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# MONITORING TIMES

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September, 1984

## REALISM AND RADIO KEYNOTES TO U.S. ARMY TRAINING

by  
Lt. Col. Douglas L. Verdier  
Fort McClellan, Alabama  
Public Affairs Officer

### FORT MCCLELLAN, ALABAMA

...Cadence calls...thoughts of chow...of cleaning weapons...of sleep...as the column of soldiers-in-training marches along the road toward main post, finished with the day's marksmanship training. Darkness gathers about them.

Down the hill behind the marching trainees, a young soldier applies the brakes of his 2 1/2 ton truck as he approaches the column.

Suddenly the brakes fail. The truck gathers speed as it rushes toward the unsuspecting soldiers.

In an instant, the truck plows through the column, crosses a ditch, strikes an abutment, overturns and catches fire. In its wake is a scene reminiscent of the battlefield.

Near the overturned truck a small fire spreads quickly, fed by the dry grass and fuel leaking from the engine. Flames creep slowly toward the injured soldiers.

\*\*\*

This scenario set the

stage for a mass casualty training exercise conducted by the U.S. Army Medical Activity, Dental Activity and Noble Army Hospital at Fort McClellan, Alabama recently.

"It was a no-notice training designated to test the quick reaction capability of the Medical and Dental Activities and Noble Army Hospital in a mass casualty situation," explained Captain Donald Chinnis, chief of plans, operations and training for the hospital.

"Our objectives were to exercise our ability to respond to a mass casualty emergency. This involves notification and recall of hospital personnel, movement to the accident scene with all available emergency vehicles, exercise of the post emergency communications system, on-site treatment of the injured, evacuation, and upon arrival at the hospital, examination, x-ray, diagnosis and treatment," Chinnis said.

"Only four people in the hospital knew this was going to happen. In fact, of the whole post, probably less than a dozen key individuals were aware an exercise was going to take place. Even the 'casual-



"Casualty" of training exercise is comforted as help is summoned by MP's VHF hand-held portable radio.

ties' were not aware of what they were going to be doing when they were selected after the noon meal and told to report to their unit classroom," he said.

The 'casualties'--21 soldiers from the 4th Combat Support Hospital--spent most of the afternoon being made up with a combination of rubber wounds, wax and burnt cork.

Added realism was ensured by supplying some victims with tubing connected to rubber bulbs containing fake "blood" which could be squeezed by the soldier to simulate a severed artery.

The injured were briefed on the nature and extent of their injuries, told how to act at the scene and how to respond to questions they would be asked at the 'scene of the accident' by medical personnel who arrived to treat them.

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Shortly after the scene was set, a military police sedan on routine patrol along the range road discovered the "accident." A smoke grenade near the truck simulated the fire and blanketed the area in a low fog-like shroud.

Seeing the truck and injured soldiers in his headlights, the military policeman turned on his flashers and rushed to the aid of the soldier nearest to the sedan. As he knelt beside the soldier, "blood" gushed from a deep gash in the injured man's arm.

"The MP's reaction was perfect," said Chinnis, who observed the scene from con't on page 27



Sp4 Oscar David responds to emergency call at the Provost Marshal's office control console.

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# MONITORING TIMES

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## The DX'ERS Dream

by John Demmitt

With the rapid advances in electronics and computers, it will not be long till ideas and dreams are put into reality in answering the needs and prayers of monitors and DX'ers interested in having a communications receiver that will perform to the highest expectations. Let's take a look.

A key switch prevents unauthorized use of the receiver or attempted removal, automatically setting off an internal battery-operated siren and activating a prerecorded message to the local police by telephone.

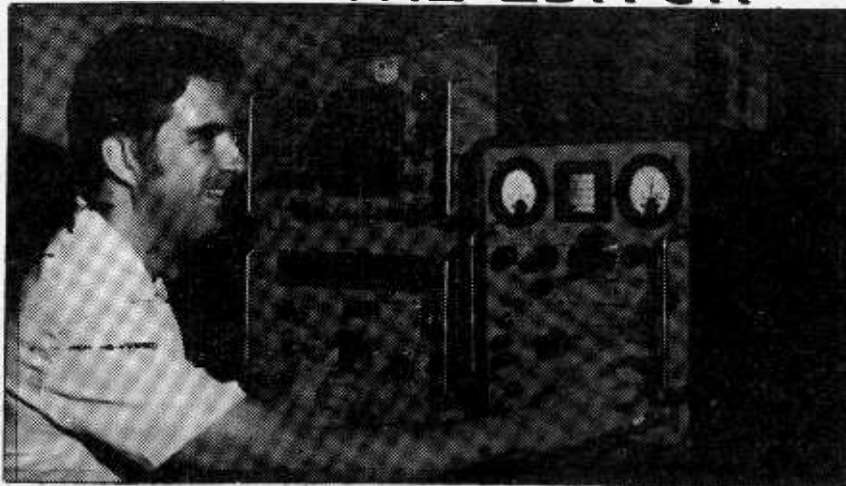
The telephone patch allows the user to answer the phone from the receiver and feed audio to others interested in the hobby.

The illuminated keyboard features reliable key switches which allow direct access to any frequency in the entire 3 kHz to 300 GHz spectrum.

A built-in microprocessor electronically selects the right antenna for the frequency being received and makes the necessary adjustments to match the impedance to insure maximum signal strength. Several microprocessor-controlled filters regulate incoming signals while adjusting the receiver's IF to prevent images and other undesirable products.

Gas gaps protect the sensitive receiver from power surges and EMP; an antenna interruption circuit

# FROM THE EDITOR



☆☆☆☆☆☆☆☆

### AND THE WINNER IS:

Congratulations to John Demmitt, winner of the "Design Your Dream Rig" contest!

Honorable mentions must go to MT readers Robert Wyman, Les Mattson and Bob Russ for their innovative suggestions as well. Complementary publications will be sent to them for their fine efforts.

John Demmitt let his unfettered mind--and imagination--soar. We have taken the liberty of quoting most of John's recommendations for the enjoyment and edification of fellow dreamers.

☆☆☆☆☆☆☆☆

will let you know at a glance if your antenna is disconnected. An antenna grounding circuit is automatically employed when the receiver is in the off position, protecting against lightning damage. During this protective switching, an indoor or internal antenna may be selected for temporary reception.

A wireless headphone feature allows the listener to continue monitoring when leaving the area of the receiver.

The guesswork of descrambling is removed with the powerful master decoding network which decodes all known encoding systems with additional capacity for future expansion. An LED will signal which of the general encoding procedures is being received.

A single switch will allow the code to be decoded and displayed on the built-in CW-RTTY Reader or video screen. Scrambled signals of satellite TV, police conversations, security agencies, etc. can be monitored easily.

The radio direction finding signal detector is a unique and innovative design that allows the monitor to ascertain an approximate fix of the signal being received. The sophisticated

### FAVORITE ARTICLE

In our May issue we asked our readers if they had a favorite article or column. The tallied responses were most interesting--three winners!

James R. Hay's "High Seas Radio," Havana Moon's "Los Numeros" and Bob Grove's "Technical Topics" were mentioned most frequently. Close runners-up included Bert Huneault's "A Gift to the Weatherwise" and John Santosuosso's "Pirate Radio."

Editor Bob Grove has disqualified himself from the running (but thanks his loyal readers), so duplicate first-place awards of \$25 will be sent to authors James R. Hay and Havana Moon. Congratulations!

## REMEMBER! "S.A.S.E."

We at Monitoring Times constantly receive letters from readers which begin, "Please send me everything you have on..."

As much as we would like to help, we are not a public library service. Letters received with a Self-Addressed Stamped Envelope will be answered.

And as always, my telephone line is open for pre-paid calls weekdays 1-5 pm Eastern (704-837-2216)...Bob

network will determine if the signal is encoded and if so will decode it. A language search mode will translate all known languages to a language selected by the listener.

A four-inch television screen will allow the monitor to view TV reception or monitor text from CW & RTTY. A split screen function allows two or more displays on the TV.

A voice synthesizer will alert the listener to the audio commands that are programming the receiver as well as translate messages to audio.

Pre-programmed circuits allow the monitor at a press of a button to hear NOAA weather broadcasts and the exact time as given over WWV. In the event of an emergency, the weather circuit will sound an alarm and relay the message from NOAA or the Emergency Broadcast System. A clock circuit will display local time and the time in UTC, both synchronized by WWV.

All digital displays are in large easy-to-read characters.

Reception modes include: AM, FM, CW, RTTY, LSB, ISB, USB and reserve functions which allow for future systems. Special modes include: SCA, TV, SSTV, FAX, Microwave and satellite.

A computer override system will allow the monitor to operate all the following functions manually: computer interface, VFO, BFO, Tracking BFO Output, AGC, AF Gain, RF Gain, Squelch, Notch Filter, IF Bandwidth Filters, and Noise Blanker.

A computer-generated SINPO reading is given on a separate digital display. Full range stereo is offered on all available modes delivering excellent sound.

The frequency readout is filtered to prevent noise

Cont'd on p.28



## Viewpoint

**CORRECTION:** Two errors crept into my article, "NCS: National Communications System" on page 3 of the July issue.

The broadcast time of 13808/14750 was at 1600, not 0600; and the Spanish transmission on 5090/6840 was 4 digit, not 5.

Additional active 4 digit numbers transmissions are on 7725, 10665 and 13452 kHz.

>>><<<

Perhaps the answer to your reader's question, June MT "Information Please" Mr. Charles Chenery asks about a sensing device used in Vietnam.

The John J. Meshna catalog (1900 Allerton Street, Lynn MA, ph. 617-595-2275) (SP-32 Summer 84) on page 32 "Seismic Intruder detection with radio transmitter" looks like dried mud 1 1/4"x2".

I am a new subscriber to MT and am enjoying reading your monthly paper.

R. Nadel  
Brooklyn, NY

>>><<<

You have mentioned TEMPEST receivers several times in MT. It might be helpful to explain to your readers that the TEMPEST standards are a way to see to it that no signals are emitted from the equipment that can be intercepted by unauthorized persons. TEMPEST standards are applied to all military communications equipment and related gear.

Keep up the good work.  
S. Stokes  
Long Beach, CA

>>><<<

I am an active scanner enthusiast, among many, I suspect, who subscribe to MT solely because of an interest in the UHF/VHF scanner frequencies. It seems as though recently you have concentrated on "numbers stations", which interest many of us not at all, and given relatively little attention to the UHF/VHF spectrum. There are certainly a lot of amateur band listeners around, but there are a lot of us, too. Please don't drift away from also including our interests in your coverage.

At the same time, let's try to stick with reporting of confirmed information.

Some of your recent submissions have included frequencies right out of Police Call or other publications, with the same errors repeated. If you encourage your contributors to limit themselves to recent verified frequencies, you will do all of us a great service and increase the credibility of your material.

L. Davis  
Vienna, VA

>>><<<

I am writing in response to Henry Ponder's letter in the June 1984 Viewpoint. He states that "they have access to most of these frequencies through frequency directories that are available from Radio Shack and other sources." I wish to point out that in Canada Radio Shack stores don't sell directories because, according to them it is illegal to do so. The only way to obtain frequencies from any scanner dealer (including Radio Shack) is to buy a scanner from him or to be lucky enough to stumble across a salesman who is happy to let you look at his list (if he has one or has knowledge of one).

Therefore, most scanner information comes from American Publications like Fox Directories and MT. Any other information comes from private lists or friends who have scanners.

I hope you don't stop your wonderful coverage of Canadian frequencies that are so helpful to us up here in the North.

Keep up the good work.  
S. Jones  
Ontario, CN

p.s. The frequency list in the closest Radio Shack store to me is 11 years old and full of mistakes.

>>><<<

Larry Van Horn's article on the "Hurricane Hunters" was excellent and I would like to contribute a little "postscript" if you will allow me.

The observer was reporting back to Anderson and described what he saw inside the 'eye'.

He stated that they were flying in absolute calm with the blue sky above. The walls of the eye extended all around them down to the ocean surface. The 'walls' were speeding downwards and were criss-crossed with lightning (at this stage I got goose pimples!).

He read out millibar figures of 700-odd (!) at certain altitudes which I was mentally comparing with one of our bad local storms of about 900. The plane then later flew up and out of the eye and I lost contact as

they switched to VHF/UHF.

C. Chenery  
New Zealand

>>><<<

Re the listening laws article in the July 84 edition of MT: I'm a little puzzled. Isn't there a constitutional right to listen to a radio broadcast, consistent with the secret regulations, without government interference?

If not, what prevents any government agency from preventing a citizen from listening to any radio broadcast on any frequency?

Re shifting to a magazine format - absolutely yes. Much of the frequency information has been filed coherently to be of any use and the current format makes it difficult. I spend as much time cutting, pasting and xeroxing the rag as I do reading it. The magazine format would mitigate this. Also try to keep only one article on a page rather than chopping the page up with a number of different subjects. Your copy is as (or more) useful for future reference than it is on initial reading and the format should reflect that.

B. Wachtell  
Stinson Beach, CA

>>><<<

Just a short one to bring to your attention the new "Equalizers" that are starting to come cheap..

## Congratulations ANARC!

The weekend of July 20-22 will certainly be remembered by attendees of the 20th Anniversary convention of the Association of North American Radio Clubs in Toronto, Ontario.

Professionally planned and meticulously executed, ANARCON 84 was a casebook of how to run a convention. Accolades must be awarded to the hard-working members of the Ontario DX Association who have been making arrangements for a full year.

It is especially appropriate to recognize the visible participation of hard-working members like Ron Hopkins, Steve Canney, Harold Sellers and Terry Colgan who, through their dedication and determination, made the three-day event flow as efficiently and effectively as a well-oiled machine.

A series of informative seminars featured noted

I have found them to be of much value in Ham, Audio/Sonic work that I am delving into..and I am sure that if you can put someone on to the study of the economical ones...such as I have from "DAK Industries" (10845 Vancouver Street, N. Hollywood, CA 91605)... that you will find that they are very valuable in the monitoring field! They are in fact an active band pass filter...and work beautifully!

A. Stroud  
Riviera, AZ

>>><<<

I just finished reading the August MT. I thought I'd pass along some additional info on FEMA. At least here in Southern California (and probably elsewhere), they are the net controller of a "Federal Disaster Network" for use in emergencies when land lines are down.

They operate a repeater with an uplink of 169.250 and the downlink of 170.200; and also operate simplex on 170.200. They use a "Private Line" type encoded squelch for priority encoding, but this would not interfere with scanner monitoring.

I really liked the SAC article. Maybe you can come up with similar ones for other branches of the military.

B. Doyle  
San Pedro, CA

experts in their fields which included Andy Sennitt, Assistant Editor of the World Radio TV Handbook; Bob Grove, Editor of Monitoring Times and President of Grove Enterprises; Tom Williamson, Tropical Bands Editor of the Ontario DX Associations and English Programs Editor of Monitoring Times; Fred Osterman, Manager of Universal Shortwave Radio; and Robert Horvitz, former "Below 30 MHz" editor of RCMA.

A most enjoyable banquet speaker in the person of Tony Ward, noted DX'er from New Zealand and Toronto, highlighted the evening's activities.

The prospective hosts for next year's Milwaukee convention will have quite a challenge facing them to equal or surpass the successes of the Toronto adventure.

Listeners desiring additional information concerning the services available through ANARC may wish to write to them at 1500 Bunbury Drive, Whittier, CA 90601.



# UNLICENSED BROADCASTERS

Dr. John Santosuosso

## PART II

### NORTH AMERICAN PIRATES

The following is a list of selected North American pirates known to be active. Frequencies are subject to change and some stations use more than one.

- 1615 PRN, PIRATE RADIO NEW ENGLAND
- 1616 REBEL MUSIC RADIO
- 1617 KPRC PIRATE RADIO CENTRAL
- 1620 WDX
- 6225 RADIO PARADISE INTERNATIONAL
- 6230 VOICE OF THE PYRAMIDS
- 6240 KPRC, PIRATE RADIO CENTRAL
- 6240 VOICE OF TOMORROW. Political with anti-Semitic broadcasts
- 6250 THE MINORITY ASSOCIATION. This organization says it wants to colonize Jupiter with resurrected human beings
- 6275 KQSB
- 6900 RADIO GANYMEDE
- 6910 RADIO 91, VOICE OF THE SOUTHEAST
- 7375 RADIO CLANDESTINE. Old established broadcaster, with 10 years experience, famous for its comedy productions
- 7375 RADIO USA
- 7399 NEW WAVE RADIO INTERNATIONAL

- 7408 WOIS
- 7410 RADIO CLANDESTINE
- 7410 SON OF IRELAND. Features Irish music
- 7410 VOICE OF TOMORROW
- 7410 VOICE OF THE UNITED STATES/VOICE OF DEMOCRACY
- 7414 KTGR
- 7420 THE CRYSTAL SHIP
- 7420 WIMP
- 7425 MUNCHKIN RADIO
- 7425 RADIO ESPIRITU. Features Gregorian chants
- 7425 RADIO USA
- 7425 TANGERINE RADIO
- 7425 VOICE OF VENUS
- 7430 ROLLING THUNDER RADIO
- 7432 SECRET MOUNTAIN LABORATORY
- 7433 KQSB
- 11600 KQSB
- 14470 RADIO USA
- 15050 KQRP
- 15050 VOICE OF LARYNGITIS
- 21495 TANGERINE RADIO

### EUROPEAN PIRATES

The following selected list of unlicensed European stations consists of broadcasters who have been heard in North America or who have conducted test transmissions to North America. Frequencies are subject to change and are not necessarily the ones monitored during North American reception. Additional frequencies are also in use by some stations.

- 963 RADIO CAROLINE. Off the Southeast coast of England. The most famous of the offshore commercial pirates, now reactivated.
- 6225 BRITAIN RADIO INTERNATIONAL, England
- 6240 ATLANTA RADIO, England
- 6240 BRITAIN RADIO INTERNATIONAL, England
- 6240 WEEKEND MUSIC RADIO, Scotland
- 6260 WEEKEND MUSIC RADIO, Scotland
- 6264 RADIO KRYPTON, England
- 6280 WESTSIDE RADIO, Dublin, Ireland
- 6910 RADIO DUBLIN, Ireland. Often heard on East Coast of North America during evening hours. Has been logged on the West Coast. Relays World Music Radio GMT Mondays at 0200.
- 7105 RADIO TIME, Florence, Italy, via Italian Broadcasting Corp.
- 7110 KBC RADIO, Belgium
- 7140 RADIO TIME, Florence, Italy, via Italian Broadcasting Corp.
- 7145 KBC RADIO, Belgium
- 7295 RADIO MILANO INTERNATIONAL, Italy. 5 kilowatts
- 7320 RADIO NOLAN, THE NETHERLANDS
- 7325 FREE RADIO SERVICE HOLLAND
- 7330 RADIO APOLLO INTERNATIONAL, ENGLAND
- 7373 VOICE OF THE LEEK, Wales
- 7400 VOICE OF THE LEEK, Wales
- 11463 WESTSIDE RADIO INTERNATIONAL, Dublin, Ireland
- 11562 RADIO NOLAN, The Netherlands
- 13733 SPECTRUM WORLD BROADCASTING, England
- 13999 RADIO CBN. Famous Australian pirate. Has tested to North America on this frequency, using USB.
- 15040 RADIO FREEDOM INTERNATIONAL, Scotland
- 15460 TELE RADIO PACE, Italy. 5 kilowatts.

**LATIN AMERICA:** Except where noted, these stations usually broadcast in the Spanish language.

- 3675 RADIO VENCEREMOS. Chief station of the Frente Farabundo Martí para la Liberación Nacional (FMLN). Opposes the government of El Salvador. In addition to those given here numerous other frequencies are in use.
- 5106 RADIO IGNACIO AGRAMONTE, LA VOZ DEL CID. Operated by anti-Castro organization Cuba Independiente y Democrática. This group maintains the most extensive clandestine broadcasting network in existence, with each station in the network named for a different Cuban patriot. In addition to those listed here, others are currently active, while still additional stations are planned for the future.
- 5570 RADIO QUINCE DE SEPTIEMBRE. Operated by the Fuerza Democrática Nicaraguense, a coalition of groups opposed to the Sandinista government of Nicaragua.
- 5750 LA VOZ DE NICARAGUA LIBRE. Operated by the Alianza Revolucionaria Democrática (ARDE).
- 5920 RADIO QUINCE DE SEPTIEMBRE
- 6150 RADIO IMPACTO, San Pedro Montes de Oca, Costa Rica. Licensed station whose broadcasts include programming produced by Alianza Revolucionaria Democrática (ARDE), which opposes the Sandinista government of Nicaragua.
- 6205 LA VOZ DE SANDINO. Operated by the Frente Revolucionario Sandino (FRS), one of the groups in the Alianza Revolucionaria Democrática. This station features Eden Pastora, Comandante Ceró, who was once a Sandinista hero but now opposes them. Some English broadcasts.
- 6210 LA VOZ DE SANDINO. Some English broadcasts.
- 6586 RADIO VENCEREMOS
- 6640 RADIO GUAZAPA. Operated by the Frente Farabundo Martí para la Liberación Nacional (FMLN). Opposes the government of El Salvador.
- 6850 RADIO FRIE SRANAN. Operated by the Council for the Liberation of Suriname. Broadcasts in Dutch and local languages. 0100.
- 6965 RADIO MISKUS. Broadcasts in Miskito, Spanish, and English to the Miskito and other Indians of eastern Nicaragua.
- 7000 RADIO QUINCE DE SEPTIEMBRE
- 7000 RADIO VENCEREMOS
- 7040 RADIO FARABUNDO MARTI. Operated by the Fuerzas Populares de Liberación (FPL), a member of the Frente Farabundo Martí para la Liberación Nacional.

## WANT TO WRITE FOR MT?

It seems that we can't find enough pages each month to adequately assist readers in the endless questions we receive. And that's good. It means that MT readers are alert, intelligent and inquisitive. And we want to help.

Many of our readers are very creative with a flair for expression. That was obvious when we listed sample topics for articles a couple of months ago and were impressed by the number of responses.

But even if you have a natural talent for writing, it is often difficult to get started if you haven't written for publication before.

It's fun to see your name in print; I think it would be safe to say that every major author now in the public eye began by volunteering his services for clubs, newspapers and newsletters, even school publications. With that humble beginning, they began to think more in terms of novels and Pulitzer prizes!

Our files bulge with

## CLANDESTINES

The following is a selected list of clandestine broadcasters grouped by geographical area. Since many of the Latin American stations broadcast extensively during evening and morning hours, with frequent changes in schedule, times of transmission for these are not normally given. For stations in other parts of the world a time when the station has been monitored will usually be listed. In some instances the station can be heard at other times as well. Frequencies are subject to change at any time, and some stations use additional ones. Clandestines typically operate irregular schedules and in some cases may even be inactive for a period of time.

requests from readers concerning articles they would like to see. Even if the topic was covered before, there are always fresh insights and perspectives that are worth reading. For example, who among us would not read an article entitled "How to Choose a Receiver"?

Cont'd on p.11

Con't on pg. 29

# - SAC -

## DON'T BELIEVE EVERYTHING YOU READ!

by Art Lewis

Contrary to the belief which is spreading like wildfire throughout our hobby, the codename of the SAC Airborne Command Post has NOT been changed from "Looking Glass" to "Cover All"!

This rumor has appeared in print several times over the past few months and has been taken as fact because it was "disclosed" in a book called "SIOP: The Secret U.S. Plan for Nuclear War" by Peter Pringle and William Arkin.

Several hobby newsletters have repeatedly urged their readers to get a copy of this book for the valuable and interesting information it contains.

Below are a few highlighted quotes from the book; they are followed by facts obtained during extensive briefings on SAC, NEACP, LOOKING GLASS and the SAC COMMAND POST at Offutt AFB.

SIOP: In describing a 1982 simulated nuclear war exercise, (page 34) the book describes how the Vice President was stationed aboard the National Emergency Airborne Command Post (NEACP) and nuclear weapons destroyed Washington (including the President) and Omaha...thus knocking out the SAC Command Post: "...Command of US. forces shifted immediately to the vice-president in the Nightwatch plane...The only surviving means of communications left was... a collection of airborne command planes, vlf transmitters..."

FACT: There is no such thing as a "Nightwatch" plane. SAC personnel report that "Nightwatch" is NOT and NEVER HAS BEEN the codename for NEACP: It is a nickname used by SAC personnel (but not on the air or in any official capacity) and refers to the communications mission aboard NEACP.

FACT: The NEACP contains 47 antennas ranging from SHF dishes to a 5-mile VLF longwire, allowing 13 forms of external communication including the ability to tie in to civilian telephone lines and the major civilian broadcasting networks...HARDLY what one would call "minimum communications."

SIOP: Same page. "...the vice-president then used the 'Airborne Launch Control System' aboard the Nightwatch plane to fire the

remaining land-based missiles."

FACT: THERE ARE ABSOLUTELY NO LAUNCH CAPABILITIES ABOARD NEACP: Airborne launch of missiles can only be done by ABNCP, AABNCP, or ALCC.

SIOP: In describing a SAC alert caused by a computer malfunction the following appears (page 130): As the controller pressed the red alert button on his console, he also selected a standard, coded message to be transmitted down the line. The code was "Skybird," ordering the bomber crews to board their planes, start their engines and standby for further orders ... the Skybird code word created a lot of commotion..."

FACT: "Skybird" is merely the callsign for any SAC ground station, just as "Skyking" is the callsign for any SAC aircraft. Anyone monitoring any of the SAC HF frequencies will hear these callsigns used frequently. Not only is this a matter of general knowledge, but the callsign and proper form for testing the Primary Alert System is printed prominently above the PAS telephone console where anyone visiting the Command Post (which Mr. Pringle did) can see it. In addition, any visitor to the Command Post is given a demonstration of the PAS during which the callsign "Skybird" is used without creating any commotion whatsoever!

SIOP: In discussing the events following the attempted assassination of President Reagan the following appears (Page 202): "As most Americans spent the hours immediately following the assassination attempt watching (television coverage)...a handful of specially selected White House and Defense Department personnel activated the presidential communications system, code named "Mystic Star" and "Nationwide." This network put the new "president" in touch with his nuclear forces. It was part of the same system that would be used in the event of a nuclear attack on the United States..."

FACT: While this reads as if some extraordinary communications plan was quickly activated to cope with an emergency, and certainly sounds impressive to someone who is unfamiliar with the system, it is pure hogwash. Mystic Star is a

system of HF frequencies, discreet from normal Air Force traffic used for voice and data on virtually all Special Air Missions from Andrews AFB. These frequencies are assigned and activated before the aircraft leaves the ground and are in use throughout the entire mission.

FACT: "Nationwide," while it sounds impressive, is again neither codeword or tactical callsign. It is a euphemism for a telephone system referred to as "The Nationwide" because it operates through a nationwide system of sites which broadcast to and receive from the aircraft via UHF radio and then carry the signal over telephone lines either ATT or AUTOVON on the ground.

It provides a little more privacy than Mystic Star in that the UHF signal can be picked up by anyone with a receiver on the ground for only a short time as the aircraft passes overhead. It is used constantly by SAC aircraft for things as mundane as arranging for ground transportation upon arrival, rearranging appointments, etc.

Throughout the book the Looking Glass is called "Cover all." The authors allege that it was formerly called "Looking Glass" but was changed. This has caused a great stir among utility monitors and has been passed around as "new" information.

Not only is this allegation completely untrue as verified by SAC, but anyone reading the book carefully should have noted that it is mentioned in connection with an exercise which took place back in 1982. In tracking down the other supposed codenames used in the book ... each one turned out to be erroneous. Some may have been used briefly as tactical callsigns.

I cannot resist adding two items of personal opinion, not to be confused with the facts stated above:

1. An entire section of this book is devoted to an "expose" of how SAC is constantly faced with false and erroneous alerts through computer error and other problems. The insinuation seems to be that we are teetering on the brink of accidental nuclear holocaust. To me this is like saying if your smoke detector goes off because you burned the bacon on the stove...you should throw the smoke detector out because your house didn't burn down!

The system obviously works, since I do not recall

hearing of SAC wiping out all of Russia lately.

2. I purposely have not commented on anything pertaining to the actual SIOP discussed in the book. This is not my area of expertise and my research for this story included no briefings in this area. However, having found a significant

con't on page 28

USAF STRATEGIC AIR COMMAND	
(NOTE: The following list of SAC frequencies is extracted from Bob Grove's new Shortwave Directory.)	
Fully 30% of SAC aircraft are on alert status at all times. This effort requires considerable coordination between aircraft, ground stations and nuclear missile silos. As part of this failsafe system, routine "Foxtrot" ("Skyking") mission status broadcasts are made throughout each hour. Should the United States be involved in armed conflict, the go-code would be transmitted via this network (as well as others).	
Primary "Skyking" channels are underlined. Four transmitter sites maintain the Foxtrot net: Offutt AFB, NB (SAC HQ); Barksdale AFB, LA; March AFB, CA and Westover AFB, MA. Emission in USB.	
Foxtrot broadcasts are frequently reported to be heard on U.S. Navy frequencies as well (6697, 11267, others) as they are recorded by the Navy for playback on their frequencies.	
4495	ECHO
4725	VICTOR
5020	
5328	
5700	BRAVO QUEBEC
6761	QUEBEC
6863	
7330	YANKEE
8101	ALFA PAPA
9027	ROMEO
9057	PAPA
11100	ALFA 21
11118	
11220	BRAVO
11243	ALFA
11408	YANKEE QUEBEC
11494	LIMA
13211	BRAVO WHISKEY
13241	SIERRA
13907	ALFA CHARLIE
14955	CHARLIE
15035	CHARLIE QUEBEC
15041	MIKE
17975	TANGO
18046	
18594	ZULU
20631	WHISKEY
20890	DELTA
23337	UNIFORM
27870	



by Don Schimmel

Over the years I have seen some Q signals in use whose meanings seem to differ from published versions or whose meanings do not appear in available Q SIG lists. I believe these will be of interest so here are a few I have run across. To form the question they are used with IMI.

QAP-STANDBY (LISTENING WATCH). Sometimes used with frequency and/or time of Sked.

QDP-MY COMPLETE CALLSIGN IS

QIC-MAKE CONTACT WITH (CALL) AT (TIME).

QIF-(CALL) IS ON (FREQ).

QLH-THERE WILL BE SIMULTANEOUS KEYING ON (FREQ/FREQ).

NOTE: I am sure some of you old timers have heard the rumor that QLH meant Please Send With Your Left Hand.

QLV-(CALL) IS TO MAINTAIN OPERATIONS.

QTR-In addition to normal use of signal sign as THE TIME IS it has also been noted in use as an authenticated /verification procedure by some activities.

MT reader Bob Rankin indicated in a letter to VIEWPOINT (MT July 1984) that he had been seeking a book called "SPANISH FOR BORDER PATROL OFFICERS." I do not know if that precise title is still available from the GPO, however, I do hold a copy of "A PRACTICAL SPANISH GRAMMAR" by Friar and Kelly, published by Garden City Books, Garden City, New York.

It was adapted from "A PRACTICAL SPANISH GRAMMAR FOR BORDER PATROL OFFICERS" by the Immigration and Naturalization Service, U.S. Department of Justice. The book was carried some years ago by the Savile Book Shop, 3236 P Street, NW, Washington, DC 20037. They may still have the title in stock.

Two other titles mentioned by Rankin were TM30-500 and TM30-544. I have checked the latest GPO list of Military publications and find those titles are not listed; perhaps they are out of stock.

Cont'd on p.28

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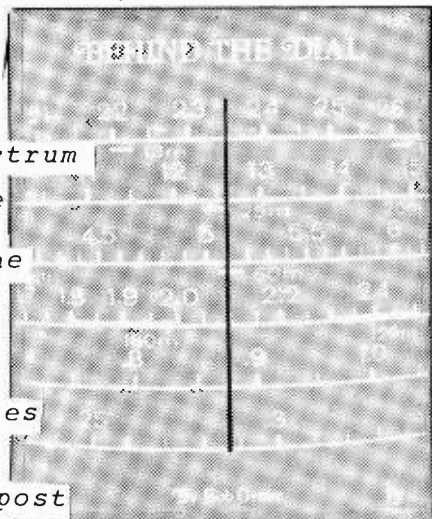
\*Coping with interference

\*Scrambling: how it's done

\*The users and where to hear them

\*Surveillance: the frequencies and techniques

\*Receivers and antennas: planning the listening post

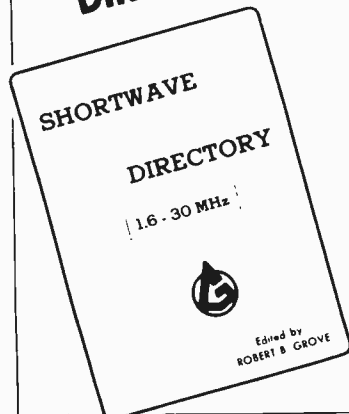


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LOGGINGS

KHZ	MODE	IDENTIFICATIONS
4274	CW	5F GRPS.
6289	CW	GKB4-CALL TAPE (PORTISHEAD, ENGLAND)
6990	CW	BOF DE KUV
9347	RTTY	AP PRESS IN ENGLISH
10950	RTTY	CODED WX. (WMR70, MIAMI)
12130	RTTY	SPANISH MSGS.
1222.4	RTTY	ENGLISH PRESS
13042	CW	PJC-CALL TAPE (CURACAO, WILLEMSTAD)
13046	CW	SVA-CALL TAPE (ATHENS, GREECE)
13062	CW	CLA-(HAVANA, COJIMAR, CUBA)
13099	CW	UXN-(ARKHANGELSK, USSR)
13290	CW	5F GRPS. RCVG STN ROGERS VIA VOICE FOR EACH GRP.
13340	CW	5L GRPS. SPANISH CHATTER.
13360	CW	SPANISH MIXED WITH 5L GRPS.
13365.9	RTTY	5YD TAPE (NAIROBI, KENYA)
13375	CW	UNID. TO CLP1 (HAVANA, CUBA)
13385.5	CW	UNID. TELLS CLP25 TO QSY 12115.
13390	CW	5F GRPS TO CLP1. SPANISH CHATTER.
13395	CW	5L GRPS.
13401.7	RTTY	ARGENTINE CITIES MENTIONED IN SPANISH, USB VOICE RCVNG STN REQUEST REPEATS.
13408.5	CW	CUT NBR TFC.1 2 8 9 Ø CUT AS A U D N T
13412.8	CW	5L GRPS
13415	CW	5F GRPS
13425	CW	UNID. TO XPK2 (LA PAZ,BAJA CALIFORNIA, MEXICO)
13426.6	RTTY	5F GRPS RPTD ON CW
13434.8	RTTY	Y7A59 TAPE (BERLIN, GDR)
13509	RTTY	CODED WX
13623	RTTY	CODED WX
13648	CW	5L GRPS
13890	USB VOICE	5F GRPS-GERMAN
13964	AM VOICE	5F GRPS-ENGLISH
14404.2	RTTY	MKD-TEST TAPE (AKROTIRI, CYPRUS)
14440.5	CW	4F GRPS
14555	CW	SPANISH MSGS.CHILEAN CITIES IN HEADNGS
15944.2	RTTY	MKG-TEST TAPE (LONDON,STANBRIDGE,ENG)
16716	CW	5F GRPS
16980	CW	DAM-CALL TAPE (NORDDEICH, GFR)
18192	RTTY	PRENSA LATINA-ENGLISH NEWS (HAVANA, CUBA)
18462		UNUSUAL SIG (SOUNDED LIKE BUBBLING)
18763.9	RTTY	CODED WX
19613.4	RTTY	NBA-TEST TAPE (NAVCOMSTA, BALBOA PANAMA)
22509	CW	FFL9 (ST LYS, FRANCE)

Unusual Utility Signals

by James Owen

Have you run across the 24-hour-a-day steady carriers with no modulation on 5115, 3395 and 10163 kHz? No problem hearing them--they are quite loud at various listening points in the USA.

These signals are part of an earthquake net that can pinpoint the epicenter of a California earthquake quickly and accurately. Monitoring receivers in Salt Lake City continually examine the phase relationship of the signals.

During an earthquake, the abrupt movement of the ground causes a disruption in the ionosphere directly above the affected area which, in turn, shows up as a change in phase of the signals. This is part of a government-sponsored program, but it is not known under whose control the transmitters and recording apparatus are registered.

Another interesting group of signals are on 3252, 10141 and 10128 kHz. These CW transmissions consist simply of the short message XUQC DE YQBF, repeated over and over. The transmissions have been noted for about a year. The signals fade in and out with other signals known to be in the south-east Asia area.

A companion to this station is on 4958 kHz, but it signs ODJ1 DE COQM. It also is heard on an Asian skip.

Finally, there exists a bevy of stations in the region 17020 kHz to 17250 kHz that send data bursts. One on 17227 MHz signs UFN and one on 17228 signs UAT. Others do not sign calls. These are heard at sunrise and evening hours on the Pacific Coast.

Listeners with additional information on these and other phantoms of the HF spectrum are encouraged to share their knowledge with fellow MT readers.



# VLF SOLAR FLARE OBSERVATIONS & VLF/VHF DXING

by Al Smith

The March '84 issue of MT contained a good review of vacuum tube VLF/LF receivers by Howard A. Layer. Besides intercepting radio services extant "below the broadcast band," VLF receivers can be used in observing some ionospheric effects of solar flares.

Many different observations of the X-ray effects of solar flares can be made in the electromagnetic spectrum and some days thereafter as flares' corpuscular streams may connect with the earth's magnetic field.

### SEA AND SES

Two observational principles parry for interpretable solar flare recordings at very low frequencies:

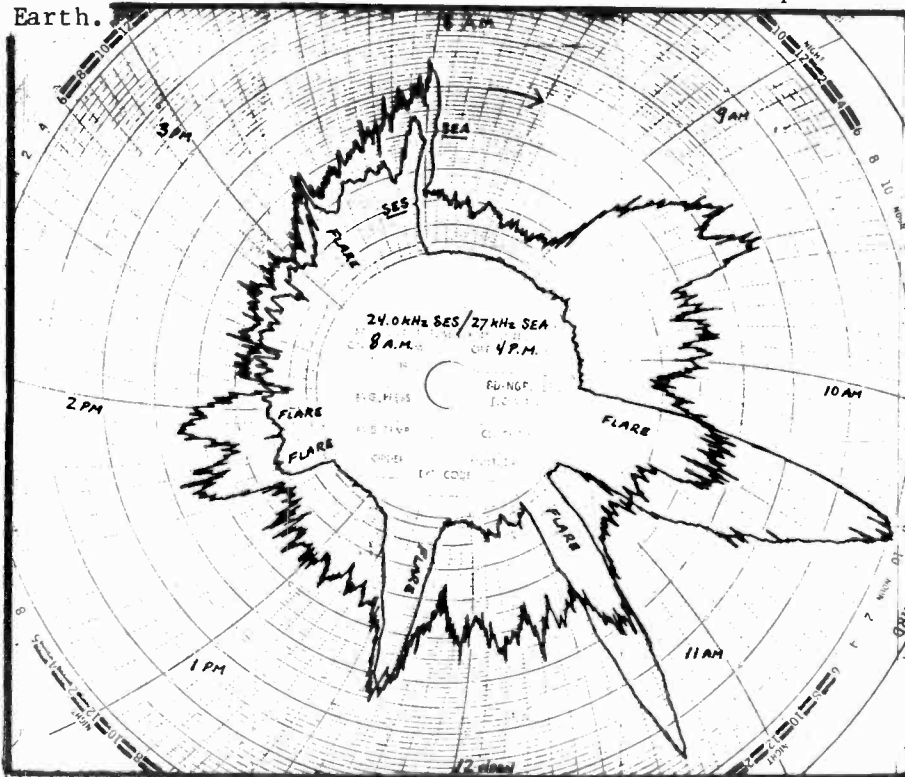
solar enhancement of the atmosphere (SEA) and solar enhanced signals (SES). Rising sharply at sunrise, daylight levels of atmospheric noise peak at 27 kHz due to the coherency of ionospheric / tropospheric waveguide resonance (11,000 meter wavelength).

At that time the D and E layers propagate lightning pulses electromagnetically, peaking in the mid-afternoon from lightning in the tropics towards the poles, and subsiding sharply after sunset. The difference between night's quiet and mid-afternoon noise is about 100:1 (20 dB).

Solar flare X-ray enhancement of the atmosphere causes a sharp noise peak of some minutes duration during the day; the effect is not so obvious at

night due to the D-layer's decomposition at dusk and the relative decrease in tropic thunderstorms at night. Thus, SEA is not an effective detector of solar flares on the other side of Earth.

Solar enhanced signal reception (SES), though, is an effective solar flare detector all hours, marked by a prolonged increase in received signal amplitude. cont'd on p.28



## - SCANNING ->

### Scanning in the U.K.

Contributed by Larry J. Chickerell, Fairmont, WV

#### GENERAL BAND PLAN

FREQ MHZ	MAJOR USES	FREQ MHZ	MAJOR USES
27.4-28	CB (FM)	119.95	departure
29.8-36	RAF	120.3	Jersey approach
30-50	Military	121.5	" "
60-88	AM land mobile; 12.5 kHz spacing:	119.45	departure
72-87	Ireland police (GARDA)	121.9	'SOL'
74	Security	140-144	Land mobile, utility companies (paired 30 MHz higher)
80	Dispatch	144-146	Hams
82	Auto clubs	146-150	Police/fire(FM) repeaters
85	Water companies	146.2	Scotland yard
70-79	RAF	146.85	" "
88-96	FM broadcasting	150-154	Domestic military (cadets,etc);fire/ambulance
97-100	Police (FM);paired with 146-150 band	154-156	Police repeater inputs to 146-150
101	Fire (FM)	156-162	Maritime(like US)
100.05	London Fire Brigade	156.0	Coast Guard
100.55	" " "	156.6	Southampton Port (incl.QEII)
100.80	" " "	156.8	Primary Guard
101.00	" " "	162-165	Mobile telephone
98-108	Police, London meteo	165-174	Private mobile radio (paired 30 MHz lower)
118-136	Civilian aircraft (AM)	165.76	US Embassy
119.6	London approach	225-400	Military aircraft
121.5	" "	410-413	RAF
119.45	" departure	430-431	Private mobile radio repeaters (London only)
121.95	" "	431-440	Hams
121.79	" " local	431-432	SSB
124.6	" " info.	432-435	FM
124.75	" " "	435-436	ATV
134.7	" " "	436-438	Satellite down-link
120.7	Lydd approach	440-450	Private mobile radio/police
126.7	" departure	450-460	Police/fire/ambulance handhelds;2-freq simplex to 97-101 repeaters
121.9	" 'SOL'	460-470	Private mobile radio (2-freq simplex)
128.95	Southend approach	470-512	UHF-TV
119.7	" departure		
124.35	Berne approach		
118.9	" departure		
119.7	" "		
128.65	Guernesey aprch		

### SURPLUS EQUIPMENT

Most of the old VLF sets described by Layer are very reasonably priced on the surplus market; I use a pair of Ling-Temco-Vought G276A 3 kHz-420 kHz receivers with AT-382 loops to listen for SEA/SES on 27 kHz/18.6 kHz.

Several hundred G276A's were made in the late 60's for USAF and some have showed up surplus. G276A includes a Collins 100 Hz crystal filter at its 500 kHz IF, requires only 24 VDC 90 mA, measures 5"x9"x7", and weighs 5 lbs.

There are many surplus chart and digital recorders around; one of the best for flare recording is the small Rustrak type which prints 31 days at an inch per hour on 2 5/16" tape.

## MONITOR



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by James R. Hay

Having spent the past few months writing about foreign stations, some of the letters which have been received indicate that it is about time to turn the attention of this column to something closer to home.

This month the United States is the country of interest, and some of its MF and HF stations. Below is a list of Public Coast Stations in the MF range which should provide some interesting listening; remember that all of these stations will have 2182 kHz in addition to the listed frequencies. All transmissions are upper sideband.

Obviously, some stations will be heard more than others and some of the stations listed may soon cease, or may already have ceased, operation on some or all of their frequencies.

Probably, in the near future, the MF/HF stations on the Great Lakes will cease operations on these frequencies and use only VHF.

There are also three major "High Seas" public coast stations operated by AT&T; KMI in San Francisco, WOO in Ocean Gate, NJ and WOM Ft. Lauderdale, FL.

KMI

COAST	SHIP
4407	4112.6
4403.9	4109.5
4357.4	4063
8784	8260.1
8743.7	8219.8
8728.2	8204.3
13187.6	12416.8
13107	12336.2
13103.9	12333.1
13100.8	12330.0
17304.2	16531.3
17239.1	16466.2
17236	16463.1
22704.5	22108.5
22679.7	22083.7
22664.2	22068.2
22636.3	22040.3

WOM

COAST	SHIP
4425.6	4131.2
4407.0	4112.6
4391.5	4097.1
4363.6	4069.2
8793.3	8269.4
8746.8	8222.9
8731.3	8207.4
8722	8198.1
8759.2	8235.3
8811.9	8288
13144.2	12373.4
13125.6	12354.8

13122.5	12351.7
13116.3	12345.5
13169	12398.2
13190.7	12419.9
17279.4	16506.5
17263.9	16491
17260.8	16487.9
17257.7	16484.8
17232.9	16460
22661.1	22065.1
22642.5	22046.5
22639.4	22043.4

WOO

COAST	SHIP
4422.5	4128.1
4403.9	4109.5
4388.4	4090.9
8796.4	8272.5
8762.3	8238.4
8749.9	8226
8740.6	8216.7
13184.5	12413.7
13131.8	12361.0
13128.7	12357.9
13107	12336.2
17325.9	16553
17310.4	16537.5
17291.8	16518.9
17245.3	16472.4
22623.9	22027.9
22608.4	22012.4
22596	22000
22704.5	22108.5

In addition, WLO in Mobile, Alabama is also offering a high seas service on the following frequencies:

COAST	SHIP
4369.8	4075.4
4397.7	4103.3
4413.2	4118.8
8790.2	8266.3
8805.7	8281.8
8808.8	8284.9
13134.9	12364.1
13178.3	12407.5
17356.9	16584
22707.6	22111.6

KFX Astoria OR	2598	2206
	2442	2009
WOU Boston MA	2506	2406
	2450	2366
	2566	2390
WBL Buffalo NY	2514	2118
	2550	2158
	2582	2206
	4415.8	4415.8
	4428.6	4428.6
	8783.2	8783.2
WJO Charleston SC	2566	2390
KTJ Coos Bay OR	2566	2031.5
KCC Corpus Christi TX	2538	2142
KGN Delcambre LA	2506	2458
KOE Eureka CA	2506	2406
	2450	2366
KQP Galveston TX	2530	2134
	2450	2366
WNJ Jacksonville FL	2566	2390
WFN Jeffersonville IN	2782	2782
	4115.7	4115.7
	6518.8	6518.8
	8725.1	8725.1
	13103.9	13103.9
	17291.8	17291.8
KBP Kahuku HI	2530	2134
WMI Lorain OH	4369.8	4369.8
	8796.4	8796.5

VHF MARITIME CHANNELS

For scanner enthusiasts who live near coastlines and waterways in Canada and the U.S., the following table will be of interest.

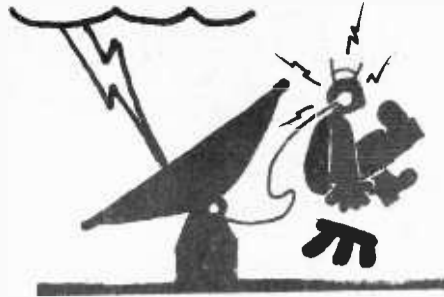
05	156.250	156.250	Not assigned	Port Operations
06	156.300		Safety	Safety
07	156.350	156.350	Commercial	Commercial
08	156.400		Safety	Commercial
09	156.450	156.450	Commercial/Non-Commercial	
			(Ship control on St. Lawrence Riv.)	
10	156.500	156.500	Commercial	Commercial
			(Ship control on St. Lawrence Riv.)	
11	156.550	156.550	Ship Control	Commercial
12	156.600	156.600	Ship Control	Port Operations
13	156.650	156.650	Ship Control	Navigational
14	156.700	156.700	Ship Control	Port Operations
15	156.750	156.750	Gov't Ops	Environmental (Coast only)
16	156.800	156.800	Distress&Calling	Distress&Calling
17	156.850	156.850	Pilotage	State Control
18	156.900	156.900	Commercial	Commercial
19	156.950	156.950	Coast Guard	Commercial
20	157.000	161.600	Port Operations	Port Operations
21A	157.050	157.050	Coast Guard	Coast Guard
21B		161.650	Coast Guard	
22	157.100	157.100	Coast Guard	Coast Guard
23A	157.150	157.150	Not Assigned	Coast Guard
23	157.150	161.750	Public Corres.	Not Assigned
24	157.200	161.800	Public Corres.	Public Corres.
25	157.250	161.850	Public Corres.	Public Corres.
26	157.300	161.900	Public Corres.	Public Corres.
27	157.350	161.950	Public Corres.	Public Corres.
28	157.400	162.000	Public Corres.	Public Corres.
65	156.275	156.275	Port Operations	Public Corres.
66	156.325	156.325	Port Operations	Port Operations

cont'd on p.29

WJG Memphis TN	2086	2086
	2782	2782
	4087.8	4087.8
	6209.3	6209.3
	8201.2	8201.2
	12333.1	12333.1
	16518.9	16518.9
WDR Miami FL	2514	2118
	2490	2031.5
	2442	2406
WLO Mobile AL	2572	2430
WAK New Orleans LA	2598	2206
	2482	2382
WAQ Ocean Gate NJ	2558	2166
WLC Rogers City MI	2514	2118
	2550	2158
	2582	2206
	4369.8	4075.4
WOX Sag Harbor NY	2590	2198
	2522	2126
WGK St Louis MO	2086	2086
	2782	2782
	4410.1	4410.1
	6212.4	6212.4
	8737.5	8737.5
	13109.9	13109.9
	17291.8	17291.8
KLH San Francisco CA	2506	2406
	2450	2003
KOU San Pedro CA	2566	2009
	2598	2206
	2522	2126
	2466	2382
KOW Seattle WA	2522	2116
WFA Tampa FL	2550	2158
	2466	2009
WCM Withamsville OH/Pittsburgh PA	2086	2086
	2782	2782
	4063	4063
	6515.7	6515.7
	8213.6	8213.6
	12333.1	12333.1
	16518.9	16518.9



# SIGNALS FROM SPACE



by Larry Van Horn

Again this year the President's Office of Management and Budget has eliminated funds for a second polar orbiting spacecraft, but the Congress is expected to restore these funds. The possibility of a cut in funds to launch and operate a second weather polar satellite to maintain a two-satellite system is very real.

\*\*\*

Last month Robert Popham updated the current geostationary weather satellite scene. This month Robert will update the rest of the weather satellite scene for MT readers.

NOAA-6 is in a standby/backup mode, awaiting deactivation. Nearly all systems have been turned off. Power system shunts on this spacecraft appear to have experienced a number of failures over a period of several months.

NOAA-7 is the primary afternoon satellite, crossing the equator northbound in daylight at about 1536 local (sun) time each day. All systems are performing nominally, except the motor current has exhibited unexpected high increases.

Efforts are being made to reduce this by heating the instrument and moving oil to the motor bearing.

Launched June 23, 1981  
International designator:  
1981-059A

Period: 102.0 min.  
Equator Crossing 1536 Local  
(sun) time

HRPT frequency: 1707.0 MHz.  
Channel 2 (0.725-1.10) and 4  
(10.2-11.3) are trans-  
mitted continuously

Orbital Inclination: 98.97  
degrees

Daytime (afternoon) ascen-  
ding orbit

APT frequency: 137.62 MHz.  
DSB frequency: 137.77 MHz.

NOAA-8 is the primary spacecraft, crossing the equator southbound in daylight at about 0738 (sun) time each day.

On May 14, NOAA-8 AVHRR instrument channels 3 and 4 were turned off for 11 orbits (5872-5884) as part of a test to precisely iden-

tify the mechanism for noise sensitivity in the 3.7 micron channel. If this first test is not successful, NOAA/NESS personnel will schedule another test.

#### NOAA-8 STATISTICAL DATA

Launched March 28, 1983

International designator:  
1983-22A

Period: 101.3 min.

Equator crossing 0738 (sun)  
time

HRPT frequency: 1698.00  
MHz.

Channel 2 (0.725 - 1.10) and  
4 (10.5 - 11.5) are

transmitted continuously  
Orbital Inclination: 98.73  
degrees

Daytime (morning) descending  
orbit

APT frequency: 137.500 MHz.  
DSB frequency: 136.77 MHz.

#### ATS SUMMARY

On March 31, 1984 NASA terminated their control of ATS-1 and ATS-5. ATS-1 is positioned over the Pacific at 165 degrees east. NASA will transfer ATS-1 operations command and control responsibilities to the University of Hawaii. It will continue to be used as an educational vehicle for voice communications with the islands in the Pacific Ocean.

ATS-5 is over the Atlantic; it will be desynchronized (placed out of geostationary orbit).

ATS-1 - launched in 1966, was the first satellite used to test and develop the WEFAX communications capability. Eight pictures were transmitted daily on VHF, and on APT-type equipment. Today, each GOES spacecraft transmits nearly 90 products every day, on S-band frequencies.

BATS-3 - operations are under contract to the University of Miami and is used in large part for oceanographic work involving ships at sea.

ATS-2 and ATS-4 never achieved geosynchronous orbit. They were used for several months for various experiments before re-entering the earth's atmosphere.

ATS-6 was de-synchro-  
nized in 1983.

GMS-1 and GMS-2 - (geo-  
stationary weather sats)  
After more than two years in

space, Japan's second Geostationary Meteorological Satellite (GMS-2) operations were terminated in January 1984 due to an apparent malfunction in an electric drive mechanism controlling its scanning mirror. The mirror, which normally recycles in 150 seconds, was taking over three hours to return.

In early January, GMS-1 was moved from its stand-by position at 160 degrees east and on January 31 replaced GMS-2 as the primary operational satellite at 145 degrees east. It is now providing the same VISSR, WEFAX, and data collection services as GMS-2.

GMS-3 is scheduled to be launched in August 1984. Its mission will be the same as previous satellites in the series. GMS-4 is scheduled for launch in 1989; its possible functions are now under study.

Both METEOSAT-1 and -2 continue to be operated simultaneously to provide image acquisition and dissemination (METEOSAT-2) and data collection (METEOSAT-1). Both satellites can be operated a full 24 hours per day and are presently technically capable of fulfilling all mission requirements except during eclipse periods. METEOSAT-1 is maintained on station

between 9 and 11 degrees east, and METEOSAT-2 between 1 degree east and 1 degree west.

NOAA-F is currently planned for launch in August, 1984 (about the time this column is in print).

NOAA-F instrument complement will include:

The 4 channel version of the AVHRR.

High Resolution Infrared Radiation Sounder (HIRS/2)

Microwave Sounder Unit (MSU)

Data Collection System - ARGOS (DCS)

Search and Rescue Satellite Aided Tracking (SARSAT)

Earth Radiation Budget Experiment (ERBE)

I would like to thank Robert Popham at NOAA/NESS for this fine update on weather satellite activity and I will be looking for more input in the future.

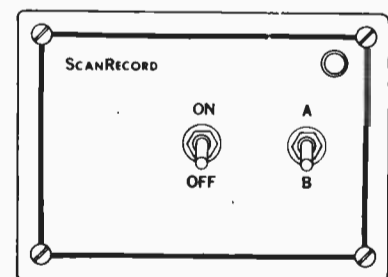
\*\*\*

Additional aspects of the ambitious WORE Ham-in-Space proposal by ARRL/AMSAT have been revealed. Speaking on Westlink, ARRL's Public Affairs Manager Pete O'Dell, KB1N, says the Mission 51F proposal is based on the success of

cont'd on p.30

## While you were out... SOMETHING HAPPENED!

Now you can record all the scanner action that occurred while you were away for playback later. The Scan Record recorder coupler will automatically turn on your tape recorder when your scanner is receiving a message and route the audio from the scanner to the recorder.



The recorder runs only when a message is received. It does not run when the scanner is just scanning. This lets you record a lot of traffic on one tape. In addition to scanners, it will work with any receiver that has a squelch control.

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# BEHIND THE DIALS

## COPYING RTTY/MORSE: WHAT ARE THE OPTIONS?

by  
Bob Grove

Years ago, the choices for reception of radioteletype and CW were limited; only the trained ear could copy Morse code and noisy mechanical printers with bulky demodulators were required for RTTY. Enter the microprocessor.

There are three basic methods now available to the hobbyist for automatic reception of these modes (and others): Dedicated terminal (Dovetron, HAL, Infotech), computer interface (Microlog, AEA, Kantronics, MFJ) and reader (AEA, Kantronics)--arranged by decreasing cost and indicating typical manufacturers.

This month we are going to examine the option which has the greatest appeal to home computer enthusiasts: The interface.

Kantronics must be credited with really getting the ball rolling; their Hamsoft program has provided considerable flexibility to both amateur radio and shortwave utility enthusiasts for two years or more. The success and popularity of their proprietary software has led to unauthorized copyright infringement, now being vigorously prosecuted by that firm.

Digital technology has advanced to the point that simple plug-in ROMs (read only memories) can be called upon to convert the home computer into a powerful RTTY/Morse/ASCII/TOR terminal.

Two leading producers of highly-effective plug-in packages for the Commodore are Microlog Corporation (18713 Mooney Drive, Gaithersburg, MD 20879) and Advanced Electronic Applications, Incorporated (P. O. Box 2160, Lynnwood, WA).

Both systems require buffering of data via the computer's companion 1541 disc drive. A printer is optional, but required if the user desires to preserve hard copy of intercepted traffic.

Both programs are designed for full trasceive amateur operation but may be used for receive-only applications.

Modes include all common RTTY speeds (60, 67, 75, 100, 132 WPM), Morse (5-100 or more WPM), ASCII (110, 300 baud plus 150 on the AEA), and TOR

### MAIN MENU SCREEN

```

hh:mm:ss
MBA-TOR™
COPYRIGHT 1984 BY AEA

SELECT:
M. MORSE
A. ASCII
R. RTTY
T. AMTOR
U. AUTO AMTOR
X. AUTO CALL
C. COMMANDS
O. OPTIONS
    
```

- CW receive and transmit at 5 to 99 wpm, auto speed track on receive.
- 8 bit ASCII, receive and transmit at 110, 150 or 300 baud.
- 5 bit Baudot, receive and transmit at 60, 67, 75, 100 or 132 wpm.
- TOR, receive and transmit ARQ (Mode A) or FEC (Mode B) and listen.
- Beacon and WRU system, includes QRG check before XMT, won't QRM.
- Message forwarding system, AUTO-AMTOR still functions in this mode.
- Selects command menu.
- Selects options menu.

- + Complete precompose split-screen display with status information.
- + Complete printer control including SELCALL/WRU printer control.

### OPTIONS MENU SCREEN

```

hh:mm:ss
I. CALLSIGN  ??????
S. SELCALL  ?????
T. ARQTIMEOUT  30
U. USOS      ON
M. MORSE FILL (BT) OFF
R. RTTY SYNC (NUL) OFF
A. AUDIO FEEDBACK OFF
C. AUTO CR   ON
L. AUTOLF   ON
B. BEACON RECORD OFF
W. WRAP-AROUND ON
K. CW BREAK-IN OFF
O. OUTPUT MODE  WORD
    
```

- 24-hour clock, shows time in hours, minutes and seconds.
- Allows entry of your callsign for auto operations.
- Derived from your callsign automatically, can be changed.
- Sets ARQ phasing calls from 1 to 99 seconds.
- Unshift on space, toggles on or off.
- Transmits Morse idle character during breaks in KB activity.
- Transmits RTTY idle character during breaks in KB activity.
- Sends short beep through your audio as any key is depressed.
- Sends carriage return the first space after 65 characters.
- Sends a line feed after each carriage return.
- Allows the beacon to be recorded to the QSO buffer for logging.
- Sends CR/LF if there is a space in the last 5 positions on the line.
- Automatic transmit/receive switching during QSO.
- Transmit in word mode (text sent on space) or character mode.

- + Break-in buffer on all modes, toggle QSO buffer on or off.
- + CW speed lock and Farnsworth low-speed CW.
- + 10 soft-partitioned™ message buffers plus direct from disk or tape.

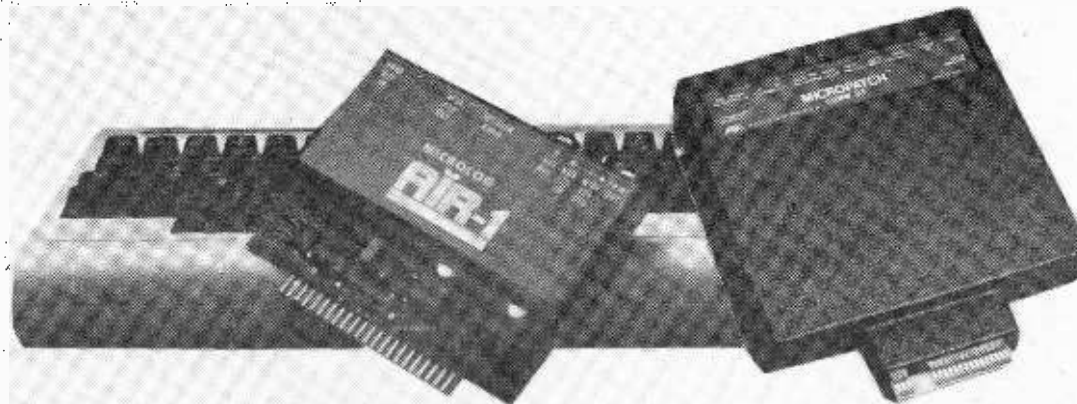
### COMMAND MENU SCREEN

```

hh:mm:ss
L. LOAD
E. EDIT
M. MOVE
S. SAVE
X. SET XMT BUFFER SIZE
C. SET COLOR
T. SET TIME
    
```

- Allows loading of message or QSO buffers from disk or cassette.
- Word processor type edit functions on message and QSO buffers.
- Allows transmission of QSO buffer without disk or cassette systems.
- Allows you to save message and QSO buffers to disk or cassette.
- Set the transmit pre-type buffer to any size you like.
- Chose between any of 16 colors for character, screen or border.
- Lets you set the time of day clock.

# MBA-TOR™



SCAN-LOC FOR THE KENWOOD TS-430S

(FEC/ARQ).

Computer enthusiasts will love the format. After loading the program, a series of menus may be called up to select a wide variety of English-word commands and options (see accompanying chart).

MT will be taking a closer look at a typical plug-in cartridge in an upcoming issue.

The AIR-1 is available for both the VIC-20 and C-64 from Microlog at \$199 for RTTY/ASCII/Morse and \$279 with TOR. The MBA-TOR 64 software-only package from AEA is \$119.95; \$239.95 buys the MAP-64/2 with self-contained interface.

Few amateur transceivers have caught on like the Kenwood TS-430S. Featuring all-band, all-mode HF transmit and general coverage receive (100 kHz-30 MHz), the economical rig provides top performance for the dollar.

As would be expected, enterprising hams have offered additional perks to provide even more flexibility. The clever little circuit we are discussing this month is an example.

Stock from the factory the TS-430S receiver includes a scanning memory, but it must be manually stopped on an active channel. With the new SCAN-LOC

modification, any signal strong enough to break the squelch will stop the scan until the squelch drops back out. Rescan delay (scan resume) may be custom-adjusted by the installer.

The seldom-used "LOCK" button on the TS-430S becomes the activating control of the SCAN-LOC, allowing total defeat of the little circuit if desired.

SCAN-LOC can also activate an external device such as a tape recorder through pin 3 of the receiver's accessory socket. Up to 400 ma. of current is safely switched.

Professionally designed and neatly constructed, SCAN-LOC is easily installed

cont'd on p.28

# GWEN AND VLF

by  
Bob Grove

The nuclear fireball rises from ground zero; ionizing radiation penetrates the upper reaches of our atmosphere, disrupting radio wave propagation in the shortwave spectrum and above. Electromagnetic pulse (EMP) further immobilizes wired and radio communications alike.

This imaginary scenario is an oversimplification of the immediate technological effects of a nuclear blast. It is a vision that we hope we will never see, yet we must be prepared for.

The Department of Defense has an on-going program of research into contingent communications; one of the most recent of which is GWEN--the ground wave emergency network.

GWEN makes use of the fact that very low frequencies (below the broadcast band) are least likely to be disturbed by the holocaust (they are also less vulnerable to distant jamming).

Ionizations (electrification) of the atmosphere occurs naturally at high altitudes in the ionosphere (upper atmosphere) where the phenomenon is utilized for reflection of skywave radio signals (skip).

At low frequencies radio waves tend to follow the contour of the earth's surface, untouched by the idiosyncracies of high altitude propagation.

The United States Air Force operates a number of redundant communications systems to insure continuity under all circumstances. Cooperating with (the Federal Emergency Management Administration (FEMA), the Air Force is developing a web of low frequency transmitting sites across the continent.

Utilizing frequencies in the license-free 1750 meter band (160-190 kHz), GWEN transmitters typically run 5 kilowatts of power into 300-foot vertical antennas. Encrypted RTTY is the preferred mode.

Nearly a dozen stations are presently in operation; future expansion could conceivably run into the hundreds. The installation at Kirkland Air Force Base, New Mexico is a prototype; the equipment at Belen, New Mexico has been dismantled and that frequency awaits reassignment.

## USAF GWEN STATIONS

kHz.	Location
161	St. Mary's, IA
164	Canton, OK
167	Clark, SD
168	Kirkland, NM
170	Pueblo, CO
173	Manhattan, KS
177	Ainesworth, NE
180	Fayetteville, A
183	Belen, NM
186	Colby, KS
189	Aurora, CO


One of the pioneers in the low frequency defense electronics system is WGU20 in Chase, Maryland, still heard with time signals transmissions in the AM mode on 179 kHz.

A holdout from the early Decision Information Distribution Systems (DIDS), WGU20 holds a tenuous link with the past, but if FEMA reactivates its 175-190 kHz network, GWEN operations may shift down to the 150-175 kHz range.

## OTHER VLF USES

Due to the relative stability and predictability of signals at the lower frequencies, many worldwide military operations may be heard there. In North America, transmissions from the US, Canada and Great Britain are most likely to be reported.

Most commonly-used modes are frequency shift keying, CW, minimum shift keying and standard frequency/time signals.

 Write from p.4

And yet that topic is constantly addressed in club bulletins, magazines and other publications intended to inform their readership. But the marketplace is dynamic and equipment is constantly changing.

## PAY

Yes, that is the bottom line for many budding authors and old timers alike. Pay scales vary from zero (club publications) to thousands of dollars (Time and Readers Digest).



Wide circulation hobby magazines (CQ, Radio Electronics, 73) may pay the equivalent of \$50 or so per page, often averaging about \$100-\$150 for an article from good, experienced writers, with article length often approaching 5000 words.

Monitoring Times pays \$25 for a 500-1000 word article and we throw in a free subscription (and our undying gratitude), a value

## VLF STATIONS HEARD IN NORTH AMERICA

kHz	LOCATION	MODE
16.0	GBR-Rugby, UK	(CW/FSK/SFTS)
16.4	JXZ-Helgeland, Norway	(CW)
16.8	FUB-Paris, France	(CW,FSK/SFTS)
17.1	USSR	(CW/FSK)
17.4	NDT-Yokosuka, Japan	(MSK)
18.5	DH038-Flendburg, FRG	(CW/FSK)
19.0	GQD-Anthorn, UK	(FSK)
19.6	GBZ-Briggion, UK	(FSK)
21.4	NSS-Annapolis, MD, USA	(MSK)
22.3	NWC-Exmouth, Australia	(MSK)
23.4	NPM-Laulualei, HI	(MSK)
24.0	NAA-Cutler, ME	(MSK)
24.8	NLK-Jim Creek, WA	(MSK)
26.1	USN-TACAMO Aircraft	(MSK/FSK/CW)
50.0	OMA-Liblice, Czech.	(SFTS)
51.6	NSS-Annapolis, MD, USA	(FSK)
55.5	GXH-Thurso, Scotland	(FSK)
58.7	Ft. Ritchie, MD, USA	(FSK/MSK)
60.0	WWVD-Ft. Collins, CO	(SFTS)
73.6	CFH-Mill Cove, Canada	(FSK)
75.0	HBG-Prangins, Switzerland	(SFTS)
76.2	CKN-Vancouver, Canada	(FSK)
77.15	NAM-Driver, VA	(FSK)
77.5	DCF77-Mainflinger, FRG	(SFTS)
82.75	MKL-Pitreavie, Scotland	(FSK/CW)
88.0	NSS-Annapolis, MD, USA	(FSK)
119.85	NPG-Dixon, CA, USA	(FSK)
122.5	CFH-Mill Cove, Canada	(FSK)

Most of the military FSK (RTTY) is encrypted.

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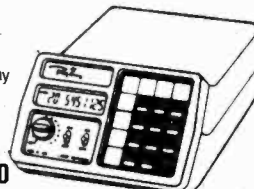
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## R-2000

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- RFB-300 1.6-30 mhz, Digital, S/Meter, More! 234.50
- RFB-600 1.6-30 mhz, Digital/Memories, Scans. 439.50
- RF-2200 8 Band Portable, AM/FM/SW Receiver. 179.50
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- Z-10 10 ch, Prog. 30-50, 144-174, 406-512 mhz. 164.58
- Z-30 30 ch, Prog. 30-50, 144-174, 406-512 mhz. 189.50
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Cont'd on p.23



# RTTY/FAX

## GETTING STARTED IN RTTY

by Fred Osterman, Manager  
Universal Shortwave Radio  
1280 Aida Drive  
Reynoldsburg, OH 43068  
(614-866-4267)

### CONCLUSION: THE EQUIPMENT

Receiving and decoding radioteletype (RTTY) does not require a special radio or antenna. As long as the radio is stable and reasonably sensitive it will work. The following table rates common radios on their ability to copy RTTY. (This is NOT an overall performance rating.)

Kenwood R-600	Fair
Kenwood R-1000	Good
Kenwood R-2000	Good
Kenwood R-2000+RIT	Very Good
ICOM R-70	Good
Yaesu FRG-7700	Good
Radio Shack DX302	Poor
Japan Radio NRD515	Excellent

### I. READERS

RTTY/CW readers are self-contained devices that connect to the audio output of your speaker. They decode and display the text on a 6, 8, or 32 character LED "billboard" display.

#### ADVANTAGES:

- \* They are relatively inexpensive ... in the \$250 to \$350 range. Nothing else beyond a receiver is required.
- \* They are easy to operate having few controls.
- \* They are compact and portable...great for field day, "DXpeditions" etc.

#### DISADVANTAGES

- \* "Copy" is typically not as good as a "dedicated" units, and they will not read poorly-sent code.
- \* The small "screen" of 6 to 32 characters does get a little tricky at 100 wpm or during the noisy copy.
- \* They typically lack some of the extra desirable features (ATC, limiting, upshift, autostart, etc.). Many will not drive printers.
- \* They are not suitable for advanced listening requirements like Arabic, or Russian transmissions.

### II. COMPUTER INTERFACES

With the increased popularity of microcomputers there has been a

proliferation of special interface that attach to these computers to copy RTTY and Morse. These units hook up very simply to your computer and receiver. They usually consist of two parts: the interface and the software. We have systems to work with the following computers: VIC-20, Commodore 64, Apple II, TRS-80 CoCo, Atari, TI-99, and TRS-80 Model III.

#### ADVANTAGES

- \* IF you already own a microcomputer the additional investment will be minimal (\$150 to \$300).
- \* Many of these units will also transmit RTTY and Morse if connected to a transceiver.

#### DISADVANTAGES

- \* Their overall performance is usually superior to a "reader" but NOT as good as a "dedicated unit".
- \* Many computers emit "RFI", (interference to nearby radios). This varies from brand to brand, model to model. In some cases, this interference can be strong enough to destroy the signal you are trying to tune.

Universal carries a wide selection of computer interfaces in the \$100 to \$250 price range. We have very economical units by MFJ and Kantronics, as well as deluxe units by AEA and HAL. We also carry the new Kantronics Radiotap. We will be happy to advise you on the best computer interface-software combination for your computer and budget.

### III. DEDICATED UNITS

A "dedicated" unit is a self-contained free standing device. They take audio from the receiver and display text to a monitor (or TV with RF modulator). They do not require a computer (although they can be used to "feed" a computer for text storage and/or analysis).

#### ADVANTAGES

- \* Clearly superior performance over readers or computer interfaces. Will afford readable output even under poor conditions.
- \* They afford a full video display with the full 72 character RTTY video line.
- \* They often have desir-

able extra features and controls not found on readers or interfaces including scope output, automatic threshold control, upshift on space, multiple scroll inhibit, RS232C output, and printer output.

As you advance in the RTTY monitoring hobby you may wish to explore the reception of Arabic, or third shift Russian Cyrillic. Several of our customers are also experimenting with decryption routines.

Hobbyists contemplating these avenues will need the quality and features of a dedicated unit.

#### DISADVANTAGES

- \* Dedicated units require a greater investment. Monitor (or TV set with 'RF modulator') is required.

#### RESOURCE MATERIAL

Listening to RTTY can be frustrating IF you don't know "when and where" to look. We offer several books to help you enjoy your RTTY/CW monitoring: \* SHORTWAVE DIRECTORY (Grove) SHORTWAVE LOG (Osterman) LIST OF WORLDWIDE RTTY STATIONS IN FREQUENCY ORDER - 9th Ed. (Kingenfuss) WORLD PRESS SERVICES FREQUENCY LIST AND MANUAL - 4th Ed. (Harrington) RTTY PRESS BROADCASTS BY TIME & AGENCY LIST - (Schaay) GUIDE TO UTILITY STATIONS - 2nd Ed. (Kingenfuss) LIST OF SPECIAL RTTY & CW ALPHABETS - 5th Ed. (Klingenfuss) CALL SIGN LIST OF UTILITY STATIONS - 7th Ed. (Klingenfuss)

## LIGHTNING -- HOW DISTANT IS IT?

by Hank Bennett

So you look at the heading of this column and wonder why I'm writing about a weather phenomenon? This summertime simply put your headphones on and you will more than likely hear the all-too-familiar crackles that signify lightning static, somewhere.

I'm writing about lightning not for the purpose of teaching anyone anything, but perhaps to learn something from those of you out there in radioland (as they used to say on radio) who might have more experience than yours truly on the subject.

I've always had a number of questions about lightning and, if nothing

else, perhaps we can stir up a bit of lively discussion.

First, just what is lightning? Our dictionary defines it as a "sudden discharge of electricity between clouds or between ground and clouds." That's putting it mildly. Stand under a tree during a thunderstorm and you can be a dead duck without any waste of time.

Failure to properly ground your radio equipment can also be fatal to the equipment if your antenna should receive a direct lightning strike.

It can be very colorful from a distance of up to 20 miles or more. It can appear as sheet lightning (flashes behind clouds) or it can be streaked lightning, such as you might see when lightning strikes a pole or tree. It can be ball lightning or chain lightning, both rather rare. It can kill you if it strikes you directly and leave the guy next to you virtually untouched. It provides nitrogen for millions of vegetable farms. It can be pretty and it can be dangerous. It can also be darned noisy as most anyDXer can attest.

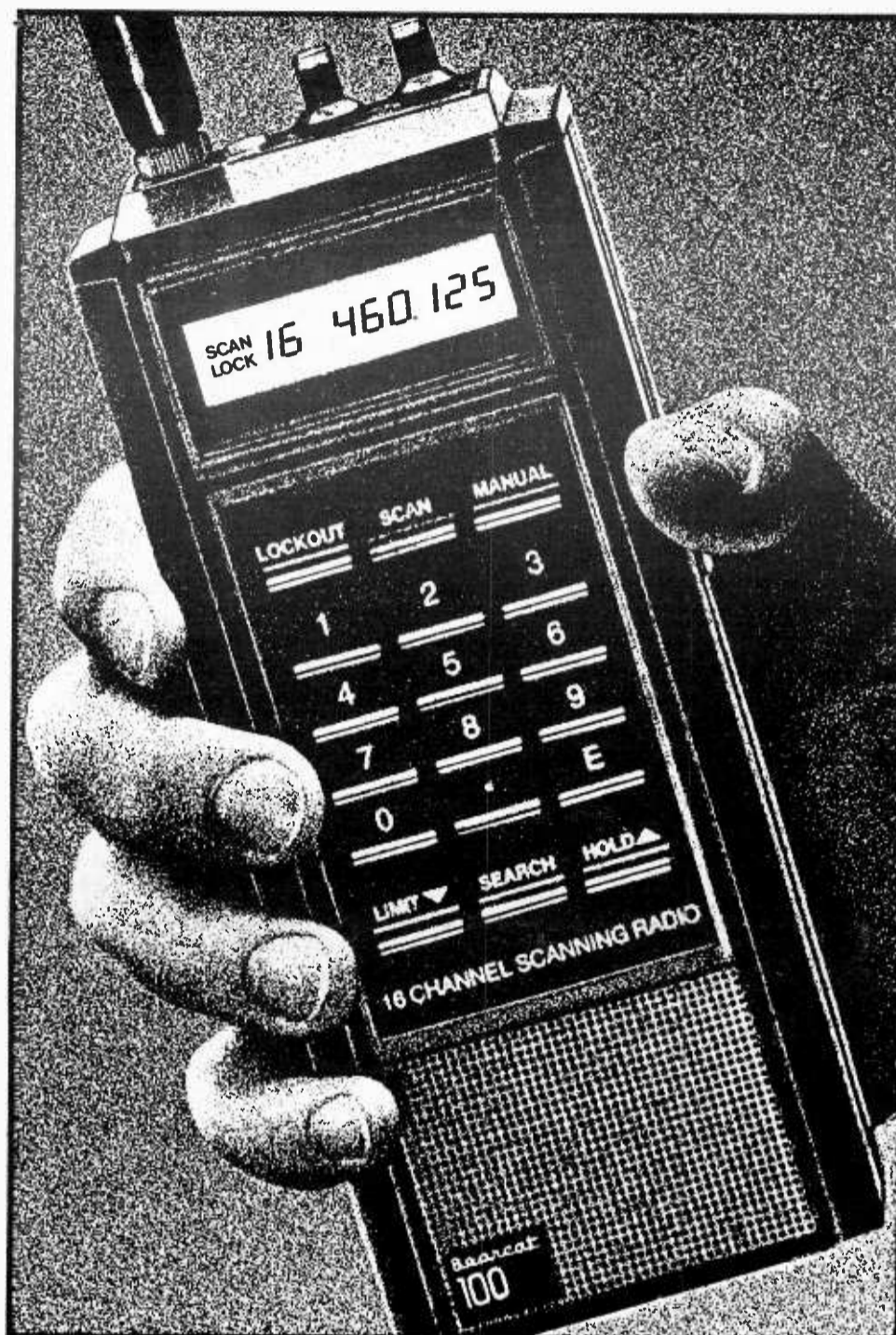
Lightning at great distance used to be what my grandmother termed "heat lightning"--too far away for the accompanying thunder to be heard, but still near enough to be seen. Oddly, heat lightning never seemed to occur overhead but my dear old grandmother stuck by her guns and insisted that heat lightning was lightning without any storm or thunder with it. We tried to convince her otherwise to no avail.

OK. Down to cases. We all know that lightning causes static on many of the radio bands from long wave on up into some of the shortwave bands. During our recent vacation in the New York Adirondack Mountains, where we long-wave DXed we found that lightning static from a particular storm would linger far longer on the longwave bands than on the broadcast band.

Up there in the mountains, we found that lightning static was easily heard on the supposedly static-free FM bands from any storm within sight! Not a fair comparison, perhaps; the nearest FM station was a good many miles distant.

Let's assume that there is a thunderstorm about 50 miles away (strictly an arbitrary figure). You can hear the static on the long waves and on the standard broadcast band. You can likely hear it on up into con't on pg. 25

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**Paul Swearingen**  
**7310 Ensign Ave**  
**Sun Valley, CA 91352**

Can a DX club whose members call each other "lowfers" be all bad? Hardly not, as the man said. And if you were a member of the Longwave Club of America, you'd know that "DX Downstairs" is not where the XYL sends you to twirl the dials when she gets tired of listening to the Russian Woodpecker chewing up your speaker... "Lost and Found" has nothing to do with objects... "Technical Round-up" leaves no one cowed... and the "Lowdown" is not the last word. The first three are columns in the last--"Lowdown"-- the official publication of the club for sub-550 kHz. DX'ers.

Founded just over ten years ago, the club grew from a couple dozen charter members to around 500, and the Lowdown transmogrified from mimeod sheets to a handsome offset bulletin. DX loggings are chronicled in "DX Downstairs"; new and previously unknown stations are listed in "Lost and Found"; "Technical Roundup" keeps members abreast of new developments in receiving and other techniques, and other articles inform members of what's happening in

DX'ing and most often are of use to any DX'er. If you'd like more information, send an SASE to Longwave Club of America - 45 Wildflower Road - Levittown, PA 19057.

Ivan Paquette (VE2-ID) sends word from Montreal that the Club Ondes Courtes Du Quebec, A French-speaking DX club which has been a member of ANARC since 1979, is celebrating its 10th anniversary in September. Send an SASE to P. O. Box 37, Succ. Youville, Montreal, PQ, H2P 2V2 Canada for information. Make that SASE in Canadian postage, or include one IRC, or if you don't have access to either, I'm sure they'd appreciate the addressed envelope and send you information anyway.

By the way, you can hear Ivan on the French DX program "ALLO-DX" which is broadcast every Sunday night over Radio Canada International. He's currently serving as president of the club.

There's no final word at deadline time as to whether a new publisher has been found for the International DX'ers Club of San Diego bulletin, but Ward Brookwell is determined to

find someone who will take over his father's club and keep it going as a non-profit organization. In July, he sent letters to four people who previously had expressed an interest in reviving the club and was awaiting reply. Of course, as time passes, the likelihood of the club becoming active again decreases. Contact Ward Brookwell at 110 Ashland Avenue, Medford, OR 97504 if you'd be interested in helping out.

Founded ten years ago, SCAD (Southern California Area DX'ers) serves a cross-section of greater Los Angeles area DX'ers. The club holds four meetings a year, charges minimal dues, and has been the generator of many friendships among DX'ers in Southern California. We'll have more information about the October SCADS meeting in the next issue of MT. If you'd like more info, contact SCADS Director Don R. Schmidt at 3809 Rose Avenue, Long Beach, CA 90807. Be sure to include that SASE.

And...don't forget that this column welcomes information about YOUR club. My next deadline, for the November issue is September 5. We'd especially be happy to inform MT readers about the smaller clubs who NEVER

get publicity - because they're "too small". We don't think there's such a thing! Jot down some salient features of your club and send them to the address above. Thanks!

## HAMS COMMEMORATE WWII LIBERATION

On October 20, 1944, U.S. troops landed on Leyte island in the Philippines. One of the four divisions participating was the 24th Infantry Division. October 20, 1984 will mark the 40th anniversary of this historic event. In remembrance of the landing and those who took part, the 24th Infantry Division Association will operate a Special Event Station, K4TF, from Merritt Island, Florida.

The Association will offer a special commemorative certificate to any amateur station making 2-way contact with K4TF during the 24-hour GMT period of October 20th. Operations will take place approximately 10 kHz inside the general portion of each amateur band. Bands to be used will be dependent upon propagation conditions. Certificates will also be available to shortwave listeners who submit correct reports of reception.

Con't on page 24

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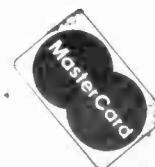
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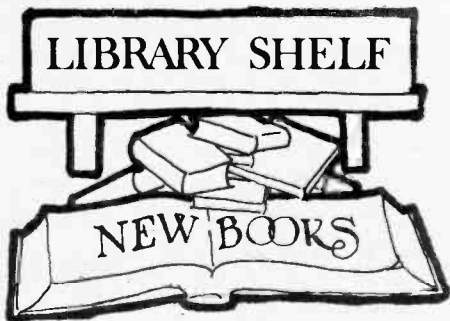


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**HANDS-ON ELECTRONICS** (Quarterly magazine, \$2.50 per issue from Gernsback Publications, 200 Park Avenue South, New York, NY 10003).

Congratulations are due to the editors of Radio Electronics and especially chief Editor Julian Martin (KA2GUN) for helping to thwart the tide of magazines leaving the experimenter hobbyist foundering in a sea of unwanted computer magazines.

**HANDS-ON ELECTRONICS** follows the venerable traditions of extinct forebears like Radio Craft, Modern Electronics and others that lost out to the "me too" mad rush to the throne of the computer.

The premier edition contains articles of all levels of complexity from extremely simple to more complex with subjects to match: solar power, alcohol calculator, automobile tachometer, resistor substitution box, tone ringer, code practice oscillator and many more.

Special columns discuss cordless phones, the RS-232 computer port, DX'ing, test-bench tips and other timely topics.

**FOX SCANNER RADIO LISTINGS** (Tampa/St. Petersburg areas, Los Angeles area and Cleveland area; \$9.95 each from Fox Marketing, Inc., Dept. MT, 4518 Taylorsville, OH 45424).

Each successive issue of these professional scanner listings is more ambitious than the last. The new Los Angeles directory contains 264 pages of solid information with some 11,000 frequencies! Easily the best buy in a regional scanner directory ever published.

As with the entire series of Fox scanner directories, this edition is cross-referenced by user or agency, call sign and frequency. A bilingual (Spanish/English) introduction is designed to assist Hispanic-American users in the California area.

The new blue-covered **TAMPA/ST. PETERSBURG** area directory announces a new service--the customer may request a county printout from any county listed in any book in the Fox series. A handy plus for scanner

addicts!

The **TAMPA/ST. PETERSBURG** edition lists users all around the Tampa Bay area including Sarasota, Bradenton, Arcadia, Clearwater, Lakeland, Dade City, Wauchula and Winter Haven.

The **CLEVELAND** area directory cuts a swath across northern Ohio bordering Lake Erie, covering major cities and suburbs one or two counties deep from Erie County and the Pennsylvania border clear across to the Toledo area which is covered in another volume.

A nice set of well-documented books from Fox.

**POLICE CALL RADIO**

**GUIDE**, 1984 Edition by Gene Hughes.

Without a doubt, more scanner enthusiasts know the **POLICE CALL** directories than any other publication. This is largely due to two factors; Hughes' lists are among the earliest to be published when scanning was young, and they are propagated through Radio Shack outlets nationwide.

Their excellent reputation is well-deserved. Updated each year, they are comprehensive and cover the entire contiguous United States. A handy band-plan frequency allocation list is included for low, high and UHF services; common air-

craft, railroad and non-sensitive U.S. Government users for the areas covered in each directory are also provided.

The main body of the directory is shared between an alphabetical state/city list and frequency cross-reference. Nine volumes in all (at \$6.95) cover all 48 continental states, with emphasis on public safety assignments.

If you are unable to find the directory for your area at a local Radio Shack dealer, send \$7.70 for book rate or \$8.70 for first class delivery to: **POLICE CALL**, Dept. MT, Lebanon, NJ 08833.

# SWL HEADQUARTERS

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# BROADCASTING. . .

## HANK BENNETT ON SHORTWAVE

### GETTING A DX AWARD THE HARD WAY

Do any of our readers know exactly how many counties there are in the United States? I didn't and, for that matter, I still don't know since I haven't taken the time to research the subject. However, Charles Loftis, WDX4KEF, of Landrum, South Carolina tells us that there are precisely 3076 counties in all. He didn't state otherwise but I assume that he means all of the counties in the continental U.S.

For several years Charles has been DX'ing the ham bands in an effort to not only log all of the counties but to verify them as well, with at least one station represented from each county, whether it be a fixed location station or a mobile unit.

This, in my opinion, is really trying to get a DX Award the hard way! Back in my more-active ham radio days, I began a similar chore but ran out of transmitter before I ran out of counties.

In his initial letter, Charles reports that he has 2960 counties logged and verified, leaving 116 to go. A subsequent report shows an increase to 2977 counties verified. (He also has 156 countries and 37 world zones verified).

Charles tells us that CQ magazine is sponsoring a United States County Award that is available to radio amateurs on a worked basis and to SWLs on a heard-and-confirmed basis. They offer a beautiful plaque and certificate to anyone who can successfully nail down all 3076 counties. Reportedly there have only been two other SWLs who have logged and verified all of the counties.

There is a net on the 20-meter ham band that is for the purpose of working (or hearing) all counties. The net, called "The Independent County Hunters Net" operates 24 hours daily, seven days a week if conditions are good.

Many hams will operate mobile units at various hard-to-get county locations. In fact, many hams reportedly make telephone calls into an information center to let listeners and/or hams know that they will be in certain counties at specific times.

If anyone would like more information on county hunting, they may contact

Mr. Loftis directly at Rt. 1, Box 72, Landrum, SC 29356.

WDX DX Awards has promised Charles a special certificate upon completion of his efforts.

\*\*\*

It generally isn't considered to be in good taste to poke fun at someone else when they make a mistake in whatever they're doing. Many people will take quick offense at being the target of jibes and jeers simply because they have made an error, whether it be innocently or otherwise.

But we saw a good one the other day and we're going to put it into print because we don't mind poking fun at this one and the guy in question can't do anything about it anyhow.

Seems this person found an old electric vacuum cleaner that was to be dismantled for parts or whatever. He quickly glommed onto the AC cord which, in this case, was about 10 feet long and would make an excellent extension cord. A quick snip of the cord separated it from the body of the cleaner. The

**SPECIAL TO MONITORING TIMES**

## "Sounds from the South Pacific"

by Gayle Van Horn

### CONCLUSION

#### NEW ZEALAND

Divided by forest and pastoral land in the North Island and glaciers and mountains on the South Island, New Zealand (RNZ) has almost signed off the air "for good" several times.

Letters of support from listeners worldwide have kept this station on the air.

Programming consists of local and national news, sports, radio dramas and a wide variety of music.

RNZ's English schedule is as follows:

1700-2000 on 15485/17705 kHz.  
2015-0530 on 15485/17705 kHz.  
0530-1215 on 11960/9620 kHz.

Recent loggings have observed RNZ on 9520 kHz. from 0530-1215 GMT. For a QSL send 4 IRC's to: Radio New Zealand, External Service, New Zealand Broadcasting Corp., P.O. Box 2092, Wellington, New Zealand.

#### AUSTRALIA

From the arid 'Outback' to the 'Great Barrier Reef', "the land down under" is a land of contrast.

Radio Australia is the

next thing was a visit to Charlie's Hardware for a plug for the other end. So far so good.

The plug was obtained; the plug-less end was cleared of insulation and the wires made ready for connection to the new plug. A few moments saw the completion of this job and all was in readiness for the trial run. All fine except for one small thing.

This guy had taken the cord, which had a male plug on one end and very stupidly put another male plug on the other end. Plugging both end into the AC line would have no doubt created a flurry of sparks, to say nothing of a wholesale short circuit.

It might be interesting to note in passing that the person who did this has been a licensed ham operator for over 40 years with half of that time heavily involved in electronic equipment construction. You'd think that by this time anyone with half a brain would know what he's doing.

This goes into the same category as the character who picked up the hot end of a soldering iron. Further, this same character was once known to hold an antenna while keying a transmitter to see if anything was going

out!

Unfortunately, I'm the one of whom I have been telling the stories!

\*\*\*

Several years ago Your Editor and his family attended Mass at St. Barbara's chapel in Caroga Lake, New York. The priest was a man of many years and an excellent talker. At homily time he pulled out a prepared script, a rather stuffy article, and began the delivery of it. After a couple of moments he crumpled up the script, threw it over his shoulder and announced that he didn't feel like talking about that subject. So he went into an ad-lib discussion of other church items which suited everyone just as well.

So it is with the column for this month. I've been going to do a column on the trials and tribulations of preparing a column and, in fact, it is nearly completed. But I didn't feel like working on that one so we did this one. I've promised you the other column and now that vacation time is upon us perhaps I'll be able to get it into shape. Meanwhile, please write - I need more mail. Hank Bennett, P. O. Box 3333, Cherry Hill, NJ 08034

#### ABC-MELBOURNE

00000815 on 9680/15230 kHz.  
08150830 on 9680 kHz.  
0830-1400 on 6150/9680 kHz.  
1400-1500 on 9680 kHz.  
1900-2000 on 6150 kHz.  
2000-2215 on 6150/11880 kHz.  
2215-2230 on 6150 kHz.  
2230-2245 on 15230 kHz.  
2245-2400 on 9680/15230 kHz.  
Send reports to: ABC, Box 9994, G.P.O. Melbourne, Australia

#### ABC-PERTH

00000100 on 6140/9610 kHz.  
01000940 on 9610/15425 kHz.  
0940-1600 on 6140/9610 kHz.  
2100-2300 on 6140/9610 kHz.  
2300-2400 on 6140/9610/15424  
Send reports to ABC, Box 9994, G.P.O. 6001, Perth, Australia and include 12 IRC's with your reception report.

#### PAPUA NEW GUINEA

West of Australia are the 600 islands of Papua New Guinea, whose 19 stations present a challenge to the best of DX'ers.

The National Broadcasting Commission (NBC) in Boroko is the easiest to hear. Listen to 4890 and 3925 kHz as early as 0800 until station sign off at 1300 GMT. Send your reports to National Broadcasting Commission - P.O. Box 1359, Boroko, Papua New Guinea.

Cont'd on p.28

most widely heard station in the south Pacific by SWL's. Broadcasting from Melbourne in nine languages, programming includes world and Australian news, current affairs, a DX program and all types of music.

English language broadcasts to North America include:

0200-0400 on 15320/17795 kHz.  
0500-0730 on 15320/17795 kHz.  
1200-1600 on 9580 kHz.  
2130-0100 on 15320 kHz.

With additional transmitters in Brisbane and Perth programming occasionally includes: Australian business reports, daily horse racing results, horse races and cricket matches as well.

An above average report and at least 2 IRC's might help in obtaining a QSL card. Send reports to: Radio Australia, P.O. Box 428G, G.P.O. Melbourne 3001, Australia.

English language schedules for the domestic ABC broadcast are as follows:

#### ABC-BRISBANE

0000-1400 on 4920/9660 kHz.  
1900-2400 on 4920/9660 kHz.  
Send reports to ABC, Box 9994, G.P.O. 4001 Brisbane, Australia.

# BROADCASTING . . .

## ENGLISH LANGUAGE BROADCASTS

by Tom Williamson

This month we will take a look at RELIGIOUS BROADCASTING on shortwave, a subject that may inspire many different reactions among readers and listeners, varying from disgust to outright enthusiasm at the extensive increase in such transmissions in recent years, and the significant high power being used by the stations.

The subject has two rather different facets: International and Regional-Local broadcasting. The majority of the small shortwave stations with target audiences in their local area belong to the Catholic Church; the International broadcasters are mostly Protestant "Missionary" stations of fundamentalist-evangelist outlook.

A complete list of all stations with operating schedules would take up too much space, and probably be out of date by publication time; also a significant number of the small stations are hardly ever heard in North America due to

frequency congestion, small power and unsuitable schedules.

Let us take a look at a representative sample which is well heard in our part of the world.

### WYFR OKEECHOBEE, FLORIDA

This station, operating under the slogan of "FAMILY RADIO", is stated to have several transmitters of 50-100 KW power and operates on a multiplicity of frequencies in the international bands. It broadcasts to Europe, Africa and Canada in English and many other European languages; to South America in Spanish, and also to China.

Some of the best signals heard by your editor are: 17750, 15440, 11875, 11830 and 11775 kHz. Reception seems to be good from about 0600-2200 UTC with the shift toward the lower frequencies during this time period.

The WYFR has a fundamentalist outlook, the programs concentrating on direct reading from diffe-

rent books of the Bible (announced in advance, if you want to read ahead of time), hymns and religious singing, traditional "sermon" type talks about Christianity and occasional news broadcasts (news from UPI can be heard at 20 55 UTC).

Readings are heard in such programs as "Family Bible School"; another interesting and useful program is "Family Radio Counselling Service" with discussions involving listeners needing advice. Such topics as wives working outside the home may be dealt with here.

Another interesting program may be heard on Tuesdays and Thursdays: "Difficult Times" by Dr. Dobson; and there are many more.

For full frequency-program details you may write to WYFR Family Radio, Oakland, CA 94621.

### OTHER STATIONS IN USA

WINB Red Lion, Pennsylvania operates in the 19/25 meter bands, but is not too well heard. KGEI, "The Voice of Friendship", is heard usually in Spanish since Latin America is their target area; however, occasional English broadcasts are heard, such as 2130 UTC. They are best on 9615 kHz.

### TRANS WORLD RADIO

This huge organization, with branches in Europe and the East, is best known to us in North America for its transmissions from Bonaire in the Netherlands Antilles. A huge transmitting site there operates at high power (500 KW) with taped programs in many languages including English.

Apart from the usual evangelistic music and talk programs, you may hear occasional news (1130 and 0500 when last checked). Good channels are 9535 and 11890. Station slogan is "International Sound of the Caribbean"; they sign on with a musical theme on several instruments, "Stand Up for Jesus".

The organization is headed by the dynamic and indefatigable Dr. Paul Freed, who circulates around the world speaking at gatherings on behalf of the organization. Yours truly had the opportunity to hear him last year, and he surely is a fascinating and wonderful speaker.

They also transmit from Sri Lanka, Cyprus, Swaziland, Guam and Monte Carlo. The last three may be heard from time to time and, for the broadcast band DX addict, Bonaire may often be heard during the deep night

Cont'd on p.30



## LISTENING TO THE WORLD

by Roger N Peterson

the major international news agencies and other foreign media pay little or no attention to events in Sweden and the other Nordic countries, the Swedes feel that they can fill a substantial gap in the international news flow.

Programs are 30 minutes in length and every broadcast begins with the news. Mondays through Thursdays, this is followed by current affairs (press comments, interviews and background reports).

On Mondays (except for the first Monday of the month) the programs conclude with "Music from Sweden". "Stamp Corner" is heard on the first Monday. This is the only program of its kind that I know of on shortwave.

On Tuesdays the very popular "Sweden Calling DXers" is on. This is one of the best DX programs on the air and also one of the oldest. Currently it is hosted by George Wood, an American residing in Stockholm. This was one of the early DX programs and has a loyal audience who participate in sending in tips on new frequencies, etc.

Wednesday is devoted to taking a look at some

aspects of life in Sweden and a Thursdays, a new show, "Thank Thor It's Friday" brings you a taste of Nordic dreams, hopes, aspirations, successes and even failures. This is a pretty good program that varies from the silly to the sad. I suggest you try it some Friday morning or evening.

Saturdays are devoted to "Review of The Week", while Sundays are given to "Mailbag" - letters from listeners.

To those of you who haven't tuned into Radio Sweden for a while, you will note that they are using a brand new signature tune; it's called "To the Wide, Wide World" and it's pretty catchy.

### NORWAY

Radio Norway broadcasts only on Sundays. They send out eleven thirty-minute programs in English starting at 1000 GMT and ending at GMT 0500 on Monday. Not all of these are directed to the U.S. but the ones at 1300, 1700, 1900, 2400, 0200, 0300, 0400 and 0600 are well heard here.

The program "Norway Today" contains news, interviews, music and features from the Norwegian scene.

### FINLAND

Radio Finland is on the air every day to North America with their "Northern Report", a roundup of regional news from Finland and the North. In addition, on Mondays, they have "Airmail" - listeners responses to programs; Tuesdays they offer a course in the Finnish language; Wednesdays feature music from Finland.

Thursdays bring "Perspectives" - reports on items of current interest and on Fridays we hear "Speak For Yourself" - interviews with insights into what Finland is like. This alternates with another Friday program, "Summerlight", which concentrates on the arts, sports and music.

Saturdays feature "Compass North" - a review of the week's news from the North. Sundays bring "Focus" - documentaries on life in Finland. Unlike the others which run for 30 minutes, the Sunday programs run for 2 hours and are heard throughout the day.

While Radio Denmark only broadcasts in Danish, they do give out a sign-on statement in English; I used this to get a QSL card from them some years ago.

Cont'd on p.30

### TUNING INTO 'WAY UP NORTH

Some of our best broadcasters are the Scandinavian countries in Northern Europe - Finland, Norway and Sweden. Another country up there broadcasts on shortwave regularly but never in English and that is Denmark.

All but Sweden prefer to send out their programs exclusively during the daytime. The Swedes give you programs day and night and by far the best of them come from that area.

### SWEDEN

Radio Sweden International began shortwave broadcasting in 1938, primarily to maintain contact between Sweden and Swedes living abroad. After the beginning of World War II, short news bulletins in German, English and French aimed at European listeners, were added. In 1946 the Swedes stepped up their broadcasts directed to overseas audiences, added large transmitters (three 500KW) and expanded their operating staff.

Since (so they claim)



# PIRATE RADIO



by  
**John Santosuosso**

**MINORITY ASSOCIATION:** The Minority Association's expected relay did appear on July 1 at 0400 on 6275 and at 0500 on 7430 kHz. A portion of the 0500 transmission was audible here in Florida and consisted of commentary on the organization's proposal to colonize Jupiter with resurrected human beings, a theory they claim originated with the historian Arnold Toynbee. We understand that the same program was also broadcast on June 30 and July 8.

Whether there will be further relays of Minority Association broadcasts is uncertain at this time, but the possibility is good. They also hope to have their own transmitter back in working order sometime this fall.

**THAT NICARAGUAN NUMBERS REPORT:** The Nicaraguan book Conspiracy of the CIA in Nicaragua, published by that country's Director General of Publicity and Press in June 1983, is receiving extensive publicity. First mentioned in Harry Helms' Popular Communications column in January, 1984, a considerable amount of additional information also appeared in Vito Echevarria's page one report in the July Monitoring Times.

The Los Angeles Herald-Examiner also ran an item on the Nicaraguan claims on April 22, and this article is reprinted in Lani Pettit's "Spy Centre" column in the July ACE.

The Nicaraguan book argues that the CIA was behind an attempt to assassinate government official Miguel D'Escoto, a Roman Catholic priest, and that the plot was timed to embarrass the Sandinists during the visit of the Pope. The report further states that the CIA transmitted 4-digit numbers transmissions at 2300 local time on 9074 and 14421 kHz. in order to carry out its

covert activities in Nicaragua.

This writer was fortunate enough to get a copy of the original Spanish language book, which contains over thirty photographs, from the Voice of Nicaragua. If you write to them at Aparto 248, Managua, there is always the possibility they may send you a copy.

Now a much-respected authority on the numbers transmissions declares he has received "direct confirmation" that the material in the Nicaraguan book is true. He says, "This happened to be one of the times when our own people got burned."

## PROGRAMMING PERSPECTIVE

**BY JOHN T. ARTHUR:** One of today's favorite alternative broadcasters is KQSB International, operating on the 48, 41, 26, and 19 meter-bands since 1982.

Broadcasting from sites on both the East and West Coasts, KQSB has received reports from nearly thirty states, four Canadian provinces and South Africa.

KQSB never announces when they will broadcast and is rarely on more than twenty minutes. The programming, untypical rock and jazz, comedy and editorial opinion, is handled by Uncle Ralph, the Old Art, and Frank Furter, who says, "Our sole purpose is to provide an entertaining alternative."

A disillusioned commercial engineer, Julio Mohammed O'Reilly, joined the staff in 1983, permitting KQSB to become the second pirate (ed. note: Voice of the Syncom was the first) to experiment with stereo SW broadcasting, using two transmitters on different frequencies.

KQSB offers three different QSL cards and a pretty blue form letter for correct reports accompanied by three 20-cent stamps. Tapes are welcome. Report via Box 5074, Hilo, HI 96720, and tell them you read it in Monitoring Times.

Next time we will look at KMA. If you would like a review of your favorite station, send a cassette recording to Box 5074.

**SURINAM:** Could French Guiana be the possible site of Radio Frie Sranan's clandestine transmitter? Writing in the August issue of Soldier of Fortune, mercenary "Dr. John" mentions a secret Surinamese training base near St. Laurent du Maroni. Although French officials did finally close it down in March, "Dr. John" reports they generally

were very sympathetic toward efforts to overthrow the military dictatorship in Surinam.

This writer has heard rumors that the transmitter is located some place in Latin America. French Guiana would be an ideal spot, since it borders Surinam.

**CB PIRATE:** Monitors in Eastern Pennsylvania and New Jersey may want to watch for a CB pirate on channel 25 (27255 kHz.). He calls himself the "Supreme Being" and does a show in which he claims to be Satan himself. Although he does not take himself seriously, apparently one listener, a clergyman, did and he began to argue with him.

Broadcasts are irregular, but normally appear between 0000 and 0200 GMT. Occasionally he will do a broadcast "on demand" if requested to do so by some one on channel 25.

**VOICE OF LARYNGITIS:** This famous pirate made another very entertaining broadcast June 17, which was audible here in Florida on 15050 from 2300 to 2330. Cowboy Stanley of the VOL tells us they hope to try some favorite broadcasts on 26 or 25 and possibly 31 meters.

Normally the VOL runs about 50 watts, but Stanley says these transmissions should be a real DX challenge as a lower power will be used.

This is an extremely creative station; hearing them is always a treat.

**LOGGINGS:** California's Chuck Boehnke reports that the latest La Voz del CID outlet, Radio Camilo Cienfuegos on 10040, is putting out an excellent signal and is heard well even before sunset.

Operated by anti-Castro organization Cuba Independiente y Democratica, this station began transmissions in May. While the group's claim that it is 800,000 watts is surely an exaggeration, this is definitely a high-power operation.

From Texas, Charles George writes that on June 22, at 2330 GMT he heard an unidentified station on 11335, which he believes was a clandestine. The program was in Arabic, and he heard mention of Libya as well as martial music.

This station had a good signal, but it suffered from utility interference. Anybody have some ideas as to what Charles heard?

In Florida, David

Crawford notes that he heard pirate KFAT, hosed by Fred Oyster, June 17 on 7432 from 0401 to 0505 GMT. The station featured bluegrass music. David also heard the recently reactivated anti-Castro clandestine Radio Libertad Cubana, with Comandante David, June 19, from 0135 to 0143 on 6914.

This writer has been hearing the Voice of the Sudanese Popular Revolution in Arabic on 17940 around 1600 GMT. It generally puts in a good signal via the facilities of Libya's Radio Jamahiriya.

At present there is no known way to verify this clandestine. Reports sent to Radio Jamahiriya, P. O. Box 17, Hamrun, Malta, are sometimes acknowledged. However, they state they are only authorized to verify the station's regular English language services.

Also being heard is the anti-Khomeini clandestine Radio Salvation of Iran on 15555 and 9032 kHz., around 0415 GMT. This station appears to be closely linked to another Iranian clandestine, Radio Vatan, which also uses these same frequencies, but currently seems to be inactive.

Reports can be sent to the Front for the Liberation of Iran, P. O. Box 102, Greve Strand, DK 2670 Copenhagen, Denmark.

**PIRATE QSLs:** Taken from the latest revision of John T. Arthur's address list, here are some addresses for reporting to pirates. WCFR: 2226 S. Gunderson, Berwyn, IL 60402. KDNF (1210 kHz.): 2248 West 37th Street, San Pedro, CA 90732. KHO: Box 144, Riverside, NJ 08075.

The following can all be reached via Box 245 Moorhead, MN 56560: WDX (1620 kHz.), Radio Alchemy (1632 kHz.), Radio North Coast International, and the Crystal Ship. We will have more addresses in future columns.

Information for future editions of the address list can be sent at any time to John T. Arthur, Box 5074, Hilo, HI 96720. As usual, we remind you that you should enclosed three 20-cent stamps with each report and that the mail drop only forwards mail. It cannot guarantee you a reply.

---

**CHECK YOUR SUBSCRIPTION EXPIRATION DATE SO YOU DON'T MISS A SINGLE ISSUE OF MT!**

---

# "Los Numeros"

32444 69213 88816 52196 63811 94216  
Havana Moon



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Don't let anybody kid you. Monitoring of "numbers" transmissions--in San Diego, Boston or the countless areas in between--often provides the individual monitor with intriguing findings.

It's your findings, intercepts or other related data that this column desires and earnestly solicits. Any request for anonymity will be honored. Keep those cards and letters headed in Havana Moon's direction!

### THE MOSSAD

A reader from the Southwest wonders if I might be able to provide definitive information about the Mossad. Meaningful information about Israel's secret and DEADLY intelligence service is something you just don't write about at a moment's notice. Facts are few and far between in a manner of speaking.

I would suggest that you obtain a copy of The Mossad by Dennis Eisenberg, Uri Dan and Eli Landau. This highly readable work was first published by Paddington Press in 1978. Unfortunately, it is now out of print and hard to find.

### THE VEILS OF SCHEHERAZADE

A rather intriguing package and letter from a person that desires anonymity crossed my desk a few days back. "Scheherazade" drops a few veiled hints of "jamming transmitters" in the good ol' U.S.A! Most peculiar, Scheherazade! Now if you would care to elaborate with some type of documentation, I'll be happy to provide the space.

Scheherazade also states that RDF will be provided in the near future on some 5-digit Spanish transmissions. Obviously the results of this endeavor will be published in this column.

And finally, Scheherazade provides a transmission site list

that's also slightly veiled in mystery, including: Isle of Pines, Kingston, Port Au Prince, Santo Domingo, Lima and Bogota.

Santo Domingo and Port Au Prince are very intriguing, Scheherazade! Are these 5-digit Spanish sites? Perhaps Scheherazade can be persuaded to provide more information on this mystery list.

### INTIMIDATION?

"... your endeavors may be in direct violation of the Communications Act of 1934..."

That's the rather surprising ending of a Freedom of Information (FOIA) response in regards the "numbers" from an intelligence agency that shall remain nameless (as shall the recipient).

### MODULAR ARITHMETIC

This means that whether in adding or subtracting in columns, the numbers are neither carried over nor deducted from the next column.

Thus, if you add:  
83729  
+97714  
the total is 70433  
and not: 181443

See previous columns for applications to so-called "one-time-pads."

### TRADECRAFT

Ever notice how an automobile with a broken or smashed rear lens stands out at night? The bright white light is easily followed from a safe distance.

Is your lens break accidental or...

### CRYPTOGRAM GURU

A New York reader wonders why the two or three U. S. groups that deal in cryptograms don't feature material about "numbers" transmissions.

That's a good question. Perhaps some of the members of The American Cryptogram Association will provide (ACA)/us with some answers. Space will be provided to any verifiable ACA member that wishes to respond.

### WWII AND JAPANESE INTELLIGENCE

A great deal of information was obtained by the Japanese from U. S. prewar announcements and



## Don't be "Left In The Dark"

### Turn On to "What's Happening"

## Give "DNE" a call 501-623-6027

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which let you hear the coded messages of police, fire, medical or emergency channels, shortwave, etc.

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D-12 Deluxe Base  
P-20 Hand held or mobile  
Fits All Scanners\*

or write for literature  
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Hot Springs, AR 71901  
Don Nobles Electronics, Inc. \*Not For TV

later from sources such as radio broadcasts, newspapers, magazines, and other publications. But their information was often so elaborate, detailed and of such a highly classified nature as to have come only through other channels.

The sources included espionage, interrogation of war prisoners, captured documents and communication intercepts. The following (incomplete) list is believed to contain, in the order of importance and reliability in the Japanese intelligence officer's mind, their primary sources of WW II information:

1. Communications intelligence.
2. Radio broadcasts from U. S. on both medium and short wave.
3. Newspapers, magazines, periodicals, manuals, documents and technical publications.

It is clear that communications intelligence of all types was heavily relied upon by the Japanese as a meaningful source of information. That a really considerable effort was expended along these lines will be made clear by a brief examination of the organizations set up for this purpose.

Both the (Japanese) Army and Navy had their separate organizations

working on communications intelligence. The Navy's headquarter's station was located at Owada and the Army's at Tenashi.

One main source of information came from U. S. air-to-air and air-to-ground transmissions of B-29s.

The B-29's radio operators adjusting and testing of radio frequencies prior to raids often gave the Japanese warnings of impending strikes.

Also the presence and radio transmissions of B-29 weather reconnaissance planes provided information by which the Japanese were 50 percent successful in estimating the target areas to be attacked!

### A HOT FREQUENCY

Keep close watch on 6840 kHz! Seems to be no end to the types of "numbers" transmissions to be monitored on this frequency. Let this column know what you hear.

### MORE OR LESS?

Reader response will dictate the amount of space given to features such as WWII AND JAPANESE INTELLIGENCE. Would you like to see more features of this type?

Time now for a Tecate and...

Adios,  
Havana Moon y  
Amigos



# Listener's log

## Atlantic Coastal Scanning

by Kevin Johnson  
P.O. Box 7464  
Hampton, VA 23666

(ED.NOTE: The following list is part of an installment

series; MT readers wishing a computer printout of the entire series may send \$5 with your request to the author at the address above.)

### PENNSYLVANIA

ALLEGHENY CO	PD	F1	473.3125
ALLEGHENY CO	PD	F2	470.3375
ALLEGHENY CO	PD	F3	470.3625
ALLEGHENY CO	PD	F4 SHERIFF	470.4125
ALLEGHENY CO	PD	F5 SHERIFF	470.4375
ALLEGHENY CO	PD	F7 REGIONAL	471.1375
CHESTER	FD	F1	154.4300
CHESTER	FD	F2	154.2050
CHESTER	PD		500.4125
CHESTER	PD	CAR-CAR	156.1500
CHESTER	PD	CENTRAL	154.7850
CHESTER	PD	CITY	155.4150
CHESTER	PD	CITY	154.7250
CHESTER	PD	EAST	154.7400
CHESTER	PD	MOBILE	159.0300
CHESTER	PD	MOBILE	158.8500
CHESTER	PD	MOBILE	158.9100
CHESTER	PD	WEST	155.7600
DELAWARE CO	FD	ALERT	46.4800
DELAWARE CO	FD	F1 DISP	46.3800
DELAWARE CO	FD	F2 CAR/CAR	46.4200
DELAWARE CO	FD	F3	46.3600
DELAWARE CO	FD	F4 AMBL.	46.1600
DELAWARE CO	PD	F1 WEST-SEC	39.8200
DELAWARE CO	PD	F2 WEST-PRI	39.9000
DELAWARE CO	PD	F3 EAST-SEC	39.7800
DELAWARE CO	PD	F4 EAST-PRI	39.5000
McKEESPORT	FD		155.7600
McKEESPORT	PD		155.5350
PENNSYLVANIA	DEL RIV AUTH		154.1000
PENNSYLVANIA	DEL RIV AUTH		460.4250
PENNSYLVANIA	METROMEDIA	ARCO GO-PTRL	455.8500
PENNSYLVANIA	METROMEDIA	ARCO GO-PTRL	450.8500
PENNSYLVANIA	PENN STATE U		155.5350
PENNSYLVANIA	PENN STATE U		155.6400
PENNSYLVANIA	PENN STATE U		155.5000
PENNSYLVANIA	PENN STATE U		155.4900
PENNSYLVANIA	PHILA NWSPRS		452.9750
PENNSYLVANIA	PHILA NWSPRS		453.0000
PENNSYLVANIA	RUST COMM.		450.8000
PENNSYLVANIA	RUST COMM.		455.8000
PENNSYLVANIA	SEPTA		504.1375
PENNSYLVANIA	STATE PD	CAR/CAR	154.7550
PENNSYLVANIA	STATE PD	F1 BASE	155.5800
PENNSYLVANIA	STATE PD	F1 MOBILE	155.7900
PENNSYLVANIA	STATE PD	F2 BASE	155.6700
PENNSYLVANIA	STATE PD	F2 MOBILE	155.9100
PENNSYLVANIA	STATE PD	F3 BASE	155.5050
PENNSYLVANIA	STATE PD	F3 MOBILE	155.8500
PENNSYLVANIA	WFIL		450.1125
PENNSYLVANIA	WFIL		450.1875
PHILADELPHIA	FD	FIREGROUND	153.9500
PHILADELPHIA	FD	NORTH	154.1450
PHILADELPHIA	FD	RESCUE	170.1500
PHILADELPHIA	FD	SOUTH	154.2350
PHILADELPHIA	PD	A WEST	453.3500
PHILADELPHIA	PD	AIRPORT	453.4500
PHILADELPHIA	PD	B SOUTH	453.6500
PHILADELPHIA	PD	BRIDGES	460.4250
PHILADELPHIA	PD	C CENTRAL	453.1500
PHILADELPHIA	PD	COURT	155.6250
PHILADELPHIA	PD	D N.CENTRAL	453.2000
PHILADELPHIA	PD	DEPT. COMM.	453.8500
PHILADELPHIA	PD	E EAST	453.3000
PHILADELPHIA	PD	F N.EAST	453.9500
PHILADELPHIA	PD	G N.WEST	453.8000

PHILADELPHIA	PD	H DETECTIVE	453.4000
PHILADELPHIA	PD	HOUSING	500.4625
PHILADELPHIA	PD	J ADMIN	453.7500
PHILADELPHIA	PD	L LIMO	453.6000
PHILADELPHIA	PD	M EMERGENCY	453.5500
PHILADELPHIA	PD	N NORTH	453.0500
PHILADELPHIA	PD	P S.WEST	453.5000
PHILADELPHIA	PD	T	453.2500
PHILADELPHIA	PD	TRANSIT	155.0700
PHILADELPHIA	PD	Z	155.6550
PHILADELPHIA	TEMPLE UNIV	COLLEGE SEC.	460.4000
PHILADELPHIA	TEMPLE UNIV	HOSP. SEC.	155.2200
PHILADELPHIA	WCAU	F1 NEWSROOM	455.0500
PHILADELPHIA	WCAU	F2 ENGNRING	455.1500
PITTSBURG	FD		154.1300
PITTSBURG	FD		154.4450
PITTSBURG	FD		154.3250
PITTSBURG	PD		453.7000
PITTSBURG	PD		453.8500
PITTSBURG	PD	F1	453.1000
PITTSBURG	PD	F2	453.2500
PITTSBURG	PD	F3	453.4000
PITTSBURG	PD	F4	453.5500
UPPER DARBY	FD	F1	154.1900
UPPER DARBY	FD	F2	154.3250
UPPER DARBY	PD		159.0900
UPPER DARBY	PD		154.9500
VERSAILLES	PD		155.6100
VERSAILLES	PD		156.0300
VERSAILLES	PD		154.7700

### SOUTH CAROLINA

S CAROLINA	STATE PD		460.2500
S CAROLINA	STATE PD		155.0700
S CAROLINA	STATE PD		155.5500
S CAROLINA	STATE PD		155.4450
S CAROLINA	STATE PD		155.5350
S CAROLINA	STATE PD		155.0100
S CAROLINA	STATE PD		42.1000
S CAROLINA	STATE PD		460.2750
S CAROLINA	STATE PD		42.3400
S CAROLINA	STATE PD		453.1500
S CAROLINA	STATE PD		453.4500
S CAROLINA	STATE PD		460.0500
S CAROLINA	STATE PD		42.1400
S CAROLINA	STATE PD		42.0800
S CAROLINA	STATE PD		155.4750
S CAROLINA	STATE PD		42.1200
S CAROLINA	STATE PD		42.2600

### VIRGINIA

ALEXANDRIA	FD		460.5250
ALEXANDRIA	FD	F1 DISP	154.4300
ALEXANDRIA	FD	F2 FIREGRND	153.8450
ALEXANDRIA	FD	MUTUAL AID	154.2800
ALEXANDRIA	PD	F1	460.0500
ALEXANDRIA	PD	F2 EAST	460.0750
ALEXANDRIA	PD	F3 WEST	460.3750
ARLINGTON CO	FD	DISP	154.1300
ARLINGTON CO	FD	FIREGROUND	155.8650
ARLINGTON CO	FD	MUTUAL AID	154.2800
ARLINGTON CO	FD	MUTUAL AID	154.2650
ARLINGTON CO	PD		453.1000
ARLINGTON CO	PD	F1 SOUTH	453.8250
ARLINGTON CO	PD	F2 NORTH	453.5000
ARLINGTON CO	PD	F3	453.2750
ARLINGTON CO	PD	F4 DETECTIVE	453.3250
ARLINGTON CO	PD	SHERIFF	453.6000
BLUE RIDGE	NTL PARK SVC		167.1750
CAROLINE CO	FD	BASE	154.3850
CAROLINE CO	FD	MOBLIES	153.9500
CAROLINE CO	LG		154.9650
CAROLINE CO	PD		42.6800
CHAR/VILLE	FD		46.4600
CHARLES CITY	FD		154.2200
CHAR/VILLE	NEWSPAPER		173.2750
CHARLES CITY	PD		39.4200
CHAR/VILLE	PD	AUX.DISP.	155.5350
CHAR/VILLE	PD	AUX.DISP.	155.5800
CHAR/VILLE	PD	DISPATCH	39.4400
CHAR/VILLE	UNIV OF VA		154.6500
CHAR/VILLE	UNIV OF VA		460.0250
CHAR/VILLE	UNIV OF VA		460.0250
CHAR/VILLE	UNIV OF VA		154.7850
CHAR/VILLE	UNIV OF VA		465.0750
CHAR/VILLE	UNIV OF VA		460.0750
CHESAPEAKE	AMATEUR		146.7900
CHESAPEAKE	AMATEUR	F1	146.7900

cont'd on page 31



# SUN BEAM TELEGRAPHY - HELIOGRAPHY

(or "THE ORIGINAL LICENSE-FREE 'RADIO' ")

by Donald K. deNeuf

Although nothing very extensive seems to appear in historical records about the heliograph, that which does prove most interesting. The name heliograph is derived from the Greek "helio" and "graphein" ("sun" and "to write").

The heliograph, a device for sending signals by means of a series of flashes of sunlight reflected in a movable mirror, was believed by some to have been used throughout Algeria nearly a thousand years ago. The signalling at that time doubtless was based on a prearranged simple code, since alphabetized codes do not seem to have appeared in history until the early 1600's.

History reports that Xerxes, when he invaded Greece with his Persian forces in 480 B.C., had his signalmen mount a steep hill near Athens and from there flash the news of the battle (Salmis) from the side of burnished shields tilted to pick up the sun's rays. Certainly at that time only

some prearranged meaning designated by a certain number of flashes was employed.

The first European nation to seriously take up the heliograph as a signaling device was Great Britain in connection with her Indian army. As a matter of fact the English scientist Mance is credited with inventing the heliograph in 1870. In any event he probably developed its use of the international alphanumerical code.

The instrument generally consisted of a circular movable mirror 10 or 12 inches in diameter mounted on a small tripod. A sighting vane was employed to properly direct the reflections to the distant point. Flashing was usually accomplished by manipulating a screen device, often in the form of "shutter blinds" by means of a key lever. In some instruments instead of shutters, the mirror was rotated slightly out of line by the key movement.

The heliograph was extensively employed 100 years ago in Arizona and New

Mexico by U.S. troops under the command of Gen. Nelson A. Miles. Although limited to daytime use, the heliograph was not vulnerable to constant interruptions as were the wire telegraph lines, caused by the Apaches chopping down the poles. The Indians apparently did not understand the "singing wires" but quickly saw a relationship between them and the activities of the troops.

The clean, dry, cloudless air of the Southwest was ideally suited for heliography, using the Morse code, and General Miles employed it extensively for the reporting of movements of Geronimo and his warriors. A large network of some 50 "circuits" and "relay points" on Arizona mountain tops manned by telegraphers and troops ranged from Fort Huachuca in the south to Whipple Barracks in the north and to Fort Stanton in New Mexico on the east. Some of these legs were as much as 100 miles in length.

Heliography was a unique system of communications requiring no wires or batteries of any kind to operate it, and "transmitters" were extremely light in weight and easily portable. An operating station

would be set up in less than a minute. The only energy required was the rays of the sun.

The simple heliograph, with its bright flashes of Morse code, brought about the end of the Apache wars on Sept. 5, 1886, when Geronimo, Natchez and their warriors capitulated, realizing that further fighting was futile. With sabotage of the poles and wires eliminated, the wire line telegraph rapidly expanded and almost overnight the heliograph went into oblivion.

One small remnant remained even as late as World War II when the emergency equipment of a life raft usually included a small pocket sized mirror device with a small hole in its center for sighting or "aiming." This was often used to draw the attention of search planes and ships, but of course was worthless if the sun was not shining.



MT AUTHORS WANT YOUR FEEDBACK - WRITE!

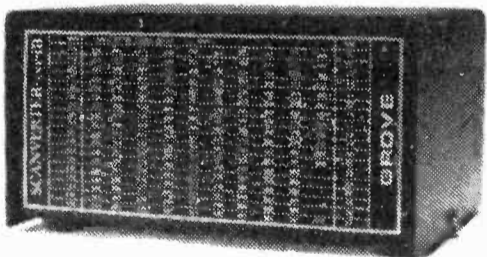


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Tom Bacchus of Tuscon, AZ heard his personal version of "War of the Worlds"...

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Secret Satellites, Air Force, Blue Angels, Federal Undercover Agents and More!\*



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F  
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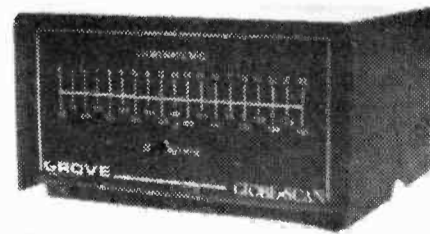


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NOTE\*Your scanner must be capable of receiving the 118-136 MHz aircraft band to use Globescan.

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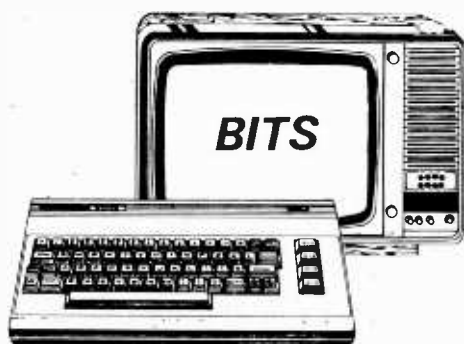
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 ROSELLE PARK, NJ 07204

**BASIC's Basics**

This month our study of BASIC continues as we learn BRANCHING AND BOOLEAN ALGEBRAIC relations. Don't let the phrase throw you; we are simply describing certain conditions--such as "EQUAL TO."

SYMBOL	RELATION	MNEMONIC
>	GREATER THAN	GT OR .GT.
>=	GREATER THAN OR EQUAL TO	GE OR .GE.
<	LESS THAN OR EQUAL TO	LE OR .LE.
<	LESS THAN	LT OR .LT.
=	EQUAL TO	EQ OR .EQ. FALSE = 0
<> or ≠	NOT EQUAL TO	NE OR .NE. TRUE = 0

Mnemonics may need to be separated from the statement by a period on each side of the mnemonic as shown. For example, "IF A<B THEN PRINT" may be written in mnemonics as:"IF A.LT.B THEN PRINT." This is how FORTRAN implements BOOLEAN COMPARISON. Mnemonics are unique to some BASICs, so check your manuals.

There are four more relationships--or operators--possible; they occur last in mathematical calculations after all the arithmetic functions are done. These are NOT, AND, OR and XOR(in their order of execution hierarchy). When you use NOT, you are making a true statement false: i.e., instead of A=B THEN DO; NOT A=B THEN DO means A is not equal to B (A.NE.B; A.GT.B .OR. A.LT.B).

The phrase AND means you combine the two operations and the operators. Thus, IF "A<10 AND B>0 THEN CONTINUE" means that if A is less than 10 and B is greater than 0 then continue. If A equals (or is greater than) ten of B equals (or is less than) either one will cause this statement not to be done on execution.

The OR statement allows one or both of the conditions to be true. Thus, "IF A=1 OR B=2 THEN CONTINUE" means that if A is 1 or B is 2, this is true; thus, only

one part of the statement must be true as opposed to the AND where both parts of the IF statement must be true.

The XOR is an Exclusive OR and it details what should be excluded for a true statement to be made. It is rarely used and can be one of the most confusing aspects of **BOOLEANISM**. Check your manuals to see if and how these are implemented; as you will see this month and next, you need them.

Now, we can start on PROGRAM LOGIC and BRANCHING. First examined will be the UNCONDITIONAL GOTO statement which, just as the name implies, tells the interpreter (or compiler) to GOTO a specified line in the program. No condition is

involved. Thus, 510 GOTO 930 tells the BASIC compiler or interpreter to go to statement 930 no matter what.

A GOTO can be included with an IF...THEN statement as follows:

```
450 IF A>0 THEN GOTO 930
460 A=A-1
470 GOTO 450
930 END
```

This program looks very plain but it details the IF/THEN and GOTO very well. As soon as A becomes GREATER THAN 0 the program directs logic to GOTO statement 930 and that terminates execution and returns to the operating system. If A is not GREATER THAN 0 the program will GOTO statement 450 and repeat the process until A is GREATER THAN 0.

Next month we will have a look at the COMPUTED GOTO, THE FOR/NEXT LOOP, AND COMPOUND IF/THEN statements. I will also give some homework in the form of a program that we will begin to develop together!

As always, I am at your service: write me at P.O. Box 203, Roselle Parkr, NJ 07204. So for now, 73 and GOOD DX; compute diligently!

**GROVE ENTERPRISES - EVERYTHING FOR YOUR LISTENING NEEDS**



by **Bill Grove**

Welcome to the world of the Commodore 64 game programs. I have found this computer system to be one of the best arcades I have ever seen. And now that I have gotten more games I find it even better!

The first game I played was called GORF; it is almost exactly like the arcade game--it even has a "hall of fame" (it keeps your name and score in memory until the game is unplugged).

GORF has four different screens, each of which is like the arcade series. It is available only as a cartridge (ROM). Age level is 8 years and up.

The MAGIC VOICE speech module may be used with GORF or by itself. It makes your computer talk--it has a 234-word vocabulary. Words and sentences are constructed by entering numbers (corresponding to the words) into the keyboard.

**ADVENTURE GAMES**

The following three games have no graphics, only words. The first, ZORK III ("The Dungeon Master"), is a logic game in which the player travels through a cave.

If you complain like my mom does, "I can't control the darn thing!", then this is the game for you. The game has a lot of built-in humor and is recommended for age 8 and up.

SUSPENDED is the second adventure game; to play it you must have a substantial vocabulary. In this game you are in suspended animation; the object is to manipulate six robots that act as your senses to get you out of suspended animation.

The last game is called STARCROSS; I find this to be one of the funniest games. Why is it funny? For one thing you talk to a computer that is very sassy and can talk back!

STARCROSS is another logic game; the player is flying through space trying to get to a targeted planet. On the way he meets monsters and aliens. Age level should be 11 and up.

For GORF, ZORK II, SUSPENDED, STARCROSS or the

MAGIC VOICE, contact your nearest Commodore dealer.

**OTHER GAMES FOR THE COMMODORE**

I have two more games for you; both are super graphic video games. The first is called FALCON PATROL in which the player flies over buildings and other obstacles trying to blow up two jet fighters.

The only sounds are when you shoot and when you dock your plane. Suggested age level is 8 and up.

The final game is called BUGABOO. I find the graphics fascinating. The player is a little bug trying to make his way out of a cave he (you) fell into. You even get music while you play. This game is really fun and should be played by anyone.

BUGABOO and FALCON PATROL are both available from Quicksilver, 426 West Nakoma, San Antonio, TX 78216.

**MORE PROGRAMS FOR THE COMMODORE 64**

by **Bob Grove**

Ever since the introduction of the Commodore 64 home computer, it has been heralded as one of the best buys on the market. With 64K RAM and a huge supply of programs, it is hard to beat.

Recently we took a look at three useful programs provided by Commodore for their 64. Nearby in the issue my 13-year-old son Bill reflects his enthusiasm for the Commodore and its games.

**LET'S GET DOWN TO BUSINESS**

Like to write? **EASYSRIPT** is hard to beat. As the best selling word processor in the Commodore line, full screen editing allows simple function-key commands to add, delete and move words, phrases and paragraphs. A lot of power for little cost.

Once your rough copy has been composed, **EASYSRIPT** allows boldface, underlining, page headers and footers, centering and justification, superscripts and subscripts, mail merge, vertical and horizontal tabs, scrolling and document linking!

Add to this impressive power **EASYSPELL**, a built-in spelling dictionary of some 20,000 words and you have quite a package for the most demanding writing challenges. Available from your Commodore dealer.

Cont'd on p.30

# GETTING STARTED

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(Adapted from the SWL Digest of Radio Canada International)

One of the most confusing discoveries by SWLs and DXers is the reception of SW stations at odd places on a receiver dial.

For example - why would you be picking up a station on 12,000 kHz when you know for certain that it only transmits on a frequency of 6,000 kHz? Or why do you receive a certain SW station on a frequency of 6870 when you know for a fact that this station broadcasts only on a frequency of 5960 kHz in the 49 meter band?

The cause of the first example of odd reception mentioned above is HARMONICS; the second is IMAGES.

## HARMONICS

Radiation from a transmitting antenna is in the form of an alternating current--a wave of a specific frequency. The basic wave is called the "Fundamental"; twice the frequency of the fundamental wave is called the "Second Harmonic"; three times the fundamental is called the "Third Harmonic" and so on. A station transmitting on 15,320 kHz (fundamental) has a second harmonic of 30,640 kHz.

The reception of harmonics which you will encounter on your SW receiver are basically unwanted or spurious radiation that nobody really needs, simply another type of interference to clutter up the already-overcrowded SW bands.

Another type of harmonic which can also have a very noticeable effect on your radio reception is "Audio Harmonics", splatter produced by overdriving the transmitter's modulator which causes distortion of the signal. The high frequency audio harmonics which result from this distortion further modulate the transmitter, producing unwanted audio sidebands (Splatter) on your receiver.

The extent to which interference will be caused by spurious signals depends on a number of factors: The operating frequency of the transmitter; transmitter power; propagation conditions; and the distance between the transmitter and receiver.

## IMAGES

Another common cause of

reception of stations at points on the dial where they shouldn't be is "Images"; unlike harmonics of the transmitter mentioned before, the culprit in this case is the receiver, and the lower the cost of the receiver the more likely you are to be troubled with image interference.

Although "Image" and "Harmonic" interference are due to the same basic cause - spurious response in the receiver - they are in fact caused by quite different circumstances.

In a radio receiver which uses the superheterodyne principle (all do); the frequency of the incoming signal is changed to a new radio frequency by the receiver's local oscillator. This new frequency is called the "Intermediate Frequency", or I.F. which is then amplified and detected by the receiver circuitry.

The local oscillator will cause intermediate frequency response at two different signal frequencies, one higher and one lower than the local oscillator frequency. They will be separated by twice the I.F.

Thus, if a receiver is tuned to 7,000 kHz and the I.F. of this particular receiver is 455 kHz, then the image frequency produced in the receiver would occur at 7910 kHz. The term "Image" is used because the unwanted signal reception occurs at a reflection, or image, of the receiver's Intermediate Frequency. It is also possible for images to occur at a frequency which is 910 kHz below the frequency of the incoming signal. In this case the image would be at a frequency of 7,000 kHz (the incoming signal frequency) minus 910 kHz (twice the IF of the receiver), which gives an image frequency of 6090 kHz.

To check to see if your receiver is bothered by images, simply tune to a strong station and make note of the frequency. Then tune the receiver 910 kHz above and below this frequency (in cases where the receiver IF is 455 kHz), and see if you pick up the same station. If you do, then you will have picked up the "Image" of the station on the original frequency first noted. The strength of this image signal will give you an idea of just how good the "Image Rejection" capability of the receiver is. If the image is very weak or absent, then the image rejection is good.

While it isn't generally practical to modify the circuitry of an inexpensive receiver, it is possible to alleviate the problem by adding a preselector between the antenna and the input of the receiver.

Preselectors come in quite a variety of prices, and are available through SW equipment stores. The best place to look for advertisements for preselectors are the various electronics hobby magazines. Used preselectors are often available through SWL club bulletins.

If you should have any questions concerning images or preselectors, please don't hesitate to write to us at:

The SWL Digest  
Radio Canada International  
P.O. Box 6000  
Montreal, Canada  
H3C 3A8

Happy Listening!

## EAGLE AND THE OSS

### A FOLLOW-UP

The interesting article by author "Hawker" in the July issue brought inquisitive comments from our readers. "Hawker" describes in greater detail below the spy rig captured by him from the Germans.

Eagle's radio consisted of three parts: receiver on left, power supply in middle and transmitter on right. They all have covers and plug together.

The receiver is the simple regenerative type with an RF amp regen tuning detector and an AF amplifier with the head phones hot with DC in the circuit. Coverage is from 4950 to 9000 kHz. The three squat, metal tubes and most of the parts are branded "Telefunken". The single transmitter tube is glass and looks like a smaller 6L6 beam power tube. Two built-in crystals are on 5462 and 8166 kHz; an external crystal socket is in the rear.

This rig puts out at least 10 watts and will load into a wire 2 to 3 feet up to a long wire very efficiently. Range is at least 1000 miles.

The power supply operates on 80 to 275 volts input; the meter measures AC volts when receiving and RF output when transmitting. Other Abwehr equipment had AC/DC supplies with small re-chargeable batteries.

Write from page 11

of about \$35, roughly equivalent to that of other hobby magazines on a word count basis.

Still looking for ideas for articles? Selecting a receiver and antenna, whether shortwave or scanner, is always a popular theme. How about a nice tutorial article on setting up an inexpensive RTTY monitor with an AEA (or similar) reader and a Uniden CR-2021 (or similar) receiver?

Readers are constantly asking our recommendations among the receivers, RTTY/Morse demodulators and active antennas on the market. A competently-written article by a qualified listener would be welcome.

Another MT reader just sent in a letter asking for a writeup on the Mississippi River Valley ship/shore system used by tugs and commercial vessels. Little has been published on that subject and it would make an interesting article.

In closing, I am going to reprint the high points of a nicely-written letter by veteran subscriber Roy Feher who did an admirable job in outlining exactly the type of article that he--and thousands of other MT subscribers--would like to see.

"How about some solid articles on basic components (e.g., antennas)? I use a Sony ICF-2001; how does a long wire (and how long) compare to an active antenna? What is the proper method of attachment? What about the ground wire--what kind and how?"

"Would the same antenna and ground configuration be used with a Kenwood, Drake, ICOM, Yaesu or JRC? And how about the proximity of electrical power lines and telephone lines? What is the best way to get signal through a lead-in through a window, wall or casement?"

"Is there a "best" kind of antenna wire? Which is preferable for shortwave lead-in, coax or open wire and why? Can SWL's use rotary directional antennas like hams do? What black-box add-ons actually help receivers, and which don't?"

"What would be the ideal, state-of-the-art listening post equipment?"

Thanks, Roy, for eloquently illustrating the types of questions which go through the minds of MT readers. And how about it, writers? Are you ready to start? Send your outlines or article ideas to Bob Grove at Monitoring Times.

**DYNAMITE! GROVE ENTERPRISES AND MONITORING TIMES!!**



## HELPFUL HINTS

**SAFETY FIRST**  
by Bob Grove

An article sent in recently by reader F. R. Pedder quoted the Orlando Sentinel's report of a ham radio operator being electrocuted while working on his transceiver. He touched live circuitry while holding the microphone.

Tragedies like this can be avoided; they are almost always due to carelessness. In the days of tube-operated equipment, I was constantly getting knocked across the room by touching the wrong place at the wrong time; I knew better.

There is an "unwritten law" in many TV repair shops: Never touch a chassis with both hands. The idea is, of course, that you not offer a return path for a lethal voltage to flow in one arm and out the other.

Even in present-day solid-state electronics where operating potentials seldom exceed 24 volts, AC cords bring lethal voltages into the equipment where they are reduced and rectified.

If you do work on the inside of your radio, observe these rules:

Never assemble or disassemble the cabinet or chassis with the power plugged in;

Never touch the chassis or any components with your bare hands while power is applied; use only insulated tools.

If you have any doubt as to whether voltage is present, measure it with a suitable voltmeter.

Do not stand on a cement floor while working on a "hot" radio; wear thick rubber-soled shoes.

Consider wearing rubber gloves if you have any doubts about the safety of your equipment or the possibility of touching "hot" components.

Be sure all AC-operated equipment is well-grounded during routine use.

We value your friendship; don't leave the rest of your life to chance.

 Hams from pg. 14

To obtain a certificate, submit a QSL card and a large (9x12-inch) SASE to K4TF, 1630 Venus Street, Merritt Island, Florida 32953. If you don't mind your certificate folded, a business sized SASE will do.

**YOUR OPINION IS IMPORTANT TO US. WRITE SOON!**

## THE UNKNOWNNS

A casual twirl of the dial on your shortwave receiver will often reveal a bewildering variety of strange sounds, unusual transmissions and unidentified broadcasts.

Perplexing to the newcomer, many of these intercepted emissions are puzzling to seasoned listeners as well. This month we are going to take a look at a recent logsheet filled out here at the Grove Enterprises/MT monitoring post.

Additional mysterious loggings from our readers are invited and, as always, identification would be gratefully received!

(All freqs kHz; all modes USB unless otherwise noted)

- 2093/2096.5 Fishing boats; EE & SS
- 4455 Tracking & bearings (petroleum platform?)
- 5217 Nassau; Bahamas Defense Force?
- 5343 Rolling code speech inversion; USN
- 3786 Nassau; Bahamas Defense Force
- 6630.2/6642 LSB; Italian illegal net
- 5014 FBI?
- 6863 USAF?/"Kitty Hawk" "Looking Glass"
- 6780 SS net
- 6900 "Idea Kilo Whiskey India"
- 7705 RTTY/USB; 67wpm Havana
- 7524 RTTY 50/VARN SS two-way
- 8300 RTTY; 66wpm; "WRV4"; USSR embassy?
- 8460 Tactical training; linkage
- 8547.5 Test count
- 6841 CW; 5-fig grps, mixed letters&nos
- 9380 "Good morning Cayman"?
- 10458.7 RTTY; 75/VAR tactical mil
- 10462 RTTY; 75/425R British tactical; "GYA"; RAF?RN?
- 10648 "Nightweather Astrosonic"
- 10937 Law enforcement?
- 11425 Honduras mil ops?
- 20611.5 Satellite references
- 20151 Point to point phonepatch (official)
- 13277 Illegal net, tuna fleets; also 8907
- 14647 Tactical training
- 17382 USB/RTTY; 67/850; Cargo traffic (illegal?); "Pt. Globes"
- 15088
- 4645/5715 mil?
- 6727/6730 Weird sweeps, bursts
- 10041.4 AM broadcast; La Voz del Cid?; Greenville

## NASA SPACE STATION CONTINUES DEVELOPMENT

NASA is considering a number of alternative Space Station design concepts.

The Johnson Space Center, Houston, is responsible for overall systems engineering.

The Marshall Space Flight Center, Huntsville, AL, will be responsible for definition of the pressurized Space Station modules used as laboratories, including communications, ward room and galley and for logistic transport.

Marshall also will manage the environmental control and propulsive systems of the station.

The Lewis Research Center, Cleveland, will be responsible for the definition of the electrical power generation. Although most of the current studies have focused on large solar ar-

rays, Lewis will also examine alternative systems.

The Goddard Space Flight Center, Greenbelt, MD will be responsible for definition of the automated free-flying platforms.


The Kennedy Space Center, FL, will, be responsible for pre-flight and launch operations and support.

## AIR-TO-GROUND COMMUNICATIONS

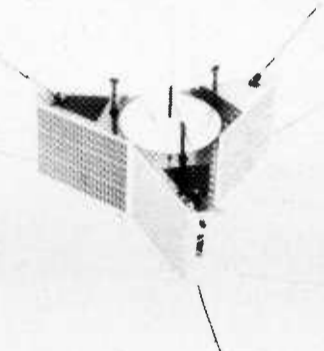
circa 1862

by D. F. deNeuf, WA1SPM

During the U.S. Civil War tethered balloons were used for observation purposes, manned by a Morse telegrapher who would, through a lightweight pair of conductors wrapped around the tethering line, report information on enemy activities to the commanders on the ground!



**OSCAR**



# AMSAT

Radio Amateur Satellite Corp.  
P.O. Box 27, Washington, DC 20044  
Telephone 301-589-6062

Do you know that *amateurs* have launched over a dozen satellites into earth orbit? Some of these spacecraft have achieved orbits over 20,000 miles high! Signals from these satellites can be received using relatively small antennas and a preamplifier and/or converter connected to your present shortwave receiver. If you are a licensed Radio Amateur with at least a Technician Class license, you can communicate through most of these satellites to obtain reliable international ssb, cw, RTTY or SSTV communications. \* Special bulletins and other informational messages are available on satellite beacons. Informal conferences regarding space activities are conducted on these satellites and on various shortwave frequencies.

Here is your opportunity to take an active part in the space frontier. Whether your interest is in building future spacecraft, space communications, computer applications, space studies, satellite tracking, or just keeping informed regarding the exciting developments of the space age, here is your chance to get involved in the new frontier. By joining the AMSAT team you will receive regular news on the various amateur space projects, the latest home station equipment for receiving or transmitting via satellites, membership discounts on space shuttle/satellite tracking software for your home computer, plus much more. Further, your membership helps support the Amateur Space Program and ensures its continued success.

Please send additional free information on the Amateur Space Program and AMSAT membership. Enclosed is a business-sized, self-addressed, stamped envelope

Please send free information on home computer programs and other software for tracking the space shuttle, satellites, and other objects in earth orbit. Enclosed is a business-sized, self-addressed, stamped envelope

Yes, I want to become a member of AMSAT and receive *ORBIT* Magazine! Enclosed are my annual dues of \$24 (\$26 overseas - surface. Special rates are available if you desire air mail delivery service).

New Member
  Renewal

Please send me a sample issue of *ORBIT* Magazine. Enclosed is my personal check, money order, or appropriate credit card information, for \$2.

I am very interested in the Amateur Space Program and the efforts of AMSAT. Enclosed is my tax-deductible donation in support of these efforts. Please send me the gift indicated.

AMSAT Call Sign and Name Badge - \$6 minimum donation, first name only, personalized as follows: Call \_\_\_\_\_ Name \_\_\_\_\_

OSCAR Satellite Teeshirt - \$7.50 minimum donation. Please specify adult small, medium, large, or extra large

Satellite Sponsor Lapel Pin - \$10 minimum donation

OSCAR Solid Brass Belt Buckle - \$13 minimum donation

Fly my name on the next OSCAR satellite and send me the special personalized certificate attesting to my support of the Amateur Space Program. \$15 minimum donation please.

Enclosed please find my check  Please charge my VISA/MC account

Name \_\_\_\_\_ Call \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

AMSAT Membership No \_\_\_\_\_ Special interest(s): \_\_\_\_\_

For VISA/MC: Card No \_\_\_\_\_ Exp. date \_\_\_\_\_

Bank No. (MC only) \_\_\_\_\_ Signature \_\_\_\_\_

\*Although an Amateur Radio license is required for two-way communications via OSCAR satellites, you do not have to hold such a license to be a full voting member of the AMSAT team.

# TECHNICAL TOPICS by Bob Grove



**GLOSSARY OF TECHNICAL TV TERMS**  
 Courtesy Kay Townes, Inc., PO box 593, Rome, Georgia 30161

**ADJACENT CHANNEL** - The frequency bands directly above and below the channel being considered.

**AMPLIFIER** - Device used to increase signal strength.

**ANTENNA** - Arrangement of metallic rods and/or wires used for receiving (or radiating) from (or into) space.

**ANTENNA COUPLER** - Device for coupling the signals from two or more antennas into a single download.

**ARRAY** - A group of antennas or antenna elements arranged to provide desired directional characteristics.

**ATTENUATION** - Reduction of signal strength.

**ATTENUATOR** - Device used to reduce signal strength.

**BALUN** - Device to match the impedance of a BALANCE transmission line (twinlead) to an UNBALANCE transmission line (coaxial) or vice versa.

**BAND** - A range of frequencies between two definite limits.

**BAND ELIMINATION FILTER** - Circuit which attenuates the frequencies between predetermined limits. Frequencies above and below these limits are passed. Also called bandstop or trap.

**BANDPASS** - Range or frequencies which can freely pass through a device.

**BAND SEPARATOR/COMBINER** - Device used for separating/combining two or more bands.

**BANDWIDTH** - Range of frequencies within which the response falls within specific limits (i.e. 3 dB points).

**BOOM** - Rigid part of antenna to which are attached the elements and the mast clamp.

**BOOM BRACES** - Devices used to provide extra boom strength in long antennas.

**BOOSTER** - Small amplifier used between the antenna and the TV set.

**CARRIER** - A radio wave used to transmit picture or sound information.

**CATV** - Cable Antenna Television.

**CCTV** - Close Circuit Television.

**CHARACTERISTIC IMPEDANCE** - Apparent resistive impedance. Maximum signal transfer occurs when characteristic impedances are matched.

**COAXIAL CABLE** - Electrical wire consisting of a center conductor surrounded by a dielectric covered with a conductive shield.

**CORNER REFLECTOR ANTENNA** - An antenna used in UHF which has two flat metallic sheets placed at 45 to 90 degrees behind the driven element.

**CROSSARM** - Same as boom.

**dB** - Abbreviation for decibel. Term used to describe gain or loss.

**dBmV** - Decibel millivolt. Equal to one millivolt across 75 ohms.

**DIPOLE ANTENNA** - A straight radiator one half wavelength long and usually separated at the center by an insulator and fed by a balance transmission line. Also called driven element.

**DIRECT WAVE** - A wave propagated directly through space and not reflected by the ground or sky.

**DIRECTIONAL ANTENNA** - An antenna which radiates or receives signals more effectively in some directions than others.

**DIRECTOR** - Shorter element placed in front of but not connected to a dipole antenna to concentrate the reception in one direction.

**DOWNLEAD** - Interconnecting cable or twinlead between the outdoor antenna and the indoor receiving equipment.

**ELEMENTS** - One or more cross members attached to the boom of an antenna for capturing TV signals.

**FILTER** - Device which passes a given band of frequencies and attenuates others.

**FCC** - Federal Communication Commission. A board of commissioners appointed by the President which has the power to regulate all electrical communications systems originating in the USA.

**FM BAND** - The band of frequencies from 88 to 108 megahertz.

**FOLDED DIPOLE** - An antenna element consisting of two parallel close-spaced lines joined at the ends. It is fed at the center of one line, the other line being continuous.

**FSM** - Field Strength Meter. Equipment for measuring TV signals.

**GAIN** - Increase in signal strength usually expressed in dB.

**GAIN CONTROL** - A device for varying the gain of an amplifier system.

**GHOST** - Multiple image on a TV screen.

**GUY WIRE** - A wire used to brace a mast or tower.

**HALF WAVE ANTENNA** - An antenna whose electrical length is equal to one half the wavelength of the desired signal.

**HIGH BAND** - VHF television channels 7 through 13.

**HYBRID** - Transformer type splitter characterized by minimum losses and maximum isolation.

**Hz** - Hertz. One Hertz is equal to one cycle per second.

**IMPEDANCE** - Total resistance and reactance which a circuit offers to the flow of alternating current.

**IMPEDANCE MATCH** - Condition for maximum transfer of energy between two circuits.

**INSERTION LOSS** - Signal loss caused by insertion of a device in a transmission line.

**INTERFERENCE** - Interaction between two signals.

**ISOLATION** - Degree of electrical separation between pieces of equipment.

**LIGHTNING ARRESTOR** - Protective device consisting of spark gaps to allow lightning currents to flow from the download to ground.

**LOSS** - Reduction in signal strength usually expressed in dB.

**LOW BAND** - VHF television channels 2 through 6.

**MAST** - Vertical structure used to support an antenna.

**MAST CLAMP** - Fixture on antenna boom to attach the antenna to the mast.

**MATCHING TRANSFORMER** - A device used for matching impedance. In TV systems usually 75 ohms unbalanced to 300 ohms balanced.

**MATV** - Master Antenna Television.

**MOUNT** - Device for holding an antenna mast in a vertical position.

**NOISE** - Unwanted electrical energy at random frequency.

**NOISE FIGURE** - Expression of how much noise a device adds to a system.

**PARASITIC ELEMENT** - Antenna element not connected to the transmission line, not driven.

**PASSIVE** - Denotes equipment which uses no active components, such as transistors or tubes.

**POLAR PLOT** - A diagram indicating the response of a receiving antenna as a function of direction.

**PREAMPLIFIER** - Low noise, small signal amplifier, usually mounted close to the antenna.

**REFLECTOR** - Conducting surface for reflecting radiant energy.

**RETURN LOSS** - Measure of reflected signal in a transmission line. Preferred term for VSWR.

**ROTOR** - A motor driven assembly which turns an antenna so that it can be aimed toward different transmission points.

**SIGNAL STRENGTH** - The strength of the signal from a transmitter delivered at a specific location.

**SIGNAL-TO-NOISE-RATIO** - Ratio between a useful signal and noise.

**SNOW** - White or colored specs on TV screen caused by noise.

**SPLITTER** - Device used to divide signals.

**STACKING** - Refers to combining two or more antennas.

**STAND-OFF INSULATOR** - Device used to support the download away from the structure on which it is mounted.

**TAP-OFF** - Device connected at some intermediate point on a transmission line to provide certain amount of signal to a TV set.

**TASO** - Television Allocation Study Organization. An Industry Group that advise the FCC on TV matters.

**TERMINATION** - Resistive unit used at end of cable or unused outputs of equipment to prevent reflections.

**TRANSMISSION LINE** - The set of conductors used to transfer signal energy from one location to another.

**TRANSPOSE** - Half turn twist in a two conductor balanced line so as to reverse the polarity between two points.

**TWINLEAD** - A transmission line consisting of two parallel conductors. Usually 300 ohms.

**UHF** - Ultra High Frequency. Band covering 300 through 3000 MHz. Includes TV channels 14 through 83.

**VHF** - Very High Frequency. Band covering 30 through 300 MHz. Includes TV channels 2 through 13.

**VSWR** - Voltage Standing Wave Ratio - A measure of the amount of signal reflected along a transmission line.

**YAGI** - A type of directional antenna consisting of one driven element, one reflector, and several directors.

Is the best transmitting antenna generally also the best receiving antenna? (Raymond Siegler, Wintrop, ME)

In a word, yes. The law of reciprocity suggests that if an antenna is an efficient radiating system from a transmitter into space, it will usually be a good receiving antenna from space back to a receiver.

Transmitters are more critical as to impedance matching and power handling ability than are receivers, however. Thus, designing an antenna for a transmitter and then using it for receiving can be overkill.

Is it worthwhile to change the RG-58/U cable which came with my mobile scanner antenna to lower-loss RG59/U? (John Popson, Throop, PA).

Probably not. Even at 450 MHz you would only net an improvement of less than 1dB, undetectable to the listener.

In the May 1984 issue of MT you included a schematic of a shortwave preselector, but the values for two resistors were omitted. Can you provide them? (Bill Lesley, Arcata, CA)

The values were printed in the June issue. R2 and R3 are 680 and 1000 ohms respectively.

When using an outside antenna with my scanner, is there anything wrong with leaving the little telescopic whip connected to the set? (Gary L. Parks, Morrisdale, PA)

While the outside antenna will receive so much more signal than the little attached whip, some destructive interference (signal cancellation) may still occur. Since you have nothing to gain by leaving it attached, remove it when using the outside antenna.

switches, fans, wheels, odd tools, stones, foil, dummy bullets and bombs, science kits, electronic parts--you name it.

And if the tantalizing selection of low-cost merchandise isn't enough to entertain you, the amusing descriptions which abound throughout the catalog ("DOMINO ALARM, \$3.95; so-called because it sounds when tipped over and because that's what it says on the case. Silent when in repose but noisy when standing up; but then aren't we all? Wasn't marketable at \$9.95 but they were probably serious about it!") should

Con't on pg. 29

Lightning from pg 12 the 75 meter ham radio band but how much higher in frequency will you be able to hear it? Can you hear it in the 8 MHz band? Or perhaps the 15 MHz band?

By the same token--it's a gorgeous day in your area and let's assume that it is known that there is no lightning storm within a couple of hundred miles of your listening post. But you're hearing static in the 25 meter band.

Is it from a storm that might still be headed your way but at perhaps 300 miles or more away? Would it be from a storm that might be 1500 miles away? Or from a storm that might be several times that distance from you? I don't know.

Hurricane Alicia hit Galveston, Texas, with a

devastating bang a few months ago. It had lightning static in it. Residents of south Texas heard the static easily. But it was too far to be heard here in New Jersey, at least on the broadcast band. But might we have heard some of the static on the shortwave bands?

I'm not trying to pull anyone's legs with my stupidity; I'm trying to learn more about the subject and I'm willing to bet that all too few of us have ever done more than accept static as something for granted.

How many of us have ever really tried to determine if lightning has frequency? I'd surely welcome your thoughts, opinions, and comments on the subject.

If we can get sufficient response from our readers, we'll try to put

those responses in some form of an article and in so doing maybe all of us will be able to gain more knowledge about a well-heard but very little-known subject involving all DXers - lightning static.

## A NIFTY CATALOG FOR TINKERERS

If you delight in looking through catalogs of strange scientific and technological surplus, you will revel at the listings in the catalog from Jerryco, Inc. (601 Linden Place, Dept. MT, Evanston, IL 60202).

Science teachers and inquiring minds alike will find the catalog a bonanza of titillating playthings. Forty-eight pages of parachutes, lenses, motors, magnets, meters, batteries,

# EXPERIMENTER'S



## WORKSHOP

### A Discriminator Meter for your Scanner

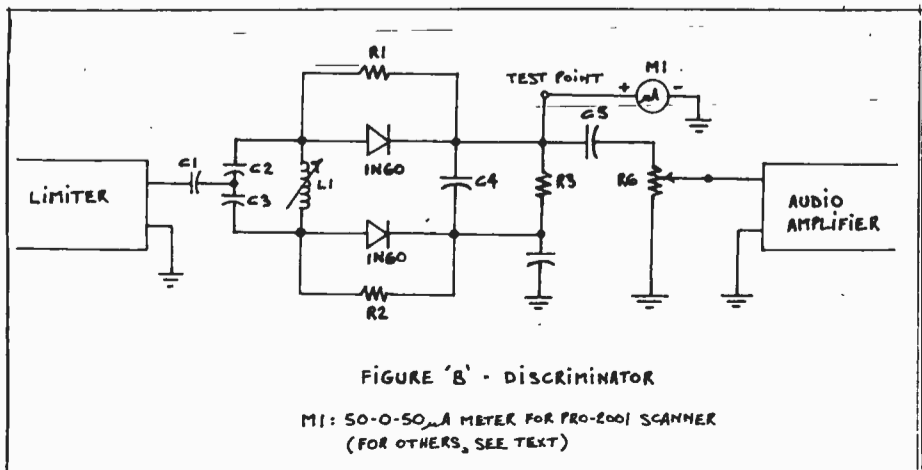
by Jean Pronovost

Although written for the Realistic PRO-2001 scanner, this modification can be applied to other models in principle. You will need the service manual for your receiver to help you find where to hook-up your modifications.

The discriminator circuit is specifically for modulation receivers and its function is to extract audio from the RF signal. Figure "B" illustrates a typical discriminator circuit consisting of a balanced tuned circuit and a pair of resistor-shunted diodes. Any change in carrier frequency will cause a proportional voltage swing.

By monitoring with a meter this voltage difference, we will be able to tell if the RF signal is right on frequency as displayed by the scanner readout, or below or above it by as much as 15 kHz. For this, we will need a zero-counter meter (a regular meter with a switch to reverse polarity could be used as a substitute, but is less consistent).

For the PRO-2001 Realistic scanner, a 50-0-50  $\mu$ A meter goes between test point 7 and ground (refer to your service manual for location of test point 7). For other FM receivers, consult our service manual. In the alignment section, a test point will be specified for you to adjust your signal generator right on frequency when tuning an IF or RF section. If it's somewhere near the discriminator circuit, then this is it!



### CALIBRATION

First, tune in a commercial station with a strong signal and which should be right on its assigned frequency; a NOAA weather station is a good choice. Enter this frequency on your scanner. If your discriminator meter reads zero, your receiver is okay; otherwise either the NOAA station or your receiver is off frequency.

Program several other reliable station on different frequencies. If they all read too low or too high, then most probably your synthesizer crystal is off frequency. Consult your service manual to find out which trimmer capacitor ("TC-1" for the PRO-2001 scanner) to adjust and zero your receiver right on frequency.

### NEXT...

Step two involves calibrating your discriminator meter to read "MINUS 15 kHz. - ZERO - PLUS 15 kHz.". If you were receiving 162.550 MHz, enter the frequency 162.555 MHz on your scanner. You are now tuned 5 kHz above the weather station and your meter should read "MINUS 5 kHz" thus indicating that the signal received is 5 kHz below.

For ease of understanding, the minus portion of the meter should be on the left side of the zero. Reverse the connections at the meter if you are getting a positive reading.

Since you want to read up to "MINUS 5 kHz", the meter needle should be one third down the left scale. If there is too much deflection, then your meter is too sensitive. Try shunting your meter by placing a resistor across its terminals.

If there is not enough deflection, then your meter is not sensitive enough and you will have to find another meter.

Repeat the above procedure by tuning your receiver to 162.560 MHz to see if your meter reads "MINUS 10 kHz." If the signal is strong the meter readings should be fairly linear;

### Button the Beep on your MX-5000

The new wide-frequency-coverage MX-5000 scanning receiver marketed by Regency Electronics has been taking the monitoring community by storm.

Featuring continuous 25-550 MHz multimode reception, compact size, excellent sensitivity throughout, superb image rejection and 20 memory channels, one has to look far to register a complaint.

One distraction is the loud "beep" tone used to confirm keypad strokes; fortunately, it is easily tamed by following the suggestions from MT reader Rene Bordé of Sunnyvale, California.

The modification will likely void your warranty, but it is easy to do and will not harm the receiver in any way provided due caution is observed working in cramped spaces with a soldering iron. It involves snipping one resistor lead and connecting another resistor in series.

To accomplish the task you will need a small, low-wattage soldering iron, small-gauge rosin-core solder, wire cutters, and a choice of resistors as discussed below.

### THEORY

Resistor R-137 provides level limitation to the amplifier chip, uPC2002. Increasing that resistance lowers the level of the beep tone. A 10K resistor (1/8 watt preferred) will lower the level noticeably; 22K will drop it to a marginal level (quiet room).

Alternatively, a 50K or 100K subminiature trimpot can be installed and adjusted to suit the user. It can

that is, "MINUS 10 kHz" should give twice as much deflection as "MINUS 5 kHz." You will get a "MINUS or PLUS 15 kHz" reading only on very strong local signals because the IF filter attenuation gets better as you move off the receiving frequency.

### USES

What are some of the uses of a discriminator meter? First, you will be able to tell right away if a station is off frequency. The 2 meter band is a good place to find lots of these.

On the commercial bands you will find some but before running to your local police telling them their repeater is off frequency, remember that resolution of your meter is 1 kHz at best, and that accuracy of your readings depends on the

be soldered to the clipped resistor leads making sure there is clearance for reassembly.

### STEPS

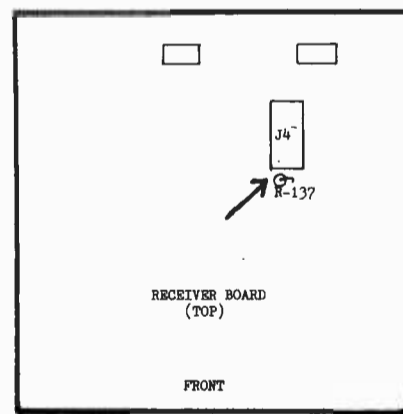
1. With power disconnected from the scanner, remove the six Phillips-head screws from the bottom and rear of the cabinet; loosen the bottom cover just enough to allow removal of the top cover. Be careful not to apply too much tension to the speaker leads on the bottom cover.

2. Locate connector J4 (see diagram); carefully pry plastic clasp slightly to the side and gently pull out the plug, exposing resistor R-137 immediately in front of the connector.

3. Locate R-137 (brown, black, red) and carefully snip the top wire lead, leaving about 1/8" remaining atop the resistor. Gently scrape the ends of both free leads with a knife in preparation for soldering.

4. Place the appropriate resistor in place and solder it, snipping off excess leads. Alternatively, solder the trimpot in place after connecting one side to one lead and the center wiper lead to the other exposed wire. (Do not connect the remaining side lead of the trimpot.)

5. Carefully re-insert plug J4 making sure no leads are touching any metallic components. Power up the receiver and test the keypad for appropriate beep level. Reassemble.



internal adjustment of the synthesizer crystal.

On those UHF channels where you have frequencies sitting on half-kilohertz (i.e. 450.0125 MHz), your meter might read a few kilohertz off even if the station is right on frequency.

Another benefit of your discriminator meter is that you will be able to tell right away if a signal is a birdie. Usually, these will fall below or above a legitimate channel frequency. Also, an image signal will read "PLUS 5 kHz" instead of "MINUS 5 kHz" on your meter; an image signal will appear upside down to your receiver IF.



Army Cont'd from p.1  
across the road. "He immediately applied pressure to the wound and got on the radio for help. At that point, I informed him that this was an exercise and the casualties were not real.

"But the Provost Marshal decided to use the situation to get some training for his MPs as well, so he let the emergency call go out to his patrols just as if it were the real thing," Chinnis said. "Within seven minutes after the first call, there were six MP vehicles on the scene.

A few minutes later, a fire truck appeared to extinguish the grass fire (which was simulated by the smoke grenade) and to assist the MPs in aiding the injured.

What made such response and coordination possible is an elaborate emergency communications network that can be activated when necessary to permit centralized command and control and also permit different emergency teams to communicate with each other.

The heart of the system is the Provost Marshal's Office Control Console, located in an interior room of the Fort McClellan Military Police station. The protected location of the communications center provides some insurance against damage from such natural disasters as tornadoes.

The control console, a Motorola unit purchased in 1976, provides primary FM radio communications with all Military Police patrols, the installation hospital and fire department, city and county police and sheriff's departments, and the local medical center. By activating selected modules, the console operator can transmit over as many as four frequencies simultaneously and can monitor all frequencies.

An added feature of the console allows cross-patching, which enables any station to communicate directly with any other station, even though the two are not on a common frequency. Cross-patching can be particularly valuable in directing ambulances to accident sites or in enabling ambulance crews to direct on-site emergency first aid by Military Police while the ambulance travels to the scene.

When transporting victims to the hospital, ambulance crews can transmit patient information to the emergency receiving area and have needed equipment and

medical personnel on hand upon arrival.

The console also has a telephone-patch capability which enables a person in the field with a radio to talk via radio-telephone link with anyone who can be contacted by phone. This feature makes the system at least technically capable of worldwide communication, though such an application has never been used locally.

The phone-patch was used, however, during a search and rescue operation two years ago to connect an individual using a pay phone with radio-equipped search party leaders.

The installation fire department has a parallel communications system that can function as a backup in case of power failure of the Provost Marshal's system.

In the exercise, the military policeman who discovered the "accident" used his portable radio to notify the base station of the situation. The base station operator then alerted other military police patrols, the hospital and the fire department. From that point it was a matter of monitoring all involved channels and cross-patching as required.

"Overall, the exercise went well," Chinnis said as the last casualty was moved to x-ray. "But we did discover some areas we need more work on. For example, it took longer than we would have liked from the time the first call was made from the scene until the first ambulance arrived. We'll have to go back now and find out why it took so long."

Col. Edward M. Johnson, medical activity and hospital commander, shared Chinnis' concern with the response time of the ambulances.

"It appears that some wires got crossed somewhere," Johnson said. "But that's why we conduct these exercises, to discover problems in our procedures and correct them in training so they won't occur if the real thing happens."

"We are required to conduct this sort of exercise at least twice a year," Chinnis explained. "This is the first one I've ever been involved in, and it was a learning experience for me."

"Keeping the whole thing under wraps was the greatest challenge," Chinnis said. "But you can't achieve the realistic results we got if everyone knows in advance what's going to happen."

"And I've got to hand

it to those soldiers from the 4th Combat Support Hospital who spent nearly an hour laying on the ground in 23 degree weather," he said. "That's dedication!"



Alert is passed on by Sgt. David Burkman using his patrol vehicle radio.

(All photos by Sp4 Ken Clauson, courtesy U.S. Army)

Training exercises provide the backbone of America's defense. Communications relating to military exercises are commonly heard by listeners throughout the radio spectrum.

While upper sideband is the universal mode below 30 MHz, FM will be heard by scanner enthusiasts. The following list provides an excellent starting point; these are commonly-reported VHF channels with military training traffic related to the US Army.

MHz	Major Use		
30.09	Tactical	34.31	Base Repeater
30.10	Crash/Fire	34.40	National Guard
30.30	Training	34.45	Range Control
30.45	Range Control	34.50	" "
30.50	Base Operations	34.70	Range Control
32.10	Control Tower	34.90	Emergency
32.30	National Guard	35.00	National Guard
32.50	" "	36.00	" "
32.69	Security	36.10	Range Control
32.70	Range Control	36.30	Accident
34.00	Tactical	36.33	Range Control
34.09	Motor Pool	36.45	Tact Training
34.10	Tactical	36.50	National Guard
34.15	National Guard	36.51	MP
34.29	Range Control	36.69	Motor Pool
34.30	" "	36.70	National Guard
		36.71	Escort
		36.75	Range Control
		36.80	Ordinance
		36.89	Escort
		36.90	Equip. Tests
		36.91	MP
		36.99	MP
		37.00	Control Tower
		38.30	Disaster Cont.
		38.40	Training
		38.45	National Guard
		38.50	Tactical Tests
		38.70	National Guard
		38.85	" "
		40.10	National Guard
		40.25	" "
		40.30	Medical
		40.45	Range Control
		40.50	Emergency
		40.55	Tactical
		40.60	Range Control
		40.90	National Guard
		40.99	Tactical
		41.00	National Guard
		41.05	" "
		41.50	Control Tower
		41.60	National Guard
		41.70	" "
		41.80	" "
		42.00	" "
		49.40	" "
		49.70	" "
		49.80	" "
		49.90	" "
		49.95	" "
		138.750	Search & Rescue
		138.975	Base Operations
		139.000	Air Tactical
		139.075	Emergency
		139.100	National Guard
		139.400	Base Operations
		141.325	Investigative
		141.375	Air Evacuation
		141.465	National Guard
		143.100	Heliport
		143.335	National Guard
		143.350	Command
		143.400	National Guard



Air-to-ground communications are often reported by monitors; here an actual mission is underway by an air evacuation unit of MAST (Military Assistance to Safety and Traffic). (Photo courtesy of Army News Features).

Dream from p.2

from being introduced into the receiver.

A power switch allows operation from either AC or DC. A battery inside the receiver is switched on automatically in the event of a power failure. A remote control allows commands to operate the receiver anywhere inside of the range of the wireless headphone.

Output jacks will allow the monitor to record audio and video of incoming signals.

An expanded memory will allow an unlimited number of frequencies to be programmed into the receiver. The set's timer can be commanded to switch frequencies and record at the will of the programmer.

The built-in computer will display DX program and frequency schedules. Updated information and DX tips from the various DX shows can be fed into the computer automatically or manually as you listen to it.

A built-in interface, when connected to a printer, will, at the press of a button, print out reception reports listing all the needed information, including the addresses which are stored in the computer's memory banks.

Dreaming a little more, the DX'ers Dream Communications Receiver has a dark path scan which will make use of the wide band space satellites which relay broadcasts. By entering the target area you wish to receive and by pressing the dark path scan button the satellite above that area will pick up the entire range of frequencies and will relay them to you.

The users of receivers have spoken and it is now up to the manufacturers to build the receivers we want. After all, we are paying for them so why not give us what we want?

SAC from p.5

number of glaring errors of facts which are readily available to anyone...casts very grave doubts on the reliability of the information which is so sensitive that it was admittedly "pieced together" in large part from leaks and supposition.

**NEXT MONTH: FLYING WITH THE STRATEGIC AIR COMMAND (Continued from August)**

**SAY YOU SAW IT IN MT!**

Intrigue from p.6

of print. None of the other Military Dictionaries were listed as well (French/English, Portuguese/English, German/English, etc.)

If anyone knows of a source for the TM's I am sure other MT readers would welcome the information because they are all excellent operator reference aids.

If interested in Crypto History you may wish to purchase the complete official story about "MAGIC" (designation given the Japanese Diplomatic messages decoded by U.S. Cryptanalysts). The 8 volume study is listed in the 1983 U.S. Government Printing Office catalog and it contains declassified information concerning the background of Pearl Harbor and the part played by Communications Intelligence.

Three volumes list the decoded messages while the other five present a narrative based on the information contained in the intercepted messages. The study is sold only as a set and the price indicated for the 8 volume set was \$40.00. Check with the nearest GPC Bookstore for availability.

The exact title is "THE "MAGIC" BACKGROUND OF PEARL HARBOR." The set bears GPO number S/N 008-000-00233-9.

Another publication for sale by Uncle Sam is an almanac entitled, "THE WORLD FACTBOOK 1983"; it contains a short description of each country of the world and includes color maps. The price is \$10.00 and the GPO number is S/N 041-015-00153-1.

VLF from p.7

It is especially noted below 100 kHz, coincident with daylight SEA.

Two bugaboos to avoid in SEA and SES observations are man-made noise, which can wipe out the delicate measurements, and antenna spatial diversity effect which can smooth the signal strength record.

Man-made noise is reduced in its effect by using coaxial antenna lead with the braid very well grounded, and by using small aperture antennas placed as far as possible from noise sources. Vertical SEA/SES antennas should be 20 feet or less and can be put on a ground plane counterpoise above the level of noise sources.

Low frequency coaxial or ferrite core loops have less sensitivity to electrical noise if SEA/SES

receiver gain is sufficient. Antennas that are much larger than these (such as 50 or 100 foot random wires) may smooth SEA/SES charts beyond recognition due to their inherent spatial diversity effect.

X-ray emissions from solar flares take eleven minutes to cross Earth, while the stream of ionized calcium takes days to cross Earth's path (if it does at all) and can wreak magnetic havoc for some time.

SEA/SES observations can foretell strong aurora, polar cap absorption of radio, and magnetic field disturbance. When strong SEA/SES effects are seen, consult the National Bureau of Standards' North Atlantic and North Pacific Radio Warning Services for anticipated radio propagational effects. Some possibilities are up to hour-long SWF's (shortwave fadeouts); SCA (sudden changes of atmospheric) on VHF where cosmic noise can be reduced, and consequently signal/noise ratios can increase up to 9 dB; SPA (sudden phase anomaly) effecting navigational systems on VLF/LF, and SEA/SES swings below 100 kHz.

Although only the most avid radioastronomers are equipped to predict radio propagation effects on the basis of SEA/SES and related observations, these phenomena are an interesting sidelight to VLF listening. Try the nighttime SES technique for VLF DXing as well as a tipoff of coincident DX appearances on 50-200 MHz by virtue of SCA.

On daytime SEA/SES peaks, VLF DX may not be extraordinary, but do check above 50 MHz again for enhanced E-sporadic effects coupled with SCA cosmic noise reduction of ten to twenty minute peaks.

## REFERENCES:

1. Layer, Howard A., "Vintage VLF Receivers," Monitoring Times Vol. 3 No. 3 pp.13-14,19.
2. Chernan, Carl M., "The Handbook of Solar Flare Monitoring and Propagation Forecasting," TAB Books, 1978.
3. AT-382 loop antenna available from Fair Radio Sales, P.O. Box 1105, Lima, OH 45802.
4. Chart recorders available from Gulton Industries, Inc., Gulton Industrial Park, East Greenwich, RI 02818.
5. Orr, William I., "Radio Handbook," 22nd edition, Howard W. Sams Co., 1981. Ch.24-8 "Ionospheric Disturbances."

6. Humes, Philip E., "Propagation Forecasts and the Shortwave Listener," Monitoring Times, Vol. 2 No. 4, p.4.

**Suggested SES monitoring channels in North America, 1 MW stations: 17.8 kHz, 18.6 kHz, 24.0 kHz, 26.1 kHz.**

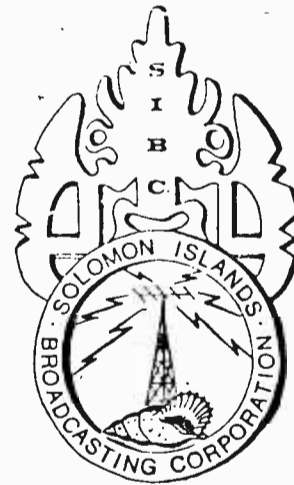
South Pacific from p.16

The provincial stations are more challenging to DX'ers. In Rabaul, Radio East New Britain broadcast on 3385 kHz from 1100-1300 GMT. Send your reports to: Radio East New Britain, P.O. Box 393, East New Britain Province, Papua New Guinea.

Radio North Solomons from Kieta broadcasts are 3322 kHz during early morning North America time. Look for their broadcast from 1100-1300 GMT. Reports may be sent to: Radio North Solomons, P.O. Box 35, Kieta, North Solomons Province, Papua New Guinea.

Radio Madang in the Madang province has been heard recently broadcasting from 1200-1300 GMT on 3260 kHz. Your reception reports should be sent to: Radio Madang, P.O. Box 2039, Yomba, Madang Province, Papua New Guinea.

For the novice DX'er or the seasoned veteran the South Pacific area of Oceania offers fascinating challenges and exotic adventures through the islands of the South Pacific.



Behind from p.10

In Kenwood by following the simple instruction booklet included with the unit.

For additional information or to order the nifty factory-wired unit (only \$19.95 including shipping!) contact MicroComm, PO Box 1003, Mauldin, SC 29662.

**NEXT MONTH: A REVIEW OF THE NEW JIL SX-400 PROGRAMMABLE SCANNER!**

**MT IS YOUR PAPER - LET US KNOW WHAT YOU WANT**



**Clandestine from p.4**

- Opposes the government of El Salvador. Other frequencies are in use.
- 7040 LA VOZ DE ALPHA 66. Operated by the anti-Castro organization Alpha 66 until shut down by the FCC in 1983. It has vowed to return.
  - 7075 RADIO MAMBI. Operated by the Junta Patriótica Cubana, an umbrella group of 200 other anti-Castro organizations.
  - 7080 RADIO MAMBI
  - 7352 RADIO ANTONIA GUITERAS, La Voz del CID
  - 7400 RADIO FRANK PAIS, La Voz del CID
  - 9610 RADIO LIBERTE. Opposes the government of Haiti. Broadcasts in French and Creole. Sunday and Wednesday at 2100 and 2300.
  - 10040 RADIO CAMILO CIENFUEGOS, La Voz del CID
  - 11700 RADIO CLARIN, Santo Domingo, Dominican Republic. Licensed station whose broadcasts include programming produced by anti-Castro Cuba Independiente y Democrática.
  - 17740 LIBERTY. Operated by the government of Argentina during the Falkland Islands War. Broadcasts were in English to the British forces in the South Atlantic. Although now inactive, rumors persist that it may eventually be reactivated.

**MIDDLE EAST:** Except where noted, transmissions are normally broadcast in Arabic or the local languages of the target country.

- 6215 KING OF HOPE. Station of the Christian High Adventure Ministries, operating from the South Lebanon enclave established by the now deceased Major Saad Haddad, a friend of Israel and an opponent of the PLO. Many broadcasts are in English. 0400.
- 6240 VOICE OF PEACE. Broadcasts in English from international waters off the coast of Israel. Reported temporarily inactive because of complaints of interference.
- 6665 KING OF HOPE
- 9710 VOICE OF THE UNITED MUSLIM FIGHTERS OF AFGHANISTAN (Radio Mujahidin). Also uses 15460. Opposes the Soviet occupation of Afghanistan. May be inactive. 0100.
- 11640 RADIO IRAN. Operated by the National Front for the Liberation of Iran and a supporter of former Iranian Prime Minister Bakhtiar. Also uses 9595. 1830.
- 15370 VOICE OF PALESTINE. Palestine Liberation Organization (PLO) program via Algeria. 1700.
- 15555 RADIO VATAN. Opposes the government of Iran's Ayatollah Khomeini. Probably broadcasts from Egypt. Also uses 9027 or 9032. 1600.
- 17940 VOICE OF THE SUDANESE POPULAR REVOLUTION. Pro-Libyan and opposes the government of the Sudan. 1430. Some English.

**FAR EAST:** Transmissions by these stations are usually in the languages of the target country.

- 4120 VOICE OF THE REVOLUTIONARY PARTY FOR THE REUNIFICATION OF KOREA. Operated by the government of North Korea. 1200.
- 4130 VOICE OF DEMOCRATIC KAMPUCHEA. Pro-Chinese. Opposes the Vietnamese-sponsored government of Kampuchea. Numerous other frequencies in use. 1200.
- 6350 RADIO ECHO OF HOPE, Seoul. Operated by the government of South Korea. 1130.
- 7525 RADIO OCTOBER STORM. Black Soviet clandestine which opposes the Peoples Republic of China. Also uses 9268. 1100. ID: Shi Yue Feng Bo.
- 7570 VOICE OF THE PEOPLE OF BURMA. Operated by the Burmese Communist Party from Panghsang, Burma. 1200.
- 9268 RADIO SPARK. Black Soviet clandestine which opposes the Peoples Republic of China. Also uses 7525. 1100. ID: Huo Hua Tai.

**AFRICA:**

- 4950 VOICE OF THE RESISTANCE OF THE BLACK COCKEREL. Operated by the National Union for the Total Independence of Angola (UNITA), which opposes the Marxist government of Angola. Transmits in Portuguese. 0430.



**Tinkerer from pg.25**

delight you.

You owe it to yourself to relax for an evening with this catalog. And tell them you read about it in MT.

**GROVE ENTERPRISES - EVERYTHING FOR YOUR LISTENING NEEDS**



**VLF Maritime from p.8**

67	156.375	156.375	Commercial/Non-Commercial	
			Commercial	
68	156.425	156.425	Pleasure Craft	Pleasure Craft
69	156.525	156.525	Non-Commercial	Non-Commercial
70	156.525		Pleasure Craft	Pleasure Craft
71	156.575	156.575	Non-Commercial	Non-Commercial
72	156.625		Pleasure Craft	Pleasure Craft
73	156.675		Comm/Non-Comm	Port Operations
74	157.725	156.725	Ship Control	Port Operations
77	156.875	156.875	Pilotage	Port Operations
78	156.925	156.925	Commercial	Non-Commercial
79	156.975	156.975	Commercial	Commercial
80	157.025	157.025	Commercial	Commercial
81A	157.075	157.075	Coast Guard	Coast Guard
82A	157.125	157.125	Coast Guard	Not Assigned
82		161.725	Not Assigned	U.S.Government
83A	157.175	157.175	Coast Guard	Coast Guard
83B		161.775	Coast Guard	Not Assigned
84	157.225	161.825	Public Corres.	Public Corres.
85	157.275	161.875	Public Corres.	Public Corres.
86	157.325	161.925	Public Corres.	Public Corres.
87	157.375	161.975	Public Corres.	Public Corres.
88A	157.425	157.425	Not Assigned	Commercial
88	157.425	162.025	Public Corres.	Not Assigned

NOTE: The letters A and B in a channel designator indicate a duplex channel. A indicates the lower (ship) frequency, and B indicates the upper (coast) frequency.

## QSL THE COASTAL STATIONS

MT reader Gene Kauffman (NP2BB), a radio operator at Global Communications Corporation marine radio station WAH in St. Thomas, Virgin Islands sent along an invitation to fellow SWL's.

Station WAH QSL's 100% when reception reports are sent to them by listeners. This listener support helps them determine antenna efficiency.

Vessel traffic lists are broadcast on the hour, around the clock; odd frequencies on odd hours and even frequencies on even hours. Broadcasts are made every hour on 2506 and 2223 kHz.

A complete list of WAH radio frequencies is shown below. Send reception reports to: Global Communications Corp., P.O. Box 7009, St. Thomas, VI 00801.

CH	COAST	SHIP
---	(C) 2.5060	2.0090
604	(A) 6.5157	6.2093
605	(A) 6.5188	6.2124
	1602(W) 17.2360	16.4631
	1603(W) 17.2391	16.4662
	2223(W) 22.6642	22.0682

# WAH

Global Communications Corp.

P.O. Box 7009 • St. Thomas • U.S. Virgin Islands 00801

A=Atlantic, Caribbean & Gulf

W=Worldwide

C=Coastal, 150 miles day, 500 miles night

MARINE VHF-FM: Channels 16, 24, 25, 28, & 84 (75 miles)

AERONAUTICAL ENROUTE: 122.875 MHz (400 miles)

Next month, as a complement to this information, United States LF and HF Radiotelegraphy stations will be presented along with some information on the U.S. Coast Guard.

As always your correspondence is welcome; please direct it to: James R. Hay, 141 St. John's Blvd., Pointe Claire, P.Q., Canada, H9S 4Z2, and remember to "keep those cards and letters coming!"

- 5015 RADIO TRUTH. Sponsored by the Republic of South Africa. Opposes the government of Zimbabwe. Transmits in English and local languages. 0430.
- 9988 VOICE OF THE BROAD MASSES OF ERITREA. Operated by the Popular Front for the Liberation of Eritrea. It opposes Ethiopian control of Eritrea. Arabic and other languages used. Also uses 4410. 0400.



W5LFL but adds significantly to that base as well.

In addition to the two-meter FM voice transmissions, the proposal calls for a ten meter downlink. The modulation of the ten meter transmitter could be from any one of several sources. Perhaps the most exciting is the prospect of amateur slow scan television (SSTV). If accepted, the standard format SSTV would use a "frame grabber" store and forward concept fed by NASA fast scan video sourced on the shuttle.

Another possible signal source is a 2-meter to 10-meter FM scanning channelized repeater. A 2 meter scanning receiver with calibrated dwell time would retransmit the uplink audio in a selected 10 meter downlink.

The 10 meter signal (including a beacon) originated at the shuttle's altitude may introduce some interesting propagation research opportunities for amateurs.

AMSAT'S inputs to the 51F mission were coordinated by Bill Tynan, W3XO. The mission is presently slated for a March 1985 liftoff.

The proposal's ambitious new aspects are complemented by WØRE's operating plan which includes plans for more scheduled QSO's with schools and amateur radio affiliated organizations. (Information courtesy of Amateur Satellite Report, No. 79)

\*\*\*

During a recent conversation with the head ed, Bob Grove, the mention of military aircraft frequencies came up. Right now, MT does not have a column for military aircraft but this columnist would be willing to cover the subject in Signals from Space as the 225-400 MHz. band is directly related to FLTSATCOM operations in the 240-270 MHz. spectrum. Much of what you hear in the 225-400 MHz. is directly satellite related.

If you would like us to cover military aircraft in Signals from Space, drop Bob or me a card and let us know. As with any column, your participation is needed for the column to be a success. Mail your cards to: Signals from Space, 1111 N. Carrier Parkway, B-107, Grand Prairie, Texas 75050.

YOUR OPINION IS IMPORTANT TO US. WRITE SOON!

**FOR IMMEDIATE RELEASE**

**HEAR SPACE SHUTTLE ON YOUR SCANNER**

The Spaceport Amateur Repeater Club (SPARC) has been authorized by AMSAT to transmit Space Shuttle mission commentary for all missions on Special Services Channel H2, 145.963 MHz., of AMSAT-OSCAR 10.

In addition, AMSAT bulletins and Space Shuttle mission audio will be retransmitted for several hours each day as time permits. Scanner listeners are invited to submit reception reports to: SPARC, P. O. Box 672, Merritt Island, FL 32952.

☞ Eng. Lang. p.17

on 800 kHz., especially if you have a loop antenna.

**VATICAN RADIO**

This is the most-likely-audible Catholic international station to be heard in our area; they have an extensive multi-lingual world service which is the official voice of the Church. The Latin station slogan may be heard at their sign-on, "Laudetur Jesus Christus". Programs are designed for all continents and English may be heard 0045-0115 (9605,11845) or at 0500 (6185).

**HCJB QUITO, ECUADOR**

Maybe you don't believe in miracles; well, if not, then you really should read the incredible story of the "Voice of the Andes". You may still be able to get the book, "Seeds of the Wind" by Frank Cook which tells of the incredible beginning in 1931, appropriately on Christmas Day! Studio was a converted cow shed, power 250 watts!!

Today the station, which justly calls itself the "World's Pioneer Missionary Station", is a huge transmitting complex with super-power transmitters and a round-the-clock world broadcasting service in many languages. Their programming is so far ahead of the others as to be a copybook for evangelistic radio.

For many years HCJB has been one of the favorite stations among shortwave fans all over the world. And no wonder, for they have such interesting programs as "Passport" with news, views and features from Ecuador and other parts of the world. "World of Science" gives the latest developments; "Today in Review" - an excellent news program; "Guidelines

for Family Living" - a practical program as the title suggests; "Musica del Ecuador" - genuine folk music of the country. Then there is "DX Partyline" - a favorite of shortwave fans for information and comments on the hobby; "Happiness Is" - a program of music, interviews, discussions, travel, letters and so on ...

If you want more information write to WRMF, Opa Lock, FL; or HCJB, Casilla 691, Quito, Ecuador.

To round up this short review here is the HCJB schedule:

**VOICE OF THE ANDES**

FREQUENCY - kHz.

26020	0030-1100
17890	1200-1530
15155	0030-0500
11910	0500-0700
11740	1200-1430
9745	0030-0700
6095	0500-0700

**HCJB**

1215-1530

**QUITO, ECUADOR**

1900-2000

**ENGLISH SERVICE TO N. AMERICA**

2130-1100

(100 WATTS! Experimental)  
Comment: When we have high frequency fadeouts, reception of HCJB is notoriously unreliable on 9745 and 6095. Reception is usually much more reliable on 11/15 MHz. channels.

**WHEN AND WHERE TO TUNE FOR SCANDINAVIA**

TIME MHz.

**RADIO DENMARK**

1300	GMT	15.165MHz.
1505	GMT	15.165MHz.
1900	GMT	11.760MHz.
2300	GMT	15.165MHz.

**RADIO FINLAND**

1100		17.800MHz.
1200	GMT	15.400MHz.
12320	GMT	"Suns
13030	GMT	"
1400	GMT	"

**RADIO NORWAY**

1202	GMT	15.225Suns
1300		15.175 "
1700		15.245 "
1900		15.175 "
2400		11.870 "
0400		9.565Mon
0500		11.860Mon

**RADIO SWEDEN**

1400		15.190Daily
2300		11.710 "

0230	15.270 "
	9.695 "
	11.710 "

☞ Commodore pg.22

**LOGO: Pictures, Words and Music**

Developed by Terrapin and available for a variety of machines, LOGO provides complete control of graphics, allowing lines and turns of every configuration without having to give coordinates. Eight independently-controlled sprites may be called up for assistance.

A brief excursion into musical composition and sound effects is included in Commodore LOGO.

Word lists, quizzes, matching test, translators-- anything requiring list manipulation is handled readily by LOGO. For the game addict, mazes and other recreational or educational skill patterns can be constructed.

Let's take a look at the program capabilities of Commodore LOGO; compare them with the computer you have been using and you will be amazed as I was at the power of this system:

Word and list commands, sprites, music, picture save, assembly language interfacing, floating point arithmetic, remarks capability, program tracing, start-up file, 10-degree turtle-turning resolution-- and all at a cost of about \$50 retail!

**SUPER EXPANDER 64: GETTING THE MOST FROM YOUR COMMODORE**

A simple plug-in ROM cartridge and your C-64 becomes more powerful than ever. Permitting extension of the machine's BASIC language, the user may now quickly and easily access the 64's extensive graphics, music and sound capabilities.

The SUPER EXPANDER 64 allows the user to plot points and lines; draw arcs, circles, rectangles, triangles and octagons; paint shapes with a wide choice of colors; read game locations of paddles, joysticks and light pens; display full or split screen text and graphics; program the keyboard's function keys. A total of 21 new commands and 11 new built-in functions are added to your C-64 with this cartridge.

Both Commodore LOGO and SUPER EXPANDER 64 are available from your nearest Commodore dealer.

**CODEWRITER**

A couple of months ago

☞ cont'd on p.31

List Log Cont'd from p.20

CHESTERFIELD	FD		46.4600	HAMPTON	FD	F1	46.0600
CHESTERFIELD	FD		46.3400	HAMPTON	FD	F2	46.1000
CHESAPEAKE	FD		154.4150	HAMPTON	HAMPTON LG		37.2600
CHESAPEAKE	LG		155.1000	HAMPTON	HAMPTON LG	BLDG INSP	37.1000
CHESTERFIELD	PD		154.8750	HAMPTON	HAMPTON LG	PUBLIC WORKS	37.9400
CHESTERFIELD	PD		154.7550	HAMPTON	HPT. INST.	SECURITY	154.5400
CHEATHAM ANX	PD		149.4500	HAMPTON	PD	F1	453.9000
CHESTERFIELD	PD		155.5650	HAMPTON	PD	F2	453.7500
CHESAPEAKE	PD	F1	155.7300	HAMPTON	PD	F3	453.0500
CHESAPEAKE	PD	F2	155.1300	HAMPTON	PD	F4	453.0500
CHESTERFIELD	RESCUE SQUAD		155.2650	HAMPTON	PD	F5	155.5500
CHESTERFIELD	RESCUE SQUAD		47.6200	HARRISONBURG	FD	BASE	33.7400
CHSPKE. BAY	BRIDGE TUN.	F1	453.5750	HARRISONBURG	FD	BASE	33.4400
CRANEY IS	PD		149.4250	HARRISONBURG	LG		45.2400
DAM NECK	PD		148.4250	HARRISONBURG	PD		39.0200
DANVILLE	FD		154.1750	HARRISONBURG	RESCUE SQUAD		33.0600
DANVILLE	PD		155.3700	HENRICO CO	FD	BASE/MOBILE	154.4150
DANVILLE	PD		155.5950	HENRICO CO	FD	BASE RPTR	154.3400
DANVILLE	PD		39.5400	HENRICO CO	FD	BASE RPTR	154.4300
DANVILLE	PD		39.5000	HENRICO CO	FD	MOBILE	154.3550
DANVILLE	PD		154.7700	HENRICO CO	FD	MOBILE	154.2950
DANVILLE	PD	MUTUAL AID	39.0400	HENRICO CO	PD		155.7300
FAIRFAX	FD	CITY	154.2350	HENRICO CO	PD	MOBILE RPTR	460.2250
FAIRFAX	FD	CITY	46.4000	HENRICO CO	PD	MOBILE RPTR	156.2100
FAIRFAX	FD	F1 DISPATCH	460.5750	HENRICO CO	PD	MOBILE RPTR	460.3500
FAIRFAX	FD	F2 MEDICAL	460.6000	HENRICO CO	PD	MOBILE RPTR	460.1750
FAIRFAX	FD	F3 FGRND	460.6250	HENRICO CO	PD	MOBILE RPTR	460.2750
FAIRFAX	PD	CITY	453.9750	HENRICO CO	PD	MOBILE RPTR	460.0750
FAIRFAX	PD	F1	460.1750	HERNDON	PD		453.8500
FAIRFAX	PD	F2	460.1250	ISLE/WIGHT	PD	BASE RPTR	159.2100
FAIRFAX	PD	F3	460.3000	ISLE/WIGHT	PD	BASE/MOBILE	154.7700
FAIRFAX	PD	F4 DETECTIVE	460.2250	ISLE/WIGHT	RESCUE SQUAD		155.1600
FALLS CHURCH	PD		453.9250	ISLE/WIGHT	RESCUE SQUAD		33.0400
FALLS CHURCH	PD		154.8000	JAMES CITY	FD		154.3550
FRED/BURG	FD		154.1750	JAMES CITY	LG		453.4500
FRED/BURG	FD		154.2050	JAMES CITY	PD		453.1000
FRED/BURG	PD		154.7250	LANGLEY AFB	AMBULANCE		173.5625
FRED/BURG	PD		155.5800	LANGLEY AFB	FD		173.5875
FT EUSTIS	FD		173.4125	LANGLEY AFB	LG		148.4750
FT MONROE	FD		163.5375	LANGLEY AFB	LG		149.3000
FT EUSTIS	LG		173.4625	LANGLEY AFB	LG		150.2250
FT EUSTIS	PD		150.5750	LANGLEY AFB	LG		149.5650
FT MONROE	PD		165.0625	LANGLEY AFB	LG	1ST TAC	149.2650
GLOUCHESTER	AMBULANCE		47.6600	LANGLEY AFB	LG	RUNWAY MNT.	149.4750
GLOUCHESTER	AMBULANCE		47.4600	LANGLEY AFB	PD		163.4875
GLOUCHESTER	AMBULANCE		155.2050	LANGLEY AFB	PD		150.1650
GLOUCHESTER	FD		154.3100	LANGLEY AFB	PD		163.5125
HAMPTON	AMATEUR		146.9400	LANGLEY AFB	TAXI		150.3150
HAMPTON	AMATEUR		146.7300	LARC	NASA	DUTY OFFICER	173.6625
HAMPTON	BRIDGE TUN.	F1	453.8500				

VA continued in next month's installment

Commodore from p.30 we took a look at an interesting piece of software called FILEWRITER from CodeWriter Corporation. That program plus another, REPORTWRITER, is included in the full Codewriter set for the Commodore 64 and Atari systems.

Users of Apple and IBM-compatible machines will be interested in the enlarged CodeWriter programs available to them which include the new MENUWRITER program as well.

Two discs are provided for the C-64 and Atari users; the first is the Data Entry System disc and the second is the Report Creation System.

The CodeWriter package allows wide flexibility which includes custom-writing another BASIC program automatically, using everyday language. Unprotected code is well documented to allow addition of sub-routines if desired (although seldom necessary).

The Data entry generator provides a 40-

column screen (just as seen on the C-64) to allow headers and field description, positions of which can be changed.

A 100-field maximum per record may be entered, with 36,000 records per field possible depending upon record length.

The user may define his own error messages and call up validation checks or defaults. Record search and display within a selected field range may be called up; modification of records is supported.

Money-type fields (automatically formatted) or numeric fields may be specified for calculations.

In the CodeWriter package, FileWriter (stand-alone) and ReportWriter (requires FileWriter) work in tandem; the former is a database collection system while the latter permits custom presentation of those data in a practical, useable form.

Just as with a paper file, you accumulate information--coins in your

collection, parts on hand, inventory, recipes, addresses, whatever--for later use.

The ReportWriter is the organizer for that later use. In common English (or whatever your native western language), simply request only those data you need--columns of figures, a mailing label, a customized business report--and it will be displayed or printed.

The CodeWriter package for the C-64 and Atari (FileWriter plus ReportWriter) is \$99; for the Apple II series, IBM PCjr. and Franklin (FileWriter, ReportWriter, and MenuWriter) \$199; for the IBM PC/XT, Compaq, Columbia and TI Professional \$249.

All versions are available from CodeWriter Corporation, 7847 N. Caldwell Avenue, Niles, IL 60648.

FREE SAMPLES OF MT SENT TO YOUR FRIENDS. JUST SEND US THEIR NAMES AND ADDRESSES.



Yes, that really is a vacuum tube next to the delighted (and delightful!) young lady. Made by the EIMAC division of Varian (San Carlos, CA), the type 8974 is capable of putting out over one million watts!

Typical operating conditions include 17,500 volts on the plate at 100 amps; the 18.5 volt filament requires another 650 amps. The tube is water cooled.

Several international broadcasters use this bottle, including perennial favorite HCJB in Quito, Ecuador as well as services in Saudi Arabia, Egypt and Yugoslavia.

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One each: JAPAN RADIO RECEIVER NRD515 with filters 5.0, 2.2, 6.0 and one separate 300 Hz filter (not installed).

One each: 96 channel memory NRD518.

One each: Speaker NVA518 has hardly been used. Have bill of sale from Gilfer Radio (Nov. 82, \$1820.22) Am asking \$700.00 plus \$25 for shipping and handling. Payment must be in Bank or US Postal Money order. Please telephone 1-704-479-3547. No collect calls accepted.

\*\*\*\*\*

KENWOOD R-2000. Like new, 12 volt power option, factory service manual. \$460.00. Call after 5 p.m. 816-665-8776. No collect calls. Zel Eaton, 904 E. Wall, Kirksville, MI 63501.

\*\*\*\*\*

INFOTECH 200E RTTY/MORSE/-ASCII converter used little, with manual and RTTY Frequency List. \$180. Gary Gonzales, 14271 Matisse, Irvine, CA 92714.

\*\*\*\*\*

JIL SX200 - programmable, 16 channels, clock, AC/DC, 26-88 MHz, 108-180 MHz, 380-514 MHz. AM or FM throughout. 3 months old. \$165. Includes all standard accessories and shipping.

BEARCAT 100 - handheld programmable-16 channels. 30-50 MHz, 138-174 MHz, 408-512 MHz. 2 years old. Excellent condition, \$140. Includes all standard accessories and shipping.

BEARCAT 200 - programmable (AC only). 30-50 MHz, 138-174 MHz, 406-512 MHz. 3 months old. \$115 includes all accessories and shipping. Lewis S. Harvey, 8000 Waters Avenue, Apt. 11, Savannah, GA 31406.

\*\*\*\*\*

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ceiver \$100.

PANASONIC RF4900 (like new with box and papers) \$250. YAESU ACTIVE ANTENNA - \$40. May trade for programmable scanners. Larry Snyder, 11664 W. Saratoga Avenue, Morrison, CO 80465. (303-979-2856).

DRAKE R-7 RECEIVER - w/NC-7A, .3/.3/1.0/1.8/2.3/4.0 kHz filters. MS-7 spkr, srvc. man., & RV-75 synthesized PTO. \$1250/offer.

REGENCY MX5000 - 25-550 scanner, \$325. Ray Berry, (206)881-6440. PDT.

\*\*\*\*\*

For Sale: MICROFICHE READER with 1984 D.O.C. microfiche listing Govt. and non Govt. agencies and about 40 pages of call letters identifying Govt. agencies. All this for \$199.50 Cdn. ppd. Gilles Thibodeau, 3653 Montcalm St., Lac-Megantic, Quebec G6B 2H8 (819) 583-1817

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MONITORING TIMES WILL PRINT AT NO CHARGE (AS SPACE PERMITS) ANNOUNCEMENTS AND QUESTIONS OF A NON-COMMERCIAL SERVICE NATURE.

I would like to trade my New York City and Long Island profile frequencies for Chicago profile. James O'Donnell, P.O. Box 70, Notre Dame, IN 46556

\*\*\*\*\*

I would like to correspond with any MT readers. I'm interested in DX'ing ALL radio frequencies. Also just getting started in numbers stations and pirates. Also interested in WWII. Cliff Richey, Jr., 3995 California Way, Livermore, CA 94550.

\*\*\*\*\*

Contact wanted for Montreal and northern state of Maine freq. to be checked out. Gilles Thibodeau, 3653 Montcalm, Lac-Megantic, Quebec G6B 2H8.

I would like to hear from DX'ers who can tell me which frequencies the Great Lake Weather Broadcasts are audible on shortwave. Also need frequencies of Nova Scotia area weather broadcasts. All answers will be appreciated. Bill Bergadano, 39 Marble Street, Staten Island, NY 10314.

\*\*\*\*\*

Wanted - any tricks known on the Realistic Pro 30 handheld scanner, also any info on mods to Sony ICF 2001. Will gladly cover postage, copying charges, etc. Phil Bridges, 960LJ, 30 Mopley Close, Langley, Southampton, SO4 1Y1 England.

\*\*\*\*\*

I am looking for a Radio Shack receiver - DX302 or DX200. William Gabali, Rt. 8, Box 624, Lexington, SC 29072.

\*\*\*\*\*

Wanted - OLD RADIO MAGAZINES prior to 1950, especially Radio News and Radio Craft. I am NOT interested in ham magazines like QST and CQ. Please state condition and price. Ken Stryker, 6350 N. Hoyne Avenue, Apt. 2, Chicago, IL 60659.

\*\*\*\*\*

Anyone interested in making printed circuit boards without using messy chemicals. Send SASE to Kenneth Hand, WB2EUF, P.O. Box, 708, Senior Citizen Trailer Park, East Hampton, NY 11937.

\*\*\*\*\*

Need Feb., March, April 1984 MT issues. Also anyone in Watertown, NY, Quincy, IL or Battle Creek, MI - I have excellent scanner lists for those areas. Also, would like to know if there are any local scanner clubs in the above cities. Please write: Kevin Trickey, 312 Jackson, Delta, OH 43515.

\*\*\*\*\*

I am in need of the Dec. '83 issue of MT. Please contact Ken Brand, 421 Fairview Ave., Winchester, VA 22601. Phone: 703-662-0665.

\*\*\*\*\*

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