

MONITORING TIMES

FIRST
EDITION

Published To Provide Information and Enjoyment To Those Who Monitor The Radio Spectrum

VOLUME 1 — NUMBER 1

BRASSTOWN, NORTH CAROLINA 28902

JANUARY/FEBRUARY 1982

Space Shuttle Communications Monitoring

With our man-in-space program now directed toward the reusable shuttlecraft approach, communications needs have changed. The days of heavy HF single sideband support associated with Apollo and Gemini are over. NASA uses dedicated hard lines and satellite links extensively.

But some HF is still in use. During the first test flights of the Columbia, tracking ships, chase aircraft, worldwide tracking stations and military support used several single sideband voice channels, including 10780 (Cape Kennedy call-in), 6708 (booster tanks recovery ships "Liberty" and "Freedom"), and 20192 (tracking station network and countdown) kHz. Although several hundred discrete NASA channels are assigned, only a few see regular use.

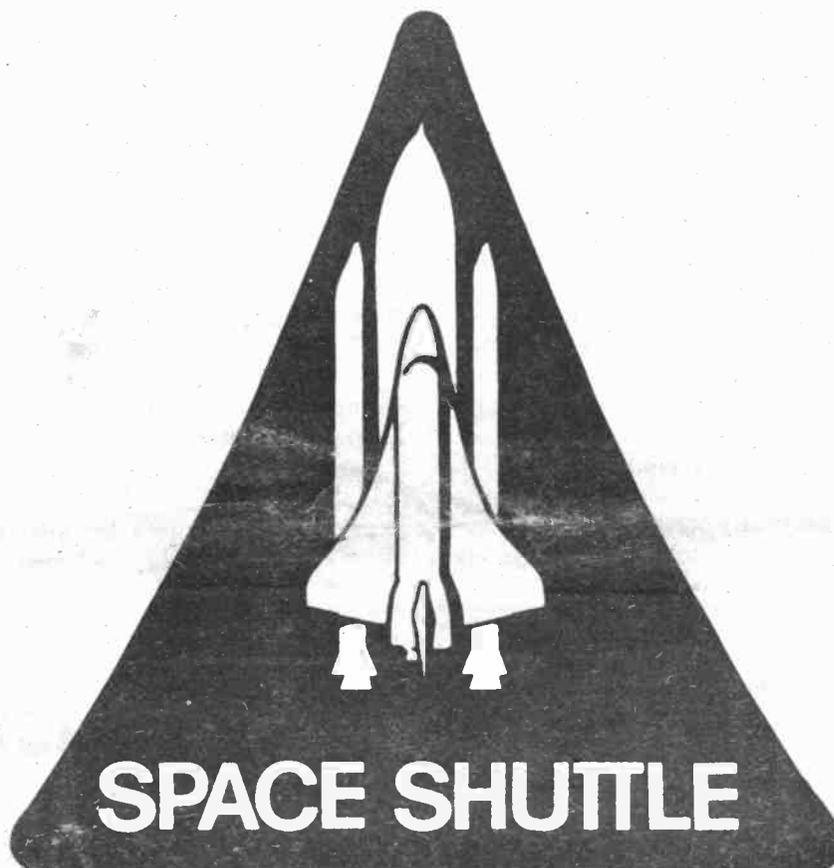
For short range air-to-ground, VHF and UHF AM channels are used: Chase aircraft within a few hundred miles of the Shuttle will be heard on 121.75 and 264.8 MHz, while the spacecraft itself utilizes 296.8 MHz as a primary UHF backup to its 2287.5 MHz s-band down link

transmissions. Earlier on-board UHF channels (259.7 secondary backup and 279.0 space suit to Shuttle during extra-vehicular activity) have been abandoned.

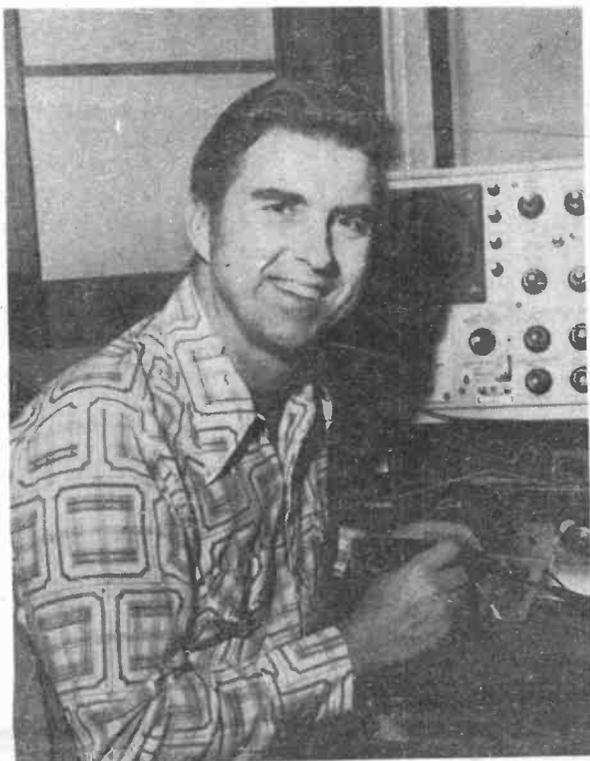
The likelihood of casual monitors tuning the excitement of a launch and recovery is great; listeners have reported activities on these frequencies during every mission, using the simplest of installations.

Here at Grove Enterprises we monitor the Shuttle missions on a Kenwood R-1000 receiver, using a Sony ICF-2001 as backup with outstanding results. For UHF, the new Grove Scanverter is used with a conventional aircraft-band programmable scanner. Normally, we use a Scanner Beam for extended VHF/UHF coverage, although many of our listening colleagues use a simple UHF ground plane.

The radio spectrum explodes with activity at all times of day or night, all year round. Simple, inexpensive receiving equipment and accessories can make this fascinating hobby come alive for you.



From The Editor...



For many years, in spite of the explosive growth of the radio listening hobby, monitoring enthusiasts have had to rely on amateur radio, CB, club bulletins and word of mouth for information useful to their hobby.

Now, MONITORING TIMES answers that void. Covering the vast swath of radio spectrum from the lowest to the highest frequency, MONITORING TIMES will present articles of unusual interest with objectivity and authority.

Practical hints for more productive listening, equipment tips for more effective installations, frequencies and identifications of both broadcasters and two-way communicators, answers to questions submitted by our readers, equipment reviews of new receivers and accessories as well as pertinent publications of particular interest. All of these and more topics will be

covered in future issues of MONITORING TIMES.

For the first time in publishing history, active listeners to the radio spectrum will be treated *seriously*, not simply as stepchildren of some other vogue hobby. And our publication will not be limited to the whims of the publisher, but responsive to the needs and requests of our readers.

What would YOU like MONITORING TIMES to be? What articles and information would be of particular interest to you? Would you like to learn more about equipment? Antennas? Theory? Frequency Allocations? Systems? Broadcasters? Utilities?

Let us know. We are looking forward to hearing from you and to serving you in the years ahead.

Bob Grove,
Editor and Publisher

DX'ing With Your Scanner

We normally think of the VHF/UHF portion of the spectrum as a short-range radio medium. Believe it or not, the record distance for two-way radio communications on VHF high band is nearly a half million miles! That's right; hams have experimented with "moon bounce" communications for some thirty years, using one or two kilowatts of power at 144 MHz, reflecting their signals off the moon to reach each other over the earth's radio horizon!

Of course, this EME (Earth-Moon-Earth) communication is still really line of sight, but it does prove that considerable distances are possible even at these high frequencies.

The term "DX'ing" has two meanings to hobby radio listeners: (1) listening in on weak, distant signals and (2) intercepting and identifying transmissions rather than listening to their content.

To many hobby listeners, short-wave and scanner monitoring is much like target shooting. The quarry is some elusive transmitter, and the weapon is the receiver. These hardy folk stalk their prey in the wee hours of the morning, suffering the ravages of static, heterodynes and reprimands from bleary-eyed members of the household. Undaunted, our heroes don their headphones...and hunt!

While such worldwide monitoring is normally credited to the short-wave bands, astounding distances

are often reported by scanner listeners. Hundreds...and even thousands...of miles can be intercepted. How do they do it? By a combination of technique, equipment and luck.

Needless to say, the proper choice of equipment is the easiest to plan, although may be expensive. A good programmable scanner and a directional beam antenna are the minimum requirements. Select high-quality foam-dielectric cable for the download, using only as much cable as absolutely necessary (extra cable adds to system loss).

A quality low-noise preamplifier will be helpful for pulling in the really weak signals, especially at UHF (406-512 MHz). If you are located near a metropolitan area, a tunable filter may be useful for removing signals which cause interference from images (approximately 21.4-21.7 MHz above their actual transmitting frequency) and intermodulation (spurious phantom signals produced by strong signal overload at the scanner).

The weather plays a vital role in DX'ing. These cold winter months are prime time for catching the rare ones. Hams often report working VHF (and even UHF) distances of hundreds of miles during winter months. One of the most interesting phenomena which assists long-distance VHF communications is called "ducting". As the name implies, the signal gets trapped between atmospheric layers which act



Dispatchers and mobile units are frequently reported by listeners to low band skip.

as a waveguide, beaming the signal over great distances.

A duct may be only a foot or two in thickness. Some hams have noted a complete loss of signal when moving the antenna a short distance up or down the mast when using the duct!

Electrical storms, sunspots, solar flares and nearby electrical interference as well as reflecting metallic masses all have a bearing on signal reception. We will address these topics in future editions of MONITORING.

Your TV reception can serve as

a valuable guide to DX'ing opportunities. When unusually good low channel (2 or 3) TV reception is observed, low band (30-50 MHz) skip probably will be good. Similarly, high channel (7-13) TV signals can announce high-band (148-174 MHz) scanner skip reception!

We will discuss more hints on improving your reception in future issues of MONITORING TIMES. Meanwhile, what are some of your best catches? How about sharing your listening logs with other readers? We would all like to hear from you!

NASA Frequency List Cape Kennedy, Florida

ETR — Eastern Test Range **SLF — Shuttle Landing Facility** **CT — Crawler Transporter**

FREQUENCY			FREQUENCY		
NET	(MHz)	ASSIGNMENT	NET	(MHz)	ASSIGNMENT
101	171.0000	UTILITIES	KSC A	142.5000	O&C CRANE OPS. (NET A)
102	156.1875	TELEMETRICS/EMI	KSC B	142.8600	O&C CRANE OPS. (NET B)
103	173.6875	SECURITY	KSC C	143.0400	O&C CRANE OPS. (NET C)
104	162.6125	LAUNCH SUPPORT OPS.	KSC D	139.3000	OPERATIONAL LOAN POOL
105	173.6625	SAFETY PRIME EMERGENCY EGRESS	KSC E	139.900	OPERATIONAL LOAN POOL
106	170.4000	GSA SUPPLY	RAD HAZ	164.000	RADIATION MONITORING
107	170.1500	BASE COMM.	UHF 1	407.325	LC 39 OPS. POOL (CONVOY CMD)
108	170.3500	PUBLIC AFFAIRS	UHF 2	407.475	LC 39 OPS. POOL VAB CRANE OPS.
		HURRICANE OPS.	UHF 3	408.150	LC 39 OPS. POOL (CONVOY PURGE)
112	148.4550	SRB RCYV/HGR AF CRANES	UHF 4	408.175	LC 39 OPS. POOL VAB CRANE OPS.
113	149.1750	SRB RCYV/HGR AF CRANES	UHF 5	408.800	LC 39 OPS. POOL
116	173.5625	FIRE/RESCUE EMERGENCY EGRESS	UHF 6	409.050	LC 39 OPS. POOL VAB CRANE OPS.
117	173.4375	MEDICAL EMERGENCY EGRESS/RESCUE	UHF 7	409.125	LC 39 OPS. POOL
		OPS	UHF 8	409.175	LC 39 OPS. POOL (CONVOY COOLING)
201	171.1500	GENERAL MAINTENANCE	SLF VHF	121.750	AIRCRAFT GROUND OPS.
203	173.1750	SECURITY TAC.	SLF VHF	126.300	AIR GROUND CONTROL
206	170.1750	RAIL/TRUCKING OPS.	SLF UHF	259.700	AIR GROUND (ORBITER)
208	TX 158.940	CIVIL DEFENSE	SLF UHF	296.800	AIR GROUND (ORBITER)
208	RCV 155.7150	CIVIL DEFENSE	SLF UHF	284.000	AIR GROUND CONTROL
216	173.7875	FIRE TAC. BACKUP EMERGENCY EGRESS	SLF AM	243.000	EMERGENCY (MIL)
303	155.3700	INTERCITY POLICE DEPT.	SLF AM	121.500	EMERGENCY (COMMERCIAL)
306	162.0125	MARINE OPS.	CT (OIS)	916.000	CRAWLER MOVES
316	154.1600	INTERCITY FIRE DEPT.	CT (OIS)	929.000	CRAWLER MOVES
ETR G	148.4850	TIMING/PHOTO	NASA HF	3.385	EMERGENCY RADIO
ETR B	163.5125	CAPE SRO	NASA HF	3.9825	EMERGENCY RADIO
ETR D	163.4625	CAPE SECURITY	NASA HF	14.4555	EMERGENCY RADIO
ETR F	163.5625	CAPE FIRE			

Tune In On The Smugglers

Among the most tantalizing--and little known--targets of radio monitoring are the drug smuggling networks. Using readily-available ham radio gear, these mobsters communicate with relative impunity at the high end of the 40 and 20 meter ham bands.

A popular rig combination is the ICOM 720A and MFJ Versatuner because of their ability to come up on any frequency in the 2-30 MHz range. While some gangs have schedules, most simply leave their rigs on continuously to be ready for any callup.

While some of their speech is encrypted or encoded, most of it is plain language, occasionally thinly-veiled by referring to a cargo of "tools" rather than narcotics, substituting "cases" for bales.

Since the vast majority of the shipments are coming up from South America, Spanish language is usually encountered, although English-speaking correspondents are often heard in the group.

It's easy to recognize the smugglers; they talk about their cargo, money transactions, schedules. Operating procedures are usually abominable, with disregard for callsigns, substituting whistling, bird calls and CB slang!

Smugglers occupy the spectrum 14400-14500 kHz, with frequently-reported nets on 14400, 14455, 14460, 14462 and 14490 kHz...all upper sideband. One unusually competent net sounds almost paramilitary with callsigns like "November Sierra one eight Whiskey" and "November Sierra one one Tango". They have

been heard on 14495 and 14505 kHz.

Don't confuse these illegitimate renegades with the tactical communications of the Venezuelan Army on 14437 and 14439 kHz!

One of the best organized...and insidious...of the mob controlled networks is that of the infamous "Black Tuna Gang". With a fresh crop of marijuana presently being harvested in South America, listen for their upper sideband, CW and radio-teletype transmission on the following frequencies:

13987 kHz These are contractors -- large suppliers of quaaludes, marijuana and cocaine. Look for "Alfa Nine", the South American control station in Santa Marta, Colombia; "J-1", the number-one man in South America, possibly on his yacht; and "J-7", the number-one man in South America, possibly on his yacht; and "J-7", the number-two man in Santa Marta or the Bahamas.

14432 kHz Base station in Santa Marta or Barranquilla, Colombia.

14445 kHz "Captain Nemo" the northern control station in Portland, Maine...also in use as maritime shrimper or when he is mobile.

14510 kHz "Man with a Million Voices" -- a group head on the East Coast, possibly Washington, DC.

14517 kHz "November" -- U.S. East Coast/Bahamas group head

"44" -- Aircraft in Tampa or Ft. Pierce, Florida

"25" -- Operation head in California or Washington, DC

"Big M" -- Base and shrimp boats in Miami and Florida keys.

"Nightrider" -- Boat and aircraft in Miami and Florida keys.

"Juliet Alfa" -- Base station in the Bahamas.

"Black 1", "Blackie" -- Located in southern US

"Clark" -- Florida mobile station.

"Alfa Golf" -- East Coast fixed or mobile station

Listeners who hear similar communications may wish to send the information to us for future articles; we will be happy to protect the anonymity of any contributors.

If you feel that you have intercepted important information, you are urged to contact your state narcotics unit, US Customs (Treasury Dept.), FBI or Drug Enforcement Administration (Dept. of Justice). Be sure to give as complete and accurate information as possible.

Section 605:

Can I Talk About What I Heard?

One of the most controversial sections of federal law is found in the Communications Act of 1934, the very act which created the FCC. Section 605 is the portion which prohibits an uninvited listener from divulging what he heard over the airwaves. According to that section, any transmission which was not of the nature of a general broadcast is considered private, and listeners-in are enjoined from disclosing to another person or using for personal gain the information intercepted.

This act does not prohibit you from listening to any communications, no matter how sensitive, for your own enjoyment. Just don't tell everyone else about what you heard!

But what about an unwitting hobbyist who just happens to overhear some criminal act being committed over the air? A clear violation of law? What if he disclosed to proper authorities what he heard? Is he liable for prosecution for divulging a message not intended for him?

The answer to this question may be found in section 501 of the penal code which states in part that the listener must willfully and knowingly violate the communications act. It is section 501 which provides the penalty of \$10,000 fine and a year in jail for section 605 violations. His intent must be clearly malicious, and clearly, if he is doing what he considers his civic duty, revealing knowledge of a criminal act, this would hardly be considered by the court to be a violation of either section 605 or 501. These are called "technical violations" since there was no intent, and rarely (if ever) are prosecuted.

Additionally, one court (Court of Appeals, volume 488 Fed. 2nd, US vs. Hall) ruled that the police are not to be considered "persons" as stated in 605; thus, divulging what you heard to a police agency does not qualify as having divulged to another person!

That particular opinion was a "dictum" and not considered firm precedent, but the part dealing with the interpretation of police not being "person or persons" is widely accepted.

He might, of course, be sued for civil damages as a result of his ill-gotten testimony if it were not for the fact that the court has ruled that information gleaned under section 605 may not be admitted as evidence.

We would like to thank the legal counsel of the Federal Communications Commission who anonymously contributed this information for his wisdom and professional courtesy.

Power Ant Sales Continue To Soar

Wouldn't it be nice if we could have an indoor antenna that works as well as some outdoor models? And what if that same unit also could act as a wideband preamplifier for an external antenna without having to pay for two separate products?

That was the reasoning behind the development of the new Grove Enterprises POWER ANT, a combination active antenna and preamplifier for scanner reception.

Inside the box

Housed in a handsome slope-pannelled enclosure, the POWER ANT active circuitry is designed around the high-performance Motorola MRF-901 microwave transistor for high-gain, low noise signal enhancement.

Protective circuitry is used to save the high-performance transistor from burnout near high-signal-density locations, and a gain control allows the user to custom-contour his amplification requirements.

Ideal for surveillance

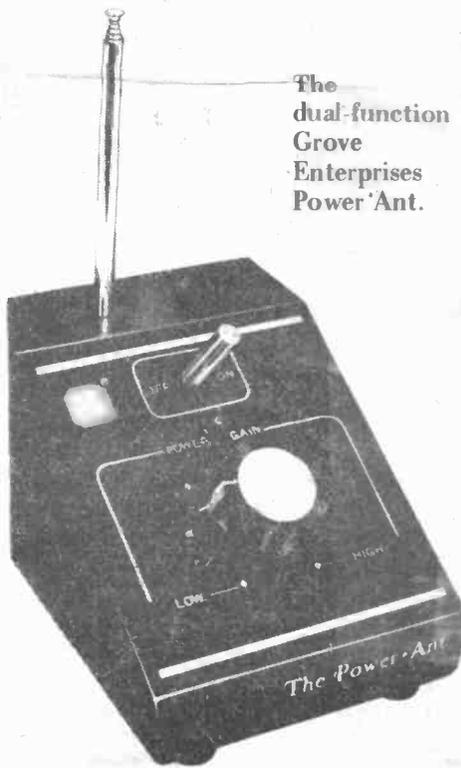
A surprise was in store for use when we discovered one of the major sources of inquiry: the undercover surveillance agencies! It seems that several prominent authorities have been recommending our little powerhouse to their field agents who need the additional amplification to locate bugs in the VHF/UHF spectrum!

For that application, POWER ANT is attached to the antenna input

of a sophisticated spectrum analyzer and carried to the target location for debugging.

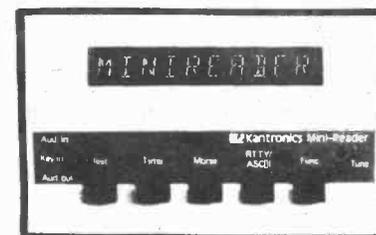
In actual field use, the useful frequency range for POWER ANT is from approximately - 1-1000 MHz, with gain rolling off slowly above and below those limits.

Interested readers may wish to take advantage of the special discount on POWER ANT and its matching AC adaptor in this month's Grove Enterprises ad.



The dual-function Grove Enterprises Power Ant.

Copy
RTTY,
ASCII
and
Morse
from
the palm
of your
hand.



Have you waited to get into code reading until you found out what this latest fad was about? You can stop waiting, because it's no longer a fad.

Amateurs everywhere are tossing the gigantic clanking monsters of yesterday that once performed the job of reading radioteletype. They are trading them in for state-of-the-art code-reading devices that are incredibly small, noiseless if desired and infinitely more versatile than their antique predecessors.

Kantronics, the leader in code-reading development, has just introduced the latest and most-advanced breakthrough in the copying of Morse code, radioteletype and ASCII computer language.

The Kantronics Mini-Reader reads all three types of code, displays code speed, keeps a 24-hour clock, acts as a radioteletype demodulator and reads all of its decoded information out on a traveling display of 10 easy-to-read characters. It is so compact that it fits in a hand-held, calculator-size enclosure.

At \$289.95 the Mini-Reader outperforms anything within another \$400 of its price range.

Call or visit your Authorized Kantronics Dealer now to find out what the latest in technology has done to code-reading.

Kantronics

(913) 842-7745

1202 E. 23rd Street

Lawrence, Kansas 66044

Profiles: Radio Netherlands "Media Network"

Editor's Note:

Tuning through the international shortwave broadcasters is a fascinating, often bewildering, aspect of radio listening.

Among the clamor of worldwide broadcasters, all seeking their place in the ionosphere, is one prominent contestant: Radio Netherlands. English broadcasts are heard daily to North America from 0230-0325

UTC for East Coast listeners on 6165 and 9590 kHz, and from 0530-0625 for West Coast listeners on 6165 and 9715 kHz.

This month we are privileged to present a feature by Jonathan Marks, producer of the popular program for DX'ers, "Media Network". His excellent program may be heard during English language broadcasts to North America on Thursdays.

Changes In The Air!



Jonathan Marks, producer of "Media Network"

1982 sees 200 years of diplomatic relations between The Netherlands and the United States. April will mean a number of special programmes looking at the two countries today. And this all part of a campaign by Radio Netherlands to "humanise" the short-wave bands. Its so easy to find a robot voice reading lists of statistics for in-

dustrial output, or to hear US pop music beamed back to North America from thousands of miles away. Here in Hilversum our message is "better understanding", involving a lot of participation from the listener. Dialling 011 31 35 18700 will connect you to our 24 hr listener feedback line, for comments, news, questions and music requests. And our "Dx programme" has evolved into a "communications magazine".

Our aim is to interest the listener, particularly the beginner, in various aspects of communications with an emphasis on short-wave. "Media Network" is the title of our weekly 30 minute survey of the "why" and "how" of international broadcasting. Why is country "x" expanding or cutting it's foreign service? How has a receiver manufacturer managed to produce new technology at such a low price? By recording the programme on



The Report team heard Monday, Wednesday and Friday. From left to right - Nevil Gray, Roger Broadbent, Barry O'Dwyer.

Wednesday evening, with the first transmission 11 hours later we can deal with topical subjects. In many cases a major news story involves a radio station somewhere, and manufacturers have a habit of revealing new items overnight. Our "network" of contributors in all parts of the world are active enthusiasts and their work, together with material generated at the station, is compiled together by producer Jonathan Marks at the Hilversum studios. We also talk to manufacturers (such as Grove Enterprises) to find out what's new, backing our reviews up with objective independent tests we conduct at the station.

We sincerely hope that programmes such as "Media Network", as well as our current affairs series "Report" will show that we're

human on this side of the microphone too. We're willing to listen to both phone-calls and letters (Media Network gets approximately 50 letters a day) and we offer the listener a number of free pamphlets to help improve reception and interest in short-wave. Our "Receiver Shopping List" gives a comprehensive survey of what's good and bad in short-wave radios, the "Book list" tells you where to read further, and so it goes on. If you'd like a schedule and our "DX Services Information Catalogue" (which lists current pamphlets) write to English Section, Radio Netherlands, P.O. Box 222, Hilversum, Holland.

Still too few North Americans know there is an alternative to their local station. We hope that by working closely with short-wave listeners we can help to bring about a change!

Jonathan Marks

Using The Code Breaker On Shortwave

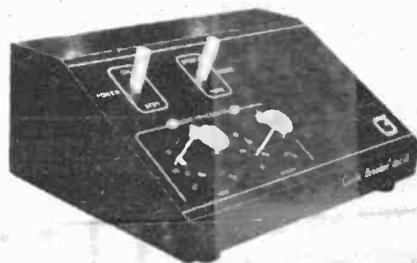
One of the most fascinating and unique discoveries which have come by our lab in a long time was accidentally discovered by several Code Breaker (Grove Enterprises DSC-2) users.

While monitoring single sideband voice transmissions on shortwave, it was noted that upper sideband transmissions could be inverted to lower, and vice versa! So....

(1) If an upper sideband station has interference, merely switch to lower sideband and use the Code Breaker to re-invert the audio back to normal! Naturally, the reverse procedure is used on lower sideband transmissions.

(2) If a slight readjustment of the receiver dial will remove the interfering station, although severely distort the intelligibility of the desired signal, merely use the Code Breaker to restore the normal voice quality using the opposite sideband!

(3) If a CW signal is experiencing interference from another CW station nearby in frequency, merely adjust the receiver until the unwanted signal is zero-beat and disap-



The versatile Grove Enterprises Code Breaker.

pears; then use the Code Breaker to adjust the pitch of the desired signal to a comfortable tone for perfect copy!

Naturally, the built-in razor-sharp notch filter can be used for additional interference rejection as necessary.

We would like to thank our Code Breaker users for their kindness in sharing these excellent listening tips with our readers. And we would like to remind our readers that Code Breaker and its matching AC adaptor are being offered at a special discount this month in the Grove Enterprises ad!



Answering the many hundreds of letters that arrive each day.

For Your Reading

Just getting started in the fascinating hobby of shortwave or scanner listening? Many excellent publications are available for your information.

For the shortwave international broadcast listener, few publications can measure up to the excellent REVIEW OF INTERNATIONAL BROADCASTING by Glenn Hauser. RIB is a 40-page monthly magazine

featuring virtually every aspect of broadcast DX'ing. Glenn Hauser is well respected for his insights and expertise in the field of shortwave listening, and interested SWL's are encouraged to write for more information: Glenn Hauser, Box 6287, Knoxville, TN 37914-0287.

Readers are also encouraged to take advantage of this month's special book offer in the Grove Enterprises ad!

Listening Intrigue - A Sampling Of The More Active Frequencies*

NAVY	
Project ELF	76Hz
Radioteletype	14-160 kHz
Atlantic Fleet	6697 11267 kHz
Guantanamo Bay Telephone	10222.5 kHz
TRANSIT satellite	150.000 MHz
MARS repeater	148.41 MHz
AIR FORCE	
MacDill AFB	11246 kHz
Scott AFB	11233 kHz
McClellan AFB	8989 kHz
MAC (Scott AFB)	11182 kHz
Andrews AFB	13247 kHz
SAC	9027 11243 13241 kHz
	311.0 MHz
NORAD	14894 kHz
CAP	4585 kHz 148.15 MHz
Base operations	165.1125/.1375/.1625/.1875 MHz
Fire/crash crews	173.5625/.5875 MHz
FEDERAL AGENCIES	
VHF air-to-ground	122.9 MHz
Fish and Wildlife	34.83 MHz
MILITARY AGENCIES	
VHF air-to-ground	126.2 MHz
ARMY	
Search and rescue	40.50 MHz
Medical teams	38.50 MHz
Aircraft tower	41.50 MHz
Military police	173.4125 MHz
Corps of Engineers	5437.5 kHz 163.4125/.4375 MHz
MARS	4010 4025 4580 kHz
US COAST GUARD	
AMVER (coastal)	6506.4 8765.4
	13113.2 17307.3 kHz
Operations	5692 5696 kHz 157.050 MHz
Distress/calling/search and rescue	500 2182 3023.5 5680
	8364 kHz 121.5 123.1
	156.8 243.0 282.8 MHz
CANADIAN AIR FORCE	
All air bases	11233 kHz

"SPY" NUMBERS STATIONS	
Havana, Cuba	3060 3090 5812 8418 kHz
CW BEACONS	
Coded letter ID (frequency kHz)	6792 (P) 6801(D) 8645(D)
	8647(K) 8656(C,D,K)
	10570(K) 10645(C,D,P)
DIPLOMATIC COMMUNICATIONS	
USMAG Latin America	7430 13950 kHz
State Dept. QRA marker	KKN50 6925 12023 kHz
TRAVELERS INFORMATION SERV.	
	530 1610 kHz
SMUGGLERS	
	7400-7500
	14400-14500 kHz

FOREIGN BROADCASTING	
Cuba	6060 11760 kHz
England	6175 15070 15420 kHz
Israel	11637 15582 kHz
W. Germany	9700 9735 kHz
Spain	9630 kHz
Russia	9665 11720 11920 12030 kHz
SPACE PROGRAM	
ATS-1	135.600 MHz
ATS-3	135.575 MHz
Space Shuttle	296.8 259.7 MHz
NASA support	6708 7675 7765
	10780 11205 20186 20192 kHz
FLTSATCOM	240-270 MHz
AERONAUTICAL	
AERONAUTICAL	
New York	6540 8945 11367 13288 kHz
US VOLMET	3001 5652 8868 13272 kHz
British VOLMET	11200 kHz
ARINC worldwide	13328 kHz
Russian Aeroflot	11312 kHz
CLANDESTINE BROADCASTERS	
Radio Free Grenada	15045 kHz
Pirates	6235-6280
	7325-7370 kHz
Anti-Castro	7030-7090 kHz
MARINE	
Coastal operator	4125 4143.6
	6218.6 6221.6
	8793 13132 kHz
Great Lakes	6516
Inland Waterways	6519 6522 kHz
INDUSTRIAL	
Petroleum networks	4634.5 4637.5 kHz
ISM	13560 27120 kHz
Gulf of Mexico rigs	30.64/.70/.88 31.16/.20/.84 MHz
LICENSE FREE	
Cordless phones	1695 1725 1755 kHz
	49.83/.846/.86/.875/.89 MHz
Experimental	160-190 kHz
NUCLEAR TRANSPORT	
DOE convoys	5751 7700 11555 kHz

Listeners Log

Each month we will present frequencies of interest reported by our readers. LISTENERS LOG will not be restricted as to frequency ranges, nature of communications or geographical regions. Rather, it will serve to inform our readers of the unusual and intriguing listening possibilities within reach of modest equipment.

This month, to inaugurate this special column, we present a collection of some of the most fascinating frequencies for hobby monitoring, concentrating on the HF and VHF/UHF portion of the spectrum.

Won't you contribute some of your catches for our next issue?

MID-WINTER SPECIAL SALE

Save \$2.00
PLUS FREE SHIPPING!

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by Robert Grove

Your complete guide to federal gov't communications - over 100,000 listings

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\$12⁹⁵

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(plus \$3.00 UPS)

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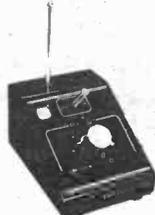


- ★ Speech inversion decoder
- ★ Built-in speaker
- ★ 800-4000HZ audio notch filter
- ★ Invert/Reverse SSB transmissions

ONLY **\$89⁹⁵**

(plus \$2.25 UPS)

The Grove POWER ANT



- ★ VHF/UHF Variable Preamp
- ★ Active Antenna
- ★ Base or mobile use
- ★ Ideal "hidden space" unit

ONLY

\$69⁹⁵

(plus \$2.00 UPS)

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(Note: BOK-4, Confidential Frequency List, shown on page 14 of catalog no longer available).

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SALE ENDS FEBRUARY 28th 1982**

To order by mail write:
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Be sure to include shipping address for delivery by UPS. Foreign shipments: contact our office.



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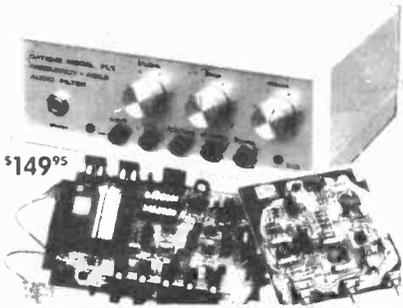
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WRITE GROVE ENTERPRISES, DEPT. N-1, BRASSTOWN, NC 28902



DATONG ELECTRONICS LIMITED



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- Fully automatic search/lock/track operation for notching out unwanted whistles
- Selectable bandpass or band-reject modes
- Bandwidth smoothly variable from 20Hz to 1000 Hz
- Centre frequency smoothly variable from 280 to 3000 Hz
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\$109⁹⁵

MODELS AD270, AD370

ACTIVE RECEIVING ANTENNAS

- Overall length only 3 metres yet gives signal-to-noise ratios comparable to full size conventional antennas in the 200kHz to 30MHz range
- The response is broadband and no tuning or adjustment is required when changing frequency therefore ideal for mounting in remote positions e.g. loft attic roof or chimney
- Dipole configuration gives choice of polarisation plus useful directivity and eliminates need for ground plane or earth connection



\$54⁹⁵

MODEL VLF V.L.F. RECEIVING ADAPTOR

- MODEL VLF CONVERTS INCOMING VLF SIGNALS TO FREQUENCIES 28MHz HIGHER FOR EASY TUNING ON NORMAL COMMUNICATIONS RECEIVERS
- Covers 0 to 500kHz plus up to 1MHz at 100% sensitivity
- No receiver modification required
- High sensitivity - only a short antenna is required
- Crystal controlled for high stability

AR Technical Products Corp.

P. O. Box 62, Birmingham, Michigan 48012

Scanverter: 225-400 MHz Military Converter

For more than forty years military aircraft have been using the 225-400 MHz spectrum, yet no manufacturer has made consumer receiving equipment to cover that active UHF band.

Bulky surplus radio equipment has been the only solution for the interested listener, some of it weighing hundreds of pounds. Most of this archaic tube-type equipment suffered from low sensitivity, and the owners suffered from unavailable replacement parts!

Now, Grove Enterprises announces the exciting new SCANVERTER, a miniature frequency converter which will instantly convert any programmable scanner capable of 118-136 MHz aircraft band coverage into a total-spectrum 225-400 MHz military/federal aircraft receiver!

The Space Shuttle, SAC aircraft, federal undercover aerial surveillance, military strategic communications, Thunderbirds and Blue Angels air shows; all are users of this active portion of the radio spectrum.

Nearly a year ago the initial research began on this new addition to the communications market. Problems seemed formidable at the time: How would it be possible to crowd the entire 175 MHz wide military aircraft band into the 18-MHz wide aircraft-band scanner?

How could the converter have maximum sensitivity throughout that range without tuning? Could the converter be packaged small enough to complement a modern scanner? And even if all of these problems could be solved, could such a sophisticated circuit be produced at a cost low enough for hobbyists to afford?

An all-out engineering effort was launched at Grove Enterprises to solve the problems. Finally, during the summer of 1981, a working lab model sat on the bench in the test lab. Cautiously, the project engineer wired it to the power supply and connected it to a scanner...and waited. Suddenly, there it was: the unmistakable sound of a military aircraft calling an Air Force control tower! Scanverter had arrived!

The first test models required constant tuning to assure maximum sensitivity throughout the wide 225-400 MHz swath of spectrum. This meant that it would not be possible to monitor the entire band at once, only portions of it at any one time. Clearly, this scheme would not work.

Next, it was decided to broadband the unit so that no tuning was required. Unfortunately, that scheme worked too well...everything came through at once: aircraft, weather broadcasts, CB, even shortwave stations!

Stepping Up In Shortwave Reception

While the Radio Shack DX-302 enjoys popularity among the walk-in crowd, most serious listeners prefer the Kenwood R-1000 and Yaesu FRG-7700 for their first big step. Both receivers are in the \$400-\$600 price class, and both are available at discounts from reputable advertisers. The Panasonic RF-4900 is another popular model in this price class.

There is a considerable price gap between this level of consumer-grade receiver and the next bracket, represented by such manufacturers as Japan Radio Company (NRD-515) and McKay-Dymek (DR-22, 33 and 44). These receivers are in the \$1000-\$2000 category, depending upon the user's choice of options.

Professional communicators must often choose among even more sophisticated receiving equipment manufactured by such international companies as Collins, Harris, National, ITT, Rohde and Schwartz and many others.

Receivers at this level of design may cost in the tens of thousands of dollars. An unusual example is the Tempest receiver from Raytheon, last priced at nearly 100 thousand dollars!

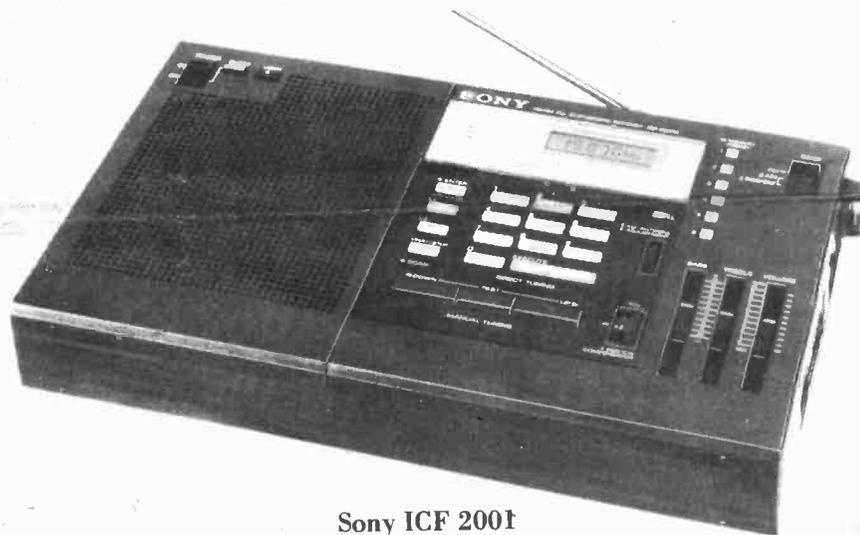
Whatever your listening need, and whatever your price limitation, there is an optimum receiver waiting for you. Check with our advertisers for their personal recommendations.



Panasonic's Model RF-4900



The National HRO-600



Sony ICF 2001



The popular Kenwood R-1000 general coverage receiver

It became evident that some sort of sharp bandpass filter would be needed. After considerable experimentation it was decided that a combination of high-pass and notch filters would fill the bill.

Serendipity may be defined as a pleasant accidental discovery. In fact, that was largely how the final solution to the wide-range in a short space problem was resolved. It was discovered that harmonics of the oscillator caused the entire 225-400 MHz band to repeat itself at intervals of 18 MHz...right smack in the 118-136 MHz aircraft band found on every aircraft scanner!

The concept of "bandstacking" was born. A neat method to com-

press a wide spectrum of frequencies into a narrow slot for quick coverage.

Ensuing months were spent testing and pruning, substituting parts, making sensitivity checks. By mid-December, Scanverter had been perfected.

Housed in the familiar Grove Enterprises slope-panel cabinet, Scanverter is scheduled for imminent production; the expected introduction price is under \$100.00.

If this unique and long-sought product is of interest to you, call our toll-free number, 1-800-438-8155 now and you will be notified immediately when production begins.

Technical Topics

Q. I have room for an outdoor antenna but don't know whether to choose an omnidirectional or beam antenna. Help!

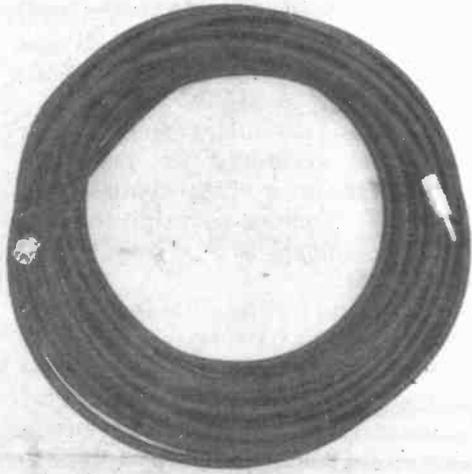
A. If you need simultaneous reception from all compass directions, you can't beat a good omnidirectional antenna. For maximum distance on weak signals you need a directional beam antenna, but it will favor only the direction toward which it is pointed. An inexpensive TV antenna rotator may be used to change its direction. Generally speaking, a beam antenna will give you an additional 50% or more greater range over that of an omnidirectional antenna.

Q. I recently purchased a preamplifier for my scanner. Although some signals are louder, my interference problem from intermod and images have skyrocketed. What gives!

A. Scanners have definite limits within which they operate satisfactorily. If signal strengths are too great, they overload, producing all kinds of phantom signal products. Your preamplifier knows only two commands: on and off. When on, it amplifies as hard as it can, increasing the levels of powerful local signals as well as those distant weak ones. A variable-gain preamplifier used in conjunction with a tunable filter will give far more satisfactory service, although additional filtering to trap out unwanted signals may be necessary if you live in the city.

Q. I have read that the only coaxial cable to use for scanner reception is RG-8U. True?

A. Absolutely not. There are many excellent grades of less expensive coax which will work just fine. At VHF (low and high bands) select foam dielectric low-loss coaxial cable such as that used in the cable TV industry. RG-59U or RG-6U will work well for most installations (under 100 feet cable length). At UHF (406-512 MHz) and especially at microwave (806-960 MHz), all conventional



Coaxial cable, a vital consideration for effective VHF-UHF listening.

cables are lossy. At microwave use hard line (aluminum sheath, air dielectric), or purchase a masthead down-converter to change the higher frequencies to a lower band to send down the cable.

At shortwave frequencies and lower (below 30 MHz), virtually any choice of coaxial cable is satisfactory. The old CB myth about using highest-quality RG-8U at 27 MHz was without foundation. In legal CB installations, an advantage of perhaps 2 dB might be gained, virtually undetectable on the air. And don't be concerned about impedance. Scanners vary their input impedances between at least 50 and 75 ohms, even on the same band, as they change frequency.

A good rule of thumb for selecting coax for most monitoring purposes: If it is fresh, well-shielded, good quality and low-loss foam dielectric, use it!

UNIVERSAL ELECTRONICS SHORTWAVE AND RTTY EQUIPMENT

NRD-515 Receiver and Memory Unit



PLL Digital VFO
Digital tuning
Up-Conversion
24 Channel memory
Unit-(Option)
NRD-515 \$1399.00 NDH Memory \$249.00 Speaker \$44.95

Continuous coverage -
all modes 100Khz-30Mhz
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All solid-state
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HAL COMMUNICATIONS portable RTTY/CW terminal — 5 inch display built into 12 3/4 x 11 x 5 in. cabinet. Separate keyboard with transmit buffer.

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RTTY/CW/ASCII converter for video or hard copy. Excellent performance at a reasonable price.

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Scanner and Shortwave Radio Monitoring Workshop

Grove Enterprises would like to conduct a series of radio monitoring workshops in several locations throughout the United States. Your response to this survey will help us determine where and when we should implement this program. If you are interested in a seminar, please fill out the following form and return it to Grove Enterprises, Brasstown, NC 28902. You will be notified of the results of this poll.

MONITORING WORKSHOP SURVEY

YES! I would like to attend a radio monitoring workshop.

The major cities in which I would attend are:
(list in order of preference)

- (1) _____ or
city and state
- (2) _____ or
city and state
- (3) _____
city and state

I would prefer this event to be held during
(check one) SPRING, SUMMER, WINTER, FALL

(check one) I WOULD PREFER A ONE DAY (SATURDAY) or a
 TWO DAY (SATURDAY and SUNDAY) SEMINAR.

What main subject areas would be of most interest to you (check appropriate box(es)). (check three)

- LONGWAVE ANTENNA THEORY
 SHORTWAVE RADIO THEORY
 SCANNERS FREQUENCY ALLOCATIONS
 SATELLITES
 CHOOSING EQUIPMENT AND ACCESSORIES

OTHER _____
please describe

Would you like Grove Enterprises to arrange accommodations for you at the seminar — or would you prefer to be responsible for your own lodging ?

What maximum seminar fee would you be willing to pay to participate in one of these workshops?

\$25 \$50 \$100 \$150 (circle one)

CUT ALONG DOTTED LINE AND MAIL

Two New Programmable Scanners From Bearcat



Bearcat's new BC-350 programmable scanner.

Announced several months ago, the BC-100 hand-held and BC-350 alphanumeric programmable scanners are now available.

The BC-100 fills a niche which had been clamored for over the years; it is a fully-synthesized, hand-held scanner covering the frequency ranges 30-50, 138-174 and 406-512 MHz.

Demand for the wide-frequency-range unit has been heavy, although preliminary reports indicated wide distribution. The little 16-channel scanner comes with a hoister-type carrying case, flexible antenna, rechargeable batteries, AC adaptor/charger and earphone.

The BC-350 is considerably larger, designed primarily for fixed use. It features 50 channels with full alphanumeric display. Thus, listeners may program both "154.640" and "CITY PD". Either display may be called up from a pushbutton.

A separate display signals various status conditions of the scanner, such as priority, delay, auxiliary and so on.

Both scanners are available from Bearcat dealers, including mail-order discount houses like Communications Electronics (854 Phoenix, Ann Arbor, MI 48106).



Bearcat's new BC-100 Programmable scanner.

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Monitoring Times is distributed free of charge by Grove Enterprises, Inc. Brasstown, North Carolina 28902; Robert B. Grove, Editor and Publisher. Correspondence concerning this publication should be addressed to: Monitoring Times, Dept N-1, Grove Enterprises, Brasstown, NC 28902.

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