Pg. 21 - check

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MONITORING TIMES

Volume 4-Number 2 BRASSTOWN, NORTH CAROLINA 28902 February, 1985

LISTENING TO THE STAR WATCHERS

by Mike Tuggle

The most fascinating monitoring on HF would never have been possible had not scientists agreed to respect the gods of the Papago Indians on whose lands the scientists work. Kitt Peak is the holy mountain whose rocky summit touches the heavens, and the forbidding caves near the summit of nearby Baboquivari are the earthly homes of the gods, or so say the Papago Indians.

One thing is certain about this beautiful peak 50 miles southwest of Tucson, Arizona: Its dizzying height offers a pollution-free and magnificent vista of the heavens for those who wish to study the stars.

Perhaps it was mutual reverence for the heavens that inspired the compromise between the Papago Indians and the astronomers: Kitt Peak Observatory may operate on the holy mountain as long as the sacred caves are undisturbed.

Kitt Peak is indeed something of a shrine for astronomers. Any astronomer may use the facilities; astronomers from all over the U.S. make scientific pilgrimages to the site to use the unique sun telescope or the other telescopes situated atop the desert mountain.

The National Science Foundation was the primary body responsible for the construction of America's national observatory. Kitt Peak has 17 optical telescopes, including a 4 meter reflector telescope, one of the world's largest. In addition, it also has an 11 meter radio telescope operated by the National Radio Astronomy Laboratory.

But the most unique apparatus at Kitt Peak is the tunnel telescope which was designed for studying the sun. It looks like a white skyscraper laid on its side. Movable mirrors near the opening reflect the sun's image down a tunnel to the measuring and recording equipment.

While designed primarily for studying the sun, the tunnel telescope is often used for analyzing other celestial bodies due to its unique light projecting abilities.

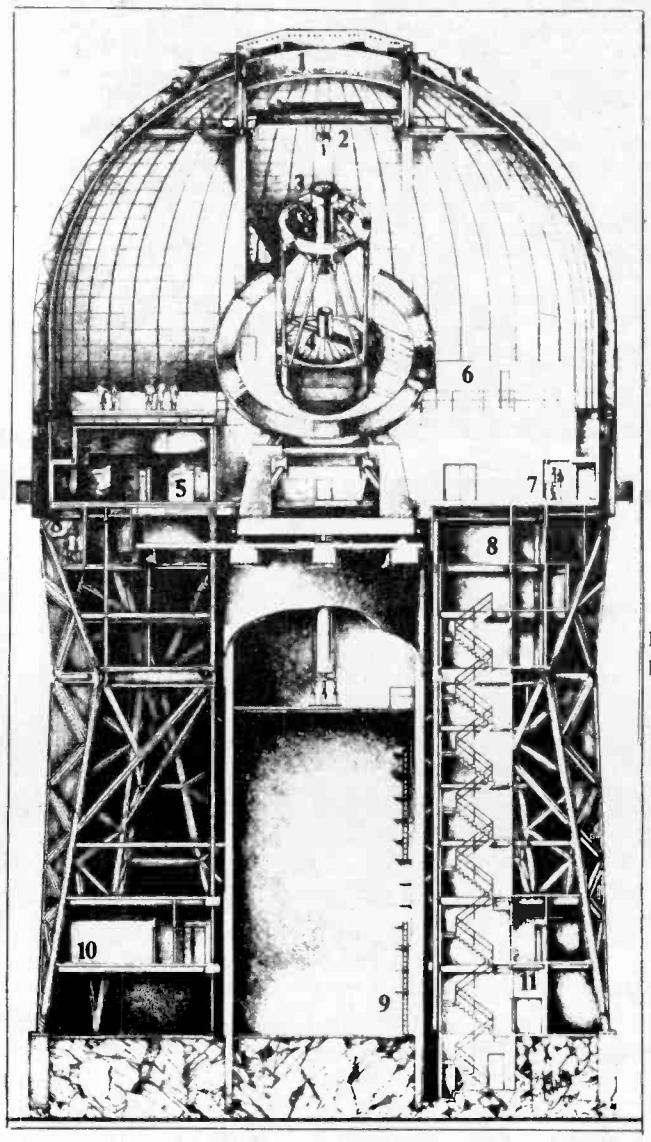
What makes this incredible facility of special interest to communication monitors is its sister station in Chile. While Kitt Peak affords a spectacular view of the northern skies, the Cerro Tololo Observatory at La Serena in the Andes Mountains provides a comparable view of the southern skies.

Cerro Tololo has seven telescopes, including a 4 meter reflector like the one at Kitt Peak so that astronomers at both sites can compare their findings via HF radio. Sometimes they will study the same new "stellar body" as they refer to stars. Or perhaps an astronomer in one hemisphere will advise astronomers in the other hemisphere of the spectroscopic behavior of bodies not visible to the other.

However, conversations also range to the more mundane. Both Kitt Peak and Cerro Tololo are undoubtedly lonely places, so phone patches to families, friends and business associates are common.

Not interested in astronomy, you say? Chances are you will be very soon. Silently coursing its way through space at this moment

Cont'd on page 3

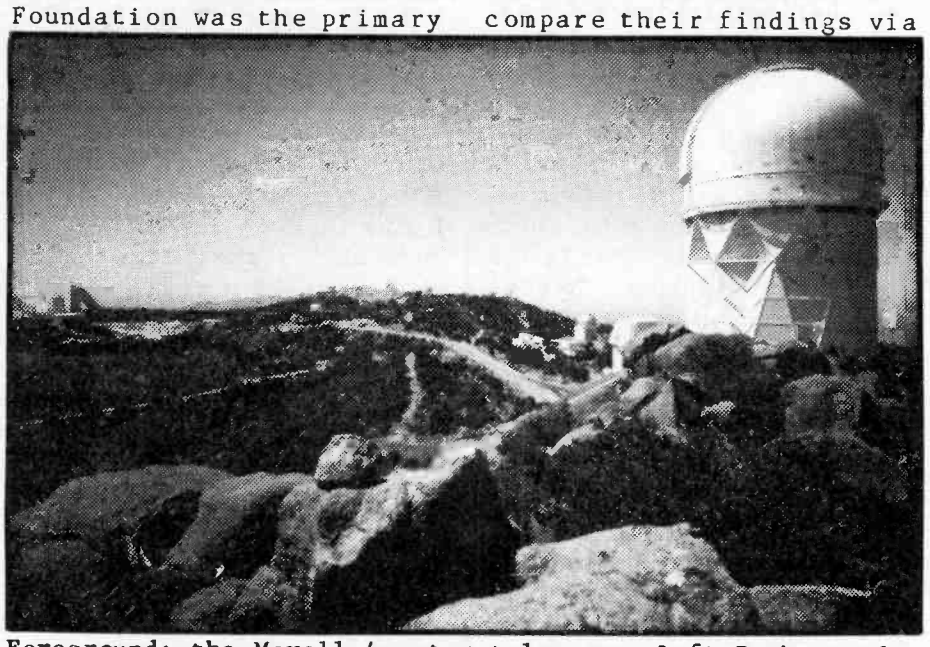


THE MAYALL 4-METER TELESCOPE

Key to Illustration

1. Building is 56.7 meters (186 feet) or approximately 18 stories high
2. Dome cranes—50-ton and 5-ton capacity
3. Prime focus cage
4. Ritchey-Chrétien focus
5. Coudé focus laboratory
6. Telescope control room
7. Visitors' gallery
8. Visitors' scenic walkway—26.8 meters (88 feet) above ground
9. Telescope pier
10. Second floor—dormitory
11. Ground floor—visitors' entrance at 2082 meters (6830 feet) above sea level

SEE ARTICLE ON P. 18 FOR MORE "ASTRONOMICAL" FREQUENCIES!



Foreground: the Mayall 4-meter telescope. Left Background: the McMath solar tunnel telescope

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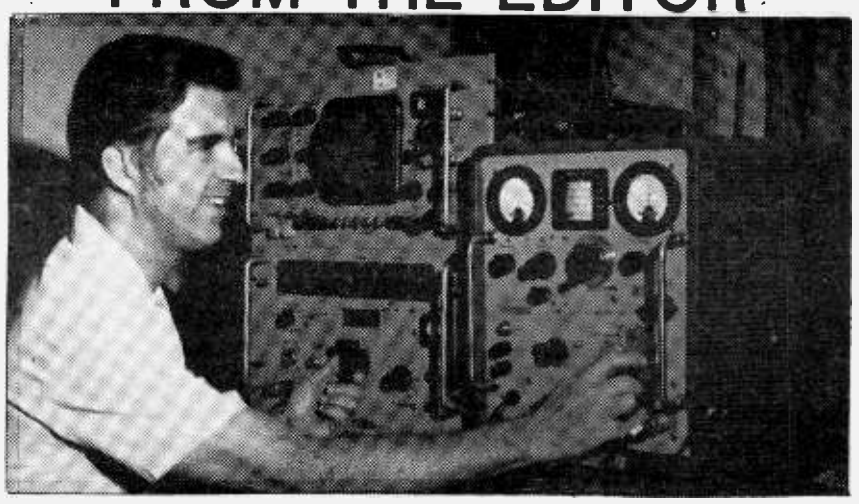
FROM THE EDITOR



A QUESTION OF BALANCE

Every editor faces a common dilemma: How can we achieve balance among all of the facets of your listening interests? Whenever an issue of MT goes out with an abundance of military frequencies, I am sure to hear from the broadcast SWLs. If worldwide shortwave coverage gets a boost one month, the scanner enthusiasts let me know that they have been forgotten!

I guess it is time once again to make a statement of fundamental policy about Monitoring Times.

When we first went to press three years ago, there was an absence of published information about "utilities," the two-way communicators of the radio spectrum. MT was meant to fill that void and still does.

As MT grows--now at 36 pages--we no longer feel it is necessary to concentrate on utilities, but include all aspects of monitoring throughout the spectrum.

Essentially, the listenable spectrum is the first thousand megahertz, beginning in the low kilohertz region. Even frequencies in the audible range are our quarry.

Rarely do we sensationalize; MT is an objective informational medium, toward an intelligent readership with wide interests. We do not fan the fires of survivalists, mercenaries and other cultists, but provide insights which are of value to all philosophies.

While the balance of coverage must of necessity vary from month to month, we attempt to provide overall integrity to every phase of listening. Only the contributions of information from active listeners and writers limit that content.

As always, we appreciate comments and criticisms from our readers; this feedback is a vital component of our reputation for responsiveness to our readership. We look forward to your requests and promise you responsible journalism in the years to come.

May the new year bring you happiness and good listening!

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 prepaid calls weekdays 1-5 pm Eastern (704-837-2216)..Bob

CB OR NOT CB: That is the question

Although often maligned and abused, the 26.965-27.405 MHz portion of the spectrum exists and is active. If there are items of interest to our readers pertaining to this frequency range they will be reported in the pages of MT.

MT does not condone the illegal operation of any radio system. The inclusion of information in these pages regarding pirate radio stations, clandestine transmitters, CB DX'ing or any other unassigned transmissions is in keeping with our policy to report objectively on all facets of radio communications.

From time to time a particularly knowledgeable letter will be sent to our editorial offices offering enlightenment on some service where accurate information is hard to come by. An anonymous "outbander" recently submitted an appeal to encourage SWL's to monitor some of the intrigue on the 11 meter band, from which we extract the following:

- Residents, especially fishermen, in the West Indies keep in touch with each other via island-to-island CB where telephone is impractical.

- Some survivalists use CB for maneuvers; listen to ch. 7 AM and ch. 36 LSB, along with frequencies above ch. 40 and below ch. 1 for these nets.

- Many U.K. freqs. are active (27.60125 to 27.99125); The R.A.F. was recently heard on 27.782 MHz with ground-to-air communications.

- Heard on 27.772 MHz, an FM paging-type transmission: "Dr. Jacobs, please call Mrs. Smolen." No ID given.

- 26.329 MHz - sounded like cordless phones in FM, Spanish transmissions.

- WARO, 11 meter pirate broadcaster, used 27.105 MHz (ch. 12)

- Brazilian relay of local broadcast of American pop rock, announced in Spanish on 27.385 LSB (ch. 38)

- Telephone calls to pirate broadcaster WRAM were relayed via CB to studio in 1983.

- Paramilitary and mercinary groups often use 27 MHz communications; 27.6625 and 27.8625 were used by mercenaries in Rhodesia (now Zimbabwe) and 26.865 and 26.875 were used by rebels in El Salvador. SWAPO guerillas in Namibia operated on 27.580.

- On "A" or "RC" channels, and various other channels in and around the CB band, CW, tone signals, beacon transmissions, and RTTY have been monitored.

- Some TV stations still use remote broadcast units between 25.870 and 26.470 MHz (FM).

- Communications can be heard in several foreign languages including French, German, Spanish and Italian.

Readers wishing more information about the present state of CB may wish to subscribe to the ELEVEN METER TIMES & JOURNAL. A sample is available for a self-addressed stamped envelope (or two first-class stamps, or $1 in the U.S., or $2 foreign, or an IRC!) sent to P.O. Box 10723, Edgemont Station, Golden, CO 80401.

Thank You!

While we at MT hoped for an occasional Christmas card, we were unprepared for the sharing of kind seasonal messages which overwhelmed us during the holiday season.

It seems somehow inadequate for us to respond in this impersonal way, but we hope all of you who expressed your feelings toward us will know that we were deeply touched.

The entire staff of Monitoring Times and Grove Enterprises hope that the new year continues to bring happiness, prosperity and optimism to all of you and your families. And this pledge to continue to listen to our readers and customers, providing quality services, publications, and products which you want at a cost you can afford.

SAN DIEGO IS NOT IN SAN FRANCISCO

In spite of what you might have read in December MT (front page, "ATTENTION DXers CLUB OF SAN FRANCISCO MEMBERS"), the former club was located in San Diego. Maybe that's why its real name was the "International DXers Club of San Diego!"

In any case, we apologize for the confusion and are happy to restate our intent to fulfill all unexpired subscriptions to that newsletter with MT.

And for those readers who already have an MT subscription your expiration date will be extended accordingly.

Viewpoint

I would like to make one correction to the "Low Band Panorama" article in the December '84 MT. In the introduction it's stated that Mike Britt, RCMA Low Band Skip editor, provided data or assistance for the article. Let me make it clear; Mr. Britt did not help in any way with logging, assessing or preparing the information and frequencies in my article.

Chuck Robertson
Creal Springs, IL

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I hate to write this but today got my last MT paper. Tell Bob though I have known him a long time I will NOT renew my subscription.

Nothing wrong with the paper; when he started talking placing CB news in the paper - that was the last straw.

Am going to miss the paper, but will not stop getting any products that I may want.

Best to you always - Stick Bob with a hard jab with a hat pin - he should know better.

E. Lee Walker
Albuquerque, NM

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Your October issue with the "new look" was the best I've seen so far, and the November and December issues look even better. The articles are much easier to follow, and overall quality seems to be improving too. No need to go to a magazine format.

I purchased the second edition of your shortwave directory in August. I was impressed with the first edition, but amazed with the second. It is much more comprehensive, complete, and easier to follow. That cross reference is a lifesaver! I'd recommend the book to anyone interested in utilities, regardless if they have the first edition.

Regarding a CB column - NO! NO! NO! NO! Monitoring Times is a monitoring publication, and I'd like to see it stay that way. A CB column would be no more appropriate than a Ham column. Currently, Ham news appears only if it is pertinent to the monitoring community. CB should be handled the same way, and I doubt if it could support a monthly column. Additionally, I would not like to see irresponsible CB practice supported, such as out of band operation.

Regarding computers and radios, a computer can be used to assist the monitoring operator, but NOT replace him. I am very impressed with the set-up on my ICOM R-71A. The dual VFOs, memories, etc. are all there to assist the operator - but their use is not required to operate the receiver. Hopefully, the PLL microprocessors will become eventually immune to breakdown, something which still occurs all too frequently (I've never had plates fall off a tuning capacitor). Further advances in RF circuitry should not be neglected either. The tuning knob should NEVER be eliminated (or manual band slewing, at least, should be maintained). I'd even like to see tuning knobs as a welcome addition to keyboard entry scanners.

I've never tried hooking up my stereo equalizer directly to my R71A, but if I'm copying a difficult signal, I'll record that station ID. Playing the tape back through the stereo system and equalizer often makes it more intelligible.

Greg Doerschler
Worcester, MA

(ED.NOTE:We concur with all of Greg's comments. MT will not become a slick; CB will not be glamorized, only mentioned in relation to other monitoring; our "new look" will continue; future Grove products will be microprocessor-assisted, not totally controlled.)

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I enjoy reading MT every month and have every one printed. I have been wondering if it would be possible to run a short section every month for beginner SWL's? Maybe something along the lines of a glossary explaining terms like suppressed carriers, A3H, etc.

Elaine Younie
Sugar Grove, PA

(ED.NOTE: Elaine suggests an excellent topic for a regular column. How about it, writers? Who among you feels qualified to write a regular column on "Getting Started"?)

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I would like to register what would seem to be a minority opinion, but what is nevertheless an opinion that is shared by a substantial number of MT readers.

While the broadcast DX'ers doubtless have the right to expect full coverage of their interests in MT, I feel they are a bit selfish in asking for more coverage at the expense of utility monitors. What's worse, I'm afraid MT is buckling under the cumulative weight of the broadcast DX'ers' demands. Let's not transform MT into another Shortwave Guide. One's plenty.

And let's not demean the interests of others, ok? Utilities monitoring is much, much more than listening to the city dump, as one broadcast DX'er put it in the 1-85 MT. What makes MT sparkle are the well-written and informed insights on the mysterious beeps and whistles that make shortwave so exciting. Writers such as Hay, Van Horn, Schimmel, Huneault, and Havana Moon are guides to what I and other utilities monitors feel is the most challenging and rewarding realm of monitoring.

If we're going to throw verbal spitwads at each other, then I'd like to take this opportunity to say that choosing to listen exclusively to broadcasts is like shooting tame squirrels instead of hunting for a ten point buck. Sure, I enjoy tuning in Deutsche Welle or Radio Peking occasionally, but for me the real thrill is listening in on those mysterious and elusive utilities. Keep MT the way it is!

Mike Tuggle
Greensboro, NC

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A SAGE QUOTE:

"You can please some of the people some of the Monitoring Times but you cannot please all the people all of the Monitoring Times!"

Herb Bates
Clifton Park, NY

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After reading one of your reader's letters in the Jan. 1985 MT, I decided to write this letter in reply to that reader's complaint.

In too many hobby-oriented publications such as yours, readers write letters to the editors that show their sefishness by demanding articles pertaining only to their interests. No concern is shown as to what other readers might enjoy about their hobby. These inconsiderate letter writers threaten to cancel subscriptions if changes that cater only to their interests are not made.

Case in point: This unhappy subscriber claims too much space is devoted to articles about military, utilities and scanner monitoring. These articles, he suggests, should be reduced in favor of more items geared toward shortwave broadcast stations.

MT would not be where it is today if it catered soleley to the wants of some of its readers and neglected the interests of the others. The recent decision to increase the number of pages shows the popularity of this publication. Rest assured that if a decision was made to drop the articles this reader didn't want and to increase the number he did want, MT would lose many

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STAR-WATCHERS from p. 1

is a highly-publicized and long-awaited visitor to our sun named Halley's (it rhymes with "valley's") comet.

"Cometscopes" are already being marketed in the U.S. and sales are expected to be brisk. As a matter of fact, I suspect that Halley's comet will do for astronomy what Bobby Fischer's world championship bout with Boris Spassky did for chess.

The Kitt Peak and Cerro Tololo observatories, with their "3-D" view of the night skies, should be very busy analyzing this rare and spectacular event.

Whether the astronomers are discussing a technical paper in the making, the computer programs and methods they use in analysis of the stars, or are lamenting the loneliness and occasional boredom of their work (yes, astronomers are human, too!), they are always worth monitoring.

Keep in mind that astronomers work at night and therefore wait until the afternoons to compare notes with each other. Voice communications are conducted on 20.875 MHz LSB, a relatively quiet and uncrowded portion of the HF spectrum.

Communications between the two observatories occur almost every working afternoon, and they tend to be lengthy, giving the communications monitor an excellent chance of getting a rich insight into the wondrous world of the professional astronomer.

The Mayall 4-meter telescope controlroom. © National Optical Astronomy Observatories/Kitt Peak.

The Anti-Castro Cubans and the FCC

by William J. Martin

More than anywhere else in the United States, south Florida conjures up vivid images of clandestine activity and political intrigue. This impression is certainly accurate with regard to the level of unlicensed radio broadcasting being conducted in the Miami area ... primarily involving the politically motivated anti-Castro groups.

In early 1981, a professional and highly organized network of anti-Castro clandestine stations came on to the scene using the title, "La Voz del Cuba Independiente y Democratica" (The Voice of Independent and Democratic Cuba). The emergence of these fiercely ant-Castro stations, referred to as "La Voz del C.I.D.," was especially notable due to the member stations' excellent production standards, regular broadcasting schedules, and relatively high powered signals.

Initially, there was a great deal of speculation regarding the geographic locations of the network's transmitters. Although most observers agreed that at least two of the transmitters were situated in the United States, rumor placed the actual transmitter sites anywhere from southern Florida to rural Georgia and as far away as Newark, New Jersey.

This article will retell the extraordinary events leading up to and the subsequent steps taken by the F.C.C. in late summer of 1982 to locate and close down two of the C.I.D. transmitters operating in the Miami vicinity.

The story takes place shortly after the U.S. attorney's office in Miami had unexpectedly bowed to political pressure by dropping criminal charges against famed anti-Castro broadcaster, Comandante David. Controversy also brewed in the U.S. Congress, as various factions debated the fate of the government sponsored Radio Marti project.

The F.C.C.--as politically sensitive an agency as one is likely to encounter in Washington--was in the thick of it. How would it react to the unlicensed broadcasts being transmitted by the C.I.D. network?

THE RISE OF THE C.I.D. NETWORK

By the summer of 1982, C.I.D. boasted at least four regularly scheduled transmissions directed to Cuba. These transmissions included programs on 11700 kHz (rebroadcast via the facilities of Radio Clarin in the Dominican Republic), 4980 kHz (via Venezuela's Ecos del Torbes), 5106 kHz and 7355 kHz (both believed at that time to be located within the continental U.S.). An Additional transmission on 7412 kHz was added shortly thereafter.

C.I.D.'s broadcasts were easily heard by the intended listeners on the island of Cuba. As a result of its displeasure, the Cuban government lodged numerous complaints with the Federal Communications Commission.

These complaints typically took the form of Spanish language cables from the "Administracion de Comunicaciones" in Havana directly to the F.C.C. in Washington, D.C., citing the times, dates, and frequencies used by C.I.D. for its transmissions, then requesting the immediate assistance of the Federal Communications Commission in putting the stations off the air.

Often the Cuban cables would remind the F.C.C. of its obligations to uphold international radio treaties --an argument that would seem laughable after the disruptions created by Cuban broadcasters in the medium wave broadcast band as a "warning" to Congress with regard to the Radio Marti controversy.

A copy of one of the Spanish language cables received by the F.C.C. from the Cuban government is included in the appendix to this article as Exhibit A. That particular cable form Havana complained about a C.I.D. broadcast on September 9, 1982 at 0200 GMT on 7412 kHz and involved the C.I.D. station identifying itself as "Radio Jose Antonio Echevarria."

Well before it received the official Cuban complaints, the F.C.C. was aware of the anti-Castro broadcasting taking place in this country by C.I.D. Contrary to many reports, the Commission was actively taking steps to locate those stations operating within its jurisdiction.

Based on information gathered by its own long range monitoring network, as well as published reports in the BBC Monitoring Service and in DX hobby publications, in August of 1982 the Commission's Field Operations Bureau (FOB) opened a file on the C.I.D. stations and set about in earnest to apprehend the stations.

On August 13, 1982, Joseph P. Casey, the Chief of the FOB's Inspection and Investigations Branch, telephoned the F.C.C.'s Engineer-in-Charge for its Miami field office, John Theimer, to personally discuss the case. Casey advised Theimer that the F.C.C. nationwide network of long distance direction finding stations had been monitoring C.I.D. stations on at least three frequencies--5106 kHz, 7355 kHz, and 7412 kHz.

The data compiled by the monitoring network placed the 7412 kHz transmitter on one of the islands off the coast of South America; however, the 5106 kHz and 7355 kHz stations were DF'd to be operating from the Miami area within a radius of 13.4 nautical miles from the geographic coordinates of 25 degrees, 40 seconds, 38 minutes North, 80 degrees, 33 minutes, 57 seconds West.

During their August 13, 1982 telephone conference, Casey also advised Theimer to coordinate his office's field work with that of the F.C.C.'s nationwide monitoring net. The Miami office was assigned the task of routinely monitoring the usual C.I.D. frequencies. If any clandestine operations were noted, Miami was to contact the monitoring network immediately to request additional direction finding information and tape recording back up.

Similarly, the F.C.C.'s long range monitoring network was assigned the task of closely watching the established C.I.D. frequencies and alerting the Miami office of any activity.

IN THE FIELD IN SOUTHERN FLORIDA

Theimer's engineers, using the Commission's MADF vehicles, acted quickly to DF and locate both of the Miami area C.I.D. transmitters.

On August 25, 1982, the Miami office notified the monitoring network that the 5106 kHz transmitter had been tracked to a ranch in southern Broward County, near Miramar. Before the engineers could inspect that station, however, the transmitter was shut off. The FOB engineers agreed among themselves to postpone the station's inspection until additional information could be obtained.

The Miami engineers were subsequently able to DF the 5106 kHz transmitter to the same Miramar site on August 26th, September 13th, and September 15th.

The Miami field engineers had similar success in tracking down the 7355 kHz operation, which was traced to a site just west of Miami International Airport in Dade County from a van which housed a mobile transmitter.

In both instances, the C.I.D. stations were using cassette tape recorders to broadcast the pre-recorded, highly polished C.I.D. programs.

The axe fell on the C.I.D. operations on the evening of September 15, 1982 when Engineer-in-Charge Theimer, Jose Salazar, and Rodolfo Pomier of the Miami field office, together with James Feagles of the Ft. Lauderdale monitoring station, busted both stations between 8:00 and 10:00 p.m.

Theimer had previously alerted the monitoring network of the impending busts and had requested that the listening posts save their tape recordings of the C.I.D. broadcasts that evening for evidentiary purposes.

A copy of the Ft. Lauderdale monitoring station's case log covering the September 15th C.I.D. broadcasts is attached at the end of this report as Exhibit B.

Upon inspecting the stations, the F.C.C. engineers discovered that the mobile transmitter operating on 7355 kHz was generating approximately 500 watts RF output into a tuned longwire antenna. The operation from the ranch house in Broward County on 5106 kHz boasted an RF output of 1000 watts, also into a tuned longwire antenna. Later reports indicated that both transmitters were modified Heathkit amateur radio gear.

Shortly thereafter, the Miami field office jubilantly notified the Chief of the F.C.C.'s Enforcement Division that both stations had been apprehended. The F.C.C., with uncommon speed, issued a News Release on September 16, 1982 to announce the stations' closings. In part, that News Release stated that:

> "The F.C.C. has closed down two unlicensed broadcast stations operating in the Miami, Florida area as part of a continuing enforcement effort against the operation of unauthorized radio stations.

ANTI-CASTRO CUBANS cont'd

"The illegal transmissions, which were identified as 'The Voice of Independent and Democratic Cuba,' were broadcast in Spanish on 5106 kHz and 7355 kHz...

"Two official Notices of Apparent Liability are being issued for violation of Section 301 of the Communications Act which requires an F.C.C. license before operation of a radio transmitter. Although this matter is currently being handled as an administrative action by the F.C.C. further unlicensed operations may be referred to the U.S. Department of Justice with a request for criminal prosecution which could result in a $10,000 fine and/or a one year jail sentence for each violation."

Obviously, the speed with which the F.C.C. announced the C.I.D. busts evidenced the seriousness and alarm with which the Commission viewed the clandestine radio scene in southern Florida.

Additionally, the Commission was still annoyed by the Justice Department's abrupt dropping of criminal charges against Comandante David, one year earlier. To some extent, the F.C.C.'s unusual News Release... issued before any Notices of Apparent Liability were issued, may have been a preemptive strike to defuse political considerations and to signal to the Justice Department the concerned attitude of the Commission regarding the cottage industry of anti-Castro stations springing forth from southern Florida.

Whatever its motivations, the F.C.C. was serious about its threat concerning any future violations emanating from the 5106 kHz and 7355 kHz frequencies. Stations in the F.C.C.'s monitoring net actively watched both frequencies on the nights of September 17th through 20th for C.I.D. broadcasts, but there were no signs of any transmissions.

NOTICES OF APPARENT LIABILITY ISSUED

On or about September 22, 1982, the Miami field office issued two Notices of Apparent Liability against Felix Lazaro Toledo, a member of the C.I.D. organization who was present at both inspections of the 5106 kHz and 7355 kHz operations. Mr. Toledo had advised the Commission's engineers at the time of the inspections that he was the responsible party. Copies of the Notices of Apparent Liability, each of which fined Mr. Toledo the sum of $1,000 were also sent to the C.I.D. organizational headquarters in Miami.

At that time, C.I.D. leader Hubert Matos declared that the stations' closure and the actions taken by the F.C.C. "benefits the tyrant, Fidel Castro, his Russian masters, and international communism..." Matos vowed that, despite the fines, C.I.D. would return.

EXHIBIT A

F.C.C.

ZABANA,
9 DE SEPTIEMBRE DE 1982
CUBA

1982 SEP 9 PM 1 50

FELCOMCOM
USA.-

FCC
MONITORING BRANCH

ADMINISTRACION DE COMUNICACIONES DE LA REPUBLICA DE CUBA SOLICITA ASITENCIA DE LA ADMINISTRACION DE LOS ESTADOS UNIDOS EN VIRTUD DEL NUMERO 342 ARTICULO 6 DEL REGLAMENTO DE RADIOCOMUNICACIONES PUNTO EMISIONES DE NATURALEZA DISTINTA A LAS DEL SERVICIO FIJO OPERANDO DESDE TERRITORIO DE LOS ESTADOS UNIDOS ESTAN CAUSANDO INTERFERENCIA PERJUDICIAL A ESTACIONES CUBANAS DEL SERVICIO FIJO PERTENECIENTES A LA RED DE COMUNICACIONES-CMNB ESTAS ESTACIONES SN LAS SIGUIENTES:

CMNB-44 CAMAGUEY
CMNB-47 C. DE AVILA
CMNB-48 C DE AVILA
CMNB-45 I. TURIGUANO
CMNB-50 NUEVITAS
CMNB-46 NUEVITAS
CMNB-49 NUEVITAS
CMNB-73 PRESA LA LAGUNA

ESTAS ESTACINES OPERAN SEGUN LISTA I DEL REGISTRO INTERNACIONAL DE FRECUENCIAS EN LA FRECUENCIA DE 7412 KHZ

FECHA EMISION INTERFERENTE : 8 DE SEPTIEMBRE DE 1982
HORARIO EMISION INTERFERENTE: 21:00--------21:37 HORA LOCAL
02:00--------02:37 G.MT.
FECUENCIA EMISION INTERFERENTE: 7412.880 KHZ.
EMISION: A3E (ALFA TRES E OO)
IDENTIFICACION: RADIO JOSE ANTONIO ECHEVARRIA

SALUDOS GENPOSTEL HABANA
DIRECCION DE FRECUENCIAS RADIOELECTECTRICAS

V
FEDCOMCOMM WSH

511490 MCDFR CU
REPLY TO THIS TELEX VIA RCA

EXHIBIT B

MONITORING NETWORK CASE LOG

LA VOZ DEL C.I.D.

DATE/TIME	SINE	REMARKS
9/10 8:00PM	RT	"LA VOZ DEL CID" UP AS USUAL ON 5106.082 BRG.
		11/191/C. SOME BCST ON 7355KHZ BUT MODULATION VERY LOW SO UNCERTAIN WHO EXACTLY IT WAS.
		PROGRAM CONTINUED UNTIL 9:40PM WHEN IT WENT OFF.
9/11 8:00-9:00PM	RT	BELIEVE THEY ARE TAKING THE WEEK-END OFF. NO ACTIVITY HEARD ON EITHER FREQ.
9/12 8:00-9:38PM	RT	SUNDAY IS NOT SACRED ONLY SATURDAY OFF ?
		5106.08 CAME UP PROPTLY AT 8:01.20 SHORTLY AFTERWARDS A CARRIER CAME UP ON 5105.6KHZ POOR COPY
		DUE TO THE IX FOR A WHILE. BRG. SAME APPROX 11/191/C
		NOT SURE JUST WHEN 7355KHZ CAME UP BUT AS EVE PROGRESSED SIGNAL GOT BETTER, BUT STILL NO NULLS
		ON OF. BEST SIGNAL ON 60/240 ANT. MADE USUAL
		IDENTS. 5106.08 OFF FIRST AT 9:35PM AND 7355.0KHZ OFF AT 9:38PM.
9/13 8:00-9:33PM	RT	5106.083KHZ UP AT 7:59PM & 7354.80KHZ UP AT 8:00PM SAME POOR BRG AS PREVIOUSLY ON 5MHZ AND NO NULLS
		ON 7MHZ. JOHN THEIMER OUT ON IT TONIGHT, INDICATED
		THE PROBABLY WOULD DO AN INSPECTION LATER THIS WK BOTH OFF AT 9:33PM
9/14 800 93	QB	5106 up 7:58PM ~~not heard on 7354.8 HEAVY QRM ON THAT FREQ. KI ALLERTED 7/14.6~~ VOZ DEL CID QSA3 BRG 120/300 UNT SURE WHEN THEY SIGNED OFF. TOO MANY ALERTS
9/15		PREALERT KI, PS, LR AT 7:45PM EST - ASK TO SAVE TAPES. STANDBY BOTH FREQS !!!
9/15		Prealert to KI PS + LR 07:45
	→	9:45 ADVISED THAT BOTH 7MHz site and 5MHz site have been inspected and closed down. Report to WA to follow from Miami office

ANTI-CASTRO CUBANS cont'd

CURRENT STATUS OF LA VOZ DEL CUBA INDEPENDIENTE Y DEMOCRATICA

As Matos predicted, the 1982 busts did not result in the end of the C.I.D. organization or its ability to transmit its professional and well-heard signals. The C.I.D. network, now boasting stations on 10040 kHz, 7350 kHz, 7400 kHz and 5106 kHz among other, continues to make nightly broadcasts to Cuba.

Though some DX enthusiasts still speculate that C.I.D. maintains transmitters in the U.S., available evidence and logic point to locations in Central America and the Caribbean as likely transmitter sites for the current operations.

We do know that despite any covert aid which may be given to the C.I.D. organization from agencies or groups in this country, F.C.C. officials expressly disavow any suggestion that they "look the other way" in order to permit the station to operate from within the U.S. without a license. ●

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* Originally appearing in the bulletin of the A.C.E. and entitled, "The 1982 Raids Against La Voz del Cuba Independiente y Democratica."

EXHIBIT B, cont'd

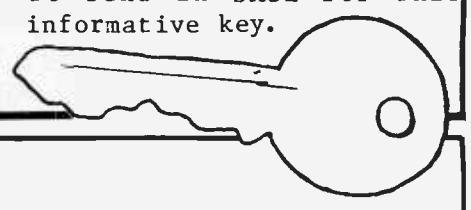
DATE/TIME	SINE	REMARKS
9/16/82	RB	SET UP 5106 + 7355 ON SPEAKER FM TO 10 PM = NIL HRD. KI ALERTED 11699.9 VOS DE CID BUT NOT IN MIAMI AREA
9/17/82	RB	SET UP 5106 & 7355 on Speaker 8PM TO 10PM NIL HRD. KI ALERTED 4479.9 VOS DE CID TONIGHT
9/18/82	RB	Set up start 7355 on Speaker FM TO 10PM NIL/HRD.
9/19/82	JR	BOTH FREQS CKD NUMEROUS TIMES, 8PM-9:45PM TONIGHT. NO SIGN WHATSOEVER OF SUBJECTS.
9/20/82	JR	CKD BOTH FREQS SEVERAL TIMES, 8PM-10PM, BUT NIL HRD.

Missing The Key For Your FCC Microfiche?

It would appear that quite a number of the new Grove FCC microfiche sets were shipped with the printed list of abbreviations omitted. If you would like this key, simply send a self-addressed stamped envelope with your request and we will be happy to send you the interpreter key at no charge.

We apologize for the inconvenience and the frustration that must have resulted trying to figure out what all of those little abbreviations meant!

Other MT readers who would like this free list to help interpret common FCC abbreviations for services, locations, emissions and other data are also invited to send an SASE for this informative key.



800 MHz: THE NEW FRONTIER

by Bob Grove

Whether we call it the 800 MHz band, the 900 MHz band, the microwave mobile band or the cellular band, that portion of the spectrum between 806-960 MHz is fast becoming the new frontier for radio communications.

Wisely, the Federal Communications Commission has proceeded with caution in allocating hunks of spectrum or assigning users in this new frequency range pending the outcome of carefully-designed studies.

A number of reserve frequency groups have remained virgin territory, but recently the FCC has begun releasing them to prospective communicators.

Some 41 megahertz of the reserve has now been allocated or proposed for allocation including:

932-935/941-944 MHz for government and non-government fixed service
944-947 MHz for broadcast studio-transmitter links and intercity relay stations
896-902/835-841 MHz for private land mobile radio
845-851/890-896 MHz for common carrier cellular services
821-826/866-870 MHz for land mobile satellite systems

The last service, land mobile satellite, may be complemented by or even substituted with spectrum at 1.5 GHz (1500 MHz). This service was originally proposed by the National Aeronautics and Space Administration (NASA) in 1982, with subsequent requests for development by Mobile Satellite Corporation and Skylink Corporation.

The new wide-area service would employ emerging technologies, including narrow band, digital data, high gain and multiple beam antennas, multiple access and modular mobile terminals. Canada is also considering a similar allocation.

The addition of 12 megahertz worth of cellular frequencies was largely spearheaded by Ameritech Mobile Communications. The FCC agreed that the additional spectrum space would keep cell-splitting costs down.

An additional 12 megahertz for the private land mobile radio services was a response to the plea from the Land Mobile Communications Council whose narrow-band channelization plan will be divided among public safety, industrial/land transportation, business radio and specialized mobile radio.

As to what constitutes narrow band technology, it is possible that the proposed 12.5 kHz plan might be reduced to as small as 5 kHz increments. The FCC is inviting comments on other splits such as 6.25, 10 and 15 kHz.

The National Telecommunications and Information Administration (NTIA), spokesman for the federal government users, indicated the likelihood of moving a number of their fixed stations from the 406-420 MHz band up to the 900 MHz authorization. This would leave the 406 MHz band open for land mobile operations only.

Denied by the FCC were several proposals for private, low-cost consumer-type communications at 900 MHz. General Electric, Mura and Airfone were among the losing petitioners for this new service. The commission felt that the proposed service was not spectrally efficient and would service very few people, according to FCC Chairman Mark Fowler●

GREAT CASSETTES FOR SWL'S

by Ruth M. Hesch

The Canadian and United Kingdom Handicapped Aid Program (HAP) have a number of professionally produced cassette tapes available for all SWLers new to the hobby or with years of experience.

HAP Identification Signals Tape (TU1S) - contains identifications and interval signals of the majority of the international broadcasting stations. The signals are listed in sound order, for instance all the bell type signals are grouped together in one section, the bird-like one in another, etc. It includes a large number of Soviet regional stations. A guide is included giving details on all the signals on the recording.

HAP Foreign Language Recognition **Course Tape** (TC2R) - has spoken examples of fifty-five different languages and includes comments by the noted language expert, author and DXer, Dr. Richard E. Wood. He gives help to pronunciation, language families and key words.

HAP Unofficial Radio Series (TCXX) - consists of six tapes which may be purchased separately or as a set.

Secret Local Radio (TC3A) - with the help of John Campbell it covers clandestine stations over the past decade around the world, including extracts from some of their broadcasts.

The London Underground (Part I-TC3B) (Part II-TC3C) - A two part, two hour documentary of alternative broadcasting in the capital of Britain. It contains peoples' opinions as to why the underground VHF-FM and AM stations are necessary. Included are voices from Radio Free London, Radio Invicta, Radio Liberty and Radio Jackie.

Famous Radio Hoaxes (TC3D) - In the fourth tape of the series will be heard actual transmitter hijacks, with extracts from programs and studio recordings including Mono Radio.

SW Pirates (Part I-TC3E) (Part II-TC3F) - Another two part documentary about the SW hobby pirates in Europe. Included are European Music Radio, Radio Utopia, Empire Radio with program extracts and interviews.

New Year Nonsense From The Netherlands (TC4N) - The 1981 New Year edition of the DX Juke Box broadcast by Radio Netherlands. It contains humorous stories, radio fluggs, etc.

Hitch-Hikers Guide to DXing - A parody of a famous radio and television series and international broadcasting itself. This series contains three tapes of six episodes originally on Radio Netherland's "Media Network" program.

Tape 1-Episodes 1,2 (TC6A)
Tape 2-Episodes 3,4 (TC6B)
Tape 3-Episodes 5,6 (TC6C)

Long Live Shortwave (TU5L) - is an introduction to the short-wave hobby, frequencies, propagation and the radio spectrum, identifications of facsimile telegraphy, RTTY, slow scan television, WWHV, etc. Henry Hatch, with 50 years experience including BBC's monitoring receiving station and senior engineer in their External Service gives the talk.

EDXC Conference, Cologne '82 (TU7E) - This includes some of the lectures and speeches with the report of the Technical Working Group.

All tapes are £2.00 ($5.00) each. The complete set of the HAP Unofficial Radio Series (TC3A through TC3F) are £11.00 ($20.00) and should be ordered as TCXX. The one exception is the EDXC Conference Cologne '82 which costs £2.75 ($7.00)

To save delivery time, the HAP Identification Signals Tape, Long Live Shortwave and the EDXC Conference Cologne '82 should be ordered directly from HAP-UK. Allow 6 to 8 weeks delivery time for all tapes.

Payment may be made by personal check drawn in sterling on a British bank or in Canadian or U.S. dollars on a Canadian or U.S. bank. Bank drafts, international money orders or postal orders are also accepted in Canadian or U.S. dollars or sterling.

For ordering or for information, write CANADIAN HANDICAPPED AID PROGRAM - P. O. Box 1143 - Pointe Claire, PQ - H9S 4H9.

For information on the U.S. HAP program send an SASE to the HANDICAPPED AID PROGRAM USA - 2105 N. Illinois - Arlington, VA 22205.

LISTEN IN TO THE WORLD'S LARGEST HAM STATION!

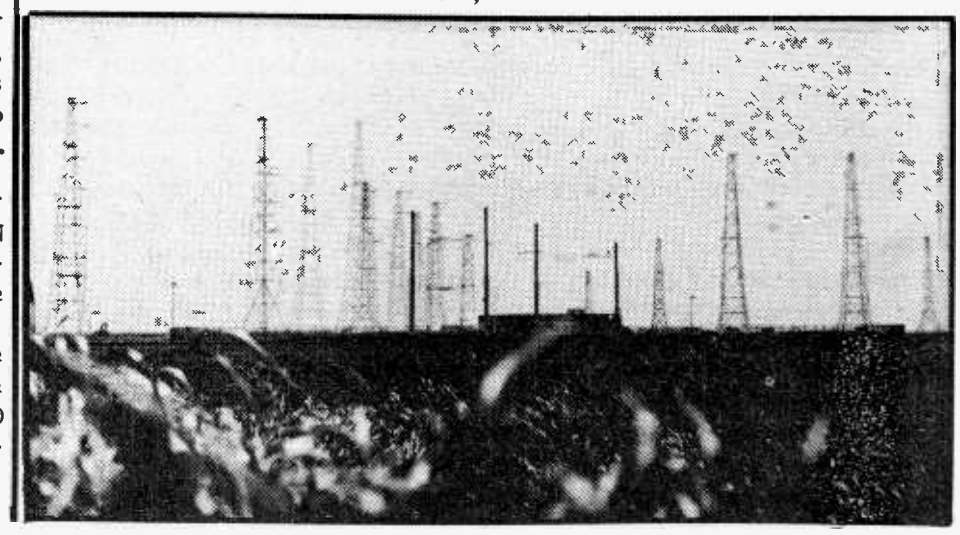
Believe it or not, this is a photo of the world's largest, most expensive, and most powerful ham station! At least for one weekend in February!

From 0600 UTC Saturday, February 16th until 1800 UTC Sunday, February 17th, the new Flevo transmitter site of Radio Netherlands will be turned over to Dutch hams for a special inaugural observation. During that period, ham transmitters will be connected to the powerful directional antenna arrays to work the world on the ham bands!

The amateur transmitting schedule will closely follow the regular English language broadcasting schedule of Radio Netherlands; that is, North American hams and SWLs will be especially favored Sunday (still Saturday night in North America) from 0230 until sign off.

Broadcast frequencies which will carry the special event on their programs to North America include 6165, 9590 and 9715 kHz. Amateur radio communications will be conducted in both single sideband and CW using the call sign PA6FLD to honor the Flevoland transmitter site experiment.

More details will be given as time grows closer on Jonathan Marks' popular "Media Network" program, heard Thursdays on Radio Netherlands' English Service.



THOSE BCB HARMONICS

MT reader and writer Dave Beauvais recently shared his loggings of AM broadcast band harmonics which he has received at his New England QTH. Note the wide distribution of these phantoms indicating the likelihood of reception over hundreds--or even thousands--of miles.

These lower frequencies are best heard at night or very early in the morning before sunrise raises the frequency of propagation.

HARMONIC, IMAGE OR INTERMOD?

A question which naturally arises is that when signals are heard in a receiver on frequencies other than where they should be, how can we be sure that it is the transmitter's fault and not the receiver's?

If you have a good frequency reference the problem is usually fairly easy to resolve.

HARMONICS

A harmonic will always be a whole multiple (double, triple, etc.) the assigned frequency. This is readily shown by the attached loggings from listener Beauvais.

INTERMOD

Produced by the mixing of two strong signals, this spurious frequency will be the arithmetic sum of the two fundamental assignments. For example, a strong local AM BCB signal on 1400 kHz may mix with the incoming signal of Radio Moscow on 11840 kHz and produce a composite signal of two simultaneous programs on their sum (13240 kHz) and difference (10440 kHz) frequencies.

A sure test for intermod is to reduce the RF gain or press the attenuator button on the receiver; the intermod will drop in strength much more rapidly than a legitimate signal on that frequency.

Intermod is the result of inadequate dynamic range on an amplifying component of a receiver or preamplifier and may be reduced or eliminated by an external preselector.

IMAGES

Every receiver has two frequencies on which a single desired signal may be heard. Fortunately, in properly-designed equipment, the second frequency, or "image," is suppressed to near non-detectability, often by designing the radio so that the image frequency would have to be above the highest frequency to which the radio tunes. This design is called "up-conversion" and is used in all well-designed receiving equipment.

Images are commonly heard on scanners where they will be detected on a frequency exactly twice the intermediate frequency (IF) away from the legitimate frequency. For example, on Regency and Radio Shack scanners with a 10.7 MHz IF, the image will be heard 21.4 MHz displaced. This is why aircraft signals are often heard in the 154-155 MHz police/fire bands.

On shortwave receivers the image is not quite so easy to predict due to the profusion of various IF's used. On inexpensive portables with 455 kHz IF's, look for the image 910 kHz away.

Thanks to Dave Beauvais' suggestion, many MT readers will now have an easier time identifying those strange signals which shouldn't be there, and know whether to blame their receivers or the transmitters!

WHEN GIANTS TALK AND PACERS BOUNCE ...a look at Air Force code names

by Bob Grove

No one would deny that the military establishment seems to have a penchant for using code names. After all, when Rawhide (President Reagan) boards Nighthawk (Marine Corps presidential helicopter) we wouldn't want a Broken Arrow (damaged nuclear weapon) reported to Cloudburst (Anacostia, MD, Nighthawk base), would we?

There seems to be a difference of opinion, even among the military, as to which names are classified and which are not. "Sky King" and "Looking Glass" (SAC command post call signs) have been in public print for decades.

Acronyms are also popular for abbreviating unwieldy names: CINCLANT (Commander in Chief, Atlantic Forces); SICOFAA (System of Cooperation Among the American Air Forces).

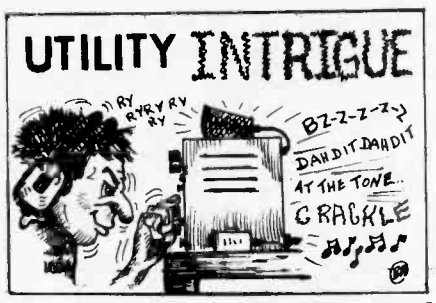
Let's take a brief look at a few other military monickers the listener may encounter as related to military communications.

PACER BOUNCE: USAF program to replace 3000 low power Collins KWM-2A and KWT-6 radios with Harris Corporation radios in 1985.

SCOPE SIGNAL: A five-phase program to upgrade and replace USAF high power HF equipment which supports the Mystic Star (presidential/VIP) network, GCCS (Global Command and Control System),

COMPLETE HARMONICS LOG 12/84

1800 (from 900) - WKXA - Brunswick, ME	2860 (from 1430) - WTTT - Amherst, MA VA
1860 (from 930) - WREB - Holyoke, MA	2860 (from 1430) - WNAV - Annapolis, MD*
1870 (FM mode?) - WVFC - McConnelsburg,PA**	2900 (from 1450) - Unidentified
1900 (from 950) - WYWY - Barbourville, KY*	2920 (from 1460) - WBUC - Buckhannon, WV
1940 (from 970) - WXQK - Spring City, TN	2980 (from 1490) - WGCH - Greenwich,CT
2020 (from 1010) - WTGC - Lewisburg, PA	2980 (from 1490) - WCDO - Sidney, NY*
2260 (from 1130) - WCBX - Eden, NC*	2980 (from 1490) - WXIT - Charleston, WV
2300 (from 1150) - WYNS - Lehighton, PA	2980 (from 1490) - WSGB - Sutton, WV
2380 (from 1190) - WKOX - Framingham, MA	2980 (from 1490) - WSTP - Salisbury, NC
2460 (from 1230) - Unidentified	2980 (from 1490) - WLOE - Eden, NC (tent.)
2480 (from 1240) - WCOU - Lewiston, ME	3100 (from 1550) - WXVA - Charles Town, WV
2500 (from 1250) - CHWO - Hamilton, Ont.*	3140 (from 1570) - WYTI - Rocky Mount, VA
2500 (from 1250) - WARE - Ware, MA	3200 (from 1600) - WLNG - Sag Harbor, NY
2520 (from 1260) - WPHB - Philipsburg, PA	3200 (from 1600) - WJSA - Jersey Shore, PA
2540 (from 1270) - Unidentified	4920 (from 1230) - WBME - Belfast, ME
2560 (from 1280) - WBRX - Berwick, PA	*QSL received from station
2580 (from 1290) - WQIN - Lykins, PA*	**WVFC thought to be a parasitic , not a harmonic. FM characteristics noted and frequency not related harmonically to their fundamental of 1540 kHz. May be drive stage in FM transmitter inductively coupling to tower on which FM antenna is mounted. Station has refused to acknowledge repeated letters requesting more information.
2620 (from 1320) - WCVR - Randolph, VT	
2660 (from 1330) - WASA - Havre deGrace,MD	
2680 (from 1340) - WGAW - Gardner, MA	
2700 (from 900) - WOTW - Nashua, NH	
2760 (from 1380) - WNRI - Woonsocket, RI	
2780 (from 1390) - Unidentified	
2800 (from 1400) - WXAM - Charlottesville,	



by Don Schimmel
516 KINGSLEY ROAD SW
VIENNA, VA 22180

Another frequency has been observed with random tone transmissions like the signal previously reported for 16630 kHz at 211408Z October. This time the transmission was noted on 13720 kHz during November 1984 at 251234Z.

The only difference between the two was where the previously reported item had appeared to be hand poked, the more recent intercept appeared to be a taped transmission because it was fast and machine-like. Although the station was on the air for a considerable period, no identification was noted.

NOVEMBER 1984 LOGGINGS

kHz	DTOI/MODE/IDENTIFICATION AND COMMENTS
6328.8	200001/RTTY 75-170/PT WX AT CANADIAN LOCATIONS
6463	130004/CW/CQ DE HKB (BARRANQUILLA COLOMBIA)
6715	050034/CW/36 DE 28 QSV K, ØØ DE 28 K
6898	251334/CW/5 CHARAC GRPS, LTRS & FIGS 2,3,8 PLUS SPEC CHARAC NYEH (MW)
6979.6	130019/CW/5F GRPS, COMMENCES EACH LINE WITH NR AND SENDS AA AFTER EACH 10 GRPS
6990	040042/CW/CT DE 28, SPANISH PT CHATTER
7405	220100/RTTY 50-170/RCC HAVANA CUBA TESTING TO ITT/WC/NY
7755	220120/RTTY 50-170 (NY END OF 7405)
10406	220200/RTTY 50-170/RY'S DE 6VU (DAKAR SENEGAL)
11068	220215/RTTY 75-425/DE LOR (ARGENTINE ALLOC)
12345	221514/RTTY 75-170/HAVANA DE CUBEMB PANAMA
13244	201601/USB VOICE/MAINSAIL FROM MIKE ALFA 570
13248	251247/CW/AFQ DE ?? (CHATTER IN UNIDEN LANG)
13365	031156/FAX/NO IDEN SENT
13423	221501/CW/OPR DE JML NIL 73 SK EE
13440	201549/CW/UJY2 (KALININGRAD USSR) DE CLN573 (CUBA)
13854	031236/FAX/NO IDEN SENT
13909	031219/CW/RPTING GRPS FROM 5L GRP TRAFFIC
13996.7	191633/RTTY 50-170/PRESS IN FRENCH
13923.1	131608/RTTY 50-170/RY'S DE Y3D5 (GDR ALLOC)
13927.6	131954/RTTY 50-170/CONTINUOUS RY'S NO IDENT
13940	132006/CW/CLP1 (HAVANA) DE CLP65 (CUBAN EMBASSY MANAGUA NICARAGUA)
13967	132021/CW/PORTUGUESE PT TRAFFIC
14617.6	101247/RTTY 50-170/QRA Y7A53 Y7A59 (GDR ALLOC)
14989	041658/CW/CLP65 (CUBEMB NICARAGUA) DE CLP1 (CUBA)
16470	052040/RTTY 50-170/? DE CLP1 (HAVANA)
16743	052023/CW/JCU DE JLRV (JAPANESE ALLOC)
16871	052020/CW/CQ DE KLC (GALVESTON TX) CALL TAPE
17460	212020/RTTY 75-170/LOL (BA ARG) DE HDN (QUITO EC)(NOTE:THIS PART OF INTERAMERICAN NAVAL NET)
18763	202005/RTTY 750170/CODED WX
18947	021648/CW/5L GRPS HAND SENT
19437.3	212039/RTTY 750170/DE LOL (BA ARG) IA NAVY NET
20065	212050/RTTY 75-170/DE PWZ33 (BRAZIL) ANOTHER FREQ OF THE INTERAMERICAN NAVAL NET

WHEN GIANTS TALK cont'd

Giant Talk (see below), Commando Escort stations, DCS (Defense Communications System), weather broadcast and command/theater requirements.

Additionally, selected HF facilities will be consolidated.

* Phase I: Closed the TAC (Tactical Air Command) Coronet Claymore command control net.

* Phase II: Pacific area upgrade

* Phase III: Giant Talk upgrade

* Phase IV: European area upgrade

* Phase V: Western hemisphere upgrade

GIANT TALK: A SAC (Strategic Air Command) network of 12 HF stations providing CINCSAC and senior SAC commanders with worldwide two-way voice communications for long range command control of tactical, reconnaissance and special missions.

HF facilities at Hickam (HI), Kadena (Okinawa), and Andersen (Guam) are expected to be closed after the upgrade.

COMMANDO ESCORT: A six-station Pacific RTTY/voice net.

CEMETERY NET: 31 low power HF stations in the European area pass EAM (Emergency Action Messages) to occupational forces in Europe; scheduled for 1988-1989 upgrade and combination with the INFORM NET to become the REGENCY NET.

INFORM NET: An alternative low power European HF net.

REGENCY NET:("Scope Force"): Approximately 600 fixed and mobile terminals designed to support NATO forces and nuclear-capable U.S. combat forces.

MISSION RADIO SYSTEM: An HF voice point-to-point communications system serving Central and South America and the Caribbean. NCS (Net Control Station) is at Howard AFB, Panama.

SITFA: With Spanish as the primary language (English alternate) and Air Force stations located at Andrews AFB (MD) and Albrook AFB (Panama), SITFA is the Interamerican HF voice and teletype network of SICOFAA (see introduction). Its purpose is to promote hemispheric solidarity among the Air Force chiefs.

Details of many of these and other HF communications systems are found in the Grove book, "SHORTWAVE DIRECTORY." ●

"Radio Marti" Has Yet To Appear

by Bill Maia, W5YI REPORT

"Radio Marti," the U.S. "news broadcasts" scheduled to be beamed to Cuba, is still not on the air even though all barriers were removed more than a year ago.

The purpose of the Voice of America-sponsored AM broadcast station, is to break the monopoly that the Cuban government has on news. The station will broadcast from Marathon Key, Florida, on 1180 kHz. Marti's staff will be located in Washington, DC, however.

Apparently the delay is caused by bureaucratic "red tape." The VOA says they are having trouble getting security clearances for its newly recruited staff. About half of the 178 staff positions have been filled.

The AM broadcast industry is bracing itself for Cuban news beamed to the United States once "Marti" becomes operational. Congress has approved a taxpayer paid "compensation plan" for U.S. broadcasters who are damaged by Cuban interference. ●

SCANNING

MICHIGAN SCANNER LAW

From time to time MT readers inquire as to the legality of using scanners in mobile applications. While several states have laws proscribing the reception of police calls by mobile radios, few states enforce the regulations. In no state is conviction more than a misdemeanor, nor does any state prohibit such a scanner to be used by a licensed amateur radio operator (except novice class).

MT reader Bob Mason, a police radio technician in Saginaw, Michigan, sent this reprint of his state's motor vehicle code section dealing with the subject to share with fellow monitoring enthusiasts.

from
MICHIGAN MOTOR VEHICLE CODE
VEHICLE WITH SHORT WAVE
RADIO SET OR TELEVISION
750.508 **Vehicles equipped with short wave length radio receiving sets. (MSA 28.776)**

Sec. 508. Any person who shall equip a vehicle with a radio receiving set that will receive signals sent on frequencies assigned by the federal communications commission of the United States of America for police purposes, or use the same in this state unless such vehicle is used or owned by a peace officer or a bona fide amateur radio operator holding a conditional, general, advanced or extra class amateur license issued by the federal communications commission, without first securing a permit so to do from the commissioner of the Michigan state police upon such application as he may prescribe, shall be guilty of a misdemeanor, punishable by imprisonment in the county jail not more than 1 year or by a fine of not more than $500.00 or by both such fine and imprisonment in the discretion of the court.

Am. 1957, Act 242.

PAGING PANORAMA II

by Bob Grove

Paging and mobile radio telephone channels abound in the VHF/UHF portion of the radio spectrum; rather than leave their discovery to chance, MT presents herein a comprehensive list of channels used nationwide along with a handy guide to tone squelch frequencies used to key up tone encoded repeaters.

A HANDY HINT:

Want to know if low band (30-50 MHz) is open to skip propagation? Listen for some of the nationwide paging channels like 35.22 and 35.58 MHz; if the skip is in, you'll hear plenty of activity!

MOBILE RADIO TELEPHONE FREQUENCIES

FREQUENCIES IN MHz

A. T. & T.

CHANNEL	MOBILE RX	MOBILE TX
ZO	35.26	43.26
ZF	35.30	43.40
ZH	35.34	43.34
ZM	35.38	43.38
ZA	35.42	43.42
ZY	35.46	43.46
ZR	35.50	43.50
ZB	35.54	43.54
ZW	35.62	43.62
ZL	35.66	43.66
JJ	152.48	157.74
JL	152.51	157.77
YL	152.54	157.80
JP	152.57	157.83
YP	152.60	157.86
YJ	152.63	157.89
YK	152.66	157.92
JS	152.69	157.95
YS	152.72	157.98
YR	152.75	158.01
JK	152.78	158.04
JR	152.81	158.07
JW	152.84	158.10
QC	454.375	459.375
QJ	454.400	459.400
QD	454.425	459.425
QA	454.450	459.450
QE	454.475	459.475
QP	454.500	459.500
QK	454.525	459.525
QB	454.550	459.550
QO	454.575	459.575
QR	454.600	459.600
QY	454.625	459.625
QF	454.650	459.650

R.C.C.

P-1	35.22	PAGING ONLY
P-2	35.58	PAGING ONLY
P-3	43.22	PAGING ONLY
P-4	43.58	PAGING ONLY
1	152.03	158.49
3	152.06	158.52
5	152.09	158.55
7	152.12	158.58
9	152.15	158.61
11	152.18	158.64
13	152.21	158.67
P-5	152.24	PAGING ONLY
P-6	158.70	PAGING ONLY
21	454.025	459.025
22	454.050	459.050
23	454.075	459.075
24	454.100	459.100
25	454.125	459.125
26	454.150	459.150
27	454.175	459.175
28	454.200	459.200
29	454.225	459.225
30	454.250	459.250
31	454.275	459.275
32	454.300	459.300
33	454.325	459.325
34	454.350	459.350

TONE SQUELCH FREQUENCIES

FREQUENCIES IN Hz

CODE	FREQUENCY	CODE	FREQUENCY
XZ	67.0	2B	118.8
XA	71.9	3Z	123.0
WA	74.4	3A	127.3
XB	77.0	3B	131.8
SP	79.7	4Z	136.5
YZ	82.5	4A	141.3
YA	85.4	4B	146.2
YB	88.5	5Z	151.4
ZZ	91.5	5A	156.7
ZA	94.8	5B	162.2
ZB	97.4	6Z	167.9
1Z	100.0	6A	173.8
1A	103.5	6B	179.9
1B	107.2	7Z	186.2
2Z	110.9	7A	192.8
2A	114.8	M1	203.5

by James R. Hay

In the past few months space has been devoted to frequencies and channels used by coast stations. Ships also communicate between themselves and these frequencies can also provide some interesting listening. Below are some simplex frequencies used for radiotelephone (upper sideband) communications between ships as well as for simplex working by some coast stations.

4143.6 kHz	16587.1 kHz
6218.6	16590.2
6221.6	16593.3
8291.1	22124
8294.2	22127.1
12429.2	22130.2
12432.3	22133.3
12435.4	22136.4

Commonly for low frequency telegraphy 512 kHz is used for intership working.

Some readers may be wondering about the system used to designate channels used for telegraphy, as commonly-heard marker transmissions from coast stations often give channel numbers where the numbering is not by any means obvious.

The following list is offered to help clarify the channelling system for calling frequencies.

Channels are clustered into groups of four. Channels 5 and 6 are common channels.

Shown below are the outer limits of each channel; the actual frequency is determined by the country concerned.

The 22 MHz band is arranged slightly differently; There are only two channels per group with two common channels (3 & 4).

ch. 1	22227-22229 kHz
ch. 2	22229-22231
ch. 3	22231-22233
ch. 4	22233-22235
ch. 5	22235-22237
ch. 6	22237-22239
ch. 7	22239-22241
ch. 8	22241-22243
ch. 9	22243-22245
ch. 10	22245-22247

The 25 MHz band has only three channels. Channel A is shared by groups I & II and is 25070-25072 kHz. Channel C is the common channel (25072-25074 kHz); Channel B is shared by groups III & IV (25074-25076 kHz).

It is hoped that this will assist in understanding calling channels.

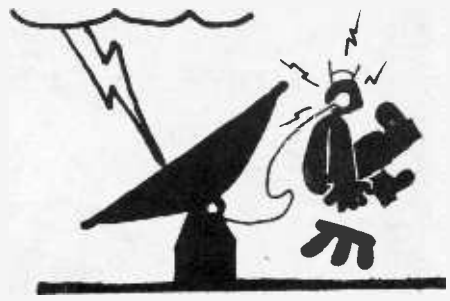
Recently I received a few loggings from Cliff Brown in Evanstown, Illinois, and perhaps readers will be interested in knowing that with his Drake R-7 he heard ZLB4 on 8504 kHz at 1200 CST (1800 hrs. GMT). Also on 8680 he received WSC from Tuckerton, N.J. (no time given). If any other readers have some interesting loggings which they wish to share with other readers, please send them to me.

Any correspondence for this column should be addressed to: James R. Hay, 141 St. John's Blvd., Pointe Claire, P.Q., Canada, H9S 4Z2.

CALLING FREQUENCIES

Group I					
ch. 1	4180-4180.4	6270-6270.6	8360-8360.8	12540-12541.2	16720-16721.6
ch. 2	4180.4-4180.8	6270.6-6271.2	8360.8-8361.6	12541.2-12542.4	16721.6-16723.2
ch. 3	4180.8-4181.2	6271.2-6271.8	8361.6-8362.4	12542.4-12543.6	16723.2-16724.8
ch. 4	4181.2-4181.6	6271.8-6272.4	8362.4-8363.2	12543.6-12544.8	16724.8-16726.4
ch. 5	4181.6-4182	6272.4-6273	8363.2-8364	12544.8-12546	16726.4-16728
ch. 6	4182-4182.4	6273-6273.6	8364-8364.8	12546-12547.2	16728-16729.6
Group II					
ch. 7	4182.4-4182.8	6273.6-6274.2	8364.8-8365.6	12547.2-12548.4	16729.6-16731.2
ch. 8	4182.8-4183.2	6274.2-6274.8	8365.6-8366.4	12548.4-12549.6	16731.2-16732.8
ch. 9	4183.2-4183.6	6274.8-6275.4	8366.4-8367.2	12549.6-12550.8	16732.8-16734.4
ch. 10	4183.6-4184	6275.4-6276	8367.2-8368	12550.8-12552	16734.4-16736
Group III					
ch. 11	4184-4184.4	6276-6276.6	8368-8368.8	12552-12553.2	16736-16737.6
ch. 12	4184.4-4184.8	6276.6-6277.2	8368.8-8369.6	12553.2-12554.4	16737.6-16739.2
ch. 13	4184.8-4185.2	6277.2-6277.8	8369.6-8370.4	12554.4-1255.6	16739.2-16740.8
ch. 14	4185.2-4185.6	6277.8-6278.4	8370.4-8371.2	12555.6-12556.8	16740.8-16742.4
Group IV					
ch. 15	4185.6-4186	6278.4-6279	8371.2-8372	12556.8-12558	16742.4-16744
ch. 16	4186-4186.4	6279-6279.6	8372-8372.8	12558-12559.2	16744-16745.6
ch. 17	4186.4-4186.8	6279.6-6280.2	8372.8-8373.6	12559.2-12560.4	16745.6-16747.2
ch. 18	4186.8-4187.2	6280.2-6280.8	8373.6-8374.4	12560.4-12561.6	16747.2-16748.8

SIGNALS FROM SPACE



by Larry Van Horn

This month, I will continue the Signals from Space series on geostationary COMSATs. The Russians filed with the ITU several years ago a new satellite system that will be of interest to us all. The system called Volna (Russian for "wave") is a seven satellite system that will probably piggyback on host satellites.

These satellites are intended for maritime and aeronautical use. Some of the frequencies filed with the ITU are for transponders in the 225-400 MHz UHF band. These transponders will probably serve the same purpose as our Fleetsatcom/Marisat/Leasat satellite constellations.

A breakdown of the Volna system is as follows:

SIGNALS FROM SPACE cont'd

Volna's 2, 4, 6, 8
Maritime Service
(similar to Marisat)
Uplink 1636-1644 MHz
Downlink 1535-1542 MHz
Aeronautical service
(similar to ESA's old Aerosat)
Uplink 1645-1660 MHz
Downlink 1543-1558 MHz
Volna's 1, 3, 5, 7
These satellites will carry the same transponders as above but in addition will carry the following UHF transponders:
Uplink 335-399 MHz
Downlink 240-328 MHz

The Russians have filed the following orbital locations with the ITU for their Volna satellite constellation system: (*indicates a UHF transponder location)

Volna 1*	Statsionar 8	24° W
Volna 2	Statsionar 4	14° W
Volna 3*	Statsionar 9	45° E
Volna 4	Statsionar 5	53° E
Volna 5*	Statsionar 3	85° E
Volna 6*	Statsionar 7	140° E
Volna 7	Statsionar10	170° W
Volna 8	Statsionar 6	90° E

The special UHF transponders will probably use the Raduga satellite as their host vehicle. The rest of the Volna system will probably use Gorizont satellite as their host vehicle.

● Another ham has appeared in the ranks of U.S. Astronauts. As it turns out he was there all the time, but just hadn't emerged into public view until recently!

John-David Bartoe, N4NYZ, is a payload specialist and will fly along wih Dr. Tony England, WØORE, in the spring. According to Roy Neal, K6DUE, the proposal to take a 10 meter SSTV along on the mission is doing very well through the review cycle.

There are now 5 hams among the astronauts; four are American and one is Dutch. Many thanks to ASR #89/90 for the above information.

● According to recent AMSAT nets, G3IOR reports that RS-6 (Russian amateur bird) is no longer. The spacecraft apparently died on Sept. 19, 1984. The satellite completed 19,778 hours of operation and 12,175 orbits of the earth.

● Speaking of Russian amateur satellites, the rumor mill has it that the Russians will soon launch the next series of RS satellites. Information receved at press time indicates the following communications setups:

RS-9	2 meters uplink 10 meters downlink (Mode A)
RS-10	70 cm uplink 2 meters downlink (Mode B)
RS-11	70 cm uplink 2 meters downlink (Mode B)

My guess for this one is that the Russians will probably try to put these satellites in a high Molniya orbit similar to the one proposed for OSCAR 10 and expect a launch late summer or fall of this year.

● Those of you interested in amateur satellites who are just beginning might want to check out the AMSAT Beginners Net each Wednesday evening at 0200 UTC on 3855 kHz. Net control for the net is KA9LCF.

Also, those of you visiting the Dallas-Fort Worth area might want to check out two interesting nets. On Wednesday evening at 0200 UTC, the Metroplex AMSAT/Packet radio net meets at 0200 UTC on the local 146.010/146.610 repeater. There is always good info passed on this net.

The Metroplex Monitor net meets on the 2nd, 4th and (if there is one) 5th Sundays of the month on the 144.500/145.150 repeater. The monitor net is devoted to hobby listening and always draws a big crowd.

See you on both nets!

● Signals from an interloper in the Amateur bands have excited UHF experts and EME'ers worldwide. What has them aghast is the 2304 MHz signal apparently originating from a Russian early warning satellite.

According to WB5LUA and KA1GT, the signals are strong enough to be heard using only a coffee can feed pointed in the general direction of the satellite! The satellite appears to be in a near polar, Molniya-type orbit.

The signal is strong enough (50 to 52 dB above cold sky) to provide a serious impediment to EME work when it is in view. Nevertheless, according to ITU allocations, the 2304 MHz band is for radiolocation work (primary) and amateur (secondary).

These early warning satellites are used by the Soviets to detect rocket plume in the boost phase of opposing missiles. These satellites transmit in the 2280-2304 MHz range. The EME'ers are only seeing a tip of the iceberg.

NASA uses the 2292-2297.5 MHz range for signals from their deep space probes, and was receiving interference from these satellites. They evidently worked out an agreement whereby the Russians would shut down the signals whenever they caused interference.

For general information, Cosmos 1217 is not the only satellite in the Soviet satellite early warning constellation. This constellation consists of 9 EW satellites spaced 40 degrees apart.

General orbital parameters are as follows: Apogee --40,000 Km, Perigee-- 400 Km, Inclination--63 degrees, Period--718 minutes.

As of the end of 1983, Cosmos 1278, 1317, 1348, 1367, 1382, 1409, 1456, 1481, 1518 were the operational satellites in the EW constellation. Several have been launched in 1984 as replacements.

Monitors might want to give these a try since they are so loud and equipment is available. Many thanks to Amateur Satellite Report for the first portion of this report.

● The HIDDEN SIGNALS ON SATELLITE TV by Harrington and Cooper recently crossed my desk. This is a very good book on all types of non-video/audio broadcast signals on TVRO. I knew there was a lot of interesting signals to be heard on the TV birds, but I did not know that there were so many.

Harrington and Cooper have put together an excellent publication that no TVRO enthusiast should be without. HIDDEN SIGNALS ON SATELLITE TV gets a three star rating from Signals from Space!

A review appeared in December's Library Shelf column and the book is sold by Grove Enterprises.

● While on the subject of good books, Bob's new SHORTWAVE DIRECTORY, 2ND EDITION, gets the Signals from Space four star award for excellence! Not only is the shortwave information outstanding, but Bob gives you some Russian and Chinese HF satellite frequencies to boot.

No self-respecting UTE listener should be caught at his receiver without the SHORTWAVE DIRECTORY, 2nd edition.

● Until further notice, letters to Signals from Space should be sent directly to MT. Uncle Sam's canoe club is sending us to warm, sunny, and wonderful Jacksonville, Florida for a four-year stint. Bob will forward all correspondence after the family and I get settled. ●

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 activites 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.

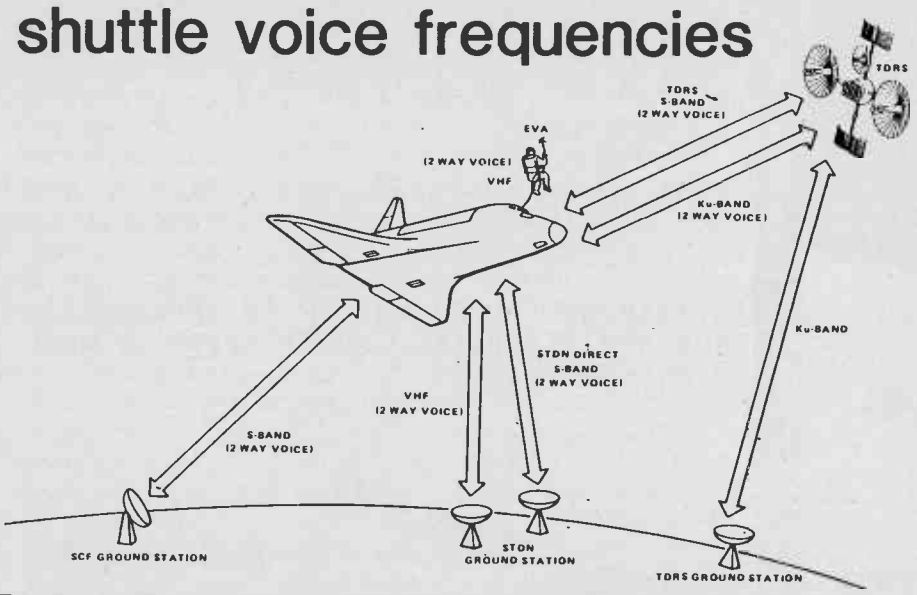
SATCOM: An Eye On The Sky

Camp Roberts, California, is home to two enormous dish antennas dedicated to satellite communications, part of the U.S. Army Communications Command, 7th Signal Command and Defense Satellite Command.

Built in 1961, the installation intercommunicates with military satellites for east/west relays of AUTOVON (telephone), AUTODIN (data), teletype, high speed computer data and DoD (Department of Defense) voice communications.

According to Major Ronald B. Seegar, station commander, if the station were to close down for only one second, the amount of information lost would, if transcribed, fill a small room!

space shuttle voice frequencies



FUNCTION/SYSTEM		ORBITER TRANSMIT	ORBITER RECEIVE
STDN PM-1	S-BAND STDN DIRECT AND S-BAND TDRS	2287.5 MHz	2106.4 MHz
STDN PM-2		2217.5 MHz	2041.9 MHz
AFSCF PM-1	S-BAND SCF	2287.5 MHz	1831.787 MHz
AFSCF PM-2		2217.5 MHz	1775.733 MHz
EVA COMMUNICATIONS (VHF)		296.8 MHz or 259.7 MHz	259.7 MHz or 298.6 MHz
Ku-BAND COMM (Ku-BAND TDRS)		Ku-BAND - 15.0034 GHz	Ku-BAND - 13.775 GHz
ATC VOICE (VHF)		243, 259.7 or 296.8 MHz	243, 259.7 or 296.8 MHz

BEHIND THE DIALS

New Grove Catalog

By now all of our subscribers should have received their new 1985 Grove catalog featuring several new products. We will take a closer look at those products but first, please make the following corrections in your catalog:

p.13: Delete the BMC video monitor; it has been dropped from the catalog due to price increases.

p.16: HX-1000; last line of ad--cigarette lighter mobile adaptor is NOT included.

p.17: MX-4000 frequency coverage is 30-59.995, 118-174.995, 406-525.9875, and 800-999.975 MHz.

p.17: HX-2000 retail price is $569.95; Grove price is $409 including UPS shipping in U.S.

p.18: Capri descrambler provides 3 watts of power in the descramble mode only; otherwise it is a passive remote speaker.

p.20: Grove Power Ant Plus frequency range is 100 kHz-1300 MHz with up to 30 dB gain (at 10 MHz).

p.28: Frequency File stock numbers; CMP3 is Timex 1000/1500 and Sinclair ZX-81; CMP4 is Timex 2068; and CMP5 is Commodore 64 cassette ($14.95).

And now, let's take a closer look at a few of the new products.

SPECTRUM PROBE ACTIVE ANTENNA

Consisting of two parts -- a remote preamplified antenna module and a desktop control box (AC adaptor included) -- the innovative product is the first in consumer history to incorporate such a wide frequency range: 10 kHz through 1000 MHz inclusively.

The preamplifier in the antenna module contains a dual-gate microwave FET for low noise and a microwave wide-dynamic-range-transistor for impedance matching. A circuit gain of over 30 dB assures performance approximately the same as cut-to-frequency dipoles at any portion of its operating spectrum.

The control box has split outputs for shortwave/long wave, VHF/UHF, and full range to accomodate simultaneous scanner and shortwave radio operation on the one antenna.

Development of such an ambitious undertaking was not easy; the first several models had serious intermodulation distortion due to the enormous gain of the device. This is one drawback of active antennas. Fortunately the intermod has been reduced to a much less noticeable level.

The delicate FET is protected from high signal levels and from nearby lightning strikes by cross-polarized input diodes, a scheme commonly used in tuners and preamplifiers.

In listening tests the Spectrum Probe rivaled the popular Sony AN-1 which is limited to the long and shortwave bands, and worked as well as the Grove OMNI on VHF and UHF.

When full-sized outdoor antennas are not practical, or when extreme portability is required, the Grove Spectrum Probe is an excellent investment at only $99.95.

POWER ANT PLUS

No question about it--everybody wants to make received signals stronger! The Grove line of preamplifiers have been popular, and now the high-performance ANT-4 Power Ant has been improved in gain, noise figure, dynamic range, and frequency coverage!

Used between the antenna connector and a scanner, the Power Ant Plus makes a noticeable difference in readability on weak or distant VHF and UHF signals. Similarly, when placed in front of a short-wave radio, signal strengths are improved.

But such broadband amplification brings with it the likelihood of interference from strong signal overload, especially from medium wave and short wave broadcasters.

If the Power Ant Plus is to be used only with a scanner, an internal provision allows the removal of frequencies below about 30 MHz: simply solder one end of a small coil to the Power Ant's antenna jack if you experience short-wave interference on your scanner bands.

If your scanner is troubled by strong metropolitan interference from FM and TV broadcasters, NOAA

weather stations, or mobile telephone carriers, a notch filter like the Grove FTR-3 is recommended between the antenna and preamp.

When used with shortwave receivers it is recommended that a passive preselector like the popular Grove TUN-3 MiniTuner be used; signals will be substantially improved without the accompanying intermod or image interference.

A novel compact wide-frequency-range antenna system is suggested in the catalog: The addition of the Grove OMNI antenna to the Power Ant Plus/MiniTuner pair results in an excellent 100 kHz-512 MHz omnidirectional antenna system for scanners and general coverage receivers.

FREQUENCY FILE COMPUTER SOFTWARE

All of us get to the point where our loggings and frequency reference material becomes quite cumbersome. This new program is available for the Commodore 64, TI-99/4A, Timex and Sinclair.

The handy logging program allows searching files for frequency, agency, location and service and has a number of labor-saving defaults and prompts.

This new frequency file program was custom developed for Grove by Ken Carpenter, well known for his amateur radio software under the name "Kentronics."

We found the disc extremely easy to use with our Commodore 64; its handy prompts and menus walked us through the powerful program with little effort. It is definitely "user friendly."

EDISON PLAQUE

While not an accessory or pertinent publication, this quaint reproduction is such a delight that it rates separate comment.

When electric lighting first began to replace gas mantles in the hotels of larger cities, patrons were understandably suspicious of the "new technology." Signs were posted to reassure the guests that no ill effects would befall them as a result of using the new light source.

Made of durable metal and finished in a satin brass with black enamel artwork and lettering, the sign reads, "This Room Is Equipped With Edison Electric Light. Do not attempt to light with match. Simply turn key on wall by the door. The use of Electricity for lighting is in no way harmful to health, nor does it affect the soundness of sleep."

Measuring 5" x 7" and drilled with four corner mounting holes, the charming sign is bound to draw attention in any ham shack or listening post!

UNIVERSAL CONNECTOR KIT

Where are those connectors when you want them? Whether you are into short wave or scanner monitoring, the Grove connector kit has now been enlarged to include two PL-259 ("UHF") connectors, two TV-type F connectors, a handy BNC/UHF adaptor (for the new Regencys), Motorola plug, UHF/Motorola adaptor, and even a small coil of low-loss RG-6/U coax for adaptor or interconnect use.

A strip of all-weather Coax Seal, crimp rings and appropriate reducers, and full instructions are also in this new, enlarged kit.

FCC MICROFICHE MASTER FILE

A common question asked is, "What's the difference between the FCC master file and FCC state index"? Briefly, the master file is unabridged, showing all data fields in the FCC files, and arranged in ascending frequency order.

The state index is an abbreviated version, arranged alphabetically by state, then city, then frequency. It is handy for quick reference to a geographical region to identify the users. The frequency callouts found in the index allow for a more detailed search in the master file.

The Grove fiche are updated periodically as the FCC releases new data, generally in the spring; the new fiche are shipped automatically when they are available.

Monitoring The U.S. Coast Guard

by Ed Soomre

USCG communications consist of search and rescue operations (SAR), maritime law enforcement, aids to navigation, and safety and security (in and out of ports). Other communications are carried out by the USCG Reserve and USCG Auxiliary. Frequency ranges start at a few kHz and go up to several thousand MHz.

OMEGA is a very low frequency navigation system consisting of pulsed transmissions between 10 and 14 kHz. Another navigational system, LORAN-C, is located at 100 kHz. The 410-532 kHz band is used for CW (Morse) marine information broadcasts, radio direction finding, and calling and homing signals, as well as the international CW distress and calling frequency at 500 kHz.

The 1.750-2.000 MHz band is divided into 14 channels (CW and voice) for disaster communications in the USA. Used primarily by state and federal agencies, USCG communications may be found there.

The 2.0-30 MHz band carries district working channels (a good overview of which are listed in the Shortwave Directory, Second Edition available through Grove Enterpises), marine information broadcasts, and search and rescue activities. Transmission modes can be USB, RTTY, CW and Facsimile (FAX).

While some USCG communications are in the 30-50 MHz band, most are experimental or point-to-point radio links. The 108-136 MHz band contains routine aircraft traffic as well as search and rescue activities. The 108-136 MHz band contains routine aircraft traffic as well as search and rescue activities. The 138-144 MHz band has some low power simplex communications as well as point-to-point links.

A large band is 156-157 MHz, VHF-FM marine radio. This band is used for distress and emergency traffic, working communications for USCG stations and vessels, marine weather broadcasts, notice to mariners broadcasts, plus communications with civilian maritime radio stations. The primary frequencies are 156.800 MHz (international distress and calling) and 157.100 MHz (notice to mariners and public information).

Some USCG communications exist in the 162-174 MHz band, including law enforcement operations, base security and intelligence, point-to-point networks and radio communication links.

The 225-400 MHz government and military aeronautical band is used for many operations; here is found the UHF international distress frequency -- 243.000 MHz.

The U.S. government 406-420 MHz is used much like the 162-174 MHz band mentioned earlier. Some USCG communications exist above 1000 MHz, but these are used as radio control links, computer data links and other very directional point-to-point systems not usually receivable by the average listener.

Most USCG communications are transmitted any time, as needed. There are some scheduled marine weather broadcasts and notice to mariner broadcasts. A good source of additional information is the Shortwave Directory from Grove Enterprises, the SPEEDX Reference Guide to the Utilities (available through SPEEDX for about $14 in the USA and $21 foreign) from SPEEDX, 7738 East Hampton St., Tucson, AZ 85715. For detailed worldwide weather broadcasts the U.S. Defense Mapping Agencies publication, "Radio Navigational Aids" is excellent. One volume covers the Atlantic and Mediterranean Oceans. The other covers the Pacific and Indian Oceans. Cost is about $11 per volume. Contact the U.S. Government Printing Office in Washington, DC.

A sample listing of USCG communications channels follows. All frequencies kHz unless stated otherwise.

410	Int'l maritime radio direction (cw)
500	Int'l distress & calling (cw)
512	Secondary int'l calling (cw)
2182	Int'l distress & calling (some AM)
2598	Canadian CG traffic lists and weather
2638	Unscheduled safety and urgent broadcasts
2670	Marine information, notice to mariners, coastal
3023	Int'l search and rescue
3120	Helicopter and coastal communications
3123	Helicopter, aircraft and coastal communications
4125	Emergency and distress
4428.7	Marine information broadcasts
5680	Int'l search and rescue
5692	Helicopter and coastal communications
5696	Helicopter, aircraft and coastal communications
6215.5	Emergency and distress
6506.4	Marine information broadcasts
8364	Lifeboat, lifecraft and survival craft (cw)
8765.4	Marine information broadcasts
8980	Helicopter and coastal comms
8984	Air, helicopter and coastal comms
11195	Air, helicopter and coastal comms
11198	Helicopter and coastal comms
11201	Air, helicopter and coastal comms
12730	Marine information broadcasts (cw)
13113.2	Marine information broadcasts
15081	Air, helicopter and coastal comms
15084	Helicopter and coastal comms
17307.3	Marine information broadcasts
22472	Marine information broadcasts (cw)
121.500 MHz	Int'l aero emergency frequency (AM)
123.100 MHz	Secondary aero emergency frequency (AM)
156.800 MHz	Int'l distress and calling frequency
157.100 MHz	Marine information broadcasts
243.00 MHz	Int'l emergency aero frequency (AM)

A good general coverage hf receiver (with SSB capability) will receive USCG communications very well. An antenna such as the Grove Skywire or active antenna is recommeneded. If a longwire is used, a tuner such as the Grove Minituner TUN-3 can peak the antenna to the receiver. For RTTY and FAX, a stable receiver with receiver incremental tuning (RIT) is needed to keep the receiver from drifting too much.

VHF/UHF transmissions can be monitored on any synthesized or crystal scanner with the capability for the VHF-FM marine band. The Regency MX-5000 or MX-7000 are suggested to be used for total coverage (including the 240-400 MHz band). Scanner antennas such as the Grove Omni II or Scanner Beam will work fine with a Grove Signal Amp II or Power Antenna for increased coverage.

Most USCG stations and vessels or aircraft will verify their voice and CW transmissions. RTTY and tactical law enforcement transmissions are rarely (if ever) QSL'ed because of the type of information contained in the transmissions. Remember, do not quote details of transmissions, but general information such as stations called and being communicated with.

Be sure to give date, time, frequency of the transmission as well as aircraft or vessel ID or station name. Send details of more than one transmission if possible. Weather broadcasts and notice to mariners (or marine information broadcasts) are good transmissions to QSL, as they are broadcast at scheduled times and details of the transmissions (which are public information) can be used in the reception report.

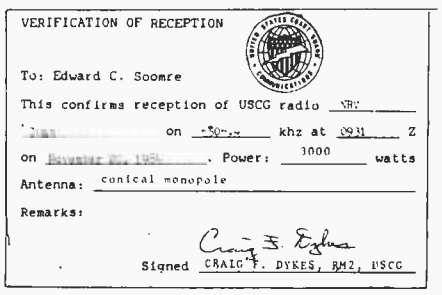
Smaller and less often heard stations can be received on 2182 kHz or 156.800 MHz, as all USCG stations must have at least these two frequencies. Other frequencies to monitor providing good reception of USCG stations are 2670, 5692, 5696, 6506.4, 8984 and 13113.2 kHz.

Always include return postage (US first class stamp) although many USCG stations will return the stamp. Most USCG stations do not have QSL cards, so have some prepared form cards (PFCs) made up. these are homemade QSL cards which include information for time, date, frequency, station location and call sign.

Usually a space is left for transmitter output power, antenna type, remarks and an authorized signature. Fill the first five items and leave the others blank (see the example card). Send the report and PFC to the Communications Officer at

US COAST GUARD cont'd

the USCG station (addresses can be found in the SPEEDX Reference Guide to the Utilities).


VERIFICATION OF RECEPTION

To: Edward C. Soomre

This confirms reception of USCG radio NMC

on [illegible] khz at 0931 Z

on November 27, 1984. Power: 3000 watts

Antenna: conical monopole

Remarks:

Signed CRAIG F. DYKES, BM2, USCG

Many USCG stations will respond quickly sending back information brochures, broadcast schedules, and even photos of their stations. Some will QSL with a letter if a PFC is not available, others will not answer.

Remember, never demand a QSL as the USCG station is not obligated in any way to respond. They are doing it as a favor to us DXers, so don't ruin a good thing. Good DXing and keep listening! ●

Listen To Communications On Your TV

by Bob Grove

Many of us are unfamiliar with the various services found scattered throughout the radio spectrum; close-by frequency ranges are often receivable on television sets. Let's see why.

In the U.S. television channels 2-6 occupy the 54-88 MHz range (there's a four megahertz vacancy from 72-76 MHz); channels 7-13 lie between 174 and 216 MHz (with no vacancies!).

UHF channels 14-83 occupy the spectrum 470-806 MHz, although in most areas 470-512 MHz has been reassigned to the land mobile services. Now let's take a look at how our TV sets can be used to hear some of the two-way intrigue in the VHF and UHF spectrum.

First, check to see if the electronic fine tuning can be defeated by a switch, thus allowing manual fine tuning without AFC (automatic frequency control). In older and less expensive TV's, a fine tuning ring is provided around the channel selector knob. It serves to adjust the frequency range of the TV tuner, and may not need to be switched in.

The amateur 50-54 MHz band is often active in larger cities across the U.S.; FM communications there may often be heard by setting the TV set to channel 2 and adjusting the fine tuning knob while listening for ham signals.

The 72-76 MHz swath is also active in larger metropolitan areas with police repeater control links, wireless microphones, industrial communications, and even radio controlled models. Fine tuning of either channel 4 (66-72 MHz) or channel 5 (76-82 MHz) should find something nearby.

Channel 6 ends at 88 MHz, the beginning of the FM broadcast band. Is there a college or university nearby? Chances are they have an educational broadcasting license operational between 88 and 90 MHz. Try fine tuning them in on channel 6.

The inland waterways (Mississippi River system) and the Gulf of Mexico have recently been awarded communications spectrum in the 216-200 MHz band; the amateur 220-225 MHz spectrum is just above that. Since these assignments are alongside TV channel 13 (210-216 MHz) there is a possibility of hearing activity in that range as well.

UHF tuners start their coverage at channel 14, 470-476 MHz; since the majority of U.S. areas now occupy the 470-512 MHz spectrum with land mobile communications, reception of those signals on most TV sets, especially in major metropolitan areas, is likely.

Finally, UHF tuners finish their coverage at 806 MHz (the end of channel 83) which is the beginning of the emerging 806-960 MHz cellular band, a busy place in larger cities.

Keep in mind that your TV reception mode is wideband FM; since all land mobile assignments are narrow band, there will be a consequent loss in audio. And selectivity is poor on the TV set; adjacent channel interference in busy areas can be expected.

Sensitivity is also much lower on television

☞

COMMUNICATIONS ON TV cont'd

sets designed to hear 100,000 watt broadcasters, not 25 watt mobiles! And TV antennas are horizontally polarized, not vertical as are all land mobile communications.

You might wish to attach a scanner antenna to the TV terminals to encourage reception on those frequencies; it would be wise to use a standard 4:1 VHF/UHF TV balun transformer with appropriate adaptors and connectors for the most efficient coupling to your TV set from the coax (unless you are one of the lucky ones using coax lead-in for your TV already!).

Naturally, a good quality wide band preamplifier will help the sensitivity situation. If you're on cable, you may not have those additional frequencies present on line, especially if the original channels have been converted. But it's worth a try! ●

Scientific Communications

(This is the first article in a series of extracts from Bob Grove's "SHORTWAVE DIRECTORY," presented as a special service to MT subscribers. Updates to the listings in the directory will be included in this series, so readers are advised to cross-check the listings in the articles with those in their directory. Corrections, deletions and additions to the listings are encouraged in order to keep the data base as accurate as possible.)

The scientific community depends upon short-wave radio for a variety of tasks which include two-way communication by voice and data, propagation sounding of the ionosphere, broadcast of time and frequency standard information, and testing of new equipment and techniques for radio communications.

This month we will take a look at several licensees worldwide who can be heard on simple receiving equipment.

ASTROPHYSICAL OBSERVATORIES

SMITHSONIAN INSTITUTION Cambridge, MA
Call Sign: KCW21/KEP78
Frequency: 20610
Mode: ASCII (110 Baud/850 Hz shift); some LSB voice

Remote Facilities (Satellite Tracking):

Arequipa, Peru	OCK25
Natel, Brazil	NA4XK (20089 kHz)
Orroval Valley, Australia	
Mount Hopkins, AZ	
Recife, Brazil	PP7A

KITT PEAK NATIONAL OBSERVATORY
Call Sign: KFK92
Frequencies: 10190 and 20875 MHz
Mode: LSB/ASCII
Remote Facility:
Inter American Observatory at Cerro Tololo (La Serena), Chile
Call Sign: XQ8AFI

ARECIBO IONOSPHERIC OBSERVATORY Puerto Rico
Call Sign: WDR71
Frequencies: 3156 4438 5060 5730 6765 7300 9040 9775 10100 10190 11400 11975 13360 14350 15450 17360 18030
Mode: ASCII
Remote Facilities:

Unknown site	WDR72
Ithaca, NY (Cornell University)	
Cleveland, OH (Case/Western Reserve University)	

CALIFORNIA INSTITUTE OF TECHNOLOGY Variegated Glacier, AK
Frequency: 5472

UTAH STATE UNIVERSITY (KK2XJT) to SIPLE STATION ANTARCTICA (KK2XJS)
Frequencies: 1000 2505 5005 10005 15010 20010 21870

UNIVERSITY OF ALASKA Fairbanks, AK (Call Sign: KM2XNZ)
Frequencies: 3192.5 5736.5 9941.5 12256.5

STANDARD TIME/FREQUENCY STATIONS WORLDWIDE

(All 24 Hours Except When Shown)

CALL-SIGN	LOCATION	FREQUENCY AND SCHEDULE
ATA	New Delhi, India	5000 10000 15000 (Weekdays 0330-1430, Sundays & Holidays 0430-0830)
BPM	Xian, China	10000 15000 (Weekdays 1600-2200, 0300-0600)
BSF	Taiwan, Rep of China	5000 15000
CCV	Valparaiso, Chile	4298 8558 (All 1155-1200, 15555-1600, 1955-2000, 0055-0100)
CHU	Ottawa, Canada	3330 7335 14670
DAM	Elmshorn, FRG	4265 (2355-0006 Oct 21-March 27, 1155-1206, 2355-0006); 6475.5 (2355-0006 March 28-Oct 20); 8638.5 (1155-1206, 2355-0006 Oct 21-March 27); 12763.5 (2355-0006 March 28-Oct 20); 16980.4 (1155-1206)
DAN	Norddeich, FRG	2614 (1155-1206, 2355-0006)
DAO	Kiel, FRG	2775 (1155-1206, 2355-0006)
EBC	Cadiz, Spain	6840 (1025-1055) 12008 (0959-1025)
FFH	St Assise, France	2500 (Weekdays) 0800-1625)
FTH42	St Assise, France	7428 (0900, 2100)
FTK77	St Assise, France	10775 (0800, 2000)
FTN87	St Assise, France	13873 (0930, 1300, 2230)
HD210A	Guayaquil, Ecuador	3810 (0000-1200); 5000 (1200-1300); 7600
IAM	Rome, Italy	5000 (Weekdays 0730-0830, 1030-1130. One hour earlier in summer.)
IBF	Turin, Italy	5000 (Weekdays 0645-0700, 0845-0900, 0945-1000, repeated hourly to 1700. One hour earlier in summer.)
JJY	Tokyo, Japan	2500 5000 8000 10000 15000
LOL	Buenos Aires, AR	5000 10000 15000 (1100-1200, 1400-1500, 1700-1800, 2000-2100, 2300-2400)
LQB9	Buenos Aires, AR	8167.5 (2200-2205, 2345-2350)
LQC20	Buenos Aires, AR	17550 (1000-1005, 1145-1150)
MSF	Rugby, Great Britain	2500 5000 10000
NAM	Norfolk, VA	5870 8090 12135 16180 (All freqs. 0455-0500, 1055-1100, 1655-1700)
NMO	Oahu, HI	4525 9050 13655 16457.5 22593 (All freqs. 0055-0100, 0255-0300, 0655-1700, 2155-2200)
OBC	Callao, Peru	8650 12307 (1555-1600, 1855-1900, 0155-0200)
OLB5	Podebrady, Czech.	3170
OMA	Libbice, Czech.	2500
PKI	Jakarta, Indonesia	8542 (0055-0100)
PLC	Jakarta, Indonesia	11440 (0055-0100)
PPE	Rio de Janeiro, Brazil	8721 (0025-0030, 1125-1130, 1325-1330, 1825-1830, 2025-2030, 2325-2330)
RCH	Tashkent, USSR	2500 (0530-0400); 5000 (0200-0400, 1400-1730, 1800-0130); 10000 (0530-0930, 1000-1330)
RID	Irkutsk, USSR	5004 10004 15004
RTA	Novosibirsk, USSR	10000 (0200-0500, 1400-1730, 1800-0130); 15000 (0630-0930, 1000-1330)
RWM	Moscow, USSR	4996 9996 14996
VNG	Lyndhurst, Victoria, Australia	4500 (0945-2130); 7500 (2245-2230); 12000 (2145-0930)
VPS8	Kowloon, Hong Kong	3842 (Odd hours 1100-2100)
VPS22	Kowloon, Hong Kong	22536 (Odd hours 0100-0900)
VPS35	Kowloon, Hong Kong	8539 (Odd hours)
VPS60	Kowloon, Hong Kong	13020 (Odd hours 0100-1500)
VPS80	Kowloon, Hong Kong	17096 (Odd hours 2100-1300)
VWC	Calcutta, India	4286 (1625-1630); 12745 (0825-0830)
WWV	Ft Collins, CO	2500 5000 10000 15000 20000
Y3S	East Berlin, DDR	4525
YVTO	Caracas, Venezuela	6100
ZLF	Wellington, New Zeal	2500 F(Wednesday 0100-0400)
ZSC	Capetown, S.Africa	4291 8461 12724 17018 22245 (0755-0800, 1655-1700)
ZUO	Olifantsfontein, S AF	2500 (1800-0400); 5000
4PB	Colombo, Sri Lanka	8473 (0555-0600, 1325-1330)

STANDARD TIME FREQUENCY CROSS REFERENCE

FREQ	STATION CALLSIGNS	FREQ	STATION CALLSIGNS
2500	FFH JJY MSF OMA RCH	8638.5	DAM
	WWV ZLF ZUO	8650	OBC
2614	DAN	8721	PPE
2775	DAO	9050	MMO
3170	OLB5	9996	RWM
3330	CHU	10000	ATA BPM JJY LOL MSF
3810	HD210A		RCH RTA WWV
3842	VPS8	10004	RID
4265	DAM	10775	FTK77
4286	VWC	11440	PLC
4291	ZSC	12000	VNG
4298	CCV	12008	EBC
4500	VNG	12135	NAM
4525	NMO Y3S	12307	OBC
4996	RWM	12724	ZSC
5000	ATA BSF HD210A IAM	12745	VWC
	IBF JJY LOL MSF RCH	12763.5	DAM
	WWV ZUO	13020	VPS60
5004	RID	13655	NMO
5870	NAM	13873	FTN87
6100	YVTO	14657.5	NMO
6475.5	DAM	14670	CHU
6840	EBC	14996	RWM
7335	CHU	15000	ATA BPM BSF
7428	FTH42		JJY LOL WWV
7500	VNG	15004	RID
7600	HD20A	16180	NAM
8000	JJY	16980.4	DAM
8090	NAM	17018	ZSC
8167.5	LQB9	17096	VPS80
8461	ZSC	17550	LQC20
8473	4PB	20000	WWV
8539	VPS35	22245	ZSC
8542	PKI	22536	VPS22
8558	CCV	22593	NMO

512-657 MHz RECEPTION ON YOUR SCANNER

Bob Parnass, AJ9S
AT&T Bell Laboratories

Articles in *Monitoring Times* and *Popular Communications* have described how one may "trick" various scanner radios into receiving frequencies they were not designed to receive. These tricks fall into 2 categories:

1. Exploiting a bug in the receiver's microprocessor firmware by entering a particular series of keystrokes.
2. Exploiting the receiver's finite image rejection by listening to simple images (e.g. to listen to frequency F, tune the receiver to F + 2 * [the intermediate frequency]).

This article describes a third technique, which permits listening in the 512 - 657 MHz range (UHF television channels 21 through 44) using radios designed to receive the 402 - 512 MHz range. The technique uses *multiple injection frequencies,* and requires no receiver modification or additional hardware.

I discovered that my Radio Shack PRO30 scanner receives the audio from TV channel 38 (619.75 MHz) when the radio is programmed for 483.5375 MHz, and from channel 32 (583.75 MHz) when programmed to 456.5375 MHz. This is also true for the Radio Shack PRO2020 scanner.

Bearcat BC100, BC210, and BC350 scanners can also receive UHF TV signals on odd frequencies, but at different programmed settings: 483.7125 for TV channel 38, and 456.7125 for TV channel 32 (Bearcat and Radio Shack scanners use different intermediate frequencies).

By checking the arithmetic, I've concluded that the same mechanism permits out of band reception on all these scanners.

The Method

In the formulas that follow, all frequencies are in units of Megahertz. To listen on a frequency *U* between 512 and 657 MHz, tune your radio to:

$$\frac{3(U) - 7(IF)}{4}$$

where IF is the intermediate frequency of the receiver.

Conversely, if you hear a strange signal when your UHF radio is tuned to *T* MHz, you may be simultaneously listening to the frequency of:

$$\frac{4(T) - 7(IF)}{3}$$

When using this technique to receive TV audio on a scanner, the signal may be weak or distorted because:

— The bandwidth of a TV audio signal exceeds that of the IF filtering in the typical scanner.

— A typical scanner radio is not as sensitive in the 512 - 657 MHz range as it is on the frequencies for which it was designed, due to the inability of the front end tuned circuits to resonate out of their normal range.

— The TV signal format maybe unconventional. Chicago's channel 44, a pay TV service, scrambles the video and transmits the audio signal using an unconventional format not known to this author. PRO30 scanners receive Chicago channel 44 audio when programmed for 510.4875 or 510.5875 MHz.

Technical Explanation

What's happening is that an injection signal with multiple constituent frequencies is being being fed to the mixer stage.

To hear the audio from TV channel 32 (583.75 MHz), the PRO30 is set to 456.5375 MHz. At this setting, the local oscillator/tripler chain is injecting a signal into the mixer stage at:

456.5375 - 10.7
= 445.8375 MHz.

This 445.8375 MHz signal is the output of a frequency tripler, whose input frequency is:

445.8375 / 3
= 148.6125 MHz.

But, in addition to this 3rd harmonic, there seems to be a 4th harmonic component present:

4 (148.6125)
= 594.4500 MHz,

which when mixed with a signal on 583.75 MHz (channel 32), produces a 10.7 MHz IF:

594.4500 - 583.750
= 10.7 MHz

Othe. Frequencies Possible

Although the scheme described in this article requires no scanner modifications or additional hardware, a multiple injection scheme forms the basis for a product already familiar to scanner enthusiasts, the Grove "Scanverter."

The Scanverter, a novel 216 - 420 MHz converter, makes use of multiple injection frequencies to accomplish what Bob Grove terms "band stacking". In the Scanverter, a local oscillator produces a signal rich in harmonics. This signal is fed into a broadband mixer along with signals from the antenna, causing several frequencies to be received at each setting of the attached scanner.

The ability to receive TV signals on a scanner is usually of little value, but there may be ways of using this multiple injection phenomenon to receive bands other than 512 - 657 MHz. I recall receiving the 787.75 MHz audio from TV channel 66 somewhere on a BC100 once!

A simple scanner modification may be possible that *purposely* distorts the injection signal in a way that produces both the fundamental frequency and its second harmonic. Theoretically, this could cause a scanner with a 10.7 MHz IF and 420 - 512 MHz coverage, to be receptive to signals in the 807.9 - 991.9 MHz band. Readers are urged to experiment to find other frequencies to which their scanners may be receptive. A well calibrated, harmonic-free signal generator would be helpful. ●

VIEWPOINT from p.3

subscribers. This loss would mean less revenue for MT and would either force a cut back in the number of pages or a cessation of publication.

I too have prejudices as to what I read and don't read. I'm mainly interested in the utilities, numbers and military articles. I began subscribing to MT nearly a year ago because it was one of just a couple publications that devoted some space to my interests. Meanwhile, there are many publications slanted toward the shortwave broadcast stations and are printed by clubs devoted to this aspect of the hobby. Should my choice of reading matter be limited further because of the selfish wishes of one unhappy reader?

I have no interest in CB radio, but if the majority of MT readers wanted a column devoted to this topic, I would go along with their desire with no complaints. Who knows? Maybe I'll learn something by reading the column.

Dear reader of MT: Let's stop writing letters stating what we don't want to read in this newspaper. Instead, let's share the interests of the other readers. That's how friendships are made. The other way only serves to ruin the hobby.

Robert Margolis
Skokie, IL

A Welcome Bit o' Foolishness

Joe Ventolo, (K8DMZ), enjoys the distinguished position of historian and writer for the USAF at Wright Patterson Air Force Base near Dayton, OH. But this doesn't stop him from having fun.

For many years Joe has edited the irreverant "GEARVAKf BULLETIN" (GEARVAKf stands for the Greater Enon Amateur Radio Vention and Kite fly), timed to be released some time around each Dayton Hamvention.

A special tongue-in-cheek glossary of technical terms, includes such items as: "Antenna Feed: A mixture of powdered aluminum, Kibbles and Bits, and cod liver oil."

"Push-pull Amplifier: An amplifier with handles on each end."

"Polarization: The sticking together of CW characters in an extremely cold environment."

For a sample send $1 to Joe Ventolo, 356 Coronado Trail, Enon, OH 45323.

Secure Installation Identified

It doesn't take long for sharp-eyed MT readers to change "unidentified" government installations to "identified"! In the January issue we mentioned a guarded facility in New Kent County, Virginia, east of Richmond ("Another Secure Installation"; page 17).

One of our inveterate correspondents has identified the facility first hand: It is a contract operation for the U.S. Navy Office of Naval Research operated by ITT-Federal Electronics Corporation.

Regarding the history behind the site, MT reader Fred Chesson provides an authoritative perspective. I stand corrected, and it is done with class!

"I had to comment on that mystery installation at White House on the Pamunkey River in Virginia (page 17). Whatever the place is now, it was never where "General George B. McClelland repelled the Union Army en route to Richmond." George B. McClellan was the Union Army Commander of the Army of the Potomac and was trying to take Richmond in the spring of 1862. White House was his main supply point of his methodical siege-train approach to Richmond which brought him to within sight of its church steeples, before the audacious Stonewall Jackson's tactical victories in the Shenandoah Valley caused Mac's change of base to Harrison's Landing on the James.

"After being relieved by Lincoln, who observed that 'Sending more and more supplies to McClellan was like shoveling flies across a barn floor (an exercise in futility),' Mac was once again reinstated as commander after Pope's defeat at the Second Battle of Manassas (Bull Run) and won a drawish victory over Lee at Antietam in September. His over-cautious pursuit of Lee led to his final departure from the battlefield, and his defeat by Lincoln in the Election of 1864 led to his political Waterloo, as well.

"McClellan was, however, a champion of military telegraphy, endorsing such innovations as artillery control from balloons and the Beardslee Telegraph, a Selsyn-like pulse-train signalling system...but that is a story, like Civil War Cryptography, all in itself!"

Identifying Unknown Broadcasters

by Patrick O'Connor

Every standard broadcast band (BCB) DX'er has had the same experience. You listen to an unidentified station, getting good material for a reception report; at identification time, the station either fades out or is lost in a blast of static or interference. Another reception report down the drain.

Not necessarily! It is quite possible to send a good reception report and get that valuable QSL without hearing a station identification. I know; I've done it!

What do you need to do to identify your mystery station? First, you have to know what stations are normally received at your location. Do several "bandscans" or several days at different times, noting what stations are being heard and what they sound like. Once you have accomplished this, you will be able to tell when a new station is being heard.

If you do have a report with no ID, look for clues. To decipher them you will need a BCB listing (NRC Domestic Log, Vane Jones North American Radio-TV Station Guide, Broadcast Yearbook), a road atlas, and a listing of FM stations. What clues do you look for?

FREQUENCY:

Take a look at the list of stations for that particular frequency. What stations would be on the air at the time you heard? Did you note a network news report or other program? Are there any local or semi-local stations that fit the description? If nothing seems to fit here, go on to the other clues.

ADVERTISING:

A good clue is local advertising. Listen for the names of businesses and telephone numbers, local professional sports teams and charities. I have verified KSL (UT) and WOSU (OH) through telephone numbers heard on the air, and WMTR (NJ) through a commercial mentioning the name of the town the merchant was located in.

Also, certain products will be advertised regionally -- you aren't likely to hear an ad for snowblowers on WBAP (TX) or a spot for Dallas Cowboys Football on WFEA (NH)!

Many stations on a state line will carry advertising from both sides. Check the location of the towns mentioned on your road atlas before jumping to a conclusion.

FORMAT:

In an effort to remain competitive, most stations adopt a specific type of programming -- a "format." It can be news and talk, top 40 music, gospel, big band nostalgia, or country-western. A good list will note the format of the stations. For example, you won't hear rock on WSM (TN), but will hear news and talk on WTOP (DC).

LOCATIONS:

Does any advertising or slogan give a specific location? A station on 750 kHz calling itself "Your host on the seacoast" would be WHEB (NH). Or, while listening to 1450 kHz, you might hear a reference to, "...junction of route 5, 9 and 91 in ... Vermont."

A look at yur BCB list shows two stations in Vermont on 1450 kHz -- WSNO in Barre and WMMJ in Brattleboro. A check of the road atlas shows that routes 5, 9 and 91 meet in Brattleboro. The tentative ID -- WMMJ.

FM CALLS:

Often an AM station will "simulcast" with an FM station. Sometimes they have different calls. Some identifications are made at the same time: "This is WECM-FM Claremont-Lebanon and WTSV Claremont." But some only identify the FM during the program and provide full ID on both only when legally required.

While listening to 1050 kHz I heard a faint ID through the noise fo WMDK. A check of the BCB list showed no WMDK. A check of the FM listing showed WMDK to be in Peterborough, NH. A return to the BCB list showed WRPT in Peterborough on 1050. A new station was thus identified.

With these techniques, it is quite possible to increase the number of stations verified. Now, it's time to write the report.

First, be sure to report the date and local time of reception in the station's local time.

You must be thorough. Get the exact wording of an ad or the exact phone number. This is where your taping of receptions comes in handy. You can replay the tape until you get all the information.

If you report a logging without an ID, be sure to tell the person to whom you are reporting it that this

(cont.)

***UNKNOWN BROADCASTER** cont'd*

is a tentative report. Don't attempt to fool him - chances are he can spot a bad report a mile away, and a fraudulant report reflects badly on ALL DX'ers!

You might include a short comparison of other stations from the same area that were being received at about the same they were being heard. You might want to note if you have heard any other stations on the same frequency, and how they compared.

If you are a member of a radio club you might indicate that, and also note that his confirmation may help you to win an award from the club if it has an awards program.

Finally, be sure to be tactful in your request for a QSL. DON'T DEMAND! Be sure to enclose a self-addressed stamped envelope (SASE) or return postage and an address label. For some smaller stations, you might want to enclose a prepared form card with a space for the responder to sign.

Utilizing all this, you should be able to increase the number of broadcast band QSL's received. Good luck, and good hunting!

Tuning In On Ham Beacons

Radio hams always seem to find a way to make the best of compromising communications conditions. With the sunspot cycle approaching low ebb, long-haul communications and even decent moderate range communications on the higher frequencies are becoming increasingly difficult.

But how about sending continuous low power beacons to alert listeners to band openings? The hams have been doing it for years, and shortwave listeners as well as scanner enthusiasts can use these beacons as propagation indicators.

We would like to thank author John Mahagan, WB4HJS, and Florida Skip Magazine, for this following informative article.

Don't Forget Monitoring 10 Meters

by John Mahagan, WB4HJS

With the decline of sunspot activity depressing many DX'ers, 10 meters is often thought of as the **last** place to be, especially if all of the published propagation charts are thought to be correct these days. But you might recall being told as a Novice that often when a band **seems** closed, it could be that nobody's transmitting and making an effort to use the limited band openings that often exist.

An answer to this is to monitor some of the several beacons operating worldwide. These operate from 24 hours a day to very sporadically. Writing the station, even if not heard, will usually result in finding out its operating schedule, and may encourage its operation over longer hours or consistent schedules like weekends. Often, monitoring that frequency with a beam will give you a good indication that your signal will get back to that region.

Typically, beacons send a brief recorded CW message, including QTH and QSL information. Many times, frequencies adjacent to beacons are excellent DX calling frequencies or DX "windows" when bands are open.

We are in need of any stations - especially DX - to continue operation of beacons they have operated in the past, or for new stations to plan to operate them as much as possible. I've recently worked DX stations that say they often hear 10-meter stateside QSO's, as well as the QRM on 11 meters. Too often it's more of the latter!

Norm Lefcourt, W6IRT, in Hollywood, California, ran his 7 watt CW beacon continuously on 28.888 MHz for about two years and received lots of QSL's worldwide from DX stations who regularly copied his QRP beacon.

For stateside stations, operating a beacon has been greatly simplified by the FCC. See section 97.87 and 97.88 for the latest rules to comply with. No special authorization is needed! You mainly need to set up your station with part 97 regulations with a memory keyer, and lower power would be recommended.

Groundplane verticals like modified CB antennas are effective if mounted high, and beams can be used to target regions of interest.

Enclosed is a list of some current 10-meter beacons to listen for. I would like to get in touch with any DX stations interested in participating in a propagation study at this low end of the sunspot cycle by operating a beacon on 10, 21 or 28 MHz. If any others are known on 10 or other bands, please notify John Mahagan, WB4HJS at 220 Covington Avenue, Apt. 73, Thomasville, GA 31792, (912)226-4522.

With some patience, 10 meters can be an exciting DX band, and operating a beacon can lead to many a surprising QSL found in your post office box!

BEACONS

Freq.	Call	Location
14100	CT3B	Funchal
14100	JA2IGY	Ise City
14100	KH6O/B	Honolulu, HI
14100	OH2B	Espoo
14100	W6WX/B	Stanford, CA
14100	ZX6DN/B	Pretoria
14100	4U1UN/B	New York
14100	4X6TU/B	Tel Aviv
28175	VE3TEN	Ottawa
28200	*	common
28202.5	ZX5VHF	Durban,S.AF.
28205	DLØIGI	Mt.Predigstuhl,W.GER
28207.5	WD4MES	Florida
28210	3B8MS	Mauritius Is
28212	ZD9GI	Gough Is.
28215	GB3SX	Crowborough, ENGLAND
28215	ZD9GI	Tristan da Cunha
28217.5	VE2TEN	Chicoutini, CANADA
28220	5B4CY	Zyyi, CYPRUS
28222	HG2BHA	Tapolca, HUNGARY
28225	VE8AA	Lake Contwoyto, CAN
28230	ZL2MHF	Mt. Climie, NEW ZEALAND
28235	VP9BA	Southampton, BERMUDA
28237.5	LA5TEN	Oslo, NORWAY
28237	JS3HL	Tsumeb
28240	OA4CK	Lima,PERU
28242	ZS1CTB	Cape Town, S. AFRICA
28242.5	R9CK	Himala, BAHRAIN
28247.5	EA2HB	San Sebastian, SPAIN
28250	Z21ANB	Bulawayo, ZIMBABWE
28252.5	VE7TEN	Vancouver, CANADA
28252	OH2	
28255	LU1UG	ARGENTINA
28257.5	DKØTE	EH26C Konstanz, GERM
28260	VK5WI	Adelaide, AUSTRALIA
28262	VK2RSY	Dural
28262.5	VK2WI	Sydney, AUSTRALIA
28264	VK3RWA	Perth,AUST
28265	VK	
28265	PY2EXD	BRAZIL
28266	VK6RTW	
28270	ZS6PW	Pretoria, SOUTH AFRICA
28272	9L1FTN	Freetown
28272.5	TU2ABJ	Ivory Coast, AFRICA
28275	VE3TEN	CANADA
28277.5	DFØAAB	Lutjenberg, W. GERMANY
28280	YV5AYV	Caracas, VENEZUELA
28284	KA1YE/B	Niantic, CT/ Henrietta,NY
28285	VU2BCN	INDIA
28285	VP8ADE	Adelaide Is.
28287	H44SI	Solomon Is.
28287	W8OMV	Tuckasegee, NC
28290	VS6TEN	Mt. Matilda
28292	JA2	Mt. Asama
28295	VU2BCN	New Delhi
28296	W3VD	Laurel, MD
28302	ZS1STB	Still Bay,SA
28312	ZS6DN	
28888	W6IRT	N.Hollywood
28894	WD9GOE	
28992	DLØNF	FJ47A
50005	H44HIR	Solomon Is.
50010	ZS1STB	Still Bay,SA
50010	ZS6STB	Vereeniging
50015	SZ2DH	Athens
50020	GB3SIX	XN49E
50025	ZS6SIX	Kempton Park
50025	6Y5RC	Jamaica
50030	ZS6PW	
50035	ZB2VHF	XW64G
50039	FY7THF	Fr.Guiana
50041	WA8KGG	NE Ohio
50050	GB3NHQ	ZL29C
50060	ZS6DN/B	Pretoria
50062	PY2AA	San Paulo
50062	W3VD	Laurel, MD
50075	VS6HK	Hong Kong

Meet'cha On The "L-Band"

Excerpted from
The W5YI Report
by Paul Maia

Ever wonder where the letter designation for certain frequency bands (such as the X-band and the K-band that radar units operate on) came from? Well, I researched this and find that RF band designations by alphabet letters was initiated just prior to World War II by the U.S. military. The plan was to refer to frequency bands by a secret code for security purposes. It apparently was a good idea because, 40 years later, the telecommunications community still can't figure it out! By 1946, the letter designations (at least certain ones) more or less became standard reference procedure.

A police radar (abbreviation for RAdio Detecting And Ranging) unit operating in the "X-band" (10.525 GHz) is actually transmitting on the X_k (X sub k) band which runs from 10.25 to 10.90 GHz.

The Department of Defense assigned sub-letters to further secretly designate bands. The radar "k-band" (24.125 GHz - right in the middle of a ham band!) is actually the K_q (K sub q) band, 20.5-24.5 GHz.

There are only two specific frequencies allocated to police radar. (97% operate in the X-band.) Police radar can not legally be set to any other frequency and detector makers that

"L-BAND" cont'd

claim additional band coverage (and some do) are just trying to out-promote competition. An L-band radar detector is useless when there aren't any L-band police radar units!

By the way, MDS (Multipoint Distribution System - over the air pay TV) operates in the "S_c-Band."

BAND	FREQUENCY:		AMATEUR BAND:	LETTER DESIGNATION:
P	225-390	MHz		
L	390-1150	MHz	420-450 MHz	L_p
S	1.55-5.2	GHz	1215-1300 MHz	L_k
X	5.2-10.9	GHz	2300-2450 MHz	S_c
K	10.9-36	GHz	3300-3500 MHz	S_a, S_w
Q	36-46	GHz	5650-5925 MHz	X_q (or C-band)
V	46-56	GHz	10-10.5 GHz	X_f, X_q
W	56-100	GHz	24-24.25 GHz	K_q(or K_l-band)
C	3.9-6.2	GHz	71-76 GHz	W
Kl	15.35-24.5	GHz		

BRITISH SIGNALS INTELLIGENCE 1945-1952

By Andy Thomas

Regular MT readers share a fascination for the world of "SIGINT"--signals intelligence, -- the professional monitoring and analysis of radio communications for intelligence purposes.

British citizens also share some interest in SIGINT because of a controversial ban on trade unions at the Government Communications headquarters (GCHZ), the British SIGINT establishment. But it is very difficult to discover what, exactly, GCHQ is up to.

It is also difficult to find out what went on in recent history; government files are released to the public only after 30 years, and often they are incomplete and heavily censored.

Although SIGINT is far too sensitive for full details to be released, we have discovered some aspects of the British effort after the Second World War.

In Britain, the wartime work of the Government Code and Cypher School (GCCS) (which later became GCHQ) is widely assumed to have been brilliant in design and faultless in execution. Not so.

The British were, in fact, only able to read some of the coded German traffic. The only reason the German "Enigma" system could be broken at all was because British Intelligence had acquired an Enigma machine and could break its codes using a battery of copies of it.

Nazi General Guderian and his crypto team with the infamous ENIGMA machine (lower left).

Even with the copies, the code-breaking method depended on sloppy operation by German radio operators so that their short-cuts could be exploited to get into the code for the day.

Although an electronic memory had been incorporated into a new codebreaking machine ("Colossus") for the first time, the electronic computer as we know it today had not yet been invented.

At the end of 1945 the British Armny had 25 intelligence officers attached to GCCS and the Royal Navy had 21. The Air Force provided the Signals personnel.

The RAF operational logs show that circuits retransmitted intercepted signals from Ottawa, Colombo, Cyprus, Germany and Australia for analysis at GCHQ in England. The Colombo circuit terminated in Britain at RAF Chicksands until 1948 when the station was made available to the USAF (they are still there today). The Colombo circuit moved to RAF Stanbridge, which is still the site of an RAF air-to-ground HF radio station.

At the Ceylon (now Sri Lanka) end, RAF Colombo received RTTY transmissions on one of the first VHF point-to-point links from Royal Navy facility, HMS Anderson, before retransmitting the intercepts on HF to Chicsands. Other transmission circuits, like those from Cyprus and British occupational forces in Germany, terminated at Standbridge.

By far the most important circuit, however, was the link between RAF Standbridge and AFHQ Ottawa. By December 16th, 1947, it was carrying an average 30,000 groups per day.

Although it is not known for certain what form the coded traffic took, it is very possible that it was high speed Morse. References in the GCCS Supply Department records of 1947 show that an experimental device was constructed using both electrical and mechanical devices, including a Morse center, suggesting that a new cryptanalysis machine was being developed. GCHQ's interest in high speed transmissions was mentioned in a requisition order for RCA AR88 receivers at about the same time.

Although some of the radio stations opened in that postwar period have been replaced, others have not. The wartime interception station at Scarborough on the east coast became the Royal Navy's primary SIGINT station, and is now thought to be an HF/DF station operating with Scottish and Norwegian stations to cover the North Sea and Eastern Atlantic.

A long-distance point-to-point station was built for the Admiralty at Culm Head in Somerset, southwest England, using highly directional rhombic aerials. It has now been handed to GCHQ.

The RAF's wartime HF/DF network, centered on Cheadle in central England, had developed a capacity to monitor Russian air-to-ground traffic by 1952. Cheadle came under the GCHQ organization then, and does now.

The excessive secrecy on SIGINT matters reveals only a patchy account of this period. Perhaps other MT readers can add to the history. If so, the author would be very interested to hear from them.

The Evolution of The Printing Telegraph

By D. K. deNeuf, WA1SPM

When robots were developed to replace skilled manpower in the fabrication of automobiles natural resentment in some quarters took place. Many workers were forced to learn a new skill or face unemployment.

An almost identical situation was created in the telecommunications field when teleprinters began to replace the Morse operators, circa 1930. Up to this time working telegraph circuits required two code operators - one to carry out the transmission and the other to receive and transcribe - or "copy" - it into written form.

Actual working printer-type telegraphs were developed by Wheatstone, House, and Hughes between 1841 and 1850 with varying degrees of success. Phelps developed one about 1860 using the features of those invented by both House and Hughes and called it the Combination Machine. (See illustration.) The latter was used rather extensively between Boston and New York City for a couple of years and was capable of transmitting over 40 words per minute.

But all of these systems were vulnerable to frequent maloperation due to

***PRINTING TELEGRAPH** cont'd*

poor circuits--efficient line insulation was yet to be developed. The damaging effects of earth currents and atmospheric discharges also upset the delicate machines.

Synchronization was also very difficult to maintain in those days. All of these systems were eventually abandoned in favor of Morse's reliable and rugged manually - operated code method.

But the desire for a printing telegraph was always present. The Associated Press hoped for an eventual system which would "pick up words at one end of the line and would type them out automatically on paper at points all along the line." Nothing really successful was developed until about 1912 when three Chicago men came up with a solution.

Jay Morton (who made a fortune from salt) supplied the money; Charles L. Krum, a refrigeration engineer and his son Howard carried out the technical development; they named it the MORKRUM machine.

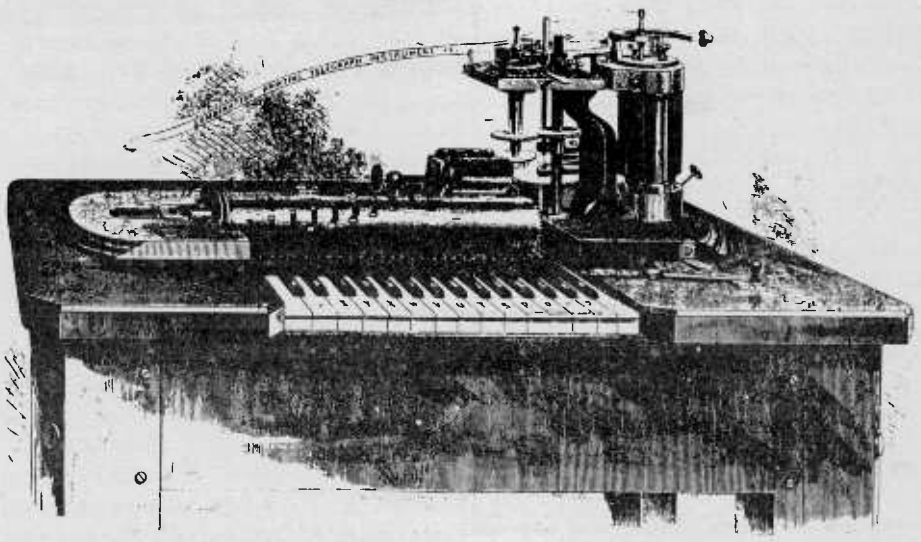
AP first tried it out on a local New York City circuit in 1913. Twenty-two years later AP replaced its last manual Morse circuit with teleprinters.

The original MORKRUM printer was extremely noisy, but this was remedied by Edward Kleinschmidt's company which substituted a "typebasket" (common in the conventional typewriter machine) for the pounding noisy typewheel of the MORKRUM.

The two concerns soon merged into the MORKRUM-KLEINSCHMIDT Corporation, and this later because the TELETYPE Corporation. Some years later it developed the TTS (TELETYPESETTER) which permitted upper and lower linecasting machines in newspapers to "set type" automatically, directly from the wire line network.

Today CRT (Cathode Ray Tube) screen and keyboards plus memory banks and computers have brought us to another milestone in telecommunications. Within another decade or so advances in automatic "voice recognition" and speech generation will surely bring us a practical "VOXGRAPH" - human speech automatically converted into printed words. Such problems as similar phonetics and differences in meanings will be overcome by refinement in "probability selection" and other techniques which will surely be developed. ●

THE PHELPS COMBINATION MACHINE



CLUB CORNER

Paul Swearingen
7310 Ensign Ave
Sun Valley,CA 91352

Along about this time of the season in most of the country, especially in southeast Kansas where I spent over three decades, a lot of people crawl inside, out of the weather, to take a breather and to take stock of where they've been the past year and try to get ready for the growing season just a month or so away.

Although our "breathing" season in the Los Angeles area starts in October when the smog blows away to Hemet and Palm Springs where the more affluent live, I've decided to take inventory now of where we've been in this column for the past nine months or so and look ahead into the future.

I'm not so sure I'm meeting the needs of the readers of this column, and I would appreciate any suggestions from you so that Club Corner could enjoy a "growing season" year-round.

I think we've covered most of the major DX clubs on this continent and many of the regional ones, but I've yet to hear from a few that I've written to for information. I could use a little help from club members whose clubs have received no notice in this column.

My main interest in DX'ing is the AM broadcast band, with foreign DX being a sub-interest in that band. Although I've DX'ed off and on since 1955, I didn't join a radio DX club until 1975 and missed out on a lot of fine, once-of-a-lifetime DX through not knowing about conditions through club bulletins. Also, I've formed some very lasting friendships through my club affiliations, some with DX'ers whom I've never met face-to-face, others whom I see for only a few hours a year at club conventions.

I wish that I had joined a club sooner, but I do have a lifetime ahead of me filled with friendships with other club members to look forward to. If you have yet to join a club, I'd urge you to spend the twenty bucks or so for a year's membership in the club of your choice.

If you're a member already, participate in one or more of the activities; correspond with other club members. If you don't like the manner in which some club affairs are conducted, don't be afraid to jump in and offer your opinion. At the worst you could be wrong and be rebuffed by other members, but you might even be the catalyst needed to effect some needed change in the way things are going. Any club needs new blood, and you could be it!

In no particular order, then, here is a summary of the major DX clubs I've written about so far. If you'd like more information, send an SASE to the clubs you'd like to know more about. Any club dues quoted are for North American DX'ers.

ASSOCIATION OF NORTH AMERICAN RADIO CLUBS - P.O. Box 24 - Cambridge, WI 53523. $7.50. Umbrella organization for NA radio clubs.

NATIONAL RADIO CLUB - P.O. Box 118 - Poquonock, CT 06064. $20.00 Broadcast band - 520-1800 kHz.

INTERNATIONAL RADIO CLUB OF AMERICA - P. O. Box 26254 - San Francisco, CA 94126. $20.00 Broadcast band.

WORLDWIDE TV-FM DX ASSOCIATION - P.O. Box 514 - Buffalo, NY 15205. $15.00 TV, FM, VHF/UHF utilities.

LONGWAVE CLUB OF AMERICA - 45 Wildflower Road - Levittown, PA 19057. $10.00 Sub-550 kHz.

CLUB ONDES COURTES DU QUEBEC - P.O. Box 37 - Succ. Youville - Montreal, PQ H2P 2V2 Canada. $29.00 - SW, MW, ham, utilties. French.

ONTARIO DX ASSOCIATION - P.O. Box 232, Postal Station "Z" - Toronto, ON M5N 2Z4 Canada. $20.00 SW, MW.

RADIO COMMUNICATIONS SOCIETY OF THE WORLD - 32 Applegate - Bennington, VT 05201. $15.00 ($10.00 for vets and handicapped). All bands; "Friendship 'Round the World thru Radio"

LA ASOCIACION DX DEL LITORAL - Casilla de Correo 26 - Villa Diego 2124 - Pcia. de Santa Fe - Argentina. $20.00 (Spanish) or $5.00 (English condensation) SW, MW, FM.

THE SOCIETY TO PRESERVE THE ENGROSSING ENJOYMENT OF DX'ING (SPEEDX) - 7738 E. Hampton St. - Tucson, AZ 85715. $18.00 SW, utilities.

EUROPEAN DX COUNCIL - P.O. Box 4 - St. Ives Huntingdon - Cambs PE17 4FE - England (3 IRC's for sample) European counterpart to ANARC.

ASSOCIATION OF DX REPORTERS - 7008 Plymouth Road - Baltimore, MD 21208. $15.00 All bands.

AMERICAN SHORTWAVE LISTENERS' CLUB - 16182 Ballad Lane - Huntington Beach, CA 92649. $18.00 SW, MW, utilities.

NORTH AMERICAN SHORT WAVE ASSOCIATION - 45 Wildflower Road - Levittown, PA 19057. $16.00 SW.

I'd like to start a new feature this issue, one which will be totally biased, opinionated, and influenced by the contents of the bulletins sent to me by various clubs. For lack of a better moniker, I'm going to call it "Things I like..." And if it gets too positive I'll provide an antidote from time to time...

THINGS I LIKE...

"Global Flashes," the bulletin of the Radio Communications Society of the World, because it's different than all the other bulletins. Although the graphic style of the 8-1/2" x 11" is best described as hodge-podge, it contains several human-oriented feature articles as well as several pleas for help -- such as from DART (Defend Amateur Radio Towers - P.O. Box 2851 - Huntington Station, NY 11746), interesting advertising from small firms and non-profit organizations, and an overall tone which can best be described as

CLUB CORNER cont'd

friendly. It also unselfishly promotes other non-profit organizations. Send an SASE to Editor George A. Greenwood at address provided in the summary above for more information about RCSW.

Remember, our deadline for the April issue of MT will be February 10. Send your news of club events happening after April 1 to the above address so that our "growing season" may continue. 73 ●

COMPUTEL PUBLISHING SOCIETY (Free catalog; 6354 Van Nuys Blvd. #161, Dept. MT, Muys, CA 91401-2696).

Intended to acquaint prospective members with the services and publications available through enrollment, the Computel catalog contains an interesting Q and A dialogue intended to inform the newcomer as to what he can expect from his association.

Everything from computer music to computer hacking seems to be included in the monthly publication--no holds barred. A library of technical and practical publications related to computers is also available for sale, including historical works on telephone engineering, computer repair, phone phreaking and computers, and so on.

INFODUTCH (Free software/hardware bibliography from Media Network, Radio Netherland Wereldomroep, P.O. Box 222, Dept. MT, 1200 JG Hilversum, The Netherlands).

Always at the forefront of information of interest to the radio hobbyist, Radio Netherlands has just published an informative booklet listing sources for and descriptions of programs and peripherals for the computer-aided listener.

Satellite tracking, RTTY/Morse decoding, ham tests, QTH locators, circuit design and more are among the topics covered.

Computer bulletin boards, equipment vendors, handy hints and other useful discussions are included.

GOVERNMENT RADIO SYSTEMS by Robert Kelty (136 pages, 8-1/2" x 11", paper bound; $15 from Mobile Radio Resources, 2661 Carol Drive, Dept. MT, San Jose, CA 95125).

This totally-revised second edition is a wealth of information for California scanner enthusiasts who enjoy monitoring military communications and two-way radio operations among federal, state and local government agencies.

Fifty-two California counties are included, with listings covering CHP, forestry, parks, corrections, universities, Treasury and Justice departments, and all military agencies.

Arranged by county and cross-referenced by user, listings include locations, channel number, and frequency of mobiles and bases.

SCANNER RADIO LISTINGS by Norman H. Schrein, Rochester/Syracuse Area (161 pages, 8-1/2" x 11", paperbound; $9.95 from Fox Marketing, 4518 Taylorsville Rd., Dept. MT, Dayton, OH 45424).

This latest in the Fox series of regional scanner directories contains the usual wealth of information verified by MT "Tune in Canada" columnist Norm Schrein.

Covering marine, public safety, business and industrial, government, aircraft, forestry and amateur radio, the book follows the same general format of previous editions in the series, cross-referenced by licensee, frequency, agency and call sign.

A BEGINNER'S GUIDE TO MAKING ELECTRONIC GADGETS, second edition by R. H. Warring (175 pages, 5" x 8", paperbound; $8.95 from TAB Books, Dept. MT, Blue Ridge Summit, PA 17214).

We like TAB Books; we don't like this TAB book. Loaded with errors, obsolete and esoteric component call-outs, incomplete schematics, mislabeled diagrams, and erroneous statements, this guide is a poor choice for the beginner trying to find a project to build that will work.

We were tempted to ignore this new release from TAB, but it would be irresponsible to turn away from a review merely because it would not be favorable.

As a second edition, the glaring errata should have been caught by conscientious editing and proofreading. It wasn't.

DALLAS/FORT WORTH FREQUENCY LIST, third edition by Ken Winters (8-1/2" x 11", paperbound with spiral hinges; approximately 5000 listings; $19.95 from Basic Computer Services, Dept. MT, P.O. Box 14193, Arlington, TX 76013).

Author Winters is not your casual scanner buff; equipped to receive any mode on any frequency from DC to daylight (literally!), Winters also is an incurable logging fanatic.

Still in preparation, the enlared third edition is much expanded over the previous sell-out -- the second edition on which this review is based.

Divided into two parts, the list may be cross-referenced by a frequency sort or by alphabetized service, and nearly all are verified by the author, from 25 kilohertz through 7000 megahertz!

Whether your taste runs from international broadcasting to satellites, public safety monitoring to amateur radio, federal government interception to cordless telephones, or aircraft to railroads, the list has something for you--if you live in the D/FW area.

Still, there is a large number of good short-wave listings which can be heard all over the country. ●

BROADCASTING. . .

HANK BENNETT ON SHORTWAVE

P.O. Box 3333
Cherry Hill, NJ 08034

As we have been promising you, here are the answers to the nostalgic stumpers that we tossed out at you late last year. The number of replies has been astounding and Amelia and I have had a lot of fun checking answers and tabulating results. Since answers are still coming in as we write this, we'll have to hold off one more month on naming a winner, at least for the first 30 questions. Ready? Here we go...

1-Joe Penner - almost everyone guessed this one.
2-Mrs. Kalabash (Calabash-?) See text further on.
3-Gang Busters. Perhaps also Sing Sing and Suspense.
4-Jay North. No one guessed his correct age. He was 34 on August 3, 1984.
5-The Cumberland Ridge Runners performing as the "Supper Time Frolic" for years and, at times, as the "Breakfast Time Frolic" on SJJD, Chicago. We had a wide variety of replies on this as well as several that were correct.
6-Inner Sanctum.
7-Marshall Matt Dillon's sidekick and deputy on "Gunsmoke," played by Ken Curtis and Dennis Weaver.
8-Don McNeill.
9-Eddie Cantor.
10-Fibber McGee and Mollie; 79 Wistful Vista. One letter said the city location was Peoria, Illinois.
11-Ed Wynn. Nearly everyone correct with this one.
12-Tennessee Ernie Ford on his old daytime radio show.
13-Raymond Burr playing the part of Chief Robert Ironside. I apologize for an error here; I said "attorney"; it was actually "detective."
14-Garry Moore.
15-Kay Kyser. I'm told it was "Kollege," not "College."
16-Lone Ranger and The Green Hornet. Perhaps also Sgt. Preston of the Yukon, The Shadow, and Father John Coughlin.
17-Bonnie Baker with Orrin Tucker's orchestra.
18-Gabriel Heatter. I thought this one would be a real stumper. Almost everyone had it correct.
19-Rudy Vallee.
20-Benny Goodman.
21-Jan Garber. Not Sinatra as some thought.
22-Kate Smith. Several guessed Dinah Shore.
23-Bobby Benson. Another toughie that really didn't fool many.
24-Wayne King.
25-Jack Armstrong from Hudson High. 100% correct for this one.
26-Little Orphan Annie. Another 100% correct. One writer tells me that this was originally begun by Harold Gray as Little Orphan Otto but that was even before my time!
27-Ireene Wicker. Several correct here even to the correct spelling of her first name.
28-Walter Winchell. Another 100% correct.
29-WLW, Cincinnati, Ohio. Several guessed Crosley in Pittsburgh.
30-Covington, Kentucky. Not Louisville, Cleveland or Toledo.
31-Secaucus, N.J. according to the picture we get of them.
32-Old Frothingslosher. No one had this one up to this time.
33-Amos and Andy.
34-Baby Snooks was played by Fannie Brice.

***HANK BENNETT** cont'd*

35-Bobby Breen and Deanna Durbin. Sorry, not Doris Day.

36-Guy Lombardo and his Royal Canadians.

We'll have the balance of the answers next time. Going back to question two on Mrs. Kalabash: I have received many, many different answers but the only one that we can really accept is the answer that was given by Jimmy Durante himself when he was once interviewed. I have a taped copy of the interview as presented by Joe Franklin's "Down Memory Lane" on WOR, New York. In his words "Mrs. Kalabash is all of the missing ones." You can take it from there.

Just at press time we learned that Gilfer Associates is coming out with a new book of 64 pages that is devoted solely to the person who is interested in our shortwave hobby but who has no idea where to begin. In speaking with the owner of Gilfer we were informed that this is more of a feeder book leading up to where my own book begins. Other details are lacking at press time but by the time you read this it should be available. You can check in with Gilfer at P.O. Box 239, Park Ridge, New Jersey 07656.

SWL WORLD WATCH

by Ken Wood

Conditions on the short-wave broadcasting bands have swung about wildly in the past month or so, ranging from superb to terrible. It pays to check the bands on a regular basis so as not to miss the good openings when they do appear. Time listed are UTC and frequencies are in megahertz.

TOP O' THE LINE - New station activity from Colombia is a rather rare event, but this is one of those times. So far, the new station is not fully identified but it's a member of the CARACOL network and is located at Puerto Carreno on the Orinoco River which divides Colombia and Venezuela.

It might be that the identification is simply CARACOL Carreno, like the CARACOL Neiva outlet at Neiva on 4.945. Sign-on is at 0900 on 5.936 and the schedule runs to a nominal 0200 sign-off. Signal strengths are generally good.

Radio Botswana has opened up a new transmitter on 4.820 where it's heard from the usual 0345 approximate sign-on. The Honduran, HRVC, still dominates this frequency, however.

Check 5.005 for the Bolivian Radiodifusora Cristal at La Paz. It can occasionally be heard up until its 0200 sign-off playing mostly "easy listening" music with only a few announcements--in Spanish, of course.

MULTI-HOPS - Radio Santiago in the Dominican Republic is currently being heard on 9.755 (but varying upwards by 20 kilohertz or more at times). Daytimes around 1700 and also in the evenings local time. It's an all-Spanish format.

Check at 0600 for the sign-on of Radio Mali at Bamako on 4.783; it's one of the less-often-heard Africans. French and local languages are used.

XEUJ at Linares, one of the rare Mexicans, has been making appearances again. It's occasionally heard on 5.982 around 1100. Speaking of the Mexicans, Radio Huayacacotla on 2.390 is still active despite reports that it was to cease its short-wave operations.

If you haven't logged this station yet, give it a try. Early evenings around 0000 or 0100 seem to be the best bet, although in most areas of the country the signal will not be strong.

Radio Nacional de Venezuela is showing up again on 9.540 with its Spanish programming running until 1200 sign-off.

The station has a broken schedule so check also in the late afternoons and early evenings, although we haven't had a chance to listen then.

Radio Novecientos Ochenta (formerly La Voz del Tigre) on 3.255 (variable) is now being heard again from around 0200. It's in the town of El Tigre, Venezuela.

One of the regular Venezuelans is La Voz de Carabobo on 4.780, usually heard in Spanish with fair to good strength up to its 0400 sign-off time.

From Caracas, Venezuela, Radio Rumbos continues usage of 9.660, in addition to its long time and continued usage of 4.970.

Radio Southwest Africa in Namibia can be heard with a fairly good signal level during good African conditions on 3.295 around 0200 and later, in English and often with U.S. pop music.

Radio Pyongyang, North Korea is receivable with its North American broadcasts around 1200 on 9.745 and 9.977, although the strength is nothing to shout about if you don't live on the west coast.

Check the early morning hours from 0800 onwards for the Solomon Islands Broadcasting Corporation, using both 5.020 and 9.545 for its English programming.

This is a local service so it can make for some interesting listening when conditions are bringing in an easily read signal.

The Broadcasting Service of the Kingdom of Saudi Arabia was recently noted on 5.875 around 0300 in Arabic with long periods of Arabic music and chants. Occasional interference from utility stations may blanket this one from time to time.

Radio Uganda signs on at 0300 in English on 5.026 and can also be heard in the late afternoons in eastern sections of the U.S. around 2200 or earlier.

Look for Liberia's ELBC on 3.255 from 0500 sign-on in English. This one, too, can be logged in the late afternoons around 2200 or 2300 before it signs off.

Radio Nacional de Chile continues to be a regular on 15.140 in the daytimes, switching to 9.530 in the evenings, with a mixture of music - from Latin things to U.S. popular tunes.

English news from Paris can be heard on Radio France International, via the relay station in French Guiana at 0315 and 0345 on 11.670. Check 7.135 for at least one parallel frequency.

Radiodiffusion Television Tunisienne, Tunisia is often heard on 7.225 after sign-on at 0430, in Arabic.

Another Latin American governmental station with a mostly music format is Radio Nacional de Paraguay, still providing good signals on 9.734 as early as 0900 and also in local evenings.

One of the higher-frequency Peruvians is Radio del Pacifico at Lima on 9.675. Try around 1100; programming is entirely in Spanish.

Another Colombian providing consistantly good reception is La Voz del Llano at Villaviciencio on 6.117 late into the evenings. Actually, it may often be on a 24 hour schedule.

Other Colombian possibilities are La Voz de la Centauros on 5.955 to 0400 sign-off, and Radio Macarena on 5.975 about the same time as well as around 1000. Both are in Villavicencio.

Equatorial Guinea's Radio Nacional at Bata often shows up on 4.926 from 0500 sign-on in Spanish, with local and U.S. music. The other local service at Malabo is frequently heard on 6.250, also with an 0500 sign-on.

The so-called international service continues on 15.107 up to 2200 sign-off, carrying U.S. religious programming.

Look for Radio Zinica in Bluefields, Nicaragua using 6.120, often in the clear in the early mornings or in the evenings. Before the revolution this one went by the name "Radio Atlantico."

The Far East Broadcasting Association from the Seychelles Islands has been using 11.895 for English to Africa and Asia around 1500. Signal strength will likely be on the weak side, at best.

Radio Algiers, Algeria is being noted in English to 2030, followed by programming in Spanish on 9.640 (variable).

7.160 may produce Trans World Radio at Monte Carlo, Monaco with their sign-on at 0625, followed by English language religious programming.

Radio Universo, Curitiba, Brazil can usually be heard best in the wee hours on 6.020 and 9.545, all in Portuguese and with some religious programming.

Still another religious station is Radio Luz y Vida in San Marin, Honduras on slightly variable 3.250 around 0200, all in Spanish.

ORTN, Niger occasionally holds forth on 3.260 from its 0530 sign-on in French and local languages. Often it's a no-show, but when African conditions are extra good it should be there.

From the South African homeland of Transkei, Capital Radio uses 3.930 and can often be heard amidst the ham QRM around 0400, with music and local commercials.

Another station which has to fight ham QRM is order to make it through is the Falkland Islands Broadcasting Station which has made the seasonal switch from 2.380 to 3.958. Try the 0900 sign-on when the hams should be less active.

0130 is a good time to try for Radio Afghanistan via one of the USSR transmitters on 4.740. Programs are in local languages.

Argentina's Radio Rivi-

SWL WORLD WATCH cont'd

davia, a single-sideband feeder supplying programming to other Argentine local stations, is now heard on 4.588 around 0030.

Another Brazilian is Radio Globo at Rio de Janeiro, often caught on 11.805 before the 25 meter band fades out for the night. All Portuguese programming.

15.120 is an active frequency for the Voice of Nigeria for most of the daytime hours, using English for much of the time. During the evening you'll hear it from 0500 sign-on on 7.255.

Radio Mogadishu in the Somali Republic, easily heard a couple of years ago on 6.790, is a little more difficult now that they've moved to 7.200. Sign-on occurs just before 0300 and programming is in local languages.

Radio Nepal is now using 7.165 and west coast DX'ers might get a shot at this one local mornings around 1400.

One of the newer Bolivians is Radio San Jose, Oruro, signing on at a variable time after 0900 on 5.985 although it operates inconsistently.

There's also a strong numbers station here which often runs a broadcast prior to 1000 and there is WYFR with a Taiwan relay from 1000, blocking the channel.

One of the tougher logs from Chad is Radio Moundou on 5.288 (variable) which can sometimes be heard from around 0400 broadcasting in French.

Another African providing good reception lately is the Angolan, Emissor Regional de Benguela, in Portuguese from sign-on just before 0400 on 5.042 (variable).

CHALLENGER - This month's tough one to try for is Radiodiffusion de la Republique Rwandais from Kigali, Rwanda. It uses 6.055 with 50 kilowatts which makes it sound fairly easy but it is rarely logged on that frequency. A better chance exists with the five kilowatt outlet on 3.300.

Sign-on is at 0300 in French with programming also in Swahili and the local language, Kinyarwanda. The station has a rather attractive QSL card and correct reception reports are usually confirmed.

The station's address is B.P. 83, Kigali, Republic of Rwanda.

ONE HAND WASHES THE OTHER - If you DX the shortwave broadcast bands we hope you'll send in your loggings to SWL World Watch in care of Monitoring Times headquarters. We'll print as many as we can fit in and try to take on your questions and news items as well. Hope you'll participate and join in the fun!

JEEVES SAYS - The past few weeks have brought some superb reception conditions, particularly from 60 and 90 meter African stations. If you live in a part of the country where many of the Africans aren't normally heard, now is the time to go after them, particularly in the local evenings.

Catch the sign-ons at 0300, 0400, 0500 and 0600. Signal strengths from Zambia, Senegal, Ghana, Botswana, Swaziland and many others have been outstanding of late and may continue at good levels off and on for the remainder of the winter DX season.

Til next month, 73, Ken. ●

ENGLISH LANGUAGE BROADCASTS
by Tom Williamson

(Opinions expressed are solely those of the author.)

EUROPEAN TOUR!

Let's take an updated look at the radio fare in English coming our way from Europe--not just the high-power stations, but some of the less frequent visitors to the dial.

ALBANIA: The People's Republic shows signs of "opening up" to Western contacts. However, this doesn't seem to have made much difference to their radio programming. It still tends to be a mixture of straight Communist propaganda with a heavy emphasis on peace activities, combined with detailed accounts of the interchange of visits between party officials of other countries.

Altogether still rather dull fare, but in a "technical" way interesting to experience the style and seriousness of Iron Curtain politics. Best signals with me are around 0000 on the 41 meter band.

AUSTRIA: ORF is famous for its recognizable interval signal--a few bars from the famous Strauss waltz "Blue Danube"! They have interesting programming with travel and cultural items, but some dreary emphasis in the "news" about economic matters.

Signals are variable, but 5945 kHz can be very good, and is certainly the more consistent channel in the evening.

BELGIUM: The Flemish network of BRT operates the English language short-wave service, and they certainly have much better signals these days compared to a few years ago.

Both morning and evening transmissions are quite well heard at 1400 & 0030 UTC. Often the 16 meter station on 17610 kHz has a blockbuster signal in the morning, dependent upon propagation conditions. Good standard of programs, and if you want to you can write and ask to join their listener "club."

BULGARIA: Radio Sofia has been around a long time! They have one of the better signals from the Iron Curtain region, and a "friendly" announcer style.

The program line is propaganda of the usual type, but in addition they have more innovative sections such as the DX program. Overall, the 9700 kHz channel is the best heard.

CZECHOSLOVAKIA: Radio Prague has one of the best signals from Europe, often heard on 5930 kHz at 0100 and 0300 UTC. Programs are better than average, with some interesting musical and historical items.

The standard of announcers is high, with some very good English being heard from one or more lady announcers (this is not always the case with foreign stations when intelligibility suffers due to an announcer's accent).

FRANCE: (See schedule for evening relay via Cayenne.)

"Paris Calling Africa" remains one of the best programs on the air, with really "in-depth" news of Africa and some super "bouncy" music.

Despite the current difficult propagation time, RFI continues to be adaptable to ionospheric changes and currently offers 16/19/25 meter band frequencies for this program at 1600 UTC.

Quality of transmission is excellent and, with perhaps an occasional exception, the standard of announcing is very good.

FINLAND: Helsinki still put out an interesting broadcast, but they are terribly dependent upon atmospheric conditions with only the 15400 kHz signal available.

EAST GERMANY: RBI has some good programming to offer including talks about famous historical sites, political lives of their leaders, and listener questions and answers. BUT the signals are not too good, with much fading noted at my location; 6080 seems to be the best of a bad bet.

WEST GERMANY: Deutsche Welle, the Voice of Germany from Koln (Cologne), is one of the outstanding signals on the dial. Technically, in strength, quality, and reliability they are an example to the rest of the world. Their programs also are of originality and interest, with everything from history to cooking; and music to sport.

BUT--oh dear--do they both you like they do me? Those announcers with their "phoney" American accents really get me down! I guess that's just a personal problem of mine. Never mind; you can rely on hearing the signal especially well on 6040/6085 kHz.

GREECE: ERT, the Hellenic Broadcasting Corporation, is something of an "in-and-outer" in respect to their signals. They do seem to be there on the dial most days, but not too often at entertainment strength. Which is a pity, since their musical items are quite enchanting! I guess it depends on whether you like Greek music--it's sure different!

HUNGARY: Well I suppose they're still on the air! 'Nuff said! A really awful signal performance record, inaudible at my location. Supposed to be heard on 6025/9585 kHz.

ICELAND: Now here's a strange one! From time to time they pop up on sideband (!) on 13797 kHz. Programs seem to consist of endless talks in Icelandic, with some occasional music. I'm not sure if English is used, but I seem to recall having read somewhere that it has occasionally been heard. Treat this as an off-beat "maybe"!

ITALY: Restricted transmissions these days--0100 on 9575, sometimes! Often not audible; famous "bored lady announcer" whose excellent diction doesn't seem to be accompanied by enthusiasm. A country with a wealth of musical talent! Try them out.

(To be continued next month.)

SCHEDULE OF ENGLISH BROADCASTS FROM EUROPE
(Courtesy ODXA-DXO)

ALBANIA	0000-0030	7060
	0130-0200	7120
	0330-0400	6200
	1230-1300	11960
	2200-2230	9480
AUSTRIA	0130-0200	5945
	0430-0500	5945
BELGIUM	0030-0130	5910
	1400-1445	17610
BULGARIA	0000-0100	9700
	0400-0500	7115
	1930-2000	9700
	2130-2200	6070
		7115
	2230-2330	9700
CZECHOSLO-VAKIA	0100-0200	5930
		7345
	0300-0400	5930
		7345
FRANCE	0315-0300	7135
		9790
	Cayenne relay	11670
	1600-1645	11705
		15315
		17620
		17795
FINLAND	1400-1430	15400
GERMANY, E	0030-0130	6080
	0230-0315	6080
	0330-0415	6010
		6080
	2315-000	6070
GERMANY, W	0100-0150	6040
		6085
		9565
	0500-0550	5960
		6110
GREECE	0000-0150	9420
		9865
		11645
	0200-0350	9420
		9865
		11645
	1200-1250	9420
		11645
		15630
	1500-1550	9420
		11645
		15630
HUNGARY	0300-0330	6025
	2100-2130	9585
		9835
ITALY	0100-0130	5990
		9575

RADIO SUTATENZA

..Education in Colombia

By Peter de Hart

It is late in the afternoon. Just beyond the door of a simple hut in a mountainous Colombian village, a small short-wave receiver lies unattended on the ground. The few people who pass within its hearing distance seem oblivious to its message.

But later on, when farmers have returned from the fields and supper is over and evening falls, families will gather around the set and receive instruction which can change their way of life.

How can one grow and be nourished by previously-untried vegetables? How should a latrine be constructed? What is the first step in organizing a basketball team? How can coffee seedlings yield in two years instead of three? The radio, the only visible evidence of technology for miles, will serve as both the instructor and the link with a modern changing world far beyond this mountain village.

This is the role of the short-wave receiver in a Colombian radio school, one of hundreds scattered throughout the mountains of this interesting South American land.

Those of us for whom short-wave listening is a daily occurrence would probably agree that the line between entertaining and educational programming heard on the international bands is fine, indeed. Yet the short-wave station or network which operates for the sole purpose of education is a rarity - except in Colombia where ACPO, the Accion Cultural Popular network, conducts a daily educational "crusade against ignorance."

Known to many North American listeners simply as Radio Sutatenza, ACPO operates daily from 4 a.m. to 11 p.m. local Colombian time, or 0800 to 0300 UTC. Founded in 1947 by the priest Father Salcedo, "Radio Sutatenza Bogotá," from where most of the ACPO programs originate, structures its programs and correspondence studies around several objectives:

1. Motivate Colombia's rural farms toward development.
2. Guide the people in terms of well being. Stimulate the physical, intellectual, spritiual and creative sentiments and abilities of individuals. Help people discover their social roles.
3. Diminish the distance between social classes.
4. Organize and develop the local, rural community by creating bonds between people.
5. Increase agricultural production by use of new agricultural techniques.

The radio courses are administered under the guidance of leaders trained by the ACPO network. The courses are described as "Basic" and "Progressive." The "Basic" radio course teaches the rural population fundamentals of the alphabet and arithmetic. A 90 lesson semester is devoted to this material. The "Progressive" course, which takes a year to complete, involves courses in health, lectures and writing, math, economics and life work. Themes on geography, history, civics, education, economics of the home and human relations are regularly assigned.

The Accion Cultural Popular network is also strongly committed to the use of news as a life-improving force. It is hoped that as Sutatenza news creates a flow of opinion, it will generate interest in national events and unity as well. Hopefully the ultimate effect will see the farmers have an influence beyond their rural sphere.

While all programming is naturally presented in the Spanish language, the programs of the ACPO network are interesting enough to justify encouraging non-Spanish speakers to cultivate a new language. The daily schedule reads as follows (information on weekend transmissions was not provided):

cadena sutatenza

PROGRAMACION CADENA SUTATENZA BOGOTA

LUNES A VIERNES

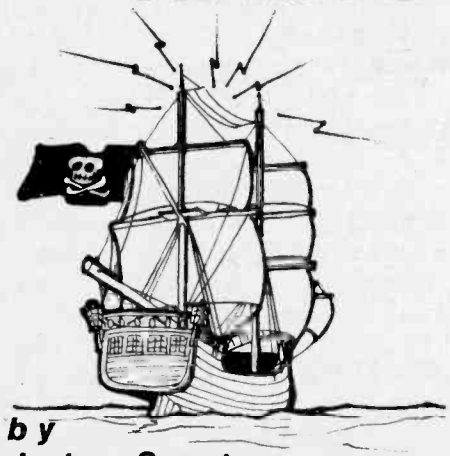
A.M.	
4:00-4:45	Buenos Dias
4:45-5:45	Improving Life
5:45-6:30	Buenos Dias
6:30-7:30	News from Radio Cadena National
7:30-8:00	Sutatenza News
8:00-8:30	Sutatenza Music
8:30-9:30	Sut. Memorandum
9:30-12:00	Sut. in Motion
P.M.	
12:00-12:30	Sutatenza News
12:30-1:00	Sports
1:00-1:45	News
1:45-2:00	Talk with the Family
2:00-3:00	Restful Music
3:00-6:00	Life in the Afternoon
6:00-7:00	Improving Life (course)
7:00-7:30	Sports
7:30-8:00	Sutatenza Music
8:00-8:30	News from Radio Cadena National
8:30-9:00	Sutatenza News
9:00-9:30	Monday: CIMPEC Tues-Thurs: Letters and Music of Colombia Friday: Inside the Plain
9:30-10:00	Aqui R.S./84
10:00-10:30	Sut.to the World
10:30-11:00	Radio National Cadena News
11:00	End of transmission

The ACPO network transmits from the cities of Bogotá, Medellin, Magangue and Barranquilla.

It should be noted that in this Pennsylvania location, 5095 kHz, a frequency noted in the 1984 WRTVH but never announced by ACPO Bogotá, is extremely strong here on a nightly basis. 6075 kHz is to this point unheard in this location.

"ACPO, Radio Sutatenza Bogotá" serves as an important educational broadcaster. Its programs show a high degree of dedication to a fundamental philosophy of education to which it subscribes. An extremely willing and cooperative correspondent as well, ACPO provides North American listeners with yet another of the seemingly endless varieties of wholesome interesting programming so characteristic of short-wave radio.

PIRATE RADIO



by John Santosuosso

AFGHANISTAN: While the event was largely ignored by the American media, a November 26 attack by Afghanistan's Mujahideen resulted in three rockets hitting the Radio Kabul compound. The extent of damage is not known.

KPF-941: From "Magic Media's" Dave Beauvais comes an interesting report on a station identifying as KPF-941. It claims to be serving the Yonkers, New York, area and announces a Box 327 Hastings-on-Hudson, NY, address.

At sign-off KPF-941 says it is authorized by the FCC and has a power of 100 watts. A fairly regular schedule from 4:00 p.m. to 2:00 a.m. EST is maintained on the frequency of 1622 kilohertz.

The station anounces a Yonkers phone number, plays classical as well as other music, and operates a community bulletin board. The announcers are quite professional and say they thought their city deserved better radio than the commercial stations were providing.

Dave's theory is that this may indeed be a licensed "remote broadcast secondary service" station, a type of operation authorized by the FCC last year. These stations are intended for such purposes as off-air network news feeds.

PIRATE RADIO cont'd

However, the folks at KPF-941 seem to have found a use for their station which never occurred to the FCC! Thus we have the bizarre case of the "legal pirate."

If you have information about this operation, or can check the FCC microfiche for the allocation of KPF-941 on 1622, then please get in touch with Dave Beauvais at P.O. Box 695, Amherst, MA 01004. This editor would also like to hear from you via Monitoring Times.

NICARAGUA: Is mail from Nicaragua to the United States being monitored after it leaves that country? If you have information about this please contact me via Monitoring Times. Your confidentiality will be respected.

FEMALE PIRATE: Our good friend Havana Moon reports reception of a lady pirate identifying as WYMN. The station was logged on 7435 kilohertz, December 8, for several hours beginning at 0500.

In addition to music, the program included commentary favorable to the women's liberation movement. The signal was quite strong.

There have been a few women pirates in Europe, but this is the first we have heard of in the United States.

And for those who keep wondering, no, I definitely am not Havana Moon, although several people keep on insisting that I am! He is a good friend, and I wish I had as many contacts as he, but I am not Havana Moon!

THE ARTHUR REPORT: John T. Arthur is unable to bring you "Programming Perspective" this time, but we hope to have it back next month. Instead, John has a little survey for you.

Send him the name of your most and least favorite pirate station (just one each), and be sure to include your reasons why you selected these stations. We will print the results in a future edition of this column.

Send your votes to John T. Arthur, P.O. Box 5074, Hilo, HI 96720.

John has also filed a "Proposal for Establishment of a Non-Profit 'Free Radio' Broadcast Service" with the FCC. The request calls for a free radio service to be established on 1700 and 1710 kilohertz, with stations limited to a power of 25 watts with a maximum antenna-and-feedline length of 75 feet. This should be sufficient to adequately serve a community. Such stations would be required to use FCC-approved transmitters, accept FCC inspection, and accept interference from other stations.

This is an effort we intend to support. If your would like to help, contact John at the Hilo address given above. Although he did not promise to do this, a request along with a legal size SASE might get you a copy of his petition. You could sign it and send it along to Washington to help back his project.

MINORITY/TOYNBEE ASSOCIATION: A recent press release received from the Toynbee Association indicates they have had difficulties with both the FBI and a federal grand jury because of alleged threats made against the producer of the film "2010."

Although the group acknowledges that the film clashes with their philosophy, it denies it has done anything wrong and believes others are out to destroy it.

Despite its present difficulties, the Association declares it is going ahead with its planned broadcasting activities. It says it will soon have a mobile transmitter in operation, and we have learned through a reliable source that some broadcasts with a very limited range may have already been made.

You may want to check 6250 on weekends around 0500 GMT. The Association says it intends to make FM broadcasts in the Leningrad and Moscow areas of the Soviet Union, but these cannot take place any earlier than next spring.

The address we printed for this unusual organization earlier probably is no longer valid; however, we hope to print a new address sometime soon. The group uses free radio to promote its philosophy that Jupiter should be colonized with resurrected human beings!

LOGGINGS: We do not get very many medium wave loggings, but Pennsylvania's John Demmitt has come through with some for us. Pirate Mike and his station WDX were logged on 1620 Thanksgiving Day from 10:00 p.m. until 2:55 a.m. EST. He also received the previously mentioned KPF-941 from midnight to 2:00 a.m. the same day. KPF-941 was playing Country and Western music along with some folk tunes.

Indiana's Dan Troglin sends along a whole host of loggings. On November 1 he monitored the relatively new pirate WMTV on 7437 kilohertz from 0358 until 0520, when they may have had transmitter problems.

There was a good signal along with a nice variety of programming, including the Beatles, the Charley Daniels Band, and various comedy skits.

On November 24 Dan feels he came across a mini "pirate fest." Radio North Coast International was received on 7392 from 2043 to 2051 GMT. From 2053 to 2134 he reports logging WKUE on 7390.

The station has a DJ with a unique name, Mr. Coffee! Then from 2137 to 2205 KOLD was also heard on 7390.

While Dan does not normally listen to numbers stations, he did note one November 23 from 0306 to 0310, with carrier continuing until 0314. The frequency was 3445, with 5-digit groups in Spanish by a female.

Dan has heard the controversial Voice of Tomorrow several times. His most recent loggings was November 17 from 2120 to 2205 on 6240. He indicates apparent jamming at 2147.

This editor wonders if the jamming was intentional; if so, it is not the first time someone has tried to jam a pirate operation.

Dan also remarks that he would like to see more pirate stations send their news to Monitoring Times for inclusion in this column. Well, we will certainly second that excellent suggestion.

If every station were as helpful as the people at Tangerine Radio and the Toynbee Association, we would have a great abundance of news!

This writer ended something of a "pirate drought" with a logging of the Voice of the Rainbow November 25 from 0312 to 0345 sign-off on 7384. Programming included rock music and some comedy. The signal was fair to good. Hopefully the drought will be followed by a torrential rainstorm.

FRANCE: Just in case you missed it, we would briefly note that the August 11 issue to TV guide carried a fascinating article by Sam Topperoff about a French TV pirate. Erica Fery and his "Antenna 1" have transmitted over 200 times since June of 1983. Sometimes he even announces in advance when he will transmit.

Much of the programming consists of experimental films ranging in everything from bad taste to true art. Fery broadcasts illegally because th government has ignored (not refused) his requests for a license.

Although he has been arrested, the judge involved refuses to hear his case, a tactic Fery believes is designed to scare other pirates. In the meantime he continues broadcasting.

THANK YOU! Our grateful thanks go to the gang at Tangerine Radio for the plug you gave us on one of your recent programs. It is much appreciated. Now here is hoping 1985 brings everyone some most enjoyable monitoring. Good luck and good listening. ●

"Los Numeros"

32444 69213 88816 52196 63811 94216

Havana Moon

HAIL, HAIL ROCK 'N ROLL...

THE BEAT OF THE DRUMS LOUD AND BOLD...Some of you know this already. Ron St. John is a breathless DJ on WRNO. Ron has a week-night musical request call-in show on 6185 kHz at 10 p.m. EST. You can reach Ron with your requests at 1-800-222-0221.

A very big THANK YOU to Ron and WRNO for the MT and Havana Moon mention of 12/7/84.

You just never know who might call the program, Ron!

THAT OH-SO-SWEET YL ON YOUR RADIO

Her voice is seductive.

LOS NUMEROS cont'd

She may be a blonde. Her eyes might be green. Her name might be...

I first caught this YL just after 0500Z on a frequency of 7435 kHz on 12/8/84. The call is WYMN.

Interspersed with rather subdued music and IDs were slogans such as: "Voice of women all over." Her announced address was: WYMN, P.O. Box 4074, Hilo, Hawaii 96720.

Are you into "numbers,"...?

HAVANA MOON'S MAILBAG

BOB LOVE of Kansas City, Missouri, checks in with a very interesting "crypt." Bob says it's a copy of one that he used during his school days. It's one that defied "teacher decryption." You might even have the best of me, Bob.

If Bob will give me permission, I'll publish this very interesting "crypt" in a future column.

Bob says that he might even get into "numbers" after he completes his antenna farm and other projects.

Are you familiar with Kemper Military Academy in Boonville, Bob? I once...

ZEL EATON of Kirksville, Missouri, has provided "Los Numeros" with some interesting Spanish "numbers" intercepts. Among them:

6804 kHz 4/24/84
YL with numbers in groups of 3. These groups were followed by a test count from 1-9. No time given for this intercept.

6840 kHz 0635Z 7/4/84
YL with numbers in groups of 4.

11416 kHz 0639Z 7/4/84
YL with numbers in groups of 5.

4307 kHz 0331Z 11/22/84
4 digit text with transmission ending at 0339Z. Signal strength was 10 over S9 in Kirksville.

6825 kHz 0558Z 11/23/84
STRONG SIGNAL. Sounded like 4-digit Spanish. Zel says that this signal was garbled on both of his receivers, much like overload situation as if within sight of his antenna. This transmission could not be cleared in any mode. A VERY INTERESTING INTERCEPT, ZEL!

6846 kHz 0723Z 11/25/84
YL with 5-digit Spanish. Signal strength was 20 over S9.

A very nice batch of "numbers" intercepts, Zel. Sorry that I couldn't include all of them. Maybe next time.

CHARLES W. JOHNSON of Fayetteville, NY, thinks it would be a good idea to let MT readers know the addresses of the crypto magazines or publications.

It is a good idea, Charles. You and other readers will find them at the end of Havana Moon's Mailbag. Why not write them and let them know what you think about their LACK OF "numbers" coverage.

BOB RUSS of Walworth, Wisconsin, receives a tip of the "Havana Moon Hat" for correctly solving the "crypt" that first appeared several months back in MT. The solution read: ROBERT GROVE EDITOR AND PUBLISHER OF MONITORING TIMES.

Bob's crypto knowledge is outstanding. Any ideas on the 5-digit Spanish, Bob?

GEORGE PRIMAVERA of Cherry Hill, New Jersey, sends a copy of an article from the November 7th Philadelphia Inquirer (Section 3-A). This article deals with a new Mexico computer scientist and his successful attempts at decrypting a **purportedly** (emphasis mine) unbreakable code.

The code or cipher is one of the family of the so-called "public-key" ciphers.

Seems that there's always someone that manages to upset the NSA crypto monopoly.

Thanks, George.

ADDRESSES:

The American Cryptogram Association, 1007 Montrose Avenue, Laurel, MD 20707

CRYPTOLOGIA, Rose-Hulman Institute of Technology, Terre Haute, IN 47803. (When requesting information from the above, be sure to include an SASE.)

Other crytological material is available from:

AGEAN PARK PRESS, P.O. Box 2837, Laguna Hills, CA 92654

There's also some indication that ESPIONAGE may, in a limited manner, publish some elementary cryptological material. You may contact ESPIONAGE at: P.O. Box 1184, Teaneck, NJ 07666.

This column welcomes other legal crypto sources.

RADIO MARTI UPDATE

It's been well over a year since our President signed into law the bill to establish Radio Marti. The January 28th target date has now been moved to late spring of 1985.

The majority of Radio Marti employees will work in Washington, but the station will make use of the Voice of America transmitter at Marathon, FL. Frequency will be 1180 kHz if this station ever becomes operational.

I'll bet the Commandant could do it for a lot less than 14 million dollars.

STRANGE INTERCEPTS

Remember David Cutter's rather strange intercept that was reported in last issue? David's report was something I wanted to check into at once.

THERE ARE SOME VERY STRANGE THINGS TO REPORT. Among them: 4-digit Spanish on 6840 kHz. A quick check on 5810 kHz was very strange as a different YL with different groups was monitored. These have been simulcast frequencies in the past. The 5810 YL was about as Spanish as Margaret Thatcher!

Shortly after the 0100Z 6840 kHz transmission began, faint - but audible - "flute-like" sounds were heard in the background. And - would your believe - CIO2 was also heard in the background!

FEMA-type slow CW transmissions also noted some minutes after termination of 4-digit Spanish. Crypt consisted of 4-element alpha-numeric characters. No such transmissions were noted on 5810 kHz. All of this on 11/22/84. VERY CURIOUS!

MORE CRYPTO

Here's the long overdue - and unique(?) - crypto system that I've so often promised.

	A	N	D	U	W
AT	A	B	C	D	E
NM	F	G	H	I	J
DG	K	L	M	N	O
UI	P	Q	R	S	T
WR	U	V	W	X	YZ

H A V A
NMDDD ATAWU WRNAD ATAUI

N A
DGUAT ATADG

The last two elements of each group are nulls and are always eliminated during decryption.

H A V A N A
NMD ATA WRN ATA DGU ATA

Very easy to memorize this grid.

A NOT SO FAMILY TYPE FEUD

There appear to be some minor(?) disagreements between a group of former intelligence officers and a very prominent journalist.

If you desire to know more, you'll find one side of the story in the Tuesday, September 18th edition of The Congressional Record!

Write your Congressman and ask for Vol. 130, No. 117. You'll find this report very interesting. I wouldn't touch this with a ...

THANKS TO

Ron St. John, a seductive YL, Bob Love, Zel Easton, Charles Johnson, Bob Russ, George Primavera, David Cutter, and those that wish to remain anonymous.

Your comments and reports are ALWAYS welcome.

A REMINDER

All letters addressed to "Los Numeros" - unless specifically requested - will be assumed to be intended for publication and may be commented upon editorially.

Time now for a Tecate and...

Adios,
Havana Moon y Amigas

(The views expressed in this column are those of Havana Moon and do not necessarily represent the views of the Monitoring Times management, staff or readers.)

Unbreakable Codes

PART II

by Lazy Dog

It has been widely held that if a cryptographic code for telecommunications transmission may be devised by man, then a man, given enough time, can break that code. Perhaps in earlier years such a maxim may have been true.

But now things have changed. Part one of this article brought forward some of the paradoxes of a new generation of unbreakable codes, and how they might be used on radio circuits by means of the currently available small personal computers now on the market. Part one also touched on the legal and ethical aspects of crypto-transmission.

This second part of the article is written to direct the reader interested in obtaining source material for these higher order encryption schemes.

HOW TO GET STARTED

It would be best if the reader would first get hold of some of the literature on the subject before commencing to program his computer for cryptography. Bone up a bit by looking through the books and papers given in the brief bibliography at the end of this article.

UNBREAKABLE CODES cont'd

It is recommended that the serious communicator who wishes to dabble in secure messages should subscribe to the magazine, CRYPTOLOGIA (Rose-Hillman Institute of Technology, Terre Haute, Indiana 47803) at $28 per year.

Lastly, one should attempt to associate with one of the few amateur/professional computer bulletin board groups who will be pleased to give you some necessary programs to start you off, and who will hold your hand until you can begin to contribute to the field.

COMPUTER BULLETIN BOARDS

One such group is the International Association for Cryptologic Research (IACR). These are all good ol' boys and girls. Some are pretty sharp cookies; others are concerned with the practical applications of cryptography. But all stand by the notion that each of us has a right to secure communications.

Operating on both the U.S. west and east coasts, and having members all across the land, one of the IACR's computer bulletin boards operates on line from the Washington, D.C. area.

If you have a home computer with a modem, you may phone in digitally at 300 or 1200 Baud, and thereby link your computer with IACR's bulletin board computer. Simply dial (703) 237-4322, allow time for the modems to shake hands, hit the carriage return a couple of times, and you are off and running.

This particular bulletin board (RBBS-PC) is an IBM system having the CPC12-2C operating software and features and, as an option, the so-called XMODEM protocol.

The system answers the phone using the following default communication parameters:

Data rate---300 or 1200 bps
Parity----------None
Number of data bits----8
Number of stop bits----1

Use 1200 bps if at all possible in order to minimize connect time.

Incidentally, if you are not a computer hot dog, don't despair. Chances are that your computer will hook right up and talk with this system with no problem.

Further words of advice: Use this bulletin board at night (6:30 PM to 7:30 AM EST) plus 24 hours on weekends. Try to avoid tying up the line more than necessary. Please use your real name, address and telephone number when signing on.

Hackers and spooks with pseudonyms will be thrown summarily off the system. If you really mean business, your association will be welcomed.

The IACR software will interactively guide you to whatever you may be looking for. You certainly will wish to read the messages on the purposes of the system, how to operate the system, a cryptography reading list for beginners, the by-laws of the association, and how to join if you should care to.

Perhaps you will wish to download the file entitled IACRNEWS.TXT or read the file named FACTOR.TXT whose significance relates to Public Key Cryptosystems such as the Rivest-Shamir-Adleman (RSA) scheme.

While you are on the system for the first time, it would be useful if you were to leave a message for the system operator (SYSOP) indicating that you heard about the association through MONITORING TIMES, and indicate your particular interest -- just common courtesy when you go calling.

Later, when you become more familiar with the subject, you may wish to download the following files in order to get going with your own message encryption system:

DESMODUL.BSV: A public domain Data Encryption Standard, in BASIC BSAVE format.
DESMODUL.COM: DESMODUL in COM format
DESMODUL.DOC: Documentation for DESMODUL
ENCRYPT.BAS: UPDATED version, with the bugs out
DECRYPT.BAS: DITTO. For use with DESMODUL.BSV
DESTEST.BAS: Validates DESMODUL with the NBS tests
PASSGEN.BAS: A program which generates 8-digit random passwords based upon a secret password input and a description of the system for which it is to be used.

Try it; you'll like it. And don't forget: If in doubt, encrypt! ●

BRIEF BIBLIOGRAPHY

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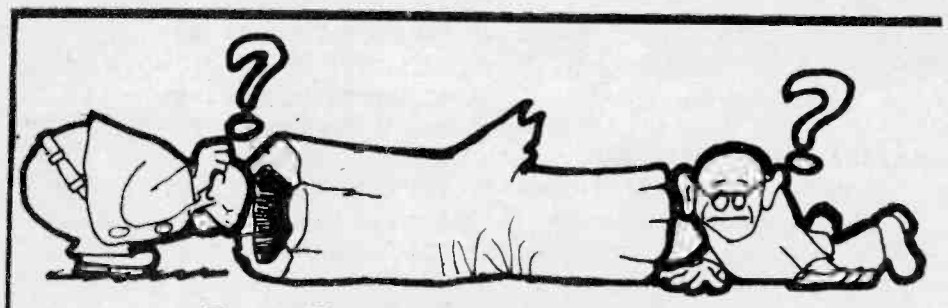
"Advances in Cryptology: Proceedings of Crypto 82," (Plenum Press, 1983).



listener's log

HATTIESBURG, MS
contributed by
Bill KA5LVP

CITY	LOCAL	
155.655	PD	KKC518 Main Ch
155.730	PD	KKC518 Car-Car Statewide
154.445	FD	KXQ673
155.490	PD	KKC518 Statewde
155.235	AMB	Ambulance Disp
155.340	AMB	Statewide Hosp
463.000	AMB	Tel/Med Duplex 468
468.000	AMB	" " " 463
155.595	SEC	Statewide College Security
154.160	FD	Statewide Rural VFD
45.92	CD	
45.96	CD	
46.00	CD	
463.450	BUS	Cablevision Repair
42.02	MHP	Statewide Car-Car
42.16	MHP	Base
42.24	MHP	Car-Base
158.640	BUS	AAA Answerphone
456.325	BUS	Repeater ATT
157.710	BUS	152.450 Cty Cab
464.65	BUS	Cummunity Rptr
154.515	BUS	Commercial Coms
463.850	AMB	Dr's Pager
155.265	AMB	FGH Internal
154.995	GOV	Street Dept
155.025	GOV	Water Dept
151.31	GOV	Pat Harrison Waterways
157.590	BUS	152.330 Liberty Cab
158.13	BUS	MS Power Repair Crews
155.22	BUS	same
155.16	AMB	Methodist Internal
155.19	MHP	Hi Band
44.96	GOV	45.00/22 Paul B. Johnson Park
123.00	BUS	Pine Belt 131.75/121.5/122.8
154.085	GOV	USM Maint
171.525	GOV	USDA
161.67	BUS	161.76 WXXX remote B'cast
161.73	BUS	WHSY " "
161.70	BUS	161.64 WFOR " "
166.25	BUS	43.00 WBKH " "
153.605	BUS	S MS Power 158.175/451.075

MONITORING CARTERET COUNTY, NORTH CAROLINA
All listings confirmed by Gordon Willis

ATLANTIC BEACH

154.725	Police Dept.
154.085	PD Ch. 4 rptr
158.925	PD Ch. 4 input
155.145	Fire & Water Depts

CARTERET COUNTY

154.845	Sheriff
154.995	Local Gov't (Fire & Rescue)
155.340	Emerg Med Service
155.280	" " " (secondary)
155.190	Intercity net (statewide)
155.250	NC Mutual Aid Net (repeater)
155.970	" " " " (input)

MISCELLANEOUS

152.090	Mobile Telephone Ch. 5
152.180	" " Ch. 11
122.800	Beaufort-Morehead Airport UNICOM (AM)
162.400	NOAA Weather (New Bern)
158.700	Mobile Paging (Anser-Quik)
152.840	Mobile Paging (CT&T)
160.950	Southern Railroad (road freq.)
160.260	Beaufort-Morehead Railroad
451.675	Carolina Power & Light Co.
153.425	Carteret-Craven EMC
155.535	Emerald Isle PD

MOREHEAD CITY

155.070	Police Dept.
154.445	Fire Dept.
155.100	Public Works

NC AMATEUR REPEATERS

146.610	New Bern
145.450	Newport
053.010	Newport
148.150	NC Civil Air Patrol (emergency network)

LISTENERS LOG cont'd

Note: (NC Civil Air Patrol callsigns--"Red Dog", "Blue Dog" and "Mad Dog".)

STATE OF NORTH CAROLINA

042.760	Hwy Patrol Ch. 7
042.640	Hwy Patrol Ch. 8
042.500	Hwy Patrol Ch. 10
042.820	Hwy Patrol Ch. 11
154.680	" " station-station
042.840	Alcohol Law Enforcement (ALE Ch. 11)
042.580	SBI (Ch. 12)
042.560	Dept of Corrections
159.345	Wildlife Resources Commission Ch. 8
151.460	" " " Ch. 10
031.420	NC Forest Service
155.820	State Port Terminal (Morehead City)
151.295	Marine Fisheries Inspectors
159.225	" " "
047.320	Dept of Transportation

US COAST GUARD

381.800	SAR Helicopter (UHF-AM)
123.100	SAR Heli (AM)
302.400	"Dragnet" Ops (UHF-AM)
292.700	same
238.500	same

USMC AIR STATION- CHERRY POINT, NC

140.350	Mil Police (PMO)
138.525	Safety Control (Fire & Hosp)
049.000	Radio Island loadng ops (USN)
140.100	Tower (FM) crash crews
140.025	Crash Crew Ch.2 (Ground Alpha)
340.200	Tower Pri (UHF-AM)
121.300	Tower Pri (AM)
306.600	Base Ops (UHF-AM)
380.800	Ground Control (UHF-AM)
126.200	" " (AM)
354.900	ATIS (Automatic Terminal Info Serv)
124.100	Approach(E) (AM)
119.350	Approach(W) (AM)
268.700	Approach(E) (UHF-AM)
374.900	Approach(W)(UHF-AM)
134.100	Departure (AM)
278.800	Departure (UHF-AM)
305.200	GCA/TWR-TWR Discrete (UHF-AM)
359.700	NC Army Natl Guard (HELO)
317.100	Bombing range (UHF-AM)
140.150	Target Ops (1) Pri
140.450	Target Ops (2)
140.625	Target Ops (3)
140.825	Target Ops (4)

* *

CENTRAL FLORIDA AND CAPE KENNEDY GOVERNMENT AND MILITARY MONITORING

contributed by

John and Wendy Pierce, Kissimee, FL

KEY: UAR=Army; UAF=Air Force; UNS=NASA; USN=Navy; UVA=Veterans Admin; UIF=Interior

Freq.	Location	Service	Description
30.450	Central FL	UAR USN	Airborne
34.230	Central FL	UGX	Wildlife - Ch. 2
34.830	Central FL	UIF	Wildlife - Ch. 1
36.110	Central FL	UAR	Airborne
38.650	Central FL	UAR UAF	Airborn
40.150	Central FL	UAF	Airborne
41.195	Central FL	UAF USN	Airborne
43.880	Cape Cnvrl	UNS	Wildlife Management
49.710	Central FL	UAR	Airborne
49.750	Central FL	UAF	Airborne
138.275	Central FL		Airborne
138.720	Orlando-McCoy Naval Ctr		Communications
138.050	Central FL		Military
138.720	Central FL		Military
142.155	Central FL		Military
143.460	Central FL		Military
143.900	Central FL		Civil Air Patrol (CAP)
143.990	Central FL		MARS
148.095	Central FL		Military
148.150	Central FL		Civil Air Patrol (CAP)
148.185	Patrick AFB	UAF	Maintenance
148.225	Patrick AFB	UAF	Maintenance
148.275	Orlando-McCoy Naval Ctr		Pager
148.325	Orlando-McCoy Naval Ctr		Pager
148.380	Central FL		Civil Air Patrol (CAP)
148.455	Cape Cnvrl		KSC
148.485	Cape Cnvrl	UNS	KSC
148.515	Patrick AFB	UAF	Base Ops
149.075	Jacksonville	Mayport	Port Ops
149.175	Patrick AFB	UAF	Maintenance
149.190	Malabar Antenna Aneex		ATS - Uplink
149.265	Patrick AFB	UAF	Base Ops
149.375	Central FL		Military
149.390	Orlando-McCoy Naval Ctr		Military
149.535	Patrick AFB	UAF	Mobile Phone
149.925	Central FL		Miliary
150.070	Orlando-McCoy Naval Ctr		Fire
150.075	Orlando-McCoy Naval Ctr		Base Ops
150.090	Central FL		Military
150.100	Central FL		Military
150.125	Central FL		Military
150.200	Cape Canaveral		Cape Support
150.225	Central FL		Avon Park Security
150.315	Central FL		Airborne
150.400	Central FL		Military
150.345	Central FL		Avon Park Control
162.0125	Cape Cnavrl		KSC
162.075	Cape Cnvrl		KSC
162.6125	Cape Cnvrl	UNS	KSC Operations
162.825	Central FL		US Marshal
163.000	Central FL		Military
163.025	Central FL		Military
163.050	Central FL		Military
163.200	FL Statewide		US Marshal
163.375	Tampa	UVA	VA Hospital Security
163.4125	Central FL	UAR	Army Corps of Engineers
163.4625	MacDill AFB	UAF	Base Ops
163.4875	Patrick AFB	UAF	Base Ops
163.5125	MacDill AFB	UAF	Airborne
163.5875	MacDill AFB	UAF	Ground Control
164.500	Cape Cnvrl		KSC
164.625	Cape Cnvrl	UIF	Fish & Wildlife
164.750	Cape Cnvrl		Playlinda Beach Patrol
165.0125	Cape Cnvrl	UAF	KSC
165.0375	Central FL	UAF UAR	Military
165.1875	Cape Cnvrl		KSC - Surveillance
168.525	CentralFL	USA	Medical Pager
170.100	Cpe Cnvrl	UNS	Surveillance
170.150	Cape Cnvrl		KSC - Control
170.350	Cape Cnvrl		KSC - Control
170.400	Cape Cnvrl	UNS	KSC
171.000	Cape Cnvrl	UNS	KSC
171.150	Cape Cnvrl	UNS	KSC
171.175	Central FL		
171.2625	Cape Cnvrl	UNS	KSC - GSA
173.025	Patrick AFB	UAF	Military Police
173.4375	Cape Cnvrl	UAF	Military Activity
173.5625	Cape Cnvrl	UNS	KSC - Fire Ch. 1
173.5875	East Coast	UAF	Base Activities
173.6125	Cape Cnvrl	UNS	KSC
173.6375	Cape Cnvrl	UNS	KSC
173.6625	Cape Cnvrl	UNS	KSC - Fire Ch. 2
173.6875	Cape Cnvrl	UNS	KSC
173.7375	Cape Cnvrl	UNS	KSC
173.7875	Cape Cnvrl	UNS	KSC

(Nice list; thanks, John & Wendy! ... Bob)

* *

TUNE IN CANADA

by

Norman H. Schrein

FOX MARKETING, INC.
4518 Taylorsville Road
Dayton, OH 45424

This month I will conclude monitoring while on a trip from Calgary to Vancouver. Here is a bit of what I was able to confirm from my motel room.

VANCOUVER

KEY: R=repeater, M=monitored

143.085/148.075	XJG 665	Police	F-1	R-M
143.385/148.375	XJG 668	Police	F-2	R-M
143.565/ ?	XJG 665	Police	F-3	R-M
143.685/148.675	XJG 669	Police	F-4	R-M
143.025/148.105	XJG 665	Police	F-5	R-M
143.775	XJG 665	Police (Det)	F-6	
143.835	XJG 665	Police (Det)	F-7	
143.055	XJG 665	Police (Data)	F-8	M
153.585/148.645	XJI 392	Police (Data	F-9	M

Mobile phone channels monitored in the Vancouver area:

152.510		R-M
152.630	CGF 923	R-M
152.675		R-M
152.720		R-M
152.765		R-M
152.810	CGF 923	R-M
454.600		R-M

In Vancouver you can also hear the Weatheradio Canada station (CFA 240) broadcasting from Victoria and serving both Victoria and Vancouver on 162.400 MHz.

Radio station CKLG's link between studio and transmitter can be heard on 450.700 MHz; the same holds true for CBU which can be heard on 450.100. These AM radio stations originating

TUNE IN CANADA cont'd

from Vancouver can also be heard on the standard AM radio on 730 and 690 Kc respectively. Also SKO-FM (96.100) can also be heard on 450.4875 MHz. Finally, in the studio to transmitter category for radio station CFRO-FM (102.700) broadcasts can also be heard on 450.375, 450.400 and 450.425 MHz.

The final loggings come from Vancouver International airport CYVR.

126.700 Communications radio
122.200 "
123.000 "
122.950 "
125.200 VFR advisory servces
118.700 Tower
124.000 "
226.500 "
236.600 "
121.400 Clearance Delivery
121.700 Ground Control
275.800 "
114.800 ATIS
124.600 "
114.800 VOR (call YVR)

Both ATIS frequencies can be monitored on a hand held scanner in downtown Vancouver.

The Canadian portion of the trip ended at Sydney near Victoria with a return to Seattle. Speaking of Seattle, the NOAA weather station (KHB 60) operating on 162.550 MHz can also be easily heard on a hand held scanner in Victoria.

I recently contacted the DOC to get a recent copy of the DOC Microfiche file (October 6, 1984). It is full of frequency information for Canada, but there is one drawback. I quote the information as received in a letter from the DOX dated November 20, 194.

"As we are in the process of revising our fee schedule, for the time being, there is no charge for this report. You will note that due to the implementation of the Access to Information and Privacy Acts, reference to individual company codes and serial numbers have been deleted from the report."

That is correct; in the set I received there was no company code information or serial numbers for individual licensees. However, the reports are still available from the DOC and for the moment they are free. They can be ordered from the Department of Communications, 300 Slater Street, Ottawa, Ontario K1A ØC8.

Due to the implementation of the Access to Information and Privacy Acts, the DOC's microfiche have been drastically changed, and it will be up to monitors to check out the frequencies they observe on the fiche for their area. The frequency pairings and call letters are still there as well as geographical co-ordinates and effective dates of the license. It is still worth it to have a set of these altered reports so that you can get a handle on what frequencies are active in your area.

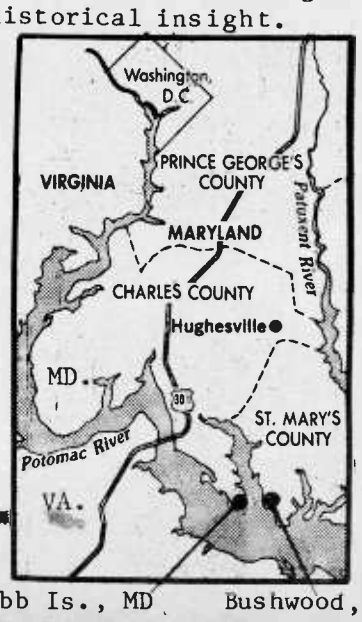
To read a microfiche report you need to get a microfiche reader. Sources for these machines vary. Used machines can be obtained from many micrographic services, or a relatively inexpensive new machine can be obtained from Grove Enterprises.

That is the "Tune In Column" for this time. Good monitoring.

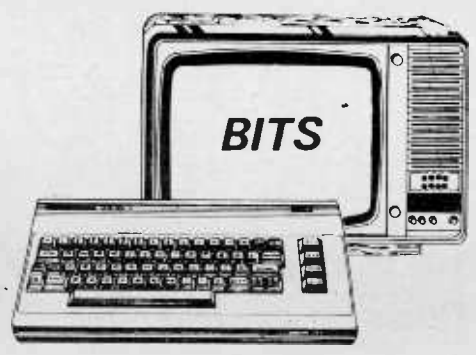
TRIVIA:
Where and When Were The First Voice Radio Transmissions Made?

On the Potomac River a sign posted by the Maryland Historical Society reads, "Here, on Cobb Island, in December 1900, Reginald Aubrey Fessenden, assisted by Frank W. Very, while experimenting in wireless telephony, for the first time sent and received intelligible speech by electromagnetic waves between two masts 50 feet high and one mile apart."

Thanks to MT reader John Cauffman for contributing this interesting bit of historical insight.



Cobb Is., MD Bushwood, MD



A SIMPLE ANTENNA PROGRAM FOR THE C-64

Although calculation of a half wave dipole is quite simple (468 ÷ frequency in MHz = length in feet), there is a way to let your computer do it for you.

MT reader Michael Roodsberry of Cheboygan, Michigan is studying for his ham radio ticket and came up with the following nifty program for his Commodore 64.

Enter the appropriate frequency and the little program will give you the length of the dipole in feet and inches. Thanks, Michael, for sharing this with fellow MT readers.

```
5   REM 468
10  PRINT
20  PRINT
41  PRINT "15 SHIFT C SHIFT
    Q 15 SHIFT C":PRINT
    "66.8 FEET SHIFT B OF
    WIRE 7 MHZ
42  PRINT" SHIFT B 40
    METERS"
43  PRINT" SHIFT B RG64 OR
    GOOD"
44  PRINT" SHIFT B COAXIAL
    CABLE"
45  PRINT" SHIFT B
    FEEDLINE"
46  PRINT" SHIFT B      "
53  PRINT" 1/2 WAVE DIPOLE
    ANTENNA"
54  PRINT" [ENTER SHIFT B
    FREQUENCY]"
55  INPUT F
56  PRINT " SHIFT B     "
60  IFF=Ø THEN 55
70  PRINT
80  PRINT"THE DIPOLE
    DIMENSIONS IN FEET &
    INCHES"
90  LET F=F/100
100 PRINT 468/100/F
110 LET L=INT (L/100)
120 LET L=L/100
130 GOSUB 41, 42, 43, 44,
    45, 46, 55, 80
```

HAM OFFERS BULLETIN BOARD SERVICE

Pat O'Farrell is an outstanding example of a new breed of hobbyist. He combines ham radio, wide spectrum listening and computers.

Pat wrote us recently offering to share with fellow MT readers his computer bulletin board information service. It is available weekdays from 6PM to 7AM Pacific time, weekends and holidays 24 hours a day.

Up/downloading for Commodore and IBM computers as well as ASCII text files for other systems are available with 10 megabyte storage capacity.

Pat's BBS has been in operation since last July and contains radio magazine bibiliographies from Monitoring Times, Popular Communications, QST, CQ, Ham Radio, 73, QEX and RTTY Jr.

To log on, call 509-697-7298; 1200 and 300 baud rates are available (3 CR's required to rate detect).

TECHNICAL TOPICS *by Bob Grove*

***Q** I recently read that there will be both a nationwide paging service and private telephone service from airplanes. Do you know the frequencies?*

A The air-to-ground service touted by Airfone was to have been in the 900 MHz sepctrum, but it has been cancelled by the FCC, although some experimental service will be allowed to continue for the duration fo the license period aboard Air One, American, Delta, Eastern, Northwest, Pan American, Republic, TWA and United in which Airfone has already installed the speculative service at a cost of tens of millions of dollars.

Back in August a lottery held by the FCC chose Radiofone, Pagememo and United Paging to offer their electronic paging services in at least 15 major cities by next September. Transmissions will be in the 454.700-454.975 MHz band.

◆◆◆◆◆

***Q** I am hearing an extremely powerful tone signal at 1735 kHz; could it be my neighbor's cordless telephone?*

A Sure could. Different cordless telephones use different methods of identifying off-hook conditions and for insuring privacy. You can find out for sure by using a pocket portable AM radio as a direction finder.

Tune the radio to the signal (top of the dial) and turn it in your hand. When the side of the radio points to the source, the signal should drop in strength. Experiment from several locations 100 feet or so apart on known AM broadcast band signals until you feel comfortable with the technique, then find your quarry!

◆◆◆◆◆

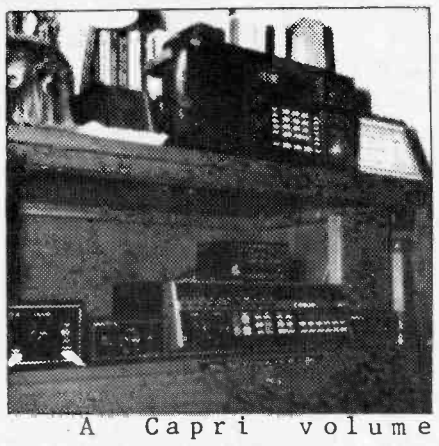
***Q** I find that when I move my Grove OMNI around my metal mast, signal strengths vary; if it's omnidirectional, how is this possible?*

A The antenna alone is omnidirectional, but when mounted alongside a metal mast, signal reflection is inevitable. Try two things: First, determine with an ohmmeter or continuity tester which element is connected to the shield of the coax--that element should be the lower one. Next, try mounting the OMNI on a rigid plastic PVC mast or extension pipe to reduce interaction with the metal mast.

MONITORING POST

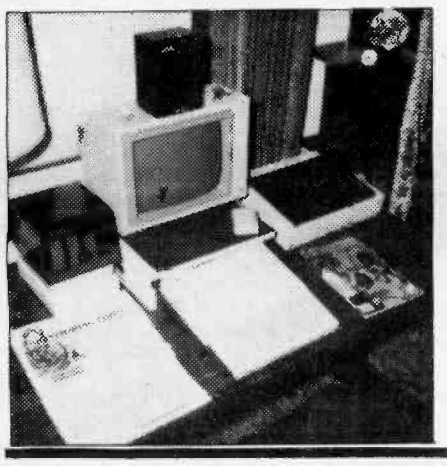
New Listener Enjoying His Hobby

MT reader Hank Bradbury of Marshalltown, Iowa, shared photos of his monitoring post and a few helpful comments which we pass on to our readers:



A Capri volume equalizer, Grove Signal Amp, Grove Power Ant, and Grove Scanner Filter all surround Hank's Bearcat 300 scanner. A Radio Shack DX-400 is perched above.

The latest issues of Monitoring Times and PopCom flank Hank's Apple computer system.



Enclosed is a picture of my monitoring station, thanks to you and MONITORING TIMES. I've been dreaming about setting up a monitoring station ever since I starting reading MONITORING TIMES, starting with your first issue. I'm sure you have gotten thousands of people interested in monitoring the radio spectrum. Thanks again for your help!

The BEARCAT-300 and all of your fine products are working flawlesly. I was a little leery about connecting two pre-amplifiers together, but they work great together. They overload the BC-300 only when they are both set on 100%, and then only on UHF. I've heard mobiles 100 miles away.

The SCANNER FILTER III also works fine, it's a very good filter. It's connected between the pre-amplifiers. I'm using the new BUTTERNUT SC-3000 antenna, mounted 15 feet above the top of my two-story house. I mounted the SIGNAL-AMP II amplifier at the antenna and used your RG/6U coax.

I've tried five antennas on my BEARCAT-300 and they all work well. The height that they are mounted is the most important factor. The five antennas are: your Scanner Beam; Radio Shack's biggest all-band ground plane; Butternut's new SC-3000; your Power Ant II with your plug-in whip and the Bearcat-300's built-in whip. I finally decided to go with the Butternut SC-3000 and your Power Ant II, because it has less wind load than your Scanner Beam or Radio Shack's big ground plane.

I would rate your Scanner Beam and Butternut's SC-3000 about equal in performance. The SC-3000 is $25.00 higher priced but it is omni-directional and I was able to mount it 10 feet higher than the Scanner Beam. I also went with your Power Ant II because it serves two functions. First it is an excellent low noise pre-amplifier and also gives me a back-up active antenna which pulls in many more stations than the built-in whip. I tested them side by side.

I would recommend Capri's VE-18 volume equalizer and external speaker to anyone who wants cleaner sound from their scanner.

I wanted an external speaker downstairs in our living room with a volume control on it. I found one that works great. Radio Shack has a 4-inch amplified speaker with volume and tone controls on it, for under $20.00. I looks and sounds super. I connected it to my Bearcat-300 with 50 feet of Radio Shack mini-speaker wire. I put the Radio Shack Amplified Speaker on our Apple Monitor, because I spend every evening working on our Apple IIc computer. This letter was written on it and printed with our Apple Scribe Printer.

Good listening,
Hank Bradbury,
Marshalltown, IA

TECHNICAL TOPICS cont'd

Q *Why does my Sony portable radio receive some stations better when standing on end? (John Demmitt, Bellefonte, PA)*

A Inside every portable AM broadcast receiver is a small ferrite rod antenna which is bidirectional in its receptivity to incoming radio waves. Its best response is broadside to it, and it is least responsive off its ends.

Depending upon the angle at which your desired signal arrives, the radio should be maneuvered until maximum signal is received. This is why many shortwave and FM portables have a swivel-type telescoping antenna.

Radio waves bounce around quite a bit on their trip to your receiver, and the wiring, plumbing, air conditioning ducts, and so forth of your dwelling add more influences to bend the wave from its original straight path as it left the transmitting antenna.

Q *Can the Bearcat 210 and JIL SX-200 be programmed to go out of band? (Kenneth E. MacLeod, Westboro, MA)*

A Neither the original BC-210 nor the SX-200 is capable of being tricked out of band by programming techniques. However, the SX-200 already has a very wide receiving range covered by its direct entry, far greater than its competition at anywhere near the price.

◆◆◆◆◆

Q *How can I find electronics parts through the mail, like tuning capacitors? (John Taylor, St. Louis, MO)*

A While electronics parts houses are nowhere nearly as common as they were several years ago, there are still many reputable dealers around, both for new and surplus parts inventories.

Look in the ham magazines like CQ, 73, Ham Radio and QST. Radio Electronics is also a great source of such advertising. You might wish to check a local radio-TV repair shop, especially one of the older firms, for a junk AM or AM-FM radio for that variable capacitor. ◆

HELPFUL HINTS

The Balky Bearcat

In response to a letter which appeared in the 10/84 MT, I had a similar problem with my BC-210 scanner. The unit would not stop scanning on ANY low band signal between about 46.5 and 50 MHz, but would receive these signals fine in the manual mode.

I do not know what caused this condition, but I was able to work around it by programming a frequency in this range in two consecutive channels. The scanner would stop on the second channel.

Does this mean the five 47 MHz channels would take up the entire memory? Not quite. If I programmed the first frequency twice consecutively and the rest of the frequencies in consecutive channels (once apiece) following this first frequency, all signals were received.

For instance, this would work:

1- 47.88	6- 460.35
2- 47.88	7- 33.94
3- 47.90	8- 154.31
4- 47.70	9- 33.90
5- 460.05	10-45.54

but this would not:

1- 47.88	6- 47.70
2- 47.88	7- 33.94
3- 460.35	8- 154.31
4- 47.90	9- 33.90
5- 460.05	10-45.54

Weird? You bet.

Greg Doerschler
WPI Box 2110
100 Institute Rd
Worcester, MA 01609

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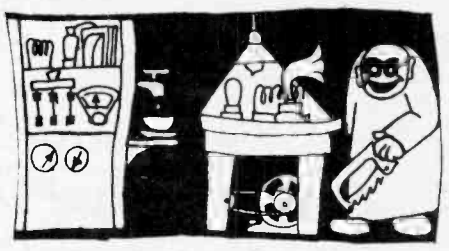


THAT #&'%$! NOISE!

Joe Thompson's article about "low frequency gremlins" in the December issue of MT brought a flurry of similar experiences in the MT mail. Two examples are shown below--one simple and one elaborate solution.

I was really burned up with all the unbearable noise and intereference which would come on now and then and spoil all listening.

First I went after the big electric utility. I was sure it had to be in the transformer across the street. I got them to check it out - no luck. I suspected it was our nearby neighbor, The University of California (Berkeley) and their Radiation Lab and Big Stuff on "The Hill." Maybe some grad student was switching on the big cyclotron to warm up his coffee or to toast a muffin in the middle of the night.

Somewhere I heard that you can trace down radio interference with a small

☞

NOISE cont'd

tery operated radio. I started checking. The radio racket got louder and louder as I approached the back of the house. All pointed to our all-night back yard light operating on an automatic light sensor switch (Radio Shack). I flipped the switch--the light went off and the silence was beautiful. The light sensor switch was replaced with a mechanical timer and all's well.

Robert Gash
Berkeley, CA

I was receiving 60 Hz AC hum (with all kinds of harmonics) every 100 kHz or so on my Kenwood R-2000. I would also get the interference on my shortwave radio in my car, when parked near one side of my mobile home.

I finally found the source of the problem. My next door neighbor had just bought himself two table lamps with an electronic "touch switch" which emit the rf energy even when they are turned off! Until and if I can find a way to "fix" the lamps I decided I needed a cure.

I devised a "noise antenna"--a 2-1/2 foot stiff wire which I erected low to the ground and near my neighbor's "noisy" house. The short antenna is connected by coax cable to a one-transistor amplifier in my house, then through a 365 pf variable capacitor to the antenna input of my receiver. The regular SW antenna is also connected there.

By tuning the variable capacitor, the phase of the rf noise can be changed 180° from the noise antenna to the SW antenna. If the amplitude of the noise signal is the same and the phase of the wave is 180° different from one antenna to the other, then the "noise" is completely canceled!

I use an antenna tuner, similar to the "Grove Mini-tuner" on the regular antenna. It helps to get a perfect match of amplitude and phasing. With a little practice it is really quite simple to adjust for a perfect radio signal with no noise.

The "noise antenna" could also be used within your own house for similar RFI. When the receiver is tuned to a noisy frequency the two antennas can be connected to the receiver one at a time; by watching the S meter the noise antenna can be positioned or altered in such a manner as to get near equal amplitude of noise from both antennas.

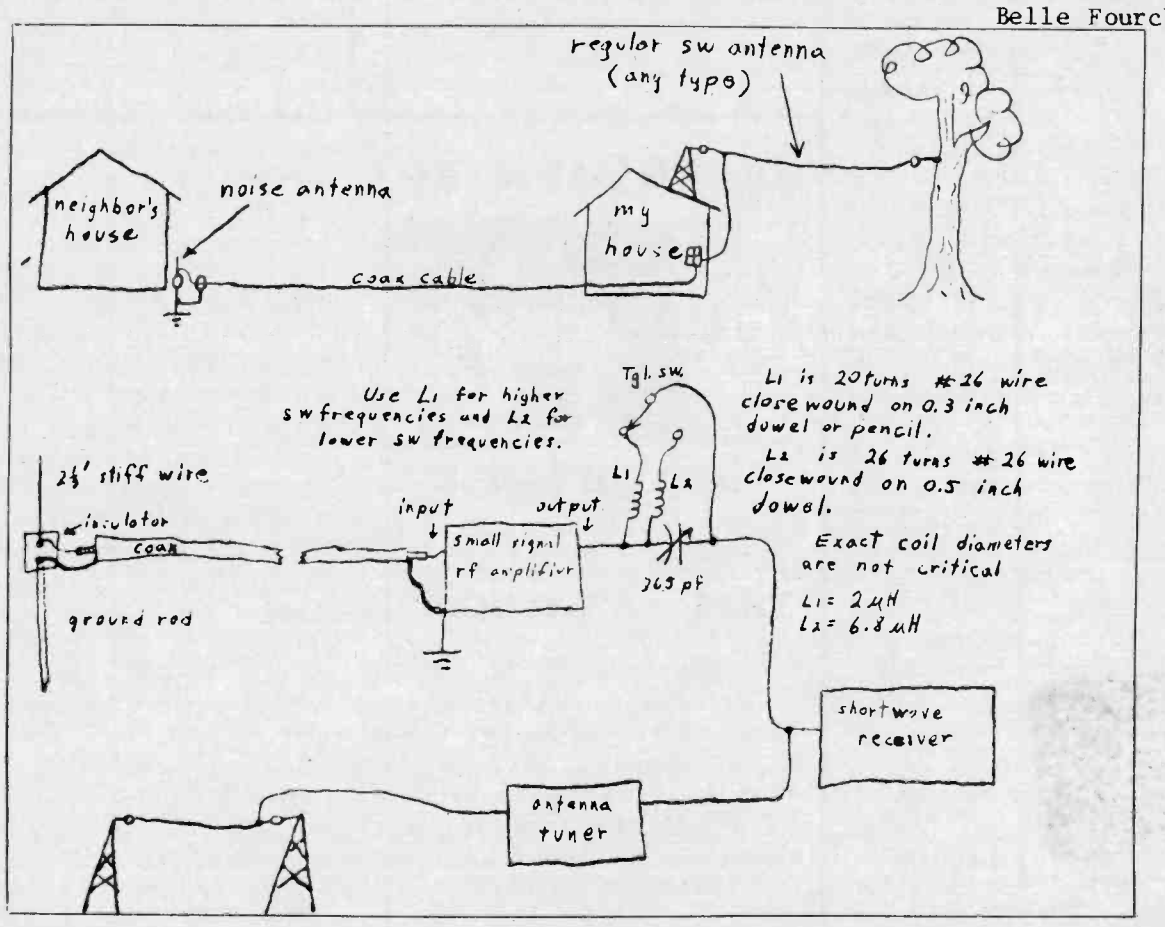
An adjustable gain or attenuator can be used on the noise amplifier also. Remember, equal amplitude alone won't do the trick. 180° phasing is also necessary. If the noise antenna amplifier has a strong enough signal then a simple potentiometer could attenuate the noise signal to match that of the SW antenna and eliminate the need for an antenna tuner. The Grove ANT-4 Power Ant is an example.

The noise antenna could also be an active antenna with the whip shortened or replaced with a short stiff wire and placed near the offending rf noise source (electronic lamp, light dimmer, electric blanket, electric heat tape, etc.)

Keep in mind that the noise antenna must not receive the desired radio station signal, or the radio station signal will be cancelled also!

The whole set-up is not as complicated or as "delicate" as it might sound; I tried variable capactiors, inductors, coax, single wire lead-in, and attenuators, and they all worked as well once everything was adjusted.

Gregory R. McIntire
Belle Fourche, SD



A SYNCHRONOUS POWER LINE NOISE BLANKER

by Vincent J. Pinto

Power line frequency related noise is a ubiquitous enemy at low radio frequencies; The single most common reason for many long-wave listeners and experimenters giving up the hobby is "unsolvable" power line noise and hash. This article describes how most of this noise can be eliminated in the receiver.

Most line frequency noise pulses have a 120 Hz. pulse repetition rate, due to the zero crossings on the AC line. The commonest source of raw noise is a defective connection or broken insulator on a power line.

Other sources of 120 Hz. noise include SCR light dimmers, defective solid state electronic components across the power line in appliances, or tree branches on high voltage transmission lines.

Blanking power line frequency related noise and hash, even in a good communications receiver, is often a losing battle. Most noise blankers look at incoming signals to detect noise pulses. They're not usually effective on power line frequency related noise for two reasons.

Firstly, noise blankers look for a sharp, short pulse with a fast rise time, but most power line noise exhibits a broad pulse with a relatively slow rise time. To a large extent it is not recognized as a "baddie" noise pulse.

Secondly, noise blankers generally create a short duration blanking pulse, much shorter than the pulses frequently encountered in power noise signatures.

This article describes a special noise blanker circuit that will drive an existing noise blanker in almost any modern solid state communications receiver. A noise limiter is not the same thing - your receiver must have a blanker.

• M. J. Salvatti, writing in ELECTRONICS magazine in 1974, proposed a synchronous noise blanker for power related noise.[1] His version drove an FET switch designed to be inserted in the audio section of any receiver. The switch literally turned off the audio for the duration of the pulse.

There are several problems with blanking at audio. This far downstream, the noise pulse has already passed through tuned circuits and filters and the detector and has suffered broadening of the pulses, and also possibly several other forms of degradation of the desired signal (ringing, etc.) which cannot be corrected by an audio blanker.

Additionally, the noise has been allowed to control the AGC gain in the IF stages. In severe cases, it can modulate the detector, too.

A synchronous blanker for the russian woodpecker OTH radar was described in Ham Radio Magazine a year or two ago.[2] This blanker was designed as an IF blanker for blanker-equipped receivers. It was highly effective and AEA now markets a woodpecker RF blanker based upon the same principle.

The blanker described herein derives its blanking pulse directly from the power line frequency. The only real critical adjustment necessary is to adjust the phase, or delay, of the 120 Hz pulses to coincide with the noise pulses. Another control adjusts the blanking pulse width for the minimum necessary to remove the noise. A third control adjusts the level of the

***NOISE BLANKER** cont'd*

blanking pulse, from TTL levels on down to almost nothing.

This blanker has proven phenomenally effective in actual use. It may drive an existing IF noise blanker in a communications receiver, or an electronic switch placed in the RF cable ahead of the receiver; the choice is yours.

While you can also choose to drive an audio blanker (as in the Salvatti article) I do not recommend it.

I designed this unit initially for use on my Drake R7A, listening below 200 kHz where power line noise (mainly dimmers) can be particularly severe. The Drake has a good noise blanker, but will normally remove only from 3 dB to 12 dB from power line noise or dimmer noise. The addition of the synchronous blanker has worked a miracle. One example follows.

On a recent rainy night, the receiver displayed a power line noise at 10-13 kHz of 48 dB over S9. OMEGA was totally obscured, even with the narrowest of filters.

I switched on the Drake's noise blanker, the noise only dropped 8 dB to 40 dB over S9. I then turned on the synchronous blanker, adjusted the phasing control, and suddenly the noise disappeared entirely! My S meter dropped back to the S3 background noise level, and three or four of the OMEGA stations came through. Things aren't always this great, but often enough!

THE CIRCUIT

The accompanying schematic is quite simple. A bridge rectifier across a 6.3 VAC winding produces 120 Hz positive pulses. A Schmitt trigger conditions these pulses. A dual monostable multivibrator determines pulse width and pulse delay.

Either the Q or inverse Q output of the 74123 can be used to drive a noise blanker gate in a solid state receiver, depending upon whether it needs an ON or an OFF pulse. The voltage level is adjusted by pot R3.

Different blankers need different pulse amplitudes. My R7A likes to see 0.9 volt or less (from pin 5 on IC2B) injected via a 1N914B diode at the cathode of CR811 on the noise blanker board. I can increase this level to increase blanking action (All I did to the Drake was add a phono connector to the rear panel and a short cable to the blanker board).

It should not be too hard to drive most blankers in modern solid state receivers with this circuit. Or you can go the route AEA chose in their Woody blanker and build a gate to be inserted in the coax input to your receiver. This is nothing more than an analog RF switch capable of operating in the linear region as well as fully on and off.

You can make the on/off transition slopes gentler by modifying the TTL driving pulse from the 74123 with an RC circuit. I recommend a VMOS switch, hot carrier diodes, or even small-signal FETs. The switch must be capable of passing bidirectional positive- and negative-going signals of at least 1-1/2 volts with little distortion.

You will probably discover you need a negative power supply to bias the switch. If you use a CMOS IC switch such as the 4053 or similar, which can really only toggle on and off, and cannot operate in the linear region, you will end up killing the noise but superimposing a terribly strong 120Hz square wave AM modulation upon your received signal. That's not much better than the line noise!

You might also want to add your own IF blanker to your receiver if it doesn't have one. It's not too hard. Basically you want to blank quite early in the IF before the signal passes through any narrow tuned circuits or filters. See the various amateur handbooks and cookbooks for blanker gate circuits. I suggest two biased diodes between two IF transformers.

Or you could write to one of the customizing houses such as Electronics Equipment Bank (516 Mill St., Vienna, VA 22180) or Radio West (3417 Purer Rd., Escondido, CA 92025) and ask if they can make the modification.

When operating this blanker at high blanking levels to get rid of severe line noise, you will superimpose some degree of 120 Hz AM modulation on your received signal. This is no problem for CW type signals (I use it on CW beacons, OMEGA, etc.) but could be annoying on AM signals - slightly less so on SSB. But it is still better than line noise.

If you primarily listen to AM signals, and need very high level blanking pulses to cope with tremendous line or dimmer noise, and find the 120 Hz modulation objectionable, you have some alternatives. Your best bet is to try to modify the shape of the blanking pulses to smooth out its rise and fall times. Use an RC network as described above.

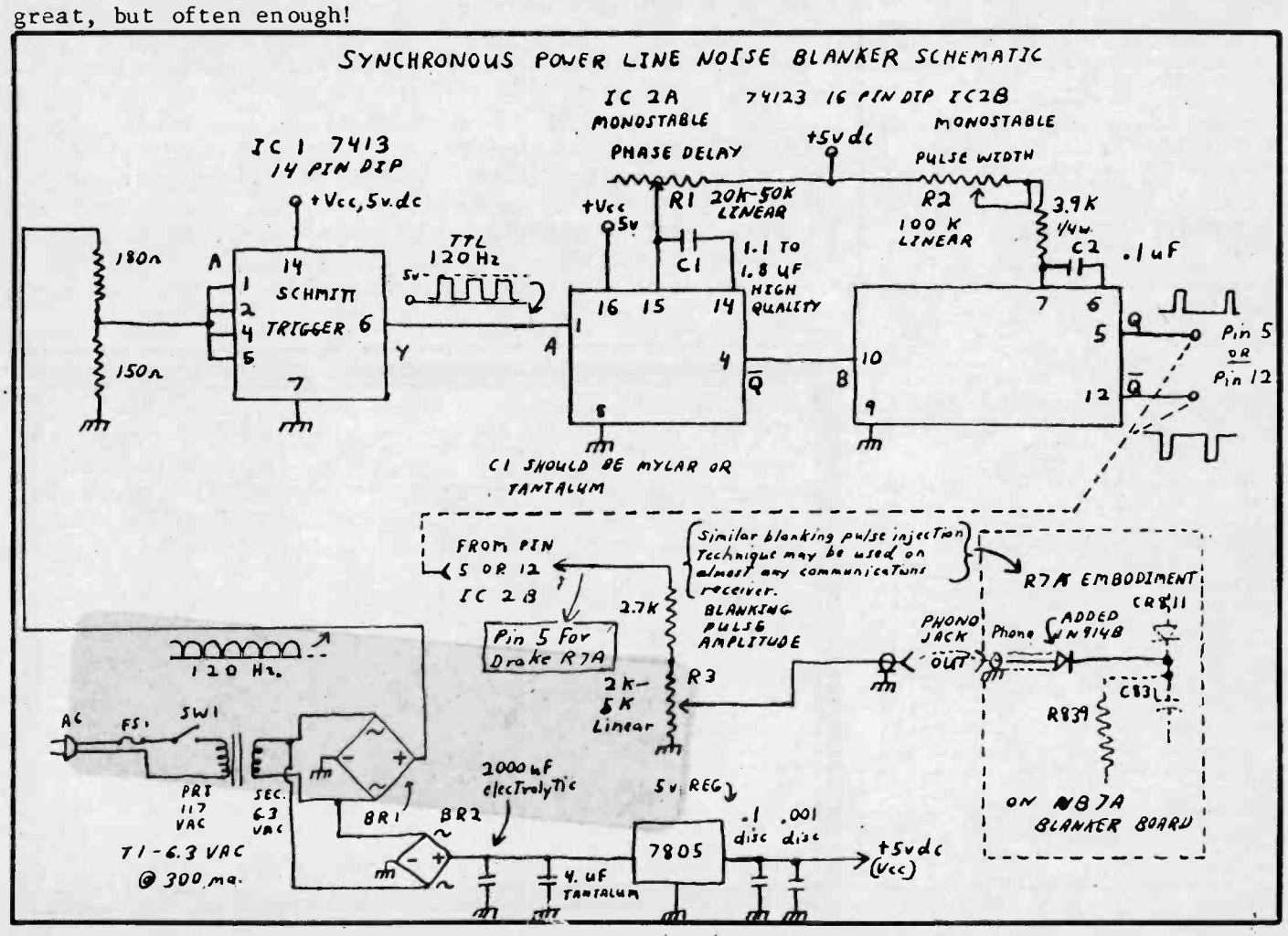
Pulse width control adjustment of R2 is noncritical, but try to keep the pulse as narrow as possible. For R1, the phase or delay control, make sure to use a knob with a numbered, indexed skirt for reseteability information.

20 Kohms for R1, the delay pot, is best. 40 or 50 K will not offer the fine resolution of a 20 K pot. The best approach is to use a 20 or 30 Kohm 10 turn pot with an incremented dial.

You should find it possible to cope quite well with over 90% of line noise related problems with this circuit. Occasionally, however, you may find that even after you have nulled your noise with the phasing control, there is still another power line related noise source remaining. This can happen if you have several different noise sources, each on a different phase of a multiphase line. You'll only be able to blank out source at a time.

If multiphasic noise does occur frequently, you may duplicate IC2A and B and the related width and delay controls. The output of each 74123 can drive a TTL OR gate, which will "sum" the blanking pulses. You could also use an op-amp as a mixer for isolation. You would then tune one blanker phase control for each noise source.

We've covered all the basics here, and probably discussed enough to point you in the right direction if you need more sophisticated embodiments. The device takes only a few hours to throw together, and in my estimation, is one of the most useful things I've ever built for my receiving setup. Good luck! ●



1. Salvatti, M.J., "Synchronous noise blanker cleans up audio signals", ELECTRONICS, June 13, 1974, page 104.
2. Nicholls, David, "Blanking the Woodpecker", HAM RADIO, 3 parts, January, February, pages 18-22, and March, 1982.

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