The 13 MHz region produced two more interesting mystery stations. The first was on 13450 kHz on 9 November at 0038Z. I believe the CW call was BBVZ which if correct would make it an activity of the FGC. Standard QM was used and the heading was a standard military appearing type: i.e., R-1012002 -GR 69 BT.

The traffic was 5L and at the end of 50 groups he sent -B 50 R RRK. The letter O was sent for the zero. The remaining groups were not decoded by BT K. No answer was heard.

The second cipher message was copied on 13414 kHz on 9 September at 2232Z; this was a CW activity with the traffic being mixed letters and numbers. Most of the groups would be 5L but a few groups were seen with four letters and one figure which sometimes was a 4 and other times was a 5.

The heading was a simple one: R-1012002 BT. The station being called was BZ8 which would be a Taiwan allocation and the transmitting station was B2, and that is all I got of that call sign.

The next net to be discussed is a real puzzle. Similar transmissions were copied in March 1985 and were commented upon in the June Monitoring Times. The cipher traffic is 4F groups but the operator chatters is in broken English.

The stations operate between 11300-11355 kHz and the transmitters all have a raspy sound. Referring to both the U.S. and International Frequency allocation charts, the 11275-11400 kHz region is assigned to Amateur Wireless and the above described activity is certainly not what you have not observed any call signs from the ITU listing; instead, they are 3L calls/addresssee indicators as follows: BU DE FKB, GMT DE FKB, ALT DE T, TNO DE CUG. Some of the other 3L designs take the form of ADR, and the above described activity is certainly not what you have not observed any call signs from the ITU listing; instead, they are 3L calls/addresssee indicators as follows: BU DE FKB, GMT DE FKB, ALT DE T, TNO DE CUG. Some of the other 3L designs take the form of ADR, and the above described activity is certainly not what

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This message was sent in very short but each element in the heading is repeated twice. It was interesting to note that at the first time a number is sent, it is sent full but usually when the item is repeated the numbers are sent cut.

For cognitive purposes, here is a typical message: NR 54 NR 54 GR 5 GR 5 212120 UAU3UT AZM AZN 9214 NUA4 BT 45... 8291 9762 9420 5101 BT.
In the operator chatter, liberal usage of QSP, QSO, QSY, and QRM is very much the order of the day. In addition I have seen QRD (where are you bound for?), QTV (Stand guard for me) and QTA (Cancel Telegram number)...

The stations are most likely ship-based in view of the use of QRD and references in operator chatter to "MASTER..."

They must be spread out over a wide area as evidenced by the remark in one piece of chatter as follows: BT RR GO ..... ZONE WK MY OWNER/MASTER FIX GO WK BT HR NEAR DAY WL QSO NORTH ZONE IF CONDITION STL GD WL CHG COS GO NORTH AR MSG PSE QSP TO INDIAN OCEAN QSP TO KAO YES BT etc.

On one occasion I saw a string of 12 short messages sent, one right after the other. I would have to assume from this that the receiving station was different to perform the relay because each message had a different 3L indicator in the heading.

Several times I heard voice activity in some Oriental language and these transmissions do seem to be carried on with the CW activity. I would think that if this is a legitimate (fishing?) operation, normal call signs would be used, rather than the unrelated 3L call signs.

I was aware that the Inter-American War Games for 1985 were scheduled for October so I decided I would spend an entire day monitoring their communications. The IA Naval Telecommunications Network was to provide the communications for these games and I therefore began the day by checking the various network frequencies. NAB Balboa was acting as a communications relay facility and was found to be simultaneously operating the RTTY traffic at 251230, 12182, 13371.5, 16194, and 19616 kHz. The frequency of 20741 kHz was mentioned in operator chatter by one of the

### LOGGED SEPTEMBER 1985

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<th>DTU</th>
<th>MODE/IDENTIFICATION/COMMENTS</th>
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<tr>
<td>13159.2</td>
<td>23126</td>
<td>RTTY 50-850/DE CAITE (CHILEAN ALICO) HYS CW/L5/GRS NR 99167 CW/L5 AWARD</td>
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<tr>
<td>13267</td>
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<td>27225</td>
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<td>24231</td>
<td>RTTY 50-425/DE STK (GREEK ALICO) RYS 4</td>
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Radar transponder replies are one-half micro-
second pulse pairs with 21 micro-second spacing. These
pulse trains contain data (altitude information and
squawk code) and the usual output power is 250 watts.
The ground interrogation signal comes from an antenna
which is mounted on top of the traffic control
radar antenna and sweeps with it.

The replies received from aircraft in the area
are decoded by a computer and displayed on the radar
scope as enhanced blips (more visible than just the
primary radar return) and have a data block that is
displayed next to the blip.

The data block con-
tains such information as
altitude, flight number, and
ground speed. Normally only one squawk code (0968 is
possible) is assigned for the entire flight. The air
traffic controller can 'blot out' unwanted targets by
asking the computer to display only those transponder
replies that he is inter-
ested in.

Radar transponders
are not limited to commercial
aircraft but are carried by
most all aircraft and are,
in fact, required by law if
you operate any aircraft in
a TCA (Terminal Control
Area) which are radar con-
trol areas set up around
larger cities in the U.S.

Totally separate from
but using adjacent frequen-
cies (and usually the same
antenna on the aircraft) is
the DME system which has
nothing to do with radar or
air traffic control. In the
operation of DME, paired
pulses at a specific spacing
are sent out from the air-
craft (this is the interro-
gation) and are received
the ground station (usually
a VOR station which is used
for navigation and not asso-
ciated with any ground
radar).

These interrogation
frequencies are from 1025 to
1040 MHz (military aircraft)
and from 1087 MHz and
military aircraft) and
have one MHz spacing. The
ground station (transponder)
then transmits paired pulses
back to the aircraft at the
same pulse spacing but on
a different frequency (962 to
977 MHz military only and
978 to 1000 MHz; additional
frequency pairs in the range
1091 to 1213 MHz).

The time required for
the round trip of the signal
exchange is measured in the
air and DME will indicate
translated into distance
(nautical miles) from the
aircraft to the ground
station. This information is
displayed on the aircraft
instrument panel as a
digital readout of ground-
speed and distance to the
VOR ground station.

DME is identified by
coded tone modulation at
1350 Hz. Frequency pairings
reserved solely for military
use are known as TACAN.

Because these signals
are strictly line-of-sight,
reception of the ground
based signal (transponder)
would be difficult unless
one is close to the station.
On the other hand, aircraft
emissions should be audible
up to 150 miles or more
depending on the height of
the aircraft.
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Introducing two all new Regency scanners. First, there's the MX7000, a 20 channel, no-crystal unit that receives continuously from 25 to 550 MHz and 800 MHz to 1.2 GHz. That's right! Continuous coverage that includes VHF and UHF television audio, FM Broadcast, civil and military aircraft bands and 800 MHz communications. Next in line is the new MX4000. It's eight band coverage includes standard VHF and UHF ranges with the important addition of 800 MHz and aircraft bands. Both units feature keyboard entry, a multifunction liquid crystal display and selectable search frequency increments.

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another chance to monitor these "unearthly" comms!

**GIVE ME LIBERTY**

Planning a trip to the Statue of Liberty? You'll want to program the frequency 34.79 MHz into your scanner. It's used for communications on Liberty Island and the ferry boats.

The base uses the call sign KD7003 or just "703." Government frequency files show the base licensed for 45 watts and ferries for 5 watts.

Wonder where the antenna for the Liberty Island transmitter is located? For only 45 watts she sure puts out a smashing signal here in Illinois!

![Image of the Statue of Liberty]

making radio checks on 38.00 MHz. It's my guess this is the radio system at the Iwo Jima National Monument in Washington, D.C. Other VHF low band frequencies may also be in use.

The monument depicts the familiar U.S. flag-raising atop Mt. Suribachi during World War II.

**THE PENTAGON, JEEVES**

A new Pentagon VIP taxi frequency recently became operational in the Arlington, Virginia/Washington, D.C. area. The channel is 32.53 MHz, narrowband FM. It's used for dispatch by the Pentagon base, with mobiles on the old Pentagon taxi frequency 32.53 MHz. The channels are used semiduplex.

There are two bases, 600 and 120 watts, and both regularly identify as "315" (actually, mobile taxicabs). Mobiles are licensed for 30, 50 and 120 watts.

Encoded tone bursts, another new addition to the radio system, are used mainly by the taxis to signal status — en route or standing by. These high-pitched chirps often occur without any verbal comment by the base or taxi.

As with other VIP taxi services in the Washington, D.C., area, four-digit numbers are often dispatched instead of the specific address or VIP's name. This is done for security purposes. Nevertheless, you'll still be able to hear lots of general locations like NSA House A, the State Department, the Pentagon, etc.

DE5-Federal scrambling has also been heard on 32.53 MHz. It's unclear whether this was Pentagon taxi comms or skip coming from some other far flung operation.

Pentagon security officers can be heard on 36.71 MHz. The base is located at Ft. Myer, Virginia, call sign WAR300, 60 watts. Mobile units are licensed for 30 watts.

More Pentagon security operations can be found on 36.79 MHz. The base is located at or near the Pentagon, call sign WAR430, 100 watts. Mobiles are also licensed for 100 watts, and portables for 5 watts.

Many of the support facilities and personnel which service the Pentagon are located at Ft. Myer. A similar liaison exists between Ft. McNair and Washington, D.C. Here are some other frequencies for the Pentagon area. Sources for this information are Bob Grove's Federal Frequency Directory, the government frequency files and on-air monitoring.

- 30.49 Pentagon, 5 watt AM mobile units
- 32.31 Vint Hill Farms, AAC 614, base 100 watts, mobiles 100 watts, walkie talkies 1 watt
- 32.85 Ft. Myer, 100 watts, mobiles 30 watts, fire channel
- 34.15 Langley AF, mobiles 2 watts, WBFM
- 36.55 Ft. Myer, WARB, mobiles 2 watts, WBFM
- 36.99 Pentagon fire channel
- 38.53 Vint Hill Farms, AAC 612, base and mobiles 100 watts, walkie-talkies 1 watt

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References
Richard B. Barnes, Director of INTERBOBS, Perth, Scotland—15 September 1985: "GUIDE TO UTILITY STATIONS: ... This is the most comprehensive and accurate guide to these shortwave stations on the market."

George D. Kelce, President of Digital Electronic Systems, Inc. (INFO-TECH equipment), Englewood, FL—03 September 1985: "Thanks for your books—they make the only manuals I carry right now."

Rob Grove in "Monitoring Times" July 1985: "Jorgen Keyence has earned a worldwide reputation as being a leader in measuring accurate and complete frequency lists of short-wave utility stations. Now, his former utility guide and his recently published manuals have been combined into one magnificent reference. To list it in this directory that uses listeners won’t be miss it!"

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VHF SKIP cont’d

security
38.95 Ft. Myer
39.50 Virginia state emergency radio system, municipal

40.10 Davison AAF, Ft. Belvoir, tower & aircraft 35 watts, WBFM. Ft. Belvoir is used primarily for Arm Corps of Engineer training. Davison AAF is the main Army Radio Field in the Fairfax County (Pentagon) area and houses aircraft for the Military District of Washington, D.C.

40.17 and 40.19 Langley AFB-Base 50 watts, mobiles 25 watts; Air Force Special Investigators (OSI)

40.49 Vint Hill Farms, AAC 614, Base & mobiles 100 watts, walkie-talkie 1 watt, fire channel

40.87 NASA Research Center, Langley. Base and mobiles 100 watts

41.61 and 46.87 Pentagon, State Dept.

46.65 Arlington, VAR335, Base 120 watts, mobiles 120 and 20 watts

49.07 Ft. Myer, base & mobiles 50 watts

49.80 Ft. Myer, base 100 watts, mobiles 50 & 35 watts

49.80 Davison AAF, Ft. Belvoir, base 100 watts, mobiles 50 watts. Could be BOD operations.

D.C. TAXI

Non-stop chauffeuring of VS is around Washington, D.C., can be heard on 36.63, 36.69 and 36.91 MHz, WBFM. There are four bases on 36.69 MHz (see the "Monitor- ing Washington, D.C." list below). The main base is at Ft. McNair, WAR 23. When the skip is in I see that these bases "walking on" each other. Buses, taxis and security patrols can be heard on 36.91 MHz. The base is in Washington, D.C., call sign VAR400.

Taxi’s and security patrols are also found on 36.63 MHz, call sign WAR200. Another Washington, D.C., taxi operation is on the unusual frequency of 36.22 repeater, 300 watts, WBFM. It’s used by the Department of Human and Health Services. Two bases, taxis and general maintenance have been logged on the channel. Mobile designators are "WBF".

ROADRUNNER

One of the most inter-
D.C., WAR20; Pentagon /Ft. Myer area,WAR28; Damascus, MD, WAR29; Independence Hill, VA, WAR31

36.63 Taxies, WAR200, base 300 watts, mobiles 30 watts.

36.69 Taxies, four MD bases: Ft. McNaIR, WAR23, base 60 watts, mobiles 30 watts; Aberdeen Proving Grounds, AAF, 219, base 50 watts, mobiles 30 watts; Suitland, base 100 watts, mobiles 100/60/15 watts; Davison AAF, WAR27, Base 60 watts, mobiles 30 watts. Four-digit numbers are used.

38.00 Iwo Jima National Monument, WBFM

39.10 Maryland State Police statewide

39.22 Maryland State Police marine patrol

40.10 Capitol Hill Air operations, tower & aircraft 35 watts, WBFM. Could be Media.

40.17 and 40.19 Bolling AFB; base 50 watts, mobiles 25 watts. Air Force Special Investigators & the Civil Air Patrol are stationed at Bolling.

40.45 Valley Naval Air Station, Baltimore, KE220A, paging, WBFM 100 watts and AM 50 watts. This appears to be a nationwide VA paging frequency.

40.47 Dept. of Energy Command Center, Germantown, MD; base 1,000 watts, 1699 emissions

40.60 Dept. of Defense, Army, mobile and/or walkie-talkies, 0.4W

41.83 H.H.S., Bethesda, MD; base 330 watts, mobiles 80 watts

49.40 Aircraft Landing at Andrews AFB, Andrews is the primary AFB in the Washington, D.C. area. Most dignitaries arrive and depart from there. The Presidential Flight Detachment (Air Force 1, Air Force 2, etc.) is also hangered at Andrews.

Note that 49.40 is a U.S. business channel! Military operations can and do turn up on this frequency. Other Washington, D.C., area aircraft have been logged on the unusual frequency of 31.85 MHz.

On the morning of July 13, I was monitoring air-to-air coms on 34.35 MHz between U.S. Aircraft attending an air show at Niagara, NY. At one point a pilot stated, "Oh, there you are." The other pilot only laughed. That was the last I heard from them!

Later the same day I learned that two Blue Angel A-4 Skyhawk jet fighter planes collided at the Niagara Falls International Air Show. One pilot was killed and the other parachuted to safety. The accident occurred during a hair-raising stunt called the Opposing Blivet, in which two planes approach head-on at more than 300 MPH. When the planes come to within 200 feet of each other they go into a steep 6,000 foot climb. At the top of the climb the pilots dive downward and crisscross paths at a 45° angle. It was during this climax that the planes collided.

I have no idea whether the remarks I heard on 34.35 MHz were by the actual Blue Angels involved in the crash, but they sure sound like “famous last words.”

Incidentally, the VHF-low band/UHF-aero band radio combination is very popular with U.S. military aircraft. I’ve regularly heard pilots on low band give UHF-aero frequencies over the air for other pilots or range controls to monitor. Next time you hear a VHF-aero comm try UHF-low band. You may be surprised to find much of the communications are occurring in that range!

NTS UPDATE

New information has been gained concerning the Nevada Test Site reported on in last month’s column. First, Mormon Mesa is in the adjoining Nellis Air Force Range and not in NTS. Here are the underground nuclear test sites which are in NTS: Buckboard Mesa, Pahute Mesa, Rainier Flat, north of NTS (see map).

Last month I also made the off-the-cuff remark that the multi-crunch sound heard at the end of each transmission on 36.33 and 36.39 MHz might be caused by several repeaters unkeying one after another. Let me clarify that statement. This would only be true if the repeaters are on different frequencies—not the same frequency. Two or more repeaters transmitting on the same frequency would cause tremendous distortion.

Several times I’ve heard technicians on the repeaters keying microwave antennas by use of audible tones. Quite likely the repeaters are linked by microwave relays.

Here’s how the system might work—When a mobile
Recently a letter arrived from Hugh Miller of Seattle which I found rather interesting and is related to this hobby which was mentioned a few months ago. This month I thought that I would share what was said with you, so here goes.

"Although some ships are fitted with the latest HF receivers and satellite communications costing thousand of dollars, there are many ships out there with gear which would be considered obsolete in any other service—including ham radio or the SWL hobby!"

"Of course, this is nothing new; raspy spark transmitters were still used on some countries' freighters at the outset of World War II, together with simple regenerative circuit receivers using a few vacuum tubes. Some English freighters, for example, were equipped with such setups when the war began.

"The equipment was hastily changed, especially as there was the fear that U-boats could home in on their prey by listening to the weak radiations from the regenerative receivers. Some were sunk before the new gear could be installed, and their raspy spark SOS's could be heard through the other static.

"Although World War II brought the definite end for onboard spark transmitters, I have been told that smaller spark transmitters for emergency use could still be found on lifeboats carried by the ships. For some small, poor countries as late as 1945. In the U.S.A., lake steamers on the Great Lakes still carried as late as 1920 a 200 W spark transmitter, which was replaced only in 1945 by the RCA AR8503, another LW regenerative set, albeit of a little more modern design (early 1940's).

"With the end of the war, vast quantities of old gear were disposed of in the U.S., and much of it went into the ships of many countries. For example, the Italian government has purchased thousands of U.S. heavy bombers and cargo planes, was sold in quantity to operators of fishing boats in the Mediterranean area for years after it was abandoned as obsolete by the U.S. military and commercial airlines.

"With the end of maritime double band AM in the U.S. and Canada in 1976, thousands of the old radios are becoming obsolete. For example, all of them ended up at swapmeets and fleamarkets, though, many of the more powerful sets found their way into other countries, where there were eager buyers, and AM was still king.

"For example, many high powered sets were sold to Mexican fishermen on the Pacific coast. In the U.S., DSB-AM lingered a while longer in Alaska, as a fishing boat operator there reported that the old AM "punched through" better than the new SSB rigs hung on to their high powered rigs.

"In the isolated inlets of Alaska, no authority was around to force them to change. Some Alaskan fishermen even interpreted their off-season visits to southern ports such as Seattle to buy up surplus AM gear at a fraction of the price which had commanded the year before.

"However, it wasn't only the fishing boats that were using out-dated gear. In the U.S. Navy, for example, the 1941 Collins-designed TCS transmitter and receiver were carried on some auxiliary vessels into the early 1970's. Later, when they were removed only when the ships were decommissioned and sent to the scrapyards.

"Other World War II gear such as the heavy ship's receivers RBA, RBB and RBC were used at numerous shore stations and on some vessels into the 1970's, by which time the Navy had already tried and released other vacuum-tube receivers and was only buying solid state receivers.

"One good of this kind of gear is still in use of older freighters and at a few shore stations in their worldwide--old, ex-military vacuum tube general coverage receivers, not even the "cadillacs" of the genre, but of the fairly ordinary kind that most SWL's here regard as "nothings".

"So, while some ships have the latest AMTOR and satellite systems, other have radio rooms with equipment that was "antique" in the late '40's and '50's. SWL's of the 1940's and '50's, and ham would not like to have to rely on! The new gear is very expensive and the old HF CW gear still works--it gets the message through.

Thanks for sharing this fascinating historical perspective with fellow listeners, Hugh. I know that many of us remember those old rigs with nostalgic familiarity.

Please send any correspondence regarding this column, including suggestions for topics.

THE 5 T 3 THE SEASON

A secondary seasonal peak in sporadic E propagation will take place this month. This is the month to check your SWL's QTH for season openings, especially in the first three weeks of December. There should also be a few brief F2 layer openings.

And remember, the skip you monitor in your area may be quite different from what I've heard and reported from my reports in southern Illinois. I hear a lot of strange and fascinating things, but I don't hear all. What sort of military, or pirate, foreign skip will you discover?

NEXT MONTH: We'll investigate the Private Investigators! Plus--low band police surveillance, tracking transmitters and unlicensed police operations.
but, due to space constraints, these plans and those of the later satellite packages will not be covered. They are presented in detail in my book "Communications Satellites," available from Grove Enterprises, and the band plan names mentioned in this column refer to the band plans mentioned in the book.

Table I is a synopsis of Fleetsatcom launches to date.

Based on extensive monitoring of these satellites, Table II lists the band plans currently in use by the Fleetsatcoms in operation.

When Fleet F2 was originally launched in 1979, it was located at 23° west. With the launch of F3 in 1980, F2 was moved to the Indian Ocean relay slot. Fleetsatcom was launched as a spare to be available when F1, the oldest satellite in the constellation, died. Unfortunately for the Navy, the General Dynamics Atlas-Centaur nose cone shroud covering the satellite collapsed inward during launch, destroying the primary antenna. The satellite continues to transmit telemetry, but is essentially useless due to the accident.

Fleetsatcom No. 6 should have been launched by the time this column reaches print, so monitors are encouraged to keep a check for a new Charlie channel transponder or a stronger Alpha channel transponder. Current plans also call for the launch of Fleetsatcom F7 and F8 in the 1986-1987 time frame. These new birds will carry special anti-jamming EHF communications payloads. This system will have a ship-to-shore as well as a ship-to-ship communication capability, relieving the Navy of its dependence upon shore stations for relay.

Assuming that the Fleetsatcom system would die from old age at the end of its five year lifetime, Congress approved the lease of an interim series of communication satellites. Manufactured by Hughes Aerospace, these Leasats (Leased Satellites) will provide communications to cover the period between Fleetsatcom satellite failures and MILSTAR satellite system launch.

The space shuttle has now launched four of the Leasat (Syncom) satellites, and the satellite has been plagued with major problems almost from the beginning.

Leasats have fewer channels than the Fleetsats, but with DAMA (demand-assign, multiple access), excellent supplemental channel capacity is realized.

Leasats have a diameter of 168 inches, and overall length of 243 inches, and a weight of 2,900 lbs. each.

Each Leasat communications payload is listed in Table IV. Table V is a synopsis of Leasat launches to date.

Based on information available now Table VI is a lineup of band plans that are currently in use and those of future use on Syncom satellites.

In the October 7 edition of "Aviation Week" it has been reported that Leasat 2 has suffered a wideband (channel 2) failure. Hughes engineers were working to correct the problem. This Leasat had been working fine until the last week in September when the failure occurred. As of this writing (mid-October), I still see no indication that the problems have been rectified. The satellite’s remaining six relay, five narrowband and one fleet broadcast channels are functioning properly.

Leasat 4 failed completely on September 6 after reaching geosynchronous orbit. Hughes Communications of Los Angeles, owner of the crippled Leasat 4, blamed the failure on a faulty cable between the satellite’s UHF radio transmission system and its broadcast antenna. The satellite is now considered an $85 million loss and Hughes officials have abandoned hope of reviving Leasat 4.

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- Battery power 3 AA, external AC adapter optional
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Leasat 3 was the satellite that was recently repaired by “0x” Van Hof ten on the STS-511 mission. The satellite is currently under Hughes Space & Communications control. Telemetry data from Leasat 3 continues to confirm good satellite health. The liquid propulsion systems are intact, and the solid propellant perigee kick motor temperatures appear to be rising toward acceptable levels. Hughes officials give the 40-50% chance of Leasat 3 being fully revived.

Leasat 1, over the continental U.S., continues to be the only fully operational Leasat in service. This satellite puts in a hefty signal, even here on the coast. A Leasat 4, which should be audible throughout the U.S.

Leasat 5, the ground spare, could be launched as soon as December 1985. It is now on standby. Leasat 5 will replace Leasat 4 as the PACWest relay satellite.

This spacecraft will probably be launched by the space shuttle and west coast monitors should be alert for a new set of misatcom frequencies that will appear shortly after launch. More than one thousand of these bands plan will be in use.

SFS readers are encouraged to send in your observations — frequency, type of signal (audio, encrypt, etc.) and, if available, direction of signal. I plan on updating this article sometime in the spring, as more of your observations to Signals from Space, 160 Lester Drive, Orange Park, FL 32073. I would like to thank all those who have assisted in this update, especially those who wish to remain anonymous.

SPACE LAUNCH REPORT

Information for this month’s report is courtesy of the Spacewatch Bulletin, NASA Thirty Day Special Bulletins—Go+rdad Space Flight Center; “Communications Satellite and Antenna Control”; and the editor, and the editor’s monitoring during the 23-day period covered by this report, August 1, 1985, to August 23, 1985. In parentheses are NORAD catalog numbers.

1985-65A (15931) Cosmos 1670, USSR, Tyuratam 8/1, F-1-m booster. Period 89.5 min, apogee 274 km, perigee 267 km, inclination 65.0°. Mission: nuclear powered radar ocean recon. Freq: 19.542 MHz, 166 MHz wide band.

- 65B (15932) rocket body
- 65B (15964) debris
- 65F (15965) debris
- 65G (15966) debris


1985-70A (15946) Raduga 16, USSR, Tyuratam 8/8, D-1-e booster. Geostationary orbit. Primary Freqs: 13745 MHz, 3787 MHz; 7250-7770 MHz for military communications. Associated objects:
- 70A (15947) rocket body
- 70B (15948) rocket body
- 70C (15949) rocket body
- 70D (15950) rocket body

- 71A (15953) rocket body
- 71C (15954) debris
- 71D (15955) debris
- 71E (15958) debris


1985-73A (15967) Planet A, Institute of Space and Astronautical Science (ISAS), Kagoshima Space Center, Japan, 8/16. Cylindrical with a 1.4 meter diameter, 0.7 meter height, weight 139.7 kg. It has an ultraviolet imaging camera to detect the hydrogen corona around the coma of the comet Halley and an energy analyzer to detect charged particles.

Transmits on 2293.89 MHz, FOH 0.07/5, 0.07 MHz, with coherent or non-coherent modes for ranging/telemetry. Freqs: 301.5 MHz, 211 MHz. Mission: Earth resources film return. Payload decayed 8/21. Associated objects:
- 73A (15968) rocket body
- 73B (15969) rocket body
- 73C (15970) rocket body
- 73D (15971) rocket body
- 73E (15972) rocket body
- 73F (15973) rocket body
- 73G (15974) rocket body
- 73H (15975) rocket body
- 73I (15976) rocket body
- 73J (15977) rocket body
- 73K (15978) rocket body
- 73L (15979) rocket body
- 73M (15980) rocket body
- 73N (15981) rocket body
- 73O (15982) rocket body
- 73P (15983) rocket body
- 73Q (15984) rocket body
- 73R (15985) rocket body
- 73S (15986) rocket body

THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA) has announced the name of its Deep Space Communication System to be SATCOM F-28, transponder 13, for broadcasting Space Shuttle and other real-time news events.

TVRO viewers who wish to tune in may select the programming at 3954.5 MHz, vertical polarization, on F-28 which is located in geostationary orbit, 39° west longitude. Nominal audio is available on the normal 6.8 MHz sub-channel.

TUNING IN ON SATELLITE COMMUNICATIONS

by Bob Grove

As interest in monitoring the radio spectrum moves from a curiosity to a hobby, readers are becoming more interested in listening to communications on the satellites. Several recent articles in MT have directed attention toward the TV satellites.

TV satellites do double duty—not only do they relay entertainment video to earthbound receivers, they also carry two-way communications on the transponders on the TVRO satellite.

TVRO receivers are equipped to tune in a few subscriber services, but it takes a general coverage short wave receiver to cover all TVRO satellites—the two-way users operating single sideband, facsimile, radioteletype, and data.

But where do you connect the receiver? Look for an output jack on the TVRO satellite receiver marked “video”, “6.8” or a similar designation indicating output for a special tuner.

Connect the antenna jack and your general coverage receiver to that output jack on the satellite receiver, set the short wave radio to receive upper sideband and start searching.

The nominal center frequency of this subcarrier band is 6.8 MHz. Let us know what you hear!
Motorola's Digital Encryption Encoder

Motorola's Communications Sector has introduced the DES (Data Encryption Standard) coding algorithm option for use in conjunction with SECURENET Digital Voice Protection Systems.

The DES has been established as the common standard for protecting all forms of digital communications used by Federal Agencies. Motorola's DES Voice Encryption System conforms to federal government specifications and can be retrofitted to existing digitally - voice - encrypted radios as well as incorporated into new systems.

Radio system security is provided by up to 70 quadrillion (7.2 x 10^43) unique key combinations. The operator simply chooses a key, manually enters it into the loader through the keypad and then transfers that key to the desired radio(s). Keys can be changed easily and quickly at any time without the possibility of "cross-talk" or partial decoding between any two different codes.

New Literature Available from Centurion

Centurion International, Inc., has published new color literature on their product lines of portable radio antennas, specialized communications electronics, batteries, cordless telephones, replacement antennas and batteries, and their new EAR.COM system.

The 1985 Centurion Batteries catalog includes a helpful cross-reference listing of more than 40 brands of communications equipment, more than 300 individual models, and the correct Centurion battery for each.

Another brochure shows their newly acquired EAR.COM line, a miniature earpiece transducer that allows communication by radio or intercom in high noise environments, or hand-free communications in a variety of work and emergency situations.

Copies of each new brochure are available by writing to Sales Department, Centurion International, Inc., P.O. Box 82846 Dept. MT, Lincoln, NE 68501. Telephone: (402) 477-4663.

Phone Bugged?

Try Capri's Tap Trap

For those who are concerned that their telephone may be tapped or bugged, Capri Electronics introduces the TT-07 TAP TRAP (wiretapping detector).

The TAP TRAP detector line can be quickly and easily checked for on-premises series and parallel bugs and wiretaps. The telephone instrument itself can also be checked for the most common types of hookswitch bypasses which can turn it into an efficient room monitor.

With the Series test, the TAP TRAP detects serial devices (such as RF transmitters) that have a resistance of 61 ohms or more. In the Parallel test, it detects parallel devices (such as telephone recording controls) of 38 megohms or less. It also detects capacitively coupled wiretaps and various hookswitch bypasses.

The TAP TRAP weighs 7 oz. and is furnished in a high-impact case that measures 4-1/4 x 3-1/4 x 1-1/2. Priced at $95, the unit comes complete with all necessary plugs, cords and adapters along with a battery and instruction manual.

For additional information, call (404) 376-3712 or write Capri Electronics, Route 1, Canon, GA 30520.

Scanner Tone Decoders from Nova

We recently had some interesting correspondence from one of our readers who noticed an MT suggestion that manufacturers might consider providing add-on tone decoders for scanners. This would allow a scanner to become a paging receiver, responding only to a specific call when the appropriate tone is received.

Nova Records (729 Elm St., Dept. MT, Kearny, NJ 07032) appears to offer several scanner tone decoders which might be of interest to MT readers. Let's take a look at some of those offerings:

DTMF series 2805 with horn and light option:

- Two-tone sequential (800-2800 Hz), high speed (REACH) compatible, with horn and light option;
- Two tone sequential (300-1200 Hz), slower speed format such as GR type 99, Motorola Quick Call and others, with a horn and light option;
- Digital decoders for CTCSS, two or eight transmit/receive tones.

We now know nothing of the reputation of this company, we are pleased to offer the information above in good faith and invite customer reports.

Or, build your own....

A call from an MT subscriber reminded us of an article which appeared in the January 1983 issue of the amateur radio magazine, 73. It offers a home-brew "Scramble" type of communications equipment. Amateurs experimenting may wish to tackle that project.

BEHIND THE DIALS

The Sony ICF2010

We have had a great many calls on the new Sony ICF2010 portable receiver; most ask: "Have you reviewed it and why Grove Enterprises does not carry it?" The answers to both questions are quite simple.

Reviews of the 2010 have been mixed, with most reviewers moderately tolerant but not overly impressed. The price is quite high compared to the now-discontinued Uniden CB.
2021 (Radio Shack DX-400) and grey market New York importers slash the prices so deeply that many hobby radio dealers ignore most Sony radios.

We have not made an effort to secure one here at the WT Lab for a first-hand check-out since it has been extensively reviewed in club bulletins, but in a nutshell, here are the average findings.

Scanout pricing seems to be around $279; AM international broadcast band reception is very good, although some listeners complain of hum and circuit noise when using the synchronous detection system. Nevertheless, that mode does reduce distortion due to fading signals and improves adjacent channel selectivity to boot.

But listening to single sidetone is another story; the receiver tunes in 100 hertz increments, disallowing fine tuning and thus resulting in very unnatural sounding voice communications even though the receiver offers excellent stability.

The bottom line seems to be that if you need portability, SSB reception, and don't want to spend more than $300, then the Sony ICF2010 is probably a good bet. It is certainly better than its predecessor, the ICF2001 and 2002.

The Pope, the President and the Secret Service:
Monitoring an Historic Meeting

by Mark Edward Springer, WL7BCT

As I stood on the apron of Fairbanks International Airport in late April of 1984, I at first wondered putting the finishing touches on a very special speaker's platform.

Suddenly my attention was arrested by a disembodied voice came from the speaker of the Radio Shack Pro-30 scanner I was carrying.

"You guys want to zero your weapons or anything?" it asked.

I felt a little tingle when I heard that, because I knew then that the show was a little bit more heavy-duty than just "Fairbanks Base" telling "green" to "two-two the radio room".

The United States Secret Service had arrived in Fairbanks Alaska, counter-sniper response vehicle. It was all over fairbanks.

We knew they were coming. The announcement that Pope John Paul II would visit our northern city was followed by endless rumors that the President of the United States would join him here in the "Golden Heart" of Alaska.

At that time I was a general assignment reporter for the Fairbanks Daily News-Miner, the local paper. I placed a call to Monitoring Times publisher Bob Grove and told him I needed some scanner frequencies. He kindly provided me with several, including primary channel "CHARLIE": 165.375; "BAKER": 165.7875; "MONTY": 166.6125; and "VICTOR" or "TREASURY COMMON": 166.4625. Grove also turned me on to "YANK-ZULU," a full-duplex pair which supports the Presidential limousine phone.

I went to the store to pick out the programmable scanner, brought it back to the newsroom and punched in a couple of the S.S. frequencies.

The Pope was in Fairbanks Base on Charlie, the speaker said. I was like a kid with a new toy.

I didn't know that by then the Secret Service telephone system had been installed by the White House Communications Agency (WHCA). Most of the radio traffic was to agents (and the White House staff) to "two-two" (phone) the "board" or the "radio room" or another agent at a particular "drop" or extension numbers.

I heard one conversation about "calling the press plane" which at the time was several thousand miles out over the Pacific Ocean.

There were announcements of, and cancellations of, all but showdown hearings and "advance agent briefings" at particular locations.

There was, much to the consternation of my newsroom neighbors, just enough DVP (Digital Voice Protection) used to make everyone able to hear the scanner quite miserable. It sound like open squeal--real raspy--and you can't really turn it off. A real pain.

The main staff frequency I monitored was 166.5125, code-named "SIERRA." A paginated voice-enabled frequency was 167.025.

The day before Air Force One (SAM 70000 or "Angel" as it is code-named) landed, the "YANK-ZULU" frequencies came alive as a WHCA technician began aligning the critical radiotelephone circuit in "STAGE- COACH," a Cadillac limo flown from Guam in a US Air Force C-5A Galaxy.

The tech put in calls to "Crown Maintenance" via the "Fairbanks radio," and in the "port city" of Fairbanks, the channel known to the local system. It's all in big suitcases and equipment cases.

It was said that although the system was in place 48 hours prior to the arrival of the President, they had everything down and packed it all into in and out of the local system. It's all in big suitcases and equipment cases.

When Air Force One departed Fairbanks International Airport!

One unconfirmed report said that ten tons of communications gear was flown into Fairbanks just for the overnight visit.

I was able to get a look at the "YANK-ZULU" radio terminal at Fairbanks...
SECRET SERVICE Obst'd

International Airport. It wasn't anything fancy, just a couple of big suitcase-type outfits built by Motorola. I imagine it was linked by land-line to the radio room.

There is no question that monitoring Secret Service communications is exciting. I listened to the Secret Service as they brought the motorcade up to the building and brought the President and Mrs. Reagan into a holding area near the gym.

It was pretty funny near the end of the rally as one agent said to the man nearest the President, "Do you know where the Polk Bear?" "What are you talking about?" came the bewildered reply. "Oh, don't worry about it," he said as the campus mascot, "Manook," came to the appearance to present the Chief Executive with a UAR hockey jersey.

The first indication that the President is going somewhere is the "ten minute sweep" followed by several other sweeps of the motorcade route. Then the words, "Signal, don't signal dispatch," the President is on his way. "Signal arrive, signal arrive," indicates he's gotten where he's going.

There isn't much talk during a motorcade; in fact, the base or command post issues an order that non-essential communications be kept to an absolute minimum prior to commencement of a movement.

During the sweeps you might hear to EOD (emergency ordnance detachment) teams and other radical-sounding things, but usually it is strictly precautionary and non-critical, which they've found nothing. In fact, an EOD team will usually check (very discreetly) a podium or other appearance area scant moments before the President arrives.

I found that I didn't have any problems taking the radio to the area. The helicopter was a more critical appearance area. As I passed through the entrances operated by the Secret Service Uniformed Division, I turned it on and broke the squelch and handed it to a guard. No sweat.

I wasn't the only one packing one of the Radio Shack 4-10s. As I wandered around the press center set up at the Airport, a vaguely familiar-looking fellow walked up to me and asked me how I like the radio.

"Fine," I told him, except that it ate batteries for 'breakfast,' lunch 'n dinner. He agreed with that, and then introduced himself as Vice-President of ABC, and wore a pretty classy earphone strung up under his shirt and plugged into the PRO-30 on his belt. I told him what frequencies I was on, we were on, and he shared a couple of S.S. frequencies with me.

The detachment of the Alaska State Troopers was right in the middle of it all, as were the Alaska Airport Police and Fairbanks P.D. Troopers. Meanwhile, local radio's were on, and he shared a couple of S.S. frequencies with me.

The detachment of the Alaska State Troopers was right in the middle of it all, as were the Alaska Airport Police and Fairbanks P.D. Troopers. Meanwhile, local radio's were on, and he shared a couple of S.S. frequencies with me.

The Secret Service communications were on their Channel One simplex frequency of 155:250, while the Alaska State Police, on whose turf the historic meeting between Reagan and the Holy Father took place, used their 155:100 frequency.

Four networks (NCRB, CNN, ABC & NBC) were on the scene and Alascom had to set up about 12 microwave links to communicate with each other and handling the uplink to satellite AURORA (SATCOM V). The lobby of the Travelers Inn was a sea of orange and silver transport cases as the networks set up their equipment. ABC provided the pool feed for the other three networks.

One of the first things that Secret Service agents are tight-lipped; in fact, the average agent is talkative as heck compared to the crew from WHCA.

WHCA is a branch of the Defense Communications Agency which is under a unified military command, so their personnel are all military, women and officers from all branches of the military.

Later, a Secret Service agent told me, "Yeah, they tell them not to talk to anyone; they kind of scare them!"

One lasting impression

Mexico 'Quake Spurs Emergency Comm

An NT Exclusive by Bob Grover

The Mexican earthquake disaster took its toll on communications as well as human lives and other property. Because of the damage to the electrical wire and radio systems between Mexico City and the U.S., the FCC has issued special temporary authorizations (STA) to several businesses to report voice communications between the two countries.

Examples of point-to-point links utilizing upper sideband mode radio include the Chrysler Corporation, KD386, authorized on 115:33, 15506 and 18032 kHz; Digital Equipment Corporation, KPD389, on 13355, another user, KPD379, on 13815, and 17550 kHz. Similar emergency HF networks on RTTY are being reported between Mexico City and other area with vested interest such as the business communications between的产品 conducted on 12135 kHz using 66 WPM (57 baud), 170 Hz shift.

I formed listening to and watching the Secret Service was a supreme respect for them; the word "professional" isn't strong enough. I can understand the motivation to protect the President and the Holy Father. They have the responsibility of keeping the President safe and, in doing so, guarantee our military security is too.

I am interested in corresponding with other people who monitor Presidential communications and exchanging frequency information. My address is 261 College Road, Fairbanks, Alaska 99701.
ICOM's commercial quality scanning receiver...Top quality at a gem of a price.

ICOM introduces the IC-R7000 advanced technology 25-2000MHz* continuous coverage communications receiver. With 99 owner programmable memories, the IC-R7000 covers low band, aircraft, marine, business, FM broadcast, amateur radio, emergency services, government and television bands.

**Keyboard Entry.** For simplified operation and quick tuning, the IC-R7000 features direct keyboard entry. Precise frequencies can be selected by pushing the digit keys in sequence of the frequency or by turning the main tuning knob.

**99 Memories.** The IC-R7000 has 99 memories available to store your favorite frequencies, including the operating mode. Memory channels may be called up by simply pressing the Memory switch, then rotating the memory channel knob, or by direct keyboard entry.

**Scanning.** A sophisticated scanning system provides instant access to most used frequencies. By depressing the Auto-M switch, the IC-R7000 automatically memorizes frequencies in use while the unit is in the scan mode. This allows you to recall frequencies that were in use.

**Other Outstanding Features:**
- FM wide/FM narrow/AM/upper and lower SSB modes
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Grove offers a complete library of reference books and microfiche files to help you locate broadcast signals throughout the world, fine-tune your monitoring techniques, and get the most out of your electronic equipment!

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(Note: All books are shipped UPS or bookrate for $1.50 for the first book and $0.50 for each additional book.)

<table>
<thead>
<tr>
<th>THE LISTENER'S HANDBOOK</th>
<th>By Bob Grove</th>
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<tbody>
<tr>
<td>This new book offers a goldmine of information for SWL's and scanner listeners alike. It is simply the definitive publication for monitoring the first 1,000 MHz of the radio spectrum. Includes frequency classifications, radio wave propagation, users of the spectrum, station layout, recording conditioners, scanners, home projects, and much more. 81/2&quot; x 11&quot;, softbound. Approx. 100 pages. Order BOK-5 Only $12.50</td>
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<tr>
<th>SHORTWAVE DIRECTORY</th>
<th>By Bob Grove</th>
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<tr>
<td>Approximately 6,000 listings from 1.6 to 30 MHz. Includes U.S. and foreign military, emergency, State Department, embassies, FBI, spies, aircraft, ships, space, RTTY, facsimile, INTERPOL, and more—all arranged by frequency. A global shortwave directory with U.S. concentration, this second edition comes with an exhaustive frequency cross-reference. 81/2&quot; x 11&quot;, 175 pages. Order BOK-14 Only $12.50</td>
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<tr>
<th>WORLD RADIO TV HANDBOOK</th>
<th>By Chet Olsen</th>
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<tr>
<td>The 30-50 MHz portion of the spectrum often explodes with intriguing communications, many from outside the United States as well as within. Published 1984. Order BOK-7 Only $12.50</td>
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<tr>
<th>WAVE BAND SKIP DIRECTORY</th>
<th>By Chuck Robertson</th>
</tr>
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<tbody>
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<tr>
<th>WAVE BAND SLIP DIRECTORY</th>
<th>By Bert Huneault</th>
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<tr>
<td>One of the most popular and informative series of articles ever published in the pages of Monitoring Times, huneault's GMT International Weatherwise is now available in a complete, supplemented, up-to-date book form. Twenty-two information-packed pages explain the radio shorthand used by agencies transmitting urgent and official weather information worldwide. Order BOK-6 Only $14.00</td>
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<tr>
<th>ANTENNAS FOR RECEIVING</th>
<th>By Wilfred N. Caron</th>
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<tbody>
<tr>
<td>The most comprehensive and authoritative book on receiving antennas for all frequency ranges! Chapters cover vineyard design, dipole ground planes, discone, beams, loops, folded dipole antennas, tuners and matching networks, and more. Learn how impedance is determined, the truth about SHAR and antenna efficiency, how to build space-saving effective antennas for mobile, portable and fixed base operation. Order BOK-6 Only $12.50</td>
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<tr>
<th>HIDDEN SIGNALS ON SATELLITE TV</th>
<th>By Thomas P. Harrington and Bob Copsey</th>
</tr>
</thead>
<tbody>
<tr>
<td>The most carefully guarded secret of satellite TV is out: hidden signals on the television channels is a world of two-way communications for professionals and special subscriber services. Stock market reports, long distance telephone, news and pressticker, special sports events, and national parks. Only $12.50</td>
<td></td>
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<tr>
<th>THE ARRL HANDBOOK</th>
<th>By Bob Grove</th>
</tr>
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<tr>
<td>Internationally recognized as the single most authoritative and comprehensive publication dealing with radio communications theory and practice, the ARRL Handbook has well over 1,000 pages. Chapters include history and principles of amateur radio, principles of electronics, descriptive illustrations of receiving, transmitters, repeaters, antennas, components, equipment, construction projects for all levels, test equipment and much, much more. Order BOK-17 Only $12.50</td>
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<tr>
<th>GROVE ENTERPRISES</th>
<th>P.O. Box 98</th>
<th>Brasstown, N.C. 28902</th>
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<tr>
<td>CALL TOLL FREE</td>
<td>1-800-436-8155</td>
<td>(Mastercard/Visa)</td>
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<tr>
<th>MICROFICHE FILES</th>
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<tbody>
<tr>
<td>Frequency directories on computer printout paper are inconvenient, costly and space wasting. Grove offers a handy, inexpensive alternative—high quality microfiche files! (Note: All fiche measure 4&quot; x 6&quot;; 42x reduction)</td>
</tr>
</tbody>
</table>

**Government Master File**

20,000 pages of frequency records of U.S. government agencies on 80 microfiche cards. Some 160,000 listings from 9 kHz to over 100,000 MHz. The largest and most up-to-date list (1982) before the records were classified. Treasury and Justice departments not included. Order FCH1 (40 Fiche) $25.00 (Free Shipping in U.S.)

**Federal Aviation Administration Master File**

1984

This comprehensive list contains over 30,000 entries from 190 kHz to over 100,000 MHz. Of particular interest to aircraft monitors, listings concentrate on the 200-400 kHz beacon band, 3-30 MHz FAA single sidband emergency networks, 108-136 MHz civilian aircraft band and 225-400 MHz military and federal government aircraft band. Now classified, but legal for you to own! Order FCH2 (30 Fiche) $12.50 (Free Shipping in U.S.)

**FCC Frequency Master File**

Yes, this is the famous exhaustive registry of all frequencies on file with the Federal Communications Commission, nearly two million listings from 1 kHz to 100 GHz—the entire radio spectrum! The most complete data set available anywhere in the world, sorted first by frequency, then by state and then by city. Covers the entire 50 states. Save more than half the FCC cost of $1935! New 1985 edition. Order FCH7 (Approx. 836 Cards) $150.00 (Free Shipping in U.S.)

**FCC State Index**

The most sought-after data fields contained in the master file above have been condensed into this nation-wide index, sorted first by state, then by city, and including licensee name, call-sign and frequency. Ideal for rapid reference of basic information. New 1985 edition. Order FCH10 (46 Fiche) $15.00 (Free Shipping in U.S.)

**FCC Call Sign Index**

If you know the call sign, this list will identify the frequency, name of licensee, service, and location of the transmitter. Does not include amateurs, CB, boats or aircraft. New 1985 edition. Order FCH3 (46 Fiche) $15.00 (Free Shipping in U.S.)

**Compact Microfiche Reader from EyeCom**

Especially selected for Grove frequency files. Features 42 power magnification! Includes lighted microfiche and giant 8" x 10" view-screen. Brilliant long-life halogen lamp, smart smooth carrier and glass-free sort, 120 VAC. Comes with heavy duty dust cover. Order RDR-4 Only $140 plus $5 UPS or $10 U.S. Mail Parcel Post
Speaking of audio programs, the NATIONAL RADIO CLUB is sponsoring the "DX Audio Service," a monthly 60-minute cassette tape production put together by Fred Vobbe, 706 MacKenzie Avenue, Lima, OH 45805. The DX Audio Service, Fred Vobbe, 706 MacKenzie Avenue, Lima, OH 45805, and aimed at non-sighted broadcast band DX'ers. However, actualities and other features not included in NRC publications make it of interest to any DX'er.

For a sample tape, send a $1.00 check made out to "NRC" to DX Audio Service, Fred Vobbe, 706 MacKenzie Avenue, Lima, OH 45805. The price of a copy of this first-class boasts your catalog of reprinted articles from the NRC, many of which could be of interest to non-NBC DX'ers. The articles dealing with topics are quite definitive. Address your request to NRC Publication Center, Ken Chatterton, P.O. Box 164, Mansfield, NY 13659.

Trying to cover the wall of your DX shack? THE CLUB ONDES COURTES DU QUEBEC offers listening certification. The Club will issue the "skillfulness and the perseverance" of those devoted to the DX hobby. If you can confirm reception of ten stations, you may apply for a listening certificate. For more information, send a self-addressed envelope plus an IRC to Club Ondes Courtes du Quebec, Case Postale 37, succ. Youville, Montreal (P.Q.) Canada H2N 2V2.

I'm sure that the ultimate in DX'ing is radio astronomy, making THE SOCIETY OF AMATEUR RADIO Astronomers and the ultimate DX club, right? SARA includes some 175 members over the world, 42% of whom are ham radio operators, and it has gained much of the technical information about a space-age, state-of-the-art field of amateur science in which many can make a significant contribution to the cause of learning.

SARA publishes "Radio Astronomy," a monthly journal, maintains a development laboratory, and Ohio astronomy equipment is repaired, calibrated, and developed and holds an annual meeting. For an information brochure or an SASE to SARA Membership Services, P.O. Box 6020, Wheeling, WV 26003.

I've made no secret that one should learn to speak more than just one language, and that joining foreign DX organizations is an excellent way to help one learn more about other cultures. If you're interested in German or speak German, you might want to contact the IFR (Interessengemeinschaft Rundfunk-Fernsehfong), an amalgamation of clubs in West Germany, Switzerland, and Austria.

The group publishes information in both German and English, produces tapes, and has international contacts, cooperates in activities with local radio stations, and represents the DX hobby at fairs and exhibitions. The club is sponsored and organized with Deutsche Welle the 1982 EDFX conference in Cologne.

For more information, send a copy of IRE's "DXING" to the Editorial Director, IFR, P.O. Box 101131, D-4560 Gelsenkirchen, West Germany.

Another overseas club (according to a 1986 bulletin) is the SURINAME DX CLUB INTERNATIONAL which concentrates on Latin America. Their bi-monthly bulletin, "Suriname DX Official Call," is published in English and Dutch. Send them a dollar and they'll send you a sample copy of their bulletin, and more information about the AMERICAN BSS for computer users, which Bill Krause of the Kearny (New Jersey) Computer Information Committee is operating at his own expense.

For a password and more information, send an SASE to Bill at ARRC BSS, PO Box 255, New Madrid, MO 63862-6043. The system can be accessed at 0500-2300 UTC weekdays and 0500-1200 UTC weekends at (501) 425-4970.

SARA has added his own notes as an orientation for radio monitors.

CLANDESTINE CONFIDENTIAL—Gerry Dexter's name is well known to SWL's and with good reason. His publications reflect personal listening knowledge and expertise. Gerry has several newsletter-format publications which are of interest to MT readers.

His CLANDESTINE STATIONS BY TIME, CLANDESTINE STATIONS BY FREQUENCY, CLANDESTINE STATION ADDRESSES, CLANDESTINE MEDIA, and CLANDESTINE BY SOFTWARE are available at $3 each.

CLANDESTINE CONFIDENTIAL newsletter—six issues per year—is available for a $10 subscription ($15 foreign, U.S. funds). Orders for the 1986 edition should be sent to Handling, 4518 Taylorville Rd. Dept MT, Dayton OH 45424.

Along with the impending release of the Nevada/ Arizona/central California 1986 edition, these two new releases from Fox make a total of 28 scanner frequency directories representing major geographic areas of the United States.

All are cross-referenced by call frequency, call sign and licensee and include business, amateur, federal and non-federal law enforcement, aircraft, and all types of land mobile services.

RADIO ASTRONOMY HANDBOOK by R. M. Sickels (approximately 250 pages, 6" x 9", hardcover, 3832 from the author, 7605 Deland Avenue, Dept. MT, FL 33451)

One area of eager experimentation by a small number of dedicated listeners is that of radio astronomy, essentially confined to the exploration of the universe at radio frequencies.
the VHF and UHF spectrum because of electromagnetic pollution and atmospheric absorption at lower frequencies.

Sickels has presented all of the facets of monitoring radio from the depths of space, including excellent charts, tables, diagrams, equipment line drawings, photos, and computer programs as well.

Chapters include a history of radio astronomy and what's to be heard out there, frequencies to monitor and the receivers to do it, antennas and accessories to produce optimum reception, recording equipment, and an index for rapid access to subject material.

Since the vast majority of amateur radio astronomy monitoring is in the 400-1400 MHz portion of the spectrum and the choice of frequencies is so vast, this book is eminently suitable for VHF/UHF scanner enthusiasts as well. Extensive material explains the construction of antennas, feedlines, preamplifiers, tuners, and other accessories to improve weak signal reception.

The book is loaded with excellent information and is a welcome addition to the bookshelf of the serious monitor of the radio spectrum.

WORLDWIDE AIR TRAFFIC CONTROL 2nd Edition (31 pages, 5 x 8", paperback; $3.75 from Cambridge Airway Services, Dept. MTA, Suite 486, 89 Massachusetts Avenue, Boston, MA 02115; see ad on p.40)

With all of the attention recently focused on air disasters, crises and hijackings, it is little wonder that considerable listeners' attention has been drawn to those monitoring frequencies.

While frequencies for VHF domestic flights are readily obtainable, those used by specific worldwide airports for international traffic and utilizing short wave frequencies (upper sideband) are less readily obtainable. Grove's Short Wave Directory has exhaustive lists of the frequencies, but not broken down into specific destination cities.

The CAMBRIDGE DIRECTORY is a handy handbook, cross referenced by frequency, country, city, and major air route. Keep it by your short wave receiver, and next time the news flash comes on...

Especially for international broadcast devotees

Adopt a Band

There are thirteen short-wave broadcast bands and, if you tune an all-wave receiver, a host of other interesting radio communications from LW up to 30 MHz. Your activities may also involve FM broadcasting and listening to the scanner frequencies as well. It is no wonder we learn so little about each individual band. Question! Why don't you adopt a band?

I do a considerable amount of listening on the 10 meter band, my own adopted band. Except when propagation conditions are extremely poor, signals are there from all major world divisions during each 24-hour period, providing listening from before dawn to long after dusk.

When conditions are right I can listen to Polynesian music from Tahiti on 15170 kHz that begins just after 0300 UTC (11 pm your time) or to the lilting music emanating during Radio Australia's French language program on 15320 and 15395.

Scan the 19M band if music is your fancy—there is almost continuous Latin music from Chile on 15140 and don't forget the Argentinian tango interludes on 15345. Weekends are music days for many of the international short-wave broadcast stations, Saturdays in particular.

Here are some frequency check points—USSR 15175, Brazil 15190, RFI Gabon Africa 15200, DW 15210, Cuba 15230, HCJB Equador 15250, Portugal 15285, DW 15425, Switzerland 15430, and China 15520.

Finally, Arabic music frequently can be heard from Egypt on 15220, UAE on 15320 and Kuwait on 15495. Don't forget the BBC music programming on 15070 and the VOA music scheduling on their channels as well.

Religious programs are many and of all faiths from Arabic to Yiddish. You can listen to gospel singing to the formal services coming from the Vatican. Strong signals are available from religious stations like HCJB and many from the U.S.

The band edges are
often productive below 15150 and above 15400; stations there are less crowded and often new stations appear. Quite often there are no occupants 5 kHz either side, so you can operate your receiver using the wide filter for improved audio quality, especially musical renditions.

As on all bands there are the usual mix of politics, propaganda, and travel presentations plus, on occasion, some unique glimpses of and insights into life within the various countries. United Nations broadcasts are transmitted by various VOA stations; frequencies and times can be found in the WRTV Handbook.

VOA programs are also transmitted by many stations throughout the world; the Organization of American States (OAS) uses a VOA transmitter to send out their programs on the 19M band at 15160 kHz.

ADPTION STEPS

Your first step to band adoption is to prepare a log. Add appropriate columns to several sheets of loose-leaf notebook paper, as shown below. Frequency spacing is 5 kHz and, in the spectrum between 15070 and 15600 kHz, there are 111 channels. Be sure to assign four or five columns to each channel because of multiple occupancy of each. A simplified example for seven channels would be:

<table>
<thead>
<tr>
<th>15070</th>
<th>15085</th>
<th>15100</th>
<th>15115</th>
<th>15130</th>
<th>15145</th>
<th>15160</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AFI</strong></td>
<td><strong>WRF</strong></td>
<td><strong>AWK</strong></td>
<td><strong>DVAA</strong></td>
<td><strong>DG</strong></td>
<td><strong>KE1F</strong></td>
<td><strong>Uruguay</strong></td>
</tr>
</tbody>
</table>

Allow three or four rows for each channel that can be used to insert times, program data and other information of interest to you. QSL send and receive dates may be appropriate. After you have come up with a log arrangement for a serious study of just a single band you can run-off copies for future changes, remembering that band occupancy changes considerably from year to year. Keep these logs in a small loose-leaf notebook.

Small profiles of the individual channels can be kept to keep you informed of band occupancy throughout your active listening day as shown below:

<table>
<thead>
<tr>
<th>15320 UTC</th>
<th><strong>TIME</strong></th>
<th><strong>STATION</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1500-1500</td>
<td><strong>US</strong></td>
<td><strong>AUS</strong></td>
</tr>
<tr>
<td>1530-1540</td>
<td><strong>Mix</strong></td>
<td></td>
</tr>
<tr>
<td>1540-1545</td>
<td><strong>HRE</strong></td>
<td></td>
</tr>
<tr>
<td>1545-1550</td>
<td><strong>Dubai</strong></td>
<td><strong>UAE</strong></td>
</tr>
<tr>
<td>1550-1600</td>
<td><strong>Mix</strong></td>
<td></td>
</tr>
<tr>
<td>1600-1610</td>
<td><strong>AU</strong></td>
<td></td>
</tr>
</tbody>
</table>

ANTENNA CONSIDERATIONS

A reasonably short antenna is effective on the 19M band. A quarter-wave, ground-plane vertical is only 15 1/2" long. A vertical dipole or an inverted "Y" comprises two such lengths and can be roof or ground supported in the same manner as short antennas. Performance will be very good.

Either antenna can be supported by single mast that need not be higher than to support such a simple configuration. If you are cramped for space, you still can adopt 19M.

If you are an avid antenna experimenter you are well aware of how easy it is to handle a small antenna when doing experiments. You can use the 19M antenna as a beginning for various antenna projects—first, try to out the bugs and checking performance. It is then possible to ups-scale the same antenna for operation on one of the lower frequency, short-wave bands.

The logging information becomes invaluable for antenna checks. You will know what time signals arrive from various directions and you can compare them with the results from a reference antenna. Convenient each antenna experimentation is one major reason why 19M is my adopted band.

---

**BROADCASTING**

**HANK BENNETT ON SHORTWAVE**

As mentioned last month, this column was prepared well in advance of publication date for use in an emergency situation. And as we pointed out last month, your editor has had a time with a smashed hand but this is now rapidly improving. Large thanks go to Amelia Bennett for her assistance during these two months.

Continuing the second of our current two-part series on trivia and nostalgic questions from olden days of radio and television, we offer the following:

109 - Two stars of the old "National Barn Dance" from WLS, Chicago, were Lyle Belle and... who was the leader?

110 - Who presided over many fireside chats on radio and what was the name of his dog?

111 - In Philadelphia many years ago, Strawbridge and Clothier operated station WFL. Down the street, Lit Brothers operated WFLR. The two stations shared time on the same frequency. Subsequently the two stations merged; the stores did not. Name the new merged call sign. The station still operates.

112 - What station for years plunged themselves as being "The Nation's Largest Independent Radio Station," where would not jot what was their power at the time?

113 - Who was Lucille Annette Simmell? Name the female counterpart of Phil Harris on his old radio show.

115 - For years WNEW in New York City carried "The Make Believe Ballroom." Name the very well-known announcer and disc jockey of this Program M.C. role.

116 - Two orchestra leaders made recordings for the "Make Believe Ballroom" theme and both tunes carried this title. Who were these two orchestras involved?

117 - Those fictional birds - Gertrude and Heathcliff - were made famous by who?

118 - Who was the newspaperman-turned-TV Master of Ceremonies who introduced the Beatles to American TV public?

119 - What well-known orchestra made a full-blow 8-1/2 minute production out of the tune "How Much is That Doggie in the Window?" and who was the leader?

120 - What orchestra had the Bobcats?

121 - Two radio stations that were identical in call sign as in the name of their town. Can you name them? Perhaps you were in one or both.

122 - NBC once had two parallel networks named after colors. Anyone remember what they were?

123 - Who was Elmo Tanner and for what was he best known?

124 - A marine radio-telephone station in Ocean Gate, New Jersey. Where and to whom was W00 first assigned? Who was the AM broadcast station.

125 - There was once an evening time news commentator named Carter. He didn't have a first name. Who was it?

126 - Who made "Yehudi" famous?

127 - Colonel ... and Bud on the blank.

128 - Who was Billy Green-...?

129 - Who was Benjamin Kubelsky from Waukegan, Illinois?

130 - Who was Norman Brokenshrie...?

131 - Does anyone remember a comedian named Phil Cook? Your editor is looking for information on this one.

132 - In what branch of the military service was the radio personality known as Don Winslow? This was another late afternoon show for kids of the 1930s.

www.americanradiohistory.com
If things seem a little out of sync with the Brazilians on the 49 meter band—
they are! Brazilians were scheduled to make major shifts in frequency assignments
on 49 meters effective October 5th. Here's the way the new channel assignments
are supposed to work:

<table>
<thead>
<tr>
<th>Station</th>
<th>Old Freq</th>
<th>New Freq</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gazeta</td>
<td>5.955</td>
<td>5.955</td>
</tr>
<tr>
<td>Itatiaia</td>
<td>6.070</td>
<td>5.970</td>
</tr>
<tr>
<td>Ceara R. Clube</td>
<td>6.105</td>
<td>5.980</td>
</tr>
<tr>
<td>Maruja</td>
<td>5.975</td>
<td>5.980</td>
</tr>
<tr>
<td>NEC</td>
<td>5.990</td>
<td>5.990</td>
</tr>
<tr>
<td>Guabia</td>
<td>5.965</td>
<td>6.000</td>
</tr>
<tr>
<td>Inconfidencia</td>
<td>6.000</td>
<td>6.010</td>
</tr>
<tr>
<td>Educadora da Bahia</td>
<td>6.025</td>
<td>6.020</td>
</tr>
<tr>
<td>Guachá</td>
<td>6.135</td>
<td>6.020</td>
</tr>
<tr>
<td>Globo, Río</td>
<td>6.035</td>
<td>6.030</td>
</tr>
<tr>
<td>Clube</td>
<td>6.045</td>
<td>6.040</td>
</tr>
<tr>
<td>Paranaense</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guaraná</td>
<td>6.175</td>
<td>6.050</td>
</tr>
<tr>
<td>Universo</td>
<td>6.020</td>
<td>6.060</td>
</tr>
<tr>
<td>Capital</td>
<td>6.195</td>
<td>6.070</td>
</tr>
<tr>
<td>Journal do Comercio</td>
<td>6.085</td>
<td>6.080</td>
</tr>
<tr>
<td>Cultura (for de Iguazu)</td>
<td>6.100</td>
<td>6.080</td>
</tr>
<tr>
<td>Bandeirantes</td>
<td>6.185</td>
<td>6.090</td>
</tr>
<tr>
<td>Tupi</td>
<td>6.115</td>
<td>6.105</td>
</tr>
<tr>
<td>Globo</td>
<td>6.125</td>
<td>6.120</td>
</tr>
<tr>
<td>Aparecida</td>
<td>6.010</td>
<td>6.125</td>
</tr>
<tr>
<td>Record</td>
<td>6.055</td>
<td>6.150</td>
</tr>
<tr>
<td>Pampa</td>
<td>6.080</td>
<td>6.160</td>
</tr>
<tr>
<td>Cultura Sao</td>
<td>6.170</td>
<td>6.165</td>
</tr>
</tbody>
</table>

Note that some of these frequencies have more than one station assigned so some
extra care should be taken in ID'ing those stations. Radio Aparecida and Radio
Journal do Comercio were recently reported to have
left short wave so those may not show. In fact, there
seems reasonable chance that not all these changes will
take place at one time.
We'll try and spot check some of these frequencies
and perhaps can give you
more information next month.
Short-wave activity and my own (and Jeeves') listen-
ing has been on the slacks side for much of the past
three or four weeks, but
here's what we've come up with.

APRICA

BURKINA FASO - Radio National Burkina continues
to provide excellent reception
over their new 50 kilo-
wart transmitters. Heard to
0000 sign-off and again from
0530 sign-on on 4815, all
French.

ANGOLA - Emissora
National at Luanda now show-
ing up on 4953 around 0100
but ID's are for the "Radio
Madrugada" late night pro-
gram. Usually weak; all
Portuguese.

KENYA - The latest

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To my knowledge this is not on the air as yet, but it could come into operation at any time. Hopefully the newmeaning hearing Kenya without a struggle.

MALI - Radio Diffusion du Mali has dropped the use of 4.783 and replaced the transmitter with a frequency with 3.380. Sign-off at 0000, sign-on at 0700. I tend to doubt that the Ivory Coast has also recently put 3.380 into operation.

MOZAMBIQUE - Radio Mozambique is also in the move. Recent use of 4.986 has been discontinued and the transmitter is now showing up on 7.734 variable. Noted at fair to poor levels from its sign-on at 0300.

NAMIBIA - Radio Southwest Africa heard at 0200 on 3.295 with FM-type music, comments.

TOGO - RTT at Lomé heard on 0535 on 3.222 with African music and chanting. Fair to good.

ZIMBABWE - The Zimbabwe Broadcasting Corporation's two own directional channels, Radio One and Radio Two, are both currently being heard from around 0300 Radio One on 3.396 and Radio Two on 3.306. Signal strength is only poor to fair.

ASIA - OCEANA

BANGLADESH - Radio Bangladesh is heard on 15525 with English beam to Europe at 1230, always bothered by low level fading.

INDONESIA - Radio Republik Indonesia at Ujung Pandang on 4719 is making its first fall appearances, though still high around 1100. Usually underneath a very strong utility station.

NEW CALEDONIA - Radio Noumea heard around 0840 in French on 7170 with fair to good strength, mostly music.

NORTH KOREA - Radio Pyongyang on 11800, poor in English, but from 0200 on 3.295 as beam to Southeast Asia.

EUROPE

ALBANIA - Radio Tirana heard at 1805 in English on 11660.

BELGIUM - BRT in English at 1320 on 15590, fair to good level.

GREECE - The voice of Greece now doing very well on 7395. Heard with an English newscast at 0135 but otherwise all in Greek.

IRELAND - Radio Dublin international noted at 0145 on 6910 with the program of World Music Radio.

ITALY - Not heard here yet at a new Italian station, Radio Callabria International, is currently scheduled from 1230-1330 on 26.015 on Saturday and Sundays. However, it is supposed to increase power to 1 kilowatt (now only 200 watts), move to 7915 and add broadcasts at 0900-1030 and 2200-2330, but may be possible to log this one if these changes happen.

LUXEMBOURG - Radio Luxembourg on 6090 in English with rock music, blocking reception of Radio Belgrano in Argentina.

ROMANIA - Radio Bucharest heard at 0200 in English news on 6990, 9510 and 11940. 31 meter frequency best.

NORTH & CENTRAL AMERICA

ALASKA - KNLS heard on 11850 at 0740 with big band music and into religious program. 25 meters barely holding its own at 0300 and may be useless now.

CUBA - Radio Rebelde, 5025, noted absent some nights and occasionally with distorted output, drifting down to 5022.

DOMINICAN REPUBLIC - Radio Santiago, heard weakly around 0100 on 9778 with Latin music. Occasionally airs baseball.

HAITI - Radio Citadelle, aside from 4VEN, the only active Haitian station (and even then only occasionally) being heard again on 6155. Weak and mostly talk around 2230.

MEXICO - La Nora Exacta on 9555 noted around 1400 with usual ads and time checks, all Spanish.

SOUTH AMERICA

ARGENTINA - RAE's SW program "DX Special" noted in English on 9690 at 0130 on a local Saturday night.

BOLIVIA - Radio Progreso at La Paz has resumed activity. Heard around 1000 on 6005. Quite good some days, all Spanish.

CHILE - Nothing so far in checks for the new Chilean some European DX'ers are hearing. Radio Santa Maria on 5930 in Coyhaique noted on the continent on 6030 around 0000. Might be possible around 0900 or 1000.

COLOMBIA - Ondas del Meta, Villavicencio on 4885 heard at 0315 with Latin music, commercials, TDs, all in Spanish.

ECUADOR - HCBJ has resumed usage of 6210 in local evenings. Noted with programs in Russian, probably other languages as well. Sistema Emisora Atalaya on 4792 at 0415 with Spanish talk, music. Good level. Also Radio Quito on 4920 at 0335 with Latin Music and TDs for the Nash radio station.

VENEZUELA - Radio Mundial Bolivar on 4770 heard at 0130 with talks and TDs in Spanish.

CHALLENGER

A seldom heard station is the Voice of Asia in Taiwan which apparently uses the International Broadcast Corporation of China transmitters at Kaohsiung. On short wave the station uses ten kilowatts on 5980 for broadcasts in English, Indonesian, Thai, and Mandarin.

Broadcasts are intended for Indonesia, the Philippines, Thailand, Singapore, Hong Kong and Malaysia; much is known about the actual purpose of the broadcasts; i.e., why the separation from the BCC or Voice of Free China (now defunct). The station can occasionally be heard in the U.S. Try from 1030 sign-on until 49 meters fades out.

If 5980 is clear of QRM this one may slip through now and then. Reception reports go to the Voice of Asia, Box 880, Kaohsiung, Republic of China.

JEEVES SAYS:

"Ken has let me take a vacation. He bought me a plane ticket to Philadelphia where I am at this writing—sitting in a hotel room making two phone calls a day to the headquartered International Broadcast Services Limited so I can be first in line to get a copy of the long-awaited RADIO DATABASE INTERNATIONAL book as soon as it's off the press. I have the 201 portable with me and am passing the time with that, having now received the BBS telephone number.

The fall listening season should be in full swing before it's time to do the next column and we hope to have some good items for you. Til next month, 73 from Ken and me.

ENGLISH LANGUAGE BROADCASTS

by Tom Williamson

Greetings to all MT readers and a reminder that all your information and comments are welcome via the Brattstown.

This month we will take a look at the variety of musical programs available on the air. As each week permits I will attempt to limit choices to any special preference, but include a mixture of available styles.

Of course it is virtually impossible to produce a comprehensive list of all the musical programs of the world. Apart from the huge numbers of stations on the air, we do not use English language in their program announcements often, so much of the information about the music may be lost to the North American listener, although he could still enjoy the sounds. So in the main my comments will be about stations with English language programming.

Another problem, commented on before, is that many stations have the habit of using short "snatches" of local music between spoken announcements, which makes it almost impossible to give time listings. In my opinion this is a pity because one may greatly enjoy and appreciate a type of folk music and have to listen with diminishing interest.

Another aspect to be considered is the special nature of short-wave reception in which distortion fading can be a severe problem, often an atmospheric natural phenomenon. Sometimes one can understand a news bulletin, but it sure upsets the esthetic impact of a beautiful piece of music.

To my ear, this is tolerable in pop music where the line of the rhythm is the important component, but it can ruin a complicated piece of classical music where the slow development of interconnected related themes is the enjoyment of the music.

Another type of music which is seriously compromised is on shortwave is choral or operatic work. Both frequency and broadcasting volume changes may produce undesirable sound effects here.

Nevertheless, even if we cannot enjoy such music, it opens up a world of new music to the inquisitive listener—without any extra cost—and one may then obtain a tape or disc recording for further appreciation.

This is especially use-
ful in folk music, much of which is almost impossible to sample on the AM broadcast bands, and even the selection in large stores of recorded folk music is pathetically limited. If you are stuck, write to the radio station; you may be lucky with a free disc or cassette! I have received a few in the mail.

ALBANIA:
A strange one to start with: when I/ ask, folk music is rather unique in itself, so don't just turn away from the idea. To your editor's ears this sounds like a situation limber from the Middle East than from a European country. Radio Tirana does not exactly concentrate on its music but you may hear an occasional piece.

Although it's not an English language broadcast, watch out for the 60 meter AM station in Manaus, 5057/5020 kHz, that can sometimes be heard with good strength in the evenings around 0300 onwards. The station has 350 kW and the give-away that you have Albania on the dial.

ARGENTINA:
Home of the unique rhythm, the Tango, now no longer danced much, but still the national cultural "party" for people. You are bound to hear some of these haunting rhythms from RAE, the Overseas Service of Argentine National Radio, in the 75 meters band. You might try--if you can hear them! Conditions are very chancy for late evening reception, but sometimes they are all alone on the band.

The English announcers will inform you in some detail about the vocals and orchestras, and their programs, in both the evening and the afternoon. By the way, there are many types of vocal tango such as romantic, political and humorous! In addition to these rhythms, the waltz and milonga are other favorites.

AUSTRALIA:
The AM somewhat overlooked by the SWL is Radio Australia's musical programming; however, in between the news and information segments, you will find a lot of "pop" music, often with (to us) unknown Australian artists work. R.A. has musical shows about the classics, Australian Country Style, Australian Top Hits, Soundabout (these being all pop-country type), Bill Belchers Band Bazaar (brass band music), and, for the classics, Australian Concert Hall.

BRAZIL:
I'm sure you don't need me to tell you of the wealth of unending talent from this giant South American country; if you haven't heard Radio Nacional in English in the evening, where have you been?! The 25 meter station is a huge signal when conditions are right--with the only exceptions being R. Brazilian "pop", instrumental and carnival music (samba/marcha) is frequently programmed as well. Some of the more interesting biographies and historical notes are often presented.

By the way, we shall soon be coming up to carnivals, and so much Brazilian music is heard at different times between programs and in the regular DX Party Line program as well.

EGYPT:
Radio Cairo has some irregular sessions of Arabic music in their English and other language programs, but reception is unreliable.

Recently, Arabic music is being heard around 0120 on their 9475 kHz channel. Try other frequencies also at that time.

GERMAN FEDERAL REPUBLIC:
Deutsche Welle seems to have their musical program--"music" rather than "music" of music! But this comment isn't too important if you are a serious fan of classical music, for they have some programming in this style but, apart from saying check them on Sundays, detail is missing from my perspective. Wednesday is also an arts program night.

GREECE:
The Hess program presents sections of musical programming of characteristic type in their English language programs and at other times. Unfortunately, they don't seem to send program bulletins when requested; rather, a frequency schedule sheet. But many evenings you can hear the quaint Greek music on 9420-3565 kHz.

NETHERLANDS:
Radio Nederland has one special program with Suzanne Conover, "Dance Across the Miles," that you may hear some very interesting material at such times as the Euro Song Festival. You might get a record request played if you contact them!

PORTUGAL:
Radio Portugal may, from time to time, present some of their unique folk vocals ("fado" music), but reception on their 6095 kHz is sometimes very poor. The usual English broadcasts is temperamental!

SPAIN:
Well, of course, what would this one be like without music?! Spanish Foreign Radio uses a lot of folk music, but at irregular and unexpected moments! However, they have segments such as "Music" at 16 past the hour, weekdays (for all of FIVE channels) and "regional music," Saturdays at 25 past the hour, for the same short scheduled period! If that was all they really presented there would be a famine, but the melodies turn up in all sorts of programs, so they keep tuned (maybe that's the idea!).

TURKEY:
Ankara has musical programs scheduled for Mondays (and Wednesdays, too) and end of their English programs and probably at other times as well. The music is fascinating, often better than their English, and a lot of their broadcasts, but they don't seem to be very popular as a station with North American audiences--or am I wrong? Let me know your feelings on the matter.

UNITED KINGDOM:
BBC World Service devotes quite a lot of effort to regular musical programs. On the pop music front we have Top Twenty, Sandi Jones Request Show, Top 15, Radio Top Ten, Mellow; for jazz fans, Jazz for the Asking; for classical enthusiasts, The Pleasure's Yours, Classical Record Review, Concert Hall, the World of Classical Music. My only comment here is that classical music does not come over well on short-wave due to frequent fading distortion.

U.S.A.:
The venerable VOA has some regular programs which attract quite an overseas audience such as Concert Hall for the classics, Music USA and Music USA Jazz. The former is a program replays for all overseas stations and the latter has jazz yesterday and today, with the famous Willis Conover.

And how about the famous "On the Air" program," radio WRNO with its Jazz 30 music and conversations with famous musicians (Tuesdays and Thursdays); this one is called "Top Ten" (requests of the week) on Fridays.

USA:
Radio Moscow has a set of musical programs on a regular basis such as Music at Your Request, Folk Box, Musical Quirks, Music and Music and Musicians and others. You may also hear interesting regional folk music over Radio Kiev and Radio Vilnius. However, you should hear that these folk music items are among the very best of the Soviet broadcasting spectrum.

NEXT MONTH we will have a tabulated summary of selected stations for musical entertainment and then continue with a review of broadcasts by continent.
SOUTH AMERICA (1) (2) (3)

by Ken Wood

It's a continent of unlimited variety. Its traditions, its different languages, its many cities and isolated villages, its jungles, rivers, mountain peaks and high plateaus, its music and culture provide enough variation for more than one lifetime of exploration.

There's variety in the radio stations of South America; some of the high-powered short-wave broadcast listeners tend to shut off the South Americans as too easy or too hard to hear, too boring or too far away.

Each country is oversaturated with stations, to the point where the radio listener can be overwhelmed by the sheer number of stations available. The variety often means the need for a good receiver and a lot of time spent at the dial. In Brazil, for example, there are over 100 AM and FM stations.

Some nations sport but one or two broadcasters on short wave; others such as Brazil and Peru can tally over one hundred. Many come on for a week or a few years and then disappear, sometimes never to be heard from again.

The small, low power Peruvians flutter up and down a few frequencies, and Portuguese is often spoken to fast for an untrained ear to pick out an ID, particularly during a "futbol" broadcast.

And yes, sometimes stations are reported on that have never been active. All that is part of the fun and challenge of DXing our southern neighbor.

This South American sampler is designed as a something-for-everyone exercise. Included are three stations from each country. The first will be one of the very easy stations to hear, the second one of moderate difficulty and the third - boy that's for tried and tested Latin American DXers who really know their stuff (and isn't that saying anyone can't go after those third level broadcasters?).

Weather you're just thinking about pointing a toe towards the South American DX waters, or are in knee deep or up to your chinny chin-chin, you'll find your hands full trying to track down stations of interest.

ARGENTINA — (1) Radio Nacional (RAE) is a near-snap log on 6.060, 9.690, 9.710, 11.710, and 15.345 MHz, among others. Some frequencies are used mainly in the daytime, some in the evening and others, in the evenings (primarily). Check for English on 9.690 and 11.710 at 0100, or on 15.345 at 1200.

(2) Radio Belgrano operates on 6.090 from 2200 to 0200 and daytime on 15.120 (1600-2000). Brazil listeners have difficulty listening to this station during the daytime.

(3) Radio Malague uses just 500 watts on 6.160 with a listed 1000-2200 schedule. It can be heard during good openings at the 1000 sign-off.

BOLIVIA — (1) Radio Illimani from La Paz uses 15.345 and 6.025. One at 0900 sign-on when frequencies are less likely to be covered. 6.025 is occasionally well heard in the daytime.

(2) Radio La Cruz del Sur in La Paz is a religious station that goes through cycles of good and bad reception - right now it's fairly good. It's on 4.875 and signs on around 1000, off at 0100.

(3) Choices for this position are many but well-picked Radio Nacional Huannuni on 5.965. Sign-on varies between 0900-1000 but the Brazilian Radio Guayana, which is almost always on this frequency so you need real determination to be up at this hour for weeks or even months in a row - whatever this does. At least there is a good sign-on and it's a terrible verifiable!

BRAZIL — There are many Brazilians which would fit into each category. But (1) almost has to be the transmitters of Radiobras/Radio Nacional Amazonas. Radiobras runs English at 0200 on 15.290 (sometimes 15.270) and around 11.780 days and evenings.

(2) Radio Araguzia in Araguaia on 4.905 makes for a good second level choice. Many top cal band-hoppers in Brazil sign on around 0800 or 0900 so check then. But beware: another Brazilian, Radio Rondônia Federal in Río, operates on the higher power on the same frequency.

(3) Radio Oito de Setembro in Descalvado uses but 200 watts on 6.670 or 6.490 (2.490) and when there's a good opening on this band it may turn up around 0000-0100.

CHILE — (1) Radio Nacional is no sweat on 15.140 during the daytime, though it sometimes uses its alternate 15.150 frequency for overnight.

(2) Check variable 9.570 or 6.020 for Radio Diego Portales from 1030 sign-on or in the evenings up towards midnight.

(3) Early morning, around 0000 UTC, might one day turn up a signal from the usually inactive Radio Calama on 6.100.

COLOMBIA — (1) La Voz del Llano is one of several vastly tuned Colombians. This one can be easily heard because of its strong signal and off-frequency operation - 6.117 rather than its assigned 6.115. It's hearable, but with any other opening, best late with the QRN a less factor.

(2) Ondas del Orteguaza in Florencia operates on 4.970 until 0300 but a strong utility station also operates on that frequency, and most of the time too. So it's a question of catching the right day or just waiting to try, as the Orteguaza should be in the clear, assuming it is on.

(3) La Voz del Yopal in Yopal operates in the 5.050 area (last reported on 5.051), with sign-on around 1000 and sign-off at 0300, sometimes 0400. There are a number of Latins operating in this general area. Yopal is not always active, so some patience and searching are needed.

DID YOU KIDDING? HCJB of course. They're on 24 hours a day and in English to North America most of the evening (and some post-midnight hours). Check 6.075, 9.735, 11.910, 11.915, and 15.155.

(2) La Voz del Napo on 3.280 signs on at 1000 and you can often catch them in continental America too. Sign off. There's a ten hour break in their schedule during the day.

PARAGUAY — (1) Radio RJI performs nicely most days to 0300 on 9.735 with its mostly music program and shouldn't be any problem to hear.

(2) Recently active was Radio Guaira at Villarica on 5.995 with a sign-on around 1000 but it may take some real tuning.

(3) Try around 0900 on 5.995 for La Voz de Amambay, a second doesn't exist. It's not always active and this area contains a lot of high power broadcasters.

PERU — (1) Radio Union in Lima on 6.113. It's good it's very, very, very good. Check early mornings or late evenings just below the Colombian on 6.117.

(2) Try Radio Chan-chanayo in La Merced on 4.896 running from 1030 to 0500.

(3) Third level Peruvians are Argentina. We won't go all the way to the super difficult. How about Radio Mundo from Cuzco on 5.120? It's one of the current crop of out-of-landers being heard with some regularity now.

URUGUAY — (1) There aren't really any easy pickings from this little country but let's go with Radio El Espectador (sometimes relaying Radio Sport) on 6.045 from 0230.

(2) SODRE, once an old standby, is seldom heard anymore. Try 9.620 at 0900.

(3) Radio Oriental, 11.730 on 5.995 from 0200 around 0000 during the spring but Radio Moscow has occupied the channel all summer. It may turn up if and when Moscow decides to excavate.

VENEZUELA — (1) Radio Rumbos in Caracas is a strong and reliable performer on 4.970 and 9.660. You can hear the 31 meter band channel most of the day, 4.970 evenings and early mornings.

(2) Radio Marsa in Maracaibo hushes up from the never-never land where silent Latin stations go from time to time. It's on 3.270 openings or early mornings.

(3) Radio Angostura in Ciudad Bolivar on 6.120 is a sometime possibility from around 0900 sign-off.

CB VIOLATIONS CAN BE SERIOUS

It seems that "Thunder Hammer," also known as "Prohibition Officer Number One," has bitten the dust. U.S. Marshals, police and agents of the Federal Communications Commission conducted a search and seizure at the Portsmouth, Virginia, residence of one of the illegal operators, confiscating six CB radios, three linear amplifiers and accessories valued in excess of $2000.

But the bust isn't over; criminal charges are pending against the operator who, just last year, was fined $6000 for his part in a restricted hours violation stemming from interference he caused to a neighbor's heart pacemaker.

And convicted, "Thunder Hammer" could be nailed with a $10,000 fine and imprisoned for a year.

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There are no longer any licensing requirements; call signs are a thing of the past. And with the sunspot cycle being at low ebb, reliable local coverage is now better than when CB was enjoying (?) a popularity peak in 1980.

Although at one time it was estimated that some 20 million operators were active on the CB band, the FCC places that estimate now at about 15 million, still a sizable number!

Canadian Federal authorities have more of an edge in keeping communications firmly under control. Canada's population is around 23 million, a fraction of the U.S. If there are so many unlicensed operations in the States, it might be that the FCC simply can't keep track of them amidst a population of 250 million.

Also, the ratio of listening to the radio to the number of listeners in Canada probably is lower than the U.S. If few Canadians are listening to short wave, even fewer have their ends open for pirating radio. Many, then, would have the capabilities—or motivation—to set up an AM, FM or SW transmitter?

But

Even if Canadians aren't the type to get out of line and start using an illegal transmitter, they have an advantage. Much of Canada is isolated forest and bush with plenty of back roads. Authorities would have to go to considerable trouble to find a pirate in that situation, especially as regards an HF broadcasting signal. It wouldn't be worth it.

Besides, when pirates take to the air in Canada (especially on SW), it's usually in the few months of summer. Not many people are up camping in a North of Lake Superior, or risking being caught, just to play radio.

However, some say they will make their chances.

"I would like to see more broadcasting of the unlicensed sort in Canada," says Mike Gsorby of the CFCK DX Association. "And at what cost to the Department of Communications? It wouldn't be worth it."

"One big road block is the occasional very low-powered broadcast, there are virtually none in Canada. While dozens of U.S. stations are heard regularly on short wave and other bands, with the exception of the occasional very low-powered broadcast, there are virtually none in Canada.

Part of the reason for this may be the typical Canadian's 'laid back' attitude. We are autonomous, but didn't fight a revolution for it, so we usually take things as they come. Thus, as the Federal Government is encouraging establishment of 'community' stations in remote parts of Canada. Some stations, having the necessary hardware, turn the juice right away without waiting for DOC's stamp of approval. Technical standards, too, are up to date."

But it's pretty hard to cause interference with low power when the nearest station is 60 miles west. And what bureauacratic wants to fly up to Ungava Bay just to put the plug in?

"There are no longer any licensing requirements; call signs are a thing of the past. And with the sunspot cycle being at low ebb, reliable local coverage is now better than when CB was enjoying (?) a popularity peak in 1980. Although at one time it was estimated that some 20 million operators were active on the CB band, the FCC places that estimate now at about 15 million, still a sizable number!"
Making things worse, the operators used actual names of prominent Ontario DX Association members who then had to account to angry listeners. It turned out to be a prank.

"WKKK was just a bunch of boys and girls well under twenty years old at a lively summer party," says Richard McVicar. "It was held out on a lake. I was told the antenna was stretched out over the lake." Conditions made it widely heard, unfortunately.

"As far as who was operating the station, there were all kinds of people chiming in. Many of them probably thought the transmitter was a CB and didn't remember anything the next morning. As far as I know, none of the WKKK people have any interest in the KKX, the CIA or pirate radio for that matter," Richard adds that the transmitter crystals has since been destroyed.

**Radiostanbak: This frequently reported pirate actually operated, from somewhere in Canada according to Richard McVicar (Their transmitter should drop down is in the States). An informed source said that Richard knows more about this pirate than any other Canadian DXer. Richard says he won't talk. "If I said anything, you could add what I said to what others have said and come up with conclusions by process of elimination. I've promised not to say anything."

**CFCC/CFCK: First logged by a DXer in the summer of 1984 on 3240, 3177 and 3420 kHz, they claimed to operate on 3250 kHz. They played set long sets of rock music every 25-30 minutes. All reports agree the location was announced as northern Ontario. But there have been none since.

Mike Cserbany theorizes: "They operated from a cabin in a remote location in northern Ontario during their school or work. Or they had equipment failure or were closed by the DOC."

**CHQCHQ: Are (respectively) AM and FM stations in Ontario that were clandestinely relayed via short wave on 3450, 6990 and 7430 kHz in the summer of 1983. Mike Cserbany says they were "one and the same as CFCC" and they probably pirated the licensed stations' signals for transmitter tests.

The choice of stations, however, is interesting: CHZ is located in south Ontario serving Ottawa, while CHNO's territory is Sudbury hundreds of miles north. The relay may have been in the expansive wilderness between the two.

**Radio Canaima: Now "Monitoring Times" readers have been alerted to the newest of the anti-Castro, anti-Sandinista stations. This is Radio Canaima which was on 3450, 3420 kHz in the early hours of October 28.

Radio Canaima (Radio Alligator) can normally be heard with good signals. The best times to try are around 0000 and 1200 GMT, although earlier transmissions have been monitored. The change from Daylight back to Standard Time may or may not effect the operating schedule.

There is no doubt that Radio Canaima is the same station which was popularly known for several months as the "Alligator Pirates," who broadcast two-hour blocks of Spanish and English music and identified only by playing Nat King Cole songs "Ojos Negros" (Dark Eyes) on their first day.

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**Radio Caiman: By now you have probably been alerted to the newest of the anti-Castro stations. This is Radio Caiman which was on 3450 kHz in the early hours of September 28. Radio Caiman (Radio Alligator) can normally be heard with good signals. The best times to try are around 0000 and 1200 GMT, although earlier transmissions have been monitored. The change from Daylight back to Standard Time may or may not affect the operating schedule.

There is no doubt that Radio Caiman is the same station which was popularly known for several months as the "Alligator Pirates," who broadcast two-hour blocks of Spanish and English music and identified only by playing Nat King Cole songs "Ojos Negros" (Dark Eyes) on their first day.
**PIRATE RADIO cont'd**

Union City Radio along with a color photo of their transmitting equipment. His report was the first they received from Florida.

In Ohio, George Zeller notes the return of Castro La Voz del CID mornings at 1100 GMT on 6305. He also received a QSL from pirate CAT. Its address is Box 140, 3090 Danforth Avenue, Toronto, Ontario M1L 1C1, Canada.

It is not pirate activity, but we just have to mention that Hawaii's Chuck Boehnke is getting some fantastic medium wave reception at his location. He hears Calcutta, India, with English news at 1530 GMT on 1134 and Saudi Arabia on 1440 kHz. Keep reporting stuff like that, Chuck, and we will all want to move there!

This writer has not had any luck logging pirates lately, but at least the mailbox has not been empty. We received a full data letter from WRAT-TV, on whom we reported last month. We were also very grateful to receive a prepared card from WMTV. So far as we know, it is the only second QSL they have issued.

However, we would suggest you save your time and postage sending reports to WMTV. Details cannot be discussed, but it appears pretty definite that the folks operating this do not intend to issue verifications.

Now, what are you hearing? Let us know and we will share the information with other "Monitoring Times" readers. Thanks to all of you for your support!

---

**"Los Numeros"**

32444 69213 88816 52196 63811 94216

**Havana Moon**

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**THE LIST**

"Los Numeros" is pleased to present herein what just might be the most comprehensive "numbers" and "phonetic alphabet" station listing available.

**"PHONETIC" STATIONS**

(some freqs in multiple use)

reduced upper carrier SSB
u = USB

a = AM

kHz

ART (ru) 3415 5437
BAC (ru) 4560 5910
CIO (u) 6790 9325 9965
EIZ (u) 10125 13921 17966
PLU (ru) 4056 6500
GBZ (ru) 4882 6270
KPA (ru) 7445
MW (ru) 8641
PED (ru) 3150
RCH (ru) 5091
ULX (ru) 4882
VBL (ru) 4670 7605
HIF (ru) 5820 7918

**SHORT WAVE SERVICES**

USIA

**VOA**

While SWL's have been following the exploits of the VOA's new voice, Radio Marti, broadcasting on 1180 kHz in Spanish language to Cuba, few of us have been privileged to information on where to tune in this latest U.S. propaganda effort in the short-wave spectrum.

We appreciate MT reader Eugene Munger of Montgomery, Alabama, for sharing with fellow listeners a broadcast schedule just received by him from Radio Marti's chief of technical operations. It is printed above.

---

**5-DIGIT GERMAN/ENGLISH**

Groups repeated twice. CW "NNN" at beginning and end of each transmission.

9697 kHz (a)
7379 kHz (a)
9052 kHz (a)
9267 kHz (a)
9973 kHz (a)
11415 kHz (a)

**GERMAN 3/2 DIGIT**

Sign on as: "929 07 44 190" (repeated)

3495 kHz (u)
5315 kHz (u)
5910 kHz (u)
6708 kHz (u)

**GERMAN 5-DIGIT GROUPS**

Repeated twice with "music box" introduction.

3820 kHz (u)
5748 kHz (u)

**SELECTED 5-DIGIT SPANISH AND CW GROUPS**

3090 and 4022 kHz
3090 and 5080 kHz
3445 and 3080 kHz
4028 and 5742 kHz
4825 and 4044 kHz
4825 and 4055 kHz
5826 and 6227 kHz
6773 and 6784 kHz
6825 and 6833 kHz
6872 and 6892 kHz
7438 and 7482 kHz
7527 and 7846 kHz
7887 and 8027 kHz
8112 and 8186 kHz
9086 and 9124 kHz
9874 and 10138 kHz
10345 and 10382 kHz
11468 and 12230 kHz
12236 and 12324 kHz
13428.5 and 13578.5 kHz
14454 and 14682 kHz
14734 and 15778.5 kHz
8482 and ?? kHz

First frequency is primary and second frequency is repeat.

All of the above 5-digit Spanish frequencies have been active for the past several months at varying times. "Numbers" monitors are also reminded that many of these frequencies are active only once or twice weekly. Most 7, 8 and 9 MHz frequencies are active after 0500Z. Much of the traffic on 3 and 4 MHz is phantom.

**SPY TRANSMISSIONS(?)**

The 5-digit USB German
transmissions on 3370 and 4010 kHz have been linked to the recent West German spy scandals. These transmissions originate from somewhere in East Germany and end with a music scale. This revelation received some minor attention on national television some weeks back.

**SPY PARAPHERNALIA**

..."Coded pads, greeting cards with microdots, transmitting and receiving equipment."

On an all-too-frequent basis, the above phrases are the basis of most newspaper and magazine accounts of...thoughts. The Japanese radio incident, however, was not a case of a Spies used as human beacons. It is...to see if there are any...carries.

**UNUSUAL INTERCEPT**

B.H.S. of New Hampshire says that we 'monitor's TRANSMISSION NUMBERS transceivers on 6839.5 kHz! Would you imagine, knowing about this Slavic VL, B.H.S. if you could provide more information? Do you hear the 4-digit Spanish on 6840 kHz in New Hampshire?

**THE CARDS**

It is very possible to liken some 5-digit Spanish transmissions to 3-card monte! Think about it.

**MOUNT ALTO**

Disturbing and disturbing are just a few of the words that spring to mind when we examine the spy city atop the second highest hill in Washington, D.C. The potential for Soviet eavesdropping from this site is appalling.

**GUESS WHO?**

B.H.S. again to ask if I would consider organizing this site. In doing so, at a quick glance, readers would have a short list of all the various frequencies and info discussed in each "Los Numeros" column.

That's a good idea, B.H.S. I'll have to give it some thought. I see the...frequency, in...the Slavic Anti-Matter, this often controversial...very next issue.

**MYSTIQUE ENHANCEMENT**

The legendary C.M. Stanbury is back and "Dustbooks" has him! Not content with the classic Anti-

**WILL THE REAL TAMMY FAYE PLEASE STAND**

What do Bob Grove, John Santosuosso, C.M. Stanbury, Tammy Fay Bakker, certain minister Misami, FL, and Union City, NJ, individuals have to say? Answer to that question is that...none of them is Havana Moon!

**TRIVIA ANSWERS**

Watch for them in the very next issue.

**ATTENTION**

Canadian DX/SWL cubes are invited to participate by sending loggings and other related information to this column. Other contributors are reminded that piracy and clandestine material should be directed to John Santosuosso.

**TUNE IN CANADA**

by Norman H. Schrein

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

Welcome to another edition of the Tune in Canada column. This time we are going to once again look at frequencies above 27,000 MHz for various sections of the country.

First of all I had a request from a reader who frequents the Cape Breton Island section of Nova Scotia and he was wondering what he could listen to there on his scanner. The Cape Breton Island area is comprised of the following communities—Baddack, Middle River, Nyanza, North River Bridge, Bridal and Sydney. I could only find frequencies, however, for Baddack, North River Bridge and Sydney. So here they are—

**Raddack, NS**

158.520 VCA 974 Baddack Ambulance, Ltd.

162.660 XJH 44 Cape Breton Primary Product.

27.340 XH 44 Baddack Volunteer Fire Dept.

153.830 XJH 44 Baddack Volunteer Fire Dept.

154.430 XJO 88 Baddack Volunteer Fire Dept.

155.160 / 155.580 XJO 88 RCMP.

155.460 XJO 88 RCMP.

155.670 XJO 88 RCMP.

150.305 / 149.590 XMI 293 Government of Nova Scotia.

162.570 / 164.715 XMI 293 Government of Nova Scotia.

149.590 / 150.305 XMI 293 Government of Nova Scotia.


152.990 XOK 47 Nova Scotia Power Commission.


162.090 XOK 47 Nova Scotia Power Commission.

**North River Bridge, NS**

163.260 VCB 768 Salmon River Construction.

153.830 XJJ 527 North River Fire Brigade.

154.190 / 154.770 XJJ 527 North River Fire Brigade.

**Sydney, NS**

95.900 CBAPF-24 Canadian Broadcasting Corp.

105.900 CBF FM Canadian Broadcasting Corp.

168.460 CIBT FM Marin Telephone/Telegraph Co.

94.900 CJCB FM Celtic Investments, Ltd.

158.640 CJR 45 Sydney Steel Corporation.

27.380 CJY 686 CHER Broadcasters, Ltd.

109.300 NO Ministry of Transport (Air).

322.000 NO Ministry of Transport (Air).

114.900 QY Ministry of Transport (Air).

110.300 QY Ministry of Transport (Air).

335.000 QY Ministry of Transport (Air).

164.960 VAX 2 Department of Transport.

163.680 / 167.460 WCA 27 Fisher Electronics, Ltd.

30.360 WCA 932 Kennedy, Allan Alexander.

153.830 XJJ 797 Sydney Fire Department.

154.370 XJJ 797 Sydney Fire Department.

**MIAMI SITES**

The things that Crockett and Tubbs would never tell you! Watch for the next issue of MT!

**REMEMBER**

"Los Numeros" is very interesting in what you are hearing. A very big thanks to...all of you for your support. HAVE A VERY HAPPY HOLIDAY SEASON.

This time for a...Asia.

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

I recently received a list of "Canadian Scanner Frequencies" which was assembled by Chuck Chivers. Here are some excerpts from that list.

142.245 Ontario Provincial Police—Brampton

142.445

142.605

142.095 --Burlington

154.710

142.935 --Brantford

142.215

142.815 --Chatham

163.110 Ottawa—Carleton Regional Police

164.880

164.730

166.770

167.235

156.240 Toronto Harbor PD

155.490

155.550

142.900 Woodstock Police

142.920

164.770 Saint John Police

155.700 RCMP (St. John)

169.230 Aitken Fire Dept.

154.950 Brampton Fire Dept. XJL 725

154.800

154.830

154.130 Cornwall Fire Dept. XJJ 376

154.370 London Fire Dept. XJL 74

154.635

154.950

154.095

154.400

156.320 London P.U.C.

156.300

156.550

159.420 Ingersol Works Dept

160.110

308.800 RCAF (North Bay)

308.800 RCAF (Winnipes,Man)

308.500 RCAF (Ottawa)

136.080 Canadian Satellites

136.410

136.590

136.950

401.750

That's it for this time. Next time we will once again look at frequencies below 27.000 MHz. Until then...Good Monitoring.
Logging 170 Meters

by Craig Healy, Editor "Top End Yearbook"
(66 Cove Street, Pawtucket, RI 02861)

NOVEMBER 1985 LOGINGS

1610 NEW HAMPSHIRE Lincoln/Cannon Mt. TIS/traffic info for road construction (DM)
1610 WASHINGTON Port Angeles 1218 8/20 ferry info (DM)
1615 NEW ZEALAND Ohura 1340 10/13 OR (ET)
   -same  2115 10/1 OR (PT)
   -same  1219 8/20 OR (DM)
1620 AUSTRALIA Brisbane 0802-15 9/29 4RH blasting in w/a "3 min past 6" TC (1 min fast!) and wx for
   Brisbane, female anncr. (AP)
1620 AUSTRALIA Hobart 0802-15 9/29 4RH (AP)
1620 AUSTRALIA Canberra 0802-15 9/29 1RH; probably the source of the SAR on 4RH and 7RH (AP)
1623 PAPUA NEW GUINEA Gurney 1025 9/29 GNY (AP)
1629 AUSTRALIA Sydney/Melbourne 1005 9/29 2RH/3RH (AP)
1635 Heard between 0400-1100 on 10/3 to 10/6. Not noted past 1200. Appeared to be two or three groups of
   sequential. Normally two were running at the same time. Definitely east of Hawaii. Oil rigs, or new calls
   for the NWT outlets? FM775, G35, R321, RMM, J7372, V074, K280, and T288 (PT)
1653 PAPUA NEW GUINEA Ts11l Ts11l 1342 0/3 T/L (ST)
1653 OREGON Nehalem Bay (all day) 8/20-21 Steady 600 Hz tones, also audible at ±10 and 20 KHz etc.
   Very loud. Found 40° vertical antenna, shed, and propane fueled generator on the dunes in the camp-
   site. 20+ S9 signal @1/4 mile distance. (DM)(Who owned it ed.)
1675 PAPUA NEW GUINEA Ts11l Ts11l 1342 10/3 T/L (ST)
1685 COLOMBIA Bercaderos 0843 8/20 MER (DM)
   -same  1010 9/29 MER (AP)
1689 PAPUA NEW GUINEA Mt. Hagen 1012 9/29 NH (AP)
1692 PAPUA NEW GUINEA Kitava 1015 9/29 KIU (AP)
1692 AUSTRALIA? 0845 8/20 DU type audio, VL2UV (DM)
    1702 0453 8/20 Unit oriental talk, not UTC. J7J also
   noted 1223 9/3 in USB (DM)

Credits:
Howard Kemp
Art Peterson
Don Moman
Pete Taylor
Eric Thew

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www.americanradiohistory.com
A/D conversion can be done on any analog signal regardless of its polarity. Most A/D converters will accept a differential signal, where an input pin is provided for a + and a - side of an analog signal.

The polarity of the input signal in some converters is immaterial. For instance, a computer may have many different power supplies with different voltage outputs, with some being positive with reference to ground and some negative. In this case, if the A/D converter is to digitize a negative voltage, the negative voltage is input to the converter on the + input, and the return side of the supply connects to the - input pin.

Most A/D converters have additional output signals which come into play at this point. The one of interest to us as bipolar inputs is the output bit called polarity. It does just as its name indicates— it tells us what polarity the voltage we fed to the + pin was in relation to the ground pin. If the bit is off, the voltage input was + on the + input, and if the bit is on, it was - on the + input.

I know this sounds to get confusing, but hang on, we are almost there. Two more bits are usually present, and their operation is similar. Overrange is a bit which turns on when the voltage fed to the input of the converter is greater than the full scale input allowed.

And last but not least, a status bit is on when the output of the converter is real data. If a microprocessor needs to access the converter output register just as the converter itself is changing the bit pattern after finishing the conversion process, the data transferred to the microprocessor is meaningless. So the converter turns on the status bit only when the data at its output is valid.

Prior to updating the output register, the converter turns the status bit off, and turns it on again after the register is updated. The microprocessor is allowed to read the contents of the register only when the status bit is on.

In summation of the A/D, bipolar operation of the converter and associated chips all utilize a + and - supply voltage to allow converting bipolar voltages to digital values. It is a rule of thumb that in analog work where A/D conversion or other handling of bipolar voltages is needed, + and - supplies will be used.

There are many audio and other analog circuits in use that operate from a single polarity supply, but special circuits and components are needed to shift levels so that the negative portions of the signal appear to be positive in respect to ground. In the area of A/D work, it is usually simpler to use + and - supplies and also achieve greater accuracy in the conversion process.

Now that we have converted an analog voltage to its digital equivalent, how do we convert it back? It's easier to do than getting the digital result and usually required less extensive circuitry.

Look at figure 1, a theoretical design for digital to analog conversion. A rule of thumb with op-amps (operational amplifiers) is that the gain of the op-amp is roughly the equivalent of the resistance ratio of the feedback resistor RF to the input resistor RI.

If we want to build a 4 bit D/A we could build figure 1's circuit. Assume that the inputs labeled 1, 2, 4, and 8 correspond to the digital outputs of a microprocessor. The 1 bit is the smallest voltage we can resolve, and its value depends on the actual resistance values used.

Let's assume that a TTL level of +5 volts on the 1 bit input produces an output voltage of 1 volt, and all bits off is an output of zero volts. With the 1 bit input on, the output voltage is a result of the resistor ratios, such that RF divided by RI of bit 1 = 1 volt.

If RI is reduced to half of its original value, then the output voltage would double. Instead of reducing bit 1's value, we add bit 2's resistor in parallel with bit 1's resistor. If we now turn bit 2 on instead of bit 1, the output is now 2 volts.

If we repeat the procedure with the 4 bit input, the 4 bit RI is half the value of the 2 bit RI, and turning on the 4 bit by itself will produce an output of 4 volts.

Repeating the process once more yields the bit 8 input resistor whose value will be 1/8 that of bit 1's RI. We are, for purposes of this discussion, ignoring op-amp parameters such as maximum gain, maximum output voltage swing, etc.

As you will see shortly, when we get to full output of the D/A converter, we will have 15 volts out, which would be impossible in a system with + and - 12 volt supplies. In such a case, 18 or even 24 volt supplies would be used.

Back to our figure 1— notice that each time the input resistor became smaller, the output voltage increased. If we refer to figure 2a and we should turn on two bits, like the 1 and 2 bits, an interesting result is obtained. Since the +5 on the bit 1 and 2 inputs is the same potential...
We now have a D/A converter that can output 16 different voltage values in steps of 0.01 volt. Not of real practical use, but it serves to illustrate the operation of a D/A converter. Now let’s make it useful. If the resistor values were changed so that instead of 1 volt output steps we now have 0.01 volt output steps, we can output any voltage between 0 and 15 million volts. Notice that we changed the resistor values, NOT THE RATIO BETWEEN RESISTORS. The 8 bit resistors still must be 1/8 of the 1 bit resistor, the 4 bit 1/4 the value of the 1 bit, and the 2 bit 1/2 the 1 bit value.

This, incidentally, is known as the R2K rule. (Each succeeding value of R is twice the value of the adjacent resistor, of 1/2 its value, depending on which way you count.)

As we said in the A/D column, adding bits increases resolution. Let’s add another bit to our converter. It will then look like Figure 3. Again, the R2K formula applies and the added resistor is 1/2 half the value of the 8 bit, and 1/16 the value of the output of the 4 bit.
The output range of our converter just doubled from 0-15 million volts to 0-31 million volts. Adding still another resistor (for 3 bit input) takes us to 0-63 million volt output. And here is another exercise for the reader—calculate the range of the output voltage for 4 and then 16 input bits.

In summary, like the A/D, the number of bits sets the resolution, and determines the maximum steps available. For our D/A, the value of the Rf and RI resistors determine the actual output voltage range.

So, what if we take an A/D converter, hook it up to an audio source and store the resulting digital value for each conversion? Can we then convert the digital patterns to a D/A in the order we stored them, and reproduce the original audio?

If we can assume we have chosen the right number of bits for both converters, the right speeds of operation, the right values of D/A resistors, etc., the answer is: Yes, we have just invented digital stereo! Now you know the basics of the new stereo, TV, and other hi-tech products advertised in the popular magazines and better digital designs.

Q Do you have a monitor radio that will pick up the time signals from Arlington, VA? (Raymond F. Bieg, Syracuse, NY)
A What time signals from Arlington, Virginia? The U.S. Navy station NAM at NNIC has some transmissions on short wave and yes, we have receivers which hear that and WWV at Boulder, Colorado.

Q How can a broadcaster like WRNO advertise a "transmitter power" of 100,000 watts and "output power" of 3,000,000 watts? Is this ratio (30:1) true for all broadcasters? (Robert Studley, Woburn, MA)
A If the antenna were a simple vertical, it would have a uniform omnidirectional pattern of radiation. But WRNO (and all other International broadcasters) uses a directional antenna to focus their signals in particular directions. This is the equivalent of providing higher power to an omnidirectional antenna.

ERP is determined by multiplying the actual transmitter power by the power gain of the antenna which is, in the case of WRNO, 30 times.

Q Is there an attachment available for my Bearcat 30/30 scanner that will allow me to receive more than 5 additional channels? (Robert Hanvey, Etowah, TN)
A Frequency converters that can extend the band limits of scanners are available from Hamtronics, 65 Moul Rd., Hilton, NY 14468. Memory expanders so that additional channel banks may be added to Bearcat scanners are available from The Dog House, P.O. Box 511, Fairbanks, WA 99703.

Q What accessory modifications are recommended for the Icom R71A receiver? (Marty Burks, L.I., NY)
A The R71A is a fine receiver right off the shelf but, as with virtually anything, some improvements can be made. The internal speaker provides passable audio, but it is greatly improved with the external SP-3 speaker unit. While the stock filters are very good and the use of the passband tuning control helps reduce adjacent frequency interference, the replacement of the filters with RFI power, and FL-32 SSB and CW filters provide a slight edge in additional rejection. An excellent "RTTY" filter comes with the receiver.

Don't bother with the EX-257 FM adaptor unless you plan to add external VHF or UHF converters; the only FM you will hear will be obedient cordless telephone bas units (1.7-1.8 MHz), 10 meter amateur repeaters (above 29 MHz), U.S. communications (around 25 MHz) and occasional foreign skip (29.7-30 MHz) Hardly worth getting excited about.
The ICC-70 DC power kit enables the receiver to be used mobile or during a power outage from an external source of 12 volt DC. The CR-64 high stability crystal oven does provide laboratory stability, but even the original crystal allows virtually drift-free listening on all modes.

Q Is there an available general array of beam antennas for short wave reception? (Craig Roeha, San Diego, CA)
A In a word, no. Amateur band beams can be used on frequencies near those for which the antennas are designed, but not for total coverage. There is no "panacea" in the 3-30 MHz short wave range.

It is possible to wind the Grove ANT-2 Skywire around a 10-foot PVC pipe or wood rod, but the antennas are a compromise in sensitivity. A preamp would help.

We would be delighted to hear from other experimenters who have solved the problem of directional short wave antennas that can be rotated.
HELPFUL HINTS
SHORT WAVE RECEPTION
FOR THE
APARTMENT DWELLER
by Bob Grove

A problem faced by many short-wave enthusiasts is zoning restrictions or landlord's covenants restricting outside antennas. This pressures a short-waver to utilize a commercial antenna, often a TUN-3, in combination with the ANT-4C wideband preamplifier. The box style receiver of this is a very popular model, and it is the most straightforward to operate, therefore I shall discuss this model in detail.

The ICOM R71A

This model is a simplified version of the R72 and it is powered by a pair of lithium batteries, 3.6V each. There are no tubes, only transistors, and the receiver is fairly portable, weighing 1.36 lbs. The overall dimensions are 5 3/4 x 7 1/4 x 2 1/4. A problem that is encountered is that the lithium cells often fail before the 12 years that are promised by the manufacturer, and this may cause you to consider replacement of the entire battery pack.

Battery Replacement:
No real problem

Recently, ICOM has endured substantial criticism in the hobby press regarding the longevity of the lithium backup battery. We feel that the problem is solvable, but for the moment may be the only way to solve this issue is to replace the battery pack. This should be done carefully, based on the manufacturer's instructions.

Increase Distance On Your Scanner
A few helpful hints by Bob Grove

One of the most frequent questions I receive is, "How can I hear more weak stations on my scanner?" While there is no single answer which will work in all cases, let's take a look at a few possibilities.

For starters, let's assume that the scanner is operating in the worst possible mode: using its own attachable whip. Invariably, range will be substantially increased by selecting an outside antenna. Now, let's improve the situation a little more.

The following list, approximately in order of effectiveness, should be followed, examining your own situation to see which steps may or may not be needed:

1. Change antennas from a small, inexpensive unit to a larger gain type, as you select a directional beam like the Scanner Beam, a lightweight TV-type rotator is recommended.

2. Change coax from inexpensive RG-58/U or RG-59/U to 100% shielded, low loss coax like RG-6/U, RG-11/U, or RG-213/U.

3. Raise the height of the antenna (just a few feet won't usually make much difference, but doubling the height will).

One of the most commonly overlooked maladies affecting scanner reception is tree foliage; this problem increases with the higher frequencies. If raising an antenna above

NEW SW DATABASE AVAILABLE

We were pleased to see a new computer database offered for short wave broadcast listeners. We mentioned in a previous edition that Ron Pokazillof (2661 Sheridan Rd. Dept. MT, Zion, IL 60099) was developing the handy system.

Ron's program is available in two versions; of greatest interest to most listeners in the hardcopy printout ($5). For the stalwart Computer enthusiast, a floppy disk version will be available (write for price and availability).

Early in 1986 Ron expects to offer an advanced version of the program with a capacity of up to 22,400 programs divided into 20 classifications. The database can be searched by station name, time or subject. Printout can be customized to suit the user.
Radio Free Ithaca—The Life and Times of a Community Supported FM Pirate Station

(Reprinted with permission by the author from the "1984 Guide to Pirate Radio Activity")

by William J. Martin

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Although the short wave and medium wave pirate stations in North America typically receive all of the publicity and attention within the pirate listening sub-hobby, each night across the country numerous unlicensed broadcasters take to the air in the FM band. These stations usually operate on frequencies near the lower edge of the FM band, such as 88.5 MHz, to avoid interference from the more powerful commercial broadcasters and the aviation services above 108 MHz.

Unlike their short-wave counterparts, the FM pirates are not interested in generating nationwide publicity or acclaim—they often exist to serve their local communities, acting as an alternative to the homogenized pap served up by large commercial interests. One such community-oriented—and supported—pirate broadcaster operated from Ithaca, New York, over a five month period commencing in late 1979. That station, calling itself WRFI--Radio Free Ithaca—broadcast its unique mixture of music, comedy and public service programming to an estimated 500 to 1500 listeners each evening.

Until the station's bust by agents of the Federal Communications Commission on April 23, 1981, WRFI was undoubtedly one of the most successful and accepted local pirates in this country, yet little has been written of the station in the hobby press. This article will examine the history of WRFI, the Ithaca community’s reaction to the station and the ultimate steps taken by the Federal Communications Commission to shut the station down.

THE EARLY DAYS

Ithaca is a relatively small community of some 30,000 people in central New York State. There are, however, a number of colleges and universities in the area. The students at these schools made up a potentially large audience in 1979 when WRFI was first envisioned by a 30 year old research assistant at the Cornell Particle Accelerator Laboratory. The researcher, an electrical engineer, reasoned that since the area’s commercial and college stations had forsaken the "progressive" programming of the type made famous in the late '60s and early '70s, there was an unmet need in the community for diversity and innovative programming—particularly locally produced material.

The young engineer, who would later use the "on-the-air" identity of "The Night Doctor," purchased an unwanted, thirty year old REL-706 model FM transmitter from the Chief Engineer of an Ithaca-area college station in 1979, assuring him that the transmitter was needed for "plasma experiments." With The Night Doctor’s electronics background, it did not take him very long to fire up the vintage ten watt transmitter for test broadcast purposes.

MONITORING POST

In the studio, a control panel was built up to include two turntables, cassette and reel-to-reel tape recording decks, and a five channel mixing board. WRFI then set to work to supplement its library of music and other types of programming, at one point accumulating over 800 albums and numerous listener-provided tape recordings.

REGULAR PROGRAMMING COMMENCES

By March of 1980, the technical and studio work had been completed and WRFI began regularly scheduled broadcasts in stereo every evening on 88.5 MHz. A number of volunteers, often children, interested in engineering, contributed to the station’s programming. The result was a broad range of music, typically progressive, well known by students and faculty at Cornell University and Colgate University.

THE REL FREE ITHACA SHAPE

After its early, crude test transmissions in November of 1979, Radio Free Ithaca became more than the isolated brainchild of an electrical wunderkind—it became a community project. During the next few to five months, more than twenty people became involved in the station and helped build a technical complex that would make many commercial broadcasters envious.

To boost the REL's feeble power, the station personnel erected a sixty foot tower and mounted a vertically-polarized Winegard model 6065 Yagi antenna (which offered 11.2 dB gain) at a height of approximately 35 feet.

Some days, the Yagi antenna, together with modifications which were made to the transmitter’s output section, enabled the station to be heard over 40 miles out from its main beam, a transmittting lobe that easily covered the area and schools surrounding Ithaca.

The Night Doctor didn’t stop there, however; he and his assistants added an RCA Model BTS-1 stereo generator to the station as well as sophisticated homebrew audio compression and limiting equipment.

Not all of the improvements were related to the transmitter; the station's studio was built up to include turntables, cassette and reel-to-reel tape recording decks, and a five channel mixing board. WRFI then set to work to supplement its library of music and other types of programming, at one point accumulating over 800 albums and numerous listener-provided tape recordings.

REGULAR PROGRAMMING COMMENCES

By March of 1980, the
the magazines say is popular. Those lists, in turn, are based on record sales and the records that sell are the ones people hear on the radio. It’s all very circular. What really controls the market are the record company people… We (on the other hand) program whatever we feel like playing or whatever we have in our recorded collection… We want to play music that can’t be played on other stations, to provide a community resource, to put on the air songs and tapes that people in the Ithaca area send us, with a minimum of interference on our part.”

COMPLAINT FILED WITH FCC BY LOCAL CABLE COMPANY

Shortly after the favorable story was published in the Ithaca Times, the Chief Engineer of the Ceracche Cable Television Company—perhaps acting on his own—claimed that WRFI’s unlicensed operations at the FCC. The Engineers Office responded to the complaint of the Federal Communications Commission’s Field Operations Bureau (FOB) in Washington, D.C. by mailing the Government’s complaint to the cable television station. WRFI was using the tape recording equipment in his vehicle to record over one hour of programming from 8:17 p.m. past 9:30 p.m. During this time, the FCC investigatory noted the station’s programming consisted of music and public service announcements, but did not include any commercial announcements.

The next evening, Taylor was joined by an FCC Engineer residing in the FCC MAFD vehicle. The two engineers again drove to Ithaca and by 7:45 p.m. had monitored WRFI from three locations. Taylor and the Engineer had complete their close-in RF measurements and the station was traced to a house high on Snyder Hill Road in nearby Dryden, New York.

After taking RF measurements with the equipment in their vehicle, Kelly and Taylor approached the house, knocked and requested entry to inspect the station. The disc jockey on duty at the time—Dennis Arnot—the engineers to wait outside while he telephoned the Night Doctor to advise him of the location. Since the engineers had no search warrant and WRFI was not a Commission licensee, the FCC’s only hope of inspecting the station was that the operators would voluntarily “consent” to an inspection of the premises.

The Night Doctor advised the engineers to keep the FCC engineers out of the house until he could get up to the station. Upon his arrival at the transmitter site, the Night Doctor did, indeed, consent to the inspection of the station. His recollections of that search…as recounted in a letter to the FCC in the August 1981 edition of “The Wavelength,” the official journal of the now-defunct Free Radio Campaign U.S.A. were confirmed to the reports of the same search which were written by Kelly and Taylor. In his letter to the “Wavelength” writer after the inspection but before any official FCC action, the Night Doctor described the FCC bust in the following terms:

“No mistake—open the door, take one look, and start laughing. The (FCC) engineers were, I almost hate to admit it, pretty cool, too, and dug the joke. They’d waited in the driveway for the album to end before bothering to knock, and let me do a dress rehearsal with call for me to haul ass up there…Well, anyway, they waited until I got there, we got along well, and they very nicely asked for a tour. After it was clear that they were on our side…assuring us that they thought we were anyone screwed…we opened some beers for ourselves and showed them our toys.”

The FCC’s perceptions of that meeting differed markedly from the FCC’s. In their report, Kelly and Taylor noted that they obtained the operators’ consent to inspect the station and that an “announcement over the air that the station was being inspected” by the FCC was made. This practice is consistent with the FCC’s standard operating procedure—most likely pulled directly from Field Operations Bureau’s Enforcement Manual—to obtain over-the-air corroborative evidence that the station was in fact, not an unlicensed broadcasting station.

This type of evidence, together with other useful facts such as the fact that a transmitter’s tubes may be warm to the touch or its transmitting crystal or VFO may be marked “885 MHz” or “885,” may implicate the FCC’s internal records of the case to substantiate whatever administrative or criminal sanctions subsequently are taken against the operators.

NOTICE OF APPARENT LIABILITY ISSUED

In a brief but to the point letter dated August 14, 1981, David A. Viglione—the Buffalo EIC—inform the Night Doctor was a Notice of Apparent Liability to Monetary Forfeiture. The FCC’s notice to the station that the station was “Legend” and the FCC’s Notice of Apparent Liability, as amended, and the Commission’s administrative rules…in that you operate a station which was not licensed for operation…You are therefore apparently liable under Section 503 (b) of the Act, which grants the Commission forfeiture authority, to a monetary forfeiture of $750.

As in all cases in which the FCC issues a Notice of Apparent Liability, the FCC was required to offer the Night Doctor the opportunity to present a response and add to the record any information that might bear on the proposed fine. The Night Doctor replied on September 10, 1981. The FCC, finding the unlicensed operation of WRFI but justifying his actions on grounds that the Ithaca community needed the alternative public service provided by the station, as evidenced by the “positive and overwhelming listener support received by WRFI.”

The Night Doctor then offered an unusual and novel secondary justification for WRFI’s broadcasts, station that “WRFI-FM has always had a technical testing ground for low power service…During transmissions, field tests were being conducted to determine radio antenna array radiation characteristics, incremental polarization shifts over heavily wooded terrain (including the first Federal one), multipath effects, and other measurements relating received signal quality to transmission path conditions and vertical polarization is employed.”

After giving justifications for the station’s operations, the Night Doctor assured the FCC that he would cease all future unlicensed activity. He then asked the Commission to reconsider its imposition of the $750 fine.

As a consequence of the appeal, the case was referred to the Washington, D.C., headquarters of the FCC’s Field Operations Bureau. After reviewing the case, Richard M. Smith—the chief of the FOB—wrote to the Night Doctor on November 17, 1981, to advise him that the $750 forfeiture would be reduced to $300. Smith’s letter said, in part:

“On April 22 and 3, 1981, your radio station was observed to operate in the frequency of 88.56 MHz. The radio operation was determined to be authorized by a station license, issued by this Commission, as Section 301 of the Act requires…Your response and background information about your station, while not substantially interested and concern for broadcasting, does not contain justification for reduction or cancellation of the monetary forfeiture payment due within 30 days of the date you receive this letter.”

Closed down and fined by the FCC, WRFI—Radio Free Ithaca—became another station in a long list of pirates that have been built up out of nothing, flourish briefly, but eventually perhaps inevitably…fade away.

Be assured, however, that as you read this article somewhere of firing up an unlicensed transmitter and broadcasting the type of music and features that can’t be found on the commercial interests. Maybe you should check around 88.5 MHz late one evening; you may be pleasantly surprised.

About the Author
Bill Martin has been D’Icing since 1985 when he first got his first pirate station. He has currently logged over 100,000, SW and FM unlicensed broadcasters and has been 10 years on the air. Bill is a member of ACRS, NASWA and the Long- Wave Club of America.

Bill Lives in Wilmington, Delaware and works as a tax attorney. He has written a number of articles concerning the FCC and unlicensed broadcasts which have been published in The ACRS and in Monitoring Times magazine. He is currently researching and writing a book dealing with the world of pirate radio in North America.
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FAX FOR THE COCO
In the never ending quest for computer weather facsimile schemes, the hams have done it again. Mike Stone, editor of SPEC- COM (formerly A3 magazine), has produced software for the Radio Shack color computer which will allow "interfacingless" WEFAX reception with joystick control. Used in combination with any general coverage short-wave receiver, Mike's "WEFAX 1.1" is available from Paul in SPEC-COM's Membership Services Department, (P.O. Box H, Dept. MT, Lowden, IA 52255) for only $1, or if you may wish to get COCOFAX program #106 on a disk ($29.95 or cassette ($24.95); add $1 each for mailing.

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