



MONITORING TIMES

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MAY/JUNE, 1983

A Monitoring Times Exclusive SPY NUMBERS TRANSMITTER LOCATED

by John H. Demmitt

Almost all shortwave listeners have at one time or another heard strange groups of numbers while tuning across the dial. Most often these numbers are spoken in Spanish, German and English.

Stations which transmit these four or five digit groups of numbers are often called the 'Spy Numbers Stations' because they are transmitting on frequencies with no public license, give no identification, nor will governments say anything about them.

A popular belief is that these stations transmit coded information...to spies...operating in foreign countries. In the past few years several spies who have been



Just a small portion of the giant antenna complex at Nauen, East Germany

arrested throughout the western countries had one thing in common: all had an inexpensive

shortwave receiver. Some had code books containing what appeared to be one-day pad codes in

PRESSTIME NEWSBREAK

A highly-placed intelligence official has notified Monitoring Times that one of the frequency-reported phonetics broadcasts ("kilo papa alpha two") originates from the Yugoslavian embassy in Ottawa, Canada.

Our frequency data base confirms that some of the reported frequencies do, indeed belong to that diplomatic service.

We appreciate hearing from individuals who have authoritative information about these mysterious "Spy numbers" stations.

groups of four or five digits. We are learning more and more about these stations and with this article we will learn the
Continued on page 3

Did the Voice Of America actually issue QSLs in verification of "numbers" reception reports--or was it a ...?

That's just one of the questions being hotly debated in monitoring circles around the world. Inside sources say the facts behind the --by now-- infamous Krueger/Sobkoviak QSLs just don't add up.

And a MONITORING TIMES investigation reveals that there is often less to a domestic VOA QSL than first thought. It's

Requiem For A QSL

By Havana Moon

How would you like to be one of the public information officers of a highly respected international broadcaster, then all of a sudden learn that your facility had apparently --on at least two occasions-- issued QSLs verifying reception of 4-digit "Spanish numbers" transmissions?

How would you like to be the one that had to offer a believable explanation to an abrasive

freelance investigative reporter?

That just about sums up what happened to Rogene Waite of the Voice of America a few weeks ago, when she was rudely asked to confirm or deny the Terry Krueger and Ralph Sobkoviak QSL incident as published in the March issue of the RCMA NEWS LETTER.

The stark abruptness of these incidents didn't stop with the VOA Public Information Office. They

rapidly spread to other sections. It was --well, something of a personal and professional embarrassment for Wayne Green.

You see, it was Wayne Green's signature that appeared on the Sobkoviak 11895 kHz VOA QSL! The signature of Vivian Smith, a receptionist who occasionally verifies domestic reception reports, appears on the 15652 kHz VOA QSL as obtained by Krueger.

The existence of these QSLs
Continued on page 4

The World's First Numbers Q S L?

By Terry L. Krueger

During the summer of 1982, I frequently heard a numbers transmission in Spanish at 0200 and 1200 GMT on 15652 kHz. Numbers transmissions certainly aren't uncommon, but what struck me as unusual was the fact that this frequency was the same one used by the Voice of America's Greenville, North Carolina transmitter site for feeding programs to relay sites.

The 1580 kHz MW Antigua transmitter, for instance, uses 15652 kHz as a pick-up during the 0000 Caribbean programming in English.

Though the signal level, audio-compression, modulation and frequency similarities, one can only speculate on any connection.

Nonetheless, I thought I would write to the VoA, as a lark, for a QSL.

Much to my surprise a full-data QSL arrived a few days later, confirming my numbers report. Since last August, several other hobbyists have reported numbers transmissions on VoA frequencies, and some have also received QSLs!

One can only speculate on this QSL's authenticity of verification. The VoA has recently been issuing a rash of legitimate QSL cards with the incorrect sites listed (one contact recently received two cards--one indicating Rhodes as Kavala, the other as the Philippines for a 2159 GMT log on 6015 kHz!)

For those interested in

THE VOICE OF AMERICA
WASHINGTON, D.C. U.S.A. 20547

Official Business
Penalty for Private Use \$300


8-22-82

We are pleased to confirm your reception of our broadcast
on 15652 kHz 0200 GMT

V. Smith
(Signature)

Antigua Island

GOLDEN GATE BRIDGE - The majestic Golden Gate Bridge in San Francisco, California, stretches from the San Francisco shore to the north side of the Bay. Phenomenon known as "water light" makes the city look sparkling white.


 Air Mail

Postage and Fees Paid
International Communication
Agency

TERRY L. KRUEGER
84 Winter Park Dr. S.
CASSELBERRY, FL
32707

monitoring international broadcast feeder transmissions I recommend Bob Grove's "Shortwave Frequency Directory" and Oliver's Ferrell's "Confidential Frequency List".

**MONITORING
TIMES**

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Jack McLaughlin- ...Are You Out There?

Yes, we're embarrassed; we've lost your address and really would like to pay you for your article!

Jack, please call home!

But don't let this lapse in our usual competent proficiency discourage other prospective writers. MT readers are asking for a wide variety of subjects to be covered in future articles, including:

Satellite reception, antennas for all ranges, aircraft monitoring, public safety radio systems, RTTY and FAX reception, scrambling and encryption systems, simple experimenter projects, Radio astronomy, interference and filters, videotext and electronic mail, police vehicle RTTY reception, monitoring post design and layout, new technologies, starting a club, BCB/FM/TV DX'ing.....and much, much more. How about it, writers? Would you like to share your knowledge with other readers?

Articles should run 500-1000 words, include illustrations whenever possible; payment is \$25 upon acceptance, along with a free subscription to Monitoring Times. Fair enough? Let's hear from you!

Write to Bob Grove in care of Monitoring Times.

Congratulations

W5RRR

Monitoring Times would like to publicly thank the amateur radio club at the Johnson Space Flight Center in Houston for rebroadcasting the voice link on the last shuttle flight.

The hams who operated station W5RRR are commended for their effort to fulfill one of the strongest attributes of amateur radio: to inform the public.

Throughout the missions, from liftoff till touchdown, hams worldwide were able to monitor the voices of the astronauts retransmitted on a frequency of 14279 kHz in the 20-meter band. We urge the service to continue.

Editorial by Bob Grove

WAYPYQ A Monitoring Network For Hams & SWL's

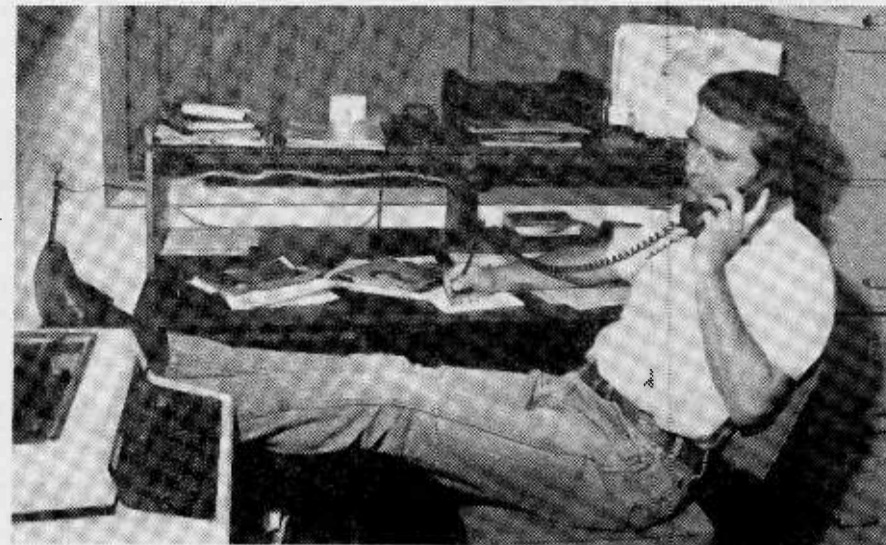
Roughly 25% of Monitoring Times readers are licensed amateur radio operators, many of whom have expressed an interest in starting a nationwide radio network to exchange interests.

Prominent in the minds of most is the use of radio direction finding techniques to identify many unknowns such as the mysterious numbers stations, beacons, illegal communications and sources of interference.

Such a network would also allow active listeners and experimenters to exchange ideas for equipment design, listening tips, and other areas of communications are presently satisfied by existing amateur radio networks.

But what about the legality of discussing intercepted communications on the air? Section 605 of the 1934 Communications Act clearly proscribes against an unauthorized listener revealing to another party the contents--even the existence--of a non-broadcast transmission.

Is there a legitimate way to avoid violating this provision? Is there a difference between saying, "I heard Air Force One transmit President Reagan's



Mideast status position on 18027 kHz last night at 2030 UTC", and "18027 kHz is commonly used by Air Force One for the transmission of presidential communications of a confidential nature"?

Or how about the interception of a clearly criminal transmission, the contents and location of which would be of vital interest to law enforcement?

Obviously, members of the net could codify their transmissions by using "ten code" techniques, known only to themselves,

but this does not exonerate the reporter; it only makes the contents known to fewer unauthorized parties.

Monitoring Times would like to hear from interested hams, shortwave listeners, law enforcement agents and FCC officials regarding this proposed network.

Without question, such a radio network would be a great interest to participants and could provide valuable assistance to overworked and understaffed agencies as well.

Grove To Speak At A.N.A.R.C. '83

Bob Grove, editor of Monitoring Times and president of Grove Enterprises, will be a guest speaker at the summer convention of the Association of North American Radio Clubs, July 15-17.

This year the ANARC convention will be held at the Rosslyn Westpark Hotel in Arlington, Virginia.

Grove's subjects will include utilities monitoring such as military, government, spies, smugglers ship-to-shore and aircraft as well as insights into new equipment and accessories which will be on display.

Both shortwave and VHF/UHF scanner monitoring will be highlighted as well as venturing into satellite and other areas limited only by the interests of those in attendance.

The ANARC convention is the largest conclave of shortwave and scanning enthusiasts in the country, with hundreds of active listeners in attendance.

Special guest speakers from all areas of monitoring the spectrum will conduct open forums on an array of interesting topics. The preliminary program is shown below.

Readers interested in attending may write for further information: Washington Area DX

Association, 606 Forest Glen, Silver Spring, MD 20901.

Friday - July 15

9:00-5:00 p.m. Registration

9:00-12:00 Noon Exhibit set-up

12:00-5:00 p.m. Equipment and club exhibits and displays

3:30-5:00 p.m. ANARC representatives meeting

5:00-5:30 p.m. Official convention opening

5:30-7:00 p.m. Dinner on your own

7:00-9:00 p.m. Wine and cheese reception

Saturday - July 16

8:00-9:00 a.m. Registration

9:00-10:00 a.m. Seminar one--PUBLICIZING RADIO LISTENING--Who should do it and how much should they do? Hear what broadcasters, clubs and equipment manufacturers think.

10:15-11:00 a.m. Seminar two--TRENDS IN BROADCASTING, EQUIPMENT AND LISTENING--Find out where the experts think the hobby is headed.

11:15-12:15 p.m. Seminar three--COMPUTERS IN THE RADIO HOBBY--Learn what you need to know about computers and how they can make your listening more interesting.

12:15-1:30 p.m. Lunch on your

own.

1:30-2:30 p.m. Seminar four--CONCURRENT SESSIONS ON LW/MW, FM/TV, PSB/UTE and SW--Free-wheeling discussions of various aspects of the hobby with noted DXers as discussion leaders.

2:45-3:45 p.m. Seminar five--

MEET YOUR FAVORITE BROADCASTER--An informal opportunity to visit, get autographs and take pictures

4:00-4:15 p.m. Presentation of "Review of International Broadcasting" awards

4:15-5:30 p.m. Seminar six--

BROADCASTER'S FORUM--A chance to question broadcasters about their stations, their programs or about anything else on your mind.

5:30-7:00 p.m. Free time

7:00-7:30 p.m. Cash bar

7:30 p.m. Annual banquet/presentation of ANARC awards

Sunday - July 17

9:00-11:30 a.m. ANARC annual general meeting

11:30-1:00 p.m. Lunch on your own

1:00-1:15 p.m. Presentation of HAP awards

1:15-3:30 p.m. HAP auction

3:30 p.m. Closing ceremonies

New Products

24 HOUR QUARTZ MOVEMENT WALL CLOCK

Benjamin Michael Industries is one of the most prolific sources of clocks of every description and their 973A military format wall clock is professional example.

Available either in 24 hour (973A) or 12 hour (972A) format, the 12-inch wall clock features a quartz crystal movement assuring better than 15 seconds per month accuracy.

Power is provided by an easily-replaceable C cell, good for at least one year of uninterrupted operation.

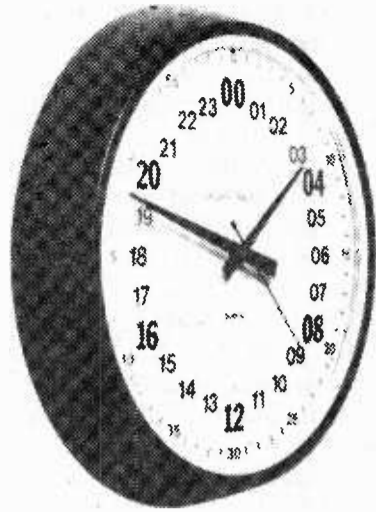
A slightly smaller version is available as the model 963A at lower cost.

The 973A is recommended for communications installations and listening posts, as well as hospitals and broadcasting studios where reliable time readings must be compromised by power outages.

The easy-to-read dial is calibrated in hours, minutes and seconds; the sweep second hand pulses once per second, audibly, but not distracting.

The clock is housed in a black textured plastic bezel and covered by a convex glass crystal.

For those who like digital accuracy but analog readability, the



973A is hard to beat. Readers may wish to inquire for the full-line catalog sheet featuring an array of timekeeping devices at various prices.

Dealer inquiries are invited. (973A, \$59.95; 963A, \$47.95; plus \$3 shipping from Benjamin Michael Industries, 65 E. Palatine Rd. Dept. MT, Prospect Heights, IL 60070)

New Scanners Due

The summer Consumer Electronics Show (CES) in Chicago this June will hold a number of

pleasant surprises for scanner buffs.

Electra is scheduled to unveil a number of new programmables; Regency is due to announce a low-priced mobile scanner, and Fanon/Courrier is slated to reveal a handheld (FTS500) and base/mobile (FTS600) programmable scanner with extended frequency range (25-512 MHz, continuous coverage, AM/FM).

J.I.L. is rumored to have cleared up many of the problems which have plagued that company's unique SX-200. Problems included severe intermod when using the receiver in metropolitan areas.

Radio Shack is scheduled to include new receivers in their fall catalog. It will be interesting to see what effect Tandy's recent acquisition of basic Electra patents will have on their product line!

Electra recently cut back some 300 production personnel and consolidated their Cumberland, Indiana operations in favor of a progressive, new manufacturing facility in Puerto Rico.

The Cumberland address will still serve as corporate headquarters and customer service.

As with the computer industry, the Japanese are making significant inroads into the scanner market as well. A Tokyo-based firm, GRE, provides basic programmable scanner boards

for several manufacturers.

Monitoring times predicts the imminent release of a whole new generation of programmable scanners, significantly more powerful than any previously offered to the consumer.

"S.A.S.E."

We at Monitoring Times constantly receive letters from readers which begin, 'Please send me everything you have on...'. Invariably, such requests don't even include a self-addressed stamped envelope.

Obviously, such requests cannot be answered. As much as we would like to help, we are not a public library service. Many publications are available with frequency lists, and our Book Shelf section contains excellent reference works.

We will be happy to reply as time permits to those who inquire with problems. Letters received with an SASE will be answered; questions of a general interest will be reprinted with answers in the Technical Topics column.

And as always, my telephone line is open for prepaid calls weekdays 8-5 Eastern (704-837-2216)...Bob

Spy Numbers Transmitter Located Continued from page 1

exact location of one of them.

I took an active interest in the numbers stations several years ago and set up a project to learn where these broadcasts were coming from. I began by logging all the known frequencies used by the German language numbers stations and listed the SINPO reception quality and area of reported reception beside each entry.

I took those which were reported stronger on the east coast and made a separate list putting the days and times of transmissions and circulated these lists among friends living in England, Holland, Italy and West Germany. I soon received reports showing that reception was best heard in West Germany.

Since there were no SIO's of 555 (extremely strong) I assumed that the transmissions must be coming from East Germany. This was later confirmed when I arranged for one person from England, Italy and West Germany to use the Parallel Coaxial Loop Direction Finder. Now we had an area to concentrate on.

A check of the card file of people I correspond with revealed that a friend lived in that very area but was currently attending college in East Germany. I contacted him explaining my project; he promised to assist me during his next term break.

Several weeks later I received

an envelope from him filled with pictures of the site of the German numbers station! He told me that he drove around using a portable shortwave receiver tuned to the frequency I gave him. As he neared the station, he had to tune to a harmonic to prevent his receiver from over-loading!

It did not take long for him to realize the transmitter was in the restricted area of Nauen (12,54E

52, 38N) within the giant complex which houses transmitters such as Radio Berlin International, Reigen Radio, Y3S, relays of Radio Moscow, military, espionage and spare transmitters which will assure constant communications.

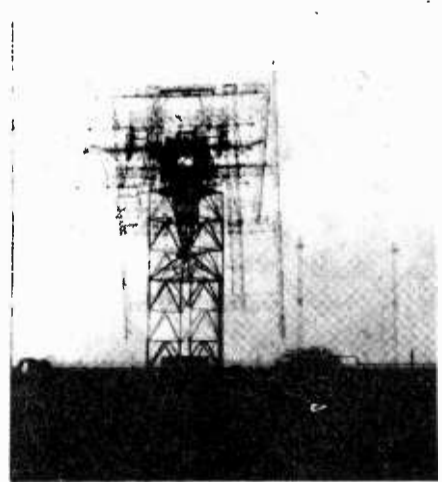
The antenna farm covers an area in excess of 1½ square miles. Roads to the complex are posted with signs restricting the area. A guard house at the entrance controls who goes into the radio complex.

My friend, feeling a sense of adventure, got out of the car and walked into a wooded area across the complex and took the pictures contained in this article. Although he knew it was illegal to take pictures of East German military complexes, he felt

satisfied after all the trouble those stations gave him as he tried listening to western stations!



Forboding sign in English, Russian, French and German reads: "Attention! Passage of members of foreign military liaison missions prohibited!"



Giant steerable array packs a shortwave punch



Main gate at the Nauen espionage installation

Requiem For A QSL

was --at first-- flatly denied by one anonymous VOA employee. This same employee also claimed to have no knowledge of Wayne Smith or V. Green!

And another anonymous VOA employee became highly indignant when it was suggested that the VOA had issued no such QSLs.

These latter incidents --for a time-- left this QSL incident shrouded in mystery. The ambiguities surrounding this QSL brouhaha is enough to give a listener mental whiplash!

There was, however, a certain and welcome amount of consistency from those in the VOA Public Information Office. There were a few times, however, when the conversations abruptly jumped off into other unrelated directions. This seemed to happen just as our thought processes were going in other more logical ways.

No small amount of thanks goes to VOA's Rogene Waite for clarifying some of VOA's domestic QSL procedures. It's the correct time and correct frequency that determines whether or not a QSL will be issued. It's that simple! No attention is given to detailed listings of program content or other related information.

Budget cutbacks and the enormous volume of mail received in quest of VOA QSLs are the primary reasons for this policy. It's unfortunate that this policy seems to be catching on among other international broadcasters. Look also for some of the larger broadcasters to resort to computer-generated QSLs. QSLs just aren't what they used to be!

It was learned that only a frequency schedule is used for reception verification.

It was also learned that VOA keeps reception reports on file for a two-year period of VOA headquarters after which they are shipped to an out-of-state warehouse where they are stored indefinitely.

Again, thanks to Rogene Waite for providing us with copies of the entire VOA frequency schedule.

Unfortunately, feeder/relay frequencies are not listed on that schedule. This fact adds a certain amount of mystery to the Krueger QSL!

Obviously, Krueger's 15652 kHz intercept of August 8, 1982, has raised more than a few eyebrows. It (the QSL) also raises one most interesting question: Just why would a 15652 kHz QSL be issued when those responsible for the issuance of QSLs --supposedly-- are not in a position to examine feeder/relay frequencies and program information?

This is just one of the many questions that VOA sources have agreed to answer. The answers, hopefully, will be forthcoming.

There's also a bit of mystery surrounding the Sobkoviak 0020Z intercept on 11895 kHz of

Continued from page 1

November 25, 1982. You see, according to the VOA frequency schedule, Latin American programming was in progress at the time of the Sobkoviak intercept. It's most unfortunate that --at this time-- we have no statement from Mr. Sobkoviak for publication. There's no doubt, however, that Krueger and Sobkoviak did intercept "numbers" transmissions on VOA allocated frequencies.

There has been, for the past several months, a 4-digit "Spanish" transmission on 9075 kHz. Is it possible that this transmission began on the wrong frequency? This has happened on numerous occasions with 5-digit "Spanish" transmissions.

Terry Krueger says: "During the summer of 1982, I frequently heard a number of transmissions in Spanish at 0200 GMT on 15652 kHz."

"Again, one can only speculate on this QSL's authenticity of verification. The VOA has recently been issuing a rash of legitimate QSL cards with the incorrect sites listed..."

--Terry Krueger

Krueger went on to say: "...what struck me as unusual was the fact that this frequency was the same one used by the VOA's Greenville, North Carolina, transmitter site for feeding programs to relay sites." (The complete Krueger statement will be reproduced elsewhere in this edition).

Krueger said that though the signal level, audio compression, modulation and frequency similarities for the numbers transmissions seemed to match the VOA feeder programming, one can only speculate on any connection.

"Nonetheless," he said, "I thought I would write to the VOA, as a lark, for a QSL."

"Much to my surprise," he said, "a full-data QSL arrived a few days later, confirming my numbers report."

Krueger also says that since last August, several other hobbyists have reported numbers transmissions on VOA frequencies, and some have also received QSLs.

An anonymous VOA source now says that VOA is being inundated with "numbers" reception reports. It's most unlikely that further QSLs in regards to numbers transmissions will be issued.

What about the VOA position on these incidents? Bob Kent, Special Assistant to the Chief Engineer, admits that VOA transmitters are leased to several other agencies. These other agencies include the UN, AFRTS and OAS. (The OAS is the former Pan American Union)

A reliable source --speaking anonymously-- indicates that the once infamous Radio Free Liberty and Radio Free Europe are now leasing VOA transmitter time!

Adding to the confusion is the statement from another equally reliable source --also speaking anonymously-- that the VOA is in NO WAY involved with these two broadcasting concerns. Again, the VOA indicates that it will clarify this situation in regards these "others" in the near future. Let's hope that it's not a lengthy wait.

As the "cold-ware" gains momentum, it's remotely possible that there's a KGB and DGI (Cuban Intelligence) plot to discredit the VOA. Another possibility is that the VOA does not have total control over the unknown "others" that lease VOA transmitter time.

It's also within the realm of possibility that the Castro regime is "miffed" that the "Radio Marti" issue refuses to expire with dignity.

This spectre of "Radio Marti" is now in the form of Senate Bill #659. It's now called the "Radio Broadcasting to Cuba Act." It's dated March 3, 1983. This Bill, in part, states:

"Radio broadcasting to Cuba under this Act shall serve as a consistently reliable and authoritative source of accurate, objective, and comprehensive news." "Any broadcasting to Cuba on the AM band other than that conducted by means of leasing time on commercial or non-commercial educational radio broadcasting stations, shall be limited to the frequency used by the VOA for its broadcasts from the facilities located at Marathon, Florida. In the event that broadcasting is conducted on the frequency used by the VOA, the VOA broadcasting facilities located at Marathon, Florida, may also be used for the purposes of this Act."

Strangely enough, those "lizard-tongues" of the Revolutionary Voice of Radio Free Grenada have, indirectly, entered this HF "soap opera" (there's also a TV Free Grenada).

As recently as March 12, 1983, (one day before the 4th anniversary of the Grenadian revolution) at 2130Z on 15045 kHz, a lengthy and caustic attack was directed at the VOA. Seems that the people of Grenada resent the VOA interfering in their revolution! That's hardly the style of the VOICE!

It's rather difficult to take this "black" propaganda Grenada bunch seriously. Their affinity for bizarre obituaries and The Old Rugged Cross are a bit much.

It's most unusual for other international broadcasters to speak unkindly of the VOICE. It's just not a "class" thing to do.

Others, outside and inside the VOA, have been quick to come to the defense of the VOA. A former intelligence officer, with 20 years experience in clandestine radio says: "... it's totally incomprehensible that the VOA would involve itself in such clandestine matters. It would be detrimental to the intelligence community and the VOA..."

"...there is no way that VOA would jeopardize its worldwide reputation or its relationship with Congress with a grey or black operation with another agency..."

--George Jacobs

Former Chief of Operations for VOA

Diane Conklin of the VOA Public Information Office, in a letter dated March 16, 1983, says:

"I would like to state for the record that no coded number transmissions have ever emanated from VOA facilities or transmitters."

There's also the indisputable voice of George Jacobs speaking in defense of the VOICE:

"I can tell you without hesitation that there is no way that VOA would jeopardize its relationship with Congress with a grey or black operation with another agency. In wartime it would be justified, but present conditions don't warrant it."

Ann Case, VOA Chief of Operations and Warren Richards, Frequency Manager for VOA, have either been in meetings or out of the office on the numerous times that phone calls were placed to them. Statements from these two officials would be most welcome and informative.

In the past few weeks there have been other incidents on VOA frequencies that warrant immediate explanation.

On numerous occasions, just seconds after 0300 sign-off on 11895 kHz, a Morse beacon, "TU" (-.-) has been monitored. In addition, Slavic(?) and Spanish language programming without any apparent identification have been monitored on several occasions on 11895 kHz after signoff.

Another strange incident involving an "English numbers" transmission and a VOA(?) news broadcast has been monitored. This incident in its entirety will not --at this time-- be reported. The VOA has been informed of this incident and we are awaiting their reply before publication.

And finally, from Rogene Waite, of the VOA Public Information Office:

"...we are still in the process of soliciting answers to your questions of March 8, 1983. Will forward responses as forthcoming."

It's lengthy series of questions that have been presented to the VOICE. Perhaps the answers will be revealing.

Shortwave

Directory Updates

Additions and changes to the Shortwave Frequency Directory by Bob Grove are now available from Grove Enterprises. The updates include FEMA, NASA, Disaster Communications, enroute aeronautical and VOLMET.

The lists are enclosed free of charge with all new orders of the popular Shortwave Frequency Directory (BOK-13); previous customers may order the update separately by sending \$1.50 to Grove Enterprises, 140 Dog Branch Rd., Brasstown, NC 28902.

In Search Of The Jolly Bucs

Part II

By John Santosuosso

DXing shortwave pirates is not the easiest thing you will ever try. In the last issue of Monitoring Times we noted some of the difficulties encountered in chasing pirates. However, if you possess certain bits of information you can swing the odds somewhat in your favor.

First of all, it is important to know when to listen. Pirates can be heard at almost anytime, since schedules are irregular, but the majority of transmissions tend to occur at particular times.

Research indicates that many North American pirates are college students. While some do find it possible, it is often difficult to carry the transmitter and antenna off to the dormitory with you. So a number of stations broadcast during those periods when students are likely to be home.

Be especially on the lookout for transmissions around major holidays such as Thanksgiving, Christmas, New Years, and Independence Day. Operators also like the holiday seasons because only the most fanatical of FCC agents would be out trying to bust a station on Christmas Eve!

Other times when monitoring may pay off are in the early spring (when colleges usually break for a week) and during summer vacation periods. Unfortunately, summer atmospheric conditions somewhat cancel out the advantage of more frequent broadcasts during that season.

Next, it is important to know that most of the broadcasts you are likely to hear will occur on weekends, especially GMT Sundays after 0400 or 0500. The reasons for this are similar to those noted above.

College students may come home for a weekend, and operators who work usually have more time for their hobby on a weekend. Also, some pirates feel the FCC is not apt to be working overtime after midnight on a Saturday or Sunday.

Veteran pirate chasers suggest you scan the frequencies at the beginning of the hour, since that is the time most stations tend to begin broadcasting.

Once armed with information on when to listen, it is vital to know where to listen. Contrary to what some believe, most pirates try very hard not to interfere with any other station. Look at it from the pirate's point of view. Such operations make no sense. No one will be able to hear him, and the station being interfered with probably will complain to the authorities. Consequently, pirates generally will avoid any shortwave broadcast band.

They also dislike amateur radio bands, despite the fact that much of their equipment is converted ham gear, because probably 99 percent of the hams vehemently oppose the pirates.

The places to look for pirates

are those portions of the shortwave frequency spectrum assigned to utility operations, and especially on frequencies where utility traffic often is rather light.

In recent years frequencies between about 7350 kHz and 7450 kHz, in a band assigned to fixed service utilities, have been especially favored by pirates. Although from the standpoint of interference it is not the best choice, probably 7425 kHz has been the most popular of all pirate frequencies.

Another "pirate broadcasting band" will be found between approximately 6220 and 6300 kilohertz, frequencies officially designed for marine operations. While many North American stations have used these frequencies, in the winter months this band should also be carefully monitored for the elusive Europirates, who, under favorable conditions, can sometimes be heard broadcasting here.

Less often used are frequencies around 6800 kilohertz. Transmissions during daylight hours are not too common, but a search of frequencies between 14500 and 15050 on a Saturday or Sunday afternoon may just turn up a pirate or two.

For those who want to find pirates on the FM and medium wave bands, the job is going to be more difficult unless you live in a major metropolitan area. Medium wave and FM pirates have a range considerably shorter than their shortwave counterparts, making reception harder and detection by the FCC easier.

They are also more likely to have interference problems if they attempt to broadcast within the normal limits of the bands. Some stations attempt to do so anyway, but most appear to land on frequencies just above or below the regular bands.

For medium wave operations try frequencies from about 1610 to 1630 kilohertz. Recent years have seen considerable activity in the New York City and Long Island, usually received even on car radio.

Under favorable conditions some of these stations can be heard throughout New England and as far away as the Midwest. Several years ago the now defunct WCBX was even heard regularly in Florida.

Lesser use of the 1610 to 1630 band is to be found elsewhere in the country, so it is definitely worth monitoring. Recently, KM-JC, a pirate claiming to be in Louisiana, said it would be broadcasting in that range in addition to the New York metropolitan area, California has also been the scene of considerable medium wave activity, some of it within the official limits of the band, so residents of that state may also have considerable success in searching for bootleg broadcasters.

The most likely place to find an FM pirate is on the lower end of the FM band, between 88 and 90 MHz, frequencies officially reserved for educational institutions.

One former New England FM pirate, WWTN, actually operated below the band on 87.4 MHz; however, some of the New York area pirates have also operated on higher frequencies within the band, so it pays to look around.

What about TV pirates? Oh, yes, they do exist! About two years ago a Southern Pines, North Carolina, man was fined \$2000 by the FCC by rebroadcasting pay-

TV signals on locally vacant channel 7, and several established radio pirates have hinted they might give TV a try. Nevertheless, TV pirates are so rare, and their broadcasting range usually so limited, that if you stumble across one consider yourself very lucky indeed. You may never see another one.

So, there you have it, a few suggestions for adding to your pirate loggings. Good luck, and while you are at it, why not let us know what you hear? Who knows, you just may be the first person to hear a brand new buccaneer!

Radio X To Leave The Airwaves

By David Crawford
Oak Hill, FL

Radio X, 103.5 MHz, from Daytona Beach, Florida, signed off for the last time on Christmas Day, 1982. The station's 20 watt signal had offered listeners in the Daytona Beach area a mixed fare of oldies and new wave music during weekends for nearly two years.

According to "Bruno The Human Pineapple," the station operator, the decision to close the station down was made in response to a threatening phone call received on 22 December 1982, from a person believed to be a federal agent.

The caller refused to identify himself, but was very knowledgeable on the subject of radio equipment and regulations, and threatened to "bust" the station immediately if it did not leave the air, said Bruno, who added that the caller seemed to be of local origin.

Radio X's telephone number

was no secret. The number was announced on the air frequently for listeners to phone in their music requests.

The beginning of the end for Radio X came on 18 December 1982, when a report of the station's existence was broadcast on Glenn Hauser's DX report over Radio Canada International's "SWL Digest" program.

It appears likely that someone within the monitoring framework of the Federal Communications Commission heard this item and took action.

The FCC, according to documents obtained via Freedom of Information Act petition, had utilized a "working contact" in Daytona Beach previously. His identity was stricken from the documents and his exact capacity is not known.

In addition, there is an FBI office in Daytona Beach from which the call could possibly have originated.

CW For Shortwave Listeners

....A Follow-up

By Sam W. Lambert

First, I would like to thank those readers who responded to my plea for aeronautical Q-codes. Your efforts were much appreciated.

Reader Ed Flynn accompanied his list of Q-codes with an additional request for a recent NAM broadcasting schedule. The following is a relatively new schedule (effective at the end of 1982); all times are GMT (UTC).

| | |
|-----------|---|
| 0100-0200 | LCMP-2 |
| 0600-0800 | Wind and Sea Warnings |
| 0800-0900 | Hydrolants |
| 0900-1000 | LCMP-1 |
| 1000-1300 | Hurriwarlants, NAM 1,2,3 |
| 1300-1400 | LCMP-1 |
| 1400-1500 | LCMP-2 |
| 1500-1600 | NAVAREA IV |
| 1600-1700 | Hydrolants |
| 1700-1800 | Hurriwarlants, NAM 1,2,3 |
| 1800-1900 | LCMP-1 |
| 1900-2000 | LCMP-2 |
| 2000-2100 | Tropical Weather & Gulf Stream Analysis |
| 2100-2200 | NAVAREA IV |
| 2200-0100 | Hurriwarlants, NAM 1,2,3; and other weather |

Note that these naval broadcasts seem to be transmitted by combined stations, as they now feature the following call letters: NMN/NAM/NRK/NGR/NAR/GXH/AOK. Here are the station locations:

NMN - USCG COMMSTA Portsmouth, VA
 NAM - Naval Radio, Norfolk, VA
 NRK - Naval Radio, Keflavik, Iceland
 NGR - Naval Radio, Kato Souli, Greece (near Athens)
 NAR - Naval Radio, Key West, FL
 GXH - Naval Radio, Thurso, Scotland
 AOK - Rota, in southern Spain

The frequencies on which I pick-up these broadcasts are: 5870, 5917, 8090, 12135, and 16180 kHz. Note that Morse code drills are occasionally broadcast outside the times listed in the above schedule. For example, a slow-speed drill (5 w.p.m.) was recently heard in progress at 0225 GMT, and it speeded up to 7 w.p.m. at 0230 GMT. It consisted of five-letter groups.

Thanks again, fellas
 Sam W. Lambert

THE LOWDOWN ON ELF

Part I

by Larry L. Ledlow, Jr.

(Monitoring Times is pleased to present the first of a three-part series by Larry Ledlow, Jr., a recognized expert in the field of low frequency communications.)

Author Ledlow's clear presentation is quite possibly the first time such a topic has been presented so comprehensively in any publication intended for the listener.)

The extremely low frequency range (30 to 300 Hz) is truly the 'low down.' It is a region of the radio spectrum which has captured researchers' interests and efforts since before the beginning of the century.

During recent years intense reexamination of the ELF range has taken place. Let's take a look at what this nether region is all about and what makes it so special.

We all utilize ELF to a certain extent. The AC lines in our homes carry 50 or 60 Hz radio frequency currents. There are many sources of ELF phenomena--lightning in the lower atmosphere, plasma phenomena in the ionosphere and magnetosphere, and biological processes are natural sources, while power and communication systems are man-made sources.

Physicist Nikola Tesla figured prominently in the early conceptual development of man-made ELF systems. In 1899 Tesla envisaged a world-wide communication system utilizing a huge spark gap transmitter located in Colorado Springs.

Several years later he built a large ELF facility on Long Island in anticipation of transmitting signals to a duplicate facility of the Cornish coast of England. Tesla also proposed a modified version of his system to distribute power to all points of the globe without conducting wires.

Unfortunately, Tesla lost his financial support from his sponsor, J. Pierpoint Morgan, apparently in part because of Marconi's successful demonstration of transatlantic signal transmission using much simpler and less expensive equipment.

It is commonly known that the penetration of RF energy into conducting media (e.g., the earth or seawater) is improved as frequency is lowered. Further, at extremely long wavelengths the signals are relatively unaffected by obstructions (e.g., buildings and mountains).

Conrad and Marcel Schlumberger, two geophysicists interested in using ELF electromagnetic waves for mineral prospecting, first demonstrated transmission of 100 Hz waves over useful distances (0.1-10 KM away) just before 1920.

From that time until recently, ELF has been a region of the spectrum inhabited primarily by geophysicists interested in at-

mospheric propagation or mineral prospecting.

Readers may be familiar with waveguides, metal pipes used to connect antennas to transmitters or receivers at microwave frequencies because their signal losses are considerably less than those of coaxial cable.

At ELF the Earth-ionosphere cavity may function as a waveguide. This allows the propagation of ELF signals around the globe with very little attenuation.

With long distance and useful penetration in mind, we can immediately imagine many uses of ELF for communication purposes. A prime use is as a link between submerged submarines and Naval headquarters.

Currently, submarine communications are limited by depth. To use HF, VHF, or UHF the vessel must have an antenna above the water. This usually requires the submarine to be at periscope depth or less.

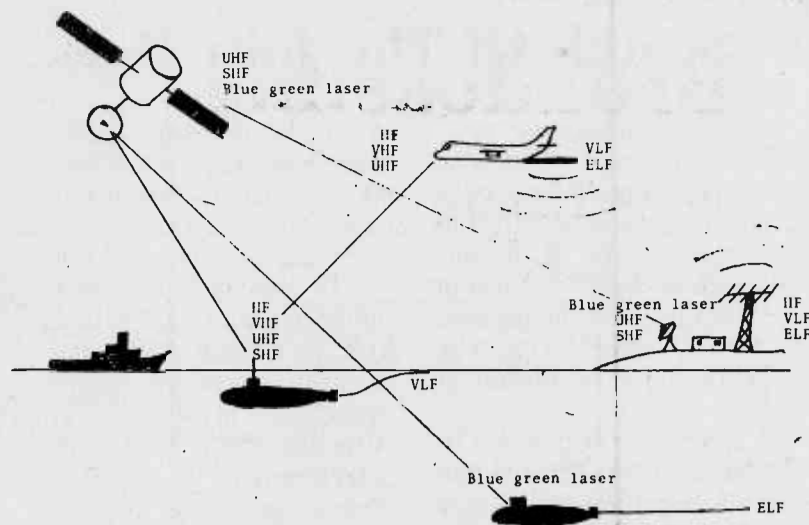
VLF (3-30 kHz) communication may be carried out by floating a trailing antenna at or very near the surface of the water while the submarine is submerged, but propagation distances at VLF are severely limited because of saltwater attenuation. In addition, the submarine is still considered vulnerable to detection and attack.

Research is being done on the use of blue-green lasers for communication through seawater to depths comparable to those considered maximum for VLF communications.

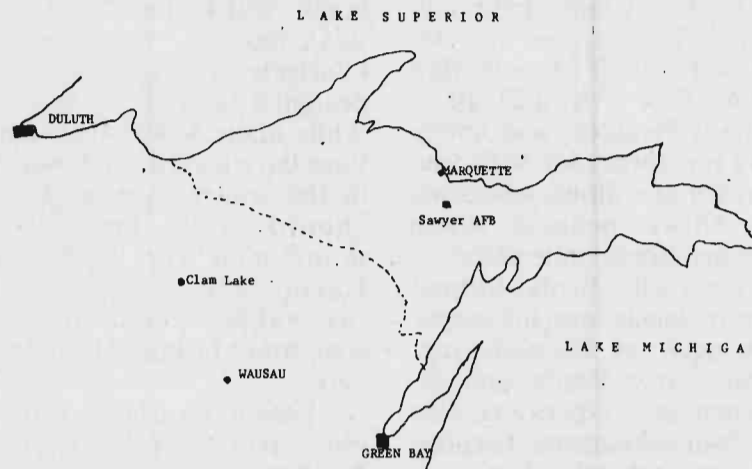
ELF, on the other hand, may provide communications with submarines submerged as deep as 300 meters without the use of aircraft or satellites to relay the information.

Short range communications through water (between divers for example) is another application of ELF. The advantages of using ELF rather than acoustic signals in water is immediately apparent, when one considers the reverberation associated with acoustic waves, especially in the proximity of vessel hulls, piers, and other obstructions. Further, acoustic communications between aircraft and a diver, for example, would be impossible without the use of a buoy with a transponder at the surface to receive the aircraft radio signals and to retransmit them to the diver using acoustic signals. ELF radio waves, on the other hand, can readily cross the air-water boundary.

Applications of ELF radio communication to mining can also be seen. Miners working hundreds of meters underground may have their conventional communications link broken during an emergency. However, ELF waves can easily penetrate the



This figure illustrates the place of ELF in an integrated communications environment to maintain contact with submarines.



This map illustrates part of Wisconsin and the Upper Michigan Peninsula where the US Navy has two ELF facilities. Sites were chosen on the basis of isolation and ground conductivity measurements.

overburden for the miners to signal their position and condition to a receiver at the surface.

We have so far discussed only the advantages of ELF but 'You don't get something for nothing.'

How does one detect ELF waves? A half-wave dipole for 100 Hz is nearly 900 miles long! This would hardly be suitable for installation on a submarine. A loop perhaps? Start winding. It may be done by the turn of the century (pun intended)!

Another problem is a noisy environment. Lightning and upper atmospheric phenomena are very powerful generators of ELF radiation. Shortwave and longwave listeners know how noisy the MW and LW bands are on a summer evening.

In addition, long trailing antennas, such as might be installed on an aircraft or a submarine, tend to vibrate due to turbulence. Because of the ever-present geomagnetic field, this vibration induces ELF noise in the receiver system.

Finally, a fundamental issue must be considered--that of data rate and signal bandwidth. Speech is contained in frequencies below 3000 Hz; if transmitted at ELF (30-300 Hz), one SSB voice signal would occupy a bandwidth 10 times greater than the entire frequency band!! This would be like trying to transmit a normal TV signal (bandwidth 6 MHz) on the AM broadcast band (bandwidth 1 MHz).

There have been many suggestions for solutions to these problems. While information may not be passed at a very high rate at ELF, a little information may be very helpful, if nothing more

than to say, 'Come up for urgent traffic.' Even indications of no traffic would be extremely valuable, thereby eliminating the need of the submarine to surface to communicate on one of the other links. A ballistic missile submarine (SSBN) must at all times remain in 'positive control' of the National Command Authority; it must remain very near the surface to communicate without ELF, and it is vulnerable.

During the Carter Administration a selective calling ELF system was proposed which could send messages to submarines without exposure or loss of operational freedom of the submarine. During April 1963 the Navy demonstrated the effectiveness of ELF communications by transmitting a signal from a site in North Carolina to a submarine 3200 km away with a receiving antenna near keel depth.

The experiment was called the "Intensive Test". Early Navy experiments have gone under the guise of projects Sanguine and Seafarer, among others.

At present there is an ELF test facility ("Project ELF") located in the Chequamegon National Forest near Clam Lake, Wisconsin. Another facility, more extensive than the test facility, has been under construction near K.I. Sawyer AFB on Michigan's Upper Peninsula.

Now that we have established that ELF is a viable communications band, let's get down to the business of discussing ELF transmitter and receiver systems--including antennas. More on those topics in Part II.

Broadcasting

"To err is Human---

Hank Bennett-W2PNA

Welcome to another column devoted to International Shortwave Broadcasting. As I mentioned last month, the term "Shortwave" listening is not entirely correct to most of us since we consider virtually any frequency to be fair game for listening purposes.

From time to time in this column you might well find an item or two on stations having frequencies that are not, in the strictest sense, considered as shortwave.

It's easy to goof, though. A number of years back I fell solidly for a report that a fabulously-new and powerful station had gone on the air from the island of Nibi-Nibi in the Pacific. It really stirred up the shortwave listening boys until someone realized that the whole thing was a hoax. Just proves how easily errors can be made without complete research and/or proof reading!

Let's Look At Some Clubs

Anyone interested in joining a club? The March/April issue had a fine list of clubs and we refer you to it. In addition, a club that has been in operation for just over a year is the Association of DX Reporters.

This club formed out of the ashes of the now-defunct Newark News Radio Club by a number of the officers and editors of NNRC. Reuben Dagold and his crew have quickly put together a fine bulletin and they would like to have your name in their membership list.

Drop them a line and send along a half buck for a sample bulletin or plunk down fifteen bucks unseen for membership for a year. Overseas readers please write for membership details and rates. Their address is ADXR, 7008 Plymouth Road, Baltimore, Maryland 21208.

The National Radio Club, in last month's list, has a fine Domestic Log for medium wave DXers. It contains over 200 pages of stations for the U.S. and Canada and listed by frequency and cross-referenced by callsign. The cost is \$8.50 for members; \$9.50 for others. Use the address as listed in the March/April issue.

An even newer club on the scene is the Central Maryland DX Association. Officers and members meet monthly at the Sacred Heart Church, Fleet and Conkling Streets, Baltimore, Maryland, at 7:30 p.m. on the second Monday of each month.

Their monthly bulletin is called DX Gram. The dues, at this time, are 37 cents per issue or \$4.45 per year and you can get involved by writing to Donald E. Stidwell, Editor-In-Chief, 6508 Eberle Drive, Apartment 101, Baltimore, Maryland 21215.

Local listeners can get more information from Don at (301) 358-6406 or Tony Kobylski at (301) 563-0039.

MIKE 'N' KEY is a new SWL/Ham publication that is published by the Senior Citizens Amateur Radio Society, George A. Greenwood, Publisher-Editor, P.O. Box 6631, Ithaca, New York 14850. Please write to them for full membership information.

Foreign QSL's

Many DXers send station reports to foreign countries the world over. And in many cases, it's not only a courtesy, but a necessity, to send return postage.

The post office will sell you International Reply Coupons which, when received at the other end, will enable the recipient to purchase sufficient postage for a one-ounce surface-rate letter (or QSL) back to you.

But not all countries belong to the International Postal Union and you could be wasting your money. How about sending mint stamps of the country to whom you are writing? Can be done...easily.

The DX Stamp Service is operated by George Robertson, W2AZX, 7661 Roder Parkway, Ontario, New York 14519. He'll sell you stamps from many foreign countries and at a fair price. Send him a stamped, self-addressed envelope for his list. Or call him at your expense at (315) 524-8806.

A Bit Of Nostalgia

Is anyone interested in obtaining information on antique radios and/or parts? Mr. J.W.F. Puett of Puett Electronics, P.O. Box 28572, Dallas, Texas 75228, has an extensive list of material that is available.

This includes cassette recordings of old-time radio shows, old radio tubes, various books on antique radios, services, antenna and ground systems, and how to appraise old receivers, along with reprints of many old instruction books...and much more. One buck will get you his 32-page catalog.

We've received many nice comments from the readers of this column and we're grateful to you for them. Several persons have also commented on my item concerning the old Westinghouse crystal sets that I've owned for years. Seems that there are still some of those antique receivers in circulation.

My best DX on them was many, many years ago when WLW, Cincinnati, Ohio, operated after midnight with the experimental callsign of W8XO and a power far in excess of its usual 50,000 watts, on 700 kHz. Does anyone else remember W8XO?

How about registering your listening post and obtaining your own individualized callsign-type

identification? Full information may be obtained from your Editor at P.O. Box 3333, Cherry Hill, New Jersey 08034. This address is also good for your reports, schedules, and comments on this column.

The Shortwave Listening fraternity has lost a good friend, as we have just learned. A short notice in the Leader-Herald newspaper of Gloversville, New York, reports the death of veteran DXer LeRoy Waite of Ballston Spa, New York.

Mr. Waite was, for many years, an officer in the Newark News Radio Club and the SWL QSL Manager for the American Radio Relay League. He died at the age of 82 after a short illness in the Saratoga Hospital, Saratoga, New York.

Those interested may send cards of sympathy to Mrs. Waite, 39 Hannum Street, Ballston Spa, New York 12020.

Gary Criteser of Battle Creek, Michigan, writes in that he stumbled onto Radio Free China, 5985 kHz, Taipei, from 0300-0345 GMT with news, a Chinese language lesson, and commentaries on Chinese history and Art.

For a program schedule, write Radio Free China, P.O. Box 24038, Taipei, Taiwan, Republic of China.

Gary uses a Kenwood R-1000 receiver with a five-band vertical ground-mounted antenna.

The International Red Cross Broadcasting Service, using transmitters in Switzerland, has a number of broadcasts planned for 1983. The balance of the year runs as follows: In English for 30 minutes followed by French at 0600, 1130, and 1700 on May 23, June 27, July 25, August 29, September 26, October 24, November 21, and December 26--all the fourth and fifth Monday of their respective months.

The frequency will be 7210 kHz with an omni-directional antenna; broadcasts in German and Spanish will be on the same schedule on the Wednesday after the above broadcasts.

Broadcasts to the Middle East and Africa will be at 0945-1015 on May 26, July 28, September 29, and November 24, in French, Portuguese, and English on 15430, 17830, and 21520 kHz, and in Arabic on 21630 kHz.

English to Asia will be at 0945-1015 two days before each of the above dates, on 9625, 15305, 21520, and 21695 kHz.

At press time, test transmissions from Radio Mediterranean, Malta, were being heard at 1800-1900 with pop music and announcements in Arabic, French, and English on 5060 kHz. European listeners were also hearing this one on 1557 kHz. Announcements indicate regular service to be at 1800-1900 English, 1900-2230 Arabic, and 2230-2330 in French.

Bangla Desh, Dhaka (formerly Dacca) is no longer being heard on 3240 kHz or the other Home Service channels of 9580, 7220, 6145, and 4890 kHz.

These transmitters are all quite old; repairs may be in process or perhaps it has been decided to drop these frequencies from the Home Service Network.

Sudwestfunk in Baden-Baden, West Germany, no longer carries the SWF 1 broadcasts over 7265 kHz. Now, SWF 3 is carried with pop music, traffic warnings, and hourly newscasts.

High powered stations are not confined to the shortwave bands. Sud Radio, actually of Andorran registry, is reported constructing a new transmitter of 600 kW in southern France, to operate on 819 kHz in the medium wave band. East Coast DXers can keep their ears tuned up for this one.

Meanwhile, on the long wave band, Medi 1, a new commercial broadcaster with programs in Arabic and French and beamed primarily to listeners in North Africa and the countries surrounding the western Mediterranean, is scheduled to go on the air on 173 kHz with 1,200,000 watts!

To operate 18 hours daily, Medi 1 is a joint French-Moroccan venture. East Coast listeners who are able to tune the long wave bands stand a reasonably good chance of hearing this station under good receiving conditions. A loop antenna might well help, too.

Speaking of loop antennas, the Colegrove loop antenna for medium waves is now available in plan form. This loop reportedly does a fine job on the broadcast band, according to information that we have received. For \$2.50, check or money order, the plans will be sent to you, postpaid.

Write to the Association of DX Reporters at the address given earlier.

Have you QSLed Austria? This one is possible but it may not be easy. After having changed its frequency to 5036 kHz, the Austrian Army Training Transmitter (Schulungssender des Oster. Bundesheeres) recently closed down its 1 kW transmitter in Vienna and moved broadcasts to a 10 kW transmitter located near Fleckendorf, just south of Linz, the provincial capital of Upper Austria.

Programming is designed exclusively for military personnel; however, correct reports are being promptly verified. If you're lucky enough to log this one, send your report to Heereseschulungssender-Sendeleitung, Franz-Josefs-Kai 7-9, A-1010, Vienna, Austria.

If you are hearing French in the 75-meter ham band during evenings (your local time) it might well be the France Inter network program that is being relayed on 3965 kHz from 1800-0800.

This frequency has been placed in operation due to the difficulty in receiving the program on 6175 kHz during hours of darkness.

Radio Baghdad, Iraq, has English for Europe on 9745 kHz at

Continued on page 8

Bits

By Mike Edelson

Questions From Readers

Several readers have asked where they can obtain information on monitoring the weather satellites. Try an excellent--and free--publication called, "Teachers Guide for Building and Operating Weather Satellite Ground Station" by R. Joe Summers and Timothy Gotwald. It is available from: Educational Programs Branch, Office of Public Affairs, NASA Goddard Space Flight Center, Greenbelt, MD 20771.

J.R.M. asks about the use of the TI-99/4A for converting CW/RTTY to a printed format. At present, I do not know of any systems available for this but it is reported to me that the International 99/4A Users-Group (P.O. Box 67, Bethany, Ok. 73008) is working on writing the software for this purpose.

I have seen software for this purpose offered for the APPLE II and for the VIC-20 computers. I do not have any bench test results for either set of software but I would imagine that they are worthy of consideration.

The computer would need in-

put of a nature to copy the signals for translation. This is a hardware problem and requires additional components. H.P., Jr. contacted me about using the Atari 800 to implement a series of systems, among them are environmental control, a Burglar alarm system, timing, and message handling. I advised him to check with Atari find out if the system could accommodate an ANALOG-DIGITAL converter.

This device converts analog-represented data (such as temperature) into a digital signal that a computer can understand.

Many networks (such as The Source or Compuserve) offer systems for message handling (electronic mail). Each manufacturer has a word processing system that they suggest: Radio Shack has SCRIPSIT; CP/M-based machines have a series of software (I suggest WORDSTAR; there are others).

XXXX

I would also like to thank DMcD in N.J. for his call (please call back as soon as you can).

TEI in Ill.; thanks for the card; I look forward to helping you if I can.

XXXX

On a serious note, the following notice passed to me recently; All TI-99/4A users are encouraged

to contact TI-- there is a potential fault in the computer transformer that TI is correcting by providing an adapter.

TI will be contacting people with the system if they have sent their rebate or warranty cards to Texas Ins. If there is any questions about this, call TI at 800-585-4565 or 800-527-3550.

It appears that while there is no major concern, there is a chance that the transformer can fail and cause a shock.

It is safe to use the system and no extraordinary measures are needed, but do be aware of strange odors, overheating, or computer failure. If this does happen, return it to the TI EXCHANGE CENTER.

The adapter that TI is providing free of charge is placed between the wall socket and the transformer. New computers from TI will have a GREEN

sticker that says "SAFETY CHECKED" on the box.

XXXX

I appreciate hearing from MT readers. Please bear in mind that I am not a hardware specialist; I am a software specialist (programmer). If you write me about a hardware matter, I will do the best I can to answer it.

Please don't be offended if my answers are short and abrupt but I will answer all questions in a greater detail in the column.

In your letter you may include your phone numbers as it may be advisable that I phone you. Otherwise, enclose an SASE for a personal answer. In any case, all letters get answered in this column as space permits.

As always, your questions, criticisms, complaints, etc. can be sent to me at P.O. Box 203, Roselle Park, N.J. 07204.

"Backscatter" Fights

Interference At Grass Roots Level

One of the most irritating sources of interference plaguing shortwave reception is the "Russian Woodpecker", a high-resolution over-the-horizon backscatter radar system.

Saturating the shortwave spectrum with high level signals, the OVTH pulses obliterate legitimate users of the HF range with impunity.

Now, the U.S. Air Force plans to add its own pollution to the pileups.

In an effort to combat the potential offender, an activist newsletter has begun to unite

serious listeners in an effort to petition the government to reconsider.

Shortwave enthusiasts may wish to subscribe to the highly-informative newsletter, written by Robert Horvitz, which comes out approximately every two or three months. Cost is a nominal \$.30 per issue plus a self-addressed, stamped envelope.

Send as many SASE's and \$.30's as you wish to: Robert Horvitz, Chairman, ANARC OVTHBR Committee, 54 East Manning Street, Dept MT Providence, RI 02906.

Broadcasting Continued from page 7

2100-2200. At 0300-0400 there is a transmission to North and South America, also on 9745 kHz. Radio Baghdad is asking for reports on cassette tapes and promises to return the cassettes with recordings of Iraqi music.

Here's a good challenge for you West Coast DXers: According to a QSL, Radio Enga, Papua New Guinea, is using 10 kW on medium wave 1494 kHz and 2500 watts on shortwave 2410 kHz.

The schedule is 0730-1300 and 1930-2200 in Pidgin and Enga. The station boasts 16 employees and about the time that you read this the station should be starting an FM service.

Every Sunday Radio Milano International can be heard on 6221 kHz with programs in Italian; RMI has also been heard on medium wave at 1300-1305 kHz. The programs of World Music Radio are no longer heard via RMI, but instead, on another private Italian station, IBC.

IBC is active on three frequencies but those frequencies are variable and modulation is weak. They have been heard on 6272-6275, 7332-7335, and 11,585-11,588 kHz.

Most of the programs are relayed from Radio Time, a local station in Florence.

A new station in Florencia, Columbia, is Emisora Armonias del Caqueta, on 4915 kHz with 3 kW. The callsign is HJVK and it operates daily from 1000-0300.

This is a Catholic-owned station with cultural and religious

programming. It's reportedly being heard well in the U.S.

Before closing, we'd like to mention that the Association of North American Radio Clubs 1983 convention will be held from July 15-17 at the Westpark Hotel in Rosslyn, Virginia, just across the Potomac River from Washington, D.C.

The world's leading DXers, broadcasters, radio companies and experts on a variety of radio related topics are expected to attend the convention.

For further information please contact the host club, the Washington Area DX Association, 606 Forest Glen, Silver Spring, Maryland 20901. Please enclose a stamped self-addressed envelope for your reply.

The reports in this column have been supplied by members of Sweden Calling DXers, care of Radio Sweden International, S-105 10, Stockholm, Sweden. We thank them for their efforts.


Radio Sweden International carries English as follows: At 0230 on 9695 and 11,705 kHz to North America; at 1100 on 9630 kHz to Europe and 21,610 kHz to Australia and New Zealand; at 1230 on 15,190 kHz to East Asia and 21,690 kHz to Africa; at 1400 on 21,615 kHz to North America and 21,700 kHz to South Asia; at 1600 on 15,435 to South Asia; at 1830 on 6065 kHz to Europe and 15,240 kHz to Africa; and at 2300 on 11,705 and 15,270 kHz to North America.

Good listening, everyone!

1983-84
\$2.00

ARRL

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Hear ham radio operators in action! The ARRL Repeater Directory lists, by location, over 6,000 Amateur Radio repeater stations and their frequencies where you can listen-in on everything from casual conversations to real emergency communications. Who knows, maybe you will catch the Amateur Radio bug! The 1983-84 Edition is only \$2.00 (In quantities of 5 or more, \$1.75 each.)

Enclosed is my check money order in the amount of \$ _____ for _____ copies of the 1983-84 Repeater Directory

Name _____

Address _____

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Common Complaint:
I don't trust mail order companies!

Remedy:
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GROVE ENTERPRISES!

Here are just a few of the comments we have received.

I hesitated to order from you. After learning your policy and prompt attention to customer's needs, I wish to order further equipment. (Richard Lucas, Frewsburg, NY.)

I really appreciate how you educate us new people in the hobby. You are a great asset to us. We respect your products and knowledge very much. (Rich Newbould, Pittsburgh, PA.)

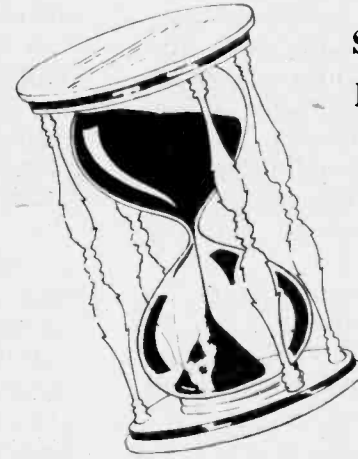
Am pleased at your service. (L.L. Branch, Cape Girardeau, MO.)

You folks are to be commended for the prompt response to order input (8 days total using the mails, money order, and UPS shipment. (John Arendt, Oswego, IL.)

Thank you for the good service I have received. (Paul Beerbower, Montpelier, OH.)

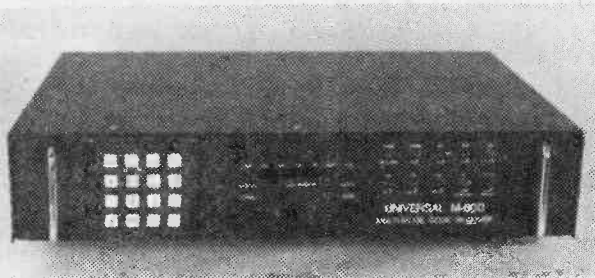
Why Wait?

Use Our
LayAway Plan



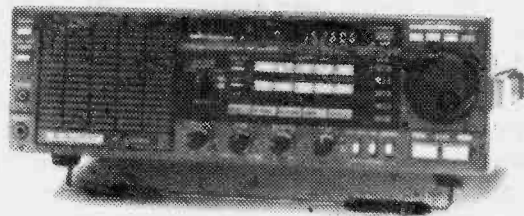
Send SASE
 For Details

Shortwave!



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Copy scrambled radioteletype messages never before readable with standard demodulators and readers. Bit inversion. TOR/SITOR, formerly garbled on other decoders, now perfectly clear on the revolutionary M-600! Simply attach to your shortwave receiver's external speaker jack and connect a printer or video monitor and copy government transmissions, ship-to-shore messages, public correspondence stations and much more. A sophisticated microprocessor automatically sorts out the encryption for you; sit back and watch what you could never see before! The magnificent M-600 provides scrolling, page recall, speed readout, unshift on space, white on black video, 64 character upper-case ASCII, 36 or 72 character lines, 16 or 25 lines per page, selective call, buffered printer out put, isolated loop, and many other deluxe features. The M-600 copies ASCII (110, 150, 300, 600, 1200 baud), Baudot (60, 67, 75, 100, 132 WPM), Morse code (up to 60 WPM), in both standard and non-standard shift. Demand is heavy for this revolutionary new decoding system, so order now! Operates from 120/240 VAC. 50/60 Hz. \$799.00 plus \$10 UPS. (No discount allowed on this item.)



KENWOOD R-2000 NEW, SUPERB . . . and affordable!

The long-awaited R-2000 receiver has arrived and has been fully checked out by Bob Grove. Outstanding frequency stability makes it a natural for SSB, CW and RTTY reception. Digital readout with 100 Hz resolution for pinpoint accuracy. 10 memory channels (frequency AND mode!) may be automatically scanned or searched! 100 kHz-30 MHz. Dual 24-hour clock-timer. All modes: AM-FM-SSB-CW-RTTY. Squelch on all modes. Selectable sidebands. Center-carrier readout. 6/2.7 kHz selectivity (15kHzFM) Noise blanker. Four-step attenuator (0-30 dB) 500/50 ohm antenna output, all ranges. 5000/500/50 Hz tuning speeds. AC or 12 VDC operation . . . and much, much more! Retail \$599. GROVE PRICE \$549.00 plus \$7.50 UPS. (Sorry, no additional discounts on this item.)



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Technical Topics

Q. What is the traffic I hear on the air-to-ground frequency 8923 kHz? The language is foul, and many numbers are exchanged. (Ron Neville, Glace Bay, Nova Scotia)

A. You have stumbled across a popular drug smuggler's frequency; their secondary frequency is a few kilohertz higher. Coded numbers and letters identify geographical coordinates, individuals, and alternative frequencies as well as shipping cargo.

Q. Can my Bearcat 300 be used for normal reception on its regular frequency ranges while the Grove Scanverter is attached for 225-400 MHz conversion? (David H. Bortzfield, Millersville, PA)

A. Absolutely. Simply install the small whip antenna which came with signals (converted to 118-136 MHz) will come in the external antenna jack, but the little whip will pick up normal signals on all ranges simultaneously.

Q. Do you recommend external audio filters? Does the ICR-70 receiver need IF filter modification? Does the ICR-70 require realignment after a few weeks bake-in time? Should I use a high-resolution monitor with my RTTY decoder? Should I use a gas-discharge lightning surge protec-

tor in conjunction with a spark-gap arrestor ("Blitz Bug")? (Hank Bradbury, Marshalltown, IA)

A. WOW! A frequency-adjustable audio filter can help restrict the desired audio bandwidth of any receiver and is a useful accessory. It can eliminate distracting heterodynes (whistles) from adjacent frequency interference and improve RTTY, CW and voice reception.

A wide/narrow switch modification is available from Grove Enterprises, EEB and some other sources of the popular ICOM ICR-70 receiver. It definitely improves AM reception. Your ICOM may drift slightly off frequency reading after a few weeks; a simple internal calibration procedure will restore the readout accuracy, and is available from ICOM service centers, or you may do it yourself if you feel so inclined.

A high-resolution video monitor may help on graphics, but standard monitors have excellent resolution on alphanumeric characters generated by all demodulators.

While nothing will protect your station from a direct lightning hit, the new gas-discharge transient absorbers are a good investment in insurance against

damage from nearby strokes. It is not necessary to use an additional gap-type arrestor.

But don't stop there; use a line transient suppressor on the power, line to protect the rest of the system. A simple metal oxide varistor (MOV) works well.

Q. How can I hear the federal government 406-420 MHz band on my BC-300 programmable scanner? (Joe Walker, Mobile, AL)

A. Two ways. First, add 21.6 Mhz (twice the 10.8 Mhz IF of a Bearcat) to the desired frequency; this is the image frequency, and although slightly weaker, is usually quite receivable near metropolitan areas. This procedure works well on all Bearcat programmables.

Second, use a converter like the popular Grove CVR-1B Scanverter; it is designed to provide continuous 216-420 MHz coverage when used with a multi-band programmable scanner. You simply add 36 MHz to the desired frequency, and receive the 406-420 MHz range from 442-456 MHz on your scanner with better sensitivity than the image reception will provide.

Q. How can I use a frequency counter to measure RPM of a motor? (Henry Perry, Lawton, OK)

A. Devise a fan blade for the shaft, and hook a photoelectric cell to the input of the counter. A bright beam of light will be interrupted by the fan's rotation, giving a readout of "interruptions per second".

Divide by the number of blades to get revolutions per second, and multiply by 60 to get RPM.

Q. Is there a way--and is it legal--to monitor point-to-point microwave telephone links?

A. These massive towers operate in the 6 gigahertz (6000 MHz) band, not receivable with conventional converters. Thus, a question as to the legality of interception has never been a public issue.

Personally, I see no difference in monitoring those than point-to-point telephone communications on any other band. They are regularly heard on overseas shortwave links.

Q. Are space shuttle transmissions scrambled? (Adrian Thomas, Williams Lake, BC)

A. All voice communications are encrypted when Department of Defense payloads are being discussed. In the primary downlink range (2300 MHz band), digital scrambling is used, while UHF (296.8, 259.7 MHz) is simply switched off.

With the space shuttle program evolving into a pure military exercise, virtually all communications may expected to be encrypted.

Q. While I enjoy making simple projects I see in MT, my local parts store does not have the components I need; where can I get them? (George DiRaimondo, Astoria, NY)

A. If you strike out at Radio Shack, look in the ads of newstand and subscription hobby radio magazines like Radio-Electronics, CQ, 73, Ham Radio and QST. They burgeon with such merchandisers.

If our proposed home construction section takes off, we will hand pick a few reputable parts firms to advertise in MT, perhaps even offering parts kits through Grove Enterprises. What do you readers think about that possibility?

Q. How can I receive the aircraft band on my Regency K-500 scanner? (Richard Shelton, Chillicothe, OH)

A. Even if it were possible to get the frequency range to track the 118-136 MHz aircraft band, transmissions are amplitude modulation (AM) and your receiver is designed to hear frequency modulation (FM).

Recovered audio would be weak and distorted, just as when you hear aircraft band images in the 154-155 MHz range of your present scanner.

It is possible to add an AM detector which could be switched in during the monitoring of that service, but it is a project.

Q. Can you provide a list of frequencies trains and boats use in Austin, Texas? (Charles Ketcham)

A. Check the back (part V) of Gene Hughes' Police Call Directory, available from all Radio Shack outlets, for railroads, and search 156:275-157.425 161.800-162.000 for active marine frequencies, shared by large and small boats alike.

Q. You recommend RG-59/U cable for scanners, while Tom Kneitel says RG-59/U is less than worthless for scanner use. Would you clarify this contradiction? (William Ritz, Cleveland, OH)

Tom and I are miles apart on this one! The fact is that no scanner made, and no scanner antenna made, maintains a perfect 50 ohm impedance at its antenna input over its operational range. Typically, impedance may vary from 40-80 ohms or more. Thus impedance matching is of no consequence.

What is important is low signal loss and high shielding. In order, I prefer the following common cable types for scanner use, especially at UHF and even high band for runs in excess of fifty feet: RG-11/U, RG-6/U, RG-8/M, RG-8/U, RG-59/U. All cables should be chosen for low loss (typically foam dielectric or spiral-wound polyethylene) and high coverage shield (in excess of 96%, may be woven copper braid or aluminum foil).

While finding suitable connectors for some of these cables may be difficult, it is available.

Coaxial cable may be run under earth or water, alongside metallic surfaces, even adjacent to electrical wiring if suitable shock hazard precautions are

Continued on page 11

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PANASONIC

RF-2200 8-band portable Rcvr **179.95**

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RF-2900 5-band digital Rcvr **244.95**

RF-3100 31-band digital Rcvr **266.95**

RF-4900 10-band digital Rcvr **389.95**

SONY

ICF-2001 AM/FM/CW/SSB digital Rcvr. **209.95**

ICF-6500W AM/FM shortwave portable Rcvr. **189.95**

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0-810 50 ch programmable scanner **259.95**

M-100 10 ch programmable scanner **197.95**

M-400 30 ch programmable scanner **224.95**

K-100 10 ch programmable scanner **144.95**

R-1040 10 ch programmable scanner **136.95**

JIL SX-200 16 ch programmable scanner, covers 26-88 mhz, 108-180 mhz, 380-514 mhz. **329.95**

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Technical Topics

Continued from page 10

taken. Do not splice coax.

Liberalily caulk all weather-exposed joints to avoid moisture intrusion, and replace all coax every five years or so.

Q. What is necessary to receive RTTY on shortwave? (Roger Arnoux, Philadelphia, PA).

A. There are three ways to recover RTTY text sent over the air; all require a frequency-stable receiver:

(1) An inexpensive RTTY/Morse reader like those from AEA, Kantronics or Microcraft;

(2) A demodulator like the HAL or Infotech and a video monitor and/or printer;

(3) A home computer and interface like the Kantronics.

Naturally, a good frequency list is also required; check the Grove Enterprises Book Shelf department.

Grove To Speak At Atlanta Hamfest

For the fourth year, Bob Grove, editor of Monitoring Times and president of Grove Enterprises will be a featured forum speaker at the Atlanta Hamfest, Saturday, June 18th at 2 p.m.

Grove's topics will include equipment, accessories, frequencies to monitor throughout the spectrum.

COMMUNICATIONS LAW AND YOU

Part II

by Bob McGovern

This month we'll take a look at several questions from readers involving monitoring laws.

A reader from the state of Connecticut has inquired about the existence of monitoring laws in his state, as well as the states of Massachusetts, New Jersey, and Pennsylvania.

While Connecticut does not have a state law which regulates the use of monitor radios in automobiles, some cities and counties throughout the United States have ordinances which govern the use of monitor radios in motor-vehicles and on foot.

There is no master collection of city and county ordinances. However, readers can frequently find these and other ordinances for their own city and county in the reference section of their local public library.

Additionally, most counties have law libraries which are open to the public. Just ask for the location of their collection of municipal and county ordinances. Next, look in the index under radios, motor-vehicles, and police. Chances are, if a regulation exists in your city or county, you will find it.

I believe that Massachusetts and Pennsylvania do not have any state laws regulating the mobile

or portable use of scanners. New Jersey does have a very strict state law which prohibits the use of monitor receivers in motor-vehicles. This law was presented in the November/December issue of Monitoring Times.

A reader from Hawthorne, California is curious as to the legality of hand-held scanners in his state. California has only one state law which addresses the use of monitor radios. In part, it states that it is unlawful for any person, not authorized by the sender, to intercept a police radio communication and divulge its contents to any person he knows to be a suspect of any criminal offense. Conviction of this charge is treated as a misdemeanor. The average monitor radio listener in California would be concerned with various municipal and county ordinances which do exist in some parts of the 'Golden State.'

As Hawthorne is in Los Angeles County, the following ordinance may be of interest. That county prohibits the operating or equipping of any motor-vehicle with a radio capable of receiving, in part, frequencies between 30 and 40 MHz, as well as 150 to 160 MHz. Certain exceptions are noted in the ordinance, but most monitor listeners would need to apply to the L.A. County Sheriff's Department for a permit if they wished to lawfully operate the receivers in motor-vehicles.

It is important to note that law enforcement officers frequently use discretion as to what degree a law will be enforced. It's not unusual for an officer to give a 'first time' ordinance violator a verbal warning if the subject passes the 'attitude test.' In some parts of the United States enforcement of certain laws is very lax. Some municipalities avoid a monetary deficit by assessing large fines upon persons who are convicted of misdemeanors. If you break the law, you take your chances.

Some readers own voice descramblers which deserve some attention. Arkansas State Law 41-2855 states that it is 'unlawful for any person other than a law enforcement officer or agency, or fire department or employee thereof to own or operate or possess any radio equipment described as a voice privacy adapter or any other device capable of receiving and decoding police and fire department communications which have been transmitted through a voice privacy adapter.' Upon conviction, a fine between \$50 and \$500 will be assessed.

In New York City it is unlawful for any person 'to equip an automobile with a radio set capable of receiving signals on the frequencies allocated for police use, or use or possess an automobile so equipped, without a

permit issued by the Commissioner, in his discretions, and in accordance with such regulations as he may prescribe.

Such permit shall expire one year from the date of issuance thereof, unless sooner revoked by the Commissioner, and shall not be transferred from the vehicle in which it was installed at the time the license was issued. The annual fee shall be \$25 for each automobile so equipped. A permit may be renewed upon payment of a like sum and under like conditions. The Commissioner is authorized, in his discretion, to issue permits for radio receiving sets capable of receiving signals on the frequencies allocated to police use to employees of federal, state, and municipal bureaus and departments without requiring the payment of the annual fee herein provided. A conviction will be punished as a misdemeanor.

It is also noted that the New York City Administrative Code forbids 'any person to unscramble or decode or possess or use any instrument or article capable of unscrambling or decoding, scrambled police broadcasts by radio or television, unless such person is duly authorized to do so by permit issued by the Police Commissioner of the City of New York.' Upon conviction, a person will face a fine of not more than \$25 and/or a jail term of 30 days.

The next installment will contain additional monitor laws and answers to some of your questions. Your comments about monitor laws are also invited. What other areas of communications law would you like to read about? Direct your correspondence to this writer at P. O. Box 879, Las Vegas, NV 89125 and be sure to include a SASE.

Information Please

I would like frequencies on HF used by San Salvador military. Lawrence Cotariu, 8041 N. Hamlin, Skokie, IL 60076.

Is White's Radio Log still in print? Are any readers receiving a Zenith scrambled cable TV system on channel 37? Richard Brunelle, 6460 River Run Rd., Riverdale, GA 30274.

I would like to exchange scanner frequencies with anyone in or near Battle Creek, MI; Miami, FL; Quincy, IL; and Watertown, NY. I have some frequencies but would like more including federal government. Kevin Trickey, 312 Jackson, Delta, OH 43515.

I would like to get in touch with anyone who has ideas or information about underground broadcasting. I'll be all ears and eyes. LEI, PO box 62-station K, Montreal, Que. Canada.

Would like to receive frequencies for Canadian police, fire and ambulances. Russ Farrell, 208-358 Queenston St., St. Catharines, Ont. Canada L2P 2X4.

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Tune In Canada

By Norman H. Schrein

Greetings to one and all who are interested in monitoring Canadian frequencies between 30 and 510 MHz in Canada.

First of all, a little information about myself; I am the author of "Scanner Radio Listings" (there are several editions out for various areas of the country). I have just recently begun working for COM General Corporation here in Dayton, Ohio. These are the folks that make the "Fox" radar detectors and scanners. I will be working with them in developing the "Scanner Radio Listings" book for various areas in the United States and Canada.

Presently the "Scanner Radio Listings" books are available in the following areas: Cincinnati/Dayton, Ohio areas; Columbus, Ohio area; Toledo, Ohio area; Fort Wayne, Indiana/Lima, Ohio areas; Louisville/Lexington, Kentucky areas; Tampa/Saint Petersburg, Florida areas; and Detroit, Michigan/Windsor, Ontario areas.

The books are generally available through retail outlets that sell scanners. Plans by Fox call for me to be developing books for the Oklahoma City, Los Angeles, San Francisco, Dallas/Fort Worth, Chicago, New York and Miami areas in the near future.

Obtaining information from the Canadian DOC (Department of Communications) is not an easy task. The laws in Canada are different than in the U.S. and the government will not give out detailed information just for the asking. I managed to be persistent and eventually received a report in microfiche from the DOC which lists the entire country.

FRG7700 Memory Expansion Kit

Considerable interest was generated by Robert Lonn's article in Monitoring Times a few months ago discussing memory expansion for the popular Yaesu FRG-7700 receiver.

One reader, J. Mills of Essex, England now offers a 40-channel kit for do-it-yourselfers. An article on the conversion is due shortly in a British journal.

The conversion is quite straightforward, but does require a lengthy disassembly of the receiver cabinet to access the appropriate circuitry and install the CB-type 40 position switch.

Interested readers not intimidated by the procedure may wish to purchase the switch and fully-illustrated article reprint sent air mail postpaid for \$20 (international money order, bank draft or cash) by writing to the author, J. Mills G3VUO, 7 Temple Grove, Bakers Lane, Chelmsford, Essex, England CM2 8LQ.

Although I have the entire country with regards to frequency, call sign and other details, I have not yet been able to obtain the coded key which matches the licensee's name up with their frequency.

It is my hope that through an exchange of information we may be able to decode information on licensees and reveal their identity.

Essentially, the DOC issues a company code to a user. There may be one company code assigned to a single frequency across Canada, or one company code identifying literally hundreds of frequencies across the country, depending on how many licenses a particular company may hold.

For example, a local delivery company may be operating on 46.860 MHz, have a call sign on KLL340 and their company code may be 800371. This company code will only identify the one particular frequency and call sign assigned to this licensee.

Other licensees may use frequencies on a province-wide or national basis, such as the Ontario Provincial Police and the Cana-

When I give a list of frequencies you will receive the following information: assigned frequency followed by a reciprocal frequency (if the frequency is different from the assigned frequency); next will be the callsign, then either the name of the licensee or the company code. Next would be the class and nature of the station.

Finally, the location of the transmitter.

The class and nature of station codes: the first two spaces represent the class of station, while the last two spaces represent the nature of service. For example, a land station in the Aeronautical Mobile Service (in certain instances, an aeronautical station may be placed on board a ship or an earth satellite). "FC" a coastal station.

The code "OT" translates to: "Stations open exclusively to operational traffic of the service concerned" relates primarily to the aeronautical mobile and maritime mobile services.

Generally there are only three codes used the majority of the time which are "CO" - "official correspondence" - licensees which do not pay fees: federal government departments, provincial government departments and crown corporations.

Exceptions would include any licensee irrespective of whether they pay fees or not who have a 6209 file number (CP not CO).

The Canadian National Railway is a crown corporation, but they pay fees.

Other common codes are: CP (public correspondence which relates to all assignments which

have a 6209 file number, coast stations or any other stations open for non-public correspondence); CV (stations open exclusively to correspondence of a private agency and pay fees). Exceptions

would include the Aeronautical Mobile Service which performs a service where traffic of an operation nature is performed).

When you ID a station let me know, and the best way for me to figure out who they are is by call letters. If you can obtain that and the frequency and location, it will be of great help to me and others.

You can contact me at the following address: Norman H. Schrein, 1107 Sharewood Court, Kettering, Ohio 45429, (513-298-5746).

Canadian Lakes Weather Coast Guard Broadcast

| ASGN FQ | RECIP FQ | CALL | Licensee | CLS/NA Location |
|---------|----------|---------|----------|------------------|
| 161.650 | xxxxxxx | VBB 3 | 200052 | FC/CO Bald Head |
| 161.650 | xxxxxxx | VBB 2 | 200052 | FC/CO Blind RVR |
| 161.650 | xxxxxxx | VDQ | 200052 | FC/CO Cardinal |
| 161.650 | xxxxxxx | VBG 3 | 200052 | FC/CO Cobourg |
| 161.650 | xxxxxxx | VDQ 3 | 200052 | FC/CO Cornwall |
| 161.650 | xxxxxxx | VBG 2 | 200052 | FC/CO Fonthill |
| 161.650 | xxxxxxx | VBE 3 | 200052 | FC/CO Kincardi |
| 161.650 | xxxxxxx | VDQ 2 | 200052 | FC/CO Kingston |
| 161.650 | xxxxxxx | VBG 4 | 200052 | FC/CO Orilla |
| 161.650 | xxxxxxx | VBC 5 | 200052 | FC/CO Pointe A |
| 161.650 | xxxxxxx | VBF | 200052 | FC/CO Port Bur |
| 161.650 | xxxxxxx | VBE | 200052 | FC/CO Sarnia |
| 161.650 | xxxxxxx | VBB | 200052 | FC/CO Sault St M |
| 161.650 | xxxxxxx | VBA 2 | 200052 | FC/CO Schreibe |
| 161.650 | xxxxxxx | VBA | 200052 | FC/CO Thunder |
| 161.650 | xxxxxxx | VBC 3 | 200052 | FC/CO Tobermor |
| 161.775 | xxxxxxx | VDQ 3 | 200052 | FC/CO Cornwall |
| 161.775 | xxxxxxx | VBG 2 | 200052 | FC/CO Fonthill |
| 161.775 | xxxxxxx | XMJ 362 | 200052 | FC/CO Killarne |
| 161.775 | xxxxxxx | VBE 3 | 200052 | FC/CO Kincardi |
| 161.775 | xxxxxxx | VDQ 2 | 200052 | FC/CO Kingston |
| 161.775 | xxxxxxx | VBE 2 | 200052 | FC/CO Leamington |
| 161.775 | xxxxxxx | VBC 2 | 200052 | FC/CO Meaford |
| 161.775 | xxxxxxx | VBB | 200052 | FC/CO Sault St M |

These stations are not to be confused with the NOAA weather stations in the U.S. These stations pertain to the water only. Part of the forecast consists of five numbers; each number means a different phase of the weather forecast. Let me know what you hear.

Sarnia, Ontario Area

| | | | | |
|----------|----------|---------|--------|---------------------------------|
| 456.0375 | 451.0375 | VCM 865 | 844951 | Sun Oil Co. |
| 456.0875 | 451.0875 | VCM 865 | 844951 | Sun Oil Co. |
| 456.0875 | 451.0875 | VCM 865 | 844951 | Sun Oil Co. |
| 451.2625 | xxxxxxx | VCM 866 | 844951 | Sun Oil Co. |
| 163.830 | xxxxxxx | VCM 868 | 410017 | Ontario Limited |
| 456.6875 | 451.6875 | VCM 878 | 410016 | Tri Con Mechanical |
| 463.4375 | 468.4375 | VCM 878 | 800257 | Imperial Oil, Ltd. |
| 167.955 | xxxxxxx | VCM 884 | 410023 | John Jousse Const. |
| 169.515 | xxxxxxx | VCM 638 | 401444 | S.J. Hydraulics Ltd. |
| 169.440 | xxxxxxx | VCM 639 | 401445 | Wally McIntosh Plumb |
| 162.870 | xxxxxxx | VCM 650 | 401458 | Richard James Evans |
| 456.6875 | 451.6875 | VCM 652 | 410061 | B & D Insulations, Ltd. |
| 158.265 | xxxxxxx | VCM 660 | 800186 | Union Carbide Canada |
| 159.120 | xxxxxxx | VCM 660 | 800186 | Union Carbide Canada |
| 163.095 | xxxxxxx | VCM 663 | 810571 | Dow Chemical Terminals |
| 167.505 | 163.725 | VCM 665 | 410058 | D & S Service Center |
| 463.8675 | 468.8675 | VCM 684 | 800257 | Imperial Oil, Ltd. |
| 463.7875 | 468.7875 | VCM 685 | 800257 | Imperial Oil, Ltd. |
| 463.8125 | 468.8125 | VCM 685 | 800257 | Imperial Oil, Ltd. |
| 463.7375 | 468.7375 | VCM 686 | 800257 | Imperial Oil, Ltd. |
| 463.6625 | 468.6625 | VCM 687 | 800257 | Imperial Oil, Ltd. |
| 159.20 | xxxxxxx | VCO 420 | 801992 | Interprovincial Pipe Line |
| 30.340 | xxxxxxx | VCO 421 | 835454 | Granbar Contractors |
| 170.250 | xxxxxxx | VCO 422 | 835275 | Ross McEachrin Enterprises |
| 167.340 | xxxxxxx | VCO 423 | 835290 | J.P. Anderson & Sons Fuel |
| 169.245 | xxxxxxx | VCO 424 | 835287 | Abram Sheet Metal |
| 164.235 | xxxxxxx | VCO 435 | 822683 | Jackson Construction |
| 463.2825 | 468.2825 | VCO 447 | 800257 | Imperial Oil, Ltd. |
| 467.7375 | 462.7375 | VCO 454 | 800257 | Imperial Oil, Ltd. |
| 468.2875 | 463.2875 | VCO 454 | 800257 | Imperial Oil, Ltd. |
| 468.5375 | 463.5375 | VCO 454 | 800257 | Imperial Oil, Ltd. |
| 165.315 | xxxxxxx | VCO 460 | 835451 | Sarnia Crippled Childrens Hosp. |
| 164.850 | xxxxxxx | VCO 461 | 835462 | Degroots Nurseries |
| 170.220 | xxxxxxx | VCO 469 | 835473 | Serv A Yard, Ltd. |
| 168.420 | 164.400 | VCO 475 | 410067 | Douglass Laboratories |
| 167.770 | xxxxxxx | VCO 477 | 835523 | Albert Karelsen |
| 163.290 | xxxxxxx | VCR 702 | 830656 | Chalmers Construction |
| 36.040 | xxxxxxx | VCR 711 | 830698 | S. Kemper, Ltd. |
| 163.395 | xxxxxxx | VCR 735 | 830761 | P.H. Electric |
| 165.660 | xxxxxxx | VCR 737 | 830825 | International Tire & Eqpt. |

I hope that these first lists prove helpful to Canadian listeners. If you have frequencies and calls for your area, and especially if you know who they

are, be sure to send them to me at the above address, as I may be able to cross them against other frequencies to come up with additional channels to listen to.

Library Shelf...

AMATEUR RADIO CALL DIRECTORY Edited by Jack A. Speer and Ashok K. Anand (8-1/2" x 11", 1027 pages, softbound. \$14.95 postpaid from Buckmaster Publishing, 70 Florida Hill Rd, Dept MT Ridgefield, CT 06877)

Nearly 2 1/2" thick, this giant compendium of U.S. amateurs looks more like the Manhattan telephone directory than a listing of hams. In actuality, the director is manifold; it lists hams -- all 369,000 of them-- first by callsign, then indicates their class of license, then full name and mailing address. AA1A through WBOZZZ.

-- Another edition of the directory is also available-- a name/geographical cross index (\$25).

CABLE COMMUNICATION by Thomas F. Baldwin and D. Stevens McVoy (6" x 9", 416 pages, hardbound. Prentice-Hall, Inc., Dept MT Englewood Cliffs, NJ 07632)

Not a technical electronics book, Cable is more a systems-oriented publication for a prospective entrepreneur. Virtually every aspect of the cable TV market is explored, complete with demographic, geographic and legal references.

Chapters include descriptions of headend installations, distribution techniques, home drops, programming, pay TV and privacy, two-way facilities, franchising, marketing and advertising.

Comprehensively indexed, Cable is exceptionally well organized, a very handy reference or teaching text for the growing market of cable television entertainment, education and business. ...And three new book from Hayden:

BASIC SOLID-STATE ELECTRONICS BY Van Valkenburgh, Nooger and Neville, Inc. (6" x 9", 930 pages, hardbound. #0890 \$29.75 from Hayden Book Co., Inc., 50 Essex St., Dept MT Rochelle Park, NJ 07662).

This five volume set is available separately at \$6.95 or all five for \$34.75 in paperback as well as the hardbound volume we shall review.

Intended as a comprehensive textbook for beginners, Basic covers the major realms of information management, a synthesis of the US Navy COMMON-CORE training program, effectively preparing over 100,000 Naval technicians in record time.

Basic is copiously illustrated to visually condition the trainee in a logical, step-by-step examination of electronics technology.

While it would be difficult to present here every aspect of the textbook program, the following guide should prove informative as to the enormous wealth of information crammed into the text:

V.1 Building Blocks (overall view, history, electron flow, block diagrams, analog and digital systems, power supplies,

amplifiers, oscillators, modulators, mixers, detectors, components).

V.2 Audio (Spectrum dB concept, amplifier design and measurements, terminology, sound, microphones, headphones, loudspeakers, Pa systems, turntables and changers, recorders, Dolby and noise systems, video systems, RF/IF amplifiers, oscillators, troubleshooting).

V.3 Transmission (signal propagation, CB transmitter circuits, antenna systems, feedlines, modulation--AM/SSB/FM, TV circuitry)

V.4 Reception (historical development, selectivity, images, antennas, RF/IF/oscillators, mixers/AGC/detector stages, receiver characteristics--gain/noise blanking, Fleet communications, communications receivers overview, TV receivers--color and black and white, TV signal processing, video recorders)

V.5 Information management (digital introduction, logic elements, arithmetic, system functions, timing and counting, displays, computers and microprocessors, I/O devices, applicants, digital communications, troubleshooting, video games, calculators, household control)

Unquestionably, Basic is the most comprehensive text we have ever seen which tackles the formidable task of training inexperienced students in virtually every conceivable aspect of electronics. And it does it well.

ACTIVE FILTER DESIGN by Carson Chen (6" x 9", 133 pages, softbound. \$10.95 from Hayden)

With the incredible avalanche of operational amplifiers and specialized programmable filters now on the market, Design is a welcome guide to application of these sophisticated devices.

Considerate of the reader, Design begins by introducing him to active, passive and digital filters and their characteristics.

Subsequent chapters rapidly evolve into transfer functions, phase relationships, poles and zeros, and the dB concept.

Mathematical approximations (Butterworth, Chebychev, elliptic/Cauer and Bessel) follow, and finally cascading and frequency information.

Design is copiously illustrated with charts, tables and mathematical documentation. An appendix of common formulas and a handy bibliography are included.

SOFTWARE TOOLKIT FOR MICROCOMPUTERS edited by Max Schindler (8 1/2" x 11", 348 pages, softbound. \$14.95 from Hayden).

Compiled from articles appearing in Electronic Design magazine, Software is divided into six sections, each covering a major delineation of software considerations for high-level

languages and operating systems.

FORTRAN, COBOL, BASIC and Pascal software systems and programming are included, each written professionally by an expert in his field.

The six sections discuss software tools (computer-aided design, test programs generation, forecasts); high-level languages (picking the appropriate computer, number-crunching, PL/M-86, Forth, MDL/u, FORTRAN variations); Pascal variations (Ada, Modula-2, Microconcurrent); operating systems (simultaneous programs, UCSD, multitasking in real time, multiplexers, Native-code compilers); choosing the best operating system (checklist, micro/mini); and software/hardware impact (architecture, data flow).

INTERFERENCE HANDBOOK by William R. Nelson, edited by William I. Orr (5 1/2" x 8 1/4", 247 pages, softbound, \$8.95 from Radio Publications, Inc., Box 149, Dept MT Wilton, CT 06897) or Grove Enterprises.

This recent publication is the most comprehensive, easy to understand, practical and up to date book on the subject we have seen.

Evolving from an informative introduction, chapters include spark discharge, tracing and locating, power line interference, receiver noise reduction and projects, unusual interference sources, vehicular noise and suppression, grounding, transmitter interference and its cures and curing interference in home entertainment equipment.

Even telephone and computer interference are discussed with practical suggestions for reducing noise.

A convenient index assists the reader in finding his particular ailment and its cure, assisted by 173 excellent illustrations.

HOW TO MAKE AND USE PRIVATE RADIO CODES by Noel Ramsay (8 1/2" x 11", 50 pages, looseleaf. \$8.95 from Eustis Press, Box 1390, Dept MT, Eustis, FL 32726)

If radio security is a consideration, you might wish to invest in this unique publication. Topics include system planning, making your code, intelligence and direction finding, jamming and countermeasures, deception and imitative communications, electromagnetic compatibility and aggression.

Lists of CB ten codes, sample messages, distress signals and FCC regulations are included, as are charts of 24 hour time, Morse code training procedures.

Of interest to survivalists and detectives.

THE BEACON GUIDE by Ken Stryker (5 1/2" x 8 1/2", 100 pages, softbound. \$7 from Century Print Shop, 6059 Essex St., Dept MT Riverside, CA 92504)

Originally published in 1974,

this 1980 edition includes an update list. For the LF enthusiast, Stryker's book is a goldmine of information on the 190-530 and 1610-1920 kHz beacons worldwide.

The guide is divided into North American and foreign beacons, and cross-indexed by frequency and callsign. A convenient time conversion chart and Morse code interpreter are included.

Some 6000 listings make this little book a handy reference for the longwave listener.

RADIOTELETYPE PRESS BROADCASTS by Michiel Schaay (discussed in last month's column) This collection of worldwide shortwave press transmissions is sorted both by agency and time of broadcast.

In most cases, schedules have been confirmed by the agencies themselves and off-the-air monitoring. Possibly the most accurate, up-to-date collection of RTTY press services available. \$12 plus \$1.50 shipping from Grove Enterprises.

GENERAL FREQUENCY AND CALL SIGN LIST by Joerg Klingenfuss. More than 8000 frequencies actively monitored over the past year in the 3-30 MHz range are identified in this exhaustive collection by a world-known utilities expert.

Listings include frequency, callsign, agency and location, even modulation.

A separate alphabetical list covers more than 4000 callsigns worldwide. Even unofficial stations are listed and identified in this useful collection.

\$12 plus \$1.50 shipping from Grove Enterprises.

MODERN ELECTRONIC COMMUNICATIONS by Gary M. Miller (7" x 9 1/2", 578 pages, hardbound, 1983 edition. Prentice-Hall, Inc., Dept MT Englewood Cliffs, NJ 07632). Intended as a definitive textbook on all aspects of radio communications, Miller's treatise is well-written, comprehensive and intelligently compiled by topic.

Major areas covered include amplitude modulation, frequency modulation, single sideband, television, digital techniques, transmission lines, wave propagation and antennas, waveguides, radar, LASERS and fiber optics.

Subtopics under the major categories analyze noise, describe and dissect circuits, and explain in a step-by-step manner the various components of systems.

Typical of Prentice-Hall textbooks, illustrations are numerous and concise, well-labelled and easy to understand.

Each chapter closes with questions and problems related to the text (answers to which are provided in the teacher's edition).

Communications is a cogent, relevant survey of the science of radio communications.

Listeners Log

(ERRATUM) In March/April issue a typographical error appeared under Governmental Agencies on P. 19 incorrectly identifying the nationwide CAP repeater output as 143.150; this should be 148.150 MHz.

Low-Band Skip (Military/Federal aircraft) contributed by Kevin Trickey, Delta, OH
 30.15 MHz, 30.30, 31.25, 32.10, 32.25, 32.70, 34.10, 34.30, 34.45, 34.60, 34.70, 34.95, 37.30, 41.50
 Goodyear blimp: 151.625 (business), 132.0 (ops)
 VLF Frequencies (kHz) in Canada
 Contributed by Guy Vallee, Borden Ont.
 Belleville General Hospital (Belleville, Ont)
 XKD538 10.6, 11.4, 12.1, 13.0, 13.9, 14.8, 18.1, 19.3, 20.6, 22.0, 23.5, 25.2, 26.9, 28.7
 BC Hydro and Power Authority (Vernon, BC)
 XOB31 13.2
 Saskatchewan Power Corp (Pasqua, Saskatoon, Regina) 20.0, 28.0
 Franco-Manitoban Cultural Center (Winnipeg)
 XNT546 27.1
 Canadian Motorola Electronics (Toronto, Ont.)
 VE9MX 20.0
 Fairview Corp. (Toronto, Ont.)
 XKD83 27.2
 Hydro Quebec (Micoua, Que.) 28.0
 Miami County, KS Scanner listening (MHz)
 contributed by John Blair, Deputy Sheriff

FREQUENCIES USED IN MIAMI CO., KANSAS AND SURROUND AREAS

39.46 KS Inter system
 Point-to-point
 39.58 KS Net Station to Car
 39.60 Osanatomic Police Dept.
 39.64 Miami Co. Sheriff - Police
 Louisberg
 39.70 KS Net - Car to station.
 39.80 Paola Police Dept.
 44.94 Ks Hwy Patrol - Base to Car
 45.18 KS Hwy Patrol - Car to Base
 462.95 Miami Co. Amb. - Base
 467.95 Miami Co. Amb. - Car
 46.52 City of Louisberg
 45.16 City of Paola
 154.085 City of Osawatomic
 453.100 Miami Co. KS
 47.06 and 47.18 State of KS A.O.T.
 39.50 Osawatomic State Hosp.
 462.80 Miami Co. Hosp. Paging
 146.52 ZM AMAT Net
 147.36 Lorpof Engineers - Hillsdale, KS
 160.410 Missouri Pacific RR, Osawatomic
 155.175 Blair Bus Service - Louisberg, KS
 Metro Atlanta Scanner Listing (MHz) Contributed by Mike Watson, Wilmington, NC
FIRE
 Atlanta Fire Dept.-Dispatch 154.190
 -TAC 2 154.445
 -Fireground 153.830
 Cherokee County Fire Dept. 33.440
 Clayton County Fire Dept. Dispatch 453.400
 -EMS-to-Hospital 453.300
 Cobb County Fire Dept. 46.260
 College Park Fire Dept. 154.265

DeKalb Co. Fire Dept.-Dispatch (Ch.3) 460.575
 -EMS/Hospital (Ch.1) 460.575
 Decatur Fire Dept. 154.250
 East Point Fire Dept. 154.130
 Forsyth County Fire Dept. 154.010
 Fulton County Fire Dept. 154.325
 Gwinnett County Fire Dept. Dispatch 154.145
 -Fireground/enroute 154.310
 Hall County Fire Dept. 154.340
 Coweta County Fire Dept. 154.205
 Hapeville Fire Dept. 154.355
 Henry County Fire Dept. 154.370
 Marietta Fire Dept. 154.430
 Morrow Fire Dept. 154.070
 Roswell Fire Dept. 460.600
 Rockdale County Fire Dept. 453.975
 Smyrna Fire Dept. 154.160
 EMS
 Metro Ambulance Service. 462.950
 Ga. Baptist "Lifeline" helicopter 155.160
 Gwinnett Ambulance Service 155.295
 Rockdale EMS 155.265
 (NOTE: DeKalb and Clayton Counties dispatch EMS/transport units via Fire Dispatch).
 * -repeated system
POLICE
 Atlanta Police Dept. Downtown 460.150
 -NW 460.300
 -SW 460.350
 -Ne 460.025
 -SE 460.075
 -Detectives 155.700
 -Citywide 460.200
 -TAC 460.475
 Austell Police Dept. 155.790
 Clayton County Sheriff. 158.895
 Clayton County Police. 158.730
 Cobb County Police-Ch.1. 460.325
 -Ch. 3 460.375
 College Park Police. 460.250
 Coweta County Sheriff. 155.565
 DeKalb County Police Ch.1(North) 460.450
 -Ch.3 (Central) 460.400
 -Ch.5 (South) 460.100
 -Ch.7 (C.I.D.) 460.125
 DeKalb County Sheriff. 154.845
 Decatur Police Department 155.955
 Douglas County Police Dept. 155.520
 Fayette County Police Dept. 155.895
 Forest Park Police Dept. 155.670
 Fulton County Police Dept. 158.775
 Fulton County Sheriff. 155.415
 Ga. State Patrol-base-to-car 154.680
 -car-to-base 154.800
 -car-to-car 154.680
 -Metro Atlanta dispatch. 155.910
 -State intersystem. 154.935
 -State civil defense. 45.560
 Gwinnett County Police. 460.275
 Hapeville Police Dept. 158.850
 Henry County Police Dept. 154.725
 Marietta Police Dept. 154.725
 East Point Police. 159.210
 Morrow Police Dept. 155.775
 Rockdale County Sheriff. 155.550
 Roswell Police Department 453.825
 Smyrna Police Dept. 156.150
 * -repeated system

Channel 1, Troop K, Base-Car 155.505
 Channel 1, Troop K, Car-Base 155.520
 Channel 1, Troop G, Base-Car 155.445
 Channel 1, Troop G, Car-Base 154.680
 Channel 2, Statewide, Car-Car 154.665
 Channel 3, Statewide, Emergency 154.695
 Channel 4, Statewide BCI and Car-Car Backup 155.565
 Channel 5, Statewide Interagency 155.370
 Conservation 159.225
 Game Wardens 159.435
 Corrections 453.400
 Thruway Channel A 453.425
 Thruway Channel B 453.525
 Psychiatric Centers Security 155.070
ORANGE COUNTY
 Sheriff Channel 2, Car-Car, Base-Car 39.200
 Channel 1, Car-Base 39.260
 Blooming Grove Washingtonville 155.610
 Eastern Orange County PD 154.875
 Middletown PD 155.730
 Port Jervis PD 155.730
 Walden Falls PD 45.500
 Village of Cornwall PD 154.965
 Orange County Fire Mutual Aid Home-Alert 154.205
 " " " " Channel 1, Base-Truck Truck-Truck 46.160
 " " " " " Channel 2, Truck-Base 46.220
 New York State Intercounty Fire 45.880
 Orange County Local Gyt., CD, Ambulance 153.860
 EMS Ambulance-Hospital F1 155.340
 " " " " F2 155.400
 Orange County Highways 159.135
 Newburgh Fire 46.460
 Middletown Fire 154.310
ROCKLAND COUNTY FREQUENCIES
 Rockland County Sheriff 37.180
 Clarkstown PD 37.240
 Orangetown PD 37.280
 Spring Valley and Ramapo PD 37.400
 Rockland County Mutual Aid Fire 46.180
 " " " " 46.080
 Palisades Interstate Park Police 154.890
 U.S. Military Academy West Point MP 38.700
ULSTER COUNTY FREQUENCIES
 Ulster County Sheriff F1 Simplex 39.180
 " " " " F2 Simplex 39.160
 Ulster County Fire Home-Alert 33.480
 " " " " Channel 1, Base-Truck/Truck-Truck 46.460
 " " " " Channel 2, Truck-Base 46.340
SULLIVAN COUNTY FREQUENCIES
 Sullivan County Sheriff 39.660
 Sullivan County Fire 46.100
AVIATION FREQUENCIES
 Civil Air Patrol Repeater Output, Air-Ground Simplex (nationwide) 148.150
 Ground-Team Simplex (nationwide) 149.925
 Repeater Input



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

| | | |
|----------------|-----------------------|--------------------------|
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| Broadcasting | Jamming | Satellites |
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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.

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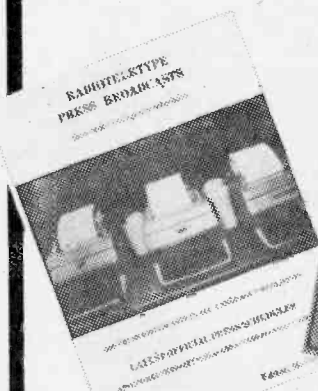
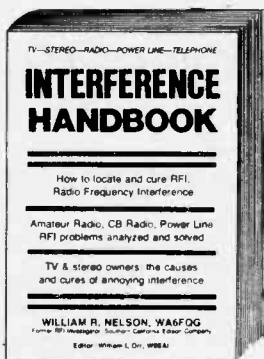
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Now in its 60th edition, the Radio Amateur's Handbook continues to be the most widely-accepted, comprehensive guide to experimenter-oriented technical radio communications in the world. The new 1983 edition is the largest in history, containing additional material on satellites, TVI, ATV, computer and calculator programs and even an up-dated list of parts suppliers. Chapters include in-depth information on electrical fundamentals, radio design and terminology, solid state circuitry, power supplies, transmitters and receivers, antennas, CW, RTTY, SSB, radio wave propagation, specialized communications techniques, FM and repeaters and much more. 640 pages of well-written, easy-to-understand text revolving around amateur radio lends itself particularly well to all aspects of hobby electronics. BOK 16 - \$12.00.

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, \$6.00.

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THE TOP SECRET REGISTRY OF U.S. GOVERNMENT RADIO FREQUENCIES

by Tom Kneitel. (4th edition, 120 pages, 6"x9"). An extensive collection of government and military frequencies, many considered highly-sensitive, from 25-600 MHz. Includes many locations, callsigns, code names. Articles on surveillance, monitoring in the 1930's bugs, scramblers and pictures of federal QSL cards. BOK 11, \$9.95.

RTTY

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 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, \$7.95.

RTTY CALLSIGN DIRECTORY

(52 pages, 5 1/2"x8 1/2"). 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. BOK 14, \$6.00.

RTTY FREQUENCY GUIDE

by Joerg Klingenfuss. (50 pages, 8 1/2"x11"). Expanded 8th 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. BOK 12, \$11.95.

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by Harry L. Helms. (182 pages, 6"x9"). 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 communication. One of our best-selling books. BOK 6, \$7.95.

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Radioworld, Oriskany, NY
Scanners Unltd., San Carlsson, CA
Ham Radio Outlet, Anaheim, CA
Larry's, Morrison, CO
Century Print Shop, Riverside, CA.
Capac Hobby Shop, Capac, MI.

Listeners Log

Continued from page 14

| | |
|--|--|
| (nationwide) | 143.900 |
| Secondary Civil Defense Southern District | 45.160 |
| New York State Civil Defense Southern District | 45.160 |
| Metropolitan Transportation Authority, Stewart Airport | 453.475 |
| Poughkeepsie Tower | 124.000 |
| Uncontrolled Airports UNICOM (nationwide) | 122.800 |
| Controlled Airports UNICOM (nationwide) 1 2 3 . 0 0 0 | 122.950, |
| EMERGENCY AIRCRAFT FREQUENCIES (nationwide) | 121.500, 243.000 |
| Search & Rescue Frequency (nationwide) | 123.100 |
| Air-Air and Multicom (nationwide) | 122.900 |
| UNICOM Helicopters (nationwide) | 123.050 |
| New York Center Catskill Region | 120.200, 133.100 |
| Boston Center | 132.650 |
| Central New York State Scanner Listening contributed by Bill O'Brien | |
| Town of Clay | 155.100 |
| Onondaga County Sheriff Command | 155.740 |
| " " " " Control West | 155.640 |
| " " " " East | 155.685 |
| " " " " DATA | 155.415 |
| Syracuse 460.325-460.350-460.425-4-460.475 | |
| Syracuse Fire N.Y. State | 153.950-154.190 |
| Police | 155.505-155.520-154.815-154.695 |
| Fulton | 155.490 |
| Oswego | 155.250 |
| Red Cross | 47.420 |
| Auto Club | 150.935-150.956 |
| Emergency Rescue | 150.935-150.965 |
| Onondaga County Fire | 46.140, 46.220, 46.260, 155.715, 155.715, 453.200, 458.200, 453.800, 458.800 |
| AMBULANCES: | |
| Eastern | 155.220-155.265 |

| | |
|--|----------------------------|
| Onondaga County | 45.960 |
| Onondaga County Repeater | 156.120 |
| Conservation/Parks | 159.225 |
| Madison County Sheriff | 155.130 |
| National Weather Service (W X L - 3 1) | 162.550 |
| Area Hospitals | 155.340 |
| Helicopter Traffic Reports | 170.150 |
| Camillus PD | 158.970, 158.865 |
| Auburn PD | 39.100, 39.500 |
| Phoenix PD | 45.500--The same for fire. |
| North Syracuse PD | 154.860 |
| Business Band | 154.515 |
| U.S Mobile | 151.625 |
| Syracuse University | 461.600 |
| (Maintenance) | |
| " " " | 461.700 (Security) |
| RCMP British Columbia, Canada | |
| Contributed by Craig Campbell | |
| 139.245 Fernie | |
| 139.410 Cranbrook | |
| 139.590 Cranbrook | |
| 139.320 Creston | |
| 139.500 Invermere | |
| 139.560 Revelstoke | |
| 139.530 Vernon | |
| 139.080 Nelson | |
| WANTED: Canadian metro air frequencies for publication in MT | |
| PRIVATE FREQUENCIES | |
| Hudson Valley Patrol F1 | 461.525 |
| Hudson Valley Patrol F2 | 463.675 |
| Hudson Valley Patrol F3 (Simplex Car-Car) | 463.675 |
| Orange Plaza Mall Security | 154.600 |
| Highland Telephone Maintenance | 451.450 |
| Orange & Rockland Utilities Electricity | 48.520 |
| " " " Gas | 37.560 |
| TelRad Communications Common Carrier, Middletown | 152.150 |
| RCC Channel 9 | |
| Syndicate 8300 Taxi, Middletown, Base | 152.450 |
| " " " " " Cars | 157.710 |

DXing Broadcast Harmonics: The New Game Updated

By Dave Beauvais, KB1F
 Since publication of "DXing Broadcast Harmonics" (MT, March, 1983) there have been a few interesting developments: a listing correction, a new "catch" (the furthest yet), and a new station you will encounter in the region of 1622 Khz.—which sounds like a pirate, but isn't.

Taking them in order:
The Correction: Bob Reinhardt, KA3JYR, program director at WDOV in Dover, Delaware, reports that WDOV does not use the logo or jingle recorded on tape, with a callsign ID believed to be "WDOV." Neither the writer nor MT's editor has been able to make a better "reading" of the recorded call sign, so this station remains a mystery. WDOV assures us that their second harmonic is -86 db at standard reference points. Our apologies to WDOV for the confusion.

The Catch: On 1900 Khz., from a fundamental of 950 Khz., we noted WYWY, Barbourville, Kentucky, in early February at approximately 6:30 a.m., with good signals and positive I.D. Doug Hammons, K4OZI, engineer at WYWY, confirms our report and comments on the phenomenon: "...I have also heard the second harmonics in the 160 meter band and above, but I am also aware of the propagation that can be obtained on this band using a half wave vertical antenna, 120 full length radials and a few milliwatts of power. This is the situation at most broadcast stations.... (M)y second harmonic is within limits. Notice, I did not say it wasn't radiating energy, just that it was within FCC limits. Thanks for the letter...and good DX or whatever!"

The "Pirate" That Isn't: Medium-wave DXers in late January had their attention grabbed by a strong signal operating intermittently on 1622 Khz., carrying the audio feed from the Satellite News Channel (a cable news operation), sometimes mixed with what seemed to be a technician's instructions. It was thought to be the transmitter test of a domestic pirate—but DXer Vince Pinto, writing in the March issue of the ACE (Association of Clandestine Enthusiasts) Newsletter, traces the signal to a new FCC allocation in the 1600-1650 sub-band. The transmitter is located in Washington, D.C., and is used by Group W's Satellite News Channel production staff to bring the on-air signal to their news vans operating in the

Washington area. The transmitter, Pinto reports, is running 100 watts into a 5-foot loaded whip atop a Washington building. The signal has been heard as far north as Massachusetts (at our listening post) and in several Southern states as well—so SNC appears to be blanketing the East Coast with their "private line" feeds, taking place on the prime pirate channel of 1622 Khz.! Reception reports may be sent to: Engineer in Charge, Remote Field News Broadcasts, Group W Satellite News Channel, 1111 18th St. NW, Washington, DC 20008.

Kudos to Vince for a super sleuthing job on tracking this signal—and more evidence of the extreme sensitivity of these frequencies to long-distance propagation at miniscule levels of transmitter power, given optimum ionospheric conditions.

(For more information, contact: Dave Beauvais, KB1F, Magic Media Services, P.O. 695, Amherst, Mass. 01004.)

Teaser Of The Month

Last issue MT presented a frequency trivia quiz. Congratulations to John Demmitt of Bellefonte, PA for correctly identifying perfectly three of the four puzzlers! Your book is on the way.

Let's have a look at those mysterious frequencies and identify them for our readers.

13560 kHz is assigned as an "ISM" (industrial, scientific and medical) frequency and the weird sounds are due to a variety of diathermy and other RF devices of a non-communications nature.

Look also for similar uses on 27120 and 6780 kHz. 40.64 MHz is authorized for wildlife tracking telemetry and beacons such as game collars. Similar sounds may be heard from 40.60-40.69 MHz.

14968 kHz is a nest of intriguing activity ranging from both English and Spanish "spy" numbers transmissions to remote beacons and cryptic voice communications.

4759/5734 kHz are occupied by continuous NASA ionosonde beacons with transmitters in Mussel Shoals, AL and Chattanooga, TN (among others). Automatic ID's are transmitted every half hour as "KCA", "KCB" and "KCC" (not registered callsigns).

Receivers are at the Manned Space Flight Center, Huntsville, AL and doppler shift is used to detect ionospheric disturbances caused by explosions and tornadoes.

KNOCK OUT IMAGE INTERFERENCE

Now you can tune out strong interfering signals such as mobile phone, aircraft, FM, ham radio or weather band broadcasts and avoid front end overload in your scanner.

The Capri Electronics RF Notch Filter can be used with any scanner that has a Motorola type external antenna jack. No modifications to your scanner are necessary. Works with outside antenna systems as well as with the whip that comes with your scanner.

The easy tune, calibrated dial lets you move the notch to any interfering signal from 70 MHz to 200 MHz. The notch depth is 40 dB at 162 MHz and the VHF insertion loss is less than 1 dB (0.5 dB typical).



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BEHIND THE DIALS

The popular Kenwood R-600 Receiver

By Larry Brookwell

What is known as a "sleeper" in merchandising is this fine little receiver. Few hobbyists have paid it any attention. All I have heard have been good reports; Larry Magne in the WRTH-83 says "For most shortwave applications the R-600 is a fine value." I would say it is an excellent value, one of the new breed of receivers not requiring modification to bring it up to full potential.

SPECIFICATIONS

Coverage: 150 kHz to 30 MHz steps of 1 MHz on band switch. Modes: AM/SSB/CW. Sensitivity: (10 dB or more S plus N/N) 150 kHz to 2 MHz, AM-50uV, SSB/CW 5uV (on Narrow); 2 MHz to 30 MHz, AM-5uV, SSB-0.5uV. Image Rejection: better than 60dB. Selectivity: AM wide: 6/18 kHz at -6/-50 dB; AM SSB narrow, 2.7/5.0 kHz at -6/-50 dB. Antenna impedance, 50 or 500 ohms Audio output: 1.5 watts 8 ohms (10% distortion). Power 120/240 VAC/12 VDC. Digital display. Size: 13"x5"x8", 9.9 lbs.

The first impression is a small, neat package (Gray plastic cabinet with front mounted speaker) with only eight controls: power, noise blanker, RF attenuation, Mode (AM wide, AM narrow, USB and LSB/CW), tuning dial (with finger spinner), AF Gain, RF attenuator and the band switch with 30 1-MHz steps. No RIT, Pitch nor RF Gain. Surprisingly, the meager array seems to do the job very well.

The circuitry is modern and includes a stabilized VFO and PLL synthesizer, band pass filters interlocked with the band selector switch and the ceramic filter circuit interlocked with the mode switch.

The attenuator control provides a 20 dB protection against powerful local stations and overload. The front panel recording output is constant volume. An antenna fuse protects against voltage surge from nearby lightning.

As I have learned to distrust selectivity ratings as much as I distrust MPG claims on new cars I first checked out both bandwidths. On shortwave the 6 kHz filter was too board; however, it did allow superb voice audio. (rich bass for music not there) On the 2.7 kHz filter the tone didn't distort but the high frequencies were chopped off.

Deciding the 6 kHz was useless for DXing I stayed on the 2.7 kHz bandwidth for my tests.

Tuning was straightforward and smooth. An annoying feature was the need to back up a full Mhz on the kHz dial when switching up on the bandswitch. There are no analog frequency markings; you

use the digital display. The band switch is a click dial without markings.

Proving out the selectivity was easy; I just looked for signals on all the bands that were 5 kHz companions. I had no trouble separating signals on 15125/15130, 15145/15150, 15170/15175 and many more. I also worked the other SW bands with equal results.

I found the little set a joy to operate; the mediocre signal/noise ratio is only noticeable when compared with such rigs as R7A and the NRD. I checked for drift and image/spur problems and found the rig clean. Disconnecting the antenna and ground left the rig silent, even though I have some bad actors in nearby Tijuana.

I douse my ceiling lights to work SW. I tried ECSS tuning and to my surprise, found it quite good. An RIT or pitch would be a help but would raise the cost. SSB came in well although a tighter IF is nice. Not being a MW fan my inspection of those frequencies is not expert. Seemed to function well and I tuned in some quite exotic catches, although with considerable noise between stations.

A practical, beginner's rig and Okay for your second-in-command on your bench. Has a handle and a DC adapter, and is small so can be toted very handily. Is sensitive enough to work on any old hunk of wire. Is superior to the popular portables in every way.



"Moscow Muffler From AEA

Few forms of interference are as aggravating as those which are deliberate. The "Russian Woodpecker" is one of the worst.

Considered to be a form of over-the-horizon backscatter radar (OVTH), the "woodpecker" got its name from the rapid rat-tat-tat sound its pulses cause over a wide range of shortwave spectrum.

Built-in receiver noise blankers and impulse-type clipper offer varied levels of success in dealing with the irritating offender.

A year or so ago, an amateur radio magazine published an article on an effective blanker which could synchronize its own internally-generated pulse with that of the offending signal, using the timing to open the antenna circuit. Thus, each time the massive pulse would appear at the antenna, the receiver would be momentarily blanked from receiving that debilitating signal.

The system worked well, and the new AEA "Moscow Muffler" is a commercial version of the theory.

Two versions of the AEA unit are available, the WB-1 for receive-only applications, and the WB-1C for transceivers.

Housed in a sturdy aluminum cabinet, the "Muffler" comes equipped with standards SO-239 rear-panel connectors to interface with receivers and transceivers.

An internal inspection of the unit revealed a very neatly laid out, crystal-controlled circuit, typical of AEA quality.

A built-in 6 dB preamp provides an optional gain improvement if selected by the user. A source of 12 VDC (575 ma.) is required to operate the unit.

In use here at the Grove Enterprises lab, results were variable, as anticipated by the manufacturer's own literature. Multipath and simultaneous out-of-synch backscatter transmissions may produce partial suppression and drift of the synch signals as well.

In our case, we found that touch-up of the synchronization control was necessary every few seconds (typically 5-55 seconds) to keep the pulse signal suppressed without drifting back into audibility.

The synchronization is used in tandem with a pulse width control to prevent excessive down-time of the receiver between pulses, thus avoiding obvious interruption of the desired signal.

In conclusion, our sample of the AEA "Moscow Muffler" provided reliable and repeatable reduction of pulse noise from the Russian woodpeckers, accepting the frequent readjustment as being a necessary annoyance.

(Moscow Muffler WB-1, \$129.95; WB-1C transceiver model, \$149.95; available from AEA dealers. For more information, write Advanced Electronic Applications, Dept. MT Lynnwood, WA 98036)

DIGITAL CLOCK MODULES

FROM DIGI-KEY

Although the cost of digital-display clocks is coming down to affordable levels, home experimenters still like to build kits.

Digi-Key Corporation, a prominent mail order parts house, offers a full line of parts, kits and

tools for the home builder. Their 76-page illustrated catalog is a comprehensive collection of low-cost components which should be of great interest to construction enthusiasts.

We decided to check out two digital clock modules, the MA1020 (\$15.95 plus options) and the MA1036 (\$6.25 plus options). The first is a 12/24 hour LED featuring large (0.84") numerals and AC operation; the second is a smaller (0.3") display LED, DC operated.

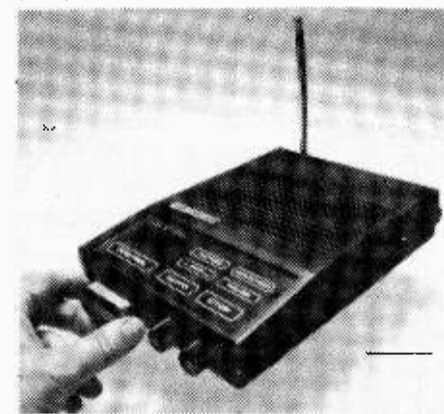
Both modules are manufactured by National Semiconductor Corporation in the Philippines and require a minimum of external components for operation.

A number of options are available with each clock module depending upon the resources and application needs of the user. These include power transformer, buzzer, pushbutton function switches and crystal for the clock oscillator.

Anyone who has wired a kit before should have little trouble once he has waded through the literature, a combination of National Semiconductor reprints and Digi-Key notes.

It is up to the builder to provide hookup wire, mounting hardware and cabinet and, of course, tools and solder.

For more information about Digi-Key Corporation products, write for their free catalog at Box 677, Dept. MT, Thief River Falls, MN 56701 or call toll-free 1-800-346-5144 and tell them you read about it in MT!



"FOX PAC" SCANNER

While Bearcat, Radio Shack and Regency may still be the dominant forces in the programmable scanner field, Fox Marketing remains a strong contender. Rumor has it that a number of innovative products are slated for release.

We tested the most recent release, the Fox Pac 100, and were impressed with its straightforward simplicity, sensitivity and compactness.

The Fox Pac is designed to accept any number of pre-programmed plug-in modules (ROMS) which may be custom ordered for your locale. This allows immediate, dense memory operation without the need to purchase crystals or keyboard-enter your favorite frequencies.

The modules may be ordered separately with 20, 50 or 100 channel capability. The scanner

Continued on page 18

Behind The Dials

Continued from page 17

allows additional bank and channel skip (lockout) flexibility.

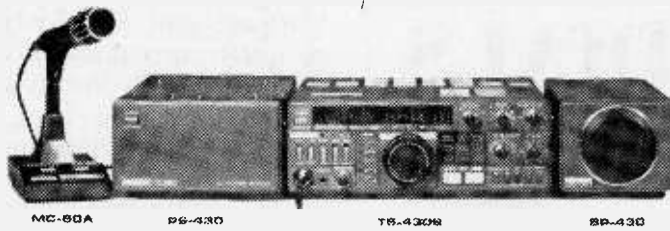
Audio quality is excellent, with a loud 2 watts of audio power available from the small (6" x 1 1/2" x 9") cabinet.

Membrane keys (like on the Regency products) select automatic scan or manual channel stepping, action (priority), instant weather channel access, as well as the memory bank and channel skip provision mentioned earlier.

Designed for operation from 12VDC, the Fox Pac scanner comes with an AC adaptor. For portable operation, a built-on telescoping whip provides excellent local signal coverage; a rear apron jack allows operation with an external antenna for mobile and fixed base applications.

While there is still evidence of a few birdies and internal synthesizer/multiplex products to be heard as interference, due largely, no doubt, to the unshielded plastic cabinet, the problem appears to be reduced from earlier models.

Combining the features of both crystal and programmable scanners, the Fox Pac has a very attractive price/performance ratio. (Fox Pac 100, \$229.95 from Fox Marketing, 4518 Taylorsville Rd., Dept. MT, Dayton, OH 45424)



...The Best of All Possible Worlds?

THE KENWOOD TS430S TRANSCEIVER

A Review by Bob Grove WA4PYQ

With the battle looming between the new general coverage receiver manufacturers (Kenwood R-2000; ICOM R-70), would it be possible to combine the best features of both receivers into one piece of equipment? And how about a transmitter to boot?

Kenwood appears to have done it. The new TS430S general coverage transceiver has just about everything: 150 kHz-30 MHz receiver with sharp selectivity, passband tuning, RIT, notch filter, 8 channel memory (frequency and mode) with scan and adjustable-speed search, squelch, superb sensitivity with excellent dynamic range and image rejection, very few spurious signals, eminent stability, frequency readout to 100 Hz with ultimate tuning resolution of 10 Hz, and an internal speaker.

The transmitter features all-mode modulation (SSB/CW/AM)

with an optional FM module for both transmit and receive, at power levels up to 250 watts PEP.

Coverage of all ham bands, including the WARC authorizations, is also provided with easily-defeatable frequency-limiting diodes.

PUTTING IT ON THE AIR

When the TS430S arrived, my natural impulse was to put it on the air immediately without reading the instruction manual. The new Kenwood is eminently user-friendly; on the air it went.

My first CQ was answered immediately by two stations, reports of excellent signal strength and audio quality (SSB) were received during this and all subsequent contacts. Even in DX pileups, my call was immediately acknowledged.

The antenna used was my own design, an all-band dipole described elsewhere in this issue. Its effectiveness obviously played a considerable part in the success of the transceiver, but if the transmitter can't put out a signal, neither can the antenna.

Using squelch on SSB is a rather recent innovation; the Kenwood squelch has good attack and recovery characteristics.

Frequency stability on both transmit and receive is like a rock; and when the other guy drifts slightly, the Kenwood's RIT (receiver incremental tuning) tracks him without affecting the transmit frequency.

The two-speed (10/100 kHz per dial rotation) could be slower, but it is adequate. Interestingly enough, the two speeds also control the search rate in that receive mode.

With antenna disconnected, I began to search for spurious signals. A number of them were found, especially at 500, 23139 and 25915 kHz, but none strong enough to cause any S-meter deflection. And with the antenna connected, nearly all of the spurs were virtually undetectable. Obviously, they would not detract from reception of desired signals.

I was disappointed in the noise blanker which seemed to be ineffectual in attenuating a variety of pulse-noise interference. The IF filter is much too narrow for AM reception, but Kenwood offers optional filters to suit the needs of the listener.

Exalted carrier SSB reception of AM signals was superb and fully corrected the muffled audio characteristic of reception in the

AM mode. The 10 Hz tuning resolution meant that speech and music were both very natural sounding.

RTTY reception at first appeared impossible with existing filters, especially on wide shift (850 Hz), but it was quickly determined that adjustment of the passband IF tuning took care of that.

Aesthetically, the TS430S continues the Kenwood tradition; it is compact, attractive and eminently functional. It is unquestionably the most cost-effective, flexible transceiver released to date.

(TS430S \$899 suggested retail; PS430 AC power supply \$149; MC-60A microphone \$79.94; FM-430 FM adaptor \$49.95; YK-88A 6 kHz AM filter \$49.95; SP-430 external speaker \$41.95).



"SUPER DF" DIRECTION

FINDING ANTENNA

A mobile (or portable) VHF/UHF radio direction-finding system has been introduced by BMG Engineering. Consisting of an upper pair of phase-sensitive whips and a lower control unit, the new "Super DF" system is designed for continuous 100-260 or 200-550 MHz applications.

Best operated from a vehicle in motion, the BMG RDF averages out fluctuations in signal strength, measuring only the phase relationships between the two antennas.

The unit is connected to both the external antenna jack and external speaker jack of the receiver or scanner. A self-contained speaker allows the user to monitor both the incoming signal and a superimposed pulse tone.

A high/low tone pair corresponds to a red/green LED visual indication; these provide left/right directional information.

Directional resolution of the

Continued on page 19

WAYNE GREEN BOOKS

The New Weather Satellite Handbook
by Dr. Ralph E. Taggart
WBEDQT
BK7315 \$4.95

NOVICE LICENSE STUDY GUIDE
by Timothy M. Daniel
N8RK
SG7357 \$4.95

World Repeater Atlas
Completely updated, 2000 repeater listings are indexed by location and frequency, pinpointed 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 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

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

The New Weather Satellite Handbook
by Dr. Ralph E. Taggart
WBEDQT
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

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Behind The Dials Continued from page 18

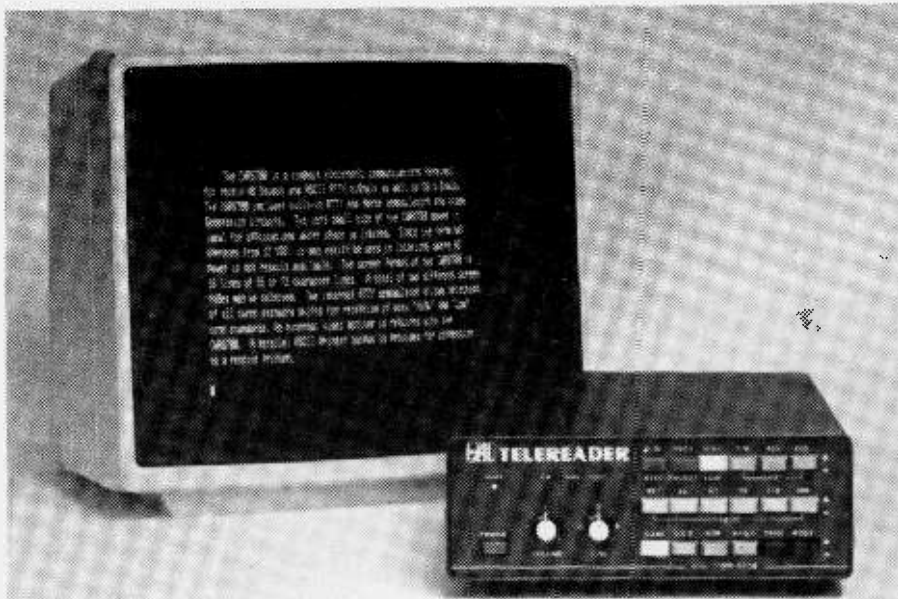
signal within one second is possible using the BMG system and bidirectional ambiguity is not a problem.

The basic system is available with a variety of options, depending upon the frequency range of interest and whether a kit or factory-built unit is preferred.

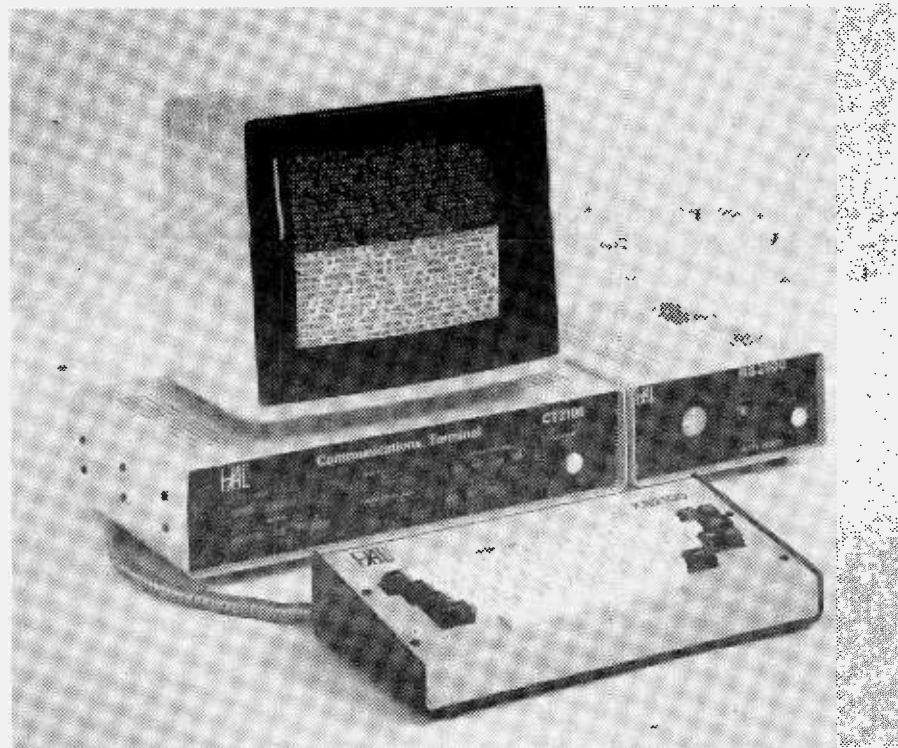
The accompanying documentation is exhaustive, examining

all aspects of transmitter hunting, as well as explaining the theory of the BMG system.

(SDC1B control unit, \$180.75; antenna unit \$56-\$66; SDC1-K kit, \$99.75; antenna kit, \$25-\$50. For more information, write BMG Engineering, Dept. MT, 9935 Garibaldi Ave., Temple City, CA 91780).



The receive-only CWR6700 and optional video monitor



The HAL Communications Terminal, keyboard, tuning 'scope and video monitor

HAL RTTY/Morse Systems

A number of accessories for radioteletype and Morse code operation have appeared on the communications scene recently. They are clearly divided between receive-only and transmit/receive devices.

HAL Communications Corporation (Box 364, Dept Mt, Urbana, IL 61801) is one of the leaders, having been in the commercial, amateur and SWL market for several years. We recently field-tested several pieces of HAL gear and now reflect our findings to Monitoring Times readers.

CT2100 Communications Terminal (suggested retail \$845)

A remarkably-flexible demodulator for ASCII, RTTY

and CW, the CT2100 features a large array of function-clustered pushbuttons on the front panel, and an impressive mass of input and output jacks on the rear apron as well.

Designed to interface with a companion multifunctional keyboard (KB2100) and video monitor (KG12), the CT2100 simply connects between the receiver audio output and the transmitter audio input. Tape recorder and printer loop connections are included.

A built-in monitor with speaker allows the use to listen in to the audio signal if desired, since connecting the unit to the external speaker jack of a receiver or transceiver will disconnect that

rig's internal speaker.

Common functions are clustered for convenience: data, MODEM, display, TX/RX control, I/O. A row of tuning LED's assists in proper alignment of the unit.

A novel feature is a video bargraph generator which allows the listener to visually peak the incoming signal while watching the monitor—a very handy display.

While the rows of pushbuttons are too close together for comfortable switching, it must be remembered that they will not be used like a typewriter. Set and forget; it's forgivable.

Data formats are ASCII and Baudot (170/425/850 Hz shift) with transmit or receive rates of 45/50/57/74/100/110/150/300/600/1200 Baud.

Morse code adjusts automatically on receive speed, manually for transmit: 5-99 WPM.

Some RF interference hash was detected from the video system on various frequencies in the shortwave spectrum. Well-shielded cables and common grounding are mandatory to avoid problems on reception.

The video format is quite pleasing; a slow scroll—not the abrupt line "snap" of competitive units—is a thoughtful consideration in design.

Video format includes 24-line pages from either 48 72-character line or 96 36-character lines (extra large characters). Either black-on-white or white-on-black characters may be selected.

The CT2100 may be used stand-alone for reception, or with the matching KB2100 keyboard for transmission.

KB2100 Keyboard (\$175 retail)

A full typewriter keyboard with excellent "feel" complements the HAL system. Addressable memory provides several messages: "DE" (here is), Quick Brown Fox, CQ. 2040 character EPROM storage may be divided up among a variety of user-specified messages. Rub out and Break keys are included among the 58 keys plus space bar.

Split-screen operation allows composition while a message is being received and read.

CWR6700 Morse/RTTY/ASCII Demodulator (Suggested retail \$495)

This receive-only terminal is designed to work with either a video monitor or ASCII printer. Input may be either audio from the speaker jack of the user's receiver, or TTL logic from a keyer.

Oddly, the CWR6700 is designed to operate from 12 VDC at 0.8 A; no power supply is available from HAL. A standard CB-type base power supply works well.

The accompanying manual is extraordinarily complete, containing informative chapters on teletype, ASCII, Morse, interference, alignment procedures and a variety of other topics. It is well-written.

The demodulator itself is compact, extremely easy to use with its array of labelled pushbut-

Continued on page 20

The BEST in Code Converters

THE INFO-TECH M200-F TRI-MODE CONVERTER

Converts Morse & RTTY (Baudot & ASCII) to video, and serial Baudot or ASCII for hard copy




Morse Reception: 6-55 wpm standard (simple user adjustment for higher speeds). Automatic speed tracking & word space adjustment.

RTTY/ASCII Operation: Decodes RTTY (45, 50, 57, 74, 100 Baud) and ASCII (110 & 300 Baud), Auto CR/LF, automatic threshold control, selectable unshift on space, limiter is switch selectable, solid state tuning "meter". Demodulator has 3 fixed shifts and 1 tunable shift, user selectable printer outputs in ASCII or Baudot for all modes with crystal controlled baud rate generator. RS232, TTL & isolated loop outputs. User adjustable autostart.

Video Display Formats (User Selectable)
 16 lines x 32 characters, 16 lines x 72 characters.
 25 lines x 32 characters, 25 lines x 72 characters
 50 or 60 Hz operation. Cursor, on or off

Built-in 115/230v power supply

Price \$495⁰⁰

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| <p>Colmay Products 14903 Beachview Ave White Rock, BC Canada V4B 1N8 (604) 536-3058</p> | <p>Dialta Supply 212 48th Street Rapid City, SD 57701 (605) 343-6127</p> <p>Electronic Equipment Bank 516 Mill Street Vienna, VA 22180 (1-800) 368-3270</p> <p>Giffer Associates 52 Park Avenue Park Ridge, NJ 07656 (201) 391-7887</p> <p>Global Communication 606 Cocoa Isles Blvd Cocoa Beach, FL 32931 (305) 783-3624</p> | <p>Ham Radio Center 8342 Olive Blvd St Louis, MO 63132 (1-800) 325-3636</p> <p>Michigan Radio 35628 Jefferson Mt Clemens, MI 48045 (313) 469-4656</p> <p>Universal Amateur Radio 1280 Aida Drive Reynoldsburg, OH 43068 (614) 866-4267</p> <p>Grove Enterprises, Inc. Brasslow, NC 28902 (1-800) 438-8155</p> |
|---|---|--|

INFO-TECH

ELECTRONIC EQUIPMENT

Manufactured by:
DIGITAL ELECTRONIC SYSTEMS, INC.
 1633 Wisteria Court • Englewood, Florida 33533
 813-474-9518

Behind The Dials Continued from page 19

tons. Rear-apron jacks are provided for X-Y scope use if desired.

All standard speeds for Baudot and ASCII are included: 45/50/57/75/110/300 baud rate; standard shift selections of 170/425/850 Hz or variable are also available on the panel.

A built-in audio monitor with speaker (or headphone jack output) with volume control affords the listener the ability to listen in on the recovered audio even if the receiver's speaker was cut off by the insertion of the audio plug.

Two pages of memory storage and recall permits the operator to refer back to text previously displayed.

Morse reception is the best we've seen on any reader/demodulator to date; it is very forgiving of sloppy dot-

dash radio and spacing, acquiring valid text virtually instantly with a data rate change.

The CW filter is quite sharp without ringing and could probably be used to advantage when manually copying CW under crowded conditions even when the full capability of the demodulator is not in use.

RS2100 Scope (\$329 retail)

Although considered by many users a luxury, a CRT display for tuning is extremely useful. At a glance, the listener can tell whether mark/space signals are properly tuned in.

The RS2100 is a miniature oscilloscope featuring a one-inch CRT display with separate horizontal and vertical inputs. Internal AC is included.

The little scope is not limited

to use with HAL equipment; its universal applications include direct connection to loop supplies of teleprinters and signal outputs of competitive demodulators as well.

Front panel controls include vertical and horizontal position, intensity and focus (as well as power). Loop indicator lamps are provided.

Internal adjustments are accessible for X, Y axis gain and astigmatism.

The RS2100 with its sharp-trace display proved an invaluable aid in rapid tuning of received signals. While many RTTY demodulators leave some question during their initial tuning-in period as to whether the signal is optimized in the mark/space bandpass, the RS2100 tells the whole story.

KG12 Monitor (\$200 retail)

The vast majority of inexpen-

sive video monitors now on the home computer market are mass-produced by Japanese TV magnates. They offer excellent performance at reasonable cost.

The HAL KG-12 features a green P-1 phosphor and 18 MHz bandwidth, composite video input at nominally 1 volt. Typical of the current genre of video monitors.

Power switch, brightness and contrast controls are external. The display was bright and sharp with a minimum of character distortion. A protective skin covers the front screen, removable by the user. Even with the skin left intact, characters are sharp and easy to read.

General conclusions.

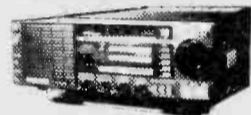
The performance of the entire video system is consistent with the HAL tradition of quality and dependability. While system costs may seem a little high, relief is available through discounts offered by Monitoring Times advertisers.

All equipment tested was neat in appearance, flexible in application and dependable in operation. It was obvious that considerable thought went into the development of the HAL system.

SWL HEADQUARTERS

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*EEB now provides an extended 90-day warranty, effectively doubling your warranty. 6 months parts and labor AT NO COST TO YOU.

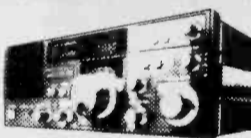
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*EEB is ICOM's mid-Atlantic authorized service center.

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- FL-44 SSB 455 KHz Crystal Filter \$159—installed \$179
- DC-70 13.8 DC option—installed \$15

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 - All mode AM-CW-SSB-FM
 - Digital Frequency and clock

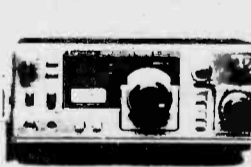
Options:

- FRA-7700 Active Antenna \$59
- MU-7700 12 Channel Memory \$135
- FRT-7700 Antenna Tuner \$59
- FF-5-VLF Low Pass Filter \$20
- DC-7700 12 VDC Kit \$8
- FRV-7700 VHF Converter \$135

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SALE \$439

*EEB now provides an extended 90-day warranty, effectively doubling your warranty. 6 months parts and labor at NO COST TO YOU.

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AM, SSB, and CW modes. Built-in noise blanker. PLL synthesizer covers 30 bands between 200 kHz to 30 MHz. Ideal 3-stage. IF filters for receiver mode. Power requirements 100, 120, 220, 240 VAC, 50/60 Hz-12 VDC option.

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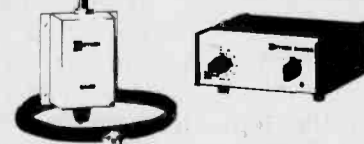
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PIRATES BEWARE...

A public notice from the FCC was received recently here at MT headquarters. It is reproduced in full for our readers.

On January 26, 1983, Ricky Lee Henderson of Salem, Missouri paid a \$750 forfeiture imposed as a result of his operation of an unlicensed FM broadcast station. The fine was assessed as a result of an investigation conducted by the FCC Kansas City District Office. Henderson, who holds a First Class Radiotelephone license as well as an Amateur Extra Class license, was observed operating a radio station on November 22, 1982, on a frequency of 102.72 MHz. The station was being identified as "KJ103".

Under Part 15 of the Commission's Rules, non-licensed voice operation in the FM Broadcast band, 88-108 MHz, is authorized only by use of an unmodified FCC type approved wireless microphone. Henderson's equipment did not meet this criteria.

The Commission's Field Operations Bureau is aware of the increasing number of unlicensed broadcast stations and is currently engaged in an extensive effort to eliminate violations of the Communications Act by imposing substantial fines to the responsible individuals.

(With special thanks to Jeff Krauss of Rockville, MD for sending the notice)

Helpful Hints

EXPANDING THE SCANVERTER

By David Wilson

(Author Wilson reports several user hints which have allowed him to improve reception in the 225-400 MHz range, including FM detection).

I presently use my Grove CVR-1 Scanverter with a BC-20-20 scanner and R-1000 receiver. For improved calibration accuracy, I set my R-1000 to lower sideband and tune in a MARISAT satellite RTTY transmission (248.925-249.300 MHz, 25 kHz channel spacing).

I have also heard much FM satellite traffic including Air Force One working "Cartwheel".

Some operational hints may help other listeners snare interesting communications.

EXTERNAL PREAMPLIFIERS

If you use an external preamp with the Scanverter, be careful not to use too much gain; this will cause the system to go into oscillation, characterized by a sudden increase in background noise.

The problem may be corrected by turning the gain down somewhat (as I do with my Grove ANT-4 Power Ant), or by lowering the DC voltage if you have a selectable AC adapter (like the Grove PWR-1).

OSCILLATOR ADJUSTMENT

As components age it is not unusual for an oscillator to slowly drift off frequency. The oscillator trimmer may be adjusted to proper frequency (18.000 MHz) by listening for a harmonic on 504.000 MHz on a multiband scanner (or 126.000 MHz on an aircraft-only scanner) and tuning for greatest quieting of background noise.

Another procedure is to tune in exactly 18.000 MHz on a shortwave receiver with BFO on (calibrated accurately to WWV) and adjust for zero-beat. Be sure to use a non-metallic (plastic) tuning screwdriver or home-made tool like a filed-down picnic fork.

OUT OF BAND RECEPTION

Because of the large numbers of oscillator harmonics present in the mixer, a correspondingly large number of combinations are possible for out-of-band signal reception. Let's take a look at how this can be used to our advantage.

For FM reception of 406-420 MHz (federal government band), adjust your scanner to receive 442-456 MHz. Similarly, for 216-220 MHz (inland waterways) and 220-225 (amateur), use 162-171 MHz on your scanner. The mathematically ambitious may wish to try other combinations as well.

USING SCANVERTER WITH A SHORTWAVE RECEIVER

To increase sensitivity of the

Keep in mind that the Scanverter utilizes a band-pass filter which rolls off below 225 MHz and sensitivity will be degraded slightly (on the order of 1-2 microvolts).

For additional in-band (225-400 Mhz) reception of FM

| FM | VHF | UHF | | | | | | | | | | SW |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| | | 226 | 244 | 262 | 280 | 298 | 316 | 334 | 352 | 370 | 388 | |
| 154 | 118 | 226 | 244 | 262 | 280 | 298 | 316 | 334 | 352 | 370 | 388 | 10 |
| 155 | 119 | 227 | 245 | 263 | 281 | 299 | 317 | 335 | 353 | 371 | 389 | 11 |
| 156 | 120 | 228 | 246 | 264 | 282 | 300 | 318 | 336 | 354 | 372 | 390 | 12 |
| 157 | 121 | 229 | 247 | 265 | 283 | 301 | 319 | 337 | 355 | 373 | 391 | 13 |
| 158 | 122 | 230 | 248 | 266 | 284 | 302 | 320 | 338 | 356 | 374 | 392 | 14 |
| 159 | 123 | 231 | 249 | 267 | 285 | 303 | 321 | 339 | 357 | 375 | 393 | 15 |
| 160 | 124 | 232 | 250 | 268 | 286 | 304 | 322 | 340 | 358 | 376 | 394 | 16 |
| 161 | 125 | 233 | 251 | 269 | 287 | 305 | 323 | 341 | 359 | 377 | 395 | 17 |
| 162 | 126 | 234 | 252 | 270 | 288 | 306 | 324 | 342 | 360 | 378 | 396 | 18 |
| 163 | 127 | 235 | 253 | 271 | 289 | 307 | 325 | 343 | 261 | 379 | 397 | 19 |
| 164 | 128 | 236 | 254 | 272 | 290 | 308 | 326 | 344 | 362 | 380 | 398 | 20 |
| 165 | 129 | 237 | 255 | 273 | 291 | 309 | 327 | 345 | 363 | 381 | 399 | 21 |
| 166 | 130 | 238 | 256 | 274 | 292 | 310 | 328 | 346 | 364 | 382 | | 22 |
| 167 | 131 | 239 | 257 | 275 | 293 | 311 | 329 | 347 | 365 | 383 | | 23 |
| 168 | 132 | 240 | 258 | 276 | 294 | 312 | 330 | 348 | 366 | 384 | | 24 |
| 169 | 133 | 241 | 259 | 277 | 295 | 313 | 331 | 349 | 367 | 385 | | 25 |
| 170 | 134 | 242 | 260 | 278 | 296 | 314 | 332 | 350 | 368 | 386 | | 26 |
| 171 | 135 | 243 | 261 | 279 | 297 | 315 | 333 | 351 | 369 | 387 | 225 | 27 |

CONVERSION TABLE (MHz)

system on shortwave, a simple preamplifier used between the Scanverter and the shortwave receiver may be used to improve reception.

SPACE SHUTTLE RECEPTION

It is unlikely that you will hear the shuttle while in flight; at an altitude of several hundred miles, reception is weak even with good equipment. However, reception of 296.8 MHz is reported both at liftoff and touchdown for coordination with chase aircraft.

Keep in mind, too, that your Scanverter stacks frequencies on top of each other every 18 MHz. So, it is possible to get interference on 296.8 MHz from FLEETSATCOM satellites on 260.8 MHz.

COMPLIMENTARY FREQUENCIES

Another set of conversion frequencies is also possible within the tuning range of the Scanverter different from the chart provided with your unit. Several formulas may be used to assist you in identifying these alternate channels.

Complimentary frequency reception is extremely handy for receiving signals when the normal conversion scheme might result in a birdie or image interference.

The first formula is: 630 - UHF Complimentary UHF Frequency. For example, if the normal conversion of 244 MHz (118 MHz) causes problems, that signal may also be heard on the conversion frequency for 386 MHz (630-244 386). Thus, you could hear 244 MHz on your scanner while set at 134 MHz.

Naturally, every 18 MHz you could theoretically hear a complimentary signal from the top line of the chart. The same is true for all lines and frequencies.

Alternatively, to find which other frequency in 118-136 MHz range you will hear the compli-



military satellite down links, simply add the frequency range 154-171 MHz alongside the margin of the frequency chart that comes with your Scanverter as shown in the illustration. Thus, 388 MHz could be heard on 10 MHz, 118 MHz or 154 MHz...and so on.

ment of a converted 225-400 MHz frequency, use the second formula:

252 - VHF Complimentary VHF Frequency.

For example, you are hearing a converted UHF signal on 125 MHz; the same signal should be heard as well on 127 MHz (252-125 127). This is excellent for avoiding interference from images, spurs and birdies.

For shortwave conversion, the formula becomes: 36-HF, and for VHF-FM high band conversion, use 324-VHF.

Updating The Scanverter

Two recent developments, both implemented in all current Grove CVR-1B Scanverters, improve performance of the popular 225-400 MHz military band converters.

Under certain circumstances, the high gain amplifier stages can go into "parasitic oscillation", recognized by a raucous buzzing sound coming through the scanner; the buzzing seems to change character if the listener's hand is placed on the Scanverter cabinet. Additionally, a rash of TV, FM and shortwave signals maybe heard during the episode.

The malady is easily corrected by the addition of a small carbon resistor (220 ohm, 1/4 watt) soldered across the antenna input jack (center terminal and ground).

The second improvement involves better oscillator stability, preventing excessive frequency drift with changing voltage and temperature.

The improvement is realized by soldering a small signal diode (1N914 or 1N4148) between the oscillator base (transistor center lead) and the nearby ground foil.

Infotech RTTY Demodulator Update

Few RTTY/Morse demodulators have captured the listeners' fancy like the M-600 from Universal (Infotech). Monitoring Times has been advised that a few minor updates incorporated in all new units may be of interest to our readers. Indeed, they are.

1. There is no physical difference between the M600 and M600A.

2. The weather text format has been dropped; in its place is a forced "Letters" case.

3. The LED's for CW and HI BAUD now only activate when the M600 is selected for those modes.

4. Mounting brackets for 19" racks are packed with all M600's at no increase in price.

5. Revised software has been incorporated for improved TOR reception.

6. Variable shift now has a greater range (approximately 80-1200 Hz.).

Additionally, a keyboard is available for full transceive capability. Options include a loop supply for a parallel printer. Other optional features are planned for the future and will be available in retrofit for present users.

Check with Grove Enterprises and other Monitoring Times advertisers for the latest prices on this fine instrument, the most flexible multimode demodulator ever made available to the serious listener.

Be sure the cathode (bar symbol or marked end) is on the base of the transistor.

After the oscillator mod, the crystal trimmer capacitor will have to be readjusted to exactly 18.000 MHz. This is easily done with a shortwave receiver calibrated for WWV and then switched to 18 MHz (BFO on, of course), tuning the trimmer for zero beat.

Alternatively, the scanner may be set to receive 504.000 MHz, a high multiple harmonic of the 18 MHz oscillator. Tune the trimmer for maximum signal (greatest quieting of background hiss).

This tuning procedure should be performed after the Scanverter has been running for a couple of minutes to stabilize circuit temperatures. It is also recommended for Scanverters which have been in service for several months as a field touch-up procedure.

All Scanverters shipped after January 1, 1983 have the diode modification already; all Scanverters shipped after April 1, 1983 have the resistor as well.

Continued on page 22

HELPFUL HINTS

Continued from page 21

How To Choose A Scanner Antenna

by Bob Grove

As with many articles of manufacture in this technological age, antenna selection for most listeners seems a black art. This needn't be so except for the fact that most dealers (and some manufacturers) don't really understand any more about antennas than their customers do!

Let's take a look at some cold, hard facts about antennas for scanner reception.

First, an antenna is either omnidirectional (receives equally well in a circle around it) or is directional (must be rotated to face the direction it favors).

All mobile service (police, fire, trains—even aircraft) antennas are vertically polarized; that is, the elements will be pointed in an up-and-down direction, not horizontal like your TV antenna.

No inside antenna (active or passive) will work as well as an outside antenna.

Only discone antennas and log-periodic beams offer continuous coverage—without frequency gaps—from one end to the other of their design spectrum.

All other antennas favor specific frequencies within the bands for which they are designed.

For example, while a trap-loaded antenna might be advertised for 30-50, 144-174 and 450-512 MHz, it is really designed for 40, 155 and 460 MHz (or thereabouts!). All other frequencies are off the design center, and performance gradually falls off the farther the scanner is tuned away from the design centers.

The same is true for 'dipole clusters,' those non-trap-loaded nondirectional multiband base antennas with several elements of vastly-different lengths. Each set of elements is designed for the center of a common band of interest.

From a practical standpoint, the common multiband antennas work quite well for the standard scanner frequency ranges. But if you are considering out-of-band reception (225-400 MHz military aero, etc.) the conventional multiband scanner antennas are very inferior to the broadband discones and log periodic beams.

THE BOTTOM LINE

For non-demanding, local coverage of signals in the low, high and UHF scanner ranges, virtually any of the standard multiband antennas will work just fine.

For weak or distant signal reception in the high or UHF band use a gain type antenna like a directional beam.

For out-of-band coverage, a single ground plane antenna cut to the center of that band will work well on that band, but not on other frequency ranges.

For continuous coverage of

in-band and out-of-band scanner reception, use a discone or a log-periodic dipole array beam antenna. Discones are made by several manufacturers, while the LPDA is only available as the Grove Enterprises Scanner Beam.

A discone performs uniformly over its entire frequency range as well as a ground plane cut to frequency anywhere in that range. And when you assemble a discone, it is essential that the upper elements are directly above the corresponding lower elements.

And don't forget to use good coax, especially if you are planning on a length in excess of 25 feet and want to listen to UHF.

Coaxial cable must be low-loss and well-shielded, like RG-59/U, RG-8/U (regular or mini) and RG-6/U (cable TV coax). Do not use RG-58/U in long lengths for fixed installations; it's OK for mobile applications, however, just so long as it has good shielding (at least 90%).

SCANNER BEAM HINTS....**Seven Steps to Outstanding Reception**

Although instructions packaged with the Grove ANT-1 Scanner Beam are reasonably good, an occasional oversight may cause problems when the antenna is first erected. Let's have a look at some common errors:

(1) Be sure the antenna is mounted away from any metal mast; an offset boom is provided for this type of installation. Plastic mast pipe section from the rotor is even better.

(2) Examine the coax (which should be RG-8/U, RG-6/U, RG-11/U or RG-59/U low loss, fully-shielded foam dielectric) for breaks or shorts with an ohmmeter.

(3) Be sure the center conductor of the coax is long enough at the F connector to make contact with the mating balun transformer; if not, carefully pull it out slightly with a pair of longnose pliers.

(4) Be sure the antenna is mounted in a vertical plane (element ends pointing up and down, not horizontally like a TV antenna).

(5) Be sure the short elements are facing the direction of the desired signal (forward).

(6) Check the wire cross-phase harness to be sure that nowhere along its length does it touch anything except the element to which it is riveted.

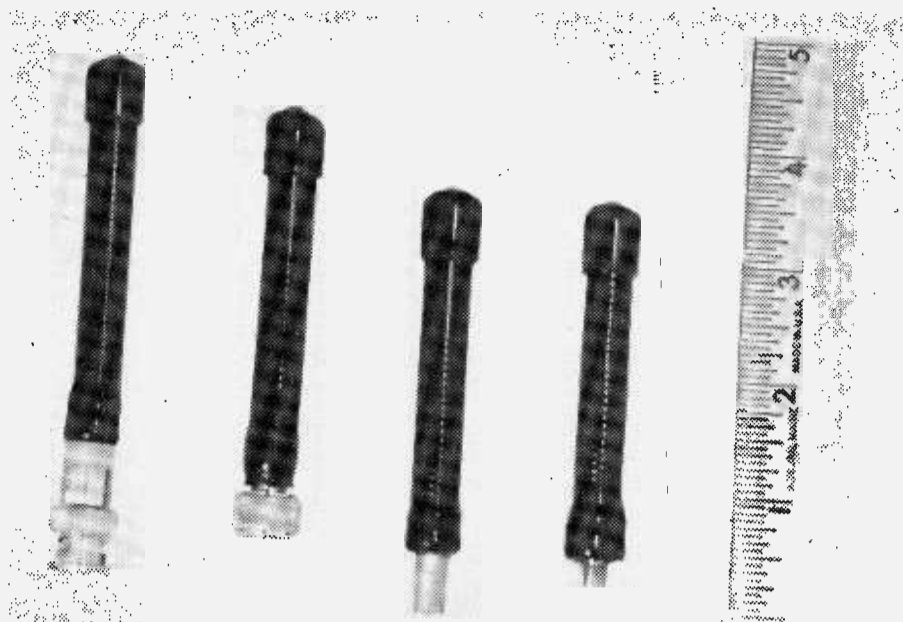
(7) Finally, substitute another balun transformer if no

signal is being received; they can be defective like any other component. Free replacements are available from Grove Enterprises.

For transmitting on the 144, 220 and 432 MHz ham band, don't run more than about 25 watts into the balun transformer or

overheating of the small internal wires could result in a blown balun.

Properly installed, the Scanner Beam is the best scanner antenna ever made available to the public; it will give you years of outstanding, dependable service.

Antenna Improvements For The Bearcat 100

While the BC-100 portable programmable scanner from Electra represents a giant step forward in solid state frequency-synthesized technology, few readers will forgive the oversight of omitting provision for an external antenna.

Although it is expected that future models of the popular hand-held scanner popular hand-held scanner will include a BNC connector for wider antenna flexibility, a prominent antenna accessory manufacturer may have solved the problem for present BC-100 owners.

Centurion International (PO Box 82846, Dept MT Lincoln, NB 68501) has announced the availability of their BC-BN adaptor, a cleverly-made, rugged antenna adaptor for the little Bearcat.

Designed to screw into the threaded antenna hole of the scanner, the BC-BN sports a BNC connector for attaching to an external antenna cable.

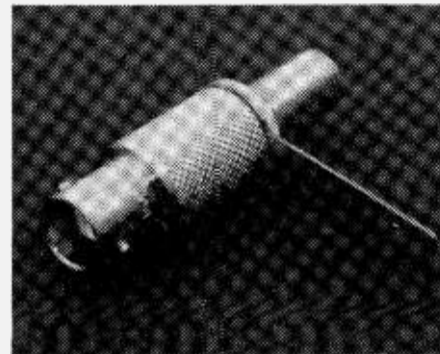
An effective ground return to the radio is provided by a strong steel strap which may be bent down to touch the radio's ear-phone jack, or trimmed to slip into the jack barrel hole.

Additionally, a series of flexible "rubber ducky" helical antennas is available from Centurion to replace the small stub antenna which comes with the BC-100. HOW DO THEY WORK?

Recently, we decided to give a rugged field trial to the three accessories on a trip through the eastern states.

Without exception, the BC-BN adaptor provided sturdy, dependable interfacing between the Bearcat 100 and coax line from the car's rooftop antenna.

Our two sample flexible antennas were identical to one another, except one had a threaded base to match the unmodified Bearcat (A-TRI-BC) and the



other had a BNC base to fit the adaptor (A-TRI-BN).

The antennas which were compared in the test were the original BC-100 flexible antenna, a home-made screw-in 30-inch telescoping whip, and the Centurion A-TRI.

TEST RESULTS

In all cases, the best performance came from the telescopic whip, adjusted for 1/4-wavelength on high band and UHF, and fully extended for low band. This was to be expected; no physically-short antenna can work as well as a full-length antenna.

Next, the Centurion worked better than the original Bearcat factory antenna on low band and high band.

At UHF the Bearcat antenna was better than the Centurion.

By way of a side note, the Centurion threads are not pitched the same as those on the BC-100, so the antennas will not fully seat. They are, nonetheless, secure. RECOMMENDATION.

For connection to an outside antenna, the BC-BN adaptor is an excellent accessory. For an attachable whip, nothing can outperform a telescoping whip (10-32 screw base) adjusted for 1/4-wave at the band of interest.

Between the flexible whips, the original Bearcat stub works best on UHF and VHF high band; the Centurion provides better low band performance and about the

Continued from page 23

Viewpoint

I wish to congratulate you for the SWL scoop in having Hank Bennett as an editor in Monitoring Times. MT is now of age and will continue to be a successful newsheet. What WORLDRADIO is to the hams, MONITORING TIMES is to the SWL's. (Stewart MacKenzie, publisher, American Shortwave Listeners Club)

Just a note to let you know how much I enjoy Monitoring Times. The list of frequencies is a great help to someone who is just getting started in scanners and shortwave. Keep up the reviews on the different scanners and SW receivers (Dale Packer, Allegan, MI)

ERRATUM

In the November/December issue of MT, p. 16 "Meters or Megahertz", it says, "The use of meter band by many broadcasters and amateurs, alike often causes confusion"; I would say so; the table used says, "49 meters equals 5950-6200 Megahertz" and so on. It should read "49 meters equals 5.950-6.200 MHz", and so on.

Your publication is great. I would like more ads and product exposure. (William J. Patterson, Houston, TX).

Thanks, William, for pointing out a glaring error! Readers are advised to correct the caption at the top of that table on page 16 of the November/December issue to read "KILOHERTZ" not "MEGAHERTZ".

Perhaps your readers might be interested in knowing that new, unused copies of the 1979-1980 issue of Jane's Military Communications are available for \$14.98 plus \$2.40 handling and shipping from Publishers Central Bureau, 1 Champion Avenue, Avenel, NJ 07001. Their stock number for this 469 page book is 391562.

When new, the book sold for \$125 as does the current issue. The sale book was the first issue to contain details and illustrations of military communications equipment for radio, satellites, land line, teletype and encryption. (William J. Neill, San Antonio, TX)

Thanks Bill for sharing this item with our readers. I took advantage of that special offer and am well pleased.

HELPFUL HINTS

Continued from page 22

same high band performance as the Bearcat. UHF reception on the Centurion is poor.

Centurion also offers a wide variety of replacement antennas for amateur and commercial handy-talky antennas as well as rechargeable batteries for virtually all hand-helds.

For more information on those products, the adaptor (\$7.50) or the antennas (\$15.85/\$18.35) contact Centurion directly at their address given earlier.

Well, you persuasive rascals did it! Your anniversary issue with the feature article on CW marine listening was the clincher. The promise of the feature on naval and INTERPOL CW is just too much to pass up on.

The competent replies to your esoteric question on the Bellini-Tossi fixed loop goniometer indicate, as well, the calibre of your readership. This was especially interesting when "yours truly", a self-styled SWL expert, was thinking in terms of a utensil used in the kitchen of a restaurant specializing in Italian cuisine!

Seriously, though, having made the "rounds" of other communications-specialized publications, it's obvious that you people have a winner. (Richard Phillips, St. Catherines, Ont.)

Bob, you are the only one who I write to who actually gave me the courtesy to answer my letter in regards to line noise and interference problems. You seem to know what you are talking about. Your paper is excellent and very informative. (Martin J. Theil, Holiday, FL)

We try very hard to answer all questions, Martin. Those accompanied by a self-addressed, stamped envelope are given first priority.

When I first subscribed to MT it was because the majority of articles concerned scanners and HF and LF utility monitoring. However, I've noticed within the past several issues that more and more columns have been devoted to international shortwave broadcasting. Why?

There are so many clubs with such bulletins right now. I certainly hope MT isn't going to go that way. Please keep MT the way it was originally! (L. Jean Baker, Indianapolis, IN).

Originally, MT was only an 8 page tabloid; in one year we have grown to 28 pages allowing for considerably more flexibility in article themes. MT will not become another SWL magazine, but we can't ignore the substantial number of readers who listen to international broadcasting. Therefore, we will continue to have pertinent broadcast articles while concentrating on communications throughout the spectrum.

In reference to "What is that Hum?" (p. 3 MT January/February), I believe I may have an answer to the question concerning radio waves bombarding the American Embassy in the USSR.

It was eventually discovered that metal rods of a specific length were found fastened to support members inside the walls of the embassy. Calculation showed that they were resonant dipoles of the same microwave frequency which was being directed at the embassy from outside at high power.

Any conversation taking place in the rooms would vibrate the walls and consequently the metal rods buried inside. Since the rods were sympathetically vibrating in step with the voices,

any radio energy picked up by the rods would be modulated ever so slightly in frequency and re-radiated.

Receivers located a few blocks away would demodulate these signals, allowing the operators to listen and record the conversations at the embassy.

Never did hear of what happened after the Americans caught on to the game. Hopefully, another reader can supply more information or add corrections to mine. (Neil Schlaffer, Chicago, IL).

THE HOME BUILDER

A couple issues back, we asked our readers if they would like to see a publication dedicated to the home radio and electronics experimenter. This poignant reply from a well-known and respected home projects author is typical of the encouragement:

In reference to your question as to whether you should start a new magazine, one dedicated to the home builder, the radio experimenter, and the serious hobbyist: YES, A thousand times YES! Such a magazine is sorely needed. Please fill the vacancy. (Carl C. Drumeller W5JJ, Warr Acres, OK).

The issue of starting a new publication dedicated to the home experimenter is still not resolved. Such an undertaking is extremely expensive.

Roughly 5% of our letters to

VISUAL MONITORING

The World of Amateur Television (Part II)

By John Edwards

In the previous issue of MONITORING TIMES, we found out about monitoring amateur television. Now it's time to discover exactly how ATV signals are transmitted and the requirements of an ATV station.

Basically, three items are required to form an ATV transmitting station: a transmitter, a camera, and an antenna.

Like receiving converters, ATV transmitters have come a long way from the days of surplus and homebrew gear, as the current trend is toward factory-manufactured units.

Typical of this type of transmitter is the Klitzing ATV transmitter (Halted Specialties, 729B E. Evelyn, Sunnyvale, CA 94086) which lists for \$199, or the \$159 Xtronix (2206 Renfrew Court, San Jose, CA 95131) TVX-10.

Both units are solid-state, 10 watt transmitters that use a plug-in crystal to determine the output frequency. The crystals can be changed so that one can use the transmitter on a number of ATV frequencies.

The user can use a conventional 420 MHz power amplifier to boost the signal.

Before leaving the subject of transmitters, let's take a look at a form of hybrid ATV unit—the transmitter/converter. As the

the editor encouraged the new publication...that's one in twenty, or a representation of about 1000 readers.

Let's try walking before we run. How about a few test articles in Monitoring Times just to see what response we get? We could include contests for original or useful ideas and projects, with prizes awarded (free subscriptions, even cash bonuses) to the winners.

Readers are always asking about audio filters, RF notch filters, electrical noise filters, RF preamplifiers, active antennas, external squelch and tape recorder activators, scanner and shortwave receiver modifications for better selectivity and additional modes, improved antennas of all kinds, and more, limited only by the tinkerer's imagination!

How about some truly innovative ideas like a simple solid-state "Geiger counter" using a photovoltaic cell? What about a simple converter to change an inexpensive video monitor (or TV set) into an oscilloscope or panadapter? A shortwave RDF antenna system would be a real prizewinner if it were small, efficient and easy to build and operate.

Let's hear from the home experimenters. Give us some guidelines, suggestions for projects and rewards, and we'll start it with the July issue!

name implies, this is an ATV transmitter and receiving converter built into one cabinet; a sort of transceiver, if you will.

Actually, there's more to it than that. The transmitter/converter also acts as a central control point for the entire ATV station. Most contain an AC power supply, jacks for video and camera inputs and, most importantly, components for transmitting audio.

ADDING SOUND

Audio is one facet that many budding ATV users fail to think about at first. Yet it's quite obvious that television isn't very effective without sound (unless you're a silent movie fan!). However, most converted surplus transmitting gear, and even some ready-built ATV transmitters, have no sound capability.

In the past, various systems were designed to provide audio. Among the ideas used were separate phone transmissions on a higher UHF frequency, 2-meter voice links (still used in some parts of the country) and various methods of adding an audio subcarrier to the visual signal.

The system that seems to have won out across most of the nation is use of an FM subcarrier

Continued on page 24

Visual Monitoring

Continued from page 23

added to the video signal. This allows any standard TV set (with a converter, of course) to pick the sound right out of the IF system and play it over the set's normal speaker. That sure beats fooling around with 2-meter rigs or separate 450 MHz transceivers!

The last element of an ATV station is the camera. Thanks to the recent boom in home videocassette recorders, low-cost, high-quality TV cameras are available just about everywhere. The price of a new camera should be somewhere in the \$150-200 range.

If that's a little steep for you, try scouting your area's next electronic flea market. You can usually find a few sellers hawking used CCTV (closed-circuit television) cameras for about \$50 and up, depending on the condition.

If you think you might be ready for color, you might want to buy one of the new portable color cameras. These units are available new for about \$400 and up.

Once the ATV station is assembled and made operational, the next step is to put together some programming. In the next issue of MONITORING TIMES, we'll look at what can be seen on ATV.

Experimenter's Workshop

REDUCE TELEVISION 'SYNCH BUZZ' INTERFERENCE

by Bob Grove

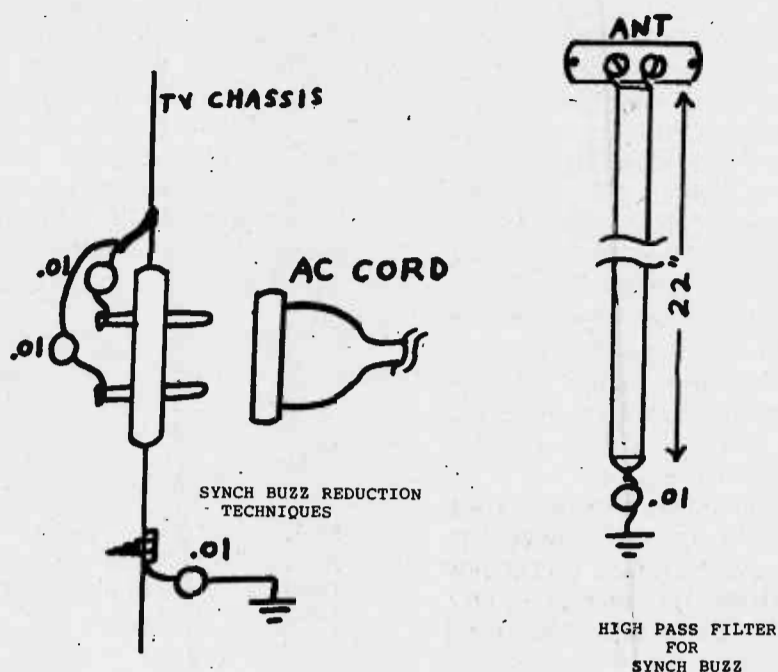
One of the most irritating forms of interference to plague the shortwave and longwave listener alike is TV sweep oscillator noise. It is recognized by its raucous buzzing sound, prominent throughout the lower part of the spectrum when nearby television receivers are turned on.

The signal is generated by the horizontal oscillator of the TV set to provide synchronized sweeps of the electron beam across the TV screen in order to produce a picture. To do so, it must sweep at a rate of 15,750 times per second (15.75 kHz).

The signal is a square wave, rich in harmonics; it is just these harmonics that cause the problem.

Fortunately, there are some measures which are within the capabilities of many home experimenters which may reduce the blight.

The first is to experimentally try a 'stub filter'; this consists of a 22" piece of twin-lead, shorted at the distant end, and connected across the antenna terminals. A 0.01 microfarad disc capacitor is connected from that shorted end to a convenient chassis screw.



The filter acts like a short circuit to remove any low-frequency radiation which might escape from the antenna lead-in.

Another home remedy requires taking the back off, or at least getting access to the AC interlock wires inside the set. Try connecting a 0.01 microfarad, 600 volt disk capacitor from either side of the line to the chassis at that point. Naturally, AC power must be disconnected during the

fix.

Another possible solution is to ground the signal by affixing a 0.01 microfarad, 600 volt disc capacitor between the chassis and ground return of the electrical AC outlet.

Now, with your set suitably remedied, I'm sure you will have absolutely no problem convincing all your neighbors to convert their sets as well!

For superb shortwave reception and amateur transmitting, try

THE GROVE ALL-BAND DIPOLE

By Bob Grove, WA4PYQ

Few questions come into the headquarters at Monitoring Times as often as "What is the best choice in a shortwave antenna?"

For that reason, we decided to try an elaborate series of experiments to devise an antenna that not only worked exceptionally well for receiving, but would work as a transmitting antenna for the amateur bands (1.8-30 MHz) without the need of a tuner!

The challenge was clear, but not insurmountable. The road had already been paved by experiments early this century by a ham, Loren Windom. His name is still identified with one of the most popular antennas of all time.

Unfortunately, Windom's antenna had its limitations. It worked only on even harmonics of

its half-wave fundamental frequency and it was fed at an awkward (400-500 ohms) impedance point. We decided to try to expand on the concept to produce an antenna with more universal application.

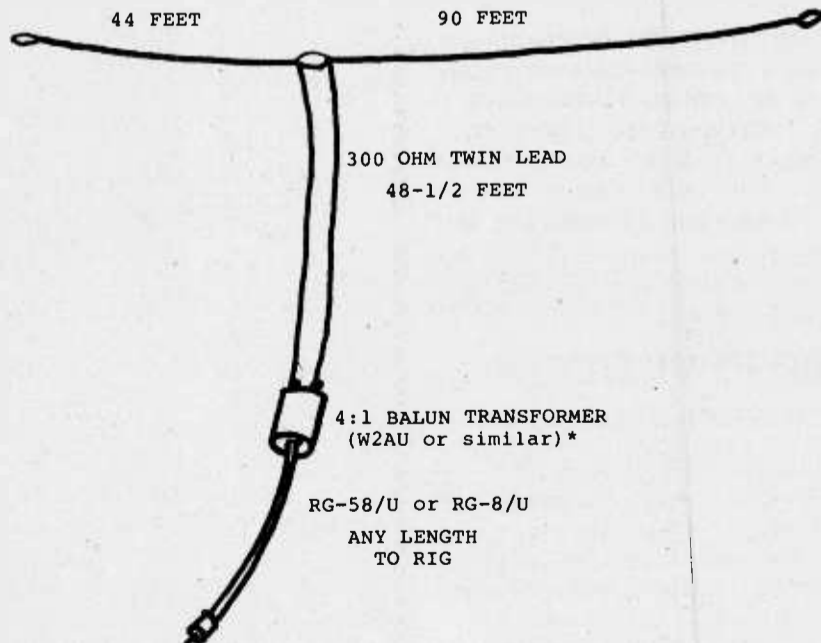
After many weeks of frustrating pruning, testing and on-the-air checks, the following scheme was finally perfected. Duplication installations by other hams and shortwave listeners produced similar results--excellent worldwide transmission and reception without the need of an "antenna tuner" (transmatch).

As with all shortwave dipoles, the higher above ground the better to keep VSWR low--especially at the lower frequencies--for transmitting. Preliminary tests

revealed that the antenna may also be used for transmitting outside the conventional amateur bands with similar VSWR.

It is entirely possible that a half-size wire antenna (22 and 45

foot legs) would work as well. We at Monitoring Times would appreciate the results our readers have with any modifications of and applications for this excellent antenna.



GROVE ALL-BAND DIPOLE DIMENSIONS

| | | | | | | | | | | | | |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| FREQ. | 1.8 | 1.9 | 3.5 | 3.6 | 3.7 | 3.8 | 3.9 | 4.0 | 7.0 | 7.1 | 7.2 | 7.3 |
| VSWR | 2.5 | 2.5 | 1.3 | 1.4 | 1.3 | 1.3 | 1.4 | 1.3 | 1.5 | 1.2 | 1.1 | 1.1 |

| | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|
| FREQ. | 14.0 | 14.2 | 14.3 | 21.0 | 21.2 | 21.4 | 28.0 | 28.5 | 29.0 | 29.5 |
| VSWR | 2.7 | 2.4 | 2.0 | 3.5 | 1.8 | 1.2 | 3.0 | 1.8 | 2.5 | 1.9 |

TYPICAL VSWR VS. FREQUENCY (MHZ) FOR GROVE DIPOLE

* W2AU balun, insulators and other antenna hardware available from a variety of amateur radio supply houses including: Long's Electronics (1-800-633-3410) Amateur Electronic Supply (1-800-558-0411) Universal Electronics (614-866-4267) Microwave Filter Co. (1-800-448-1666)

TUNING IN THE COASTAL CW STATIONS

by Joe Woodland

(Editor's note: The recent series of MT articles on shortwave CW by Sam Lambert drew many favorable comments from our readers. As a result, we are pleased to present this excellent list of coastal frequencies collected recently by the patient monitoring of author Joe Woodland.)

Coastal stations serve ships at sea by exchanging telegrams. They also gather weather observations from the ships and broadcast weather forecasts.

Despite the growth of RTTY and other forms of sophisticated communications, most of this traffic is still carried on by Morse code. And a large amount of it is conducted in English.

You don't have to be a code expert to DX coastal stations. Except for the Russians and a few other stations, the code speed isn't that great. The general calls used by most coastal stations are brief and are repeated over and over. If you miss something the first time, it will be repeated in just a few seconds.

These general calls are to let ships know that the station is monitoring that band. Calls and responses are usually conducted on other frequencies, so the general calls continue at the same time.

The general calls start with a series of VVV or CQ, or perhaps just a DE. This is followed by the station call letters (usually repeated 3 times). Many coastals

will follow this with some various "Q" messages such as QSX or QRU?. Then the whole cycle will be repeated over again. It may only take 3 or 4 seconds, or maybe up to 15-20 seconds, before the repetition begins. In any case, it's a short cycle.

Following is a list of some of the more common coastals in the populated 8 and 12 MHz maritime bands. You should be able to hear many of the 12 MHz stations during summer evenings as well as the normal daytime listening.

The 8 MHz stations are good from late afternoon into the daylight hours.

Other bands to try include 4220-4350, 6325-6500 and 16856-17215 MHz.

COASTAL STATIONS - 12 MHz BAND

| FREQ. | STATION | LOCATION | FREQ. | STATION | LOCATION |
|---------|---------|------------------------|---------|---------|-------------------------|
| 12655 | FFT6 | St.Lys France | 12875 | FUG | Le Regine France |
| 12657.5 | PJK213 | Suffisant Neth.Ant. | 12876 | VAI | Vancouver BC |
| 12660 | WSL | Amagansett NY | 12880.5 | SAG62 | Goteborg Sweden |
| | YIR | Basrah Iraq | 12886.5 | WLO | Mobile AL |
| 12665 | FUM | Papeete Fr.Poly | 12887.5 | EAD44 | Aranjuez Spain |
| 12669 | OFJ3 | Helsinki Finland | 12889.5 | NMO | Honolulu Hawaii (USN) |
| 12673.5 | CLA | Havana Cuba | 12893.5 | DAN | Norddeich w.Germany |
| | JOU | Nagasaki Japan | 12907.5 | KLB | Marysville WA |
| 12678 | FFS6 | St.Lys France | | VHP | Canberra Australia |
| 12682.5 | LFC | Rogaland Norway | 12912.6 | FFL6 | St.Lys France |
| 12687 | OFJ4 | Helsinki Finland | 12916.5 | UXZ6 | Lyngby Denmark |
| 12690 | PPJ | Juncao Brasil | 12926.5 | WCC | Chatham MA |
| 12692 | ZRQ | Capetown RSA (Navy) | 12934.5 | EDZ5 | Aranjuez Spain |
| 12693 | URD | Leningrad USSR | 12940 | LZW5 | Varna Bulgaria |
| 12695.5 | KFS | Palo Alto CA | 12943.5 | ZLP2 | Irirangi N.Z. (Navy) |
| 12700 | NMR | San Juan PR (USN) | 12947.5 | ZRH | Simonstown RSA (Navy) |
| 12702 | CKN | Vancouver Canada (Mil) | 12952.5 | VIS | Sydney Australia |
| | Y5M | Ruegan E.Germany | 12961.5 | LFI | Rogaland Norway |
| 12703 | XFL | Mazatlan Mexico | 12975 | IQX | Trieste Italy |
| 12704.5 | WLO | Mobile AL | 12981 | PPL | Belen Brazil |
| 12709 | BPO | Barbados | 12988.5 | LPD88 | Gen.Pacheco Argentina |
| 12709.2 | VRT | Bermuda | 12993 | KOK | Cerritos CA |
| 12717 | ZLQ | Irirangi N.Z. (Navy) | 12994 | VIP | Perth Australia |
| 12718.5 | NMN | Portsmouth VA (USN) | 12996 | IAR | Rome Italy |
| 12720 | SVG5 | Athens Greece | 12997.5 | WSL | Amagansett NY |
| 12726 | CFH | Halifax NS (Military) | 13002 | KPH | San Francisco CA |
| 12727 | HLJ | Seoul S.Korea | 13008 | JOR | Nagasaki Japan |
| 12727.5 | LGJ | Rogaland Norway | 13011 | WNU44 | Slidell LA |
| 12730 | UMV | Murmansk USSR | 13015.5 | IAR3 | Rome Italy |
| 12738 | PPR | Rio de Janiero Brazil | 13020 | GKC5 | Portishead England |
| 12740 | ZL85 | Awarua N.Zealand | 13023.7 | HEB | Bern Switzerland |
| 12740.5 | GVA | London England (Navy) | 13024.9 | WSL | Amagansett NY |
| 12743 | NRV | Guam (USN) | 13027.5 | DAL | Norddeich W.Germany |
| 12743 | CLQ | Havana Cuba | 13029 | SVA5 | Athens Greece |
| 12753.5 | UXZ62 | Lyngby Denmark | 13031 | FUF | Fort de France Mart. |
| 12768 | PCH50 | Schevingen Netherlands | 13033.5 | WCC | Chatham MA |
| 12781.5 | OST5 | Oostende Belgium | 13038 | KLC | Galveston TX |
| 12788.5 | GKD5 | Portishead England | 13042 | FUV | Djibouti (Navy) |
| 12795 | UXN | Arkhangelsk USSR | 13051.5 | 4X0 | Haifa Israel |
| 12799.5 | PCH51 | Schevingen Netherlands | | WPD | Tampa FL |
| 12808.5 | KPH | San Francisco CA | 13054 | JDC | Choshi Japan |
| 12822 | GKA5 | Portishead England | 13056 | UJQ7 | Kiev USSR |
| 12824 | CTP | Oeiras Portugal (Navy) | 13062 | CLA | Havana Cuba |
| 12825 | GYU | Gibraltar (Navy) | 13065 | EAD4 | Aranjuez Spain |
| 12826.5 | WNU24 | Slidell LA | 13067 | OST52 | Oostende Belgium |
| 12828.5 | XFM | Manzanillo Mexico | 13069.5 | JOS | Nagasaki Japan |
| 12833 | SVF5 | Athens Greece | | TFA | Reykjavik Iceland |
| 12835.5 | GKB5 | Portishead England | 13072 | GKE5 | Portishead England |
| 12839 | WPA | Port Arthur TX | 13073 | ZSD | Durban RSA |
| 12840 | PPD | Olindo Pernambuco Braz | 13073.5 | WLO | Mobile AL |
| 12844.5 | KFS | Palo Alto CA | 13073 | VIS | Sydney Australia |
| 12853.5 | HKC2 | Buenaventura Columbia | 13073.5 | WLO | Mobile AL |
| 12856 | XSG7 | Shanghai PRC | 13080 | HEC | Bern Switzerland |
| 12858.5 | FUJ | Noumea N.Caled. (Navy) | 13083.5 | WLO | Mobile AL |
| 12869 | WNU54 | Slidell LA | 13087.5 | HKB | Barranquilla Columbia |
| 12871.5 | XSG | Shanghai PRC | 13090 | WCC | Chatham MA |
| 12874 | HPN60 | Puerto Armuella Panama | 13098 | WLO | Mobile AL |
| | VCS | Halifax NS | 13100 | TIM | Limon Costa Rica |
| 3437 | 4XZ | Haifa Israel (Navy) | 8610 | WMH | Baltimore MD |
| | JOS | Nagasaki Japan | 8615.5 | WPD | Tampa FL |
| 8440 | VCS | Halifax NS | 8613 | EDZ4 | Aranjuez Spain |
| 8443 | Y5M | Ruegan E.Germany | | KPH | San Francisco CA |
| 8444.5 | KFS | Palo Alto CA | 8622 | PCH41 | Schevingen Netherlands |
| 8449.3 | BPO | Barbados | 8625 | FUM | Papeete Fr.Poly. (Navy) |
| 3449.4 | VRT | Bermuda | 8625.5 | GYU | Gibraltar |
| 3453 | HWN | Paris France (Navy) | 8630 | WCC | Chatham MA |
| | VAI | Vancouver BC | 8634 | PPR | Rio de Janiero Brazil |
| 8457 | OFJ2 | Helsinki Finland | 8633.5 | DAM | Norddeich w.Germany |
| 3460 | PPJ | Belen Brazil | 8642 | KPH | San Francisco CA |

Continued on page 26

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Shortwave Listening On A Rainy Weekend



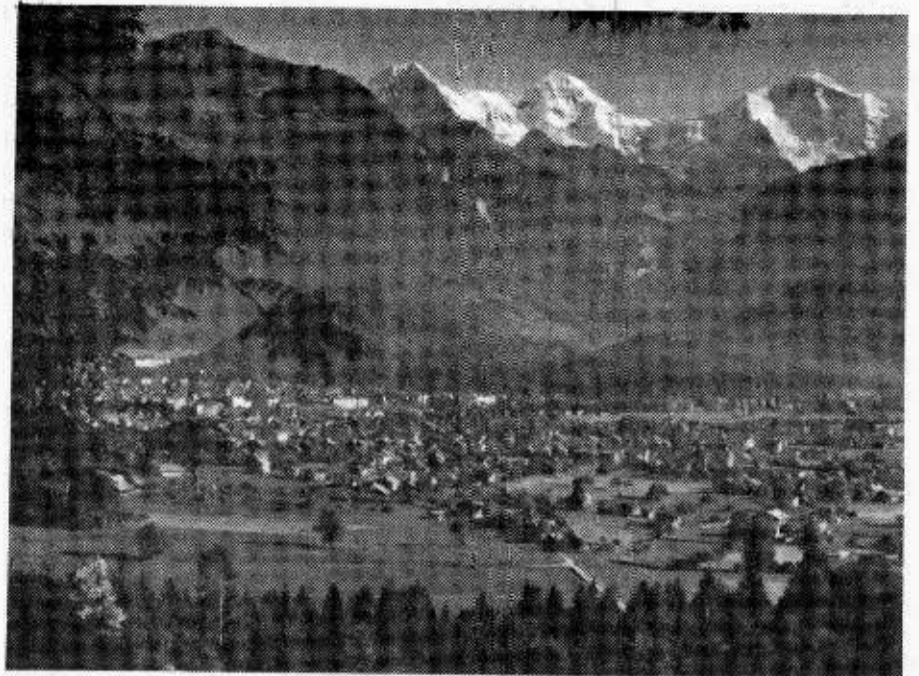
The French have a word for it at 1600 daily - The only time they broadcast in English.

By Roger N. Peterson

Unless you're retired or still going to school; the chances are most of your shortwave listening is done during the evening hours. Daytime, even during weekends and holidays, can bring big conflicts with golf, fishing,

gardening and yardwork. But come a bad, rainy day and that shortwave receiver looks pretty good!

For those of you who don't listen much during weekdays, here are some choice day-time programs for Saturdays and Sun-



Switzerland can be heard easily on Saturdays and Sundays at 1315 and 1530. Try 21.570 MHz.

days.

Starting on Saturday morning at 1100 GMT (7 AM Eastern) for you early risers, tune in the BBC News on 6.195 MHz or 11.775 MHz. If you're interested in Great Britain, stay tuned at 1115 and listen to "News About Britain."

At 1200, check Radio Australia on 9580 MHz for news

from that corner of the World. At 1210, on the same station, you can hear "Dunstan's Diary" a lighthearted account of the events of the past week in Melbourne.

Another good program at this time is on the BBC--"Anything Goes" at 1215 GMT features a variety of music and comedy-all requests by listeners. However, this is not just the average "Music Request" show.

The requests have to be a bit on the unusual side to be aired. For example, I requested some hit tunes of the World War II period in London. No problem. Three weeks later, they played four tunes from London musicals of that era!

At 1315 GMT, it's time to tune in the Swiss and hear one of the best DX programs on the air: Swiss Merry-Go-Round, featuring the "Two Bobs". They discuss the latest in shortwave receivers, antennas, etc.

The program is heard on the 2nd and 4th Saturdays of the month on 21.570 MHz. Reception in North America is usually excellent.

At 1400 GMT go to 21.615 MHz and listen to the famous Radio

Continued on page 27

Tuning In The Coastal CW Stations Continued from page 25

| | | | | | |
|--------|-------|------------------------|--------|-------|------------------------|
| 8463 | CKN | Vancouver BC (Mil). | 3646 | FUJ | Noumea N.Caled. (Navy) |
| 3465 | NMN | Portsmouth VA (USN) | | LPD86 | Gen.Pacheco Argentina |
| 3469 | CUL3 | Lisbon Portugal | 3649.5 | ICB | Genoa Italy |
| 8470 | ZRQ | Capetown RSA (Navy) | 3650 | NMO | Honolulu Hawaii (USN) |
| 3471 | NMR | San Juan PR (USN) | 3652 | OST42 | Oostende Belgium |
| 3474 | FUX | LePort Reunion (Navy) | 3653.6 | JCS | Choshi Japan |
| 3474.5 | WLO | Mobile AL | 3654.4 | PCH42 | Schevingen Netherlands |
| 3473 | FUF | Fort de France Mart. | 3656 | IAR38 | Rome Italy |
| | TIM | Limon Costa Rica | | XFU | Veracruz Mexico |
| | VHP | Canberra Australia | 3658 | WSL | Amagansett NY |
| 8483.5 | DAN | Norddeich W.Germany | 3666 | FUG | Le Regine France |
| 8486 | WOE | Lantana FL | | KLC | Galveston TX |
| 8490 | CUL7 | Lisbon Portugal | 3670 | IAR3 | Rome Italy |
| 8493.5 | GYA | London England (Navy) | 8672.5 | DAF | Norddeich W.Germany |
| 8493 | SAG4 | Goteborg Sweden | 8675.2 | FFP3 | St.Lys France |
| 8502 | PPL | Belem Brazil | 3678 | ZLP | Irirangi N.Zea.(Navy) |
| | XSG | Shanghai PRC | 3679 | IQX | Trieste Italy |
| 8510 | FFS4 | St.Lys France | 8682 | EAD3 | Aranjuez Spain- |
| 8511.9 | DAL | Norddeich W.Germany | 8683.5 | LGB2 | Rogaland Norway |
| 8514 | WSL | Amagansett NY | 8685 | IRM | Rome Italy (MEDICO) |
| 3516 | GKC4 | Portishead England | 8687 | SVB4 | Athens Greece |
| 3520 | PPO | Olindo Pernambuco Brzl | 8687.6 | URD | Leningrad USSR |
| 3521 | VIS26 | Sydney Australia | 8688.5 | ZSC6 | Capetown RSA |
| 3522.5 | FFL4 | St.Lys France | 8692.5 | SVF4 | Athens Greece |
| 3525 | WNU33 | Slidell LA | 8694 | 4X0 | Haifa Israel |
| 3527.5 | LFN | Rogaland Norway | | PJC | Curacao Neth.Antilles |
| 3546 | GKA4 | Portishead England | 3697 | CFH | Halifax NS (Military) |
| 3550 | WPA | Port Arthur TX | 8698 | UDK2 | Murmansk USSR |
| 3552 | CTP | Oeiras Portugal | 3700 | YUR3 | Rijeka Yugoslavia |
| 3557 | SPE4 | Szczecin Poland | 3702 | CLA22 | Havana Cuba |
| 3557.9 | GKB4 | Portishead England | 3703 | CTV | Monsanto Portugal |
| 3558.4 | KFS | Palo Alto CA | 3704 | SVA4 | Athens Greece |
| 3562 | PCH40 | Schevingen Netherlands | 3705 | WSL | Amagansett NY |
| 3565 | D3E | Luanda Angola | 3705.5 | GKE4 | Portishead England |
| 3568.5 | XFM | Manzanillo Mexico | 3706 | KFS | Palo Alto CA |
| 3570 | NRV | Guam (USN) | | ZSD | Durban RSA |
| 3573 | CLA21 | Havana Cuba | 3707 | LGB2 | Rogaland Norway |
| 3574 | HKC | Buenaventura Columbia | | WLO | Mobile AL |
| | LGB | Rogaland Norway | 3707.5 | VIP | Perth Australia |
| | NMC | Bolinas CA (USN) | 3709 | HEC18 | Bern Switzerland |
| 3582 | KLB | Marysville WA | 3711 | GKP4 | Bodmin England |
| 3586 | WCC | Chatham MA | | KPH | San Francisco CA |
| 3593 | OXZ4 | Lyngby Denmark | | VIS65 | Sydney Australia |
| 3593.5 | ZLO | Irirangi N.Z.(Navy) | 3712 | WLO | Mobile AL |
| 3604 | ZRH | Simonstown RSA (Navy) | 3712.5 | SVU4 | Athens Greece |
| 3607 | LZW | Varna Bulgaria | 3715.5 | WCC | Chatham MA |
| 3603 | HPN | Puerto Arnuella Panama | 3717 | WLO | Mobile AL |



Alastair Cooke presents the BBC's very popular "Letter from America" on Sundays at 1115, 1645 and 2315 GMT.

Shortwave Listening Continued from page 26

Sweden "Saturday Show". It's usually a winner. Lots of humor and variety.

At 1500 GMT switch to 25.790 and listen to Radio RSA from South Africa. They have an excellent program called, "Good Afternoon Africa". Don't miss it!

The only English broadcast from France can be heard at 1600 GMT from Paris, called "Paris Calling Africa". Reception in North America is very good on 21.620, 21.580, and 17.620 MHz.

At 2130 GMT you will want to tune into Radio Canada International to hear the best DX program on the air. Ian McFarland's "DX Digest", featuring people like Larry Magne covering new receivers and other equipment and Glenn Hauser with the latest frequency news for SW listeners. Tune to 11.945 or 15.150 MHz.

At 2300 GMT, listen to the BBC evening news on 7.325 MHz and stay on that frequency to hear Margaret Howard's "Letterbox" - answering listeners' questions, but with great humor.

Most SW broadcasters restrict their transmissions to nighttime when reception is better and you are more likely to be home listening. Thus you are pretty well restricted to stations like the BBC, Radio Canada International, Radio RSA and others who brave the daytime for broadcasting.

On Saturday, if you arise early, listen to the BBC news at 1100 GMT on 6.195 or 11.775. Stay on the frequency and hear "News about Britain" at 1115 and then the well-known "Letter from America" by Alastair Cooke.

At 1200 GMT it's time to try Radio Australia on 9.580 for their

World News and then "Report from Asia."

At 1230 GMT you can hear a good DX show from Austria. It's on 21.615 and is usually a good program. Glenn Hauser is usually a contributor, bringing you up-to-date frequency changes and new stations heard on the air.

At 1300 GMT you have several choices. Radio Canada International offers "Sunday Morning" on 11.995 MHz. This is a three-hour-long program with a magazine format - news, interviews, and features.

If you want quicker news, tune to AFRTS Network (American Forces) on 15.330 MHz or Voice of America on 21.840 MHz.

AT 1345 tune back to the BBC to hear the "Sandi Jones Request Show", contemporary music with a "sexy-voiced" host. Try it; you may like it!

At 1645 the BBC has "Letter from America" again, in case you didn't hear it earlier. This is on 21.700 or 15.07 MHz and at 1930 you can hear Radio Canada International's DX Digest if you missed it the day before, tune for it at 5.995, 15.325 or 21.695 MHz.

AT 2015 GMT BBC has "Letterbox" on again, in case you missed it Saturday. It's on 6.175 or 15.23 MHz.

At 2230 GMT try Israel on 11.655 for news and comments. It's a pretty good program and gives you a nice insight into their point of view as to what's going on over there.

At 2300 GMT you have a couple of choices for news and features. Radio Canada International has a popular review of Canada's situation on 5.960 or

9.755. BBC has World News on 7.325 and 6.175. AT 2330, WRNO (New Orleans) has a repeat of "The World of Radio"--DX news with Glenn Hauswer on 11.956 MHz.

At 0000 GMT you have three good choices. Radio Israel comes on again on 11.655 and 9.815 MHz.

with their weekly DX program. If you are into DXing the Middle East, this is one for you.

China is heard on 15.520 and 15.400 and you may wish to try Norway on 15.175 and 11.870.

So there you have it--the best in weekend daytime listening!

NASA APPLIED TECHNOLOGY SATELLITES

Although we have listed two of the ATS-1 and ATS-3 channels in the accompanying article, a comprehensive channelization scheme for these two communications satellites should be of interest to our readers.

Although voice and data transmissions are narrow-band frequency modulation (NBFM), they are readily receivable on the AM aircraft band portion of a programmable scanner.

The technique is called 'slope detection' or 'delta demodulation.' Find the center frequency and then move off channel to the next programmable entry; for 135.575, try 135.570 or 135.580.

Some interference from domestic air carriers on 135.600 should be expected; it's a common air-to-ground frequency.

ATS-1 AND ATS-3 CHANNELIZATION PLAN
ALL FREQUENCIES MHZ

| DOWNLINK (OUTPUT) | UPLINK (INPUT) |
|----------------------------|----------------|
| 135.540 data beacon | |
| 135.555 ch. 1 (unused) | 149.175 |
| 135.575 ch. 2 (ATS-3 pri.) | 149.195 |
| 135.600 ch. 3 (ATS-1 pri.) | 149.220 |
| 135.625 ch. 4 (ATS-3 sec.) | 149.245 |
| 135.645 ch. 5 (unused) | 149.265 |

The ATS-1 satellite at 149° west longitude--out over the Pacific--is out of range for most North American listeners. But the ATS-3 at 105° is definitely in range.

Since both satellites are geostationary (over one point on the earth at all times) a directional antenna may be predictably positioned for best reception.

For example, here in Brasstown we point the Scanner Beam at approximately 225° (azimuth); ideally, elevation would be about 45°.

Listen In On Russian Aircraft And Ships

One of our readers, a former intelligence officer with the defense department, would like to share a recent list of frequencies used by Russian aircraft, ships and land stations.

All frequencies are in kilohertz and the prevailing mode is upper sideband voice communications. Identifications are tentative.

Monitoring Times wishes to thank this contributor and invites other readers with interesting lists to share them with fellow listeners through the pages of Monitoring Times.

| Russian Aircraft | | Russian Point To Point | |
|------------------|---|------------------------|------------|
| Freq. | Identifier | | |
| 5488 | | 3160 | 7415 (LSB) |
| 5520 | Blaga (Blagoveshchensk) | 4640 | 5292 |
| 5557 | Khabarovsk | 4470 | 5415 |
| 5570 | | 5049 (LSB) | 5760 |
| 5632 | | 5089 (LSB) | 7414 (LSB) |
| 6588 | | 5292 | 7470 |
| 6692 (AM) | Khabarovsk, Magadan, Okhotsk, Petropavlovsk | 5415 | 7780 |
| 6736 | Khabarovsk | 5760 | |
| 4663 | Russian Volmet (Weather) Khabarovsk (English) | | |
| 4684 | | | |
| 5691 | Khabarovsk | | |
| 8819 | Magadan | | |
| 13271 | Khabarovsk | | |
| 6203 | Ship To Shore Petropavlovsk | | |
| 6213 | Kholmsk (Sakhalin Is.) | | |
| 6222 | Magadan #1 | | |
| 6519 | Petropavlovsk | | |
| 8202 | Klaipeda, Baltic Sea | | |
| 8214 | Leningrad | | |
| 8217.2 | Magadan | | |
| 8236 | Leningrad #1 | | |
| 8239 | Novorossisk (Black Sea) | | |
| 8242 | Kaliningrad #1 | | |
| 8270 | Odessa | | |

| | | |
|--------|--|---------------------------------|
| 12330 | | |
| 12340 | | Leningrad |
| 12417 | | |
| 13129 | | Petropavlovsk |
| 13151 | | Vladivostok #1 (Ch. 1) |
| 16494 | | Vladivostok #1 (Ch. 2) |
| 16498 | | Okhotsk |
| 16516 | | Vladivostok #1 |
| | | Russian Ship To Ship |
| 6207 | | |
| 6527/8 | | Dalnoy # (Navy or trawlers) |
| 12433 | | |
| 16505 | | Priboy # (fishing factory ship) |
| 16555 | | |
| 16590 | | |

Need A Military Technical Manual?

A frequent question asked by surplus radio enthusiasts is, "where can I get a manual for this thing?" One answer is, "From Wayne D. Russell (9410 Walhampton, Louisville, KY 40222).

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Note: Monitoring Times assumes no responsibility for misrepresented merchandise. SUBSCRIBER RATES: \$.10 per word, paid in advance. All merchandise must be listening related.

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Kenwood R-1000 and SP-100 speaker, both mint and less than year old. Boxes, IB's. \$375. UPS paid. Frank Shoemaker, Box 6432, Syracuse, NY 13217. 315-446-9016.

Realistic PRO-48 scanner. VHF low, high, aircraft, UHF. Included 10 marine band crystals, antenna, 25' coax and vehicle antenna. \$125 plus shipping. David Gaines, 2347 Toussaint Ave., Savannah, GA 31404.

Military radio relics-I collect, restore, operate the older military radio equipment. I am looking for any Japanese, German, other foreign radios and any related items. Also US gear from earliest to mid-1950's, particularly RAX, RBM, TBY. (No postwar FM/VHF please). H.E. Miller KA7LXY, 11206-1 NE, Seattle, WA 98125.

SWL NEWS SERVICE with Kenwood R-1000 communications receiver \$345 and Crown ROM-116 RTTY/CW interface to TRS-80 computer \$290. Bob WA6ERB/0 (303-986-0189 evenings).

IN MINT CONDITION! DX-200 original box and manual. NEW! \$155 DX-200 original box and manual. Slightly used, \$155 National NC-60B. Used, \$75. Hallicrafters S-38B. Used, \$75. Bearcat thin line pocket scanner, new nicads, AC adaptor, 4 crystals, charger pack and manual. \$50. Heathkit AJ-53 AM hi-fi tuner (tubes) makes a great "BCB DX" receiver. 7 microvolt sensitivity or better. \$50. Montgomery Ward 40 channel CB sets (pair): \$50. Send bank or postal money order. Call any time (no collect calls) 919-752-6722. Garry Bacon, PO Box 561, Greenville, NC 27834.

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WANTED: Tennenac IV--Tennelec 800--Regency M400 and MT-5500--RCA 165400 scanners; also crystals. Taylor, 72 Anthony, East Providence, RI 02914.

DX-302 receiver. New! \$325 or best offer. George Konya, 3067 N. 2450 West, Salt Lake City, Ut 84116.

Regency AT16K "Touch", perfect condition except two screw holes in top of cabinet, \$150. FRG-7700 memory unit--new, still under warranty, \$100, or trade either/both plus cash for scanner with VHF/UHF/aero in good condition. Art Kimball, 802 N. Parke, Tuscola, IL 61953 (217-253-4598 evenings).

WANTED: Issue 5 of Monitoring Times. T. Mishler, 2438 Kentucky Ave., Flint, MI 48506.

SWAP OR SELL: Hammarlund SP600 VLF receiver, Regency TMH2 monitor receiver, front end removed, with manual. M. Fortner, 27 Brown St., Clendenin, WV 25045.

Listen to Ohio at work--RR's, aero, business, federal government PLUS MORE! Sample newsletter \$1 or SASE for details. All Ohio Scanner Club, 10 Avalon Rd., Mt. Vernon, OH 43050.

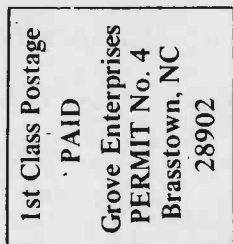
White Sands Missile Range Communications

In the desert of New Mexico an enormous and historic military research and development project stretches over thousands of square miles.

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Club Corner

(Note....be sure to include \$1 with any request for sample bulletins from these clubs to help with their postage and printing)

ALL OHIO SCANNER CLUB One of the most active statewide clubs is AOSC, spearheaded by dynamic Jerry Callam.

Goals of the club include legal and ethical uses of scanners, compilation of accurate frequency data and sharing information with fellow members throughout Ohio.

For more information, write AOSC, 10 Avalon Rd., Dept MT MT. Vernon, OH 43050. And don't forget to include \$1.

ASSOCIATION OF DX REPORTERS is a general interest club with worldwide membership interested in broad-spectrum monitoring of both utilities and broadcasting, amateur radio and QSL'ing.

An excellent monthly bulletin is published, a sample of which is available by sending \$1 to 7008 Plymouth Rd., Dept MT Baltimore, MD 21208.

INTERNATIONAL DX'ERS CLUB OF SAN DIEGO presided over by Larry Brookwell, who publishes a monthly bulletin of timely topics, concentrating on equipment and accessories for shortwave listening.

His new 1983 supplement to the Shortwave Hobby Equipment Review is 194 pages in looseleaf form for \$7. An additional quarterly update is another \$7, and a leatherette binder with the club logo is \$3.50; \$16 postpaid for the package.

For more information on the club and its services, write to 1826 Cypress St., Dept. MT San Diego, CA 92154.

EMERGENCY NOTIFICATION ASSOCIATION OF NEW YORK (ENANY) is a non-profit repeater society (462.700 MHz output) to alert members of activity on various scanner channels within a 25 mile radius of Manhattan. An additional repeater (462.600) now services adjacent New Jersey communities.

Membership is open to anyone and dues are to support the repeater operation. For more information write ENANY, PO Box 741, Dept MT Ridgewood, NJ 07451-0741.

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