$2.00

MONITORING TIMES

Volume 4-Number 8 BRASSTOWN, NORTH CAROLINA 28902 August, 1985

EAVESDROP ON THE NUKES

PANTEX: One of America's Best Kept Nuclear Secrets

by the Interceptor

Traveling through the high plains of West Texas along old Highway 66, just east of Amarillo, you might notice a strange collection of buildings off to the north. What are those shiny metallic conical structures looking like high-tech pyramids, surrounded by tall lookout towers and acres of plowed fields?

You have just passed one of the biggest collections of doomsday weapons in the world: the Pantex plant, the final assembly point of all nuclear weapons made in the United States.

Stockpiled and manufactured here are the most destructive weapons in the world. Managed by the United States Department of Energy this plant is responsible for the final construction and dispersion of nuclear weapons used by the U.S. and her allies.

Pantex started out as one of the many ordnance plants that sprang up during World War Two. The manufacturing of nuclear warheads didn't begin until the '60s and what the plant was really manufacturing was only recently revealed.

When one asked an employee a few years back what they made out there he might hear anything from "air conditioning filters" to "ball bearings." With a large part of Amarillo's populace employed at Pantex most natives knew what was really being made there, but few admitted even to their close friends the truth.

An abundance of warning signs tells you what will happen if you get too close: "Whoever willfully violates the no trespassing warning will possibly suffer substantial injury to person and/or property."

The watchtowers and guards armed with automatic weapons surrounding the facility are proof that they take this threat very seriously. An armored, well-armed personnel carrier is on patrol as an additional deterrent. The innocent looking plowed field that separates the main road from the plant is laden with hidden mines and motion sensors as a final precaution.

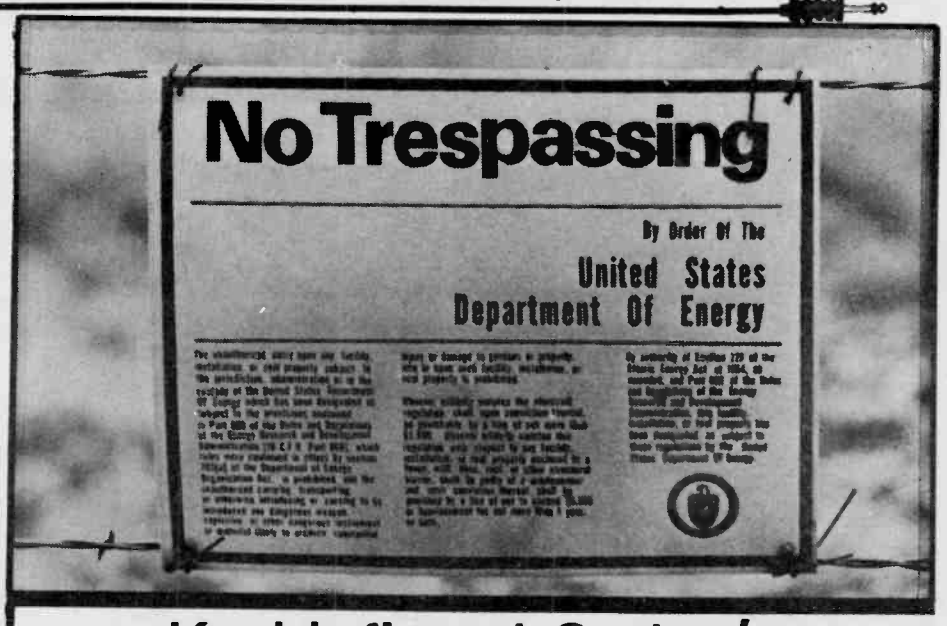
In this age of international terrorism a facility such as Pantex has to be prepared to protect itself from terrorist attack to steal nuclear weapons to use as nuclear blackmail against the world.

According to Pantex it is impossible to penetrate and take over the facility. Every contingency has been taken into account. The air space above and around Pantex is restricted. The guards are constantly drilled in stopping any force that might be encountered.

Exercises are constantly held to work out all plans of action in case of attack. Believe my surprise when I was monitoring such an exercise on radio, a scenario involving a hostage situation, when I heard the command to "take out" the

Cont'd on p.4

Aerial view of Pantex; only view ever released. Rounded conical structures are the storage areas for nuclear weapons which can supposedly contain an accident.



Kaddafi and Sudan's Radio War: The End

by Vito Echevarria

On April 22, just after the military coup overthrew Sudanese dictator Gen. Mimeiri in Khartoum, capital of that troubled country, the new leader of Sudan, Gen. Swar-al Dahab, and Libyan dictator Col. Kaddafi resumed diplomatic relations. This sudden renewal of friendship caused the two countries to "pull the plug" on the two clandestine stations they were sponsoring.

Up until late April, Sudan permitted the anti-Kaddafi group, the National Front for the Salvation of Libya (NFSL)--the group responsible for the attempted overthrow of the Kaddafi regime by NFSL commandos, on May 8, 1984--to broadcast propaganda from their station, "Voice of the Libyan People."

The Sudanese government radio station at Omdurman, transmitting site of the anti-Kaddafi cland, was the target of a Libyan SU-22 bomber that flew in from Kufra Air Base on March 16, 1984, resulting in the partial destruction of the station. "Voice of the Libyan People" was last heard on 15040 kHz//11640 kHz from 1800 UTC sign-on to 2200 UTC sign-off in Arabic, before dropping out of sight last April.

The anti-Kaddafi cland operation began in the fall of 1982 in retaliation for

Cont'd on p.4

TABLE OF CONTENTS

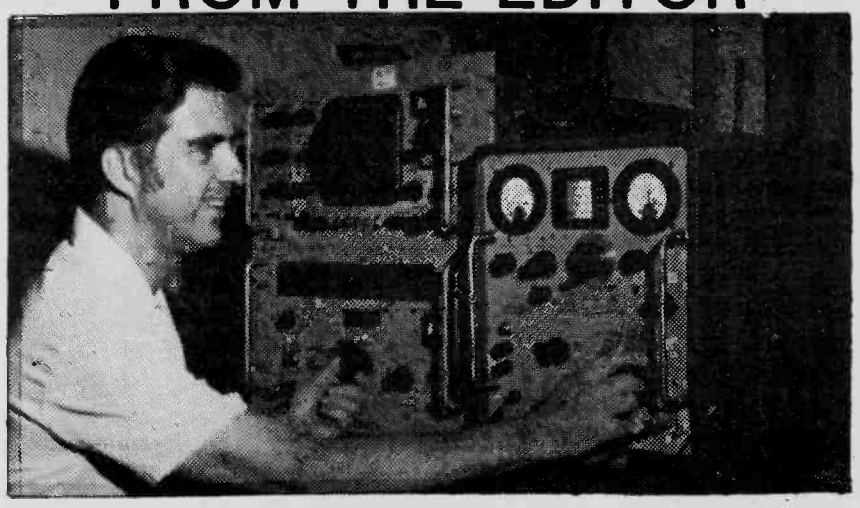
MONITORING TIMES

Bob Grove.....Editor

Judy Grove.....Publisher & Advertising Manager
Rachel Thomas.....Production
Mitzi McCoy.....Distribution
Joan Fuller.....Subscription Services

Monitoring Times is published by Grove Enterprises, Inc., 140 Dog Branch Road, Brasstown, NC 28902. Phone 704-837-9200.Subscription rate: $12 for one year, $22 for two years, $31 for three years. Canada and Mexico add $2 per year. Foreign subscribers: surface mail add $11 per year or air mail add $27 per year.

FROM THE EDITOR



(ED.NOTE: Monitoring Times is proud of its reputation as a forum for objective dialogue. Last month's editorial article concerning the prospect of MT providing information to the FCC to help their enforcement of abuse of the radio spectrum has touched one sensitive nerve, and we are pleased to respond.)

Dear Bob,

I am writing to express my deep concern over the policy that you outline on page 2 of the July issue of Monitoring Times. I feel that the plan to furnish information to the FCC will do extensive damage to my column, if indeed it does not prove fatal. In my opinion it will also be harmful to Havana Moon's "Los Numeros" column and indeed will have a negative impact on Monitoring Times as a whole. One person did ask me why you were trying to commit "economic suicide."

It has always been my feeling that our responsibility as journalists was to report the news, not "help catch the bad guys." Certainly the FCC is entitled to use whatever information it finds printed in Monitoring Times, as is anyone else. However, I feel that our responsibility to them goes no further than this.

As far as "Pirate Radio" is concerned, I believe that many of my better sources of information will now disappear, and in the future what is left of the column will have to be highly "sanitized" in order not to compromise people who have trusted me and confided in me. Even if the policy outlined were to be reversed I fear that considerable permanent damage has been done.

In any case, I am writing in the hope that you might consider a reversal of the position outlined in the last issue, or at the very least some major limitations on it. The statement on pirate broadcasters was particularly damaging to my efforts. If this could be revised to include only pirates deliberately causing interference it would help considerably, although not as much as a complete abandonment of the plan.

Sincerely,
John Santosuosso

REPLY:

Monitoring Times has always followed the principles of responsible, objective journalism. While avoiding sensationalism, we have reported all aspects of the listening scene, irrespective of personal likes and dislikes.

The enormous amount of accurate information found each month on the pages of MT is of considerable interest to a wide variety of eager readers for an equally wide variety of reasons. Regular subscribers include intelligence agencies, foreign embassies, military departments, federal government bureaus like the FCC, other hobby publishers, and, of course, serious hobby listeners like you and me.

Pirate radio unquestionably offers unbridled creativity to the producers and endless variety to the listeners. It is also illegal. The position of MT on this subject is the same as on all other facets of the radio spectrum: report without prejudice.

John Santosuosso's column is popular and deservedly so; his style makes for enjoyable, informative reading and his subject is interesting. He is a pro. We have never used his sources or the information they provide to indict the pirates.

We see no change whatever in the treatment of pirate radio in our pages; the editorial list was merely a synopsis of those areas of enforcement of greatest concern to the FCC, nothing more. In fact, our first coordinated efforts in assisting the Commission will be in the area of intruders into the aeronautical and marine radio allocations.

We encourage our readers to continue to support our columnists with contributions which can be shared with all of our readers; this invitation includes information concerning pirate radio.

FCC CLOSES ILLEGAL NET

A nationwide network of illicit radio operators using lower sideband amateur equipment on 6933 kHz has been nipped in the bud by Federal Communications Commission enforcement personnel coordinated through the Powder Springs, Georgia, monitoring station.

Known as the "Oscar" group, the net members used unauthorized identifiers like Oscar 1 (net control station), Oscar 5 (North Winchester, Indiana), Oscar 10 (Ridgetop, Tennessee, near Nashville), Oscar 13 (Groveland, Indiana), and Oscar 33 (also near Groveland).

The operator identifying himself as Oscar 10 has been closed down and the FCC made an announcement over the air to other net members of that fact. Continued violations will result in continued prosecutions.

Upon issuance of a Notice of Apparent Liability, the Ridgetop resident faces a fine of $700 for unlicensed operation and an additional $300 for operation in an aviation band. Depending upon the disposition of the case by Washington officials, a maximum fine of $10,000 can be levied for unauthorized use of the airwaves.

Pennsylvania and California Scanner Listeners May Lose Rights

Periodically, law enforcement officers face the problem of illicit use of intercepted communications. A natural reaction is, "How can we stop people from listening in to our privileged radio traffic?"

The problem has now reached the Pennsylvania senate as a bill introduced by Midigan, Shumaker and Helfrick dated March 27, 1985. It is senate bill 637 and in essence prohibits any individual who is not a law enforcement officer from installing into a motor vehicle a radio capable of monitoring police calls.

Exceptions include licensed radio amateurs who have such monitors in conjunction with mobile transmitting gear. Penalties of $1000 and six months imprisonment are sought by the bill.

Even more sweeping in its ramifications and severe in its penalites is California Senate Bill 1431, introduced by Senator Rosenthal, which makes it illegal for anyone to tune a scanner to the 800 MHz cellular telephone band. Upon conviction the hapless listener would receive a fine of up to $2500 for the first offense ($10,000 for the second offense) and up to a one year prison sentence.

The same penalty would appy to any manufacturer of a device intended for receiving cellular radiotelephone, specifically naming scanners in the indictment. Licensed amateur radio operators are not excluded from the wrath of this intended legislation.

Radio enthusiasts concerned about this infringement of their constitutional rights are encouraged to write to their Pennsylvania and California legislators expressing their dissent.

NEED TECHNICAL HELP?

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

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

Viewpoint

CORRECTIONS AND ADDITIONS

I enjoyed your article on "Long Wave 0-500 kHz, Part I" that appeared in the June 1985 issue of the Monitoring Times.

For some 15 years, I have had a special interest in the 160 to 190 kHz band, mainly the challenge of using mini-power and antennas for communication purposes in a range that normally would be considered useful only for "super-power" stations.

What we LOWFERS (short for low frequency experimental radio station) have accomplished over the past 10 years is a matter of record and history accomplishing communications in distances that the experts (?) would consider impossible!

Since 1972, I have published a series of scrapbooks dedicated to 1750 meters with basic information that would help an experimenter become operational with information that is neglected in all radio handbooks. The scrapbook is currently in its fourth edition.

I have discovered several errors in your manuscript that should be corrected and would also like to offer some constructive criticism:

*The FCC Rules and Regulations concerning operation on 160 to 190 kHz is covered in Section 15, Subpart D...Your mention that CW is the only form of transmission allowed is in error...Any type of transmission is allowed except Class B (damped waves) as long as any emissions below 160 or above 190 are suppressed 20 dB below the unmodulated carrier...As far as the average experimenter is concerned, this would allow CW, AM, Suppressed carrier voice (double or single sideband), RTTY or even SSTV.

*Your mention that the antenna length (including feed line) is limited to 15 feet is obviously a typographical error as it should be 15 meters. (It was originally 50 feet, but we lost a few inches when the FCC went metric...Hi!)

*In the average urban or suburban location, a long wire antenna can, and usually is, a disaster...They can be nothing more than a good "noise collector"...The physical positioning of a receiving antenna can do wonders in reducing possible noise sources, but it is not a very convenient method for long wires.

*Many successful longwave DX'ers use loop antennas or short active vertical antennas...The loops can be rotated to cancel out an interfering signal or noise source and favor a wanted signal...The active whips, being small and easy to move around the average homestead, can be located in the quietest location as to noise sources.

Except for the items mentioned above, I feel that your article will help fill in a vacuum about the low frequency range that for some reason has been neglected in the many radio publications.

I am looking forward to your future articles.

Ken Cornell
Point Pleasant Beach, NJ

>>>>><<<<<

On Page One of your June issue of Monitoring Times, in the article by Patrick O'Connor on the longwave spectrum, some large errors were made describing the 160-190 kHz experimenters band. These corrections are in order:

1.A license-free low-power communication device operating between 160-190 kHz need only meet the following requirements:

a)The power input to the final radio frequency stage shall not exceed one watt.

b)All emissions below 160 kHz and above 190 kHz shall be suppressed 20 dB or more below the unmodulated carrier.

c)Total length of transmission line plus antenna shall not exceed 15 meters.

As long as no harmful interference is caused to licensed operations, operators in the 160-190 kHz license-free band have just as much priority here as any other authorized users of this spectrum. Experimenters can operate any mode they wish in this band - AM, FM, CW, modulated CW, SSB, RTTY, broadcasting, beacon operation, etc.

This is a great area for experimentation as long as the operator is in compliance with these few simple requirements.

Todd Roberts
Hilton Head Island, SC

>>>>><<<<<

Earlier today I spoke on the phone with Michael Speers who has an article in the June issue of Monitoring Times. I mentioned some corrections to his article, and I wonder whether I might pass them along to you for possible inclusion in a subsequent issue. Most of the article is accurate and I share most of the author's judgments.

*David Kahn's THE CODE-BREAKERS, Macmillan, NY, 1967, said to be out of print, has occasionally been out of stock, but never technically out of print. It is once again available from the publishers and from Mr.

Cont'd on p.36

INSIDE THIS ISSUE:

FORUM

AIRCRAFT COMMS BORING?
A Listener Replies

It's hard to believe Ken Greenberg finds the aircraft bands boring, humorless and dull (Viewpoint, June '85-MT). VHF air communications are, without a doubt, the most exciting listening we have today. For me, buying a receiver without the air band is unthinkable.

Boring? Living between the two largest airports in Michigan (Detroit Metropolitan and Willow Run) really makes my scanner cook. After owning my rig (a Radio Shack PRO-2020) for less than a year I have discovered about 40 aeronautical frequencies to listen to. The aero band crackles with activity 24 hours a day. Greenberg's problem is that he is (by his own admission) an "on and off" listener. No one can become familiar with a radio band if they don't listen to it on a regular basis.

No humor? Wise cracks between controllers and pilots abound. I often hear male pilots flirting with female controllers. And I have to chuckle when a controller chews the head off a senior captain of an airliner for not following instructions.

No excitement? Hardly a day goes by without some type of airborne emergency: precautionary engine shutdowns, sick passengers, lost pilots, emergency landings, flaring tempers,and controllers calling the fire trucks out on the runway to aid a stricken aircraft. None of these things are rare occurrences at my location.

Greenberg laments that he can't tell where the planes are going. This can be solved by finding the airport's "ground control" frequency. "Ground control" communications will give you all the information (headings, altitude and final destination) you need to know about where that aircraft is going.

If you take the time to jot down the flight number of the aircraft during "ground control" communications you will be able to follow the aircraft as it is pushed back from the gate, taxis to the runway, takes off, and leaves the airspace of the airport.

Finally, concerning Greenberg's remark about "a little brief weather info," when southern Michigan thunderstorms start booming in the spring, the aircraft band is the only thing to listen to. Pilots fly in the weather. Because of this most are expert meteorologists. Find me a better weatherman!

Pilots routinely radio in extremely detailed reports about severe weather they have just flown through. This is done as a service to other pilots who must follow them along the same route. Air traffic controllers give the position of all thunderstorm cells within many miles of the airport as they vector the aircraft up, down and around the storms. I get all this information long before it is announced on the local National Weather Service frequency.

I became so interested in air traffic control I purchased several publications from the Federal Aviation Administration to help me understand air traffic control lingo and procedures. As a result I have learned how a modern airport works. I have a much greater respect for air traffic controllers and pilots after listening to the aircraft bands.

Monitoring the aircraft bands has taught me quite a few things I never knew before and has made me a better informed person. Isn't that what listening to the radio is all about?

Randy Borst, KA8TOD
Plymouth, Michigan

KADDAFI & SUDAN cont'd

the anti-Nimeiri cland that Kaddafi began to broadcast in the summer of 1982. The station, "Voice of the Sudanese Popular Revolution," supported the rebel group, the Sudanese Peoples Liberation Army (SPLA), headed by Col. John Garang.

The SPLA until recently received financial and military support from Kaddafi, while Ethiopia provided bases for the SPLA, whose rebels are currently waging a war in the southern regions of Sudan.

The "Voice of the Sudanese Popular Revolution" was heard mostly in Arabic on 17940 kHz between 1400 and 1700 UTC, with occasional broadcasts in English. On August 12, 1984, between 1540 and 1600 UTC, I intercepted an English broadcast which called for Nimeiri to "renew the 1972 Addis Ababa Agreement" which granted autonomy to southern provinces of Sudan and "human rights and fundamental freedoms for all the people of the Sudan."

As a result of Nimeiri's overthrow and the renewal of relations between Sudan and Libya, the two liberation movements have been left out in the cold and their stations are being shut down.

If the "Voice of the Libyan People" should go back on the air in the near future, its broadcasts would either be based in Tunisia--one of the targets of Kaddafi's "Radio of Vengeance and Sacred Hatred" (a cland station begun last March on MW and SW which calls upon Tunisians, Algerians and Morrocans "to rid themselves of the Jews and revolt against their governments which are their 'accomplices'")--or in Egypt, a long-time refuge for anti-Kaddafi groups.

Meanwhile, Ethiopia, ally of the SPLA, would be the only country in the region that would broadcast "Voice of the Sudanese Popular Revolution," since the struggle is far from over for that group.

This situation proves once again that political situations and events dictate the fate of clandestine radio stations. However, since the "Kaddafi Enterprise" has come up with another subversive station ("Radio of Vengeance and Sacred Hatred") in his attempt to cause mischief and mayhem toward his targets, more episodes of clandestine radio activity are likely to occur.

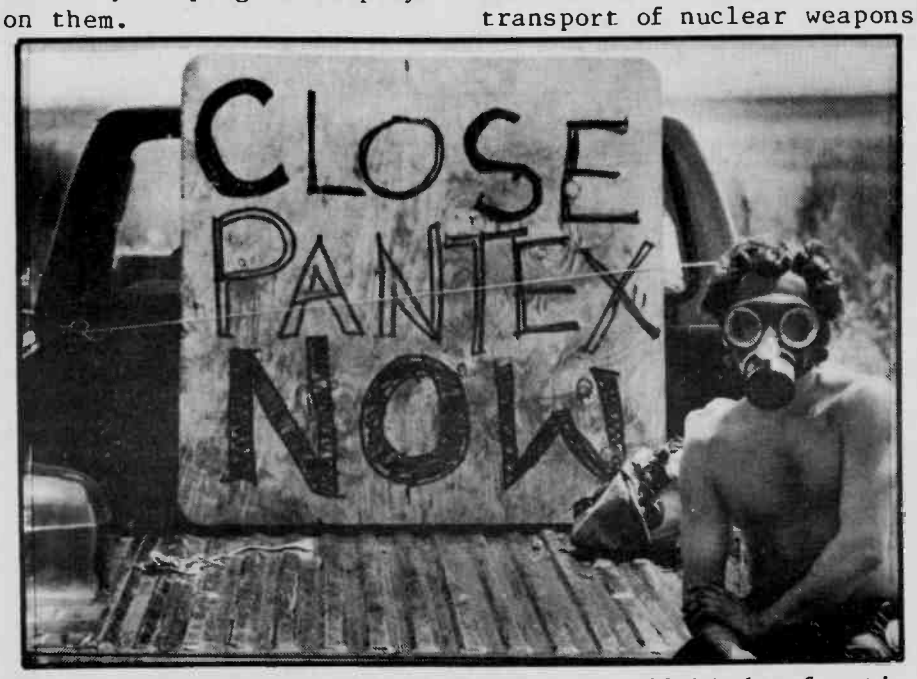
EAVESDROP ON NUKES cont'd

hostages and their abductors! Apparently, when dealing the the threat of someone getting his hands on a nuclear device, anything is fair.

When it was finally admitted that Pantex was the final assembly point for the bomb, anti-nuclear groups flocked to the site to wage their protests. On any day one can see demonstrators outside the main gate with security keeping a sharp eye on them.

Occasionally, a guard will photograph the protesters to find out who they are or to add them to a file somewhere in Washington. Security men with parabolic microphones listen in on the conversations of the dissidents, and the armored tank will make a sweep around the fence as a show of strength.

Something of special interest to the protesters is the arrival and departure of the infamous "White Train," a specially constructed locomotive for transport of nuclear weapons to and from the facility and military bases. The anti-nuke activists have formed a sort of network that notifies other groups when the White Train has left and where it is heading. They then follow the train and sometimes try to block its passage.



The plant's controversial product draws all kinds of anti-nuke protesters.

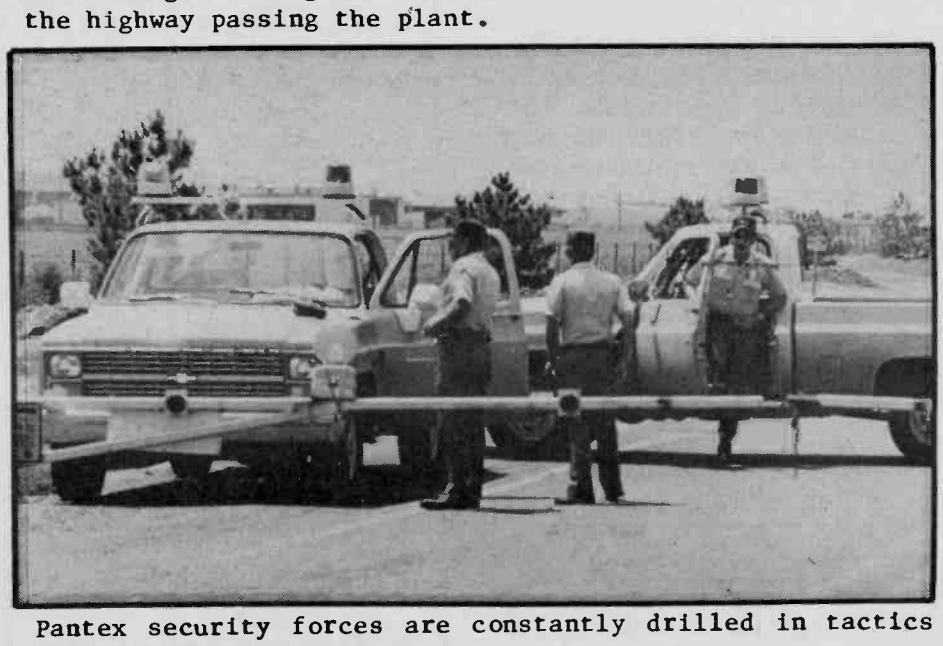
The actions are mostly symbolic because they are not allowed near the train. A couple of Amarillo nuns make it a full time job to watch for the train and notify the network. Sometimes the White Train is just an empty decoy; most shipments are loaded on to C-5A and C-41 transport military jets at Amarillo International airport.

MONITORING THE PANTEX RADIO NET

As you can see this plant can make for some interesting monitoring. Where Pantex security can only be heard in the local area because they use the VHF high band, some of the operations, such as Nuclear Transports passing near your town or the D.O.E.'s HF networks, can be heard at your location. ●

Across a plowed field filled with motion sensors and mines lies the main Pantex complex.

The strange looking nuclear containment domes as seen from the highway passing the plant.



Pantex security forces are constantly drilled in tactics to repel terrorist attack.

FREQUENCIES

PANTEX D.O.E. FREQUENCIES:

VHF: 164.225, 164.275 MHz FM

HF: Transport Net 5.750, 7.780 MHz USB

D.O.E. COMPUTER NET (ECLIPSE NET):

3.330, 3.335, 4.627, 4.630 MHZ ASCII

THE RUSSIAN WOODPECKER ...A Closer Look

by David L. Wilson

It should be readily realized in the radio hobby that what is one man's interference is another man's interest. Such is the case with the USSR OTH-B (over-the-horizon backscatter) radar.

Also known as the "woodpecker" or "pulser," this device has drawn much interest by the interferehce that it generates. In fact, the World Radio Television Handbook's 1984 edition reviewed two products designed to counter this interference.

On the other hand, with proper equipment, the woodpecker can be an object of study--as it is to this author.

The USSR OTH-B radar is believed to use two locations in the western USSR, Minsk and Nikolayev. One location is used for transmitting and the other for receiving. This prevents the receiver site from being "overwhelmed" by the transmitted signal. (This is a common practice for many operations at HF frequencies.)

An analysis of the woodpecker has been made using an externally triggered scope. The remainder of this article discusses the results of that analysis.

The USSR woodpecker has been observed using three repetition rates: 10 Hz, 16 Hz and 20 Hz. By far the most common rate is 10 Hz. In fact, the 16 Hz and 20 Hz modes are so rare that an analysis of those modes has not been made; however, it is probable that their operations are the same as those of the 10 Hz mode.

The woodpecker generally is found to operate in either of two modes which will here be called static mode and dynamic mode.

In the static mode, four frequencies are used, each of which is associated with one of the time windows during which a pulse is transmitted.

For example, the woodpecker was observed using 16450, 16490, 16570 and 16390 kHz. During time window 1, 16450 transmitted a pulse; during window 2, 16490 transmitted a pulse, during window 3, 16570 transmitted a pulse; during

JOIN THE WOODPECKER PROJECT

Interested in having your protests regarding the flagrant abuse by the Russian woodpeckers heard by the major world powers? ANARC is preparing an organized listening and logging project to be present formally to major policy makers who have clout.

The concerted listening effort will be conducted in the 5 to 23 MHz spectrum over a 24 hour period in October. But in order to make this effort successful, hundreds of serious monitors are needed, each of whom is committed to monitoring a three hour period.

If you are interested in helping this effort, please complete the adjoining registration form (A) and send it in IMMEDIATELY. **No applications will be accepted after August 15.**

ANARC is also interested in accumulating reports of woodpecker interference to international broadcasters. A sample logging sheet (Form B) is also printed nearby to show you the preferred format for submitting your report(s).

FUND RAISING

In order to offset the enormous costs involved for this effort (in spite of its all-volunteer support), ANARC requests that interested monitors send adequate postage for a complete copy of the WOODPECKER PROJECT newsletter; better yet, send $2 and an SASE with a request for the newsletter plus back issues of "Backscatter", an extremely informative periodical which will fill you in on the details and history of the interference.

FOR THE STAUNCH MILITANTS

To help pay for printing and postage costs, ANARC is offering imprinted T-shirts featuring the "no woodpecker" logo shown herein for only $10 each including North American postage. Specify S/M/L when ordering your size, and make checks payable to "The Woodpecker Project" in American currency.

FORM A

Sign-Up for the Woodpecker Monitoring Team

Name:_____ Years of SW listening experience:____

Address:_____ Receiver model:_____

_____ Receiver's band coverage:_____

At right, put a "1" on the line that corresponds to the date/time which is your first choice for duty, "2" for your second choice, etc.

If you are willing to monitor for more than 3 hours, how many time-periods can you handle?:____

We will try to schedule you according to your preferences, but we can accommodate only 48 monitors per time-slot, and other factors - like geographical distribution - must be considered, too. In general, our policy is "first come, first served", so don't delay! Send this completed form - along with a self-addressed US-stamped envelope, or 3 IRCs - to:

The Woodpecker Project
1634 - 15th St. NW
Washington, DC 20009 USA

October:	1	4	7	10	13
0000-0300:	____	____	____	____	____
0300-0600:	____	____	____	____	____
0600-0900:	____	____	____	____	____
0900-1200:	____	____	____	____	____
1200-1500:	____	____	____	____	____
1500-1800:	____	____	____	____	____
1800-2100:	____	____	____	____	____
2100-2400: (UTC)	____	____	____	____	____

We must hear from you by 15 August 1985. Time- and band-assignments will be mailed out 1 September 1985.

Feel free to photocopy and distribute these forms to other SW listeners.

FORM B

Report on "Woodpecker" Interference in a Shortwave Broadcasting Band

Affected station:_____ Affected frequency:_____

Strength of interference (1 = mild, 5 = overwhelming): 1 2 3 4 5
circle one

Date (UTC):_____ Time (UTC):_____

Approximate duration of interference:_____

Reporter's name:_____ Receiver model:_____

Reporter's location (city, country):_____

Complete and return by 1 November 1985 to: The Woodpecker Project
1634 - 15th St. NW
Washington, DC 20009 USA

To file additional reports, photocopy this form.

RUSSIAN WOODPECKER cont'd

window 4, 16390 transmitted a pulse; then the 72 ms silent period; and then the pattern repeats.

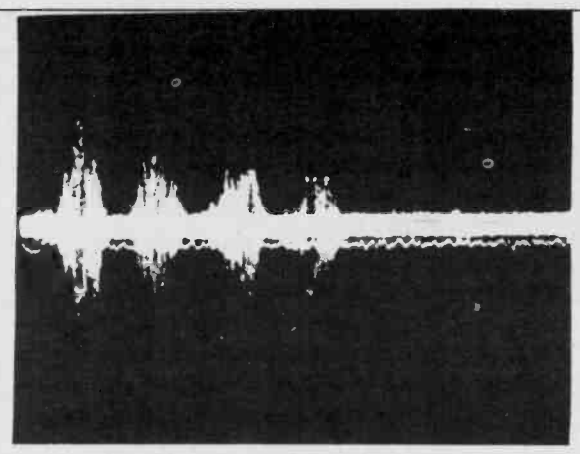
Before going any further, let us note an important fact. The pulses transmitted by the woodpecker have a wide bandwidth, typically 40 kHz; thus, all listed frequencies are approximate. The shape and length of the pulse is not known.

The pulse does not occupy all of the 7 ms transmission window; measurements indicate the pulse width to be between 3 and 6 ms; possibly it can be varied.

It would not be surprising if the pulse actually consists of several "subpulses." Due to receiver reaction time and multipath, it is very difficult to analyze the exact structure of the pulse.

In the dynamic mode each of the four frequencies uses all four transmitting windows, stepping through them in six ms intervals.

In the 10 Hz mode, a pulse is transmitted every 0.1 sec (100 ms). Using the triggered oscilloscope, it is found that there are actually four adjacent 7 ms transmission windows in the 100 ms period. In time order, let us call these 7 ms transmission windows 1, 2, 3, and 4. In other words, we may view the 100 ms period as consisting of window 1 (7 ms), window 2 (7 ms), window 3 (7 ms), window 4 (7 ms), and the remaining 100-28=72 ms in that order. The stepping order on each frequency may be 1-2-3-4 or 4-3-2-1 so that each frequency occupies a different transmitting window during a typical six second period.



Time exposure (24 sec.) of a triggered (10 Hz) oscilloscope showing a woodpecker frequency in the "dynamic mode" with pulses in each of the four transmitting windows. It uses each window for six seconds.

As an example, the dynamic mode was noted using 8070, 8230, 8310, and 8260 kHz. In the first six seconds, the frequency-to-transmitting window assignment was 8070/1, 8230/2, 8310/3 and 8260/4; for the next six seconds it was 8070/2, 8230/3, 8310/4 and 8260/1; then for six seconds it was 8070/3, 8230/4, 8310/1 and 8260/2. Finally, for six seconds it was 8070/4, 8230/1, 8310/2 and 8260/3. The pattern then repeats after 24 seconds (4 steps x 6 seconds).

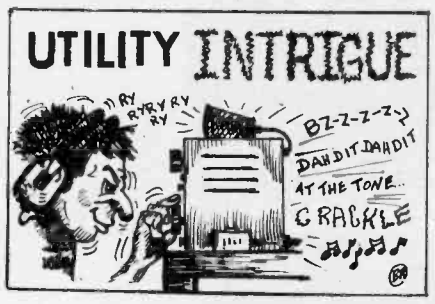
The result is that the dynamic mode looks like the static mode for six second intervals. Only to a very trained ear can the difference between dynamic and static modes be detected.

It is suspected that the loss of synchronization that sometimes occurs with woodpecker blanking devices is caused by the transmitting window shifts in the dynamic mode, not by varying rate as stated in the 1984 World Radio TV Handbook.

Why does the dynamic mode use both the 1-2-3-4 and 4-3-2-1 transmitting window cyclings? The answer came one day when 15960, 16370, 17480 and 16820 kHz were observed using the 1-2-3-4 cycling while 16230, 15730, 16020, and 16130 kHz simultaneously were using the 4-3-2-1 pattern. Keeping in mind the wide bandwidth of these signals, it is likely that the two different cyclings allow simultaneous use of two separate four-frequency, dynamic-mode systems in the same frequency band without mutual interference. However, usually only one set of four frequencies has been noted at a time.

COMPLICATIONS

In either the static or dynamic mode, one or all frequencies may suddenly change, often so rapidly as to frequently make it difficult to establish which four frequencies are in use at a given time. Sometimes the



by
Don Schimmel
516 Kingsley Rd SW
Vienna, VA 22180

On a just concluded vacation trip to the Virginia historical area of Williamsburg/Jamestown, I became aware of the rare opportunity for SWLers to monitor communications of the re-enactment of a voyage which originally took place 378 years ago (see map).

This event is in commemoration of the 1607 founding of Jamestown in America by English settlers. The ocean trip currently under way is in a replica of the GODSPEED, one of the three ships that made the original voyage in 1605/1606.

This modern day effort, however, does have more sophisticated facilities than did the initial crossing. Receiving and transmitting equipment have been installed for communications between the ship and its Jamestown base station, manned by members of the Williamsburg Area Amateur Radio Club. Members taking part are to be commended for contributing their time and efforts in handling the messages for the ship. Position data is provided by NASA, and the U.S. Navy is furnishing weather information..

The voyage got off to a bad start after departing Blackwell (on the Thames River) 30 April 1985 because the trip down the English Channel required two weeks. The arrival in Jamestown was initially projected for 20 July but as of 3 June, the new arrival date there was thought to be in early August.

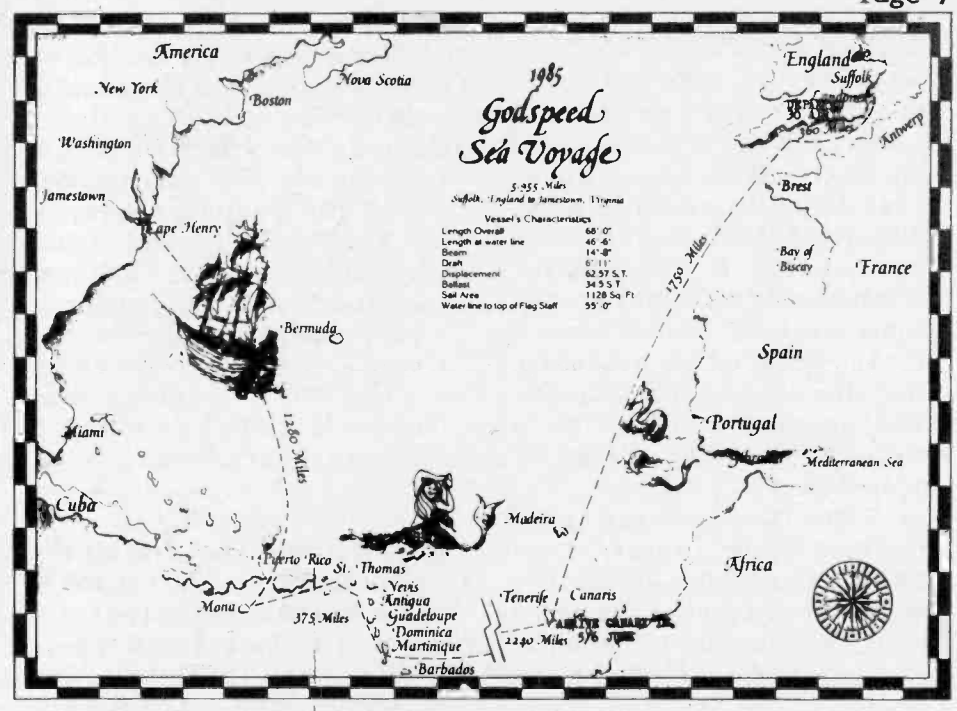
For the trip from England to the Canary Islands, radio contacts at 4 PM and 11 PM EDT were in the CW mode. The exact operating frequencies are not available to the public but are near 7, 14 and 21 MHz depending on the time of day and propagation.

The callsign for the GODSPEED is WA4CHQ but before you are tempted to try and contact the ship let me advise you that I was informed the ship only communicates with the authorized base station in Jamestown and will not respond to any other calls. Such attempts to communicate with the ship could cause interference to the exchange of official traffic between the ship and the base station.

It is believed that as the ship approaches Martinique most contacts will continue to be CW, but once the vessel is in the West Indies area reliable voice comms should then be possible.

The GODSPEED was due in the Canary Islands on 5/6 June. After reprovisioning and making any necessary repairs they will head across the Atlantic Ocean and will make a few stops in the West Indies at some of the locations where the three ships of the original voyage landed for provisions. Clearing the West Indies, the GODSPEED makes for Cape Henry and then on up the James River to dock at Jamestown Festival Park.

If you do succeed in hearing traffic exchanged between the ship and its base station you will be sharing in an historic happening. I am sorry that I did not learn of the activity sooner as it would have been a pleasure to monitor its progress during the entire voyage. However, there is still time to listen in on the remainder of the trip which is now scheduled to be completed sometime in August.



I am at a loss as to why this important event has not received national publicity. In the Jamestown area there were daily reports in the local paper and the local TV newscasts carried several reports each day concerning the progress of the ship plus other appropriate interesting facts relating to the voyage.

● I am sure you will agree that the following looks very strange at first glance. P O I U Y T R E W Q D N A R G U D S E R P E N I M A X E S E U Q T N A E B K C I R B E L Z E Y O V. Station FDY (Orleans Air, France) made this boo-boo on May 16 at 2235Z on 14528 kHz when it ran its test tape backwards. After several lines of the transmission appeared on my video monitor I finally realized what had happened.

● In past columns I have mentioned some language publications I have found helpful for identification purposes in connection with SW monitoring. My latest

RUSSIAN WOODPECKER cont'd

woodpecker returns to a frequency abandoned earlier.

No pattern has been found for these frequency changes; they appear to be random. At times the frequencies stay constant for long periods; at other times the frequencies change at such a rapid rate as to make analysis difficult.

While a listener may encounter difficulty trying to separate two overlapping woodpecker frequencies, a triggered scope will easily identify the two signals.

On rare occasions the woodpecker has been noted with other 10 Hz modes, often consisting of more than one pulse. In one instance, the woodpecker was observed transmitting pulses in all four 7 ms transmitting windows on a single frequency. This could be described as static or dynamic mode with all four frequencies the same.

In another case, the woodpecker was found to be transmitting a second pulse 25 ms after the first; in effect, this made eight transmitting windows. This operation was of the dynamic type.

Whether these rarely-seen modes are actual operating modes, test or tuning modes, or accidents, is unknown. Perhaps other modes or some of the questions that arise from the above analysis may be answered by further observations. ●

UTILITY INTRIGUE cont'd

browsing trip to a local book store yielded yet another operator reference aid: "LANGUAGES OF ASIA AND THE PACIFIC." While it is primarily a traveler's phrasebook, it never-the-less will be of assistance in recognition of a language and therefore a nationality and country related to an intercepted item under question.

The languages treated include Persian, Hindi and Urdu, Bengali, Simhalese, Burmese, Thai, Lao, Vietnamese, Mandarin, Cantonese, Japanese, Korean, Malay and Indonesian, Tagalog, Spanish, Portuguese, French and several Pacific Island languages.

Each language in the book is briefly described so as to identify basic grammar and construction plus an indication of where (what countries) the language is used. The listings for each language cover such subjects as common phrases, numerals, days of the week, months, selected sentences, and a vocabulary section containing approximately 1900 words for each of the included languages. A system of Romanization has been used for script type languages which is, of course, a definite factor when dealing with such texts sent via telecommunications means.

The one disadvantage to the book is that it is the English words that are alphabetized and so one must guess the language involved for a copied item and then scan through the entries for that particular language. The latter are not listed in alphabetical order; however, it is a fairly quick method of confirming the suspected language.

The book is authored by Professor Charles Hamblin and published by Angus & Robertson of London-Syndey-Melbourne. It bears ISBN 0 207 13628 9. I obtained my copy at B. Dalton bookstore and the cost was $16.95. According to the introductory sections of the book, there is a tape available for those interested in the spoken pronunciation of the words and phrases.

Information on the tape and its cost/shipping should be sought from the following address:

TAPE CORRESPONDENCE SERVICE
Division of Post-graduate
Extension Studies
Univ. of New South Wales
Kensington, N.S.W.
Australia 2033

The tape, on two cassettes, gives, for each language, the everyday phrases, numerals, days of the week, months, and sentences spoken by a native.

● I still have not figured out this transmission. The signal consisted of 9 dits and 1 dah. This was sent via MCW and repeated over and over on 11192 kHz on 26 May at 1321Z. I stayed with it hoping for something more but I finally grew tired of such repetition and moved on.

● Using my newly acquired reference aid (LANGUAGES OF ASIA AND THE PACIFIC) I was able to identify the transmissions on 13858 kHz, RTTY 50-850, on 26 May at 1314Z as being Romanized Korean plain text messages. I had suspected that the activity was Korean but the new reference book clinched the ident for me.

● Two new additions were made to my short-wave publications collection.

The first, WORLD PRESS SERVICES has proved to be a very useful reference guide for English language RTTY news monitoring. Author Tom Harrington has done a great job in this compilation of frequencies and information poertraining to the interception of press material.

The second title is CLANDESTINE CONFIDENTIAL by Gerry L. Dexter. Although monitoring such stations on a regular basis is not my cup of tea, nevertheless I thoroughly enjoyed reading this book which is packed with informative data describing past and present clandestine broadcasting stations and programming content.

Both of these books are available from various MT advertisers. ●

LOGGED JUNE 1985		
KHZ	DTOI	MODE/IDENTIFICATION/COMMENTS
4781	112357	CW/PROB FEMA/5L GRPS, 6 GRPS TO MSG
5022	121604	RTTY 45-850/DE CHO/RY'S (CANADA ALLOC)
5096	121557	CW/DE CFH (HALIFAX, NS, CANADA)
6354	110308	RTTY 75-850/78EAL DE 72JKL/RY'S
6365	121550	CW/DE WPD (TAMPA, FLORIDA)
6376	121544	CW/DE WCC (CHATHAM, MASS)
6380	110111	CW/DE GKB2 (PORTISHEAD, ENGLAND)
6491.2	102256	CW/DE PJC (WILLEMSTAD, CURACAO)
6495	110258	CW/DE KFS (SANFRANCISCO, CALIF.)
6500	110256	CW/DE FFT31 (SAINT LYS, FRANCE)
6983.6	110252	RTTY 50-425/CODED WX
7300	120108	CW/DE IDR3 (ROME, ITALY)
7419	120104	RTTY 50-425/DE 5YD/RY'S (NAIROBI, KENYA)
8456.8	110046	CW/SPORTS NEWS IN SPANISH
10803	110019	RTTY 50-850/HORSE RACE RESULTS IN SPAN.
10878	120024	RTTY 75-425/PRESS IN ENGLISH
11306	102243	CW/POSS 4F GRPS/CHIRPY XMTRS
12125	122037	RTTY 50-425/ANSA (ITALIAN PRESS SVC WITH PRESS ITEMS IN FRENCH
13364	112251	RTTY 50-425/DE 5YD RY'S (NAIROBI, KENYA)
13449	122030	RTTY 75-850/ENCIPHERED TRANSMISSION
13705.6	110028	USB VOICE/CONVERSATION IN SPANISH
13727	110037	RTTY 50-425/FRENCH PT, MILITARY TEXTS
13750	112230	RTTY 50-425/CODED WX
13768	110040	RTTY 75-425/PRESS IN ENGLISH
13795	102238	RTTY 50-850/DE ZVK RY'S (RIO DE JANEIRO, AERADIO, BRAZIL)
14424.6	102230	USB VOICE/CONVERSATION IN SPANISH
14428	120003	AM VOICE/ATENCION 447 03/SPANISH FEMALE, 5F GRPS
16438.9	112238	RTTY 75-850/CODED WX
16448.5	122020	CW/5F GRPS/VERY WEAK SIGNAL
16549	102232	USB VOICE/CONVERSATION IN GREEK
17006.9	102225	CW/DE PCH61 (SCHEVENINGEN, HOLLAND)
17059	102228	CW/DE 4XO (HAIFA, ISRAEL)
17135	112321	RTTY 75-850/78EAL DE 72JKL/RY'S
17147	112320	CW/DE TIM (LIMON, COSTA RICA)
17164	112318	CW/DE CLA (HAVANA, CUBA)
17229	112314	CW/DE GKQ (PORTISHEAD, ENGLAND)
17966	112316	CW/DE KFS (SANFRANCISCO, CALIFORNIA)
18043	112259	CW/PT SPANISH MSG FROM LIMA, PERU TO QUITO, ECUADOR RE AIRLINE MATTER.
18193.1	102241	RTTY 50-425/PRENSA LATINA, CUBA WITH PRESS ITEMS IN ENGLISH
23768	122042	RTTY 57-425/ENCIPHERED TRANSMISSION

SCANNING

ABC NEWS

Exclusive to MONITORING TIMES

by Mark Edward Springer

One of the largest and most active electronic media organizations in the U.S. is the ABC News division of the American Broadcasting Company.

With bureaus in a number of major American cities, ABC news makes use of an elaborate communications system to keep crews and producers in contact to facilitate the seemingly incredible speed in which the network gets stories on the air.

ABC NEWS RADIO FREQUENCIES

Ch	Trans	Rec	Comment
Zone A	New York City/D.C./Boston		
1S	455.0875	455.0875	
2S	455.5875	455.5875	
3S	450.5875	450.5875	
4D	450.5875	455.5875	
5D	450.6125	455.6125	
6D	450.1125	455.5875	BOSTON
Zone B	Southern Bureau		
1S	455.0875	455.0875	ATLANTA/MIAMI only
2S	455.5875	455.5875	ATLANTA/DALLAS only
3S	450.5875	450.5875	DALLAS/MIAMI only
4S	455.5875	455.5875	ATLANTA/DALLAS/MIAMI
4S	450.1125	450.1125	ATLANTA/MIAMI only
5S	450.4125	450.4125	ATLANTA/MIAMI only
7	BLANK		
8D	450.3875	455.3875	ATLANTA/MIAMI/DALLAS
Zone C	Chicago		
1S	455.5875	455.5875	
2S	450.5875	450.5875	
Zone D	LA/San Francisco		
1S	455.2875	455.2875	
2S	450.2875	450.2875	
3S	450.1500	450.1500	
4S	455.1500	455.1500	

VHF SKIP REPORT

by Chuck Robertson

Send your VHF skip contributions to:

Charles Robertson
RR 2, Box 850
Creal Springs, IL 62922

It's time to begin harvesting the long hours of summertime skip monitoring. Roll up your sleeves. Here we go!

NEW YORK PIRATES

Another "pirate" taxi cab service has been discovered operating in New York, this one on the frequency of 32.00 MHz. The emissions are narrowband FM, and the language is Spanish with noticeable English influence. Communications between base disptacher and mobiles are quick and brief, more so than most legal taxi services.

These people have been using this frequency for over two months now. Surely their days are numbered! Eventually the FCC or U.S. military will put an end to it.

The U.S. military often uses 32.00 for training and tactical communications. Furthermore, the U.S. government operates a ferry in Washington, D.C. which occasionally uses 32.00 MHz. Passengers, employees and mailbags are ferried to and from an embassy.

At first glance this Spanish-speaking taxi service might be assumed to be skip coming from a Latin American country. But closer inspection will reveal that the location information given to the cabbies puts this operation squarely in New York.

Another New York pirate taxi service is regularly heard on the unusual frequency of 34.98 MHz. The language is English, so it's easy to tell what's going on, though Spanish has also been heard.

Note that the frequency 34.98 falls in between the usual channel spacing used by the U.S. federal government. This may give the pirate a bit more protection against causing interference to federal communications, thus being discovered!

Also, a New York taxi service using the frequency 32.22 was heard conducting range tests on 7/26/84. The language was British West Indies English, and the base was called "94 Base."

They've not been heard again, so the sole purpose was probably to determine if the radio system would work properly. After all, one wouldn't want to invest big bucks in a radio system for a fleet of cabs if the radios won't reach back to the base.

Just wait 'til they get one of those crowded New York business channels with lots of QRM! Range tests on uncongested channels can be misleading.

A trucking company has taken up permanent residence on the state conservation frequency 31.30 MHz! This operation is located just outside New York, but treks are often made to the Big Apple. Sounds as though they're a "parcel service" for airlines and businesses.

Unlike other businesses in the New York area, these people have their channel to themselves. The FCC frequency files show no licenses to 31.30 within 700 miles of New York!

In the U.S., the frequencies from 30.86 to 31.98 are allocated in 40 kHz steps for state conservation; however, the 30.86 to 31.14 frequencies may also be shared with transportation. But this doesn't explain the trucking business on 31.30 MHz!

Discovering pirate operations can make for some interesting monitoring. Where will they raise the Jolly Roger next?

Some NY hacks take frequencies wherever they want them!

ALPHA BRAVO, KOMMEN?

Extensive German language communications were logged this spring and early summer on the following frequencies. A 100 kHz channel spacing appears to be used.

30.80
31.10
31.60

Standard phonetic letters were interspersed in groups throughout the communications. I got the impression these operations were scientific or military in nature. Quite likely they are vessels off the U.S. coast.

Perhaps one of our German speaking readers would like to translate the recordings I made of these comms; drop me a line and I'll send you a cassette. First come, first served. I only have a couple of copies to give away.

I've also heard German language several times during the summer of 1984 on 31.30 MHz. This channel hasn't been heard in 1985, but I suspect it's all part of the same operation.

These communications are heard most any time of the day or early evening. This indicates that the skip must be sporadic-E in nature, arriving from a "local" operation. If the comms were actually originating from East or West Germany via multi-hop F_2 skip, they would only be heard at a specific time each day. Here in mid-America, West Germany can be heard from about 9 to 11 AM during periods of very high solar activity. December, January and February are usually the best months for transcontinental F_2 skip.

Since we are presently in the low point of the 21st solar cycle, to have received multi-hop F_2 skip during the summer of 1985 would be completely out of the question.

Back in the winter of 1982/1983 I logged several German police repeaters on the frequencies 34.76, 34.78, 34.80, 34.82, 34.84, 34.86, 34.88, 34.90 and

ABC NEWS cont'd

Field portable repeaters can be set up in a matter of minutes by technicians for long-distance communications, and the system includes simplex channels as well.

This communications system is used both for news gathering operations and technical control during major news events.

Straight off the back of one of their Motorola HT's is this list of frequencies. If you tune in, don't expect to hear a lot of formalized operating procedure. But you just might recognize some of the names used! ●

VHF SKIP REPORT cont'd

34.92 MHz. It will be interesting to see if these frequencies are still active when the 22nd solar cycle gets into full swing around 1990!

FISH AND SHIPS

Several elusive Canadian fishing vessels have been monitored this summer, possibly located in the Grand Banks fishing grounds on Canada's east coast.

Grand Banks ranks among the world's best fishing grounds and is famous for lobster, herring, cod, and scallops.

Other fishing grounds include the Canadian sections of the Great Lakes. Additionally, Canada's six large lakes plus 600 smaller lakes in the prairie and northwest regions also produce fish for consumption in Canada and the U.S.

30.04 Fishing vessels. One vessel was called the "Rewarder."
30.32 Speech inversion scrambling was used between fishing vessels. One crew member mentioned he was headed home to Havelock, New Brunswick.

The frequency 30.32 is also used on Canada's west coast, clear voice. Some of the vessels mentioned include "Coastal Warrior," "Motion," "Summer Breeze" and "Paty Force" ("Petitsfours"?).
30.64 Fishing vessels
31.08 Fishing vessels
31.20 Fishing vessels. The ships "Beagle," "Baltic Spirit" and "Xreathea" were mentioned.
31.28 Fishing vessels
31.38 Fishing vessels
31.46 Fishing vessels
31.94 Fishing vessels
37.30 Fishing vessels; speech inversion scrambling

8 METER UPDATE

Last month I presented a list of 38 to 38.25 MHz radio astronomy band channels used for terrestrial communication by the U.S. military, plus Canadian and Latin American businesses.

With the arrival of the 1985 summer sporadic-E season, more two-way comms have been logged in this band.

38.00 U.S. military, "Forward Control" and mobile units on exercises. WBFM
38.05 "70 Alpha Range Control" and mobile units on range. WBFM
38.12 Canadian construction business. NBFM
38.17 U.S. military. WBFM
38.23 May be U.S. federal government. NBFM
38.25 U.S. military range control and mobile units. WBFM

A DIFFERENT DRUMMER

In the June VHF Skip Report, the frequency 38.30 was listed to "Wheeler SAC Operations." I noted that Wheeler AFB was located in Waipahu, Hawaii, but that the comms must surely be coming from inside the contiguous U.S.

Word comes from Kevin Trickey that Ft. Drum, Watertown, New York, also used to be known as Wheeler. Looks like the name is still in use!

Kevin used to live in Watertown and has sent on an impressive list of Ft. Drum frequencies.

30.10	Active
38.00	M.P. jeeps
38.10	Mobiles on range
38.50	Range control
38.85	PMO
38.91	Fire
40.65	ANG (Army National Guard
41.10	Medivac helicopters
46.70	Range control including helicopters/aircraft
46.87	Active
49.70	Active
49.80	Tower
126.20	Tower
139.025	Active
139.050	PMO
141.100	PMO
141.475	Post engineers
141.550	ANG
141.675	ANG
142.450	Post engineers
143.075	Active
143.150	Active
143.850	ANG
143.925	MARS
163.510	Security Police

Finally, here's a list of UHF aircraft band frequencies from the IRAC files for the Watertown facilities.

227.1 228.7 229.8 235.8
239.2 241.0 244.7 254.8
258.2 278.4 282.5 288.0
292.8 298.8 303.9 316.2
326.4 338.8 342.1 347.4
351.6 364.2 371.8 376.2
379.5 389.2 394.8 399.0

Kevin goes on to say that Ft. Drum is fast becoming the Northeast's largest military installation, with up to ten thousand personnel to be assigned there over the next few years! Communications should increase accordingly.

Thanks, Kevin, for the great information!

PROGNOSIS

The mid part of August usually marks the return of long distance F_2 skip. The peak should come in September and October.

Be sure to check the Caribbean and Central/South American frequencies contained in my book, Low Band Skip Directory.

NEXT MONTH: Hold on to your hat! We're going to investigate sporadic-E skip produced by hurricanes! Also, more pirate frequencies. ●

by James R. Hay

From the Indian Ocean last month, we move a bit closer to home - Africa, and more specifically the east coast thereof. Let's start by having a look at South Africa, and then moving up the coast. (All freqs. kHz.)

ZSC-Cape Town Radio SOUTH AFRICA

CW	SSB Channel	
4261	405	4419.4
4291	421	
4317	821	
6379.5	1209	
6423	1608	
6467	2204	
6478		
8449		
8461		
8502		
8688.5		
12698		
12709		
12724		
12772.5		
16890.8		
17018		
17164.75		
22347.5		
22455		
25277		

ZSV-Walvis Bay Radio NAMIBIA

CW	SSB Channel
	4357.4
	8718.9
	13125.6
	17254.6

D3E-Luanda Radio ANGOLA

CW	SSB Channel	
6369	413	4125
8565	802	4143.6
8694	821	6218.6
12780	1203	8291.1
13023	1221	12429.2
17189.6	1615	16587.1
22330.5	1621	22124
	2207	

9PA-Banana Radio ZAIRE

CW	SSB
8714	
13078.5	
17184.8	
22431	

9PM-Matadi Radio ZAIRE

CW	SSB Channel
6491.5	
8546	
17184.8	

TNA-Pointe Noire Radio CONGO

CW	SSB Channel
8453	
12682.5	

TRA-Libreville Radio GABON

CW	SSB Channel
8722	
13101	

TJC-Douala Radio CAMEROON

CW	SSB Channel
4480	818
8449	828
8718	1227
13069	
17237	

SOW-Lagos Radio NIGERIA

CW	SSB Channel
6411	4425.6
8698	6506.4
13065.5	6518.8
16861.5	6532.5
17199	8768.5
	8773.6
	8774.7
	13133.6
	13193.8
	17307.3
	17353.8
	22599.1
	22611.5

SOZ-Port Harcourt Radio NIGERIA

CW	SSB Channel
8461.5	4125
8490	
8496	
12696.5	
12723	
12935.5	
16923.6	
16942	

9GA-Takoradi Radio GHANA

CW	SSB Channel
4262	402
6424	601
8542	823
12669	1202
17175.2	1616
	2213

9GX-Tema Radio GHANA

CW	SSB Channel
4340	409
6480	602
8696	825
12765	1224
16920	1622
	2215

HIGH SEAS cont'd

Abidjan Peche Radio
IVORY COAST

CW	SSB Channel
	404
	602
	806
	1212

TUA-Abidjan Radio
IVORY COAST

CW	SSB Channel
4343	419
8465	603
13060.5	822
16947.8	1205
	1634
	2225

ELZ-Cape Palmas Radio
LIBERIA

CW	SSB Channel
4323.6	
8606	
12995.25	
16930.8	
22416	

ELH-Harbel Radio LIBERIA

CW	SSB Channel
4240	4380
8600	8800

ELC-Monrovia Radio LIBERIA

CW	SSB Channel
8518	
12709	
16983	
17146.4	
22491	

9LL-Freetown Radio
SIERRA LEONE

CW	SSB Channel
6411	804
8710	
13042.5	
17175.2	

J5M-Bissau Radio
GUINEA-BISSAU

CW	SSB Channel
	413
	426
	802
	813
	1203
	1615
	1635

C5G-Banjul Radio GAMBIA

CW	SSB Channel
8441	405
13042.25	829

6VA-Dakar Radio SENEGAL

CW	SSB Channel
4295	404
6383	803
8690	1212
12655	1629
16947.6	2220

5TA-Nouadhibou Radio
MAURITANIA

CW	SSB Channel
8572	

CNP-Casablanca Radio
MOROCCO

CW	SSB Channel
8686	828
12695.5	1223
17170.4	1638

The above frequencies ought to provide interesting listening and might also provide some practice in foreign languages. I trust that you will give them a try.

Suggestions and correspondence regarding this column is always welcome, and should be addressed to: James R. Hay, 141, St. John's Blvd., Pointe Claire, P.Q., Canada H9S 4Z2.

Good listening until next month. ●

This month we will start a two-part feature involving monitoring the high frequency aeronautical bands.

While many of our readers are familiar with the VHF aero band, not everyone knows that you can also hear both aircraft and ground stations' transmissions on the HF bands. These transmissions are among the most interesting to monitor; there's never a dull moment!

RECEIVERS

You do not have to spend your entire life savings to purchase a good high frequency receiver. Radio Shack, Panasonic, and several other manufacturers put out some very decent sets for $175.00--and sometimes less! Some of these even have digital frequency readouts. While this feature is not essential, it is a big help--mainly because playing frequency roulette on an analog receiver can be very frustrating. One feature that is essential, however, is a BEAT FREQUENCY OSCILLATOR (BFO or product detector). All aircraft voice transmissions are in the upper sideband mode (USB) on these bands.

ANTENNAS

One of my readers asked me, "How am I supposed to get any really good DX without an outside antenna?" Believe me, you can. Very often the extendable whip antenna on your portable receiver is all that you will need. I've monitored transmissions from aircraft and ground stations worldwide this way. If you need a better antenna, consult the Grove Enterprises catalog!

LISTENING IN

Transmissions heard on the high frequency aeronautical bands are totally different from those on VHF. English is the international aeronautical language, guaranteeing interesting worldwide monitoring.

Although aircraft pilots on a world-wide basis must advise Air Traffic Control facilities of their positions and other factors, they are often out of radar contact because the maximum distance that ATC radar can pick up a "target" is about 425 miles. Even so, the pilot must stay in touch with the Air Traffic Control facility serving his area.

You will hear pilots transmit positions, requests for different altitudes and other data to a middleman who will, in turn, relay this information to an Air Traffic Control Center. These "middlemen" are aeronuatical enroute ground station operators.

Most countries have aeronautical enroute ground stations, whether privately operated, government-controlled or, in some cases, jointly operated. These ground station operators exchange information between Air Traffic Control and pilots concerning permission to climb or descend to new altitudes, routing changes and clearances, weather reports, etc.

Next month we will take an in-depth look at these aeronautical ground stations and will spotlight Aeronautical Radio, Inc. (ARINC) --probably the oldest and best known contractors for enroute communications.

Over the years that I have been monitoring the HF aero bands, I've heard transmissions that ranged from hilarious to frightening. While at times the transmissions on the VHF aero band tend to be a tad cut and dried, those on HF rarely are. I've listened to pilots inform ground stations of sky-jackings in progress, suspected cases of food poisoning aboard, and

PLANE TALK cont'd

ground stations advising pilots that the airport was under military siege!; I've heard pilots reporting births and deaths aboard their flights, malfunctioning engines which had to be shut down, and even overflowing coffee-makers. I've probably heard everything that can happen aboard a plane during flight at one time or another, and rarely the same thing twice!

RECEPTION

Reception will probably be much better at night. Depending upon propagation, weather and other factors. Have patience; there are nights when all you'll hear is static. However, there'll be many more times when you'll hear one aero transmission after another just as clearly as if it were coming from the next room!

LOGGING

Keep records or logs of what you hear on these bands. A choice bit of aero DX reception is as interesting and worthwhile to keep note of as are any other logs that you keep for your other monitoring activities if you listen to other types of communications. You can make up your own logging sheets, or buy them already prepared from Grove Enterprises and other equipment dealers. Figure 1 gives you one way to keep a record of your monitoring which doesn't take up a lot of room, yet gives you a space for recording details.

Of course, if the pages of your logbook are wide, you'll have more room. Develop your own style in regard to record-keeping, but do keep them. It's interesting to go back over a year's worth of loggings (at the end of that time period) to see just what you've accumulated!

QSLs

I have been extremely fortunate to receive many QSLs from Aeronautical Enroute Ground Stations' Operations Managers. You stand a very good chance of receiving a response and verification of your reception report if you use a prepared data sheet similar to those outlined below. Remember, these ground stations don't send QSL cards out on a regular basis like the short-wave broadcasters do, so you will need to send your prepared data sheet:

DATE/	GMT/	FREQUENCY/	AIRLINE FLIGHT#/	GROUND STATION/	REMARKS
3/20/85	0138	6577 KHZ	FAGIN AIR 32	NEW YORK	POSITION REPORT & LONDON DESTINATION, ETA

FIGURE 1

Attn: Manager Air/Ground Operations
Auckland Aeronautical Enroute Radio
Auckland International Airport
Auckland, New Zealand

To whom it may concern:

I monitored your station working the flights listed below on (dates). All times are expressed in GMT. The frequency was _____.
5/22/85
Fearless Airlines----0220/0225: Position report
Amalgamated International---0230/0233: ETA destination
5/24/85
Pacific Holidays Air----0120/0122: weather report
etc.

(You might tell them what type of receiver you use, and also about your antenna.)

(The most important paragraph in your whole report is the following one--no matter how you word it yourself):

"If the above data are correct according to your records, would it be possible for you to sign, date and verify this reception report and return it to me? I have enclosed 3 International Reply Coupons for this purpose."

Thank you,
(Your name, address, country)

FIGURE 2

Always include International Reply Coupons for return postage when you send a reception report to a foreign aeronautical enroute station if you expect a reply. Even when I send a reception report to a domestic enroute station, I include a self-addressed stamped envelope. It's the courteous thing to do.

Remember, enroute ground station managers are not really interested that their signal is "five by five" in your listening area; his main concern is that the pilots of the aircraft that he's working are receiving his transmissions! So make sure that your request for a verification is always very polite; ask, don't demand!

If you are unsure of the address of the enroute ground station to which you are sending your report, just address it to the country's (where the ground station is located) largest international airport, for instance:

Nandi Aero Radio
Nandi International Airport
Nandi, Fiji

It will eventually get to the right person IF you remember to include the words, "Aero Radio," or "Aeronautical Enroute Radio," before the name of the country to which it's going.

Remember, you may not legally reveal the contents of the transmissions that you are reporting, just the type of transmission--such as "position report"--but no more.

I'd really like to hear from those of you who would like to share monitoring experiences, both VHF and HF. Perhaps we can devote a future column's contents to readers' catches!

Until next time, 73's and out. Jean Baker, Registered Monitoring Station KIN9DD ●

SOYUZ RIDES AGAIN

With the gradually receding interest in the U.S. manned space program by the media, reporting on Russian space activities has dropped to nil. The recent (June 7) launch of another Soyuz space station mission by the USSR passed virtually without notice.

Monitoring Russian space missions is considerably easier than U.S. missions because of the lower radio frequencies involved. The frequency 121.75 MHz (FM) is used repeatedly for voice communications from the cosmonauts.

A scanner with aircraft band coverage is all that is needed to detect the signals (assuming a good outside antenna) and, while FM detection would be desirable (aircraft communications are AM and this is the mode on most scanners which cover the 118-136 MHz band), conventional aircraft scanners should recover the transmissions using slope detection.

Slope detection, sometimes called delta demodulation, is accomplished by tuning slightly off center of the FM carrier frequency and detecting the amplitude variations on one sideband as AM. Thus, 121.75 MHz FM may be recovered as AM on 121.745 and 121.755 MHz.

As with all satellite monitoring, attention must be paid to orbital revolution periods (typically 90 minutes) and whether the orbit is equatorial or polar.

MT READER HEARS HOSTAGE RETURN FLIGHT

Upon the announcement of negotiations completed to return the Beirut hostages to Frankfurt, many veteran SWL's sprang to life and cranked up their receivers to tune in on the action. One MT reader and enthusiastic listener, Richard Kramer of Sinking Spring, Pennsylvania, was very lucky.

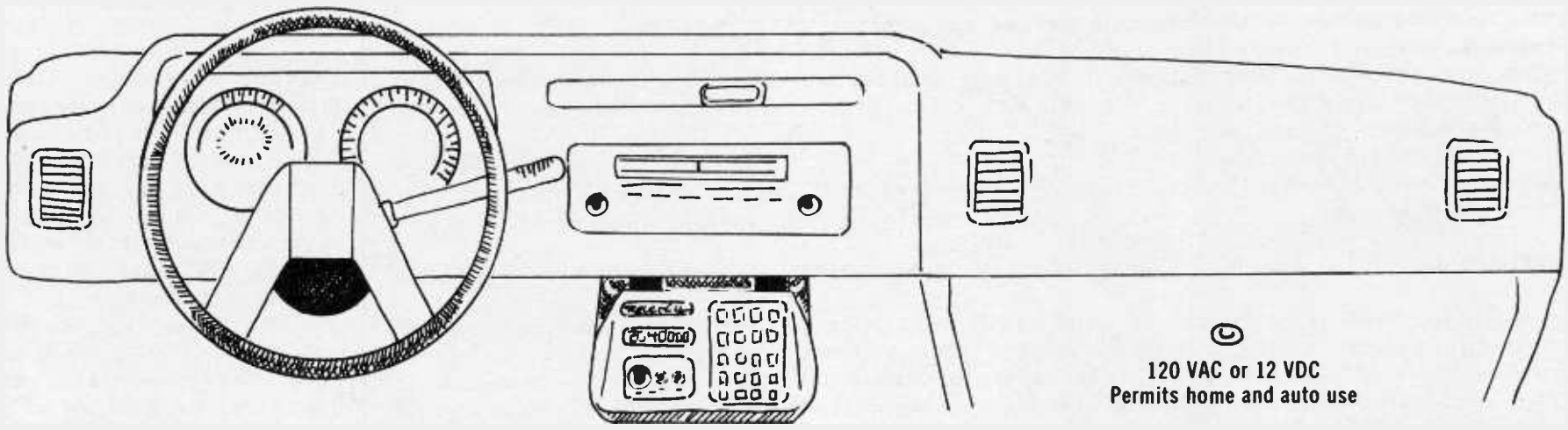
Rich was fortunate enough to tune in several active USAF frequencies used by Andrews AFB as they were in contact with Air Force Two during the transportation of the ex-hostages from Damascus to Frankfort aboard MAC flight 380676.

Frequencies most active were 13208 kHz (primary), 15036 (secondary) and 11249 (backup). All transmissions were in upper sideband.

(ARINC map and frequencies follow on page 14.)

On The Road With Grove

We've Got Scanners and Accessories Flexible Enough to 'Follow You Anywhere'



120 VAC or 12 VDC
Permits home and auto use

Take It On Vacation. . .

The Superb Regency MX-7000

This compact scanner (5½" x 3" x 8") is a top-notch performer at home or on the road. Delivering a continuous frequency range of 25-550 MHz plus the 800-1300 MHz band, the MX-7000 is loaded with many of the same features found on much more costly units: 20 channel memory; AM, wide or narrow FM on any channel; high sensitivity (0.3uV FM); and sharp selectivity (±7.5 kHz). A large LCD display shows frequency, channel, priority function, lockout of unused channels, delay of resumed scanning or searching, search increments, reception mode and time of day.

SCN6 ONLY $469 ***(Retail $699) Plus $5 UPS or $10 U.S.Mail***

~~MX-5000~~ ~~SCN5 SALE $359! Save $30~~

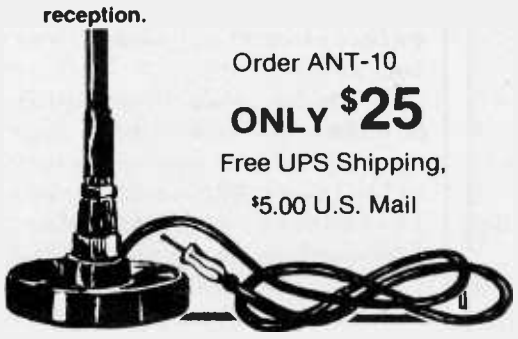
NEW!

Low-Profile Mobile Scanner Antenna

Now only 18" in height and with a professional black appearance, this strong, fiberglass helical antenna is a natural for all mobile scanners.

The Grove mobile antenna operates as a helical quarter wave on low band (30-50 MHz), full length 1/4 wave on high band (118-174 MHz) and a 2dB collinear gain antenna on UHF (406-512 MHz).

A strong, chrome-finished 3½" magnetic base assures fast holding power at high road speeds. Twelve feet of low loss coaxial cable, terminated with standard Motorola plug, provides 50 ohm matching for optimum signal reception.



Order ANT-10

ONLY $25

Free UPS Shipping,
$5.00 U.S. Mail

Hand-helds Are Portable & Affordable

With Features Rivaling Many Full-Sized Scanners

Regency HX-1000 (Above)

This recent addition to the Regency line of high performance scanners offers 30 channel memory, 0.5uV sensitivity, sharp 15 kHz selectivity and an FM frequency range that won't quit: 26.5-64.5, 117.7-193.8 and 309.3-538 MHz (wider than specified by Regency)! Other features: search, scan, delay, priority, lighted LCD display, top-mounted squelch and volume controls and BNC antenna connector.

Order SCN-7 ***Only $229*** $5 UPS Shipping, $10 U.S. Mail

SPECIAL SALE on

Regency HX-2000

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

VHF-FM sensitivity is 0.4 microvolts. Unit measures 3"W x 6.9"H x 1½"D. Two screw-in flexible antennas (800 MHz and VHF/UHF, rechargeable batteries and plug-in wall unit included.

Order SCN-9 ***Now only $289!*** ***Save $100*** $5 UPS Shipping, $10 U.S. Mail

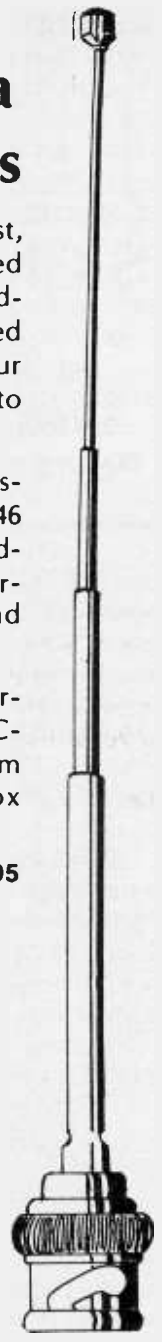
Universal Whip Antenna For Hand-helds

With a simple twist of a wrist, you can replace that range-limited "rubber ducky" on your hand-held scanner with this full-sized whip—then STAND BACK! Our universal whip is guaranteed to increase range.

Standard BNC base allows custom length extension from 7 to 46 inches! Great for amateur hand-helds and scanners like the Bearcat 100, Regency HX-1000 and Radio Shack PRO-30.

(Screw-in BNC adaptor for earlier BC-100 available as model BC-BN for $7.50 plus shipping from Centurion International, Box 82846, Lincoln, NE 68501.)

Order ANT-8 ONLY $12.95
PLUS $1.50 Shipping



Order These Items Today!

Call Toll-Free:

1-800-438-8155

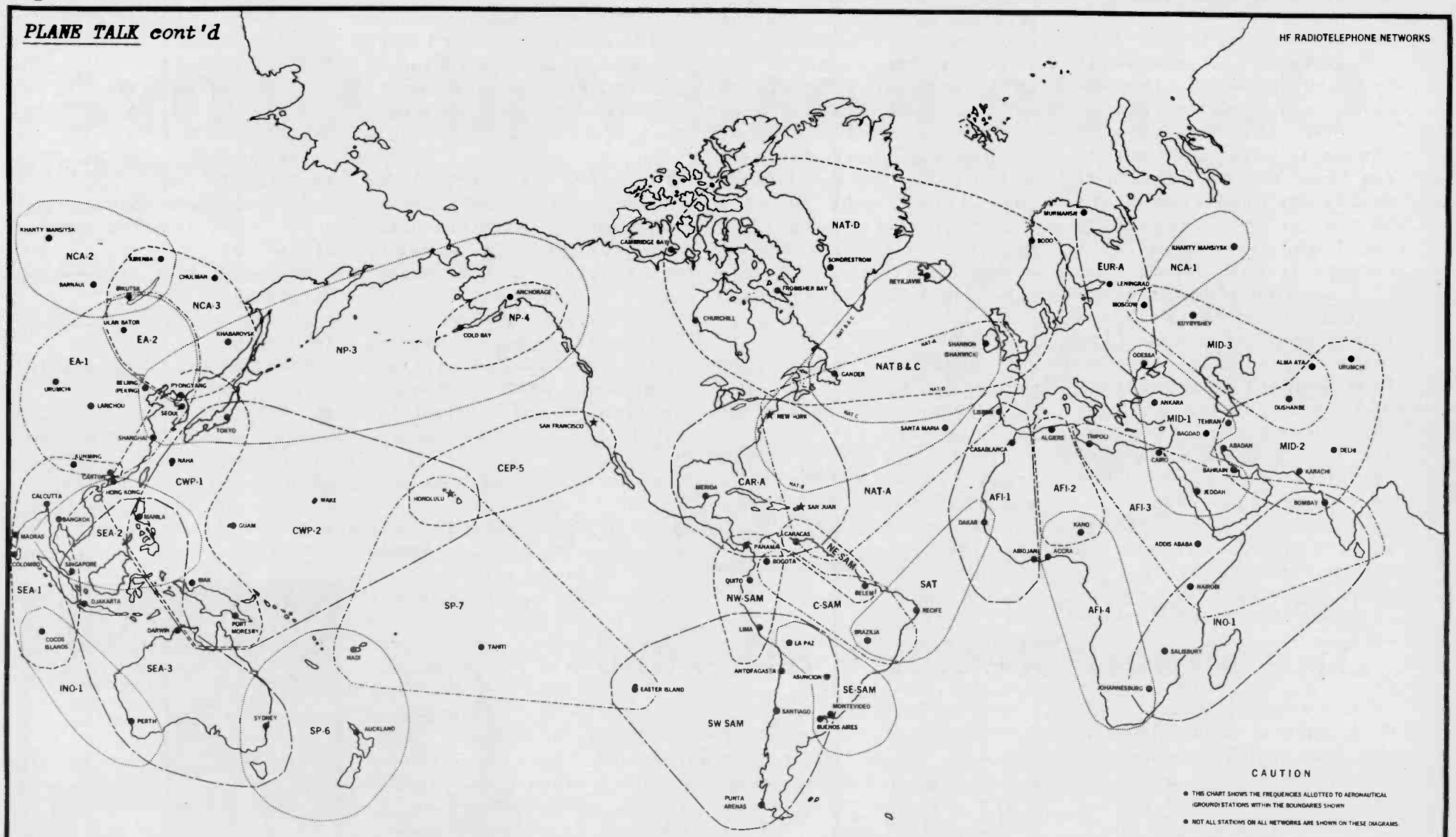
(Master Card or Visa)

Write for our free catalog

Grove Enterprises

P.O. Box 98, Brasstown, N.C. 28902
704-837-9200

PLANE TALK cont'd

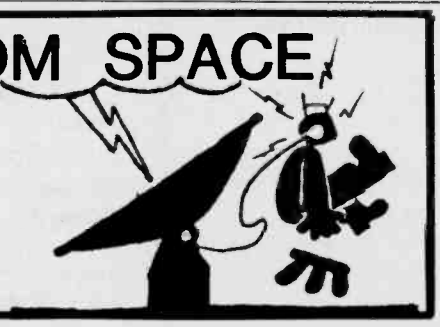


SEA-1 & 3	SEA-2 & EA-2	EA-1	NCA-1	NCA-2	NCA-3	CWP-1 & 2	CEP-5	SP-6 &7	NP-3 & 4	SAT-2	CAR-A	NW SW SAM	NE SE-C SAM	EUR-A	AFI-1 & SAT-1	AFI-2	AFI-3 & MID-2	AFI-4	NAT-A	NAT-B	NAT-C	NAT-D	MID-1	MID-3	INO-1
3470	3485	3016	3019	2851	3004	2998	2869	3467	2932	2854	2887	2944	3479	3479	3452	3419	3467	2878	3016	2899	2962	2971	2992	2944	3476
6556	5649	6571	5646	4678	5664	4666	3413	5643	5628	5565	5550	4669	5526	5661	6535	5652	5658	5493	5598	5616	5649	4675	5667	4669	5634
10066	5655	8897	13315	6592	10039	6532	5547	8867	10048	11291	6577	6649	8855	6598	8861	8894	10018	8903	8825	8864	8879	8891	8918	6631	8879
11396	8942	10042	17958	10096	13303	6562	5574	13273	13294	13315	8918	10024	10096	10084	13357	13273	11300	13294	13306	13291	13306	11279	13312	8951	11306
13318	11396	13297		17958	17958	8903	8843	17904	17904	17955	11387	11360	13297	13288	17955	17961	13288	17961	17946	17946	17946	13291		11375	17961
17907	13309					11384	11282				13297	17907	17907	17961			17961					17946		17961	
	17907					13300	13261				17907														
						17904	13354																		
							17904																		

ICAO HIGH FREQUENCY EN-ROUTE RADIOTELEPHONY NETWORKS
SERVING THE MAJOR WORLD AIR ROUTE AREAS (MWARAs)
EFFECTIVE 0001Z
FEBRUARY 1, 1983
ARINC AERONAUTICAL RADIO, INC. 2551 RIVA ROAD ANNAPOLIS, MARYLAND 21401
ALL FREQUENCIES ARE EXPRESSED IN KILOHERTZ
HF-501-1

SIGNALS FROM SPACE

by
Larry Van Horn
160 Lester Drive
Orange Park, FL 32073



(NOTE: Last month, I presented material that was in a paper written by Jeffrey Richelson on U.S. Space Intelligence. This month I will conclude this unique look at the U.S. military space program.)

● Jeffrey Richelson also presented in his paper information on the Navy's activity in ocean surveillance. According to Richelson, the Navy had no dedicated overhead ocean surveillance system until 1976; earlier inputs came from "national" imaging satellites.

Initial studies in 1968 for a Navy system led in 1970 to a five-volume Ocean Surveillance Requirements Study by the Naval Research Laboratory in response to an extensive Soviet naval buildup. The "Program 749" study focused on high-resolution, phased-array radar satellites for all-weather ocean coverage and detection of low-trajectory, sea-launched missiles. Infrared scanners were suggested for such satellites.

The resultant Classic Wizard ocean surveillance system lacks radar capability; instead, the Classic Wizard's space segment--White Cloud--operates with passive IR scanners and millimeter wave radiometers as well as antennas for monitoring Soviet submarine and ship transmissions.

White Cloud is comprised of three spacecraft that are deployed from a mother craft. These vehicles are placed into three parallel orbits with specific latitude, time and distance separation indicating that interferometry techniques are being used to pinpoint the location of Soviet vessels.

The smaller NOSS satellites measure 3 x 8 x 1 feet. The eight foot side contains solar cells used to power the small satellite; the other sides support the satellite's array of antennas. According to Aviation Week, each satellite transmits its collected intelligence at slightly different frequencies: 1430.2, 1432.2 and 1434.2 MHz using 1 MHz bandwidth. Narrow-band telemetry is transmitted on 1427.23, 1427.43 and 1427.63 MHz.

These satellites are launched from Vandenberg AFB into near circular 1120 km orbits inclined 63 degrees by the Atlas F rocket. Richelson says that five operational clusters have been orbited since 1976.

Classic Wizard ground stations include Guam, Diego Garcia and Adak, Alaska, as well as Edzell, Scotland, and Winter Harbor, Maine.

Richelson says additional ocean surveillance is provided by two U-2 aircraft modified for long loiters and equipped with a Westinghouse high-resolution radar, IR scanners and ELINT and COMINT ocean surveillance receivers. The U.S. also operates HF direction finding (HF/DF) sensors from shore stations as well as shipborne sensors.

Subsurface acoustic data from a global network of stations and sensors is transmitted by FLTSATCOM-LEASAT and DSCS satellites to the Acoustic Research Center, NAS Moffett Field, California. This acoustic information is integrated with other data and fed into the complex distribution channels of the Navy's ocean surveillance network.

Richelson says that the U.S. also operates ferret SIGINTs in lower orbits to map Soviet, Chinese and other radars. These ferrets include a "piggyback" class launched with larger satellites that are then ejected into individual orbits. The most recent "octagon shaped" piggybacks were launched off KH-9s, said Richelson.

Space-based surveil-

SIGNALS FROM SPACE cont'd

lance of other spacecraft may already be partially provided by the KH-11 satellites. Richelson, referring to 1981 press accounts of the KH-11 being used during the first shuttle mission to verify the condition of the tiles on the shuttle's fuselage, cites this as an example in this report.

Also in this category of surveillance is an Air Force program as well as DARPA's SIRE (Space Infrared Experiments) program. The SIRE program is already through ground testing. The Air Force's Space-based Surveillance System (SBSS) has called for four satellites in low equatorial orbits, with long-wavelength IR sensors on each satellite scanning altitudes from 60 miles through geosynchronous orbit.

Space-based nuclear detection, formerly provided by the recently deactivated VELA class of satellites, in now provided by the Nuclear Detonation (NUDET) Detection System (NDS) aboard Global Positioning Satellites (GPS) and Defense Support Program (DSP) missile launch detection satellites, being a secondary mission on the latter. Richelson says a classified NUDET system is aboard another class of military satellites.

Richelson's paper also mentions U.S. and Soviet practices of modifying or ceasing sensitive terrestrial activities when unfriendly recon satellites are overhead. The U.S. system, Satellite Reconnaissance Advance Notice (SATRAN), is matched by comparable activities orchestrated by the Soviet General Staff's Chief Directorate of Strategic Deception.

Soviet defector Viktor Suvorov (pen name) in his book, Inside the Soviet Army, explained how the deception was done in practice.

A huge American computer which has been installed at the Central Command Post of the Chief Directorate of Strategic Deception maintains a constant record of all intelligence-gathering satellites and orbiting space stations and their trajectories. Extremely precise short and long term forecasts are prepared of the times at which the satellites will pass over various areas of the Soviet Union and over all the other territories and sea areas in which the Armed Services of the USSR are active.

Each Chief Directorate unit serving with a military district, group of armies or a fleet, makes use of data provided by this same American computer to carry out work for its own force and area. Each army, division and regiment receives constantly updated schedules showing the precise times at which enemy reconnaissance satellites will overfly their area, with details of the type of satellite concerned (photo-recon, signals intelligence, all-purpose, etc.) and the track it will follow.

Neither the soldiers nor most Soviet officers know the precise reason for daily orders like, "From 12:20 to 12:55 all radio transmissions are to cease and all radars are to be switched off," but they must obey them.

Each division has several radio transmitters and radars which work only during this period solely to provide bogus signals for the enemy's satellites.

● Speaking of the Soviets, they have just launched a new Soyuz spacecraft toward Salyut 7. Launched June 6, Soyuz T-13 carried two veteran cosmonauts: Col. Vladimir Dzhanibekov, 43, the mission commander, and flight engineer Viktor Savinykh, 45. The T-13 mission blasted off from Tyuratam on an A-2 booster at 10:40 a.m. Moscow Time. An open downlink carrier with the Cosmonauts' voices has been heard on 121.75 MHz (FM).

TASS reported that T-13 will carry out a series of experiments to master the operation of improved onboard systems of the Soyuz T-13 spacecraft and methods of its control during independent flight.

TASS did not elaborate on what kinds of controls were installed or what was meant by "independent flight," but it may have been referring to the docking with Salyut 7.

Listeners are invited to refer to the Soviet Space Program chapter of Communications Satellites for complete details of the Soviet space (manned) program and Soyuz/Salyut spacecraft frequencies. Communications Satellites is available from Grove Enterprises.

● Navy/TRW Fleetsatcom No. 5 COMSAT, now in geostationary orbit, continues to transmit telemetry but is essentially useless due to an accident during launch from the Cape on August 6, 1981.

Analysis indicates the General Dynamics Atlas-Centaur nose cone shroud covering the satellite collapsed inward during launch, destroying the primary antenna. Plans are to launch a sixth Fleetsatcom satellite from the Cape this fall to replace Fleetsatcom No.5.

● NOAA has regained control of its NOAA 8 orbiting weather satellite after the satellite's erratic master clock crystal oscillator stopped April 20. Once the unit failed completely controllers were able to reprogram the satellite's computer with a backup oscillator and reorient the satellite. Weather satellite buffs might want to watch for the rebirth of NOAA 8.

● It appears more and more likely that the Arsene satellite of the French group, RACE, will be absent when the Ariane 4 #1 takes Phase 3C into orbit next summer. Word from France has it that kick motor problems have delayed progress to the point that schedule slippage is inevitable. RACE will be seeking a launch on Ariane 4 #2 or later according to sources in Europe. Launch could come in the autumn of 1986. Also scrapped due to schedule constraints will be the 10 GHz beacon experiment; present plans call for a Mode B and Mode S transponder. If any of our AMSAT readers has the address for the RACE group, I would appreciate a note care of this column.

● AMSAT headquarters is asking for donations of copies of old ORBIT magazines for binding into special edition volumes. If you have any back issues in good condition, please mail them to Martha at Headquarters ASAP (AMSAT, 850 Sligo Ave., Silver Spring, MD 20910. Information courtesy of ASR No. 101).

● I received a nice piece of correspondence from John Biro recently. John is an active satellite listener and a ham to boot. He would like to know if anyone has any information on decoding the solar data transmitted by NOAA 9 weather satellite John would like information on data format and decoding means. Anyone with information on this satellite can contact John through the column address, SIGNAL FROM SPACE, 160 Lester Drive, Orange Park, FL 32073. Please include an SASE if you desire a reply.

● John also provided the following information on upcoming launches.

03 QTR. 85
NOAA-G Atlas-E
10 Aug. 85
MSL-2, AUSSAT-1, ASC-1, Syncom IV-4 STS-51I/103
Sept. 85
Spacenet-3 Ariane-V15
17 Sept. 85
Intelsat (a/c 65) Atlas Centaur
01 Nov. 85
SPOT-1, Viking Ariane-V16
04 QTR 85
GOES-G Delta 3914
16 Oct. 85
Spacelab D-1 STS-61A/102

● GIOTTO, the European Space Agency Halley's Comet interceptor spacecraft, has been completely and officially accepted by ESA. British Aerospace is prime

***SIGNALS FROM SPACE** cont'd*

contractor for GIOTTO.

GIOTTO began the first stage of its 94 million mile journey to Halley's Comet at the end of April when it left Toulouse, France, on an air France 747 for French Guiana. GIOTTO is programmed for launch from the Kourou range as this edition of Signals from Space goes to press.

On March 14, 1986, GIOTTO is targeted to pass as close as possible to the nucleus of Halley's Comet. During that critical encounter which, at best, will last four hours, data from the ten experiments on board will be relayed in real time back to earth.

If anyone has any frequency information on GIOTTO, please drop a note to Signals from Space and we will pass it on to the rest of MT's readers.

The French aren't the only ones going to Halley's Comet; the Russians are sending their VEGA (Venus-Hally/Venera-Gallei) probes to Halley via Venus. Launched December 15 (Vega 1) and December 21 (Vega 2), 1985, the trip to the comet will consume 440 days.

Since this spacecraft is built on the Venera spacecraft frame, Soviet telemetry frequencies around 928 MHz will probably be used.

Each spacecraft represents the culmination of an international effort by nine contributors including the United States.

● Next month Signals from Space will feature material gathered on the Soviet NAVSATs transmitting around 150/400 MHz. Also some interesting UOSAT telemetry data courtesy of John Biro will be presented. Your comments, questions and contributions to Signals from Space are welcomed, including military aircraft activity and frequencies. ●

BEHIND THE DIALS

The Yaesu FRG-9600

SCANNING VHF/UHF RECEIVER

A Technical Review
by Dave Watters

SOME GOOD NEWS...

Finally! A scanning receiver built to design and quality specifications equal to those of the better amateur and commercial equipment.

Providing continuous coverage from 60 to 905 MHz, the "Frog-96" provides single sideband, AM and FM demodulation.

Tuning is achieved either by pushbutton keypad or by rotary dial. The operating frequency is indicated in glowing, quarter-inch-high, segmented, blue-green fluorescent numerals readable fifteen feet away. Its seven-significant-figure readout permits channel selection down to the nearest 100 Hz increment.

Band searching, either by manual knob, twisting, button stepping, or in automatic mode, may be achieved in seven increments: 100 kHz steps for the wide band FM (180 kHz BW at the 3 dB points); 25, 12.5, 10 and 5 kHz steps for the narrow band FM (15 kHz BW) and wide band AM (6 kHz BW); and 1 kHz and 100 Hz steps for the single sideband (upper and lower) and narrow band AM (2.4 kHz @ 3 dB).

As the receiver scans from channel to channel, either in memory stepping or incremental "search" stepping modes, the full numerical frequency and channel numbers are displayed. In some scanners only a channel number or a flashing light signifies that the unit is stepping.

A convenient tuning feature permits the frequency memory registers to be programmed allowing each respective channel to be tagged with an associated modulation type and skirt selectivity. This "mix-em and match-em" feature is also enjoyed in the Regency MX-500 and MX-7000.

The FRG-9600 has a sensitivity ranging from 0.5 uV to 1.5 uV--as good as the best scanners. We were not able to discover any signficant "birdies" or microprocessor buzz.

Such versatility in a scanning receiver is quite exciting--but read on.

The Frog-96 has a luminous segmented signal strength meter, one hundred (count'em) memory channels, optional external interconnect devices for home computer control, and an optional internal video board allowing the unit to become a front end for a broadcast TV receiver, a cable TV system or part of the down-conversion scheme in a TVRO satellite system.

The receiver is packaged handsomely in a gun-metal-grey aluminum wraparound cabinet with a matching injection molded panel. Approximate dimensions are 3x7x9 inches. Squelch, volume, tone, and tune knobs are firmly affixed. Pushbutton controls are of the positive "click" detent variety with additional operator feedback provided in the form of a quiet "beep" from the internal 2-1/2 inch speaker located at the top of the enclosure. Incidentally, if one makes an improper programming move, a "boo-boo" alarm will beep twice.

On removal of the top cover panel, a well-organized interior reveals a main PC board with a state-of-the-art layout of discrete components and connectors. This main board also acts as the mother board for eight smaller boards populated with discrete and integrated circuitry. Additionally, the shielded RF tuner, the front control panel, CPU board, and optional video board are plugged into the mother board. The interior looks as if it will afford ease of tweaking, peaking and circuit adjustment--things are not crowded.

There are a few empty PC board tracks and an obvious empty spot for a second tuner unit which apparently failed to make it to the final circuit design.

The rear apron of the Frog-96 supplies a virtual panoply of connectors and controls other than the obvious PL-259 antenna, external speaker and dc power jacks. An external 115 Vac power unit provides the receiver with 13.8 Vdc. An audio output jack unaffected by the volume control may be used for a tape recorder input; a 6-pin DIN jack may access the CAT (Computer-Aided Transceiver) system; and a multiplex output jack may be used should the owner with, his own home brew equipment, wish to demodulate sub-carriers from a base band such as for stereo FM reception. A MUTE jack, when externally shorted, will "dunk" the front end of the receiver for high-power RF protection should the unit be used in conjunction with a transmitter.

A TV-AGC trimpot is available on the rear apron for use with the optional video plug-in module. There is also an AF-MUTE trimpot for use with a special front panel button which causes the scanner not to stop on carrier-only signals.

--AND SOME BAD NEWS

Perhaps the most glaring fault with the receiver is its interminably slow scanning speed--about three channels per second. The better scanners are usually on the order of 15 channels per second.

One will hear an annoying pop in the speaker each time the scanner steps to a new channel. Then when an active channel is landed upon the speaker will beep, an unnecessary and annoying feature.

To add to your frustration, the Frog-96, when in either the memory scan mode or the search stepping mode, will not stay on an active transmission more than eight seconds unless you reach up and press a button. Then, to resume the scan or search modes, one must again reach up and restart the machine for continuance. Worse yet, one must wait for the whole eight seconds even if only a split second transmission broke squelch.

The receiver winks each number of the frequency readout in succession, one each second, as the eight second count down occurs. This convenient visual indicated will let you know how close you are to losing the transmission if you don't do something.

Although there are one hundred memory channels available for scanning, the user may set the unit to scanning only one group (block) of ten channels at a time. You can, for instance, scan channels zero through nine, or channels 30 through 39, but not both blocks consecutively and automatically, and certainly not all one hundred. There is no "lockout" function which will temporarily cause the scan to hop over a programmed frequency.

In the search-between-limits stepping mode, the stepping speed is about 5 per second and, thankfully, the speaker does not "pop" with each step.

There are no search memory banks to allow the receiver to store acquisition frequencies into these ancillary registers for later recall. The old Bearcat 250 had both the search lockout feature and 64 special search memory slots for retaining acquisition frequencies.

The Frog-96 receiver has a 24-hour digital clock, but it would be better if one could select either 12 hour or 24 hour formats, and

☞

BEHIND THE DIALS cont'd

it would be good if the system would indicate seconds as well--all the necessary digital indicators are in place to do this.

The real dumb part of the clock, however, is the on-off timer feature which simply provides one receiver "on" function and one receiver "off" function every 24 hours, just like a clock radio--but not quite.

For one thing, the clock digital readout disappears when the receiver is in the "off" cycle. Secondly, one cannot at 9 PM set an on-off cycle such that the receiver will cut "on" at 8 AM and "off" at 10:30 AM the next morning and then at the setting time, 9 PM, the previous night, cause the receiver to go off temporarily, until the cycle starts at 8 AM the next morning. Almost any cheap clock radio will do this.

Although there is a long life back-up battery built into the receiver which prevents the channel frequency memories from being wiped out during a temporary mains power interruption, the clock loses its setting whenever the power is disconnected.

Another missing feature is a recorder automatic on-off or "AUX" function to control a small recorder motor as the radio breaks squelch, a common feature of scanners of ten years vintage.

YAESU offers three optional interface units:

FIF-65A for the Apple II
FIF-80A for the NEC-PC-800(A)
FIF-232C for most other brands having RS-232C serial ports

The Apple and NEC modules are installed inside the respective computers in an empty auxiliary board slot, cable-connected to the scanner through the rear apron 6-pin DIN jack. The FIF-232C interface device is in a box by itself, and must be powered by a separate connection to the AC mains.

All three units allow frequency and mode commands to be transferred to the scanner and afford reverse transference of a single TTL logical state back to the computer for an indication of squelch break and channel activity. Only the Apple and NEC will pass back "S" meter AGC signals to an A-to-D converter for use in the computer.

If one is inclined to use a computer that will not support "port poking" via hexadecimal code or one which will not employ "string" functions, however, he may be out of luck.

Standard 8-bit serial bytes in ASCII are used for data transference. The Baud speed is 4800. If one wishes to remote his scanner via modems which operate only at 300 or 1200 Baud, don't even try.

There is a curious four-pin Molex jack on the rear apron of the scanner marked "BAND". The written manual accompanying the receiver only says that this connector provides "binary band data," and that it is to be used for "possible future options"; nothing more.

Additionally, there is an extra RCA jack on the rear apron which provides a regulated 9 VDc at 200 mA to the outside world for "powering external devices." Again, the manual never identifies what device needs to be so powered.

Regrettably, the Yaesu-9600 only goes down to 60 MHz. Since HF receivers go up to 30 MHz, it would have been desirable if our newly purchased VHF/UHF would go down to about 25 or 30 Megs in orders that we might have complete spectrum coverage. Similarly, the top of the "cellular band" is 960 MHz, not 905 MHz, which is the top limit of the 9600.

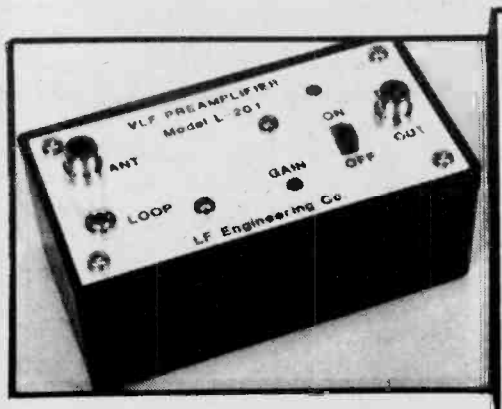
We found the manual to be awkward in speech, convoluted in logic, poorly organized, and insufficient in technical data and instructional information.

THE BOTTOM LINE

All-in-all, we judge this receiver to be quite superior as a communications monitor, well worth the $600, more or less, you will shell out to be a proud owner. ●

(NOTE: The PRG-9600 is now available from Grove Enterprises for $529, free UPS shipping.)

LF ENGINEERING
LOW FREQUENCY PREAMPLIFIER



While several wideband and VHF/UHF preamps have been available for some time on the market, no one had specifically addressed the low frequency range--until now.

LF Engineering Company (17 Jeffry Rd., Dept MT, East Haven, CT 06512) has announced their new L-201 2-500 kHz LF preamplifier. Built around an LF 357 BI-FET integrated circuit with static protection, the L-201 is designed to operate in conjunction with either a random wire antenna (approximately 50 feet in length) or a tuned loop antenna.

An internal nine volt battery (not supplied) powers the unit which has at

Cont'd on p.36

Popular Columns

There are probably as many combinations of "favorite articles" as there are MT readers (over 15,000 as of this writing). Recently, Phillip Dampier, Director General of the DX Radio Network, sent an interesting list of favorite MT articles and subjects voted by his readers.

DXRN caters to sightless hobbyists, so it is natural that there will be a slight bias with an obvious disinterest in video.

FAVORITE COLUMNS (in order of most to least)
Los Numeros
SWL World Watch
Pirate Radio
Viewpoint
Technical Topics
English Programming
(most anything profiling short wave broadcasting)

MOST UNPOPULAR
VHF/UHF loggings, radio astronomy, EHF reception

MOST USEFUL
SWL World Watch
Product Reviews

LEAST USEFUL
Satellite TV (naturally)
military profiles like long SAC articles

MOST NEEDED
Beginners columns in utility, scanner and short wave with solid information

Among DXRN members, the ICOM R71A is the most popular short-wave receivers by far because it offers the speech synthesizer. Also popular are Sony digital direct-entry radios and the Uniden CR-2021 (Radio Shack DX-400).

Scanners most commonly reported were Bearcats, then Regencys.

Visually impaired hobbyists may wish to contact Phillip Dampier at DXRN for information on his services which include MT on cassette. Write: DXRN, 3176 Elmwood Avenue, Rochester, NY 14618-2535.

CLUB CORNER

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

We're in the heart of convention time, with some gatherings already history, and I hope you're able to take in at least one this year. I've solidified many friendships through club GTG's, and it's always fun to be able to meet in person those individuals who, heretofore, have been only names in club bulletins. If you haven't been able to spare the time or money to attend a convention this year, try to get it together for next year!

A correction is in order for last month's address for ANARC's Computer Information Committee: Bill Krause, 4347 - 29th St. SE, Rochester, MN 55904. Thanks to ADXR for the update. If you send him a #10 envelope with 39 cents postage, he'll send you a list of almost a hundred hobby-related programs for Commodore, Timex-Sinclair, Apple, and other computers.

You can add another acronymn to your list of radio-related organizations: **DXRN**, or DX Radio Network. Director General Phillip M. Dampier writes me to confirm that DXRN is growing at a rapid pace in providing transcriptions for the visually handicapped of the following publications: MONITORING TIMES, REVIEW OF INTERNATIONAL BROADCASTING, LONDON CALLING, EBU REVIEW, SPEEDX, ASWLC, FRENDX, the LOWDOWN, and THE SHORTWAVE GUIDE, with other publications on the way. Their services are non-profit in nature but they do ask for a minimum yearly donation of $10.

Arrangements are almost complete for an audio magazine for both the handicapped and non-handicapped to be produced on audio cassettes, and Phil says that it will contain DX news, quizzes, international music, tuning signals, jingles, and much more. The tentative subscription price will probably average between $10-35, with the cost to the handicapped in the low range.

You can write to Phil at 3176 Elmwood Ave., Rochester, NY 14618 and ask to be placed on a mailing list so that when the magazine becomes available you'll be notified. He'd also appreciate comments on what should be included. I sounds like a great idea--I've always wondered why an aurally-oriented hobby hadn't produced such a magazine before.

A copy of "**THE SPEEDX GUIDE TO LATIN AMERICAN DXING**" found its way to my shack a few weeks ago, and like other publications from this club, the GUIDE is excellent. Authored by John Cereghin and Carl Hoffaker, it is divided roughly into four sections: a very useful guide to Spanish (one of the best I've ever seen in any publication, and I saw many while teaching high-school Spanish for eight years), DX tips, commentaries on the radio outlets of each country, and a list of stations from 2300 to 6200 kHz located south of the border, by frequency, and with helpful remarks on each, including the program schedule.

The cost of all this? Just $2.50, or 12 IRC's outside of NA. Send your request to SPEEDX, 7738 East Hampton St., Tucson, AZ 85715. SPEEDX also publishes the SUNSET-SUNRISE BOOKLET, FOREIGN LANGUAGE REPORTING GUIDE, THE SPEEDX GUIDE TO AFRICAN LISTENING, THE FIRST SHACK, PITFALLS AND PROBLEMS, SPEEDX REFERENCE GUIDE TO THE UTILITIES, and other items, not to mention their monthly bulletin. They'll send you a leaflet describing them all for an SASE to the above address.

Doug Hopkinson's "**SONY ICF-6800 SWL-DX Friendship Society**" is off and running and he's decided to open it up to all SWL's using Sony equipment. For more information, send him an SASE at 1012-1360 York Mills Road, Don Mills, Ontario, Canada M3A 2A2. His monthly newsletter is called "The Short-Wave-O-Gram," or "SWOG" for short, and Doug promises that it will not include loggings nor technical commentaries.

If you happen to be in West Berlin around Labor Day, you might want to drop in on the **International Radio and TV Exhibition** at the ICC Conference and Exhibition Centre. It'll be on view August 30-September 8; this is from the Journal of the European DX Council.

Their March bulletin profiled the two major DX clubs in Finland, noting that during the past 30 years some 7,000 people have been members of the Finnish DX Association, Suomen DX-Kuutelijat ry, and the smaller Finlands DX-Club and the Friendly DX Club ry.

If the U.S. had the same proportion of DX'ers to its population as does Finland, we'd number some 340,000. Just think of the clout we'd have in Congress!

I note in "Latinoamérica DX," the bulletin of **Argentina's Asociasión DX del LITEral**, that in that country of double-digit MONTHLY inflation, only 48 members of ADXL's 332 can afford to subscribe to the monthly bulletin. And that's a shame, as the lively bulletin does an excellent job of covering South American DX as well as selected areas of the rest of the world.

ADXL also publishes a four-page bi-monthly entitled "Latin American DX Report" for English-speaking DX'ers. I'm not sure of the yearly subscription cost, but the WRTH notes that a sample copy of the monthly Spanish-language bulletin can be yours for 7 IRC's, and a copy of LADXR for 5 IRC's.

Send your requests to Emilio Pedro Povrzenic, Casilla de Correo 26, Villa Digo 2124, Pcia. de Santa Fe, Argentina.

Because many radio stations change formats and call letters monthly in an effort to stay afloat, the commercial press is providing more coverage of the radio business. ADXR's June "DX Reporter" reprinted a San Francisco Examiner and Chronicle article presenting an exhaustive survey of AM/FM radio station formats, and NRC and IRCA frequently reprint articles covering the foibles of commercial radio.

In the same vein, **Radiophiles** is a club devoted to radio programming, and if you send them $20, you'll receive all you ever wanted to know about what's going on today in radio. Their address is P.O. Box 540381, Houston, TX 77254.

THINGS I LIKE:

The front cover of WTFDA's VHF-UHF DIGEST. Although some of the covers are rather mundane converage maps or pictures of antennas, the most creative are belly-laugh cartoons from the talented pens of Tim McVey, Dave Nieman, Bill Fahber, and Harry Hayes. They're real classics.

As I head into my second year of editing this column, I'd like to thank you for your support and kind words. I'd also like to appeal to readers of MT to send me tips about new clubs starting up or established clubs that I may have overlooked. If it seems that I have plugged some clubs over others, it's simply because I either belong to them or receive free copies of their publications and am more aware of their activities.

Frankly, some clubs offer their members more things than others and deserve to find a larger audience. But in the interest of fairness I'm attempting to present information about all clubs around the world, and your tips will help me and MT readers to learn more about DX organizations. My next deadline (for the October column) is August 10. Until next time--73.

THE ALL OHIO SCANNER CLUB announces its first annual general membership meeting August 10, 1300 hrs EST at the Sharon Woods Metro Park shelter house, Westerville, OH. The meeting is open to all members, families, friends, RCMA and SCAN members. Write to AOSC, 1043 Princewood Avenue, Dayton, OH 45429-5863 for more information.

Communications Satellites

By Larry Van Horn, edited by Bob Grove (8-1/2" x 11", 216 pages, paperbound; $12.95 plus $1.50 shipping from Grove Enterprises, P.O. Box 98, Brasstown, NC 28902).

This newest release from Grove has been creating an enormous impact on the listening hobby. A recent report on Cable Network News called it the best on the market!

Ambitiously assembled by noted satellite expert and Monitoring Times "Signals From Space" editor Larry Van Horn, COMMUNICATIONS SATELLITES is an incredible assemblage of useful facts concerning frequencies, uses, orbits, specifications, and launch details of virtually every class of satellite placed into space.

Conveniently arranged by chapter according to class (weather, domestic communications, international, direct broadcast, Space Shuttle, U.S. military, surveillance, and Soviet), the directory also features satellite cross references by frequency and orbital position.

Lavishly illustrated, COMMUNICATIONS SATELLITES is the one publication which should be on the operating desk of every serious VHF/UHF monitor.

LIBRARY SHELF cont'd

AIR AND METEO CODE MANUAL (8th edition) and **RADIOTELETYPE CODE MANUAL** (8th edition) by Joerg Klingenfuss (50 and 25 Deutsche Marks respectively including airmail; available from Klingenfuss Publications, Panoramastrasse 81, Dept. MT, D-7400 Tuebingen, Federal Republic of Germany).

Author Klingenfuss enjoys a worldwide reputation for his thoroughness and accuracy of reporting utilities transmissions throughout the short-wave spectrum. His two brand new (April 1985) books are a welcome addition to the RTTY buff's library.

The AIR AND METEO CODE MANUAL is the definitive reference for the listener who monitors weather broadcasts via RTTY. Detailed descriptions and explanations of codes include: AIREP, ARMET, METAR, PILOT, SHOP, SYNOP, TAF, TEMP, NOTAM, and SNOWTAM.

Locations of some 10,000 worldwide observation stations and 8000 ICAO location identifiers are provided as well as solar and geophysical data codes.

The RADIOTELETYPE CODE MANUAL concentrates more on language text of all kinds--RTTY, FEC, SITOR/AMTOR, VFT, and NAVTEX. Special language identifications and interpretations include Arabic, Cyrillic (Russian), Hebrew, third-shift Amharic, Greek, Japanese, Korean, and Thai as well as foreign CW, CCIR/CCITT definitions, and an introduction to cryptology!

Both books are ambitious undertakings and well done.

REPEATER DIRECTORY and **NET DIRECTORY**, published by the American Radio Relay League (225 Main Street, Dept. MT, Newington, CT 06111).

Handy handbooks for hams; briefly, that describes these annual directories of amateur radio networks in North America.

The REPEATER DIRECTORY ($3 plus $1 postage) is a must for hams and scanner buffs alike who monitor VHF and UHF amateur radio bands. measuring 5" x 8" and encompassing 176 pages, the directory lists repeaters known at the time of publication in the 50 United States and Canada.

Included are call signs, locations, input and output frequencies, sponsoring organizations, and date of listing. Additional data

Cont'd on p.35

WHO'S ON FIRST?

by Patrick O'Connor
Plain Road
Hindsdale, NH 03451

PART III

SHORT-WAVE BROADCAST

Mention the term "short-wave radio" to the average person and he probably thinks of the British Broadcasting Corporation (BBC) or the Voice of America (VOA). But beyond these, the world of short-wave broadcasting is much broader. It ranges from stations noted for blatant propaganda (Radio Moscow) to those noted for an evenhanded treatment of events (Swiss Radio International); from religious stations (HCJB, in Ecuador) to commercial stations (WRNO in New Orleans).

Short-wave broadcasters occupy 13 separate bands of frequencies in the high-frequency spectrum (1.8-30 MHz). These are:

120 meters:	2300- 2500 kHz
90 meters:	3200- 3400 kHz
75 meters:	3900- 4000 kHz
60 meters:	4750- 5060 kHz
49 meters:	5950- 6200 kHz
41 meters:	7100- 7300 kHz
31 meters:	9500- 9900 kHz
25 meters:	11650-12050 kHz
22 meters:	13600-13800 kHz
19 meters:	15100-15600 kHz
16 meters:	17550-17900 kHz
13 meters:	21450-21850 kHz
11 meters:	25670-26100 kHz

Please note that the bands are measured by both frequency in kilohertz, and wavelength in meters. The wavelength can be determined from a known frequency by the formula (300,00/kHz). Conversely, a station announcing only the wavelength ("This is Radio Nibinibi on 49.55 meters") can have its frequency determined by the formula (300,000/wavelength), in this case being 300,000/49.55 giving a frequency of 6054.4 kHz.

The first four bands (120/90/75/60 meters) are called the "tropical bands"; most of the broadcasting here is done in tropical countries close to the equator. The beginner isn't likely to hear much on these frequencies; stations are low-powered, aimed to cover only limited areas in the native language of the country.

75 meters (3900-4000 kHz) is shared by the 80-meter ham band (3500-4000 kHz) so little broadcasting is heard here. 60 meters is noted for having a good selection of African stations but little English will be heard here.

49 meters, the old "continental band," is still in wide use by international broadcasters. Best during the evening hours, a little careful listening can bring in English transmissions from much of Europe. During the day you may be able to hear a few low-powered Canadian relay stations.

41 meters is another band shared with the amateurs (7000-7300 kHz); unlike 75 meters, the majority of signals heard here are from overseas broadcast stations. It could be nicknamed the "Red band" since most of the powerful stations are located behind the Iron Curtain.

31 and 25 meters are both good DX bands with a fine mixture of large international broadcasters mixed with smaller DX targets.

22 meters is not yet in use; it was allocated at the last World Administrative Radio Conference (1979) and should be in use by 1989.

19 and 16 meters are still able to provide some DX, but are better during periods of higher sunspot counts.

13 and 11 meters are seeing little activity at the present as the sunspot count is too low. When these bands are open they do provide good, high quality signals from all over the world.

WHY SHORT WAVE?

What are the advantages of short-wave broadcasts over domestic radio and TV? In a word, VARIETY! Music, news talk, language lessons, religious sermons, humor, facts and figures...it's all there. The variety is amazing.

Disadvantages? Well, there are a few. The best DX catches are rarely in English; some stations change frequency more often than Dick Clark appears on television; fading (QSB) can be a problem with distant stations. Overall, however, the advantages outweigh the disadvantages.

EQUIPMENT

If all you want to listen to is the BBC or VOA, then that little $19.95 portable down at Honest Joe's Discount will do. If, on the other hand, you are interested in real DX'ing, a communications receiver is needed. The key words are sensitivity and selectivity

WHO'S ON FIRST? cont'd

--will the radio be able to pull in the weak signals without interference?

Antennas are another story. For hearing the "big boys," a built-in whip or short hunk of wire will do, and a random longwire is good for all-band coverage. If you intend to listen to only one or two bands, a dipole antenna for those bands would be indicated. The antenna you choose should be designed to fill your specific needs.

Of course, you shouldn't forget to add a ground system. AND ALWAYS HAVE A LIGHTNING ARRESTOR ON YOUR ANTENNA LEAD-IN!!

WHEN TO LISTEN

Short-wave broadcasts are available 24 hours a day. Transmissions on 11-31 meters are heard during the daylight hours; 25-40 meters has activity in the early morning and afternoon through late evening hours; 41-120 meters is for night-time listening. To hear long-distance signals on the tropical bands (60-120 meters), a path of darkness must exist between the transmitter and receiver.

QSLs

With rare exceptions (such as Radio Botswana), most international broadcasters will verify reports. Many have become famous for their colorful and attractive QSL cards. Some stations like Radio Moscow will verify anything that looks like a report; others like Radio Tirana require good, detailed reports for a specific length of programming. Most smaller broadcasters will also verify, but it may require several follow-up reports.

Reports to international, government-owned stations are usually acceptable in English with no reply postage required. Reports to missionary (religious) broadcasters should contain reply postage, as should reports to smaller, regional stations. Reports to the latter should be in the native language of the country.

Reply postage should be in the form of mint stamps of the country being reported to. While International Reply Coupons (IRC's) may theoretically be good, many post offices in outlying areas will not redeem IRC's for various reasons. Therefore, mint stamps may increase your chances of getting that valuable QSL.

Also remember that when you send a report to remote areas, NEVER put commerative or colorful stamps on your envelope; there is a chance that a foreign post office employee may take a fancy to the stamps, steal the envelope and roundfile the report!

Addresses are very easy to come by. The QSL ADDRESS BOOK by Gerry L. Dexter has the addresses of almost all SWBC stations both large and small; the WORLD RADIO-TV HANDBOOK contains the addresses of ALL broadcasters in operation at the time of publication.

The WRTVH also lists the schedules and operating frequencies of all SWBC stations. NO SWBC DX'er should be without this valuable annual publication!

There are several clubs for SWBC DX'ers. The best known are: American Shortwave Listeners Club (ASWLC), 16182 Ballad Lane, Huntington Beach, CA 92649; Association of DX Reporters (ADXR), 7008 Plymouth Rd., Baltimore, MD 21208; North American Shortwave Association (NASWA), 45 Wildflower Rd., Levittown, PA 19057; and the Society to Preserve the Engrossing Enjoyment of DX'ing (SPEEDX), 7738 E. Hampton, Tucson, AZ 85715.

Prices for a sample bulletin and membership application are ASWLC $2.00; SPEEDX $1.50; ADXR & NASWA $1.00. Anyone interested in listening to SWBC should give serious consideration to one or more of these fine organizations. ●

NEXT MONTH: A little higher in frequency!

ZCZC...NNNN

Newcomers (and many seasoned operators as well) to radioteletype are understandably perplexed at the large numbers of abbreviations used to expedite message handling. But rarely explained are the letter groups ZCZC and NNNN often found on the weather networks.

The explanation is simple enough: ZCZC indicates the beginning of a transmission or message and NNNN signals the completion of the message.

Dyed-in-the-wool RTTY enthusiasts are well advised to consider some excellent reference publications available from Joerg Klingenfuss, monitor extraordinaire from Germany. Reviews of two new RTTY guides are found in this month's Library Shelf column.

BROADCASTING. . .

HANK BENNETT ON SHORTWAVE

Your editor has had many requests for another column or two of nostalgia questions similar to those that we have run before. We have a couple of columns in preparation along that line and we'll given them to you in the near future. Meanwhile, here's one to ponder, as submitted by my boss, Bob Grove:

What was the reason for choosing 78, 45, 33-1/3 and 16-2/3 rpm for phonograph turntables? I don't know if Bob is leading me down the garden path or not but I DO have an answer for this one if I can ever get it translated from cassette to shorthand to longhand! Meanwhile, give us your ideas as to why these speeds were chosen.

I had a lengthy report the other day from Robert Homuth out in Phoenix, Arizona. He uses a DX-400 receiver with a big, ugly, bulky (those are his words!) untuned loop antenna, composed of 24 turns of wire wound around a large wooden frame and connected to the antenna and ground posts of his receiver. This was used at least on the longwave bands but I'm not certain whether he also used it on the short-wave bands. Gather a glimpse of what he picked up in the 200-530 kHz navigation band (frequencies in kHz and these are all voice stations):

206	GLS	Galveston, TX
230	ILT	Albuquerque, NM
236	GNI	Grand Isle, LA
242	EL	El Paso, TX
251	RPY	Blythe, CA
305	RO	Roswell, NM
332	IGD	Los Angeles, CA
338	RYN	Ryan Airport, Tucson, AZ
344	FCH	Fresno, CA
350	RG	Oklahoma City, OK
362	EZB	Oakland, CA
365	FT	Fort Worth, TX
394	ENZ	Nogales, AZ
400		Unknown station with English weather reports --possibly northwest Canada or Alaska
366	GYM	
367	LEO	
374		EP EP EP, then a five second dash
377	HPL	
383	CNP	
387	SPP	
405		The number "1" repeated
406		CO and HEY
414	TAM	
517	PKV	
521	INE	

These come in quite well after dark. I know that GLS and GNI both run 2500 watts, but I don't know the power of the others.

Robert has also picked up a number of non-voice navigation stations in the same frequency range. Help with locations would be appreciated.

Write Bob at 5215 N. 11th Avenue, Pheonix 85013, or your editor at P.O. Box 3333, Cherry Hill, NJ 08034.

In the category of standard frequency and time stations, Robert has made these tunings:

3330	CHU	Ottawa, Ontario, after 0100 UTC
4500	VNG	Lyndhurst, Australia, around 1300 UTC
4996		Soviet Time station, CW time pulses, 1000 UTC
5000	BSF	Taiwan, ID every 5 min. in Morse & in voice by a Chinese female ammouncer.
	JJY	Sanwa-Sashima, Japan
	WWVH	Hawaii
	ZUO	Olinfontein, South Africa; good after 0300 (one night blocked out both WWV & WWVH)
6100	YVTO	Caracas,Venezuela, time signals and announcements: "Observatorio Naval Cagigal, Caracas, Venezuela" every minute
7600	HD210A	Ecuador, with same format as YVTO; best 0200
8000	JJY	Sanwa-Sashima, Japan
10000	BMP	Shanghai, China, around 1600
12000	VNG	Lyndhurst,Austrlia good after 0400

On the aeradio channels, Roberts has logged these VOLMET stations:

3485	New York and Gander, Newfoundland
6676	Australia on the hour and half hour; Bangkok at 10 and 40 min. past the hour and Singapore at 15 and 45 min. past the hour.
6679	Honolulu at 10 and 55 min.; Hong Kong at 15 and 45 min.; New Zealand at 20 and 50 min. and Japan at 10 and 40 min. past the hour.

***HANK BENNETT** cont'd*

10057 Johannesburg, South Africa and Nairobi, Kenya
15035 Various Canadian Air Force weather stations

Coast Guard Notices to Mariners can be heard on 2670, 6506.4 and 8765.4 kHz. Does anyone have schedules for the various stations on these frequencies? Robert has logged Puerto Rico, California and Oregon so far.

Travelers Information Service stations (TIS) can be found on 530 and 1610 kHz. Robert has logged several and he's even verified WNAG556, Coronado, California, police. Their power was 6-1/2 watts and I was about 25 miles away at the time. Most TIS stations run a cool ten watts!

Mr. Homuth also reports hearing Tucson International Airport on 530 kHz from over 75 miles with weak but distinctly audible signals during nighttime hours and that it is occasionally audible in Phoenix, some 125 miles distant. He was told that the station can only be heard by ground wave within one-half miles from the airport. It must have some odd antenna system which gives a powerful skywave and attenuates the ground wave.

Most of the TIS stations I've heard have terrible audio and horrendous technical problems. Our local TIS, WXK790, Sky Harbor International Airport, has problems with its recorder. The background noise is often louder than the recorded message. Once the station ran for a week with a totally ruined tape and all that could be deciphered was "bb st mm tk tk mm nn --parking-- mm pp ph fft"!

Once, a local announcer for a rock FM station put together a professional quality tape for WXK790 and this was the best sounding TIS in the western hemisphere. Unfortunately, they never ran it again...

Robert would like advice on how to verify the TIS outlets, especially where to send reports. If any of our readers can help him, his address is further up in this column. A complete list of TIS stations is found in the Grove catalog under FCC microfiche selections.

Your editor would like to encourage others to share their listening activities with us, especially on the non-broadcast bands. Tell us what you're hearing and from time to time we'll include some of your reports.

There's still time to get in some last-minute antenna work before the new DX season settles in. Get the joints all tightened and soldered, where necessary; get the grounding system in top shape, then sit back and enjoy! ●

SWL WORLD WATCH

by Ken Wood

Despite the highly changeable propagation conditions experienced over the past month there has been some homegrown excitement in the air for listeners to the short-wave broadcasting bands.

Radio Martí, the U.S. government's long-awaited special service to Cuba went on the air on 19 May and to the surprise of most listeners, showed up on short wave in addition to its 1180 medium wave outlet at Marathon, Florida. The short-wave broadcasts come direct from the VOA's Greenville transmitter complex and are currently aired from 0930 to 1200 on 6.075, from 1200 to 1400 on 9.570, 1400 to 1730 on 11.815, 2030 to 2300 on 11.930 and 2300 to 0330 on 9.660. No QSL info on Radio Martí so far.

The Assemblies of Yaweh station, WMLK, has started testing and is being heard around 1700 on 15.110, although through rather heavy QRM and not at good strength. The program consists of sermons, interrupted every few minutes for station IDs and requests for reception reports. Those reports go to WMLK at P.O. Drawer C, Bethel, PA 19507. The schedule is supposed to be 1700 to 1900 on 15.110 and 0400 to 0600 on 15.150.

Otherwise the summer doldrums have set in. Jeeves and I have, however, managed to collect a few things for you "off the Frog" so here it is:

RADIO MARTI REPORT

Now that Radio Marti, America's official anti-Cuban voice operating from the Florida Keys, is a reality, listeners' reports are starting to come in to MT headquarters.

One of the big surprises is the lack of intentional jamming or high-powered Cuban broadcast retaliation which was expected. This month's report by MT reader Dave Larsen, who lives in Harlingen, Texas, due west of the Keys, is a case in point:

6.075 (0930-1200 UTC) clear of interference; good reception
9.570 (1200-1400 UTC) clear of interference; good reception
11.815 (1400-1730 UTC) co-channel interference from Radio France International
9.660 (2300-0400 UTC) co-channel interference from Caracas, Venezuela

Dave goes on to point out that several speculations regarding intentional jamming of the short wave frequencies listed above have not yet materialized. This may be planning strategy for some sort of political trade-off. It seems as if we will have to wait and see, too.

Thanks, Dave, for your fine report.

(See p.24 for more.)

SWL WORLD WATCH cont'd

AFRICA

CAMEROON - Radio Cameroon, Yaounde, noted with good strength on 4.850 at 0500 with local music. News in English (which is picked up by several other Cameroon outlets as well).

EGYPT - Cairo Radio's "Voice of the Arabs" all Arabic service heard at 0300 on 7.150 at good strength.

KENYA - The Voice of Kenya heard in English at 0300 on 4.915 but it seldom equals the strength of most of the West Africans.

LIBERIA - Religious outlet ELWA heard with English religious programming on 4.760 at 0705, fair level.

LIBYA - LAJBC in Arabic with a sign on at 0500 on 6.195 and continuing in Arabic with mostly music and talk.

NAMIBIA - Radio Southwest Africa on 3.295 at 0145 with pop music, easy listening selections, English IDs and talk.

SIERRA LEONE - SLBS in Freetown on 5.980 in vernaculars at 0630, into English news at 0700.

SOMALIA - Radio Mogadishu on 7.200 in Somali from 0300 sign on with anthem and prayers.

SUDAN - Omdurman Radio now heard in local U.S. daytimes on 11.180, a channel formerly used by the clandestine Voice of Free Sons of Yemini South.

TUNISIA - Tunis Radio's all Arabic program noted from 0630 sign on with a good signal on 7.225.

ASIA AND OCEANA

NORTH KOREA - Radio Pyongyang heard on 9.977 from 1100 in English with an organ interval signal at sign on. Poor to fair level.

SOLOMON ISLANDS - Solomon Islands Broadcasting Corporation on 5.020, parallel to 9.545, at 1000 with Radio Australia news relay.

SOUTH KOREA - Sweden Calling DX'ers reports a new South Korean time station on the air. HLA, operated by the Korean Standard Research Institution at Tay Doc is scheduled on weekdays from 0100 to 0800 on 5.000. Fat chance on that frequency!

SYRIA - Syrian Radio heard on 17.840 in their 1200 hour long English segment. Also noted in Arabic at 2000 on 12.085.

TAHITI - Radio Tahiti, 6.135 good with island music at 0600.

UNITED ARAB EMIRATES - Voice of the UAE from Abu Dhabi heard in Arabic to 2130 on 9.695 and UAE Radio, Dubai noted in Arabic to 0330 on 7.310 with English starting at 0330.

UZBEK USSR - Radio Tashkent heard on 11.785 with English from 1200 but signals only at fair strength.

VIETNAM - English from the Voice of Vietnam noted at 1000 on 9.840, in parallel with 12.020 and about equal in readability.

EUROPE

DENMARK - Radio Denmark, usual Danish except for English opening announcement at 1300 on 15.165.

HUNGARY - Radio Budapest, English to Europe heard at 2000 on 11.910.

MALTA - Radio Mediterranean scheduled from 1800 to 1857 in Arabic, 2130 to 2230 in French, 2230 to 2330 in English all on 6.110.

NORWAY - Radio Norway, English at 2000 (Sunday) with the "Norway Today" program.

YUGOSLAVIA - Radio Yugoslavia with English news and features at 2115 to 2130.

NORTH AND CENTRAL AMERICA

COSTA RICA - Radio Casino, Puerto Limon, on 5.955 at 0550 to 0600 sign off in Spanish.

CUBA - The Mayak relay continues going strong on 4.765, all Russian.

Radio Rebelde medium wave relay still heard on 5.025 during local hours of darkness. Latin music, IDs, time checks, news, all in Spanish.

HONDURAS - Radio Luz y Vida, 3.251 at 0238 with both Spanish and English music and religious programming.

MEXICO - La Hora Exacta reactivated on 9.555 after an absence. Time announcements, commercials. Noted in mornings and early evenings.

La Voz de la America Latina, still heard daytimes on 15.160 (sometimes up to 10 kilohertz higher), all Spanish relays of XEW medium wave, Mexico City.

SOUTH AMERICA

ANTARCTICA - Radio Nacional Archangel San Gabriel, Argentine Antarctica, heard to sign off at 0032 on 15.474.

BOLIVIA - Radio San Jose, 5.985 with Bolivian music, Spanish IDs at 1040.

4.797 Radio Nueva America at 1000 sign on with ID by woman over piano music. Usually more reliable reception at this hour than in the evening.

Radio Illimani, 6.025 at 0930 in parallel with 4.945, the former frequency with the better signal.

BRAZIL - Radio Nacional Tabatinga, 4.815, at 1015 in Portuguese. Good level with the Colombian not in evidence.

Radio Inconfidencia again showing on 19 meters. Heard around 2300 on 15.190 with ID in Portuguese.

Radio Aparecida now using 11.855 around 0030 in Portuguese with all religious programming.

Radio MEC now on 11.950 from 2130 tune in all Portuguese. This station, operated by the Ministry of Education and Culture, is expanding hours and frequencies.

Radio Poti, 4.965 with Brazilian popular music, IDs in Portugese at 0230, to sign off around 0300.

COLOMBIA - Radio Macarena, 5.975 at 1003 in Spanish with music, ID, commercials.

ECUADOR - La Voz de Upano, 5.039 heard in Spanish at 0200.

La Voz de Napo, 3.280 in Spanish at 1032 with ID and Ecuadorian music.

Radio Iris, 3.380 at 0325 in Spanish with Latin pops, time checks, IDs.

Radio Catolica National, 5.055, good strength at 0145 with religious programming in Spanish.

FALKLAND ISLANDS - FIBS is still being noted frequently at 0900 sign on and again in the late evenings on 3.958.

SURINAM - Radio Apinte on 5.006 heard here around 0230 with a mostly music program.

VENEZUELA - La Voz de Carabobo, 4.780 good as usual to its normal 0400 sign off, all Spanish.

Radio Nacional, 5.020 with news in Spanish at 0100 at good level.

Radio Tachira, 4.830 at 0130 with ID and Latin ballads. Good but some spill from Radio Reloj, Costa Rica, 4.832.

CHALLENGER

Adventist World Radio's newest station, a three-kilowatt'er in Forli, Italy, is now on the air and has already been heard by a few listeners in the United States. The station seems to be continually adjusting schedules. Latest one Jeeves and I have seen has English from 0600-0700 on 7.125 and 2200-2300 on 6.205. French at 0700-0730 on 7.125. German at 0730 to 0830 on 7.125 and 1600 to 1700 on 6.205. Power may be increased to 10 kilowatts before too long. Reception reports should be sent to AWR at P.O. Box 2590, 1114 Lisbon, Portugal.

JEEVES SAYS:

Ken and I are still keeping an ear on that unidentified all music station on 7.400 which continues daily at 0000 to 0200, but still not hearing any announcements, only the music tapes. If these were tests of a broadcast outlet surely they would have been completed by now?

Otherwise, like so many SWBC listeners, the receiver is getting less use during the summer months. If you are listening, let us know what you're hearing. If you're looking for things to tune, don't forget to check the 7 megahertz area for pirate broadcasters. For that matter, explore the whole area as more and more regular broadcasters are calling this area home. Another good bet is 19 meters, now staying open later into the evening so you never know what may turn up here.

We'll be prowling 'round the bands too, and, as usual, will report our results next month. You're welcome to join us and until then,

73 from Ken and me●

ENGLISH LANGUAGE BROADCASTS

by Tom Williamson

This month we present an updated list of the "Big Six" broadcasters -- one station from each of the six continents chosen on the basis of reliable signal performance, and comprehensive programming. The revision takes into account the seasonal frequency and propagation changes.

RADIO RSA: Other things being equal, the 9615 channel gives the best signal in my area.

HCJB: Not such a good situation these days; while 9745 is quite a reliable channel, there is severe interference at present, so the morning broadcast is preferred. Incidentally, HCJB is adding REUTERS NEWS to their services.

V.O.A.: The times and frequencies chosen are those of the service to the Americas and Caribbean. To listeners in this continent there may be considerable variation in reception of this station and other times and channels may be good, though not intended primarily for reception here.

RADIO AUSTRALIA. No broadcasts are primarily beamed to North America, but it is presumed that signals for the Pacific and Asia may provide good reception to us; the frequencies in parentheses are heard quite well at times. RA quotes a beam bearing of 063 or 065 degrees as suitable for North America but only recommends the channels I have listed; however, there are others with a similar bearing.

KOL ISRAEL: The 9440 channel may provide quite good signals. The LF channels are likely to be the most consistent for reception at any time.

BBC WORLD SERVICE: It really is quite difficult trying to keep up with the BBC! Not only has there been quite a variation in reception on the usually good frequencies (notably 6175 which, after having been improved in audio quality, is now a horrendous mess with interference from France--probably the Guyana relay). But the listed frequencies in "London Calling" bear little relationship to what you can actually hear!

In your editor's experience the following are the most reliable channels at present for hearing London at good strength: 11775 - 9915 - 7325, but other channels such as the 9 MHz frequencies can be very good. It will depend on your location and prevailing propagation conditions.

STATION REVIEW...Radio Beijing, People's Republic of China

Information has just come to hand from two sources, via Monitoring Times (material sent in about a delegation visit to the Voice of America) and direct from Radio Beijing.

R. B. broadcasts in 38 foreign languages since its inauguration on September 11th, 1947, when the English language service began. Standard Chinese and four dialects are also used, but home services come under the heading of the Central Peoples Broadcasting Administration through Programs I & II from Beijing, and also regional services, in addition to the Fujian Front station and Chinese press services.

We hear only the external service of CPBA which is in effect Radio Beijing, although from time to time English lessons have been heard over home service stations.

In the context of learning Chinese, the English service of RB produces the program "Learn to Speak Chinese"; if you are interested, write to them about it..but it's a difficult language for us on account of the different "tones" used to pronounce words which may have similar spelling.

This learning program is broadcast on Mondays and Wednesdays. I have reviewed the scope of RB programming in the past; Chinese music features are heard widely along with travel and cultural reports and news bulletins. Sunday, Tuesday and Friday listeners' letters and requests are answered. A new program on alternate Wednesdays is called "Martha in Beijing," but I have yet to hear this one.

Chinese Lessons on the air are warmly welcomed by Japanese listeners. The photo shows a Chinese language announcer helping visiting Japanese listeners with their pronunciation.

The special series of programs on Chinese culture highlighting painters started on October 4th last year and may be finished by now, but RB is still sending out a beautiful colored brochure showing twelve color pictures of prominent artists. They have always been famous for their high quality color printing and photography as any listener will know if he or she has received one of Radio Beijing's calendars!

The "Culture in China" program of the English Department plans to present a series on contemporary Chinese paintings in 1984.

If you write to the English Department of Radio Beijing you will be put on their mailing list and, believe me, they are very efficient at remembering your address! You will then receive the current "goodies" or souvenirs that they send out from time to time and, of course, the program schedule. No further address is needed other than R. Beijing, Beijing, China.

The current schedule to North America is as follows:

EAST COAST:
0000-0100 15385 15520
1100-1200 11860
1200-1300 6160 9820

WEST COAST:
0300-0400 11970 15520 17795
0400-0500 11970 17795

In addition they send the following data on one hour test transmissions:

to East: 0000 on 11970; 1200 on 9535 kHz
to West: 1300 on 9730 and 9550 kHz

The Radio Beijing delegation visit to the U.S. from April 29th to may 12th this year was led by the director, Madam Ding Yilan. This followed a cultural exchange agreement signed by President Reagan and Premier Zhao in 1984. The VOA had asked the National Committee on U.S.-China Relations to organize the visit which allowed the participants to meet their American colleagues with a view to studying the broadcasting industry in the country.

The visit included Washington, New York, Chicago, Columbia, Los Angeles, and San Francisco. In addition to government departments, the delegation visited KCBS, KFRU, FOMU, KBIA, KWIX, and network headquarters along with cultural centers such as the Chicago Art Institute and museums.

The U.S. side of the group included VOA chiefs of Asia and China branches, and several broadcasters in the Chinese Branch of VOA.

I'm sure this must have been a profitable enterprise for all concerned, because it's always instructive to meet overseas visitors, sense their attitudes and explain one's point of view, but I don't envy the job of the interpreters!! If you've ever had the experience of translating foreign languages in ongoing conversation, you will appreciate how incredibly tiring it becomes after two or three hours!! It's very different from translating written material, I can assure you, and the professionals sure earn their money. I have had a little experience of this with French and Spanish!

And so on to our Broadcast Summary:

AFRICA-RADIO RSA	
0200-0256	9615 6010 5980
SOUTH AMERICA- HCJB Quito	
0030-0130	11910
0035-0200	15155 9745
0200-0500	9745 6095
0500-0700	11915 9745 6095
1200-1530	17890 15115 11740

PIRATE RADIO

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

RADIO MARTI: Radio Martí is the radio story of recent weeks. After first being proposed four years ago, the station made its initial broadcast May 20, 1985, at 0930 UTC (5:30 a.m. EDT).

According to the VOA, the final decision to go ahead with the Radio Martí transmissions was made by President Reagan on Saturday, May 18. Cuba's independence day was deliberately selected for the start of the new service, and the Cuban government was informed May 19 of Washington's intentions. According to NBC, the State Department called Radio Martí "a surrogate home service for Cuba" and claimed it would break the "regime's virtual monopoly on information."

Officials in Washington have acknowledged Castro's ability to interfere with American radio stations or retaliate in other ways, but their attitude seems to be similar to that expressed by Florida Senator Paula Hawkins, who declared, "You can't back down in front of a two-bit dictator."

As was to be expected, the reaction from Florida's Cuban exile community was one of elation. An editorial in an October 1981 issue of the exile magazine Ideal is typical of the support the vast majority of Cuban Americans have given to the concept of Radio Martí from the beginning. Among other things, it said such a station would let the people of Cuba know of the battles in Africa where "thousands of their sons are sent to die."

When actual broadcasts began a talk show on Tampa's Spanish language WTYM (1300 kHz) was flooded with calls, all favorable. Miami's WQBA (1140 kHz), which Cuba makes half-hearted attempts to jam, was reporting Radio Martí's presence very shortly after it began transmitting. For much of the exile community the station's greatest significance is as a symbol.

Tomas Regalado, news director at Miami's WRHC (1550) and a leading spokesman for the exile community, referred to it as "a gesture of moral support for the people of Cuba." He said Cuban Americans see Radio Martí as more important in a political sense than as a source of information. He also felt that the start of Radio Martí was the start of a new period of confrontation between Washington and Habana.

Cubans on the island itself may be less enthusiastic. According to an article in the Washington Post, listeners there believed that Radio Martí had a somewhat antiquated, pre-Castro concept of conditions in cuba. Persons interviewed remarked that Radio Martí referred to social conditions that no longer existed and commented on past sports heroes that no one remembered.

There is considerable interest as to what Cuba's ultimate response to Radio Martí may be. On May 30 the Miami Herald quoted a Cuban diplomat as saying one possibility may be a "Radio Lincoln." He claimed that a two months' supply of broadcasts had already been prepared, and all that was necessary was official approval to begin transmitting.

A reliable source states that Castro has four 500,000 watt transmitters obtained from Czechoslovakia. These have ten times the power of the VOA transmitter at Marathon in the Florida keys which is used for Radio Martí's medium wave transmissions. On August 30, 1982, Cuba demonstrated its ability to harass American broadcasters by interfering with stations on six frequencies, including KSL in Salt Lake City.

The government has threatened to counter Radio Martí broadcasts with transmissions on 1040 and 1160 from facilities supposedly at La Julia. In the past, "Voice of Cuba" programs in both English and Spanish have been carried on some of the more powerful medium wave stations in the hope of reaching an international audience.

Despite such capabilities and threats, the Cuban response so far has been rather mild. While the Miami Herald, NBC and others reported a jamming tone on Radio Martí's 1180 kilohertz medium wave frequency, it has not been audible here in central Florida. South Florida DXers have reported an open carrier just slightly above 1180 occasionally creating some very slight interference in the pre-Martí days when Marathon carried VOA's Spanish language program "Buenas Noches America." Perhaps this was what attracted the media's attention.

During the early hours of Radio Martí's initial transmission the tone, usually noted mixing with WQBA, was audible at my location although, as is almost always the case, it created no problem. Other south Florida Spanish language stations remain unjammed as they have been in the past. No jamming has been detected on any of Radio Martí's shortwave frequencies. The Cuban authorities appear to be making no serious attempts to prevent residents of the island from hearing Radio Martí or any other American station.

Cuba did suspend a recently negotiated immigration treaty with the United States. This announcement was greeted with joy by some of Miami's Anglo community since the treaty would ultimately result in more Cubans coming to the United States than would be returned. However, on June 6, NBC reported that the Castro government is once again issuing exit permits for people to leave. At present Cuban exiles may no longer return home to visit families except for "strictly humanitarian reasons."

Threats to begin counter-broadcasts and to cease cooperating on the prevention of airplane hijackings have so far remained threats.

Radio Martí identifies itself as a special VOA information program to Cuba rather than as a separate broadcasting station. In authorizing the operation, Congress insisted on this arrangement in the hope it would minimize Cuban retaliation.

Extensive monitoring of Radio Martí does reveal a variety of programming; news broadcasts cover the world including such diverse items as Chinese claims to the Portuguese colony of Macao and the President of Kenya's fears that overpopulation is creating an economic and social catastrophe in his country.

There is, however, a definite emphasis on items pertaining to Cuba and also to Nicaragua. For example, newscasts frequently mention Cuban involvement in Angola's civil war. Of interest was the considerable treatment given to Grenada on Radio Martí's first broadcasting day.

In addition to frequent references to Cubans dying in Angola and border violations by Sandinista forces, Radio Martí sometimes takes a hardline approach in airing commentary on the problems of the Cuban economy and quoting the great Cuban patriot José Martí (for whom the broadcasts are named) on the "danger of socialism."

Still, on the whole, programming is more moderate than that heard on Florida Spanish language stations and considerably more so than the clandestine shortwave broadcasts of Cuban exile groups. The latter have gone so far as to broadcast calls for sabotage and insurrection. Some Radio Martí programming is of a light variety such as the musical program "De Mujer a Mujer" ("From Woman to Woman") and the soap opera "Esmerala."

A schedule received from Radio Martí indicates that broadcasts on 1180 can be heard from 0930 to 1700 and from 2030 to 0300 UTC. The short-wave schedule is as follows: 0930 to 1200 on

ENGLISH LANGUAGE cont'd

NORTH AMERICA- V.O.A.	
0000-0200	11740
0000-0400	17730 15375 15205 11740 11675 11580 9650 9455 6130 5995
1700-1800	21840 21590 21560 21545 17860 17640 15580 (1580 MW)
OCEANIA- R.AUSTRALIA	
0200-0400	17795
0800-1400	9580 (6060 6045 5995)
2100-0100	17795
ASIA- Kol Israel	
0000-0200	11655 9815 (9440) 7410
0400-0500	15585 12025 11655 9815 (9440)
EUROPE- BBC WORLD SERVICE	
0000-0200	* 9915 9590 9515
0200-0500	* 9515 *7325 6175
0500-0900	9510 6175
1100-1330	21660 17790 15070 *11775 *9510 6195
1500-1730	15260 15070 11775
2000-0000	15260 *9915 9590 * 7325 6175 6120 5975

NOTE: * indicates a usually reliable good channel; () indicate not beamed to N. America but may provide good reception.

***PIRATE RADIO** cont'd*

6075; 1200 to 1400 on 9570; 1400 to 1730 on 11815; 2030 to 2300 on 11960; and 2300 to 0300 on 9660. Transmissions on 11815 and 11960 are with a power of 500 kilowatts; other short-wave broadcasts are 250 kilowatts.

Reception reports can be sent to Radio Martí, United States Information Agency, Washington, DC 20547. A report sent from here for a logging on the first day of broadcasting yielded only a no-data-confirmation form letter and schedule, but the letter promised a QSL card would be sent after they were printed.

Our friend in Pennsylvania, John Demmitt, was more fortunate. John heard the initial sign-on at 0930 UTC on 1180 medium wave and his report was rewarded with two printed schedules, a two-page information sheet, a handwritten Radio Martí schedule, and a QSL card noting the reception was for the very first program transmitted by Radio Martí on 1180 from Marathon, Florida.

This writer would be interested in knowing how well readers are receiving Radio Martí, especially on medium wave. Reception during evening hours is usually good at my central Florida location, but I had poor results during a visit to Daytona Beach, where the 10 kilowatt Haitian on 1170 put in a much better signal.

Ohio's George Zeller obtains good short-wave reception from the Greenville relay, but notes WHAM Rochester (1180) obliterates the medium wave signal. I did monitor Cuba's one kilowatt Radio Reloj outlet in Nueva Gerona on 1180 shortly after 0300 when Radio Martí finished its first day of broadcasting. It would be interesting to know how well Radio Martí does on the island against the "local competition."

PROGRAMMING PERSPECTIVE BY JOHN T. ARTHUR: "From a leaky bathtub somewhere off the coast of North America" comes Radio USA, self-proclaimed official station of the International Waters Olympic Team. RU originally appeared about two years ago, but has had transmitter problems recently. Their absence from the airwaves gave them creative time in the studio, however, and new programs will feature ads for their "erlitz-Bay ool-Skay of ig-Pay atin-Lay," among others. Relays over Radio Apollo International (England) kept them active and resulted in numerous reports.

Radio USA operations are handled by Mr.Blue Sky, Quicksilver and Hubie, and you would think with a staff that large they would be able to get the transmitter fixed. If you hear them, they will verify correct reports accompanied by three mint first-class stamps sent to Radio USA, Box 5074, Hilo, HI 96720. Incidentally, Mr. Blue Sky, it's pronounced Hee-Low.

BOOK REVIEWS: One of the most interesting books we have seen in a long time isthe Guide to North American Pirate Activity, 1984 Edition by Keith Thibodeaux, talented publisher of A.C.E. The heart of this 47-page publication is a compilation of over 500 pirate loggings obtained in 1984 arranged by station, frequency, date, and time. The lists are extremely useful for determining which frequencies are most active and where and when your favorite stations are most likely to be heard.

In addition to the loggings, the book contains a number of helpful articles on such topics as QSLing pirates. Reflections on Radio Free Nashville and Radio Free Ithaca offer a fascinating look at broadcasters who are a part of history. The price is $6.95 ($5.95 for ACE members) from Data/Radio, P.O.Box 46199, Baton Rouge, LA 70895-6199.

Frankly, monitoring satellites is not my first love in the field of radio communication, but I still found Larry Van Horn's Communications Satellites a very intriguing publication. This is an extremely complete treatment of the subject and is written in such a way that it neither confuses the novice nor insults the intelligence of the expert. It will not tell you a thing about pirates or clandestines, but it is a book you will find most enjoyable. You can obtain a copy for $12.95 from Grove Enterprises, P.O. Box 98, Brasstown, NC 28902.

DON'T TELL THEM YOU READ IT HERE DEPT.: Recently, in a certain Midwestern state that shall remain nameless, there was a mammoth pirate marathon which nobody heard. In a less-than-completely-sober state the operators aired a Minority Association tape (an organization which wants to colonize Jupiter with resurrected dead persons) mixed with obscene ads for 7-11 stores. This was followed by an "equal time Majority Association program" which we understand featured such famous persons as "Bob Grave" and "Larry Killer." Maybe people did hear this and just don't want to admit it!

LOGGINGS: From his new location in Hawaii, Chuck Boehnke bagged the anti-Zimbabwe clandestine Radio Truth on 5015, May 7, from 0430 to 0500 sign-off. He reports the signal was quite good and programming consisted of commentary on Angolan and South African affairs.

In Ohio, George Zeller continues to log numerous pirates. On May 7 he heard Radio USA at 0249, Union City Radio at 0330, and KNBS at 0430--all on 7430. May 11 brought Radio North Coast International on 7430 at 0032, and on 7429 Zeppelin Radio Worldwide was logged at 0104 and KROK at 0135. WKUE was heard with two definite IDs on May 19 at 0413 using 1622, the same frequency as KPF-941. On May 20 KLS was logged on 7426 at 0032, while Radio Soundwave had a USB transmission on 7425 on May 26 at 0322.

Also logged during May were WYMN with its women announcers, May 12 on 7427 at 0050, and Radio Sine Wave, May 5 at 1925 on the unusual frequency of 11611. George also managed to hear Ireland's Radio Dublin on 6910 at 0400 on May 21 and other days. With the low level of sunspot activity, this is about the only Europirate audible now.

George heard something on 10475 from 0406 to 0412, but unfortunately there was no ID; it could have been a clandestine. He notes that on 7425 a Farsi (Persian) language station at 0230 clearly identifies as Radio Iran, but a similar program heard around 0130 seems to be something different. Does anybody know what it may be?

John Demmitt has sent along some Europirate material. We will take a look at it next month. ●

STOP THE PRESSES!!

A familiar old frequency pair has just pulled a switch. The Spanish language five digit transmissions still occur on the hour on 3090 kHz, but the repeat on the half hour has changed frequencies from 4030 to 5090 kHz.

And a new four-digit transmission has begun at 0430 on 4310 kHz.

Primary nighttime frequencies to watch from 0000-0500 UTC include 3080, 3445, 4030, 4780, 4827, 4836, and 7431 kHz.

NATIONAL (IN)SECURITY

"...How does that saying go? Hell hath no fury like a woman scorned."

Statement by alleged spy John Walker in an attempt to explain what went wrong.

The revulsive and incredible activities of the --by now-- infamous alleged Walker spy ring has left the American public and the U.S. Intelligence community stunned. Daily media revelations indicate a deep penetration of the nation's most sensitive military and intelligence centers. Walker now joins the putrid ranks of Boyce, Burgess, Philby, MacLean and many others.

Let's hope that the public's fascination with "cloak-and-dagger" activities does not obscure the fact that Walker and his cronies were under the employ of the KGB and GRU (Soviet military intelligence).

The sickening allegations in these daily media revelations will hopefully create a more cautious approach to the safeguarding of our national-security information. Perhaps public outcry will mandate a more efficient process of screening the well over four million Americans with security clearance.

The NSA, CIA, ONI, DIA --and most importantly--the American people have been seriously betrayed. When and where will it end?

THE LETTER

"...I feel that there is a very good chance that

LOS NUMEROS cont'd

the numbers transmissions are used by the U.S. and the USSR to communicate with each other. They could be a backup system should the Washington-Moscow hot line be inoperative. The current transmissions are all test transmissions used to make sure the "numbers hot line" is operational. There is a landline link from Washington to the Virginia transmitter. Likewise, there is a link from Moscow to the Eastern European transmitter.

"The link from Moscow to Cuba is more of a puzzle. However, I am sure the USSR runs the Cuban transmitter rather than Castro's government.

"Note that the hot line was established in 1963. This is just about the same time that the numbers transmissions began.

"In the event of nuclear war, many electronic devices would be ruined by the blasts. A simple voice communication system is easier to repair and get back on line than a radio teletype or other more sophisticated device..."

Martin A.
full name and address withheld by request.

A thought provoking observation, Martin. I assume that you refer to the 4-digit Spanish transmissions. Thanks, Martin. Reader response to the above is eagerly solicited.

DEAR LUNA HABANERA

"I read with interest your column in the Monitoring Times and look forward to future issues. Of special interest is information in regards to the clandestine transmissions from Central America and Cuba, and hope it will be possible for you in some future issue to print up a list of the various stations currently (or in recent past) operating on the various bands, such as 15 September (5565 kHz), the many C.I.D. (6305, 6151, 11700, etc.) Also the "numbers" stations in Russian such as the 7410 kHz AM YL, ..."

B.H.S.
New Hampshire

Thanks for the letter, B.H.S. The most authoritative source of clandestine transmissions from Central America and Cuba is presented monthly in MT by John Santosuosso. I think you'll find what just what you're looking for in John's pirate radio column. You'll also find that John is the foremost expert in the field of clandestine and pirate operations.

As for the "numbers," the Apple--at this very moment--is churning out an updated listing of all types of "numbers" transmissions. Hopefully you'll find this listing in next month's issue of MT.

How about more information on the Russian numbers, B.H.S.? Thanks for your time.

INTERCEPTS

Column regular Zel Eaton checks in with some interesting intercepts this issue. Here's a portion of what's being monitored in Missouri:

0300Z 03/11/85 6998kHz AM
Morse code "N" continuous until 0306Z at which time German YL begins transmission of 5-digit groups

0317Z 03/14/85 4670 kHz AM
Spanish YL with 4-digit transmission

0212Z 04/08/85 4670 kHz AM
Same as above with the exception that signal covered a wide segment of the band (Very interesting, Zel.)

0231Z 04/08/85 6840 kHz AM
Spanish YL with 4-digit transmission

0410Z 05/01/85 11535 kHz AM
Spanish YL with 4-digit transmission

2336Z 05/08/85 12470 kHz AM
Tones as if someone keying an electronic organ. Signal 40 over S9. (These are possibly European embassy transmissions, Zel.)

Thanks for the nice list, Zel; sorry I couldn't include everything.

THE RETURN OF JAMES BECKETT

Mr. Beckett would like to know who lurks behind the name "Havana Moon." It's like this, James: it's not Bob Grove or John Santosuosso. I do, however, lurk.

James dabbles with ciphers and passes along a very simple cipher to see who can solve it. The Beckett Cipher goes like this:

26432 85447 89354 24825
54632 71458

Sharpen up those pencils, Bob Russ.

James wonders if numbers station operators read MT. He thinks that it might be possible to communicate with them through this column or other sections of this publication.

I have a deal this bilingual YL just might go for, James. Read about it near the end of this column.

James says that he copied WGY912 slow CW (with the WGY912 ID)--and sent in a report to the address given in MT. James says that the letter was returned and envelope marked no such address.

A FEMA project is now in the research stage, James. Give me two or three months.

FREQUENCIES TO WATCH

3070, 3074, 3080, 3090, 3445, 4010, 4025 and 4030 kHz. Also check 4044, 4049, 4057, 4188, 4825 and 5188 kHz. Five-digit Spanish reported to be heavy on all these frequencies after 0200Z. Let me know what you hear.

THE CIA SPEAKS

Be sure to write the CIA for its two multi-colored and very slick and glossy publications. FACT BOOK ON INTELLIGENCE and THE ACME OF SKILL can be yours FREE. Write to:

The Office of Public Affairs
Central Intelligence Agency
Washington, D.C. 20505

AUGUST OF 1976

Be sure to check your local library for the August 1976 (that's the correct date) issue of Popular Mechanics and the excellent Anthony Curtis article on "spy-and-number" transmissions. Many of the frequencies listed in the Curtis article continue to be active. Are you among our readers, Anthony?

Monitoring Times readers might wish to write Popular Mechanics to request consideration of a follow-up "numbers" article.

ESPIONAGE

There are some slight indications that Espionage--a bi-monthly publication in the pulp tradition--might entertain the notion of a "numbers" article. Contact the editors at:

ESPIONAGE
P.O. Box 1184
Teaneck, NJ 07666

LET'S MAKE A DEAL

I WOULD SAY IT'S ALMOST A SURE BET that 5-digit Spanish station operators read MT! I would also say it's almost a sure bet that these shadowy and (expletive deleted) technical misfits know a lot more about serious "numbers" monitors than we know about them.

Here's the deal: How about a special 5-digit Spanish transmission just for MT readers. In "Tom-and-Jane" language, here's the transmission schedule and procedure:

1.TIME.....0600Z
2.DATE...10 August 1985 Zulu (Saturday)
3.FREQUENCY.....5135 kHz
4.REPEAT....30 past the hour on 6500 kHz
5.IDENTIFIER.....007
6.GROUP COUNT.....50
7.1st 3 GROUPS...00351 99112 11136

Care to bet these (expletive deleted) misfits can't pull this off?

Just to make it a bit more easy: The time for the transmission is 2 a.m. New York time on 10 August 1985. That's a Saturday morning and very early. UNDERSTAND?

WE'LL BE LISTENING.

A REMINDER

All correspondence directed to this column will

MAKING AND BREAKING CODES WITH A HOME COMPUTER

by Chris Williams

A recent issue of Monitoring Times contained an excellent article by Bob Russ which discussed some of the history behind ciphers. In addition to covering the motivation for using them, it also described some of the basic ciphers employed in the past and the methods used to produce them.

As Mr. Russ pointed out, many of these ciphers are still around today; there are also, however, many new ciphers in current use and most of these are the result of the recent computer technology explosion. In this article, I'm going to demonstrate a computer encryption/decryption algorithm and use it to show some of the fundamental concepts of computer ciphers.

LETTERS ARE NUMBERS

Inside computers, all the letters of our alphabet have a numerical equivalent; the set of these equivalents is called ASCII (American Standard Code for Information Interchange). In addition to letters, all the rest of the characters on a keyboard also have equivalents and can therefore be understood by the computer. An ASCII table showing all these equivalents can be found in just about any computer book so I won't repeat it here.

The encryption technique we'll be discussing uses ASCII along with a machine language computer instruction called the "Exclusive OR" (XOR). The XOR function operates on two bits (A and B) and results as follows:

LOS NUMEROS cont'd

be assumed to be intended for publication unless otherwise indicated. YOUR CARDS AND LETTERS ARE ALWAYS WELCOME.

THANKS TO

Martin A., B.H.S., Zel Eaton and John Santosuosso. Thanks to CA for the color photo and the Miami information. A special thanks to James Beckett and his radio friends. Those friends being: Jim Craig and Bill Slep.

I HATE TO SAY THIS, BUT

Radio Marti finally made it and Castro is jamming the frequency like crazy. The program content is so drab that Fidel is wasting his time. Now a little of Madonna or Prince just might attract the under 40-year olds.

I suspect that by the time you read this that Cuban jammers will be very common on many American AM frequencies. I'm confident that Fidel has an ace up his beard.

DID YOU KNOW

Col. Rudolph Abel (now put to shame by the alleged Walker spy ring) was a GRU officer rather than a KGB officer.

Time now for an Anchor Steam and ...

Adios,

Havana Moon y Amigas

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

MAKING CODES cont'd

A		B	
0	XOR	0	Equals 0
0	XOR	1	Equals 1
1	XOR	0	Equals 1
1	XOR	1	Equals 0

One, and only one, of bits A and B may have a value of 1 if the result of the XOR is to be 1. Since an ASCII character is eight bits long, XORing one character with another involves executing the above process eight times. The XOR instruction is common to most computers' assembly languages.

THE TECHNIQUE

The phrase we're going to encrypt is, appropriately enough, "LOS NUMEROS." We will do so by XORing each letter of that phrase with the result of XORing the preceeding letter. Because the first letter has no preceeding result we'll simply pick an initial letter at random. In this case, our initial seed will be the letter "S" which has an ASCII equivalent of 53 hexadecimal, 01010011 binary.

The letters of "LOS NUMEROS" have the hexadecimal ASCII equivalents 4C, 4F, 53, 20, 4E, 55, 4D, 45, 52, 4F, and 53. Notice the blank also has an ASCII (20) equivalent.

Now, taking the XOR of each of the bits of "S" with each of the bits of "L" yields (again in hexadecimal):

4C XOR 53 --- IF

We then use 1F as the preceeding result and continue the process for each of the hexadecimal ASCII equivalents:

Uncoded		Encoded
4F XOR 1F	---	50
53 XOR 50	---	03
20 XOR 03	---	23
4E XOR 23	---	6D
55 XOR 6D	---	38
4D XOR 38	---	75
45 XOR 75	---	30
52 XOR 30	---	62
4F XOR 62	---	2D
53 XOR 2D	---	7E

Thus, in encrypted form, we have "LOS NUMEROS" as 1F, 50, 03, 23, 6D, 38, 75, 30, 62, 2D, and 7E. Few of these characters are equivalents for letters; some are punctuation or numbers and some have no direct keyboard representation at all.

This algorithm is not a simple number substitution cipher because each number is entirely dependent upon the previous value which is ultimately dependent on the initial seed. A different initial seed would change all the values resulting from the XORs.

An attractive feature of this technique is its ability to decrypt with essentially the same procedure used to encrypt. Watch:

Coded		Decoded
1F XOR 53	---	4C
50 XOR 1F	---	4F
03 XOR 50	---	53
23 XOR 03	---	20
6D XOR 23	---	4E
38 XOR 6D	---	55
75 XOR 38	---	4D
30 XOR 75	---	45
62 XOR 30	---	52
2D XOR 62	---	4F
7E XOR 2D	---	53

and there in the decoded column we have the original message.

WHY USE A COMPUTER?

The primary advantage of using such a computerized algorithm is the speed of the process on both ends of the circuit. This makes conversation more convenient because time needn't be spent leafing through a codebook. Both sender and receiver simply feed the characters into the computer and then read the results off the screen.

Another attraction for this particular approach is that the code is quite secure. The receiver must know both the procedure being used and also the initial seed.

There could also be several "stacks" of this technique on a message that would require it to be run through the procedure more than once and with different seeds. The receiving station would also have to know the number of stacks which, of course, adds to the security of the code.

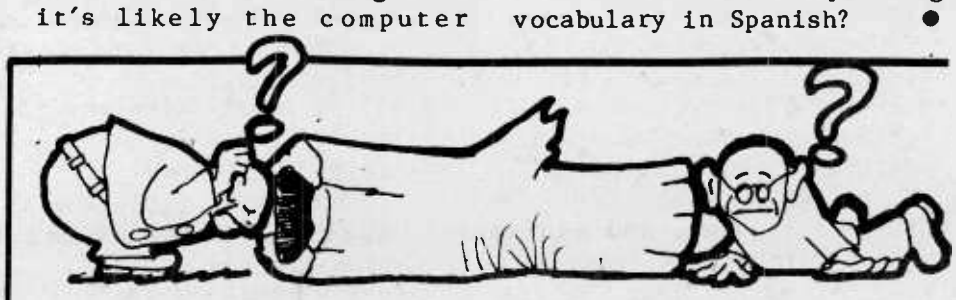
APPLICATIONS

One could certainly apply a decrypting computer to the encoded message and it's likely the computer would eventually hit on the correct combination of algorithm and seed. The more ambitious among you might want to program your personal computers to attempt decryption of some of those 5-character groups you've been intercepting.

I've no more idea that you what algorithm the transmitters are using so anything you might do will require your computer to use trial and error in varying degrees of sophistication.

One place I can help you is in defining success cirteria for your programs, i.e., how does the computer know when it has cracked a code? The solution to this can be found on word processors. The newer products have spelling checkers with large vocabularies implemented in the program.

One approach could be to look for a percentage of decryption match to the vocabulary. This assumes the language encrypted is English which isn't always the case. How about a spelling vocabulary in Spanish? ●



listener's log

MONITORING THE STOCK CAR RACES--CHARLOTTE STYLE
A frequency profile by
RADIO RESEARCH
10 Elf Lane
Greenville, SC 29611

CHARLOTTE MOTOR SPEEDWAY

464.725 Security
464.500+Race ControlTower
462.650+Operations
461.700 Operations
455.650 FM broadcast link
173.225 Parade
154.600 Operations
151.895 Parking
42.82 +Traffic-NC trooper
42.50 Traffic-NC trooper

GRAND NATIONAL DIVISION

461.050 #17 Lenny Pond/Sub
461.27 #71 Dave Marcus
461.812 ?
461.825 ? (Mike)
461.875 #44 Terry Labonte
462.175 #11 Darrell who?
462.550 ---(media)
463.462 #7 Kyle Petty
463.487 #7 Kyle Petty
463.700 #28 Cale Yarborough
#22 Bobby Allison
463.900 #27 Tim Richmond
463.925 ?
464.125 ?
464.573 #9 Bill Elliot?
464.625 ?
464.800 #43 Richard Petty
#84 Mike Alex also?
465.537 #00 Morgan Shepard
466.812 #95 Sterling Marlin
467.775 ?
468.562 #28 Cale Yarborough
468.612 ?
468.700 #28 (rpt on 463.700)
468.900 ?
468.975 #75 Lake Speed
469.125 ?
469.962 #9 (spotters only)

NOTE: Some race teams are using multi-channel radios and are switching channels at random during the races. Several different teams were monitored on the same frequency during the race.

HARRISBURG, PA, SCANNING
contributed by Tim Shingara

PENNSYLVANIA STATE POLICE

	Base xmit	Mobile xmit
A	155.580	155.790
B	155.670	155.910
C	155.505	155.850

33.040 Harrisburg river rescue
33.220 Buckeye Pipeline
33.380 Columbia Gas
33.600 Lancaster Co. FD
33.640 " (working)
33.700 Middletown FD #2
33.740 Lebanon FD
33.760 Middletown FD #1
33.800 Dauphin Co. FD #1
33.840 " #2
33.860 " #3

LISTENERS LOG cont'd

33.880 York Co. FD #2
33.900 Dauphin Co. FD #4
33.900 Duncannon FD
33.900 Lancaster Co. FD
33.900 Lebanon Co. FD #1
33.900 York Co. FD #1
33.920 Harrisburg Int'l Airport fire
33.940 Lebanon Co. FD #2
33.960 Derry Twp. FD #1
45.080 Palmyra local gov't
45.100 York, Cumberland state sheriff net
45.120 Silver Spgs Twp PD
45.200 Lower Allen Twp
45.200 New Cumberland boro
45.220 Lemoyne PD
45.240 Millersburg
45.320 Camp Hill boro
45.440 East Penn Twp.
45.580 York Co. PD #2
45.600 Perry/Lebanon Co.
45.620 Franklin Co. sheriff
45.640 Upper Allen Twp.
45.660 Perry Co. PD #1
45.940 West Shore records
45.960 New Cumberland river rescue
45.980 Carlisle boro PD
46.000 Cumberland ambulance to hospital
46.040 Mechanicsburg amb.
46.060 Cumberland Co. FD #1
46.060 Perry Co. FD #1
46.060 Franklin Co. FD #3
46.060 Juniata Co. FD #1
46.060 Snyder Co. FD #1
46.120 Cumberland Co. FD #2
46.160 Franklin Co. FD #1
46.180 Adams Co. FD #1
46.200 " #2
46.200 " Perry Co. FD #2
46.220 Cumberland Co. FD #3
46.500 Hampden Twp FD #4
46.520 Derry Twp
46.540 Swatara Twp
46.560 Dauphin Co.
46.580 Hampden Twp.
47.200 Dauphin Co. emerg. management
47.420 American Red Cross
47.500 Citizens of Mechanicsburg
47.540 Upper Allan Twp FD
49.830 CB channel A
49.845 CB channel B
49.860 CB channel C
49.875 CB channel D
49.890 CB channel E
49.980 Air Force MARS (FM/SSB/AM)
52.010 CPRA repeater (ham) input
53.010 " output
118.250 Harrisburg Int'l app
118.800 Capitol City tower
119.500 "
121.500 National ELT
121.650 Harrisburg Int'l ground
121.900 Capitol City ground
122.400 Harrisburg flight service
122.800 UNICOM (Harrisburg & private airports)
124.800 Harrisburg tower
126.450 " approach
128.200 New York Center
130.050 Middletown UNICOM
130.100 US Air ARINC
130.500 Middletown UNICOM
134.950 Capitol City ATIS
135.450 New York Center
138.225 FEMA rptr pair (141.875)
139.250 " pair (143.250)
141.725 FEMA simplex
143.155 Air Force MARS (rptr input)
142.925 FEMA simplex
143.255 FEMA mobile
143.355 military rptr?
143.460 AF MARS (output)
143.950 AF MARS (simplex)
145.010 Packet
145.030 "
145.050 "
145.170 Ham rptr Pine Grove (10 meter link)
145.310 Ham data rptr York
145.370 Ham rptr Pottsville
145.390 " Reesers Summit
145.430 " Carlisle
145.450 " Ephrata
145.470 " (Central Pa. Rptr. Assoc.) Harrisburg
145.490 " Reading
146.640 " Pine Grove
146.760 " (CPRA) Harrisburg
146.790 " York
146.880 " Mechanicsburg
146.940 " (CPRA) Harrisburg
146.970 " York
147.240 " Elizabethville
147.315 " Lebanon
147.375 " (CPRA) teletype
148.150 CAP rptr Reesers Summit (143.9 input)
148.175 Nat'l Guard Olmstead (command post base)
148.290 Mechanicsburg depot (USN)
148.320 Navy depot
148.450 NG Olmstead(base ops)
148.550 " (base maintenance)
148.675 NCAD (US Army) supply net
149.070 Mechanicsburg depot (USN)
150.200 NG Olmstead (base disaster)
150.945 AAA
151.179 Forest and Waters
151.300 Penn Nat'l Race Track security
151.400 "
151.895 Carlisle School
151.925 Eastern Microwave maintenance
151.985 Bell Tel. maint.
152.030 RCC mobile phone ch#1 (Metrocall)
152.060 " ch#3 (tri-state York) manual access
152.090 " ch#5 Lebanon
152.120 " ch#7 (Metrocall)
152.150 " ch#9 (tri-state) Camp Hill
152.180 " ch#11 (Metrocall) Harrisburg
152.210 " ch#13 (Metrocall)"
152.240 P-5 RCC paging chan
152.510 Bell Tel. mobile
152.540 "
152.600 "
152.630 "
152.660 "
152.720 "
152.750 "
152.780 "
153.255 FEMA rptr (output)
153.700 Three Mile Island
153.980 Elizabethtown gov.
154.010 Harrisburg FD #2
154.070 " #1
154.100 Selinsgrove
154.155 Harrisburg state hospital
154.280 Cumberland Co. inter-county net
154.540 Trafax (simplex)
154.650 Just Dept. surveil. (hidden microphone)
154.755 State police mobile/ mobile rpt output (input 159.210)
154.875 Lancaster PD
155.130 Columbia PD
155.145 Mount Joy PD
155.160 Harrisburg/poly-clinic amb. to hosp.
155.205 Geisinger Med.Center
155.220 Harrisburg Hospital
155.235 Hummelstown amb.
155.250 Mechanicsburg PD
155.265 Hershey Med. Center
155.280 Lebanon Co. amb-base
155.325 Community General Osteopathic Hospital
155.340 Lebanon Co. amb-hosp
155.400 York hospital
155.490 Middletown Steeltown PD #1
155.505 State Police base ch#C (pl=146.2)
155.580 " ch#A "
155.610 Tamaqa Carbondale PD
155.625 York metro PD
155.630 Mount Joy PD
155.640 Lancaster PD #2
155.670 State PD base ch#B (pl=146.2)
155.685 Lancaster PD #1
155.700 Reading PD
155.730 "
155.760 Middletown Steeltown PD #2
155.790 State Police mobile ch#A (pl=146.2)
155.835 Capitol Campus Middletown
155.850 State Police mobile ch#C (pl=146.2)
155.910 " ch#B "
155.955 Harrisburg maintnce
155.970 Lebanon PD
155.985 Pa. Housing Auth. portables
156.015 Liquor Control Board (output 158.760)
156.135 Penndot up-link
156.210 Harrisburg city
156.450 "
156.570 York PD
158.130 FEMA rpt (input)
158.490 Mobile phone Ch#1 (Metrocall) H'burg
158.520 " ch#3 York
158.550 " ch#5 Lebanon
158.580 " ch#7 (Metrocall) Carlisle
158.610 " ch#9 (Tri-state) Camp Hill
158.640 " ch#11 (Metrocall) Harrisburg
158.670 " ch#13 (") H'burg
158.700 Paging ch(Metrocall)
158.730 Lancaster PD
158.780 Susquehanna Twp. maintenance
158.790 Elizabethtown Lancaster PD
158.850 Lebanon PD
158.865 Susquehanna Twp PD
158.910 Lebanon PD
159.045 State Police turnpke
159.210 " mobile rptr (output 154.755)
159.195 Olmsted fire & sec
160.800 Conrail base
161.000 " yard ch#3
161.070 " mobile
161.640 WHP (rpu)
161.670 WCMB/WSBA (rpu)
161.700 WKBO (rpu)
161.730 "
161.760 WHP (rpu)
162.400 US Weather Bureau Baltimore, MD
162.475 " Philadelphia, PA
162.550 " Harrisburg, PA
163.025 Corps of Engineers
163.240 Federal Marshalls, Camp Hill?
163.4625 Ft. Indiantown Gap Military Reservation (IGMR)
163.5625 New Cumberland Army Depot (NCAD)
163.925 FBI
163.9875 "
163.0625 NCAD
165.1125 "
171.425 Game Commission
173.485 Carlisle Army barracks
173.510 "
223.300 Ham rptr Lancaster
224.780 " (CPRA)
232.700 IGMR air-ground
237.200 " air-ground (paired to 237.7)
247.200 Capitol City (mil.) air-ground
248.200 IGMR tower
251.900 Reading approach
257.800 Capitol City tower
322.400 NY ARTCC
339.300 Cap. City approach
379.800 "
412.875 IGMR police
444.450 Ham rptr (CPRA)
450.650 WGAL TV (rpu)
451.050 Three Mile Island
451.125 "
453.225 Londonderry Twp
453.250 West Hanover Twp. trucks
453.300 State capitol police
453.325 East Mall security
453.350 Pa. Emergency Mgt. Assoc. portable rptr
453.375 Dauphin Co. Agency for the Aging
453.525 PEMA rpt output
453.650 White Hill prison (simplex)
453.675 Cumberland/Dauphin transit
454.025 Mobile phone Lebanon
454.050 " Carlisle
454.075 " -
454.100 " York
454.125 " Lebanon
454.150 " (Tri-state) H'burg-York
454.175 " Lebanon
454.200 " -
454.225 " Hanover
454.250 " (Metrocall)
454.275 " (")
454.300 " Lebanon
454.325 " Lancaster
454.350 " "
454.350 WGAL radio
458.675 Cumberland/Dauphin Area Transit(busses)
459.700 Air-ground telephone
459.755 "
460.025 Dauphin Co. PD #2 (Reesers Summit)
460.050 " #4 (Short Mt.)
460.075 " #1 (Blue Mt.)
460.100 " #3 (countywide)
460.125 " #5 (Berry Mt.)
460,175 Derry Twp. PD
460.200 Harrisburg PD
460.225 Dauphin Co/H'burg felony
460.250 Harrisburg PD
460.275 "
460.300 "
460.350 "
460.475 "
461.200 comm. rptr

Logging 170 Meters

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

Freq.	Location/ Time/Date/Call-ID	Credit
1613	GUATEMALA Rabinal	
	1035 3/5 RAB Ident frequency is exactly 1614.01	SR
1617	0444 5/26 Cubic Argo	CH
1620	1000 4/23 UBT Ident freq is 1621.02; rep. rate is 7.585 sec	SR
1622	NEW YORK Yonkers	
	0340 4/10 KPF941 Folk music and male announcer	RR
1625	ECUADOR Pastaza	
	0850 3/5 PAT Rep. cycle is 8 sec; Ident. freq. 1666.13	SR
1649	0443 5/26 Cubic Argo	CH
1665	ECUADOR Lago Agrio	
	0950 3/5 LAG Rep. rate 8.162 sec.; ident. freq. 1666.13	SR
1682	0441 5/26 Cubic Argo	CH
1685	COLOMBIA Mercaderes	
	0808 3/5 MER Rep. rate 5.089 sec; ident. freq. 1686.14	SR
1685	COLOMBIA Mercaderes	
	0430 4/9	RR
1699	0435,0439 5/26 KA84112	CH
1709.5	0434 5/26 Decca HiFix	CH
1714	0433 5/26 Cubic Argo	CH
1716	0433 5/26 Cubic Argo	CH
1728.5	0432 5/26 Cubic Argo (sounds like cw "s")	CH
1746	0431 5/26 Decca HiFix	CH
1747	0431 5/26 Decca HiFix	CH
1762.5	0430 5/26 Cubic Argo	CH
1767.5	0430 5/26 Cubic Argo	CH
1782	0428 5/26 long & short 30 pip/min	CH
1615	H24 "RBT" in CW; IDs 12/min; Camp Roberts, CA?	CB
1615	NEW ZEALAND Ohura	
	1254 6/5 OR	AP
1620	0639 6/12 Loran-like tone	MH
1629	1145 5/26 GEK	BP
1640	0641 6/12	MH
1660.5	0644 6/12 "	MH
1662	0644 6/12 "	MH
1665	1150 5/26 DMO	BP
1691	0648 6/12 Warbling tone 1689.5-1691.4	MH
1699.5	0649 6/12 RTTY-like tone	MH
1700	1103 5/26 USB voice	BP
1710	0651 6/12 Loran-tone 1709.5-1710.5	MH
1720	1101 5/26 "38" in Morse	BP
1780	0655 6/12	MH

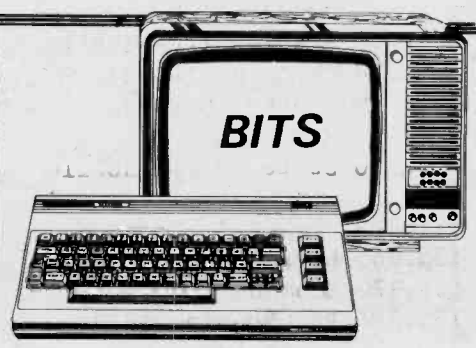
Credits:

Cliff Buttschardt	Morro Bay, CA
Mike Hardester	Encinitas, CA
Craig Healy	Pawtucket, RI
Art Peterson	Richmond, CA
Bruce Portzer	Sombrio Point, BC
Sheldon Remington	Fairfax, CA
Robert Ross	London, ON

LISTENERS LOG cont'd

461.300 Dauphin Co. school buses
461.325 Security patrol
461.375 Motorola comm. rptr
461.525 Wolford TV truck & collection agency
461.875 (comm rptr) Mt.Holly
461.925 (comm rptr)
462.000 WHTM (remote pickup)
462.550 GMRS output
462.575 "
462.625 "
462.650 "
462.675 "
462.700 "
462.725 "
462.950 EMS
462.975 "
463.000 "
463.025 "
463.050 "
463.075 "
463.100 "
463.125 "
463.150 "
163.175 "
463.300 Penn Nat'l Race Track & Sammons Communications
463.775 (comm rptr)
463.800 Penn Natl Race Track
463.925 (comm rptr)
463.975 (comm rptr)
464.150 Hershey Park (rptr)
464.275 "
464.375 "
464.400 "
464.400 Hershey (water twr)
464.925 East Mall security
465.150 Dauphin Co. portable talk-around
465.175 "
465.225 Harrisburg city crime alert
467.550 Hershey community center (simplex)

rpu = remote pickup



C.W. Ellis
13 Public Avenue
Montrose, PA 18801

A PC TO RECEIVER LINK

PART II

Last month we looked at the steps necessary to convert a receiver to computer control. This month we will take a look at what has to happen at the other end to allow the computer to control the receiver.

The part of the computer that enables it to communicate with the outisde world is called a port. Ports comes in many types and configurations. They can be broken into three types for the purpose of discussion: the parallel, the serial, and the special purpose ports. Most ports allow communications in both directions and are thus called "Input and Output" ports, usually shortened to "I/O."

A parallel port transmits data on multiple lines all at one time, the usual number of lines being eight although ports of four or 16 lines are not unusual. The unit of data--often a number or letter--moved around within the computer is called a byte and, in most machines, consists of eight bits although there are 16 and even 32 bit machines.

Also included in the parallel port are one or more control lines to keep track of which device (in our case computer or receiver) has control of the "bus" as the lines are called.

In contrast to the parallel port, the serial port has only one line to transmit data on, so in order to transmit the same eight bits of data, the bits must be transmitted one after the other; hence the name "serial" port. This setup also has additional lines to control who is the "talker," and who is the "listener."

The third type of port sometimes encountered is the special purpose port, a serial or a parallel port which has been adapted for a specific job. An example of this is the IEEE-488 port developed for the control of laboratory test and measurement instruments such as signal generators, oscilloscopes, etc. This has not precluded the control of power supplies, robots, conveyor belts, or a host of other items from being attached to a computer with a 488 link.

Henry Perry, Jr., of Lawton, Ok., has asked the best way to interface a code converter to an Atari 800. There are a number of code converters on the market and most interconnect to a computer in one of two ways.

The first is called a "dedicated interconnect" which means you buy the model made to hook to your particular model of computer. This type is usually slightly less expensive, and is fine as long as you don't plan on changing computers.

The second type uses an industry standard RS-232 interface and will, with the appropriate cable, plug into any model computer that is similarly equipped. This unit is slightly more expensive due to the extra hardware needed to build the RS-232 feature into the converter. However, the unit can be moved from computer to computer with relative ease.

Both the RS-232 and the IEEE-48 interfaces are standards backed by the Electronics Industries Association (RS232), or the International Electrical and Electronics Engineer's association (IEEE-488). This assures a large degree of compatibility between various maufacturers.

Henry also asked if there were any programs around for the Atari to run the code converter. In many cases the company producing the converter will also have software for the various computer models that they make a converter for.

Another source of software for a given machine is the "public domain" series of programs available through microcomputer clubs, electronic bulletin broads and individual companies specializing in cataloging public domain programs for different machines.

BITS cont'd

There is a charge to obtain programs from these sources but it is considered a fee covering the cost of the disk, copying charges, overhead for cataloging and listing programs, and the inevitable profit every company must have to stay in business. In other words, the program is free; you are paying for the service to get it to you.

Digging through some recent issues of various computer magazines revealed the following sources of public domain and other inexpensive software:

Gordon Mueller, KB6BNR
4914 Commonwealth Ave.
La Canada, CA 91011
Leaflet on computer and software for Oscar 10 work.

PDS Service
P.O. Box 414
Storrs, CT 06268
A stamped self-addressed envelope will get you information on public domain disks for Apple and IBM computers.

ESRAEZRA
Box 5222NAP
San Diego, CA 92105
Another SASE, this time for TI-99/4A, TRS-80, Timex, and Commodore programs.

Having had no contact with any of the above, I can't tell you anything about the quality of the programs, but initially all you are investing is a couple of stamped envelopes. There are others.

Another source of programs is the SIG (Special Interest Group) of your local computer club. If you don't belong to a microcomputer club, make every attempt to find and join one. Most clubs are a real asset in terms of information swapping, program exchange, etc. Many larger clubs feature group buys on popular items, saving substantial amounts of money over individual purchases.

Chief among the differences between and RS-232 connected machine and a plug-in card for the interface is an external power supply for the standalone interface device. Note, however, that a plug-in card is still required to adapt the usually parallel I/O bus in the computer to the RS-232 interface. The big advantage is that the computer may already have a spare RS-232 port available.

Plug-in adapters may also require system power that is just not available, which makes the external device look better from a power standpoint.

One place this is evident is in modems (MODulator - DEModulator) which are used to connect two computers together through a telephone line, which is another story in itself. You can buy a modem that will sit on your desk and plug into the RS-232 port, get its power from the ac wall outlet, and plug into a standard telephone jack for the communications end of the connection.

Or, you can buy a modem on a card providing the same function and install this device inside your computer. It gets its power from the computer's power supply, makes connection to the internal bus as it is plugged in, and has a jack to accept a standard telephone line plug.

Getting back to the Morse/teletype/ASCII adapter, this device can be obtained with the 232 port or a number of other designs to adapt to almost any popular computer.

There are other factors to be taken into account; for example, if both types are available for a reasonable price, you can easily install either, and both have the features you want, the decision is tough but should only one manufacturer furnish software for the unit and the other "doesn't have it for your particular machine," by all means go with the software.

Even poor software is better than none. At least it is a starting place to modify to suit your needs, and is a heck of a lot easier than rolling your own from scratch.

Depending upon interest, perhaps we can take a look at what's involved in writing a communications program in a future column.

If you have a question on personal computing, especially as it relates to monitoring or SWL'ing, drop me a letter. I'll pick the questions of most general interest to answer in this column and if you include an SASE, I will answer questions on an individual basis as time permits.

So, for this month, happy monitoring, and *don't* byte off more than you can chew. ●

INTERESTED IN A HAM TICKET?

Questions and Answers Are Now Available

In sweeping changes about a year ago the Federal Communications Commission restructured the amateur radio licensing program. While the same requirements for various classes of ham license are still in effect, the means to meet them have been simplified.

The code test requires receiving only, and the theory questions are available--with answers and their explanations--in advance. Tests are given by volunteer examiners, licensed hams in your area.

Fred Maia, editor of "Dits and Bits--The W5YI Report," is a volunteer exam coordinator (VEC) and study guides are available at low cost from him:

Novice Study Guide: $3 plus $1 postage
Novice Element 2 test: $1.50 plus $.50 postage
Technician/ General Study Guide: $5 plus $1.50 postage
Advanced Study Guide: $5 plus $1.50 postage
Extra Study Guide: $5 plus $1.50 postage
Part 97 Rules and Regulations: $4 plus $1.50 postage

Order from: W5YI-VEC, P.O. Box 10101, Dallas, TX 75207.

Novices May Get More Phone Bands

The novice class amateur radio license was instituted over thirty years ago to encourage more prospective hams to pass the Morse code hurdle, take an introductory exam, and get into ham radio.

As part of the incentive licensing plan developed by the American Radio Relay League (ARRL) in Newington, Connecticut, there are increasing levels of licensing, each with increased privileges for achievement.

The ARRL has been under increasing fire lately from the amateur community for setting up the amateur hierarchy which has been blamed for the lack of growth--and even decline--of amateur radio.

In response, the ARRL has proposed to the FCC that novices be permitted SSB privileges from 28.3-28.5 MHz and FM on 220-225 and 1246-1260 MHz; additionally, they could operate digital modes like packet radio and RTTY, although their operating power would be limited to 25 watts on the 220 MHz band and 5 watts on 1246 MHz.

Technician class licensees would also see the added phone spectrum on ten meters, and both classes would be allowed CW operation from 28.1-28.5 and data modes from 28.1-28.3 MHz (1200 baud max.).

GETTING STARTED

by John Avery

RADIO MONITORING ACROSS THE YEARS: A Tour in a Time Machine

GUEST ARTICLE
by
W. Clem Small
26530 Parkside Drive
Hayward, CA 94542

Come with me in my time machine. Bring a scanner and a general coverage receiver, for we are about to zip backwards in time to the 1700's, before the advent of radio or wireless. Then we'll move forward through various points in the history of electronic communication. Ready? Here we go!

We arrive back in the 1700's. Full of anticipation we pull out the telescopic antennas and flip on the power switches to our battery-operated receivers. Back in the 1700's, there were no house wiring mains to supply electric power.

What do we hear? On longer waves we pull in lots of static or atmospheric

noise generated in the low, medium and high frequency bands by lightning crashes around the world, just as it is today. But nowhere in the spectrum will we find a sign of a man-made signal for your monitoring efforts.

Our scanner, checking through the VHF and UHF regions of the spectrum, would fare the worst--not a sign of a signal or even any real static to notice except during an electrical storm when a lightning bolt strikes fairly close by.

We move forward in time to England and stop around 1867 when Maxwell was proposing his revolutionary theory on the possibility that electric waves could be created and even sent through the "ether" across space. He was right, of course, and we now call those electric waves "radio" waves.[1] Radio wasn't invented yet in those days, however, nor was the term "radio" with its present meaning yet coined.[2]

Undaunted by all this, we switch on our receivers and hear the same results as we did back in the 1700's, except that as you passed by the laboratories of experimenters like Michael Faraday (you know Faraday, he's the guy they named the microfarad for) you might now hear some occasional short interference-type pulses of man-made origin.

Some of the devices used by these early workers, such as switches on circuits containing electromagnets, caused healthy electrical sparks which, in turn, create electromagnetic radiation (radio waves) in the same way that lightning bolts do.

One of the devices which would produce a particularly noticeable and exciting buzz (music to our signal-starved ears at this point!) in our receivers would be the Rhumkorff coil (induction coil), the basis of the transmitter which Hertz used to demonstrate the electric waves which Maxwell had predicted earlier. As a matter of fact, if we were in Germany around 1887 and actively scanning the 150 MHz band, we just might have monitored Hertz's very first demonstration of electromagnetic radiation!

Yes, that "150 MHz" is not a printing error--Hertz did his early owrk in the VHF and UHF range. It was not until Marconi began experimenting with his own new quarter-wave grounded "aerial," and then lengthening it to cover greater distance, that wireless telegraphy invaded the longer wavelengths.[3]

Unofrtunately, we wouldn't have monitored any communications like Morse code exchanges or emergency messages in Hertz's day; it was not until later in the 1800's that Marconi added the telegraph key to the spark-gap transmitter to produce the first "wireless telegraph."[4]

Easing on up to 1895, we move in next to Villa Grifone, Italy, and monitor young Guglielmo Marconi's VHF spark-gap transmitter as he worked away at his early wireless experiments on his family's estate. This historic work gave birth to wireless and ultimately to radio operating and monitoring as we know them today. No doubt the signals from Marconi's rig would be heard relatively infrequently as he must have had to pause frequently to make numerous tests and adjustments.

There were very few workers in this new field; only a few physicists and experimenters like Marconi scattered across the globe were generating these new "electric wave." So then, in the late 1800's, even with wireless under development, we'd have relatively little to monitor except approaching storms with lightning-caused atmospheric static crashes.

Some of the pioneers of wireless in those days were interested in monitoring static crashes; Poppov, the famous Russian radio pioneer, was among the old-timers who developed devices for monitoring the electromagnetic radiation from approaching storms.[1] On the other hand, the number of stations on the air was increasing, and interference between close stations was a problem at times. All stations on the air with enough strength for your receiver to respond would be heard mixed together, there was no tuning to separate them.

Oliver Lodge later developed resonant (tuned) circuits so that stations could be separated from one another.[5] I propose that all monitoring enthusiasts hold the name of Lodge in great reverence--can you imagine a world without the ability to tune in just one station at a time? What bedlam!

In 1896 Marconi demonstarted his new wireless communication system to the British government because his native Italy chose not to sponsor his efforts, believing that the future development of wireless lay with a seagoing power such as England.[4]

From that time on there were communications test frequently and if we had been around in 1899, we might have heard the first wireless transmissions across the English Channel, or perhaps some of the early tests using wireless aboard ships of the British navy. This was surely a great time in the history of radio. We now move forward in time to December 12, 1901, to catch the most famous and exciting monitoring feat in all radio history. On this date Marconi and his men sat nervously in a lonely outpost in Newfoundland awaiting the simple "dit-dit-dit" (the Morse-code letter "S") being sent to them from Poldhu, England, across the Atlantic Ocean. As the weak signal crackled in their earphones, waves of excitement spread through the civilized world. Transoceanic wireless communication was a reality! Just think of the QSL card Marconi could have sent to us if we had monitored that transmission!

If we were listening on the right wavelength at the right time in 1899, we might have been lucky enough to catch the famous first radio-assisted rescue at sea when the steamer "R.F. Mathews" collided with the light ship "East Goodwin."[6] Or perhaps we would have heard that famous call from T. D. Taubner, radio operator on the ill-fated ocean liner "Republic," as he sent the world's very first "SOS" distress call in 1909.[7] Both of these radio calls resulted in the successful rescue of the people on the ships.

Not so fortunate were the passengers on the now infamous "Titanic" when she struck an iceberg and sank in 1912, producing a maritime disaster of such proportions that it led to the compulsory installation of two-way radio aboard all U.S. seagoing ships of substantial passenger-carrying capacity. Among the many persons monitoring and communicating during this disaster was a lad named David Sarnoff, destined to later become president of the Radio Corporation of America (RCA).[8]

Rescue work at the Titanic disaster provided many other operators and monitoring enthusiasts a spine-tingling encounter which demonstrated well the value of radio at sea. Even today, some of the most exciting monitoring you can find involves the maritime radio frequencies.

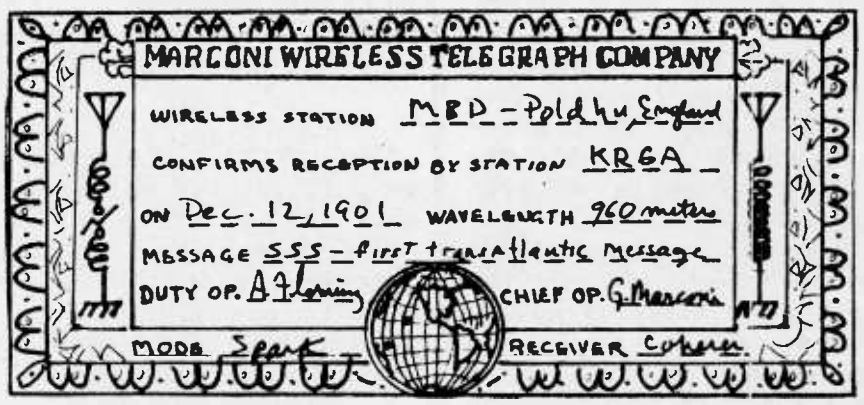
Now, as we move forward into the present century, we find the airwaves growing filled with activity. Monitoring buffs could detect strange new signals on the ether, very different from the "rock-crusher" buzz of the spark-gap. They needed a new device such as a "tikker" or, even better, a hetrodyne-oscillator for their receivers in order to monitor them.

These new signals came in with a musical-sounding note as compared to the buzz of the old "rock crusher" and came to be called "CW" or continuous-wave signals.[9]

One variety of CW was generated by the Poulsen arc transmitter; another by the Fessenden alternator. Still later, DeForest's three-element vacuum tube proved to be a most useful generator of CW signals.

The airwaves became filled with new and exciting things for the monitoring enthusiasts to enjoy. For instance, experimenters started doing things like inserting a carbon microphone into their antenna leads, and shouting into it (from a safe distance of course). These results astounded those who heard their signals: They were clearly transmitting the human voice on wireless for the first time in history! In fact, if you happened to be monitoring 80 to 100 kHz on Christmas eve in 1906, you could have written to the famous radio pioneer Fessenden himself for a QSL card of the first voice and music broadcast ever.[10]

On that occasion, from his station at Brant Rock,



QSL card the author would have loved to receive after a 1901 time-machine DX-pedition to Newfoundland.

GETTING STARTED cont'd

Fessenden connected a microphone to his new alternator to thrill radio operators and monitors up and down the east coast and even in ships at sea. A few operators knew that such a broadcast was to be expected but others did not, and it was reported that some were so surprised that they believed they were hearing angels or other heavenly voices coming in on these mysterious waves out of the air!

While we are experiencing this early broadcasting, let's jump ahead to 1909 in central California. Here would would monitor a San Jose station without a call-sign, later to be assigned the call "FN", as its operator began the first regular broadcasting ever by any station.[11] Or we could move up in time to 1920, 11 years later, and monitor the first broadcast of 8XK, later to become the most famous of the early broadcasting stations: KDKA.

Moving on into the second and third decade of our present century, we'd find the radio engineering profession developing sensitive and selective receivers of remarkable quality. Most of these were derived from the inventions of Major Edwin Armstrong who, despite legal decisions to the contrary, is generally acknowledged as the inventor of every major type of radio receiver in the history of electronic communication.

Radio operators and monitors received their most precious gift ever when Armstrong conceived of and designed the first superheterodyne radio receiver, a major advance in selectivity.

Development pushed ahead in the 1920's, 30's, and 40's at a fast pace. Vacuum tube technology was supporting explorations into the HF, VHF and even the microwave regions of the radio frequency spectrum. During this time the development of AM FM, RTTY, and even commercial SSB and electronic TV became reality! Then the greatest engineering and development effort known in the history of radio came about.

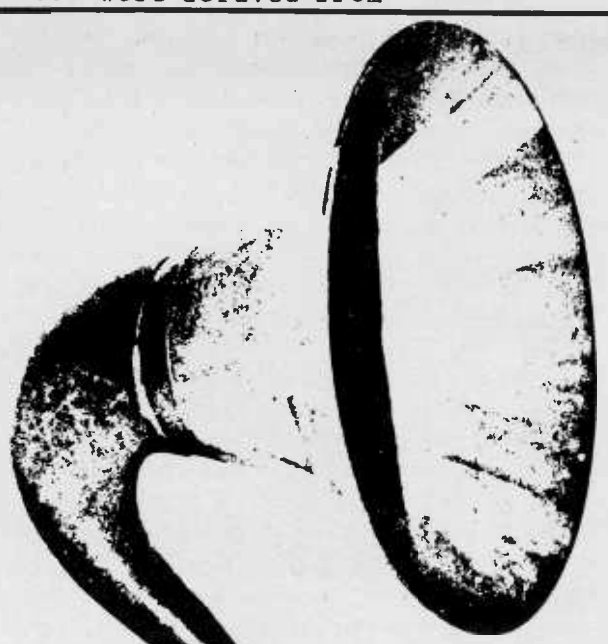
As the world plunged into the dark days of World War Two, scientists and engineers worldwide worked day and night to provide better communications for their national defense. At the same time, existing technology was pushed to its limits--the airwaves crackled with messages in plain language, Morse and Baudot code and secret code cryptograms. Out of this era came many developments which made for more sensitive, stable and selective receivers.

The usable portion of the radio spectrum was significantly enlarged with wartime-spawned advances in microwave technique. For instance, that scanner which you tucked under your arm before we boarded the time machine could have been used in the 1940's to monitor the sound of the first radar blips as they were being developed. The U.S. even had a functional radar system prior to the invasion of Pearl Harbor by the Japanese naval air task-force; that radar warned of the impending approach of the attacking planes. For some reason no action was taken on this information and, to the great sorrow of our nation, radar had to wait for other battles to show its great value as an electronic warfare weapon.

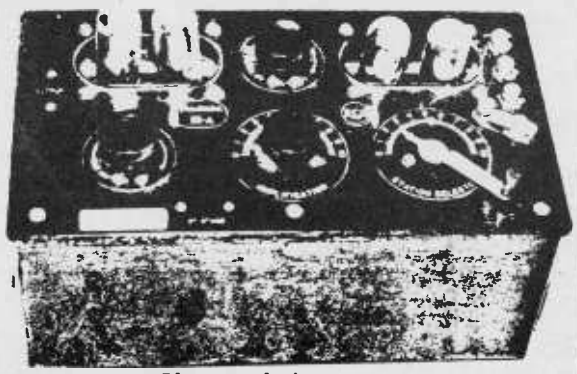
In October 1957, history records that a small spacecraft circled our planet for an extended period carrying a little dog inside. From antennas on that craft came simple Morse code signals heard by monitors around the world. This Sputnik 1 satellite drew the attention of monitoring enthusiasts toward space. Today we have communications with manned spacecraft, radio-telemetry equipped deep-space probes, and orbiting communications satellites which emit signals ranging from TV programming to weather information.

An now, at the end of our time machine voyage, we may monitor many different kinds of man-made signals. They range from the extremely short wavelengths of the microwave regions to the extremely long waves of the ELF band--signals which may utilize AM, wide and narrow band FM, SSB, slow and fast-scan TV, RTTY, TELEX, SITOR, AMTOR, packet radio--you name it.

But remember, all this variety didn't come from the work of the last one or two generations of scientist, engineers and technicians--it was a "long time a-borning." In just two short years, a full century will have elapsed since Heinrich Hertz first discovered radio waves! ●



The old "morning glory" horn speaker of the 1920's.



RCA, Radiola IIIA, 1924, battery, regenerative. Photographed at St. Louis Museum of Science and Natural History.

TECHNICAL TOPICS *by Bob Grove*

***Q** I have used a Kenwood R-600 for three years. I now have a Kenwood R-2000. I find, when tuning SSB signals on the R-600, I have to tune about 1 kHz higher for USB signals, such as the Coast Guard on 5696.0 MHz. But, on my new R-2000, to receive the same station, I have to tune approximately 1 kHz lower (for USB--5695.0 to 6596.1).*

Is this normal for each receiver? I have read that the difference between the "carrier" frequency and the "sideband" frequency was approximately 1.5 kHz but I though both radios would tune the same.

Also, the R-2000 has an "AGC fast" control, but the instruction manual does not make clear what it is for, or how to use it. (I can't tell any difference, on or off.) (Kenneth Roberts, Ft. Lauderdale, FL)

REFERENCES

1. Orrin E. Dunlap Jr., Radio 100 Men of Science. Harper and Brothers, New York, 1944, p.67, 127.
2. Small, W. Clem, "Why Do We Call Wireless Radio?", Monitoring Times, May 1985, v.4, no.5, p.25-26.
3. Small, W. Clem, "The Radio Spectrum Emerges," Monitoring Times, March 1985, v.4, no.3, p.30-31.
4. Marconi, Degna, My Father, Marconi. Frederick Muller Ltd., London, 1962, p.27,31,32.
5. Aitken, H.J.G., Syntony and Spark. John Wiley and Sons, New York, 1976, p.131.
6. Dunlap, Orrin E. Jr., Radio and Television Almanac. Harper and Brothers, New York, 1951, p. 33.
7. This comes from a reprint of a 1932 Veteran Wireless Operator's Souvenir Journal, no other reference information available. Note that some sources credit Jack Binns with the first SOS in 1919, however he used the older CQD at that time, not an SOS.
8. Lyons, Eugene, David Sarnoff. Harper and Row, New York, 1966, p.50-60.
9. Small, W. Clem, "Dah-Di-Dah: just what does 'CW' stand for?", Popular Communications, October 1984, v.3 no.2, p.49-50.
10. Fessenden, Helen M., Fessenden: builder of tomorrows. Coward-McCann, New York, 1940, p.145, 153.
11. Morgan, Jane, Electronics in the West, National Press Books, Palo Alto, 1967, p.29.

TECHNICAL TOPICS cont'd

A The earlier Kenwood receivers did read the sideband offset, 1.5 kHz higher than the actual suppressed carrier; that was changed in the R2000 and now reads the correct carrier. Thus, when you are listening to the U.S. Coast Guard whose suppressed carrier is 5696 kHz, the readout should display that frequency. If your Kenwood R2000 does not show that and show 5695 instead, it needs frequency calibration.

So far as the "AGC" control, you would set it for fast tuning through the AM international broadcasters and slow for single sideband or Morse code. It merely adjusts the recovery time during which strong signals automatically cause the receiver to lower its sensitivity while tuned to those frequencies so that the receiver does not overload. If you leave it on fast while receiving SSB or CW, the receiver "pumps" in its audio, giving distorted or uncomfortable sounds.

◆◆◆◆◆

Q *I would like to connect my R-2000 audio output to my Panasonic tape recorder; any hints? (George Miller, Marietta, GA)*

A The "RECORD" jack on your receiver provides a standard level output which is compatible with most tape recorders. It may be connected to the various inputs ("LINE", "RECORD IN", etc.) or even the microphone jack as a last resort.

Many portable tape recorders have automatic level control (ALC) which automatically adjusts for changes in volume at the microphone; this creates a "pumping" quality to the recorded audio and is the reason why the mike input should be used as a last resort.

In receivers with record outputs which don't change with the volume control, you may still adjust the attenuator or RF gain control to change the audio level at the record jack.

◆◆◆◆◆

Q *I can hear cordless phones in the 1.6-1.8 MHz range, but no matching handsets in the 49 MHz range; how come? (Andrew George, Selden, NY)*

A Signal paths (propagation) from the lower frequency base units are invariably better than from the short-antenna, lower power handsets. And don't forget that the old 1.6 MHz phones are obsolescent, replaced by the newer 46/49 MHz duplex sets. ●

HELPFUL HINTS

ANALYZING BCB INTERFERENCE

by Greg Doerschler N1DEM

If you live in or near a city and monitor the 2-30 MHz short-wave spectrum, chances are you've been troubled by local AM broadcast band stations cropping up in places where they're not supposed to be. Various AM broadcast band traps or preselectors (such as the Grove Minituner TUN-3) should alleviate this problem if the receiver is at fault; but if these devices don't help perhaps the problem lies outside the receiver.

Living in close proximity to four AM radio stations, I found various combinations of these signals mixing and appearing in the 3-6 MHz range on my ICOM R71A. Using an AM broadcast band trap, I attenuated the primary signals by over 40 dB, but the mixing products remained at a constant level. It wasn't the fault of the ICOM.

Using a second receiver, I confirmed that this mixing was actually taking place somewhere outside of the receiver; the receiver was merely picking up a signal being rebroadcast on the frequency to which it was tuned.

The following test should help determine whether the receiver is at fault in cases of AM broadcast interference. As an example, let's assume that a local AM station is being heard on 3.900 MHz.

1)Determine if 3.9 MHz is an exact multiple of the actual broadcast frequency. If so, you're probably receiving a transmitter harmonic (in this case the third harmonic of 1.3 MHz).

2)Add some attenuation (resistance) at the antenna line, shorten the antenna, or shut off the preamp if you are using one. If the 3.9 MHz signal seems to "drop out" when the fundamental signal is reduced beyond a certain level, the problem is likely with the receiver. Conversely, if the fundamental is reduced 10 dB and the 3.9 MHz image only drops about 10 dB, the problem may reside outside the receiver.

3)Try an AM broadcast band trap or tune out the fundamental frequency as much as possible. If you hear audio from more than one station mixing, try tuning out each station individually. If the 3.9 MHz signal is not attenuated, you're probably hearing a transmitter "spur" (spurious signal) or external mixing product. Spurs as weak as 60 dB below the fundamental transmitter signal may still be audible at close range.

4)The most accurate test involves using an antenna tuner or preselector like the Grove MiniTuner. If the fault lies within the receiver, the interference should be strongest when the tuner is set so that the fundamental is strongest. If the fault is not within the receiver, the interference should be worst when the tuner is set to the interference frequency (in my example, 3.9 MHz).

Broadcast band interference is annoying. But if a device designed to eliminate it effectively attenuates the primary signal and leaves the interference untouched, you may take comfort in knowing that your receiver is most likely merely doing its job, and the problem lies elsewhere.

METROPOLITAN SCANNER LISTENERS: Troubled with Intermod?

by Bob Grove

There isn't a scanner made--hand held, fixed or mobile--that will hold up under the onslaught of powerful metropolitan signals. In a major downtown section, intermod will drive you up the wall.

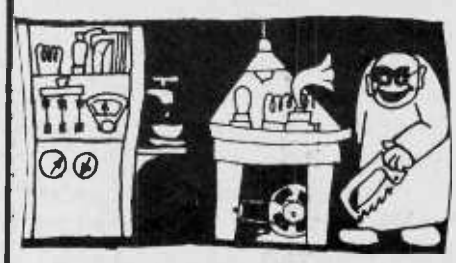
Is there anything that can be done to reduce this barrage of interference? Yes. In the majority of instances the signals you want to hear are also extremely strong. By reducing all signal strengths you may solve the problem. Here's why.

Intermodulation ("intermod") is a product of two or more signals mixing in the receiver producing the resultant interference signal on some unrelated frequency. For every one dB signal reduction you can provide, the intermod will drop three dB. That's good news.

Try this experiment: Detach your present antenna and try gradually smaller prices of wire acting as a temporary antenna. When you reach the point that the intermod is tolerable (hopefully gone) and the desired signals are still receivable, make your own antenna of that length mounted on an appropriate connector for your scanner.

You might not have solved the scanner's design limitations, but at least yu will be able to hear more of the signals you want to hear!

EXPERIMENTER'S WORKSHOP



Thomas Alva Edison
(Note flask liquid battery)

"Dear Mom: I don't think I'm ever going to get this darn thing to work!" Love, Tom

SPECTRUM PROBE... Making a Good Active Antenna Even Better

The new Grove Spectrum Probe active antenna is causing quite a stir among short wave and scanner enthusiasts alike. The teeny amplified antenna system (less than two feet tall with whip fully extended) provides continuous reception from the lowest radio frequencies (10 kHz) clear through UHF (1000 MHz).

With all revolutionary products, a period of field testing is necessary to evaluate comments from users in order to accomodate any production changes which might improve performance. Encouragingly, very few criticisms have been received, but one which was anticipated has now been corrected in all models shipped after June 1, 1985. (Updated units will have a small, round, white sticker on the rear of the control box.)

As advertised, the ANT-9 Spectrum Probe is capable of local VHF/UHF scanner reception, but sensitivity drops off on the higher frequencies making fringe reception less dramatic.

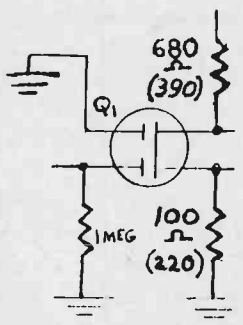
Additional testing in the lab has shown that the simple replacement of two resistors cures the problem, considerably improving Spectrum Probe sensitivity throughout its range.

EX. WORKSHOP cont'd

To proceed:

1)Remove the antenna module circuit board by unscrewing the nut on the threaded stud and pulling firmly on the coax connector; you may push on the threaded stud to encourage the board to come loose.

2)Examine the board and locate the two resistors shown on the diagram; they are physically just to the right of the first transistor, the FET, assuming the threaded stud is on your left.



The values of 680 ohms and 100 ohms for the drain and source resistors will be changed to 390 and 220 ohms respectively using 1/4 watt carbon resistors. They are easily located on the main circuit board by their color codes (blue-violet-brown and brown-black-brown).

CAVEAT: Any tampering with the circuitry of a commercially - manufactured product automatically voids the warranty. This modification should be attempted only by qualified persons with soldering experience. Excessive heat will destroy the FET.

For a limited time, Grove Enterprises will perform the improvement for a flat fee of $15 which includes return shipping UPS anywhere in the U.S.

If you would like to take advantage of this offer, please follow these directions:

1)Call Grove toll free (1-800-438-8155) for a return authorization for the modification;

2)Carefully package the antenna module only (remove and retain the whip) and enclose a check, money order or Master Card/VISA authorization along with your account number. Don't forget to put your return authorization number on the box;

3)Send the unit postage-prepaid to Grove Enterprises, 140 Dog Branch Rd., Brasstown, NC 28902.

It will be updated, tested thoroughly and returned postpaid within two weeks. ●

LIBRARY SHELF cont'd

lists show bandplans, tone encoding frequencies, contact names and addresses, a repeater "lingo" glossary, and even frequency usage agreements on all ham bands--29.3-1300 MHz.

The NET DIRECTORY is free of charge, but $1 to cover postage would be appreciated for the service. This directory lists hundreds of registered networks of amateur radio operators who meet on the air on a regular schedule.

Interested in computers? Short-wave listening? Chess? Experimentation? The latest hurricane information? Maritime traffic? There is a net for you and it's listed in this excellent directory.

SPEEDX REFERENCE GUIDE TO THE UTILITIES (SRGU) Third installment; edited by Mike Chabak (5" x 8" ring binder transmittal sheets; available only to those who previously purchased the first and second sections; $4.75 first class mail; $6.25 foreign air mail from SPEEDX, 7738 East Hampton St., Dept. MT, Tucson, AZ 85715).

SPEEDX has enjoyed a well-earned reputation for years as the penultimate short-wave utilities DXing club. Their previous edition of the SRGU is now nearly 10 years old and the sections of the newest edition have been slowly evolving for the last two years.

This most recent installment contains two pages updating aircraft tail numbers in the U.S. Coast Guard inventory, 19 pages of commercial aeronautical station mailing addresses, and 29 pages of maritime frequencies and call signs.

A major 31 page section covers the basics of QSL'ing with sample verification forms in English, Spanish, French, German, and Portuguese for utilities purposes.

EXPLORING LIGHT, RADIO AND SOUND ENERGY With Projects, by Calvin R. Graf

TUNE IN WITH Ed Noll

SIDEBAND ENCOUNTERS IN THE BROADCAST BAND

Single sideband modulation has been proven in the marine and ham-radio services. Its advantages as compared to regular AM are economy, almost complete freedom from the distortion that results from selective fading, narrower bandwidth, and better performance under adverse reception conditions such as low signal levels, noise and interference.

Even in the commercial landmobile services there is an SSB system (amplitude compandered sideband--ACSB) that will soon be competing with the broader bandwidth FM system. Is it to be the mode of the future for international broadcasting? Come on, let's do some sideband tuning!

You can begin by searching for the limited number of SSB signals on the international broadcast bands. Two of these are Austrian Radio (ORF) and Radio Sweden International (RSI). You can ID them and sometimes pull in a strong enough signal to enjoy the programming when propagation is right. Listen on 6155 between 1700-1900 UTC; this is noon to 2 pm here in the East and certainly not the ideal time for receiving signals from Austria on the 49-meter band.

Despite the fact that the ORF signal is radiated from an omnidirectional antenna and is for European consumption it is often readable--thanks to the SSB mode. The ORF signal transmits the upper sideband with the lower sideband spectrum attenuated by at least 35 decibels. The carrier itself is not fully suppressed; it is reduced 6 dB. By so doing the SSB transmissions can be received by conventional double-sideband AM receivers. It is anticipated that in the short-wave broadcast services of the future the carrier reduction shall become at least 12 decibels.

Sometimes when you receive a reasonable SSB signal from ORF (SINPO signal strength of S1 or more, tune in the signal well on upper sideband and switch between USB and AM and note the improved sound clarity and lower background noise level of the sideband reception.

You can expect better results with ORF signals during the winter than in the summer. Signals will be better nearer to 1900 UTC rather than 1700 UTC.

I copy the Radio Sweden sideband signal (USB) on 15420 at about 1800 UTC. A major problem at present is the signal from WRNO on the same frequency. And that very fact discloses a major advantage of sideband.

The two signals often take turns dominating the frequency; however, I can always copy WRNO by setting my receiver on lower sideband (LSB) since Radio Sweden transmits no lower sideband signal. As a result WRNO comes through without interference.

If WRNO transmitted no lower sideband I could choose either signal with the receiver's sideband switches. Further improvement and greater separation would result if there was no carrier present.

How is that for finding more frequency space on each band? Sideband transmission occupies half the frequency space required by a regular AM signal. Also, with carrier reduction there is no heterodyning among signals--many of the whistles and squawks would be removed.

Iceland relays their local broadcast programs to their sailors at sea over a sideband station that operates on 13797 kHz, copyable here some mornings. They, too, transmit some carrier that permits demodulation by a conventional AM receiver.

There are two sideband signals I have not caught up with: The sideband signal on 15500 from Colombia, South America, and a relay station operated by Kirabati far out in the Pacific. Go get them!

Some interesting sideband signals can be picked up by dropping in on the VOA sideband relay links. I've picked up several during daylight hours on the frequencies on 10235, 10237.5, 10314.9, 10382.5 and 14398. I'm sure there are others but you must search for them.

Upper and lower sideband frequencies are used and when you tune into a signal you must choose the correct sideband. They seem to change at various times of the day. Most unusual is the 10235 signal which often transmits both sidebands simultaneously with unlike programming. You can choose either one of the programs with your sideband switch.

Sideband tuning itself must be a bit more precise than the adjustments for a standard AM signal. All you need do is adjust a bit more carefully to obtain the very best voice or music quality. The international broadcasters normally use the upper sidebands.

Sideband signals carry well; a little power is made more useful at a greater distance. Better DXing results. All of this can be augmented with the use of a good antenna. ●

LIBRARY SHELF cont'd

(#1758, 195 pages, 5" x 8", paperbound; $10.95 from TAB Books, Dept. MT, Blue Ridge Summit, PA 17214)

Beginning with a short tutorial chapter on audio and light, Graf's new book rapidly evolves into a tinkerer's delight, homing in on listening to pocket calculator noise, tuning fork watches, heart pacemakers, electromagnetic interference, TV deflection coil radiation, automobile electrical systems, and other devices.

A chapter on VLF monitoring includes experiments involving atmospheric noise ("whistlers" and such), Omega navigational signals, loop antenna construction, lightning storms, auroral activity, electrostatic noises, and a host of other natural and man-made environmental phenomena.

All of these experiments revolve around the use of a simple home-built high gain amplifier the author chooses to call a "Humbug." By attaching a simple crystal diode, the device can now detect any nearby amplitude-modulated radio signals throughout the spectrum: aircraft passing overhead, CB'ers driving by, broadcasters, radar transmitters and navigational aids, television video transmissions, and so on.

By connecting a simple solar cell to the "Humbug," you can "hear" the light from burning matches, cigarette lighters and candles, and so on.

Graf's new work is a fun book, loaded with concepts rarely--if ever--fully discussed previously.

RADIOTELETYPE PRESS BROADCASTS (2nd edition) by Michiel Schaay (120 pages, 8" x 11-1/2", paperbound; $12.95 plus $1.75 shipping from Universal Electronics, 4555 Groves Rd., Suite 13 Dept. MT, Columbus, OH 4323)

Author Schaay has earned a reputation for accuracy in utilities frequency directories, and this latest edition of his popular RTTY press schedules is no exception.

Well illustrated, the new directory contains complete schedules and content information on press transmissions from 63 agencies worldwide including Tass, AP, Prensa Latina, ANSA, AFP, and many more.

Arranged by agency and cross indexed by operating time, this edition contains 35% more listings than the previous printing and it's all updated. Schaay includes instructions on how to send for free update sheets for his book as they become available.

FOX SCANNER RADIO LISTINGS, BALTIMORE/WASHINGTON EDITION edited by Norman Schrein (313 pages, 8-1/2" x 11", paperbound; $9.95 from Fox Marketing, 4518 Taylorsville Rd., Dept. MT, Dayton, OH 45424)

MT's own Norm Schrein ("Tune in Canada" columnist) has been putting out scanner directories faster than we can count them! This latest information-packed edition follows the previous standard of excellence with cross indexes by licensee, call sign, frequency, and service.

If you would like one of the best lists of federal agency listings (Secret Service, FBI, Nuclear Regulatory Commission, DEA, State Department, and many more) this new Fox directory is loaded!

FOX SCANNER RADIO LISTINGS: HOUSTON/BEAUMONT AREAS by Norm Schrein (8-1/2" x 11", 300 pages, paperbound; $9.95 from Fox Marketing, address above)

Following the format of previous editions, this new Houston/Beaumont, Texas scanner monitoring directory is cross-referenced by frequency, call sign, alphabetical licensee, and service.

To increase reader appeal, some short-wave entries are beginning to appear including commonly-heard English language broadcasts as well as time/frequency standard stations.

FOX SCANNER RADIO LISTINGS: BUFFALO,NY/ERIE,PA Areas by Norm Schrein (8-1/2" x 11", 180 pages, paperbound; $9.95 from Fox Marketing, address above)

Following the normal Fox directory format, this latest edition which replaces a former smaller Buffalo edition concentrates on scanner-receivable VHF and UHF signals in the metropolitan Buffalo, New York, and Erie, Pennsylvania, areas with listings on the Canadian side of the Falls as well.

THE NEW KGB by William R. Corson and Robert T. Crowley (560 pages, 6-1/2" x 9-1/2", hardbound)

For those MT readers who enjoy following spy intrigue, Corson and Crowley's new book couldn't have come out at a better time. Riding on the crest of public attention to the Walker/U.S. Navy espionage case, THE NEW KGB is a detailed chronology of the development of this top secret Soviet agency with tens of thousands of undercover agents now operating within the United States.

Available through your book store. ●

NEW ARRIVALS

ANTENNA CATALOG

Few competitors would deny that Antenna Specialists is one of the oldest, broadest-line antenna manufacturers in the commercial communications industry.

If you are planning on installing two-way radio, or are simply looking for a special purpose antenna such as for cellular radio applications, you may wish to take a look at the new "ANTENNA SELECTION GUIDE" from The Antenna Specialists Co., Marketing Department, 12435 Euclid Avenue, Dept. MT, Cleveland, OH 44106.

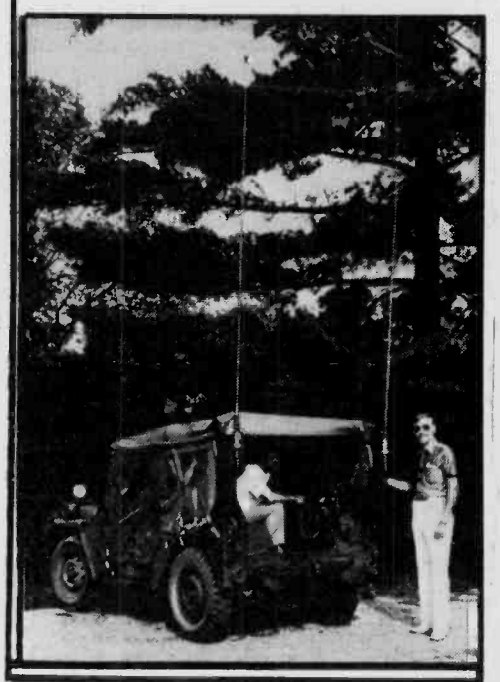
ARMY DEVELOPS ANTI-JAMMING DEVICE

With an enormous investment in radio equipment already in the field, the U.S. Army is understandably reluctant to replace it all with more up-to-date jamming countermeasures devices. Enter "SNAP."

The new Steerable Null Antenna Processor (SNAP) developed by the Army's Electronic Warfare Laboratory at Fort Monmouth, New Jersey, requires no modification to existing radios. The principal is applicable over the entire communications spectrum from HF through UHF.

Serious research and development of the new system began in 1973 during the Mideast conflict; Soviet-built jammers were employed by the Egyptians to interrupt Israeli communications.

SNAP makes it possible to differentiate between the desired and interfering signals and can even display the direction of the jamming transmitter. It utilizes the phase delay of the arrival of the signal at two antennas (see photo); this information is then electronically resolved into a bearing, or detuned out of phase to cancel the incoming jamming signal.



Charles Meincke, right; Toms River, NJ, project engineer and chief of EWL's ECCM Equipment Branch, demonstrates SNAP I, which is mounted in a jeep. He is assisted by an engineer.

ESKA FILES FOR BANKRUPTCY

Many short wave enthusiasts have been awaiting the imminent arrival of the advanced RX99PL general coverage receiver from ESKA, a Danish electronics manufacturer.

A recent broadcast from Media Network by Radio Netherlands' popular host Jonathan Marks quoted a newspaper article indicating that the Danish company had filed for bankruptcy.

ANARC officials attempted to contact the company by telephone to confirm the announcement, but the telephone had been disconnected.

STOCK EXCHANGE

PERSONAL

NOTE: Monitoring Times assumes no responsibility for misrepresented merchandise.

SUBSCRIBER RATES: $.10 per word, paid in advance. All merchandise must be non-commercial and radio-related. Ads for Stock Exchange must be received 45 days prior to the publication date.

PANASONIC RF4900 shortwave receiver. $300. Good condition. Ray Hill, 735 East Washington Street, Greencastle, IN 46135, 317-653-6479.

>>>>><<<<<

Sell: HAMMARLUND SP-600 with speaker and extra SP-600 for parts. Very nice shape, $200 or best offer. Brad Hyde, 1106 Duvall, Killeen, TX 76541. (817)699-7817.

>>>>><<<<<

Join a radio listening club. Complete information on major North American clubs and sample Newsletter $1.00. Association of North American Radio Clubs, 1500 Bunbury Drive, Whittier, CA 90601.

COMMERCIAL

$25 payment must accompany ad. Send 2 1/4" wide x 2" long camera-ready copy or we will type copy (35 words maximum).

COMPUTERIZED SWL LOG

C-64 version holds 1000 entries! Fast machine code search. Hardcopy or screen print. Only $14 disk or cassette. Other versions for Timex and TI99/4A, $9.95 cassette. SASE for info to:

KEN CARPENTER
Box 586,
Vernon, AL 35592

INFORMATION PLEASE

Monitoring Times will print at no charge (as space permits) announcements and questions of a non-commercial service nature.

I have excellent scanner freqs for Watertown, NY, Quincy, IL, Battle Creek, MI, Toledo, OH. Also, have older & newer issues of Popular Communications and Monitoring Times and CB Magazine. Write: Kevin Trickey, 312 Jackson, Delta, OH 43515.

>>>>><<<<<

NEEDED: I am giving a friend in Cincinnati a 4 channel crystal scanner as a gift. Would like to know 4 best channels to buy. She lives in the "Price Hill" area of Cincinnati. Mike Antio, 331 Cleveland, Trenton, MI 48183.

>>>>><<<<<

AUTHORS WANTED:

Often, while driving around town, I see base antennas and mobile antennas and I wish I could recognize their operating frequencies. How about one of MT's writers tackling this as a topic for an article?

Ed Flynn
San Rafael, CA

>>>>><<<<<

First of all, I must say that I am very pleased with the content of Monitoring Times; I bought my first subscription mid-1982, and was extremely pleased last year when it became a monthly publication. The only way it could improve more is if you made it a weekly publication, and I can appreciate the many problems in making that major change.

The second reason for this letter is for some assistance and possibly an article from you or from one or your many readers regarding how to protect valuable electronic equipment from lightning strikes. Recently, my home was struck by lightning which entered the radio room via the electrical entrance. Some of the items that were destroyed include: a 3-day-old VRG 7700 receiver, a DX-300 (which some people would say was the best thing that ever happened), Commodore 64 computer, reel-to-reel tape recorder, and a Heathkit stereo. The lightning finally exited the house via the Coax feeding the antennas, burning the side of my home while on its last legs.

An article on lightning protection both on the electronic items and how to protect antenna and rotator feed lines would certainly be appreciated both my myself and many others who read your publication.

Kal White
Rothesay, N.B., Canada

(Both excellent topics...How about it, authors?...Bob)

***BEHIND THE DIALS** from p.17*

least 20 dB gain throughout its design range. Rejection above 500 kHz is extremely steep to avoid broadcast band intermod, becoming 100 dB at 1 MHz.

When switched on (indicated by an LED), power drain is only 6 miliamps; in the off position, the antenna is rerouted directly to the output jact so that the receiver may be utilitzed over its normal range without having to disconnect the preamp.

Lab tests conducted by veteran LF'er Dave Wilson confirmed the signal enhancement capability of the L-201. Signals normally only registering S1 to S3 on his ICOM R70 receiver in the 77-400 kHz range exceeded S9. His tests used a 60 foot wire antenna.

Dave goes on to report that in spite of the considerable gain, no broadcast band intermod was noted--and he lives only 1/2 mile from a 5,000 watt AM broadcaster.

The L-201 is shipped postpaid anywhere in the U.S. for $29.

***VIEWPOINT** from p.3*

Speers at P.O. Box 232, Weston, VT 05161.

*Mr. Speers was unsure whether Patrick Beesly's excellent ROOM 40: BRITISH NAVAL INTELLIGENCE 1914-18 was ever published in the United States. It was: by Harcourt Brace Jovanovich of New York.

*Mr. Speers says that two bibliographies, Constantinides' and that of Bowen's collection, were published in 1981. This is a typographical error. Both appeared in 1983.

*May I--rather immodestly--add two items to Mr. Speers' list? One is my own KAHN ON CODES, Macmillan, NY, 1984, a collection of my articles reprinted from such sources as Playboy and The New York Times Magazine. The other will interest readers of Monitoring Times. It is Pierre Lorain's CLANDESTINE OPERATIONS, Macmillan, NY, 1982, which I adapted from the French.

It consists of line drawings and description of the arms and tools used by the French WWII Resistance, including 11 radio sets (six with circuit diagrams), and discussions of cryptography, German direction-finding, and also drawings of airplanes and guns. It is an elegant, data-laden book, even if the publishers have priced it high at $24.95.

David Kahn
Great Neck, NY

>>>>><<<<<

RADIO ASTRONOMY

Have just had passed to me a copy of your excellent publication. In reading it I noted an article on radio astronomy and wish to advise you that there is now an amateur radio astronomy support group consisting of a current paid roster of 186 members.

About 42% of SARA's members are hams who have learned to do science with the fine receiving equipment they already have operating.

Bob Sickels, Editor
RADIO ASTRONOMY,
The Journal of the
Society of Amateur
Radio Astronomers,
7605 Deland Avenue,
Ft. Pierce, FL 33451

(Ed.Note: We are pleased to recommend SARA to those stalwart tinkerers among our readership who wish to explore the horizons of their hobby to the limit.

Membership is open to anyone who has an interest in radio astronomy, and their newsletters cover all phases of the subject from computers and data bases to receivers and antennas.

An S.A.S.E. sent to the address above will bring an introductory brochure.)

>>>>><<<<<

GROVE ENTERPRISES
P.O. Box 98
BRASSTOWN, NC 28902

BULK RATE
POSTAGE PAID
GROVE ENTERPRISES
PERMIT No. 4
BRASSTOWN, N.C.
28902

GOODMAN, DAVID J. *
31870 HIRAM TRAIL
MORELAND HILLS OH 44022

1/ 1/86

SEE MAILING LABEL FOR SUB. EXPIRATION MONTH/DAY/YEAR