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MONITORING TIMES

Government Withdraws Frequency Information

Federal Frequency Information No Longer Available From Government

In a surprise move, the National Telecommunications and Information Agency (NTIA) has denied all recent Freedom of Information Act (FOIA) requests for frequency printouts from that agency.

NTIA serves the Interdepartment Radio Advisory Committee (IRAC) who, in turn, maintains all records for federal government users of the radio spectrum.

According to Leo Buss, Director of Spectrum Plans and Policies, the decision was mandated by the general counsel's office by the FOIA officer, Richard Shay.

The extreme action stems largely from a recent request by a petitioner for a complete run of the unclassified master file of frequencies and agencies on record with IRAC.

Although the request was for unclassified information, it is felt by the general counsel's office that such disclosure would also reveal classified listings by their exclusion from the unclassified list.

Buss went on to say that casual monitoring by hobby listeners is of no concern, but availability of sensitive material to foreign agents is of vital concern. The denial was based upon a judgement of national security.

Bob Grove, author of the exhaustive Federal Frequency Directory, asked Buss whether his publication had anything to do with the decision. "Yes, it most certainly did" replied Buss.

It would seem that unless some major policy change reverses the restrictive posture at NTIA, the Federal Frequency Directory, now nearly exhausted in supply, will remain the last comprehensive publication of official government frequency files.

Monitoring Times contacted counsel Dick Shay to find out more about the recent decision to withhold formerly-available frequency assignment records. Our questions and Mr. Shay's responses are printed here.

(MT) Mr. Shay, I have heard from a reliable source that the federal government is considering prosecution of individuals who publish sensitive frequencies; is this true?"

(Shay) "I have not heard of such an effort; I have no knowledge of that whatsoever".

(MT) With your new policy to withhold from release all frequency/agency information from the

public, how can an individual know what may or may not be classified or sensitive?"

(Shay) "There is no longer an unclassified government master file. All government frequency

records are now classified. I don't know what the individual agencies will do regarding the release of their own records, but the records will no longer be released by IRAC or NTIA."

The Government Giveth, The Government Taketh Away

Federal Frequencies And The Freedom Of Information Act

By Richard Prelinger

Ever been curious about those sizable chunks of radio spectrum earmarked for the sole use of the Federal government? Most of us are, and the difficulty of putting our hands on official data concerning Federal frequencies only whets our interest more.

An obscure group called Interdepartment Radio Advisory Committee (IRAC) advises the Nation Telecommunications and Information Administration, (NTIA) on radio frequency matters. In place of this complicated structure, let's just say it all comes under the jurisdiction of the Department of Commerce. IRAC, like FCC, coordinates frequencies and assigns them to specific users, but only to users who happen to be Federal agencies, military or civilian.

IRAC, like FCC, enlists computers to coordinate and record frequency assignment information. FCC data files are available to the public and serve as original source material for such publications as Gene Hughes' POLICE CALL and the RADIO AMATEUR CALLBOOKS. Any chance, one might wonder, of getting our hands on some Federal frequency information straight from the government?

Well, until recently, anyone (in theory) could. But in May the prospects began to look grimmer. Before I indicate that enthusiasm for monitoring sufficed to pry this information loose from the government, you should know that this has always been a difficult (and costly) proposition.

IRAC maintains what it calls the Government Master File (GMF), which comprised some 165,000 frequency assignments at the end of 1980. The GMF lists

every Federal radio facility from hand-talkies carried by Secret Service Agents, to downlinks from photo reconnaissance satellites and wireless mikes at Walter Reed Army Hospital.

The Navy, the largest American spectrum user, weighs in with some 28,000 frequency assignments. Following closely are FAA (24,000) and USAF (23,000), then Army (18,000). Incidentally, if AT&T were ranked among government agencies, it would take fourth place almost 23,000 licenses. Fifth in rank is Justice with some 13,000 followed by Interior (11,700), Agriculture (9,000), Coast Guard (9,000), and Energy (5500). Some 5,400 non-governmental assignments are in reach of governmental bands, and eleventh in rank is Treasury, with 46,000 assignments as of the end of 1980.

Should you search through publicly-available listings of the GMF for those 17,000 Justice and Treasury frequencies, you're likely to be disappointed. True, "J" and "T" pop up here and there, but mostly on frequencies used in common with state and municipal police. Throughout the country, FBI, DEA, ATF, Customs and other Federal agencies often talk to local police on FCC-local-assigned frequencies. Most of their other assignments (especially between 162-174 and 406-420 MHz) aren't available to citizens without a "need to know."

I wouldn't want to let these statistics go by without mentioning FCC's 842 assignments, NSA's 165, CIA's 142, and 126 assigned to State. Almost every one of these is unlisted in publicly-available material and a matter for fertile speculation.

Until this spring, much of the

GMF was available to anyone under the provisions of the Freedom of Information Act. The GMF as a whole is classified "Confidential" because a handful of items in the list (your guess is as good as mine) bear that security designation; but most of the list, item by item, is unclassified. The rub is that perhaps 20,000 of these unclassified assignments are exempt from release under the Freedom of Information Act. In other words, agencies justified the omission of "certain frequencies from public records on the grounds that, if revealed, "identifiable harm" might be caused to national security. This phrase--"identifiable harm"--has created work for scores of lawyers in recent years, and is still controversial. In any case, any citizen was entitled to ask for: (1) everything unclassified, and (2) releasable under FOIA.

Requesting information is one thing; obtaining it is quite another. Citizens requesting frequency lists from NTIA are routinely quoted huge processing fees which, in themselves, function as barriers to obtaining even the limited amount of data that's publicly available. Computer time consumed in sorting locations, agencies and frequencies is quite expensive--and, not surprisingly, the cost of calling out the non-releasable items is borne by the citizen, not the government.

Many of the 33 individuals and corporations requesting data from NTIA during 1979-1982 must have been unpleasantly surprised at the processing fee quoted them. One person was quoted \$2,500 for a complete list, someone else \$600 for another lists, another approximately \$750, and so on, depending upon their exact re-

Continued on Page 2

FEDERAL GOVERNMENT from page 1

quirements. These steep costs deterred all but 11 out of the 33 requesters--six of whom were companies like GT&E, COMSAT, and Comsearch--from putting cash on the table and ordering their lists.

A year ago I tried to cut expenses by organization a group to share the costs of a single request. Sixty people agreed to split the \$1300 fee. Our goal was to get a list including all agencies, all states and possessions, all frequencies, and all 21 items of data (data "fields") included for each assignment in the file. As it happened, this was the most comprehensive request NTIA had ever received.

After waiting almost three months, we were furnished with a list that included only 12 of the 21 items of data for each assignment. Such items as "Remarks", indicating the exact usage of a frequency (e.g. "Fire & Crash Crews") and "Bureau", indicating the subdivision of the assigned agency (e.g. "SAC" within Air Force) were withheld. The omissions were visually striking--the right half of each microfiche frame was blank!

I didn't have to wait long to find that these omissions were intentional. Beginning with my request, the list was now considered too sensitive to release in full, at least as far as certain data "fields" were concerned. This came as a surprise. I'd seen half a dozen printouts containing every item of data going back as far as 1976, and I was also aware that IRAC had routinely invited requesters (including myself) to "pick and choose" from among all data fields to limit computer costs.

Perhaps IRAC was nervous about the list going out to 60 people. Notwithstanding that, it had been in the public domain since 1975, and every frequency included had already been assessed for its capability to cause harm to the national security if released. The omissions were more likely a result of the stricter controls on release of governmental information that were ushered in after

President Reagan took office.

The Commerce Department informed me in May that they considered our request as "having been satisfied fully and completely." I'm now awaiting the results of an appeal as provided for under the Freedom of Information Act.

Federal frequency listings, once available to anyone willing to pay for them, are no longer being released by NTIA. The entire Government Master File, all frequencies, agencies, and data "fields", has been classified. No distinction was made between sensitive FBI frequencies used in counterintelligence operations and FAA channels used for air traffic control, Forest Service firefighting frequencies, frequencies used for paging at VA hospitals, or even the NWS weather stations!

It seems likely that some listings of non-sensitive government frequencies will once again be available to the public, but their contents will probably be greatly reduced. Nevertheless, an important source of data that was released to many people has now been "yanked back" by the government. Keeping the innocuous nature of many of the assignments in the list in mind, many feel as if this is a case in which the government is over zealous about protecting "secrets" that are not, in fact, secret.

In many countries information on non-broadcast and governmental radio frequencies is considered sensitive and its disclosure tantamount to espionage or treason. I think all monitoring enthusiasts hope that the United States won't follow this course. Scrambling, data encryption, and tactical ID's are already used successfully to preserve secrecy when necessary and prevent the disclosure of sensitive transmissions. In this era of sophisticated electronic technology, it's difficult to understand how knowledge of a frequency assignment can itself compromise national security.

Technical Topics Special Feature

Out-Of-Band Programming The Bearcat 100 And 300 Scanners

They said it couldn't be done, so Monitoring Times readers went right to it! We have learned that it is possible to cover 136-144 and 174-174.645 MHz in addition to the normal ranges on a BC-300.

The BC-100

Even the popular new BC-100 hand-held can be taught new tricks: 50-112, 120 (or lower)-174 and 318-512 MHz programming.

But just because the scanner frequency display shows these numbers does not mean that the scanner is capable of receiving the frequencies. What you are viewing is the free-running algorithm program addressing the microprocessor; neither the oscillator nor the RF amplifier is capable of tracking such a wide range of spectrum.

The practical limits for the BC-100 hand-held so far as reception is concerned are: 30-54, 132-174, and 375-512 MHz--plenty good enough!

Even the receivable extensions are not without limitations, however. Search must often be done manually by repetitive pressing of the up/down search keys, and the frequencies are not storable in memory (so far as we know).

Owners of the new BC-100 may wish to experiment with the following program to extend their receivable frequency ranges:

Press MANUAL to select channel

Press 49 LIMIT

Press 50 LIMIT

Press SEARCH, HOLD, MANUAL

Press 138 LIMIT

Press 137 LIMIT (display will read ERROR)

Press SEARCH, HOLD, LIMIT down

You may now manually step below 138 MHz and autosearch up again to 138 MHz, after which the search will jump to 50 MHz and continue upward. You may manually step back to 50 and then 138 MHz as before.

After you have entered the foregoing routine:

Press decimal, ENTER, SEARCH

Scanner will begin autosearch upward from 318 MHz (although there is no sensitivity at this low frequency). If you wish to go below 318 MHz, press HOLD and then repetitively press LIMIT down.

To search for signals above 50 MHz, follow the foregoing routine, them:

Press decimal, ENTER, SEARCH.

To look for signals below 406 MHz, try the following program:

Press 30

Press 31

Press SEARCH, HOLD, MANUAL

Press 406 LIMIT
Press 405 LIMIT (display will read ERROR)

Press SEARCH, HOLD, LIMIT down

You may now manually step below 406 MHz and autosearch up again to 406 MHz (after which the search will automatically jump to 31 MHz.)

THE BC-300

Richard Kramer (340 Main St., Blandon, PA 19510) has contributed the first out-of-band program for the BC-300 to cross our desk. Anyone with additional information is requested to contact Richard--and us--to share his findings. Richard's program is presented here for Monitoring Times readers.

To search 136-144 MHz:

Select any channel and enter a VHF low (30-50 MHz) or VHF high (144-174 MHz) frequency into that channel.

Press 157.6 LIMIT; 165.6 LIMIT

Open squelch

Press SEARCH

Press HOLD

Close Squelch

Press ENTER

Press decimal

Press RESUME (BC-300 will now autosearch 136-144 MHz)

An abbreviated version of the 136-144 MHz program follows:

Enter 40 on any channel

Enter search limits 157.6 and 165.6 MHz

Open Squelch

Press SEARCH

Press ENTER

Close squelch (BC-300 will now autosearch 136-144 MHz)

To search 174-174.645 and 420.425-512 MHz

Select any channel and enter a VHF low (30-50 MHz) or VHF high (144-174 MHz) frequency into that channel.

Press 472.8 LIMIT; 512 LIMIT

Open squelch

Press SEARCH

Press HOLD

Close squelch

Press ENTER

Press decimal

Press RESUME (BC-300 will now autosearch 174-174.645, then 420.425-512 MHz).

NOTE: After one search, the last program will have to be repeated.

To enter a 136-144 MHz frequency into memory:

Select any channel and enter VHF low (30-50 MHz) or aero band (118-136 MHz) frequency.

Add 21.6 MHz to the desired 136-144 MHz frequency and set both search limits to that total number.

Open squelch

Press SEARCH

Press HOLD

Close squelch

Press ENTER

Press decimal

Press HOLD

Open squelch

Close squelch

Enter search limits of any frequency between 157.60 and 165.6 MHz

Open squelch (Frequency will now be stored in memory).

International Aircraft Frequencies Changing

Many of the decisions at the World Administrative Radio Conference (WARC-79) which took place in Geneva, Switzerland, in the fall of 1979 are gradually being implemented.

Among these are the dozens of HF long distance single sideband communications channels which were reliable frequencies for listening over the years.

Even VOLMET (flight weather) frequencies are being changed, as are their modes. AM will no longer be permitted; SSB

will replace it.

MONITORING TIMES will present a special feature updating these new assignments in a future issue. The changes are to be fully effected no later than February 1982. Until then, some interim assignments are being used.

A sample of the new SSB VOLMET listings include:

New York/Gander (Atlantic)
3001, 5652, 8868, 13270 kHz

Oakland/Honolulu (Pacific)
2980, 5519, 8903, 13344 kHz.

VIEWPOINT

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

Received the latest copy of Monitoring Times and it looks super. I know that your publication is destined to be a great success. One of the many good points is your short lead times for current and up-dated material. (Tom Harrington, W80MV, Reynoldsburg, OH)

I have found that this is an excellent publication for people such as myself who enjoy monitoring the radio frequency spectrum. "Hats off" for a job well done, and a very fine publication. (Philip Blue, Raleigh, NC)

Why don't you peak the interest of your readers by printing updated schedules of the numbers stations so all can join in? Also, it might be wise to encourage subscribers to pass their editions on to friends after they are finished with them. This will encourage others to get into the hobby.

Since dated materials are not dealt with, why go to the expense of higher postage just to get it there a day or two early? I really believe it would benefit you and your customers to send it out at the standard newspaper rate. (John Demmitt, Bellefonte, Pa)

I'm not interested in your publication because "Monitoring Times" is incomplete as monitoring time goes. This year, or the next year will not be missed as I choose not to subscribe.

I monitor the frequency both for entertainment (sic) and for

good reason. There are many good hours spent on and off of the radio. Now I'll tell you why. Because what I am, is not to your liking or perhaps a low class-low grade person is not going to spend big money on you (sic) stuff. You left out of your package good CBers--10-4? (Jack Gordon, Los Angeles, CA)

Dear Bob,

I am not a talented reader but a comparatively newcomer to SWLing and must make this comment- Robert Leary has some shack! I would need more than one head and one pair of eyes for all that equipment. My "compulsion Neurosis" would cause ulcers trying to decide which piece of equipment to use and then think I am missing something more important on another piece. His description of the various jamming signals has convinced me not the enemy, but my neighbors are using a couple of them.

Seriously, I like MONITORING TIMES better and better with each issue.

Ruth Hesch
White Plains, NY

Dear Sir:

Over the years, the U.S. Army Signal Corps has trained thousands of men and women in the various phases of communication. Today, these highly skilled people are scattered across the nation.

The Signal Corps Association is interested in locating these professional communicators and

making them aware of the Association and its goals. We are also interested in locating others who have worked for the Signal Corps or who have an interest in military communications.

Undoubtedly many of the readers of Monitoring Times have served in the Signal Corps, or have had some association with the Corps. We would therefore be most grateful if you could run the enclosed narrative in a future issue of your fine paper.

Our sincere thanks.

William C. Willmot
Publicity Chairman

(It is our pleasure. See pg. 18...Bob)

I am writing to say thanks! Thanks, Bob, for the Scanverter; thanks, Bob, for the time and phone calls. Without your help and products I would still be in the dark.

I am glad there are still people in the USA who care about the products they sell and the people who buy them. In the future, if you need any frequencies from this area or monitoring information, please call or write me.

An F-16 just flew over my parts store...it's closing time and I'm going home to see what he is up to! Thanks again. (Clair Frew, N. Ogden, UT)

(Thank you, Clair, for the kind comments. Unfortunately, there are too many profiteers with little regard for customer satisfaction. Fortunately, we are not one of them!...Bob)

Tune In On The Intelligence Networks

INTERNATIONAL DEFENSE INTELLIGENCE SERVICE (INDIS)

While the vast majority of intelligence frequencies are classified, some are not. These frequencies are used for routine traffic and occasional secure transmissions as well.

It must be pointed out that the following list of discrete channels is not available from published sources; sharp-eyed readers may recognize some frequencies as widely-used military assignments.

FREQ. kHz	USE
4368	Routine information and coordination between areas
6738	Shared routine coded traffic with USAF air stations
11243	Same as 11243
25850	Routine local communications in operations area
26120	Secondary to 25850
29850	Video/Data/secure voice link
29950	Secondary to 29850

For readers unfamiliar with INDIS, their operations are global in nature. TV spy fans will remember "Mission Impossible" which borrowed heavily from the activities of this agency. For years, the US government denied the very existence of INDIS.

Another secretive branch of the military is the Air Force Office of Special Investigation. Most Air Force installations support AFOSI communications on three VHF frequencies: 138.075, 138.165 and 138.175 MHz FM.

Naval Intelligence Communications At VLF

Although most of us are aware that there is no voice transmission below 150 kHz, there is one exception!

The US Navy reportedly operates an unusual network with headquarters at Portsmouth New Hampshire.

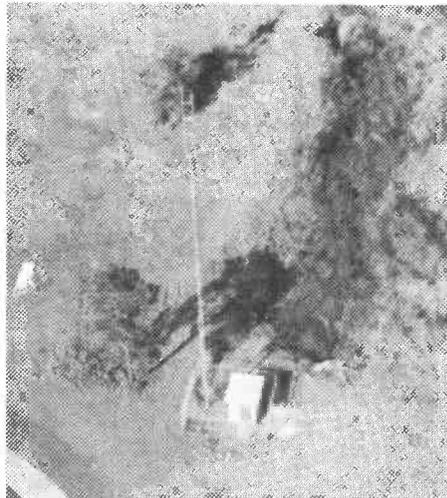
A discrete frequency between 70-80 kHz is used with an extremely narrow FM deviation: 170 Hz average (500 Hz peak) with 50 microsecond pre-emphasis.

The signal is phase-lock detected, then tracked and multiplied by 10 for a full 5 kHz

deviation to provide useful audio recovery.

Readers with information regarding these and other intriguing undercover communications are invited to contact Monitoring Times.

NOTE: All information contained in this article has been cleared through source 14-387 (required statement to avoid official inquiry regarding sensitive material).



Remote repeater sites with vertically-polarized antennas may provide a clue as to the locations of federal government communications installations.

FBI, DEA and other law enforcement agencies support a na-

Court Upholds Right To Listen

An unusual court precedent has been set regarding the right to listen in on "private" communications. The decision was made in the case of James Hill and Robert Rose, whose convictions for drug trafficking were upheld despite the defendants' claim that the FCC had monitored their private communications in the 14.400-14.500 MHz spectrum.

The trial defense claimed that the defendants were protected under Title III which was enacted after the famous section 605, both of which refer to privacy of communications.

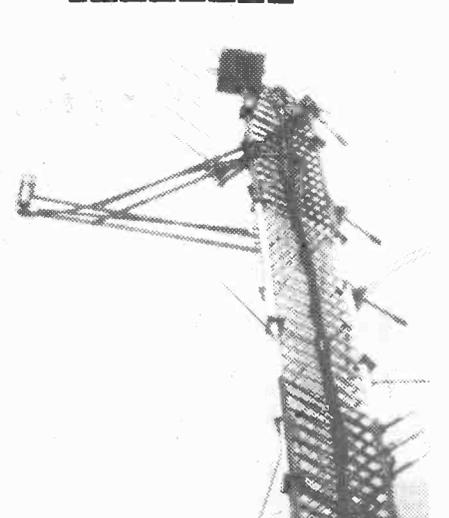
The court ruled that Title III applies only to those communications deemed to be either "wire" or "oral" communications; radio transmissions are excluded because they can not be considered private due to the ease with which they can be monitored!

The U.S. Court of Appeals upheld the decision with the statement, "We cannot find that the trial court erred. The manner in which the communications were transmitted indicates the appellants were aware that their communications were likely to be intercepted." That court went on to say that because the defendants switched frequency, did not identify their stations nor themselves and chose to use code to disguise the content of their communications they did not expect privacy.

The court concluded that "A reasonable person would not expect that words uttered over the ham radio frequency would be heard only by a few individuals for whom the communication was specifically intended."

The Massachusetts case could set a landmark precedent for interpretation of the privacy clauses of the Communications Act, now under fire in Congress.

Monitoring Times would like to thank Fred Maia of the W5YI Report ("Dits and Bits") for bringing this interesting case to light.



tionwide network of VHF and UHF backbone systems for their investigations.

Most such installations are surrounded by chain link fences; prominent signs will usually state the ownership of the equipment.

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Additional features include: 10/20 dB attenuation switch, automatic up/down frequency tuning switch, separate RF and AF gain controls, frequency lock for absolute stability and an AM broadcast band preselector.

Independent laboratory measurements have shown the NRD-515 to be superior to anything in its price range.

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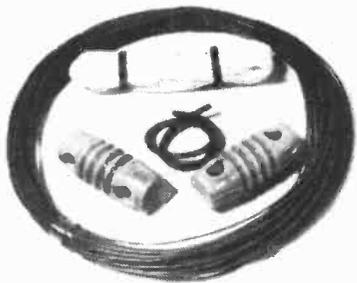
NDH-518, 96-channel memory unit.....	\$259
NDH-515, 24-channel memory.....	\$239
NVA-515, matching speaker.....	\$44 ⁹⁹
CFL-260, 600 Hz filter.....	\$49 ⁹⁹
CFL-230, 300 Hz filter.....	\$74 ⁹⁹

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Kenwood R-1000.....	\$449 plus \$7 ⁹⁹ UPS shipping (retail \$499)
Yaesu FRG-7700.....	\$499 plus \$7 ⁹⁹ UPS shipping (retail \$549)
Kenwood R-600.....	\$359 plus \$7 ⁹⁹ UPS shipping (retail \$399)
Sony ICF-2001.....	\$299 plus \$5 ⁹⁹ UPS shipping (retail \$349)
Panasonic RF-4900.....	\$410 plus \$7 ⁹⁹ UPS shipping (retail \$499)

LIQUIDATION!

(*\$15⁹⁹ minimum order-can be mixed with other products)



SKYWIRE

This popular wire antenna kit has been used by countless shortwave and longwave listening enthusiasts. Consisting of 100 feet of insulated flexible wire, two porcelain insulators, a length of feed-through tubing for walls or windows, and a rugged support cord. Our supply is nearly exhausted.

Strung between houses, trees, through attic spaces or other elevated areas, Skywire is an ideal antenna system for Kenwood, Yaesu, Sony, Panasonic, Radio Shack, JRC and other general coverage receivers. Regularly \$8⁹⁹...\$5⁹⁹ while supply lasts. Shipping free.

PORCELAIN INSULATORS

For those stalwart do-it-yourselfers, these quality porcelain antenna insulators are the same as used in the Skywire kits.

Made in the USA to exacting specifications, these rugged strain insulators measure 2 1/2" x 1" and are glazed and ribbed for minimum losses. \$3 \$1, plus \$1⁹⁹ UPS shipping; 10/\$2⁹⁹, plus \$1⁹⁹ UPS; 100 \$20⁹⁹, plus \$4⁹⁹ UPS.

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THE MINITUNER (TUN-3) ONLY \$54⁹⁵

An antenna-optimizing passive preselector for 100 kHz-30MHz receivers.

Ideal for use with Kenwood, Yaesu, Sony, Panasonic, Radio Shack and other general coverage receivers.

Guaranteed to remove off-frequency interference from images and intermodulation. No power required (not a preamplifier).

Connect between your antenna lead and receiver. Simple bandswitch frequency selection and fine tuning control makes adjustment a snap.

One handy switch allows selection of frequency range (4 convenient bands), bypass (Minituner defeated for direct antenna connection to receiver) and ground (protect your untended receiver from nearby lightning strokes or powerful transmitters).

A practical and inexpensive way to improve your reception.

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KANTRONICS MINIREADER (RDR-1)

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By far our MOST POPULAR Morse/RTTY reader, the Minireader is a compact handful of advanced features at a LOW PRICE.

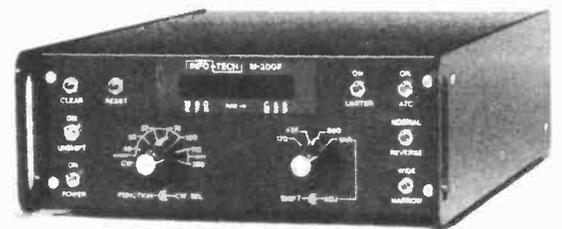
Hardly larger than a pocket calculator, the MINIREADER will help you monitor shortwave radioteletype and Morse code news relays, weather reports to ships and aircraft, ship-to-shore messages, amateur and even some government communications.

When plugged into your receiver's speaker or earphone jack, radioteletype and Morse code messages appear in plain text antenna character, brilliant fluorescent display.

It seems hard to believe that everything is included (AC adaptor, interconnecting plugs and tilt stand) at this low price, but it is!

When not copying off the air, your MINIREADER becomes: a 24-hour digital clock, a code practice display, a lapsed time counter, even an audio frequency counter!

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INFOTECH M200F MORSE/RTTY RECEIVING SYSTEM (RDR-3)

\$60⁰⁰ FACTORY REBATE

This deluxe demodulator will provide full-function radioteletype and Morse display when used in conjunction with a shortwave receiver and video monitor or serial printer.

An optional modulator (\$29⁹⁹) will allow connection to a standard TV set.

Control functions are enormously flexible, allowing: Composite video output (1.5V P-P negative sync, white or black), 32 or 72 characters per line, 16 or 25 lines of print, 50/60 Hz, scrolling and editing.

RS232 level at 110 or 300 baud and 60 ma. loop drive for all speeds plus autostart for printers.

Demodulation of Morse (5-105 WPM) and RTTY (60, 67, 75, 100 WPM) as well as ASCII are provided by an active-filter high tone mark; standard 170, 425 and 850 Hz as well as non-standard variability are provided.

Automatic threshold improves copy during signal fading; normal/reverse and wide/narrow switches allow phase and bandwidth selection.

Tuning is assisted by a 10-step LED bargraph.

Operates from 115/230 VAC, 50/60 Hz at 20 watts.

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Listeners Log

MILITARY NATIONWIDE (Contributed by Allan Nesteruck)

Frequency	Allocation
30.450	Army Nuclear Accident Team
36.190	NOAA National Ocean Survey (Land Units)
36.300	Army Nuclear Accident Team
38.300	Army Nuclear Accident Team
38.500	Army Nuclear Accident Team
40.900	Army Nuclear Accident Team
45.300	Army MP's
49.700	Army EOD
49.800	Army Nuclear Accident Team
138.960	Navy Public Works Net
139.000	Army EOD
139.175	Army EOD
140.100	USMC Crash Crews
140.220	Navy Crash & Fire Net
140.760	Navy Harbor Tug Boat Net
143.900	Civil Air Patrol - repeater in
148.150	Civil Air Patrol - repeater out
148.350	Navy Security Police
149.335	Navy Amphibious Bases
149.370	Navy Weapons Range
149.910	Army Civil Disturbance Net

US MARINE CORPS (Glenview NAS, IL)

contributed by Scott Menke

Ground	382.8 MHz
Tower	340.2 360.2
Departure	337.4 269.5 290.2
Approach	306.2 353.9 363.8
Radar	289.4 345.2 315.6 308.4
FSS	255.4
Tactical	264.2
Midway	341.3
Civilian Tower	257.8 336.4
Lake Front Control	384.9
Squad Command	358.9
FM	32.45 36.55 38.20

PUBLIC SAFETY Toronto, Ontario contributed by Rory McEvoy

Metro Toronto Police

Scout Car	Radio System
142.035-138.015 Toronto	— XJF72 (XJF759, XJF901-908, XJK737-768)
142.065-138.045 Toronto	
142.125-138.105 Etobicoke	— XJF905
142.155-138.135 Toronto	
142.305-138.285 Toronto	
142.335-138.315 Scarborough	— XJF904
142.695-138.675 Toronto	
142.725-138.705 Toronto	
142.875-138.855 Etobicoke	— XJF905
142.905-138.885 Toronto	
142.965-138.945 Toronto	
142.995-138.975 Scarborough	— XJF904

Monitor System

148.850-154.995
(1) West-Downtown
148.490-155.850
(2) Etobicoke
156.240-158.895
(3) North York
155.550-159.180
(4) Scarborough
155.400-159.300
(5) Downtown - Core

Mobile Support System

155.520	Base 150	XJF901
156.000	Base 250	XJF901
155.235	Base 350	
155.430R	—	
155.025	—	XJF905
155.895	—	XJF906/8

Investigative Units - UHF System

412.2125-417.2125.....	
412.2875-417.2875.....	XJK737-8-9
412.3625-417.3625.....	
412.8875-417.8875.....	

Toronto Harbour Police

155.490 XJG52
156.800 XJL 434
121.700 (Not used)

Metropolitan Toronto Ambulance Service

Ch 1: 152.375-155.640 XJK783 Northwest
Ch 2: 151.820-155.715 XJK782 Northeast
Ch 3: 150.530-154.680 XJK783 Southwest
Ch 4: 148.165-153.905 XJK782 Southeast
Ch 5: 149.410- — XJJ466 Tactical Band
Ch 6: 150.100- — XJK774 Provincial
Ch 7: 148.360-151.520 XJK783 Administration
Ch 8: — 156.195 TAC

Note: TAC may operate simplex as via mobile repeats; also licensed to Metro Ambulance Service in Aurora (XJL840). Metro Emergency Government (Fallout) Shelters.

Metro Toronto Area Fire Departments - each municipality operates independently.

City of Toronto FD

Ch 1 Operations	411.9875 F1
	417.9875 F2
Ch 2 Tactical Two	411.7875 F3
	417.7875 F4
Ch 3 Access Three (mobile repeater)	411.7875 F3
	417.6625 F6
Ch 4 Tactical Fours	411.8625 F7
	416.8625 F8
Ch 5 Access Five (mobile repeater)	411.8625 F7
	417.7125 F10
Ch 6 Fire Marshal (simulcastor 154.070)	412.8125 F14
Ch 7 Supervisors	412.3125 F11
	ONLY in Chiefs cars

Metro Toronto Area Fire Departments

East York	153.770 XJK45
	154.400 XJK45
Etobicoke	154.325 XJJ55
North York	153.830 XJ178
	153.395 XJL421
	153.?? XJL422
Scarborough	154.430 XJG87, XJG573
	153.950
	154.265
York	154.890 XJF39

All above have Ontario fire marshal frequency 154.070 capability.
(Nice comprehensive list, - Rory! Thanks...Bob)

FCC Authorizes New Disaster Network

The Federal Communications Commission has announced the availability of 28 HF frequencies to be used by disaster response teams in times of widespread emergency. A maximum power output of 1000 watts P.E.P. is authorized; all transmissions must be in upper sideband (USB).
The 2 MHz channels are available to fixed (point to point), base and mobile users; all other frequencies are for fixed service only.

FREQ. kHz.

2326	2411	2414	2419	2422	2439
2463	2466	2471	2474	2487	2511
2535	2569	2587	2801	2804	2812
5135	5140	5192	5195	7477	7480
7802	7805	7932	7935		

So far the state of Mississippi has applied for authorization to utilize two frequencies in the band. Other state civil defense organizations desiring further information may write Keith Plourd, FCC, Washington, DC 20554.

You May Be Bugged

Monitoring Times welcomes Fred Simon, syndicated author of a weekly column in THE CINCINNATI ENQUIRER and Gannett newspapers. For the past 8 years his column has explored short-wave radio, scanners, computers, CB and HAM radio.

A former employee of a Cincinnati suburb of 20,000 placed electronic bugs in the office of the city manager as well as in an adjoining washroom.

The electronic snoop hoped to gain information because another member of his family, still in the employ of the city, was about to leave.

The city manager somehow became aware that his conversations were being bugged. Shortly thereafter, the former employee walked into the city hall and in broad daylight, removed his bugging equipment simply by carrying the miniaturized things out under his coat!

This is just one example of how radical developments in the field of electronic communications made for the betterment of society can be used to its detriment.

Most of us, I am sure, can look at each other and say, "Who would want to eavesdrop on our conversation? How could anything we say be of any importance, except to those with whom we are talking?"

That's the question of the day. The answer lies in the realization that most successful spy work involves assembling from a variety

of sources a great mass of detailed information from which can be gleaned the important facts.

We are, all of us, potential targets of bugging.

Many of the people now in the electronic eavesdropping or surveillance business had their training while employed by the FBI, CIA, Army Intelligence or a municipal police department.

But in the amazing world of electronics with its miniature, cordless microphones smaller than matchboxes, it is easy to understand how even an amateur can do a half-effective job snooping on conversations.

Professional eavesdroppers will have a bagful of tricks including microphones the size of a pinhead, or even--a recent development--a directional microphone that can pick up conversations through walls from a distance of 500 feet or more.

With this last device, a snoop can point the microphone at an office from a room in a building across or down the street and private conversations will have an unseen, uninvited ear.

Back in the early 1960's, I had an opportunity to attend the Republican National Convention in Chicago. I was a volunteer worker for a presidential candidate.

Being bright-eyed, bushy tailed and imbued with the American Dream (I still have it), I was surprised to see small signs placed around the rooms that simply stated, "Say nothing that

will help our opposition."

The rule was never to speak about anything of a confidential nature without having a radio blaring in our rooms. The sound of the radio was supposed to overcome the bugs and prevent a "clean" tap.

But nowadays a development favored by snoops is a process by which a normal commercial AM-FM radio can be converted so that it is actually broadcasting on an unused frequency!

Another trick of the trade is for the snoops to put a bug between a phone and its junction box, turning the telephone into a microphone.

When local, state or federal authorities have a court order to tap a telephone, the tap normally is handled through the telephone exchange that serves the phone.

High-priced professional silent snoops have found a way to tap the microwave beams used to carry thousands of telephone conversations on a trunk line.

The result of the study was a recommendation that devices be placed on the phones of high government officials that scramble and otherwise encode their conversations.

A "debugger" is a person who has sophisticated equipment to locate "ears" placed by illegal snoops. For upwards of \$500 these people will perform a "sweep" of your office or home, supposedly cleaning it of any bugs.

Debuggers have elaborate radio spectrum monitors and

analyzers for the tools of their trade. These devices can scan all ranges of the radio spectrum in the hunt for illegal snooping devices.

In writing for so many years on the subject which you and I enjoy so much--radio--I have often felt that a product such as MONITORING TIMES has been much needed and long overdue.

For that reason I advised Bob Grove that I would volunteer my efforts and write from time to time.

I wish MONITORING TIMES and the family that produces it a great deal of success.

Bob Grove had done for scanner and shortwave radio hobbyists what Thomas Edison did for the light bulb.

I will enjoy visiting with you once more in the near future.

Back Issues Of Monitoring Times

We have a limited supply of back issues of Monitoring Times. If you wish to get a copy of the January or March issue please send a large self-addressed envelope along with 37 cents postage for the January issue, or 54 cents for January and March. If you want us to furnish the envelope send an additional 25 cents.

On The Track Of The Drug Smugglers

By Bob White

(This month's guest author is a law enforcement officer. His suggestions for file-keeping and research are worth reading)

Now that you have invested your time and money into establishing a listening post, you may wish to organize the information you hear. This way, the pieces of the puzzle will fit together and you can easily find what you want.

We have been tracking a group of druggies on the HF bands; during the past two months we have actually been able to identify some of the sixty we have heard. Our system is much simpler than a computer...it goes like this:

First, all incoming information is logged on a note pad and received signals are recorded on an inexpensive cassette recorder. Use the margin of the note pad to log the date, time, tape number and the tape counter reading.

Next, after the transmission is over, use a 4x5 index card to note the important information. Cross-reference the card back to the note pad entry by date, so you can get all the information if you need it. I reserve the top of the card for the subjects name and code name/number, the frequencies, and known associates. Usually a quick look at the card will refresh my memory, but if needed I can listen to the tape or read the log. Keep your cards in numerical and alphabetical order.

You will not want to make a file card for each name you run across, as many are just mentioned once or twice in a conversation. What you do want to do, however, is make a listing of these names on a file card, so you can refer to the pad for details.

Forty or fifty names and dates can easily fit on one card, providing easy access and instant recognition when the name is heard again. Another card is kept listing the main players who frequent certain frequencies and the times are usually on the air.

All of these cards may sound like a lot of work, but believe me, they take only a few seconds each to maintain and save hours of searching through notes.

Now, as for the tape recorder, I wouldn't be without it. You would be amazed what you miss the first time you hear something and how much more you can get by listening to conversations over and over again. If you can hear both sides of the conversation very well, and you don't have background noises in your radio room (the kids, telephone, other radios, etc), you may record by placing a microphone in front of the speaker.

If some of the signals are faint, or if you have a noisy room, you'll want to record directly from the radio itself. If your internal speaker is muted when a patch cord is plugged into the external speaker socket, use a "Y" adapter plug with one side going to an external speaker and the other side going to an ATTENUATING patch cord. The

patch cord is then connected to the microphone input of the tape recorder.

If you want to "document" your tapes as to the time, date, and frequency of each transmission, then you can unplug the patch cord from the tape recorder, speak into the internal microphone, and then plug the patch cord back in so it is ready for the next transmission.

Another way—the one I use—is to install another "Y" adapter at the tape recorder and plug a second-hand microphone into the extra jack. Use a recording mike with an on/off switch to avoid picking up room noise when not speaking into it.

Don't waste your money buying expensive tapes. They are made for recording music; cheap tapes easily record well beyond the limit of the normal human voice.

As you track these stations, don't forget two very helpful sources of free information—your local newspaper and county library. By watching the local and wire service articles on drug busts, you might be able to put

"two and two together" as to the identity of some of the stations you have heard.

A few words of warning about this hobby—it can become quite addicting. Once addicted, you'll find yourself altering your own schedule to fit that of the stations you listen to. Some friends of ours haven't eaten out in weeks for fear they'll miss something at dinnertime!

On the more serious side, don't forget that the odds are you aren't the only person listening. Many hours or months of undercover work could be blown and lives could be in jeopardy if you cause the wrong information to be published. If you are a licensed ham operator like me, and you have the capacity to transmit on the frequency where the smugglers are operating, resist all temptation to jam them! Not only are you breaking the law, but you might cover up a very important message that a law enforcement agency has been waiting to intercept.

Once you get organized you'll enjoy the hobby much more, and you'll find yourself getting more work done with much less effort.

Distance And Radio Reception

The distance you can hear a ground wave (non-skip) signal is frequency-dependent. On the lower shortwave bands, nighttime distances of thousands of miles are possible. At low band (30-50 MHz), scanner reception is typically 40 miles with average installations.

As the target frequency increases, radio range decreases. High band (144-174 MHz) reception is roughly 75 percent of low band, and at UHF (450-512 MHz) only about 50 percent.

Actual reliable coverage depends on a number of factors including Transmitter power, receiver sensitivity, height of

receiving and transmitting antennas, obstacles and obstructions to the signal path including buildings and terrain, gain of the transmitting and receiving antennas, losses in the antenna system, presence of signal interference, and propagation characteristics.

With a good outside vertical antenna on a rooftop or mast, add another 20 percent to your calculated range. And under ideal conditions, using a beam antenna on a high tower in flat or high terrain, and with a preamplifier ahead of the scanner, distances of 100 miles or more are frequently reported.

A Salute To Amrad

We would like to take this opportunity to acknowledge one of the most progressive and competent groups of communicators in existence, the Amateur Radio Research and Development Corporation.

AMRAD is a technically-oriented club comprised of more than 500 amateur radio operators dedicated to improving techniques of radio and computer communications.

A technical library is maintained by Tedd Riggs KC4YN (8402 Bereat Ct. Vienna, Va 22180) and donations of pertinent publications are tax-deductible. Special interest groups have

been responsible for the development of telecommunications for the handicapped, packet radio repeaters with interlinking and spread spectrum technology.

Handicapped readers with access to a 300-baud Bell 103 terminal or a TDD (teletype for the deaf) may dial up "HEX", the Handicapped Educational Exchange, by calling 301-593-7033.

The public-spirited, dynamic AMRAD participants are always looking for more members who enjoy the challenges of technology. Interested readers are invited to write AMRAD at 1524 Springvale Avenue, McLean, VA 22101.

WAYNE GREEN BOOKS



Novice License Study Guide
by Timothy M. Daniel
N8RK
This book emphasizes the practical side of getting a license and putting a station on the air. Complete with information about learning Morse code, the latest FCC amateur regulations and application forms, this guide is easily the best path into the exciting world of ham radio.
SG7357 \$4.95

General License Study Guide
by Timothy M. Daniel
N8RK
Learning rather than memorizing is the secret. This is not a question-and-answer guide that will gather dust when the FCC issues a new test. Instead, this book will be a helpful reference, useful long after a ham upgrades to General. Includes up-to-date FCC rules and an application form.
SG7358 \$6.95

The Magic of Ham Radio
by Jerry Swank W8HXR
Under various call signs, W8HXR has been heard on the ham bands since 1919. He has watched amateur radio grow from the days of Model A spark coils to an era of microprocessors and satellite communications. Drawing on his own colorful experiences and those of many other hams, Jerry has compiled this word-picture of ham radio during the past six decades.
BK7312 \$4.95

World Repeater Atlas
Completely updated, 2000 repeater listings are indexed by location and frequency, pin-pointed on more than 50 maps throughout the USA. Foreign listings include Europe, the Middle East, South America, and Africa. In addition to covering the popular two-meter repeaters, the World Repeater Atlas lists repeaters for six meters, 220 MHz, and the other bands.
BK7315 \$4.95

The New Weather Satellite Handbook
by Dr. Ralph E. Taggart
WB8DQT
This revised edition contains all the information on the most sophisticated and effective spacecraft now in orbit. The book is also an introduction to satellite watching, providing all the information required to construct a complete and highly effective ground station. Not just ideas, but solid hardware designs and all the instructions necessary to operate the equipment are included.
BK7383 \$8.95

Behind the Dial
by Bob Grove
This book explains, in detail, what's going on on all the frequencies, from shortwave up to microwave, including some of the secret stations of the C.I.A. and F.B.I. Surveillance, station layout considerations, antenna systems, interface, and the electromagnetic spectrum are included.
BK7307 \$4.95

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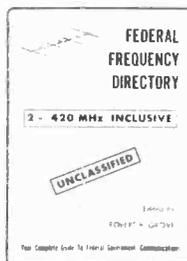
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SALE! \$14⁹⁵ (Reg. \$16⁹⁵)
WORLD RADIO TV HANDBOOK (BOK-3) by J. M. Frost (1982 edition, 590 pages, 6" x 9"). Widely recognized as the singular reference for broadcast listeners. Shortwave, langwave, FM and TV stations worldwide are all listed. Schedules, frequencies, programs, languages and even printed scores of musical interval signals are included. Beam headings, addresses, band plans, frequency allocations and other articles of interest are presented in an authoritative, easy-to-follow manner. A MUST for every shortwave listener.



Supplies Limited!
FEDERAL FREQUENCY DIRECTORY
 BOK-1
ORDER TODAY!

With the recent decision by the government to withhold all further government frequency data from the public, the Federal Frequency Directory may well be the last comprehensive list of frequencies, agencies and locations available.

More than 100,000 separate entries covering the entire 2-420 MHz range lists every entry formerly releasable before the recent classification.

State Department, Air Force, Navy, Army, Commerce, Coast Guard, Energy, FAA, Interior, TVA, Postal Service, Transportation, Science Foundation, NASA, HEW, VA, GSA, EPA, Boundary and Water, Communications Agency, ... all are included in this exhaustive book.

With supplies nearly exhausted, this may be your last opportunity to acquire the official federal government master frequency file. **REDUCED FOR FINAL SALE...\$10⁹⁵ (Reg. \$14⁹⁵)**

NEED TECHNICAL ADVICE? Call Bob Grove, 4-5 PM (eastern time) weekdays. 704-837-2216.

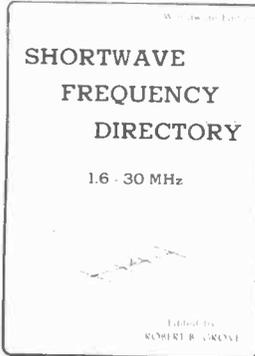


SALE! \$3⁹⁵ (Reg. \$5⁹⁵) **SOUNDS OF SHORTWAVE (TAP-1)** by Bob Grove (60-minute cassette). Puzzled by those strange sounds on the shortwave bands? This lively, professionally-produced tape identifies them for you!

Learn how to recognize jamming, spy transmissions, slow scan TV, teletype, multiplex, facsimile, telemetry and much more from actual off-the-air recorded examples.

And as an added feature, helpful answers to your questions about antennas, receivers, grounds and other subjects most often asked by listeners. Get the most out of your listening.

Follow the diagnostic tips explained by Grove to test a receiver BEFORE you buy so you won't be disappointed!



SHORTWAVE FREQUENCY DIRECTORY
 BOK-13
NEW
ONLY \$12⁹⁵

The most comprehensive 1.6-30 MHz directory by Bob Grove of agencies and frequencies using the HF spectrum to date.

Some 5000 listings including Air Force, Navy, Coast Guard, Army, Foreign military, Energy, Emergency, State Department, Embassies, FCC, Interior, Spies, beacons, clandestine and pirate broadcasters, aircraft and ships, space, RTTY FAX, smugglers, INTERPOL, Border Patrol, radiotelephone and more.

Over 200 pages, 8 1/2" x 11", spiral bound for radio desk convenience.

Truly an indispensable reference for any shortwave listener.

Listen to comments from delighted users:

"The most exhaustive directory of agencies and frequencies using the HF spectrum ever published. A must for the folks who DX the utilities". (Editors, American Shortwave Listeners Club)

"Worldwide in scope. Data is presented in clean, neat typing, and the offset printing was first rate. There is a very wide assortment of NEW military, governmental, commercial material...quite a collection of data covering virtually all aspects of utility communications. The Shortwave Frequency Directory is destined to be one of those MUST use books to have."

(Mike Chabak, utilities Editor, SPEEDX)

"The great virtue of the Shortwave Frequency Directory is gathering so much material together in one handy volume, and presenting it in a form that is so easy to understand and use."

"No one document that I've ever seen gives such a grand overview of what can be heard in the nonbroadcasting parts of the HF band. It's a god for exploring shortwave more deeply."

(Robert Horvitz, Shortwave editor, Radio Communications Monitoring Association.)

THE COMPLETE SHORTWAVE LISTENER'S HANDBOOK by Hank Bennett and Harry Helms (2nd edition, 306 pages, 6" x 9"). A thorough introduction to the exciting world of shortwave listening.

Learn more about receivers, antennas, frequencies, radio wave propagation, harmonics, lagging, reception reports.

Fascinating and informative reading. BOK-7, \$10⁹⁵.

HOW TO BUILD HIDDEN, LIMITED SPACE ANTENNAS THAT WORK by Robert J. Traister. 308 pages, 6" x 9". A collection of clever and innovative antennas for SWL's, hams and anyone else who finds he has no room for conventional antennas. Special projects for apartment dwellers include suspended verticals, window antennas and attic antennas.

Devise effective antennas from downspouts, window screens, TV antennas and other available surfaces. BOK-8, \$9⁹⁵.

THE GIANT BOOK OF ELECTRONICS PROJECTS by the editors of 73 Magazine. (498 pages, 5 1/4" x 8 1/4"). A massive collection of eminently-useful home projects for both beginners and advanced experimenters.

More than 100 liberally-illustrated projects include antennas, filters, receivers, transmitters, test equipment, clocks, power supplies and more. BOK-15, \$12⁹⁵

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

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

BOK-9, \$9⁹⁵.

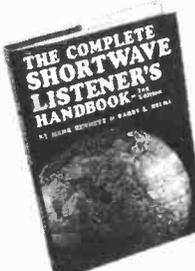
THE TOP SECRET REGISTRY OF U.S. GOVERNMENT RADIO FREQUENCIES by Tom Kneitel (4th edition, 120 pages, 6" x 9"). An extensive collection of government and military frequencies, many considered highly-sensitive, from 25-600 MHz.

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

BOK-11, \$9⁹⁵.

RTTY FREQUENCY GUIDE by Joerg Klingenfuss (50 pages, 8 1/2" x 11"). Expanded 7th edition -- The ultimate directory for tuning in news agencies, weather broadcasts, military communications, embassies and telegrams worldwide.

Over 2000 RTTY frequencies, 3-30 MHz, identified by location, agency, call sign and schedule. BOK-12, \$11⁹⁵.



HOME-BREW HF/VHF ANTENNA HANDBOOK by William Hood (210 pages, 6" x 9"). Down-to-earth presentation tells you what you want to know about antennas, dummy loads, SWR meters, dip wave meters, impedance bridges and more.

A handy guide for the home experimenter. BOK-10, \$6⁹⁵.

HOW TO TUNE THE SECRET SHORTWAVE SPECTRUM by Harry L. Helms (182 pages, 6" x 9"). If your curiosity is aroused by unusual signals, this is the book for you.

Tour the world's secret radio spectrum: pirate and clandestine broadcasters, spy

communications, mysterious beacons, long-delayed echoes, diplomatic and military channels, space communications.

One of our best-selling books. BOK-6, \$7⁹⁵.

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

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

And, as a special bonus, a

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

BOK-2, \$6⁹⁵.

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

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

A handy reference guide for every RTTY enthusiast.

BOK-14, \$6⁹⁵.

WORLD PRESS SERVICES FREQUENCIES, by Thomas Harrington, 3rd Edition. 72 pages, 8 1/2"x11. An up to date comprehensive manual covering the field of radioteletype news monitoring. Contains three different master lists of worldwide radio teletype frequencies used for transmitting news services in the English language, plus all needed information on antennas, receivers, terminal units, monitors and how-to-receive hints. Master lists include: Transmission times, frequency, shift and speed, service (AP, UPI, TASS, REUTERS and other.) location and reception ratings. Highly recommended for all those interested in RTTY monitoring. BOK-5, \$7⁹⁵

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Product Review...

THE BEARCAT BC-100

Few new products--especially as sophisticated as the BC-100--arrive on the marketplace without imperfections. This is certainly true of the BC-100.

The new hand-held programmable from Electra is unquestionably a remarkable step forward in miniature, microprocessor-controlled RF technology. It is handy, eminently portable, frequency agile, and certainly unique.

The 100 sports 16 channels, automatic lockout, search, scan,



manual up/down step search, and direct channel access.

The LCD display is easy to read in either ambient or direct daylight, although no illumination is provided for night use.

Internal NICAD batteries (included) will last for many hours of continuous operation after an overnight charge; a charge indicator alerts the operator to low battery status as well as shows charging progress. The charger may be used as an AC adaptor, powering the unit from the mains when available. The charger is included.

An extended (over previous models) frequency range covers 30-50, 138-174 and 406-512 MHz, all FM mode.

For mobile application, the 100 is capable of being powered directly from 12 VDC; a 2 mm. coaxial (DIN) power plug is required.

Since its introduction a year ago, the 100 has been both lauded and criticized; both seem justified. Unquestionably, the 100 is unique, offering portability and frequency flexibility awaited by eager listeners for many years. Let's take a look at the criticisms.

INSENSITIVITY: Weak-signal capture by the 100 is not as good as competitively-priced full size scanners. This shortcoming is aggravated by the use of a "rubber ducky" low-efficiency antenna. To make matters worse, no provision is made for the attachment of an external antenna, a serious oversight which was pointed out to Electra before the unit's release to the public.

To be sure, the sensitivity of the BC-100 using the flexible whip is adequate for metropolitan monitoring. It is inadequate for mobile use and weak signal or distant reception.

SPURS AND INTERMOD: Partially due to the dense packaging, the 100 is plagued with spurious signals ("birdies"). Many of them are close-spaced (42.34, 42.36, 42.40, 42.60, 42.80); others are very broad (149.020-149.204). The net result is, of course, that there are portions of the bands that cannot be received. Intermodulation in strong signal environments is considerable. In spite of these limitations the successful ranges of receivability are considerable.

MICROPROCESSOR FAILURE: Perhaps one of the sharpest criticisms of the 100 revolves around the microprocessor. We hear of field failures in which the automatic functions take off on their own, much apart from the commands entered by the user.

We confirmed that infirmity, and in spite of a return to the factory with a detailed description of the micro's infidelity, it continued to misbehave upon its return.

Typically, during search, the unit would suddenly revert to scanning; or, it would cease to function entirely, wiping out the display. Switching the receiver off, then on again, the display showed a weird display of memorized frequencies, many of which were outside the programmable range of the scanner, not those which had been entered by the user.

BALKY KEYBOARD: Early units required considerable pressure to activate the keys, and several of them (including our test model) would stick--unnoticed--preventing further programming executions.

We have been advised by Electra that these complaints have been resolved in a new keyboard.

ERRATIC SQUELCH: The squelch circuitry of the BC-100 is activated by the IF circuit, not audio as in most other scanners. The result is that, depending upon ambient noise and RF levels, different squelch threshold settings may be necessary for different frequency ranges.

AND OTHER MINOR IRRITATIONS: Loose-fitting batteries, low audio output, wide tolerance in cabinet alignment...these can certainly be lived with, but deserve mention.

THE BOTTOM LINE: The BC-100 provides previously-unavailable portability and frequency coverage. It is extremely easy to use and employs an intelligent selection of functional features for the user on the go.

While the recommended retail price (\$499) may seem a bit high, it is widely available for less from Monitoring Times advertisers.

It is impossible to compare it with similar products at this time--there are none--so the prospective buyer must decide whether optimum performance or portability is more important.

Reviews next month...**SPOTLIGHT: THE YAESU FRG-7700**

An extensive product review by engineer Robert Lonn includes 256-channel memory expansion! Don't miss this Monitoring Times exclusive!

...Also! **THE ALLIANCE U-100** antenna rotator. A small but effective rotator for directional antennas.

Standard's "Talkman," a personal 2-way communications system. Eminently portable. **Info-Tech RTTY/MORSE DECODER**, step up to affordable luxury with this flexible system.

Japan Radio Company's NCM-515 Frequency Controller

By Fred Ostermann
Japan Radio Company (JRC) has been a respected name in marine communications for several decades. Recently, they have also been involved in radar, satellite navigation systems, commercial communications and industrial/medical electronics. This company has become increasingly involved in the amateur and shortwave listener market as well.

Just over a year and a half ago JRC introduced a general coverage receiver called the NRD-515. It has become a popular radio with serious shortwave DXers worldwide. I have been using the NRD-515 for one year and have been pleased with its performance. Being primarily a "utility" DXer I was especially attracted to its excellent stability which is so important when listening to CW, RTTY, or FAX.

Most NRD-515 owners would agree that one of the key benefits to using the NRD-515 is its ease of operation. Tuning is simple, fast and absolutely accurate. Additionally, there are 24 or 96 channel memories available. With all this tuning convenience I was surprised to learn of something new to make tuning and frequency entry even better and faster!

The annual Dayton Hamvention is the biggest "hamfest" in the world. Electronics companies often use this event to preview or announce new products. This year JRC introduced a new product of special interest to the shortwave enthusiast. The item is called the NCM-515 frequency controller.

The NCM-515 is a hand-held keyboard entry-display device to facilitate frequency entry and tuning into the NRD-515. This controller resembles a large hand-held calculator. The cord connecting the NCM-515 to the NRD-515 is 6 feet long. It attaches via a special adapter (supplied) to the memory port of the NRD-515. Yes, you may attach the NCM-515 at the same time your 24 or 96 channel memory is attached.

Installation takes about three minutes and requires only a screwdriver. You do not have to go inside the NRD-515 to install this device. The controller derives its power (+10VDC @ 100 ma.) from the receiver. It has a standard calculator keyboard with an audio response tone as well as a six digit LCD display. The unit measures 3 3/4 x 5 1/2 x 1 1/4".

FEATURES: The NCM-515 has several modes of operation:

For keyboard entry of a given frequency simply turn the unit on, press the P/MA key once (display will show 0.0), type in the desired frequency (in kHz) and press the =key. Sample entries would be: "15070.0=" or "15070.=" or "15070=". Invalid entries will show "E" on the NCM-515" display. In the remote mode you take control from the NRD-515; its MHz. And tuning knobs are now inoperative (RIT is still functional). All frequencies on the keypad will also be



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Radio And The Falklands

Monitoring Times Welcomes

(Ed. note: this month veteran writer John Santosuosso whose technical expertise in clandestine and pirate radio is without peer. Let us know if you would like to hear more from John!)

By John Santosuosso

The Falkland Islands (Islas Malvinas) crisis filled the short-wave bands with more unusual activity than any event in recent year. Some of these transmissions will probably have disappeared by the time you read this, but others should continue, and new ones may appear.

The British military victory will not end the conflict. Troops will have to be stationed on the islands to prevent an Argentine return, and most likely the propaganda war, largely waged by radio, will continue.

"Argentine Annie," as the British call her, or "Liberty, a proud woman from Argentina," as she identifies herself, is the most interesting radio personality to emerge from the conflict. Liberty broadcasts on 17740 for thirty to forty-five minutes every other hour from 1800 to 0000 GMT. Usually the 0000 transmission is the clearest.

This sultry-voice female specializes in pop music and propaganda for the British task force. Many of her musical selections are chosen with the purpose of weakening the morale of occupational forces far from home. These include "London," and one of her favorites, an instrumental arrangement of "Stormy Weather."

In between the music Liberty provides news and commentary, some of it rather unbelievable, such as former reports of heavy British casualties in the retaking of South Georgia Island.

Lately the British have been jamming Liberty, so she may prove difficult to hear, but keep trying as you will recognize that sexy voice instantly when you do come across it.

There has been much speculation as to the point of origin of the Liberty transmissions. Although she claims to be broadcasting from the Falklands, this is most unlikely. It is possible that the actual programs themselves may not even be produced in Argentina but might be supplied by a friendly outside power.

DXpert David Crawford has obtained information from the FCC which would locate the transmitter in the Cordoba-Junin area of Argentina. Bearings taken by the FCC at Fort Lauderdale, Florida, and Kingsville, Texas, make this location in the north-central part of the country appear most likely.

Not to be outdone, the British have countered with their own station, broadcasting entirely in Spanish to Argentina and the

Falklands. This is Radio Atlantico del Sur (South Atlantic Radio) which utilizes a BBC transmitter on lonely Ascension Island. Programs begin around 2300 on 9710 kiloHertz. While there is Argentine jamming, it is generally not very effective.

Radio Atlantico del Sur is operated by the Ministry of Defense and was at least in part the idea of Prime Minister Thatcher, who was dissatisfied with the BBC's coverage of the South Atlantic situation.

In the early days of the conflict BBC World Service broadcast frequent messages urging British citizens to leave Argentina. World Service news broadcasts, easily heard evenings on 6175, 7325, 9510, 15070 and other frequencies are among the best sources for obtaining news on the Falklands and the British government's viewpoint.

The closing days of the war Argentina jammed some World Service frequencies, as that country's situation grew more desperate. Even earlier BBC Spanish language programs on 15390 and other frequencies were jammed.

While North American listeners should have no difficulty in overcoming these jamming efforts, an increase in their occurrence or their disappearance could indicate a change in Argentine policy. Even a jammer may sometimes tell you something important!

One special BBC transmission is of particular interest. This is the program "Britain Calling Falklands," which is directed to the Falkland Islanders themselves. It features news, personal messages from relatives and friends, and sometimes special events such as a speech by the Falklands Governor. In more normal times this program is transmitted only on Sundays, but at present it is aired daily. Look for it from 2120 to 2200 on 11820, 15400, and the recently activated 12040. So far Argentina has made no attempt to jam any of these frequencies.

Naturally, Argentina has found it necessary to establish special radio services of her own. One of the more interesting of these has made use of Radio Nacional shortwave transmitters to relay domestic medium wave stations for troops stationed in the Malvinas.

At 0000 Radio Rivadavia has been relayed on 9690 kHz, while on 11710 either Radio del Plata or Radio Nacional programming has been transmitted after 0300.

The final defeat of the Argentines may mean the end of these transmissions, but there is always the possibility they might continue in the attempt to create the illusion of a continued Argentine military presence in the Malvinas.

There are still other types of transmissions worth monitoring. Should you hear pop music along

with messages for British troops on the Hermes and other ships, chances are you are tuned to a transmission of the British Forces Broadcasting Service. One place to look is 15105 between 1130 and 1155 GMT.

Jamming may also be present. The navy of Argentina's nervous neighbor, Chile, has recently been monitored with CW transmissions from station CCS on the approximate frequency of 22074 around 1800.

Chile is worried because she controls three small islands at the tip of South America which are also claimed by Argentina. She cannot help but think that this situation could produce another dispute similar to that over the Falklands.

Finally, mention should be made of the transmissions coming from the Cable and Wireless Company's facilities in the Falklands. After occupying the islands Argentina made use of these transmitters for USB links to the mainland. Military communications and phone calls to home by Argentine soldiers are among the kinds of traffic which have been heard.

Frequencies to watch are 11565, 19950, and 24145. However, be careful on 19950, as France's Saint Lys Radio has also monitored recently on that frequency.

In reality the Falklands conflict has produced so much short-wave activity it is difficult to monitor it all, but this tragic event has proven once again the value of shortwave radio.

The shortwave monitor has the opportunity to obtain vital information on the crisis which the general public, limited to the conventional news sources, cannot possibly obtain. It is yours free for a little time and effort. Good Listening!

Pirate Update:

Look for a drastic decline in domestic pirate activity as a result of the FCC's third bust of the famous Voice of the Voyager on May 9. One operator of the Minnesota station was fined \$2000 and the other \$1000. They were warned that a fourth offense would result in the maximum possible penalty, a \$10,000 fine and a year in prison.

FCC agents also advised the station staff that they had managed to infiltrate several of the organizations which publish pirate radio news, and they now know the locations of most of the more active stations.

The Voyager does not plan to return, and several other stations appear to have shut down--at least for the moment. However, one has threatened to counter with a series of clandestine political broadcasts.

Credits:

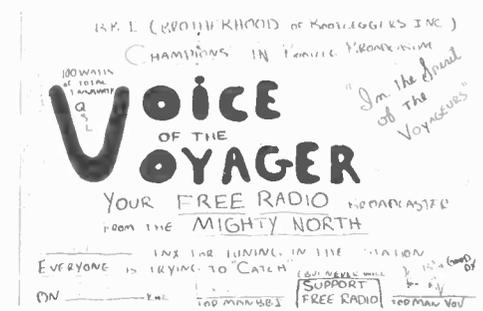
Thanks to Dave Crawford, Terry Kruegar, Havana Moon, and Gregg Bares for some of the information used in the above article.



1. Bush House, London, where BBC broadcasts to and about the Falklands originate.



2. Transmitters used by the Argentine government for its foreign shortwave service have also been relaying programs to troops in the Falklands.



3. QSL from the most famous American pirate of recent years, the Voice of the Voyager. In May the Voyager was busted for the third time.

Radio Moscow Sits On WWV

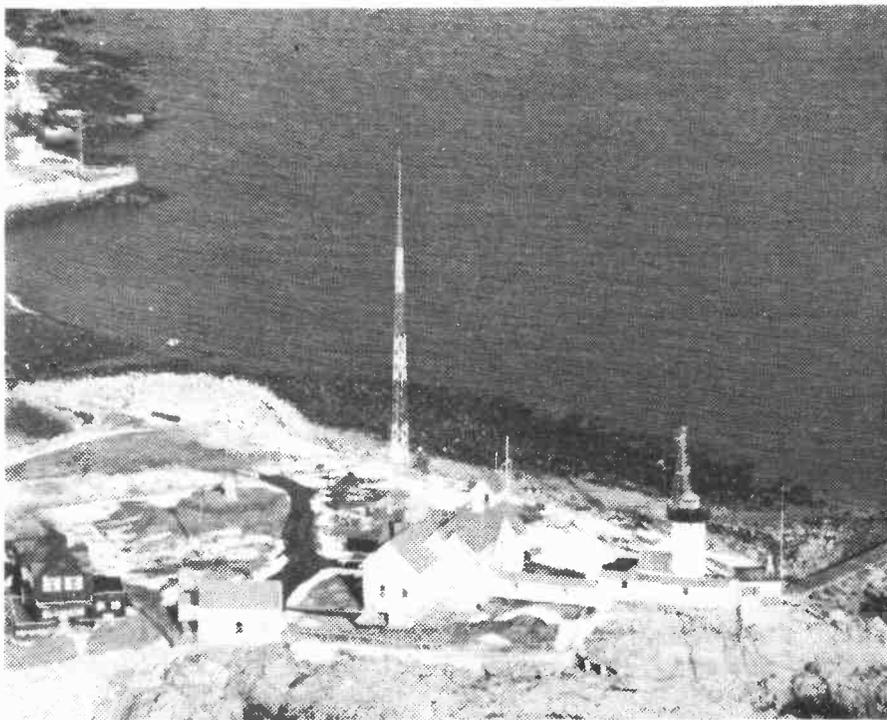
At approximately 0000 UTC Friday, May 7, 1982, the Havana relay station of Radio Moscow began broadcasting on 10.000 MHz, an international standard time and frequency control.

At our monitoring laboratory in Brasstown, WWV (National Bureau of Standards, Ft. Collins, CO) was completely covered up by the transmission which lasted until the following morning.

An inquiry to the FCC monitoring station in Washington, DC revealed that this was not the first time that this transmitter was brought up on 10 MHz. Spokesman Frank Williams said that at this writing he has no official explanation, and was searching for some possible technical accident which would account for the blunder.

At Monitoring Times, we have another hypothesis. With the impending approval of Radio Marti (1040 kHz) and other clearly anti-Castro broadcasts scheduled to be placed on the air from southern Florida, tempers are visible in Cuba. Could this have been a subtle hint that a full-fledged radio war is impending?

Time will tell.



This US Coast Guard light station at Gloucester, MA provides VHF-FM ship to shore com-

munications. Prominent in this photo is the Phelps-Dodge model 340 broadband base station antenna.

US Coast Guard: Exciting Monitoring Fare

During boating and storm season, The United States Coast Guard has its hands full. While careless weekend pleasure boaters are always a headache for the Coast Guard, even experienced sailors can be caught by capricious squalls.

The following list of US Coast Guard air to ground frequencies is excerpted from the new Shortwave Frequency Directory available by Bob Grove (see Grove Enterprises Book Shop).

The higher frequencies are most likely to be found active during daylight hours, while lower frequencies are conventionally night time and local coastal use. All frequencies will be upper sideband.

Freq. kHz	USE
2141	Alaska only
2261	US only
3120	Helicopter
3123	
5692	Helicopter
5696	
8980	Helicopter
8984	
11195	
11198	Helicopter
11201	
15081	
15084	Helicopter
15087	

LOCATIONS OF COAST GUARD AIR STATIONS

Aroata, WA	Boronquen, PR
Astoria, OR	New Orleans, LA
Barbers Point, HI	Elizabeth City, NC
Brooklyn, NY	St. Petersburg, FL
Chicago, IL	Miami, FL
Cape Cod, MA	Traverse City, MI
Corpus Christi, TX	Mobile, AL
Cape May, NJ	Morth Bend, OR
	San Francisco, CA

Spies In The Skies

According to an interesting article in May 17 Time Magazine, considerable espionage goes on over our heads. Russian and US spy satellites vie for air space.

Two days before the Argentine takeover of the Falkland Islands, the USSR launched Cosmos 1345 and 1346 military spy satellites. At least six more were launched after the episode to monitor Argentinian and British ship movements.

Their functions included interception of communications, radar detection, photo-reconnaissance and other intelligence gathering assignments. Capsules were ejected over the Soviet Union where they descended by parachute for recovery.

While US satellites are designed to remain in orbit for months to years, Soviet satellites

weeks at most because of their low orbits.

The United States presently has two photographic systems watching the South Atlantic: the KH-11 and the twelve-ton "Big Bird". "Big Bird" is capable of descending to 100 miles for close-ups, returning to altitudes of 170 miles for wide-angle shots of the earth's surface.

Rather than ejecting film capsules, the US satellites beam their stored data to earth as binary digits for collection and reconstruction.

While the connection between US spy satellites and British intelligence was a closely-guarded secret, it is felt that British naval commanders were in possession of Argentinian military orders nearly as soon as they were transmitted

Simplified Tuning For The AEA MORSE/RTTY Reader

The product review of the AEA model MBA reader which appeared in the May/June issue of Monitoring Times elicited a number of inquiries as to a more effective tuning procedure when listening to RTTY.

Reproduced here is a system which worked well for us in the Grove Enterprises lab.

Attach DC and audio cords as instructed; switch unit on. Adjust threshold control so that both lamps are extinguished with no audio present.

CW RECEPTION

(1) Set FILTER to CW; MODE to MORSE

(2) Advance receiver audio to comfortable listening level and tune in CW signal in a normal manner.

(3) Adjust receiver tuning knob so that both TUNE lights blink together at full brightness with CW notes.

CW SPEED

(1) Set MODE to SPEED while copying CW as above. Speed in words per minute will appear as two right-hand digits.

RTTY RECEPTION

(1) Set FILTER to RTTY-W; receiver should be set to USB mode.

(2) Adjust threshold so that both lamps are extinguished with no audio present, then rotate control slightly counterclockwise so that right-hand light just comes up to full brilliance.

(3) Adjust receiver tuning and volume so that the left-hand TUNE light blinks on with RTTY signal pulses. If interference is present, set FILTER to RTTY-N.

(4) If the light stays on bet-

ween RTTY pulses, reverse sidebands on your receiver and repeat step 3.

NOTE: There are two possible audio frequencies on each sideband which will cause the lights to blink; mark and space. Only one of these will provide correct copy.

ADDITIONAL NOTE: Virtually 100 percent of RTTY signals intercepted on shortwave will be either 67 or 100 WPM. However, many are non-standard shift or baud rate and will not be copyable on standard readers.

Phony Sony?

Rumors are rife that the popular ICF-2001 is being counterfeited offshore and being sold by New York importers. This prompted a call to Jon Strom, spokesman for the Sony Corporation.

According to Strom, he is unaware of bogus copies and feels that the rumor is unfounded. True, some units are coming in without AC adaptors, intended for foreign distribution, but the receivers are the real thing.

Strom went on to say that Sony has created a revolutionary new product, and the consumers who buy them are, in general, "forward looking." As a result, many suspicions are engendered including the similarly-unfounded rumor that there is a second model of the 2001 due for release featuring advanced features like better selectivity.

"I can say without a doubt," continued Strom, "that there is no such animal!" Subtle changes do occur, Strom admitted, referring to the power switch now being recessed below the panel to avoid accidental turn-on when the small receiver is carried in an attache case.

Panasonic has just announced its competition to the ICF-2001; it is called the RF-799. Monitoring Times has contacted Panasonic for a review unit so that we can inform our readers of its performance. Hopefully, that review will be forthcoming in a future issue.

In the mean time, two new miniature shortwave pocket radios have been released from Sony. The ICF-7600A is the world's smallest dual-conversion radio featuring 7 shortwave bands plus Am and FM as well. It will retail for \$159.95.

The ICR-4800 is a smaller pocket sized version, touting 5 shortwave bands and the AM broadcast band. It will sell for \$89.95.

As a dealer and customer incentive program, Sony is offering an essay contest ("I like my Sony because" routine); winners will be drawn by lottery and may choose among six worldwide cities for a vacation!

806-960 MHZ BAND CONTINUES TO GROW

Variouly called the "800 MHz band", "900 MHz band" and microwave mobile band, this high UHF portion of the land mobile spectrum is growing in the major metropolitan regions.

Recent FCC amendments have designated 48 new channels (12 common carrier and 36 private use) for multiple-address master and remote stations.

The 12 unpaired fixed common carrier channels are taken from the 928.8625-928.9875 and 959.8625-959.9875 MHz range, 14 paired and 8 unpaired private channels are taken from the 928.0125-928.3375/952.0125-952.3375 and 956.2625-956.4375 MHz portion of the band.

After a five-year moratorium, cross-allocations may be made among both private and common carrier users depending upon frequency availability in a particular geographical area.

Interested listeners may refer to FCC parts 2, 22 and 94 for the new rulings on these 25 kHz-

New Books From The Publishers

Several new books of interest to listeners have crossed our desk this month.

Since none is presently stocked for resale Grove Enterprises, interested readers are requested to contact their local bookstores or the publishers directly for further information.

BUSCHBAUM'S COMPLETE HANDBOOK OF PRACTICAL ELECTRONIC REFERENCE DATA by Walter H. Buschbaum (Hardbound, 645 pages, 7" x 9½", from Prentice-Hall, Englewood Cliffs, NJ 07632).

Decidedly not a "how-to" or circuit collection book, Buschbaum's is a dense compendium of solid theory, fundamentals, charts and tables, formulas and reference data covering a wide swath of electronics subjects.

Copiously illustrated, the 24 chapters cover industrial and biomedical electronics, optoelectronics, digital logic and computer theory including programming language, broadcasting and recording, radar and navigation systems, communications, filter network design, solid state and vacuum tube technology, antennas and circuit components as well.

Well edited, Buschbaum's is a recommended reference for anyone seriously interested in an in-depth look at the field of electronic technology.

CODES, CIPHERS AND COMPUTERS by Bruce Bosworth (softbound, 259 pages, 6" x 9", Hayden Book Company, Inc. No. 5149-0, \$13.95).

With the rapid acceleration of public access to the airwaves and to computer data, the need for privacy has never been greater.

Bosworth's introduction to information security examines virtually every imaginable technique for encryption, beginning with historical military applications and progressing through modern methods.

Bosworth demonstrates with examples for each encryption method under examination, Codes is written as a textbook, complete with questions to test the readers retention of contents at the end of each major section. Answers--with solutions--are presented at the end of the book.

For additional help, Bosworth has included exhaustive lists of references to enable the reader (or student) to go further in his studies of particular concepts.

Quite likely, the key to the "spy numbers" messages so frequently reported by our readers may lie within the pages of this essay on cryptographic techniques.

THE SWL'S MANUAL OF NON-BROADCAST STATIONS by Harry L. Helms (TAB 1235, \$12.95 softbound, 272 pages, 5" x 8")

Noted author Harry Helms' newest book is intended as an introduction to the world of utilities DX'ing. The manual evolves

through a description of utilities (non-broadcast) users, modes of transmission, signal propagation, fixed, marine and aeronautical stations, equipment and logging.

Appendices are included listing call sign block allocations, sample frequency lists and QSL information.

Any criticisms of the book are of a minor nature: VHF and UHF lists inappropriate for a short-wave book; FBI, aircraft, numbers and beacon frequencies are largely obsolete.

But as an introduction to the world of shortwave utilities DX'ing, the book is informative.

BUILD A PERSONAL EARTH STATION FOR WORLDWIDE SATELLITE TV RECEPTION by Robert J. Traister (TAB 1409, \$9.95 softbound, 296 pages, 5" x 8")

As a tutorial guide to the hardware and basic theory of satellite television, Traister's new book is hard to beat.

While the vast majority of the book centers around commercially-available products (many of which come and go in the flakey home satellite TV business), considerable do-it-yourself information exists as well.

Separate chapters abound on antennas, receivers, amplifiers, locations and construction.

Appendices include charts and tables concerning satellite transponders, orbital locations, wind factors, noise figures, frequency allocations and other considerations germane to adequate reception.

THE MASTER HANDBOOK OF IC CIRCUITS by Thomas R. Powers (TAB 1370, \$14.95 softbound, 532 pages, 5" x 8")

A massive collection of integrated circuit applications, there are typical hookups for a large variety of popular (and-not-so-popular) chips on the market.

Major sections are categorized as to Linear, voltage regulators, CMOS, TTL/LS, Radio/TV and special purpose devices.

Sound generators, oscillators, amplifiers and modulators, filters and power supplies, gates and triggers...a wide variety of handy circuit schematics are presented as a guide to IC applications.

THE GIANT HANDBOOK OF ELECTRONIC CIRCUITS by Raymond A. Collins (TAB 1300, \$18.95 softbound, 880 pages, 5" x 8")

One of the largest compendia of hobby electronic circuits we have seen is this new release from TAB. Sixty separate categories of discrete and chip applications from A/D converters to waveform generators populate the pages of this missal.

More than a thousand simple circuits are included to assist the home builder with oscillators, transmitters, receivers and detectors, smoke alarms, toys,

limiters, photocircuits, logic, sensors, music makers...almost every imaginable concept is covered. While some circuits are merely partial to demonstrate applications techniques, all are eminently useful for informational content.

GIANT HANDBOOK OF 222 WEEKEND ELECTRONICS PROJECTS (TAB 1265, \$12.95 softbound, 496 pages, 5" x 8")

This handbook is remarkably different from other collections of electronic workshop do-it books. Compiled from nearly forty years of "School Shop" magazine, the handbook features many demonstration, visual-aid projects for educational purposes.

Sample of the publication's contents include sound switches and relays, broadcast-band transmitters, workshop test equipment, automotive timing light and ignition, light-beam transmitters and club teaching equipment and many more.

First-rate publication for teachers involved in electricity and electronics.

103 PROJECTS FOR ELECTRONICS EXPERIMENTERS by Forrest M. Mims, III (TAB 1249, \$9.95 softbound, 308 pages, 5" x 8")

Yep, another simple project collection. In all fairness, we must remind our readers tht Forrest Mims is well-known for his years of writing hobby-related articles in popular magazines for radio and electronics enthusiasts.

WARC-79 Rules Gradually Implemented

The World Administrative Radio Conference (September 24-December 6, 1979) in Geneva, Switzerland involved 154 member countries who sent 2000 delegates. Nearly 900 plenary meetings generated 1150 pages of text, all relating to spectrum policies acceptable to the nations of the earth.

Decisions made at that conference will be gradually implemented over the next 5-10 years, although those with the most impact have already begun. Some of the rulemaking landmarks of particular interest to readers include:

AT HF:

- The official table of frequency allocations now begins at 9 kHz
- The AM broadcast band will extend to 1.7 MHz (now 1.6 MHz)
- All LORAN A systems will be deleted from the 2 MHz spectrum before 1983
- A worldwide wireless hearing aid channel is reserved for 3.155-3.195 MHz; others may be assigned up to 3.4 MHz
- The band 21.85-21.87 MHz will be vacated by radio astronomy and given to the fixed (point-to-point) service; astronomy will get 25.55-25.67 MHz and maintain 13.36-13.41 MHz (shared with fixed service)

This latest Mims work is typical of his polished writing: concise, informative and easy to read. Projects are not unduly complex; many, in fact, are quite simple.

Active filters, modulators, optoelectronics, digital and analog IC applications, power supplies and amplifiers highlight the majority of the work.

And for the uninitiated, an introductory chapter discusses tools, techniques and even circuit symbols.

★★★★★★

CANADIAN RAILWAY RADIO GUIDE by Kenneth A. W. Gansel (Gansel Publications, PO Box 1108, Niagara-on-the-Lake, Ontario, Canada LOS 1J0)

Fourteen pages (8½" x 11") featuring frequencies of dozens of Canadian railways nationwide. A separate frequency cross reference assists in identifying signals heard on the air.

SCANNER FREQUENCY DIRECTORY FOR NW OHIO AND SE MICHIGAN by Daryll Symington (\$5.95 from Midwest Softwave Services, PO Box 399, Holland, OH 43528)

Approximately 1500 frequencies relating to local and federal law enforcement, private radio, industrial and commercial communications, amateur, marine, mobile phone and aircraft.

A 10-county area of NW Ohio and SE Michigan is the target of this neat little volume.

- Additional maritime mobile spectrum was provided at 12.23-12.33, 16.36-16.46, 17.36-17.41, 18.78-18.90, 19.68-19.80, 22.72-22.855, 25.11-25.21 and 26.10-26.175 MHz

- Hams received extra bands at 10.10-10.15, 18.068-18.168 and 24.89-24.99 MHz (Already in use in some parts of the world)

- International broadcasting won some major extensions at 11.65-11.70, 11.975-12.05, 13.60-13.80, 15.45-15.60, 17.55-17.70 and 21.75-21.85 MHz

- Industrial, Scientific and Medical (ISM) emissions will now be allowed at 6.78 MHz in addition to the present 13.56 and 27.12 MHz

- The aeronautical mobile service has inherited 21.924-22.00 MHz

AT VHF/UHF:

- The 216-220 MHz band is now available for maritime communications

- Radio astronomy will have primary status from 322.0-328.6 and 608-614 MHz

- Formerly UHF TV, 470-806 MHz is now available to fixed and mobile services

- Fixed and mobile (but not aeronautical) services have been granted primary status in the 420-430 and 440-450 MHz bands.

Caribbean Cruising...

Monitoring Times welcomes guest writer Tom Williamson, A Canadian listener who specializes in monitoring ship to shore communications and foreign news broadcasts.

By Tom Williamson

"WHISKEY OSCAR MIKE...WHISKEY OSCAR MIKE...THIS IS THE STATENDAM...THE STATENDAM" ..."OCEAN GATE RADIO...THIS IS THE QUEEN ELIZABETH TWO...GULF BRAVO TANGO T A N G O . . . C H A N N E L 1210"... "SUN VIKING, ALL THROUGH? WOM CLEAR CHANNEL 1203"

These are a few of the messages you may hear on the Marine Bands on your short wave radio.

Are you fascinated by the sight of large ocean-going ships majestically cutting through the seas? Do you dream of lying on sun-drenched decks as your favourite liner plows the calm blue Caribbean? Would you like to go ashore at exotic isles like Puerto Rico? Can't afford it? Neither can I!!!

But with your receiver tuned to shortwave you can at least follow the route of the beautiful cruise liners as they journey around the tropical islands of this part of the world. And if you like collecting QSLs, you will find a new and interesting type of collecting here. Even if they do not issue prepared printed cards many of the shipping companies will be pleased to send you a fine photograph or color card of their great ships.

So how do you start on this type of SWling? Let's take a look at the Marine bands. They are as follows:

4063-4438, 6200-6525, 8195-8815, 12330-13200, 16460-17360, 22000-22720 kilohertz as the principal bands. In these frequency ranges you will find a mixture of Coastal stations, Naval stations, Coast Guard and ships of all types. Operating modes will vary, with telegraphy, radioteletype and SSB voice communications being the main modes.

In all these bands there is a regular allocation of frequencies, and for ship-to-shore communication, you will find the ship on the low frequency side of the band, and the coastal station on a corresponding frequency on the high frequency side. This is termed duplex communication, and the

two linked frequencies are given channel numbers.

Let us take as an example the 12-13 Mhz region which is a very useful band, open much of the 24 hours for signal propagation. Channel 1201: ship 12330/coastal station 13100.8 khz; Channel 1202: ship 12331/coastal station 13103.9 khz; and so on up to Channel 1232: ship 12426.1/coastal station 13196.9 khz. This gives a channel spacing of just 3.1 khz throughout the bands. You can work out the channel frequencies for other bands from these data: channel 401: 4063-4357.4; 601: 6200-6506.4; 1601: 16460-17232.9; 2201: 22000-22596.0 khz.

In order to receive these coastal-ship conversations you will need a receiver which has upper and lower sideband switch positions, or a Beat Frequency Oscillator (BFO) which can be varied until speech becomes understandable. In order to follow both sides of a conversation you will need two receivers, one for each frequency, or a computerized set like the Sony ICF 2001 which can switch directly from one preset channel to the other.

Start by tuning the coastal station frequencies, and when you have identified a conversation in progress search for the ship on the corresponding LF frequency. Nearly always the ship will be much weaker than the shore station, often inaudible, unless you have a super antenna. Nevertheless, many ships can be heard every hour, and you can build up an interesting log, often with their geographical positions, quite quickly. The coastal stations most often heard in North America, in respect to the Caribbean area, are (Miami) and WOO (Ocean Gate, N.J.) Of course they share their channels with other coast stations world-wide, and you will quickly learn to identify many other frequent voices such as KMI (Point Reyes, CA.) and many European stations like Portishead (U.K.), St. Lys, (France) so forth.

Operating procedure is as follows: Ship calls the coast; coast radio replies checking reception, ship position, etc.; when circuit is satisfactory the coast operator passes the line to the telephone company so that the person on board the ship can

make a direct call to any number. The telephone operator usually identifies simply as "High Seas", and at the end of the conversation or "traffic", passes the ship back to the coastal station for clearance. At this point the coastal operator closes with the channel number which is a useful check to you as to the frequency to which you are tuned.

Ship callsigns are given in phonetic code, and are allocated in accord with international prefixes, dependent upon the country in which the ship is registered, not necessarily the country which owns and operates the vessel. A guide as to which ships are around the area at any given time is the "roll call" which the coastal stations transmit from time to time, when they announce the name (and often callsign) of ships for which they are holding traffic. Also to be heard are marine weather forecasts, given in great detail. These may also be heard over the U.S. Coast Guard stations such as NMN (Portsmouth, VA), NMC (Point Reyes, CA) and NMO (Honolulu) A good frequency for hearing these stations is 13113 khz. More details on Coastal radio may be found in the new shortwave frequency directory by Bob Grove.

To report to ship stations it is advisable to send a prepared card on which you simply list the date, time, frequency and station contacted. The ship radio officer will usually sign and stamp the card and return it with a photo if you have requested it. And remember: NEVER report any details of traffic, i.e. no details of telephone conversations (no names, no numbers, NO nothing!). This is against International Telecommunication rules and could get the listener into serious trouble.

Information on the owner/operator of ships is not easy to come by, nor is it cheap. You can buy the I.T.U. List of Ships from Geneva, but it is costly and does not give much data on addresses to send reports to. A good cheap source of data on the big cruise is Fords Cruising Guide, which you can find in most local travel offices.

Good DX cruising!

UNIVERSAL ELECTRONICS SHORTWAVE AND RTTY EQUIPMENT

NRD-515 Receiver and Memory Unit



PLL Digital VFO
Digital tuning
Up-Conversion
96 Channel memory
Unit-(Option)

Continuous coverage -
all modes 100Khz-30Mhz
Bandpass tuning
All solid-state
Modular Construction

NRD-515 \$1399⁰⁰ NDH 518 Memory \$279⁰⁰ NDH-515 \$229⁹⁹ Speaker \$44⁹⁹

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Direct-access digital key-touch tuning with programmable bandscan and memory. Dual conversion, quartz crystal, phase-locked loop frequency synthesis for all bands. LCD digital display, 5 step signal strength indicator.

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AEA-RO code and RTTY reader with 32 character fluorescent display .29 in. high. Copies morse, baudot RTTY, ASCII RTTY from 60 thru 100 WPM and 110-300 Baud ASCII. Ideal for beginners.

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Watch Those Voltages!

Common AC adaptors like the Grove Enterprises PWR-1 provide good filtering, but poor regulation. An adaptor rated at 12 volts @300 milliamperes, for example, may actually put out 18 volts--or more--when providing low current (30 milliamperes or so).

For this reason it is recommended that the user experiment with voltage settings for best performance of the accessory being used with the adaptor. Better yet

measure the voltage with a suitable voltmeter.

During recent tests at Grove Enterprises, we found that low-current devices like the Scanverter and Power Ant work best with the PWR-1 set at 9 volts rather than 12. Under actual measurement, the 9 volt setting puts out approximately 12 volts under the small current requirements of these lightweight accessories.

displayed on the NRD-515.

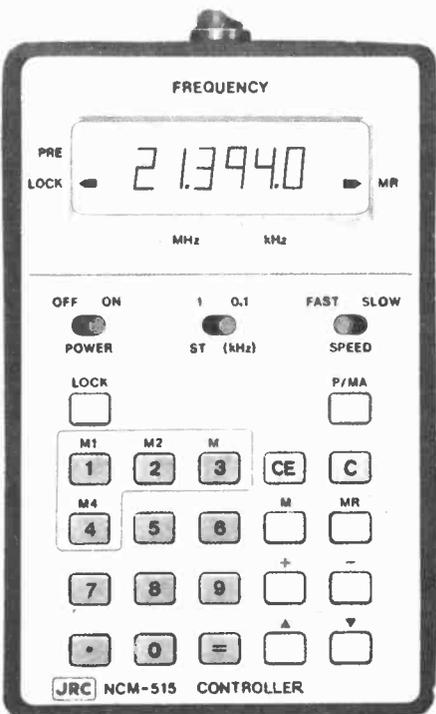
To entry a new frequency simply key it and press =. There is also an add and subtract function: If you are at 15300.0 kHz and want to move to 18350.0 kHz., simply type: +3050.0=.

Whether or not you have the NDH 24 or 96 channel memory unit you will now have the ability to store 4 frequencies in the controller itself! Simply press M and either M1 M2 M3 or M4. To recall any of the four memorized frequencies in the future, simply press MR followed by M1 M2 M3 or M4. When you turn the NCM-515 off you will not lose the memories, but turning the power off on the NRD-515 receiver will erase the four memories.

There is a LOCK key on the NCM-515 which works exactly the same as that on the NRD-515. Press once to lock, again to unlock. The status of the "LOCK" is also shown on the LCD display of the controller.

The most interesting and unexpected feature of the NCM-515 is its ability to automatically tune up or down (slew) at different rates. I found myself enjoying this feature as much as standard keyboard entry! You can slew by 1 kHz. or 100 Hz increments, in either FAST or SLOW mode. The rates of tuning through 1 MHz of bandwidth are:

	Step 1 kHz	Step 0.1 kHz
FAST	16 secs.	160 secs.
SLOW	66 secs.	660 secs.



The "SLOW" "Step 0.1" is nice for just "scanning" across the band. The keyboard input combined with the 4 tuning rates essentially eliminates any need (or desire!) to tune manually.

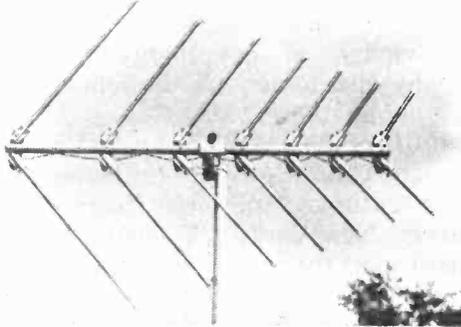
The NCM-515 also provides a very fast and efficient means to program your 24 or 96 ch. outboard memories! In summary I am sure every NRD-515 owner will want to add this convenience to his listening post.

A July delivery is expected for the new NCM-515 and cost is expected to be under \$200. Interested readers are advised to keep in touch with authorized JRC dealers.

Special Sale To Our Subscribers!

PRICES EFFECTIVE THROUGH AUGUST 31, 1982

Your Antenna Makes The Difference!



THE SCANNER'S EDGE Our World Famous SCANNER BEAM (ANT-1) - Save \$10⁰⁰

Our high-gain broadband beam is the finest scanner antenna available! We wouldn't make that statement if our customers haven't been proving it!

After two years of this product's unparalleled success, **NOT A SINGLE SCANNER BEAM HAS EVER BEEN RETURNED FROM A DISSATISFIED USER!**

Countless Scanner Beams are now in use by government, military, hams and hobby listeners.

Continuous 108-512 MHz coverage with high band gain of 6 dB and UHF gain of 8 dB provide exceptional in and out-of-band performance. Even low band reception is remarkable considering the beam's compact size.

This rugged 7-element log-periodic dipole array is only 51" long and 42" high, yet outperforms anything in its field!

Ideal for long distance public safety, government and aircraft monitoring. Also useful for amateur 144, 220 and 432 MHz applications!

Point it at your favorite target and listen to the improvement in signal strength.

Rugged mounting hardware, wideband matching transformer, weather boot and complete instructions included.

SPECIAL DISCOUNT FOR MONITORING TIMES READER... \$39⁹⁵ (Reg. \$49⁹⁵) plus \$3⁰⁰ UPS delivery or \$7⁰⁰ USPS delivery in U.S.

Suggest CBL-1 coaxial cable for use with Scanner Beam (See details in this ad)



METRO LISTENERS CLEAN UP YOUR ACT! REDUCE INTERFERENCE VHF/UHF SCANNER FILTER (FTR-3) - Save \$5⁰⁰

Our new dual-range notch filter allows simultaneous VHF/UHF rejection of interfering signals anywhere in the 76-200 and 400-512 MHz bands!

Simply connect between your antenna and scanner and tune out those troublesome aircraft, FM broadcasters, mobile telephone transmitters, weather stations and other signals that cause off-frequency overload interference on your scanner.

Only \$34⁹⁵ (Reg. \$39⁹⁵) plus \$2⁰⁰ UPS or \$5⁰⁰ USPS in U.S.

ORDER TODAY! 1-800-438-8155 (cont. US except N.C.)

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SHIPMENT WITHIN 48 HOURS OF ORDER

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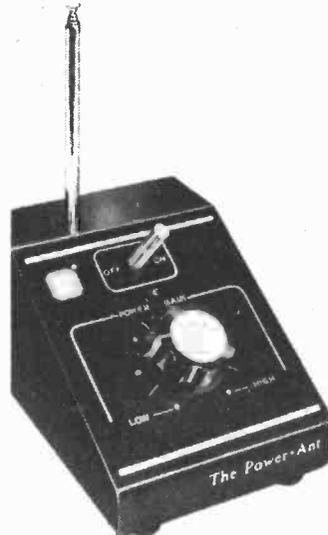
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140 Dog Branch Road, Brasstown, N.C. 28902

Products manufactured by Grove Enterprises carry a one year warranty against defects.



**IDEAL FOR APARTMENT DWELLERS!
Pre-Amp For Outdoor Antennas**



OUR FAMOUS POWER ANT Plus a Free AC Adaptor (ANT-4) - Save \$18⁰⁰!!

Two valuable receiving tools in one: a low/high/UHF active antenna and an in-line signal preamplifier.

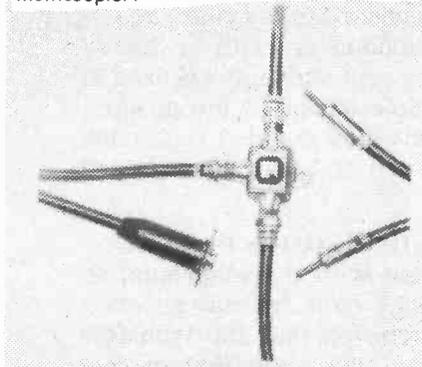
POWER ANT is designed to maximize signal reception throughout the 30-960 MHz spectrum. Use it as a stand-alone indoor antenna, or as a distance-capturing booster with your outside antennas.

A front panel control allows you to customize your amplification. Attenuate overload signals and boost VHF signals as much as 25 dB, UHF 15 dB, and even 900 MHz 8 dB!

A low noise 1.8 dB microwave stripline circuit operates from any convenient 12 volt DC source.

For our Subscribers: \$59⁹⁵ (Reg. \$69⁹⁵) plus \$8⁰⁰ for AC plus \$2⁰⁰ UPS delivery or \$5⁰⁰ USPS delivery in U.S.

THINK YOU NEED TWO ANTENNAS FOR TWO SCANNERS? Not if you use the Grove multicoupler!

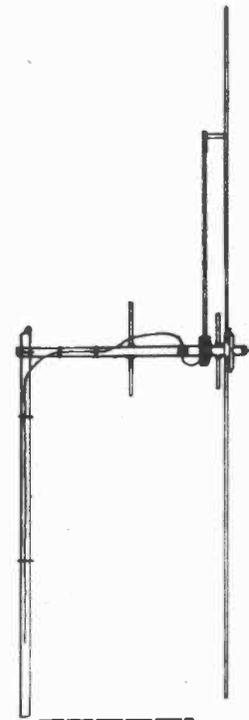


SCANNER MULTICOUPLER (CPL-1) - Save \$4⁰⁰

An inexpensive, high-performance combiner which comes fully assembled and merely plugs into your two scanners. One external antenna is all you need to efficiently operate both.

Designed for continuous 3-960 MHz applications; comes complete with extra connectors and full instructions.

\$14⁹⁵ (Reg. \$18⁹⁵) plus \$1⁰⁰ UPS or \$3⁰⁰ USPS delivery in U.S.



OMNI ANTENNA (ANT-5) Save \$5⁰⁰!

An **IDEAL MULTIBAND SCANNER ANTENNA** for non-directional 360° coverage.

This low-cost, high-performance, all-direction antenna is designed for 30-54, 108-174, 406-512 and even 806-960 MHz reception! Includes a 65-foot length of low-loss UHF RG-59U cable with all connectors and weather boot.

Maximum element length is 8 feet; convenient offset mount allows the OMNI to be affixed to any standard mast pipe.

Only \$34⁹⁵ plus \$3⁰⁰ UPS shipping or \$7⁰⁰ USPS delivery in U.S.

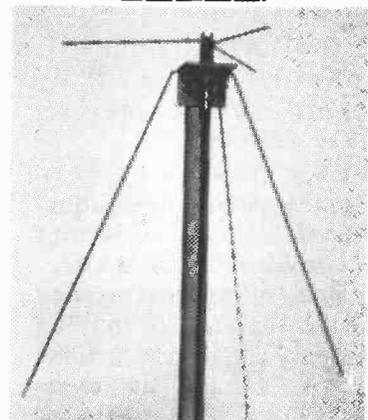


HIGH-PERFORMANCE COAXIAL CABLE (CBL-1)

A good antenna needs good coax to deliver its signal to your scanner. Be sure you get the best signal; use Grove's sweep-tested low-loss RG-59 U. 65 feet of high-quality coax.

Comes complete with Motorola and F-59 connectors and weather boot. Ideal for use with Scanner Beam.

MT subscribers save \$2⁰⁰...only \$12⁹⁵ (Reg. \$14⁹⁵) plus \$2⁰⁰ UPS or \$4⁰⁰ USPS delivery in U.S.



DISCONE (ANT-6)

For continuous VHF high/UHF frequency coverage, a discone is hard to beat. Providing 2-3 dB gain above a standard scanner dipole antenna, the discone is compact, lightweight, and has full 360° coverage--no rotator is necessary. Connects to your low-loss 50 or 75 ohm coax.

An ideal companion antenna for out-of-band scanner converters like the Grove Scanverter. Requires PL-259 (UHF) connector.

\$20⁹⁵ plus \$2⁰⁰ UPS or \$5⁰⁰ USPS delivery in U.S.

The Number Game

(Editor's Note: No subject in the annals of communications journalism has caused such speculation as the tantalizing "Spy numbers" stations. And no source of information has titillated the readers' fancies as has "Havana Moon", pen name for a highly-credible oracle on these cryptic transmissions.)

by Havana Moon

The Game Of Electronic Intrigue

EQUIPMENT

1. A general coverage receiver. (Need not be elaborate)
2. A reasonably effective antenna system.

REQUIRED SKILLS:

1. Ability to count from one to ten in Spanish.
2. Elementary knowledge of Morse. (Especially the numerals)

GAME OBJECT:

1. Intercept as many Spanish 5-digit transmissions as possible. (Often referred to as "Spy" transmissions)

WHERE TO START:

Begin your game on 4044 kHz at 0100, 0200 and 0300 week nights. At 30 minutes past these hours you'll hear a repeat transmission on 5135 kHz. The announcer is female whose hometown is not necessarily Miami or Havana. Transmission Mode is AM.

Transmissions on these frequencies are taped; we'll talk about "real-time" transmissions a little later.

FORMAT:

The format for transmissions for the 4044/5135 kHz family or circuit is:

1. HEADER

"Atencion!" XXX XX
 XXX (Identifier?)
 xx (Group count of crypt or message)

X denotes numerals

2. CRYPT OR ENCIPHERED TEXT

XXXXX XXXXX XXXXX
 XXXXX(5-digit groups in Spanish)

3. TERMINATOR

"Finale!" (also "Fin" and "adios" on the previous 3060/3090 kHz circuit)

For many years (until June, 1982) the 4044/5135 kHz format was broadcast on 3060/3090 kHz.

Only one government agency will officially admit to having knowledge of these transmissions. It's not the CIA but the ever-watchful FCC. Here's a portion of what they have to say:

"...it has been determined that the 3060 and 3090 kHz transmissions originate from a site near Havana, Cuba..."

This statement further adds to the mystery and intrigue as the majority of known numbers monitors indicate that numerous U.S. sites are involved! One such alleged site is the Washington, D.C. area.

It's only fair to point out that

the vast majority of monitors lack adequate radio direction finding (RDF) antennas.

One monitor in South Florida indicates that on occasion he had monitored transmissions at 1300, 1400 and 1500 hours. U.T.C. on 3060 kHz during the summer months with signal strengths in excess of S9! Other mornings the signal would be barely audible. Does this suggest multiple transmitter sites with some sites not so near Havana?

This individual also states that his own RDF at night--on some occasions--would indicate a bearing that would pass near Havana. Of course this radial would also pass near and through many other sites.

A LITTLE HISTORY...

Spanish numbers transmissions can be traced back to the "Bay-of-Pigs" era. Reliable monitors from that time frame indicate that just prior to that ill fated adventure, 4 digit live transmissions by a male announcer were very common. The frequency was near 3 MHz.

In addition, the 4-digit groups were liberally punctuated with four letter words. It was generally accepted that these transmissions were originating from the Miami area as well as the upper keys. It was rumored that the long-closed Richmond Naval Air Station near Perrine, Florida, was the main site. On this site now stands the new Dade Metro Zoo.

It was just a matter of time before the pro-Castroites on the island of Cuba decided to reciprocate in kind. They even threw in the same four letter words.

It would be safe to assume that the traffic transmitted by both sides was of the "disinformation" type.

One amusing transmission was overheard many years ago. A male announcer with a heavy Bronx accent suddenly sneezed in the middle of one of the groups; the poor fellow couldn't regain his composure and was never heard again!

FOR THE SERIOUS PLAYER:

Those with a background in cryptology have by now reached the conclusion that the transformation of the plain text of this traffic is by a substitution method rather than a transposition method. Further examination indicates that the system is polyalphabetic.

Experienced monitors also generally agree that the traffic is -- for the most part -- "phantom" or "dummy." This applies to the 4044/5135 kHz circuit.

On some occasions taped CW transmissions of Alpha characters in groups of five rather than numbers are heard. Only ten letters of the alphabet are used. The morse equivalents of these Alpha characters are the most easily identifiable of all the morse characters.

A=•— REVERSED—•=N

D=•— REVERSED ••=U

When all ten are reversed

they produce -- in a different order -- the same ten characters of the crypto alphabet.

Space does not permit a further discussion of cryptological procedures as they would apply to numbers transmissions. It's very likely that any detailed writing would be in direct violation of certain U.S. statutes regarding cryptological methods.

If you desire to further your knowledge of cryptology you might wish to acquire the following publication:

CRYPTANALYSIS by Helen Fouche Gaines — Write to: Dover Publications, Inc. 180 Varick Street; New York, N.Y. 10014. At last report the price was less than \$4.00 for this 230 page book.

(Editor note: See "Codes, ciphers and computers" review under "New Books" column)

One cryptological anomaly will be illustrated before concluding this segment. The incidence of occurrence of doublets and triplets in the individual groups of the 4044/5135 kHz circuit is far above average.

01123 01222

01123.....(doublet)

01222.....(triplet)

The "one time pad" must be ruled out; there is far too much similarity between groups.

OTHER FREQUENCIES AND OTHER LANGUAGES:

Following the Spanish numbers you will find the German numbers are the second most common. English numbers are monitored on a somewhat on-again and off-again manner. Some monitors have reported Serbo-Croatian as well as Korean numbers transmissions. Most are of the 5-digit variety with the 4-digit variety running a close second. Some 3-digit also have been monitored. Many German numbers transmissions are of the 4-digit variety. This is also true of the English.

For added intercepts and intrigue you might scan the high end of the 6 and 7 MHz bands. After 0500 U.C.T. on weekends their appears to be a massive traffic "dump." About once every month on the weekends at 0300Z you'll find 5-digit Spanish transmissions on the low end of the 80 meter ham band. This always causes a great deal of confusion among the hams that happen to be on the same frequency. The MARS Frequencies just above 4 MHz are also often used.

The frequency 3315 kHz is interesting in that it is used on a purely random basis and at random times. Perhaps the traffic that's being passed on this circuit is not so "phantom"!

A "real-time" Spanish transmission can be monitored on the simulcast frequencies of 5812 and 4668 kHz at U.T.C. In all probability, these numbers of the 4-digit variety are electromechanically generated. The voice of this female is linguistically sterile. She has also been reported by some monitors on this same frequency with 4-digit groups in English!

Another curious 4-digit Spanish simulcast transmission occurs on 4305 and 4670 kHz at 0300 U.T.C. on weekends. The 4670 kHz transmission is far stronger than the 4305 kHz transmission. It's been suggested by a highly reliable source that a HF repeater system is being utilized. (One transmitter keying a repeater on another frequency).

A once-a-week (Saturday) transmission occurs on 3090 kHz at 0500Z with a repeat transmission on 4024 kHz at 0530Z. Group count on this circuit is never more than 15! This is hardly "phantom traffic!"

Space does not permit a listing of the numerous frequencies where numbers transmissions have been monitored in the past. Many frequencies are only used once a month and many of the frequencies change quarterly. The frequencies mentioned in this article are known to be relatively stable with the 3060/3090 kHz circuit having been formerly active for many years. In all probability this was a training circuit as messages are repeated with enormous frequency. Messages that were transmitted as far back as 5 years ago still show up at various times. For more detailed frequencies I would suggest that you join the SPEEDX shortwave club. Their utility column with numbers loggings is one of the best around.

Due to space limitations much pertinent data was painfully deleted in my rewrite. Perhaps if favorable response is great enough, Bob will kindly consent to another in-depth article on the many "KNOWNs" in regards the numbers transmissions.

CAVEAT:

The enforcement division of the FCC has stated that numbers transmissions do have the protection of Section 605 of the Communications Act of 1934.

"Adios!"

Havana Moon

(How about it readers? Would you like to hear more from "Havana Moon"?Bob)

FLASH! SPY NUMBERS STATIONS CHANGE FREQUENCY

An alert listener has informed Monitoring Times that the famous 3060/3090 kHz Spanish numbers station went off the air following the pass of hurricane Alfredo off the western end of Cuba.

A new pair of frequencies, 4044/5135 kHz, has apparently taken their place. A schedule of new frequencies follows.

Time (UTC)	FREQ (kHz)
0000	4044
0030	5135 (repeat)
0100	4044
0130	5135 (repeat)
0200	4053
0300	4030
0330	3085 (repeat)
0400	4044 (cw)
0430	3080 (repeat)
2300	4044
2310	5135
1400	4044
1500	4044

FCC Replies To "Sensitive Frequency" Inquiry

Recently, Monitoring Times directed a letter to Robert L. Cutts, Chief, Spectrum Management Division, Federal Communications Commission. That letter read in part:

"There seems to be considerable misunderstanding among listeners as to what constitutes a 'sensitive' frequency, and whether or not sensitive frequencies are published by the International Telecommunication Union (ITU). Would you please clarify these issues for our readers?"

We are pleased to reproduce here the portion of Mr. Cutts' reply which deals with this question.

Let me begin by defining a "sensitive" frequency. It is one which the disclosure of the technical characteristics of the frequency assignment, in some cases just the frequency itself, along with the nature or content of the transmissions, either in general or specific terms, and/or the identification of the operating agency or subpart of an agency, would be denied by the Federal Government because the information was classified or otherwise not releasable under the Freedom of Information Act (FOIA). What this means is that the technical characteristics of a frequency assignment by themselves, would not result in information that would be classified or otherwise not releasable under the Freedom of Information Act. Obviously there are exceptions to this very simplified explanation but, in general, it is the linking of the operating agency and/or content of communications with a specific frequency assignment that determines whether an assignment would be classified or otherwise not releasable under the Freedom of Information Act.

With regard to the International Frequency List, administrations, including the United States, notify frequency assignments to the International Frequency Registration Board (IFRB) in accordance with the relevant provisions of the international Radio Regulations using the following guidelines contained therein:

"Any frequency assignment...shall be notified to the International Frequency Registration Board:

a) if the use of the frequency concerned is capable of causing harmful interference to any service of another administration; or

b) if the frequency is to be used for international radiocommunications; or

c) if it is desired to obtain international recognition of the use of the frequency."

While the Commission authorizes only non-Federal users of the spectrum, the Commission nevertheless serves as the International Telecommunications Union (ITU) notifying administration for non-Federal and also for virtually all Federal government operations notified to

the ITU and thence appearing in the ITU published International Frequency List (IFL). Permit me to assure you that no information known to be classified, nor even information in respect to unclassified U.S. Government authorizations not releasable under the Freedom of Information Act (FoIA), has been so notified. In fact, above 28 MHz in the mobile services by far the most common kind of notice provided by us to the ITU is no more than a typical notice. This procedure is fully in keeping with the treaty obligation set forth in No. 490 of the international Radio Regulations. Such a typical notice need specify only the broadest technical parameters, e.g., frequency, state or states wherein the frequency may be used, a general power level, indications that the assignments so typified are in the mobile service, and the like. Characteristics which might serve to identify certain Federal agencies, or in the converse, to eliminate certain agencies as possible operators of the assignments in question, are not provided by typical notices inasmuch as individual notices of each and every land station and mobile station assignment need not be notified to Geneva. I select this example in that it would appear that much of your interest is devoted to the mobile services above 28 MHz.

The resulting entries in the Master International Frequency Register, when published as the International Frequency List, become part of the public domain. The information contained therein is not by itself sensitive. It is only when that information is coupled with other information, that information of a classified nature or not releasable under the Freedom of information Act may possibly be disclosed.

The notices of this Administration with the exception of only radio astronomy and non-government space radiocommunications are submitted without an indication of the operating agency or company. There is no information about specific content of transmissions. Consequently, any linkage of an International Frequency List entry to a specific agency may be established only by using information not in the International Frequency List. This point should be clearly borne in mind whenever you attempt to identify an assignment by linking International Frequency List information to a particular agency or type of transmission such as a "spy" station.

I would also caution you and your readers from making the assumption that because a particular agency is operating on a frequency in one area, that agency would operate on that frequency in all areas. All Government Agency frequencies are not uncommon. Even more common is the agreement by one agency to allow a second unrelated agency

to use the former's planned channel in a given area or areas.

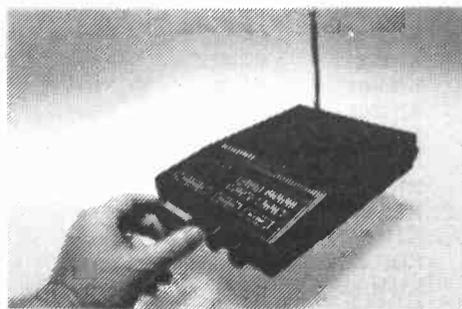
I hope that you and your contributors plus your readers are cognizant of Section 605 of the Communications Act is in alignment with the treaty obligations set forth in Article 17 of the international Radio Regulations which states:

Article 17
Secrecy

722.... The administrations bind themselves to take the necessary measures to prohibit and prevent:

723..... a) the unauthorized interception of radio communications not intended for the general use of the public;

724..... b) the divulgence of the contents, simple disclosure of the



New Fox Programmable Has Unique Features

Fox Marketing, Incorporated of Dayton, Ohio has announced their "Fox-Pac" programmable scanner. Compact, the new scanner is activated by the insertion of interchangeable frequency modules, available in pre-programmed banks of 20, 50 or 100 channels each.

Three models of the Fox-Pac are available: the 100 FXR (100 channels), 50/100 FP (An additional 50 channels) and 50/100 AP (adds aircraft band).

Delivery is expected this month (July); a fully-programmable version is expected to be released late this year.

(Fox 100 FXR scanner, \$229.95 from authorized dealers).

Regency Electronics Sold

Amidst a flurry of rumors, Regency Electronics, a prominent manufacturer of scanning receivers, was sold to the Reading Company, a well-known diversified investment organization.

According to Floyd Ritter, Chairman of the Board of Regency, there will be no change whatever in programs or personnel. He asserts that Regency will continue its present efforts in the consumer market.

At this writing final ratification was expected at a June 30 shareholders meeting, with consummation of the takeover expected in 30 days in accordance with Indiana state law.

existence, publication or any use whatsoever, without authorization, of information of any nature whatever obtained by the interception of the radiocommunications mentioned in No. 723.

I hope that the above has been responsive to your questions.

Sincerely
Robert L. Cutts, Chief
Spectrum Management Division

We would like to thank Mr. Cutts for his professional courtesy in replying to our inquiry.



RTTY GUIDES FOR SERIOUS MONITORING



by Joerg Kligenfuss, internationally renowned expert on radioteletype reception.

RTTY FREQUENCY GUIDE (Expanded 7th edition) The ultimate directory for tuning in news agencies, weather broadcasts, military communications, embassies and telegrams worldwide.

Over 2000 RTTY frequencies, 3-30 MHz, identified by location, agency, callsign and schedule. 50 pages (8 1/2" x 11").

BOK-12 Only \$11.95 including shipping (book rate in US)



RTTY CALLSIGN DIRECTORY (New publication) Worldwide collection of some 3000 callsigns to help you identify those elusive RTTY stations encountered on the air.

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

A handy reference guide for every RTTY enthusiast. 52 pages (5 1/2" x 8 1/2").

BOK-14 Only \$6.00 including shipping (book rate in US)

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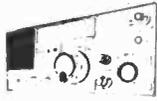
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Behind The Scenes At Walt Disney World

We would like to thank reader John Pierce of Kissimmee, Florida for the most comprehensive list of Disneyworld frequencies to cross this desk.

Call Sign	Freq. MHz	Net	Transmitter	Use
KAA8101	462.625	OPS III	Space Mt.	Transportation
KAA8102	467.625	OPS III	Castle	Transportation
KAA8103	462.650	Maint. I	Castle	Custodial, Landscape
KAA8104	467.650	Maint. I	Castle	Custodial, Landscape
KAA8207	462.575	OPS II	Space Mt.	Monorail
KAA8208	467.575	OPS II	Castle	Monorail
KAA8209	462.675	Maint. II	Castle	Theme Park Maint.
KAA8210	467.675	Maint. II	Castle	Theme Park Maint.
KAA8211	462.550	OPS I	Space Mt.	Pagers
KAA8212	467.550	OPS I	Space Mt.	Security
KUL 487	464.400	SEC I	Space Mt.	Security
KUL 487	469.400	SEC I	Admin. Twr.	Security
KUL 489	464.125	SEC II	Admin. Twr.	Security
KUL 489	469.125	SEC II	Admin. Twr.	Security
KUM 848	464.800	Taxi	Space Mt.	Int. Transportation
KUM 848	469.800	Taxi	Space Mt.	Int. Transportation
KUL 488	461.600	Resorts	Space Mt.	Ft. Wilderness
KUL 488	466.600	Resorts	Space Mt.	Ft. Wilderness
KUR 462	463.975	Ent.	Space Mt.	Entertainment
KUR 462	468.975	Ent.	Space Mt.	Entertainment
KUL 486	464.625	Utilities	Space Mt.	Reedy Creek Utility Co.
KUL 486	469.625	Utilities	Space Mt.	Reedy Creek Utility Co.
KRT 729	453.825	Fire	Space Mt.	Mutual-Aid
KN6223	458.825	Fire	Space Mt.	Mutual-Aid
KN3604	458.875	Fire	Space Mt.	R.C.F.D.I
KN3604	458.925	Fire	Space Mt.	R.C.F.D.II
KRO 332	453.875	Fire	Space Mt.	R.C.F.D.I
KRO 332	453.925	Fire	Block House	R.C.F.D.II
KRW 819	157.740	Hotel	Cont.	Hotel Pagers Only
KUJ 399	151.895	Subs	20,000 Leagues	Submarines
KJU 650	151.655	Const	Admin. Tower	BVC Construction
KQP 477	154.430	Fire	Admin. Tower	Inter-City Fire
KRM 753	155.370	Police	Admin. Tower	Inter-City Police
WSP 68	12.450	GHZ	Cont. Hotel	To L.B.V.
WQU 90	12.210	GHZ	Small World	To Cont. Hotel
KCR3548		CITIZENS BAND		

If you are taking a trip to the fabled kingdom this summer, listen in to the reality behind the fantasy.

NOTICE TO OUR READERS: While every attempt is made to answer the barrage of questions which come in, the cost of postage is staggering.

To be sure of a reply to your questions, be sure to include a self-addressed stamped envelope.

"The Number You Have Reached..."

There are some 70 automatic intercept systems (AIS) throughout the United States. Virtually all of them use Western Electric equipment, and of those, two Atlanta companies, Autochron and Weatherchron, produce nearly all of the recorded announcement drums.

In most cases, the recorded voices are analog, not digital, and belong to professional announcers. Similar systems are used for recorded messages on the air as well. WWV, CHU and even the "spy numbers" stations use these recording systems.

The voice of Don Elliot, a former Atlanta radio announcer (WSB), is heard on the WWV time messages. That Autochron system is also found in nearly two dozen AIS installations for telephone companies nationwide, utilizing the voice of Jane Barbe, who was featured on a recent Real People segment.

Ellis Bryant, president of Weatherchron Company, is understandably proud of his company's thrust into the recorded announcement field. At least 60 AIS installations are Weatherchrons, including that of the US Naval Observatory (202-254-4950), considered the most accurate time standard in the world.

Incidentally, the voice at the Naval Observatory belongs to freelance announcer and actor Fred Covington, most recently noted for his role as the slave auctioneer in "Roots". His voice is also heard in dozens of cities throughout the Northeast on recorded telephone messages.

Another popular voice heard on Weatherchron intercept systems is that of another Atlantan, Joanne Daniels. Her melodic intercept message is encountered all over the country!

Finally, a digital message is also available. It is stored as binary bits of memory on a 64K ROM chip as ten numerals. The owner of the voice on a chip? Maureen McDermott.

How's that for an excursion into trivia?

NASA Proposes Land Mobile Satellite System

The National Aeronautics and Space Administration (NASA) is seeking two 10-MHz blocks of the 800 MHz UHF high band for mobile-to-satellite-mobile interlinking. Satellite-to-fixed earth station interlinking would be accomplished in the 2500-2690 MHz band.

NASA claims it has already demonstrated the feasibility of such a system during the Mt. St. Helens disaster when it used the Applied Technology Satellite ATS-3. At that time an Air Force jeep from the 303rd Aerospace Rescue and Recovery Squadron was used for search and rescue operations. The jeep was equipped with satellite communications gear.

ATS-3 is still used by many oceanographic and educational institutions; their daily nets usually begin on the hour, most commonly on channel 2 (135.575 MHz downlink) using narrow band frequency modulation (NBFM).

Public safety organizations

have also shown interest in the proposed mobile satellite system. The Federal Emergency Management Agency (FEMA) and the Associated Public Safety Communications Officers (APCO) feel that the new system would be ideal for coordination of their nationwide activities.

More specifically, NASA requests that the present cellular land mobile allocation (825-845 MHz) be shifted up to 831-851 MHz, next to the 851-866 MHz safety and special base station service.

Correspondingly, the cellular base station allocations would be shifted up from 870-890 MHz to 876-896 MHz.

The net result of the shifts in allocations would be the availability of two 10 MHz swaths of spectrum on either side of the new cellular mobile/base displacements. It is NASA's proposal that these frequencies be assigned to the Integrated Terrestrial Land Mobile Satellite System (T/LMSS).

User Fined For Transmitting Federal Band

Vicky's Record and Gift Shop in Hialeah, Florida recently forfeited a \$750 fine for operating a two-way radio system on 148.165 MHz, a frequency within the federal government 148.0-150.8 MHz block.

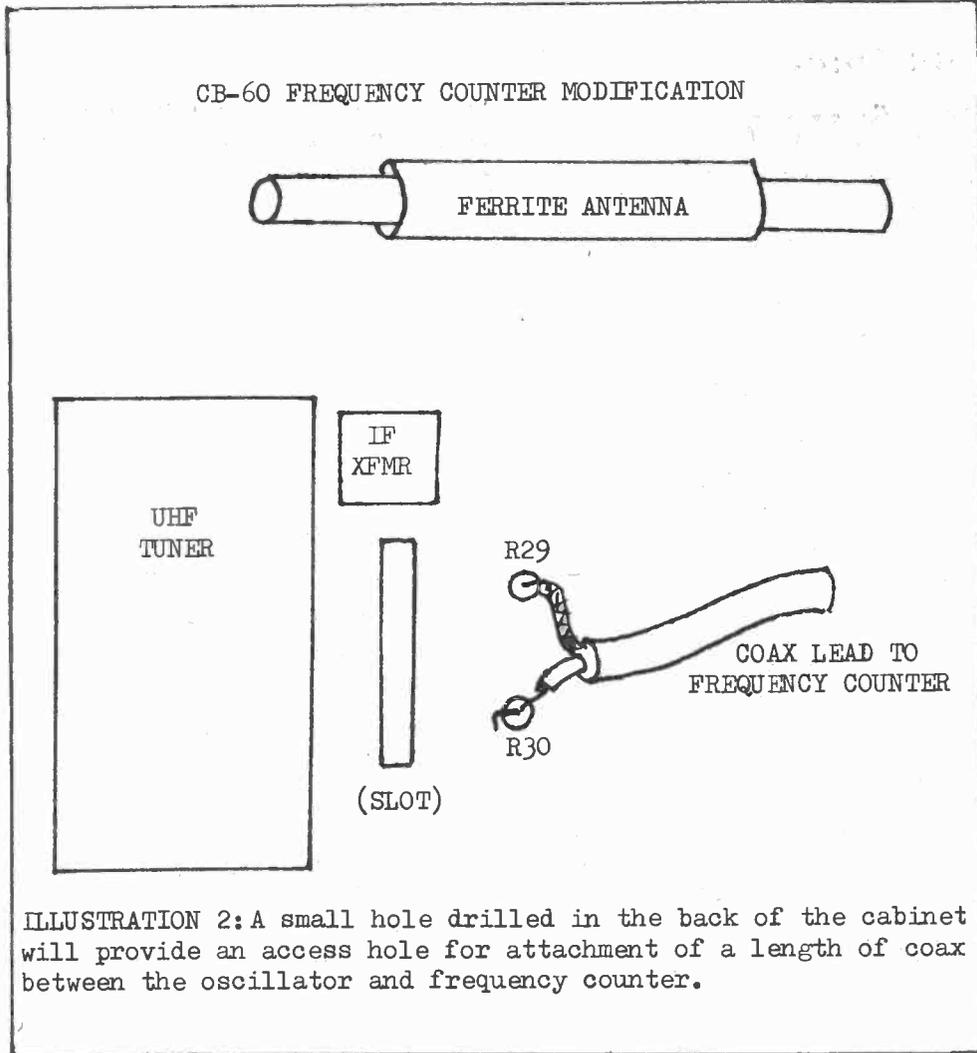
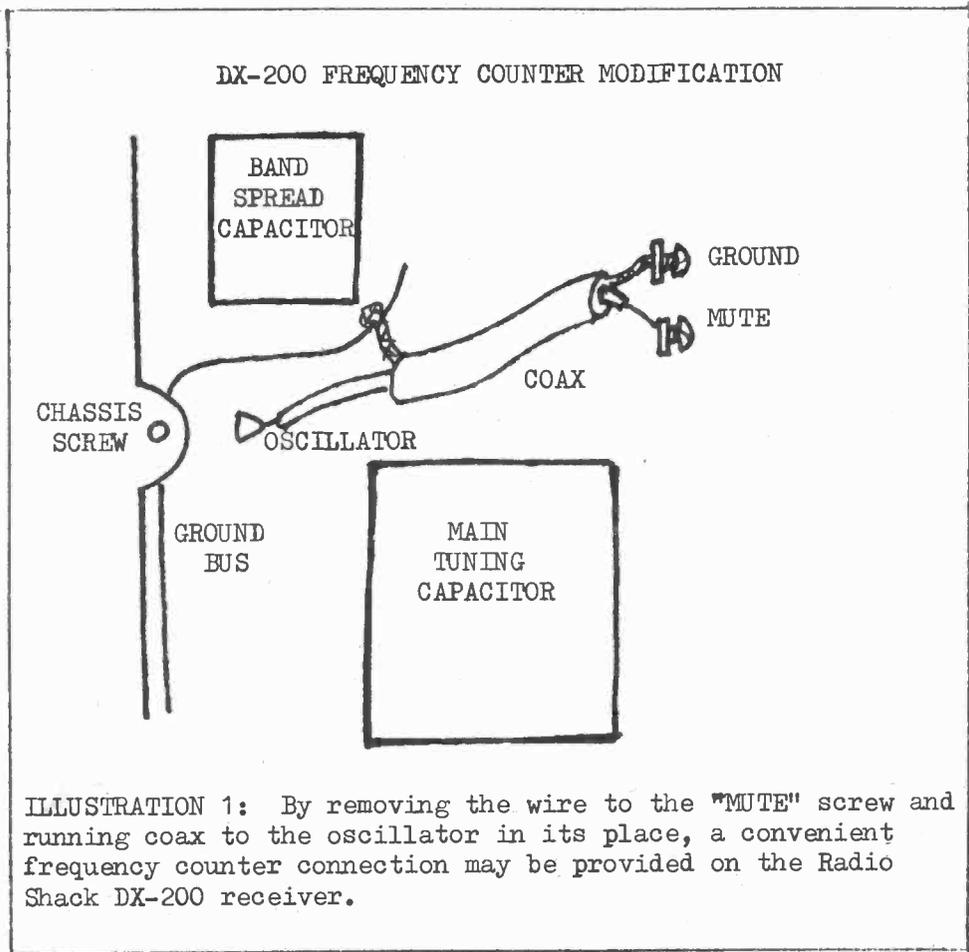
The source of interference was registered with the FCC by the Florida wing of Civil Air Patrol which normally has a repeater output on an adjacent frequency, 148.150 MHz.

(Editor's note: We are pleased to reprint the following letter from reader and monitor Ricky Tharrington of Wilmington, N.C.)

Frequency Readout Modifications

The illustrations which accompanied David O'Neil's article on page 15 of the May/June issue

did not reproduce well. Reprinted here are the two illustrations in a much more readable form.



Good News On CVR-1

After using the CVR-1 for two months, and making a few antenna modifications, I have found that this converter is the best available at this point in time.

Through trial and error, I found an antenna preamp is essential to increase the converter's signal sensitivity. With the help of the pre-amp I have increased by listening area at least two-fold.*

For my antenna, I have a half-wave ground plane, 65 feet above the ground. Electrically, I have the antenna cut for 343.000 mhz which is the center of my listening coverage area. The pre-amp's located 6 inches below my antenna. 75 feet of RG-8/U coax is fed from the CVR-1 to the input of the scanner. I ran a separate 12-volt power supply line up to feed my pre-amp. This line also powers my CVR-1 unit. The power supply I use is a 400 ma., 12 volt DC power supply.

With installation complete, I can now tell you of my listening success. I am located on the southeast coast of North Carolina, centrally between Seymour Johnson Air Force Base, Cherry Point Marine Corps. Air Station, and the Myrtle Beach Air Force Base. Polk Air Force Base is also within my listening area. An Abundance of air-to-air tactical military training is performed in this area, which includes dog-fights, live firing and air-to-air refueling missions.

I have been able to identify many of the frequencies encountered through references such as 1) Federal Frequency Directory by Robert B. Grove and 2) The 'Top Secret' Registry of U.S. Government Radio Frequencies by Tom Kneitel. Others I have discovered on my own through monitoring.

A station that particularly comes to mind is called "Giant Killer" operating on 310.1000 mhz. Giant Killer seems to be some

type of control aircraft or AWAC-type aircraft giving F-15's their targets (Bogies), which simulate hostile aircraft penetrating U.S. airspace along the coast.

I have found that 311.000 mhz is an action-packed frequency. Air-to-air refueling missions are numerous on this frequency. Air-to-air combat training is also abundant on this frequency. It also seems to be paired with another frequency from time to time. This frequency is 41.700 mhz FM, which is the transmitter Boom Operators frequency aboard a tanker.

There is always something to listen to as the local airport military frequency and Washington Center are very active.

In closing, I have enclosed a list of some of the other frequencies I have been able to receive with the CVR-1. These help to confirm that my monitoring capabilities have increased immensely.

Ricky R. Tharrington
Wilmington, North Carolina

(NOTE: All Scanverters (CVR-1A) now include a built in preamplifier at no extra cost.)



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FCC Allows Scrambling On Business Bands

Digital voice privacy systems are now allowed on all part 90 services. The FCC recognizes the need for secure communications among industrial security, oil exploration and many other services vulnerable to unfair utilization of

intercepted communications.

While such station are permitted unrestricted use of such scrambling systems, call sign identifications in clear voice are still required.

HIGH TEST ELECTRICITY FOR ELECTRIC CARS? OHM'S LAW DOWNGRADED TO OHM'S OPINION? SPRINKLERS PREVENT FIRE IN 20 METER BAND?

Over the last several years, the Dayton Hamvention has been the distribution point for the GEARVAKf BULLETIN, a tongue-in-cheek look at communications.

Edited by Joe Ventolot K8DMZ, the GEARVAKf BULLETIN has brought smiles to thousands of readers. A sampling of previous articles describe how one of the new WARC-79 bands was stolen, how a devastating fire broke out in the 20-meter ham band, the use of nylon fishing line as an invisible antenna, and other imaginative satire.

For a sample copy, send \$1 and an SASE to Joseph A. Ventolo, Jr., K8DMZ, 356 Coronado Trail, Enon, OH 45323.

Receiving Shortwave...

Interested In Military Communications?

The U.S. Army Signal Corps Association was formed to recognize the proud history of the Signal Corps and to preserve its ever-evolving history for posterity. In accomplishing this goal, recognition will be given to signal soldiers, civilians and signal units for outstanding achievements.

Members of the Association represent many skills and skill levels and share a background of highly specialized training and working together as an integrated team. Here is a chance to join other communicators like yourself.

Membership in the Association is open to anyone who is interested in military communications.

Members of the Association receive copies of the Army Communicator, the Voice of the Signal Corps, as a benefit of membership. This professional journal contains timely articles on worldwide communication developments. Here is an opportunity to learn what the Signal Corps is doing today and what is in store for the future.

Additional information and applications for membership are available by contacting: SIGNAL CORPS ASSOCIATION, P.O. BOX 7740, Fort Gordon, Georgia 30905.

Without A Shortwave Receiver!

By John H. Demmitt

If you have no shortwave receiver and want to listen in on shortwave broadcast stations, here is a simple way to do it using an inexpensive signal generator and a TV set!

Connect the output probe of the generator to the antenna terminals of the TV set. Connect a length of wire—about fifty feet—to the same terminal as the “hot” connection from the probe. Ground the other terminal (or connect another 50 feet of wire there to make a dipole).

Set the TV channel selector to channel 2 (54-60 MHz) and the signal generator to the band which covers that range. You may

have to set the generator output to a fairly high level; experiment with the level while slowly tuning the frequency control of the signal generator back and forth listening for the best signals.

A log of stations in order as they are received may assist you in accurately determining the frequencies; some will be announced on the hour or half hour.

You may wish to make a chart of frequencies, assigning each frequency a logging number from that scale of the signal generator for more accurate reference later.

Anyone needing additional information may contact me and I'll be happy to provide assistance. (John H. Demmitt, Box A K0848, Bellefonte, PA 16823).

Air Force UFO Investigation Still Active

Any anonymous tip from Wright-Patterson AFB, home of the historical Project Bluebook, says that UFO investigation is still proceeding under a new code name.

Additionally, a radio network exists for the coordination of sighting information. Any of our readers have details that might help fill in the gaps in this intriguing report?

Federal Agencies To Use 800 MHZ?

The National Telecommunications and Information Administration (NTIA) has requested from the FCC co-channel usage with non-government assignees two segments of the 800 MHz band.

Sharing of the 899-902 and 938-941 MHz spectrum was deemed necessary by several federal agencies for Coast Guard law enforcement and search and rescue, interlinking of other law enforcement agencies, flood warning monitoring systems for the US Ar-

my Corps of Engineers, and power line monitoring by the TVA. Even the Department of Defense is considering the band for data transmission at test sites.

Still to be ironed out, assuming the federal users get their way, are technical and administrative decisions such as frequency pairing, emission standards, interference protection and assignment coordination.

Monitoring Times will alert our readers as to progress on this new swath of spectrum.



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

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

And when it comes to answering these kinds of questions, no amateur radio magazine has a better track record than **73**. Just ask our readers, and they'll tell you—**73** keeps them "in the know." And now you can be in the know by subscribing to **73 Magazine**. 12 monthly issues are only \$19.97, a small price to pay when you consider the wealth of information you'll be receiving in return. Fill in the coupon and mail it to **73**. Or call 1-800-258-5473. You'll be glad you did. And so will we.

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Television Channel Frequencies

Channel No.	Freq. Limits				
		P 543.25	26	542	P 717.25
		S 547.75		548	S 721.75
					P 723.25
		P 549.25	27	554	S 727.75
		S 553.75			P 729.25
P 55.25	2	P 555.25	28	560	S 733.75
S 59.75		S 559.75			P 735.25
P 61.25	3	P 561.25	29	566	S 739.75
S 65.75		S 565.75			P 741.25
P 67.25	4	P 567.25	30	572	S 745.75
S 71.75		S 571.75			P 747.25
		P 573.25	31	578	S 751.75
		S 577.75			P 753.25
P 77.25	5	P 579.25	32	584	S 757.75
S 81.75		S 583.75			P 759.25
P 83.25	6	P 585.25	33	590	S 763.75
S 87.75		S 589.75			P 765.25
		P 591.25	34	596	S 769.75
		S 595.75			P 771.25
P 175.25	7	P 597.25	35	602	S 775.75
S 179.75		S 601.75			P 777.25
P 181.25	8	P 603.25	36	608	S 781.75
S 185.75		S 607.75			P 783.25
P 187.25	9	P 609.25	37	614	S 787.75
S 191.75		S 613.75			P 789.25
P 193.25	10	P 615.25	38	620	S 793.75
S 197.75		S 619.75			P 795.25
P 199.25	11	P 621.25	39	626	S 799.75
S 203.75		S 625.75			P 801.25
P 205.25	12	P 627.25	40	632	S 805.75
S 209.75		S 631.75			P 807.25
P 211.25	13	P 633.25	41	638	S 811.75
S 215.75		S 637.75			P 813.25
		P 639.25	42	644	S 817.75
		S 643.75			P 819.25
P 471.25	14	P 645.25	43	650	S 823.75
S 475.75		S 649.75			P 825.25
P 477.25	15	P 651.25	44	656	S 829.75
S 481.75		S 655.75			P 831.25
P 483.25	16	P 657.25	45	662	S 835.75
S 487.75		S 661.75			P 837.25
P 489.25	17	P 663.25	46	668	S 841.75
S 493.75		S 667.75			P 843.25
P 495.25	18	P 669.25	47	674	S 847.75
S 499.75		S 673.75			P 849.25
P 501.25	19	P 675.25	48	680	S 853.75
S 505.75		S 679.75			P 855.25
P 507.25	20	P 681.25	49	686	S 859.75
S 511.75		S 685.75			P 861.25
P 513.25	21	P 687.25	50	692	S 865.75
S 517.75		S 691.75			P 867.25
P 519.25	22	P 693.25	51	698	S 871.75
S 523.75		S 697.75			P 873.25
P 525.25	23	P 699.25	52	704	S 877.75
S 529.75		S 703.75			P 879.25
P 531.25	24	P 705.25	53	710	S 883.75
S 535.75		S 709.75			P 885.25
P 537.25	25	P 711.25	54	716	S 889.75
S 541.75		S 715.75			

P = Picture Carrier Freq.

S = Sound Carrier Freq.

All frequencies in MHz.

Fig. 76.

Ever wonder what UHF TV frequencies go with which chan-

nels? Reader Allan Nesteruk shares this list with us.

CLUB NEWS

NASWA (North American Short Wave Association) The official publication of NASWA is **FRENDX**, a densely-packed collection of articles related to international broadcasting. Schedules and interviews are included and occasional equipment reviews as well.

For a sample copy send \$1 to NASWA, PO box 13, Liberty, IN 47353.

INTERNATIONAL DX'ERS CLUB OF SAN DIEGO

Written almost entirely by its prolific editor, the monthly bulletin is loaded with equipment reviews, as well as interesting sidelights. For a sample copy, send \$1 to International DX Club of San Diego, 1826 Cypress St., San Diego, CA 92154.

SENIOR CITIZENS AMATEUR RADIO SOCIETY

A new publication, Mike and Key, has just been distributed for the purpose of encouraging the use of radio as a hobby among active seniors. While ham radio is the strongest persuasion, other aspects of the hobby are included. For a sample copy of Mike and Key, write: Senior Citizens Amateur Radio Society, 944 Shaffer Rd., Newfield, NY 14867.

EMERGENCY NOTIFICATION ASSOCIATION OF METROPOLITAN NEW YORK

(ENANY) A non-profit amalgam of serious scanner enthusiasts, ENANY members monitor scanner bands of interest and alert fellow members via 2-way radio of particularly interesting developments. Diehard scanner buffs may inquire by writing ENANY New Jersey Operations, PO box 741, Ridgewood, NJ 07451-0741, or ENANY New York Operations, PO box 368, NY, NY 10013-0368.

SCANNING DALLAS/FT. WORTH

Conceived to cater to scanner enthusiasts in the Dallas/Ft. Worth area, SDFW distributes a monthly organ of local activity and interesting sidelights. For a sample copy and

membership information, write Dallas/Ft. Worth Chapter of RCMA, 1111 N. Carrier Parkway, GrandPrairie, TX 75050.

ARCTIC DX A specialized group of Arctic Circle communications listeners, Arctic DX'ers share a column in the monthly Canadian International DX Club (CIDX) bulletin featuring logsheets of intercepted radio operations from that frigid part of the globe, as well as Antarctica.

For a sample copy send a self-addressed stamped envelope to: Bob Curtis, 17 Cobbleview Dr., Colchester, Vermont 05446.

MIAMI VALLEY DX CLUB

Founded in 1973, this group's monthly DX World contains bits and pieces from all over the radio spectrum. Annual dues are \$5 a sample copy of their newsletter is available by sending seventy-five cents to: Dave Hammer, 4666 Larkhall Lane, Columbus, OH 43229.

ALL OHIO SCANNER CLUB

Concentrating on statewide Ohio scanner monitoring, AOSC publishes a monthly newsletter catering to a variety of listening interests.

A sample copy of their newsletter may be obtained by writing AOSC, 104 Mapelwood, Mt. Vernon, OH 43050.

HANDICAPPED AID PROGRAM (HAP)

To insure the delights of the radio hobby to physically-handicapped and homebound individuals, HAP actively acquires equipment, publications and other vital accouterments of the hobby for use among its members.

HAP works closely with many clubs which support their worthwhile activities. Readers who feel they would like to participate in their vital program are invited to write HAP, 460 Emmett St. B-19, Bristol, CT 06010.

INTERNATIONAL RADIO CLUB OF AMERICA (IRCA)

Specializing in AM broadcast band DXing, IRCA publishes DX Monitor 34 times per year. Equipment and techniques are

highlighted. For more information and a sample copy, write IRCA, PO Box 26254, San Francisco, CA 94126.

BROOKLYN DX CLUB

Established in 1975, BDXC publishes several helpful fact-sheets of benefit to shortwave listeners, including a monthly newsletter. Membership is \$6 per year. For more information, write BDXC, 1137 E. 12th St., Brooklyn, NY 11230.

NATIONAL RADIO CLUB

(NRC) Founded in 1933, NRC is the oldest and largest medium-wave listening club. A large selec-

tion of listening-aid packets is available from NRC. For a sample membership packet, write NRC, PO box 118, Poquonock, CT. 06064.

ONTARIO DX ASSOCIATION

(ODXA) Started in 1974, OTDXA is open to Ontario radio hobbyists. Membership is \$12 per year, entitling the member to receive the monthly DX Ontario bulletin. For more information, write ODXA in care of Harold T. Sellers, 3 Camrose Crescent, Scarborough (Toronto), Ontario, Canada, M1L 2B5.

Listen In On VHF/UHF Press Relays

By Mike Cooper, Atlanta, Ga.

My colleagues in the news-gathering end of broadcasting would no doubt disapprove of my publicizing fact, listening to the two-ways of the news departments of local radio and television stations is to me some of the most entertaining and exciting scanner listening.

Most major cities are blessed with a plethora of frequencies assigned to local radio and television stations, and to newspapers. Radio stations sometimes use two-way units to feed a report live from the scene of an event. They also generally use these frequencies for transmitting traffic reports from helicopters during the morning and evening rush hours. Television stations need to use their two-ways to direct news crews to the places where news is happening, as well as discuss the stories involved.

As a result, you can get a good idea of news events by listening to these frequencies. In fact, most major television stations have someone who spends much of his time doing the same thing we scanner listeners do. In an attempt to find out when news is happening, an assignment editor will monitor dozens of local police, fire, and other frequencies. And when the assignment editor learns that something is going on, he'll usually radio a news crew that is already out in the field that they need to be somewhere to investigate the story.

Many radio and television stations are vaguely aware that others may be listening, including the competition. But when news is breaking fast, they can't wait for a news reporter in the field to find a telephone so that the information can be passed along in a private manner. Instead, they are forced to spell out all the details of the story and it's location. Sometimes, you'll hear references to "that story we talked about this morning," or "that story that we don't want to say too much about," but in many instances, the time won't allow that sort of exchange. In fact, in this city, it is quite apparent that the various radio and television stations do a poor job of monitoring each others' transmissions. You'll often hear one station discussing the location and details of a story for some time, before the other station, an hour or two later, suddenly will be heard saying "we just heard there's a big fire, and we better get down there."

In fact, here in Atlanta, when the series of murders of young people took place, local two-way frequencies were almost constantly hopping. Even the national networks could be heard when they sent their news crews to Atlanta.

In addition to listening in on the newsmaking process in action, it's also kind of fun to watch the evening news while listening to that television station's two-way. You'll hear cueing instructions, idle chatter, and very excited voices when something goes wrong. And you can even hear highly-paid television newsmen act a little less professional than they should, such as a recent instance here when a reporter was so upset that his "live" spot on the noon news was cancelled that he began swearing on the air, demanding to know "who made that decision," as the personnel at the station unsuccessfully tried to calm him

with pleas that "the two-way is not the place to discuss this!"

On the receiving end, it's nice to be able to hear a radio station's traffic reports without having to put up with the rest of the idle chatter that you'd hear on the broadcasts.

Some radio stations use their two-ways for remote broadcasts from sponsors. In one town the radio station would simply leave the two-way on during the entire remote, regardless of whether they were on the air. As a result, you could hear the announcers discussing the attributes of females walking by, and giving their opinions about the way certain people ran their place of employment.

Even if your town isn't that large, there's a good bet that your local television station makes use of a two-way. If you hear live reports from news events where the radio station would not have been able to find a phone line, it's a good bet the station has a two-way.

Not to be overlooked are transmissions from two-ways operated by your local newspaper. While some newspapers use their frequencies for the rather unexciting purpose of reading addresses where subscribers missed their papers, they are also just as often used to send photographers to news events.

The best frequencies to look for these transmissions, are:

On VHF: (simplex) MHz
161.64, 161.67, 161.70, 161.73, 161.76, 166.25, for radio stations
173.225, 173.275, 173.325, 173.375, for newspapers.

On UHF: (using repeaters)
450-451 MHz, and 455-456 MHz, generally used by television, and sometimes by radio.

Since repeaters are usually mounted with their antennas at a high location, you'll be able to hear reporters far away in the field.

Here in Atlanta frequencies are used by each network television station and four or five frequencies are assigned to radio stations.

One local radio station believes it has solved the problem of uninvited eavesdroppers. If sensitive information is to be discussed between employees, instead of using the two-way, the reporter calls the station on his mobile telephone. But those of us who monitor actively don't mind switching to the mobile telephone frequencies to hear the conversation.

In another amusing incident, I heard one news crew being asked by it's base: "Are you somewhere where nobody can hear you?" Which brought the reply: "Oh, yeah, we're parked here with all the windows rolled up, and the air conditioner turned on full." The two parties then proceeded to have a discussion about a competing television station that certainly wasn't meant for outside ears.

Obviously, all of these transmissions are subject to the usual rules against disclosing their contents. But, quite often, you'll be able to watch the evening news or hear a report on the radio, and then, when the details of the day's biggest news story are read, be able to say: "Oh yeah, I knew that hours ago," when everyone else is learning about the story for the first time.

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"Meeting the LF Challenge"

By John Edwards, K12U

Where do you look for your challenges in monitoring? If you're like many, you're probably heading up in frequency—VHF, UHF, SHF, satellites, TVRO and all the rest. But have you ever thought about the other end of the spectrum? That's where I began tuning after run-of-the-mill short-wave listening began to lose its thrill for me.

Until recently, the biggest challenge facing the potential LF listener existed in finding a receiver that would tune the frequencies in question. Since most conventional receivers covered nothing lower than the standard broadcast band, most LFs were forced into converting old military gear or homebrewing their own equipment. Today, the

situation is considerably brighter. An entire new range of receivers and converters are on the market that not only cover the frequencies in question, but run rings around the equipment of only a few years ago.

I got my first taste of low frequency radio about five years ago when I picked up a vintage Hammarlund Superpro at a local fleamarket. A proverbial boat anchor, the Superpro wasn't the world's prettiest receiver, but it did do a remarkable job of covering the spectrum all the way down to 10 kHz. Today, my rig of preference is Sony's space-age ICF-2001 digital receiver. Although it only goes down to 150 kHz, it's a lot more sensitive than my tube-driven Hammarlund. And since most LF activity lies above 100 kHz anyway, I find the rig a dream.

Listening on the LF bands has always been a hit or miss proposition. Problems that SWLs take in stride can cripple their LF brothers. Consider, for example, the problem of noise. Whether it's natural or man-made, the noise on these frequencies can blow the headphones off of a listener's head. Even on crisp winter evenings (the best time for LF DXing) power line interference, AM broadcast images and other howlings and squeals can make the LFs life pure hell—all a part of the LF challenge.

Stock Exchange

NOTE: Monitoring Times assumes no responsibility for misrepresented merchandise.

SUBSCRIBER RATES: \$1.10 per word, prepaid. All merchandise must be listening related.

J.I.L. SX-200 scanner, 16 channels, selectable AM/FM, RIT, three level scan delay and squelch, quartz clock, AC/DC power, sensitivity 0.4-2 microvolts, new, lists \$550; yours for \$435. Call Dom Isabella 215-627-5073 after 5 PM or write 806 South 7th Street, Philadelphia, PA 19147. Check OK.

JIL SX-100 scanner, 16 channels, 30-54 MHz, 140-174 MHz, 410-512 MHz, FM Dual seek and scan; variable scan delay; AD/DC power, clock, 0.5 microvolt sensitivity, new, \$260. Call Dom Isabella 215-627-5073 after 5 pm or write 806 South 7th Street, Philadelphia, PA 19147. Check OK.

Kenwood HF Receiver, R-1000 with AC/DC supply; outstanding RX sensitivity and selectivity, wide and narrow AM filters; FM and USB-LSB-CW; new \$370. Call Dom Isabella 215-627-5073 or write 806 South 7th Street, Philadelphia, PA 19147. Check OK.

Hammarlund HQ-140A receiver. Good Condition. \$130 Ed (919-489-2164)

1982 NC Radio-TV guide. An alphabetical listing of all NC radio-TV stations by cities and call letters, including dial location, power, network affiliation and music format. Send \$2.50 to: Radio Guide (Ed Best), 2004 University Drive, Durham, NC 27707.

Call	Location	Frequency (kHz)	Power (kW)
GBR	Rugby, U.K.	16.0	300
NAA	Cutler, ME	17.8	2000
NPG/NLK	Jim Creek, WA	18.6	1200
NPM	Lualualei, HI	26.1	1000
NSS	Annapolis, MD	21.4	1000
—	Cologne, W. Germany	151.0	50
—	Ufa, U.S.S.R.	155.0	100
—	Reykjavik, Iceland	182.0	100
SBG	Motala, Sweden	191.0	600
—	Caltanissetta, Italy	191.0	10
—	Droitwich, U.K.	200.0	400
—	Monte Carlo, Monaco	218.0	1200
—	Konstantynow, Poland	227.0	2000
—	Junglinster, Luxem.	233.0	1100

Still, the rewards are worth the misery. Literally thousands of stations use these frequencies, and since LF listening remains a relatively untapped field, the mystery that so often seems lacking up on HF still exists here in abundance. Unlike HF, you'll find stations broadcasting news or music on LF. What you will hear, however, are maritime and aviation weather stations, standard time broadcasters, radiolocation beacons and even the occasional coded military transmission.

Perhaps the most intriguing part of LF are the frequencies between 160 and 190 kHz (1750 meters). This is the FCC's "Part 15" band where experimenters may operate unlicensed radio transmitters as long as power is kept within one watt and antenna

length is limited to 50 feet. Within recent years, an entire subculture of LF operators has developed, all intent on seeing how far their meager signals can carry. For the listener with a lot a patience and a keen ear, many DX treasures lurk within the noise.

Antennas for the LF bands pose a particular problem. After all, very few of us have the five or so square miles of land needed for even a quarter-wave dipole resonant to these frequencies. As a general rule, string out as much wire as you can, or wrap it around a ferrite bar. For many valuable tips on LF antennas and LF listening in general, you'll want to consult the book that has become the LF listener's bible: Ken Cornell's Low and Medium Frequency Radio Scrapbook (Ham Radio Books, Greenville, N.H. 03048). Another superb source of LF info is the newsletter of the Longwave Club of America (P.O. Box 33188, Granada Hills, CA 91344).

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