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- **Selected English Language Broadcasts — Spring '86**
- **Out-Of-Band Scanning Tricks**



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CIRCLE 115 ON READER SERVICE CARD



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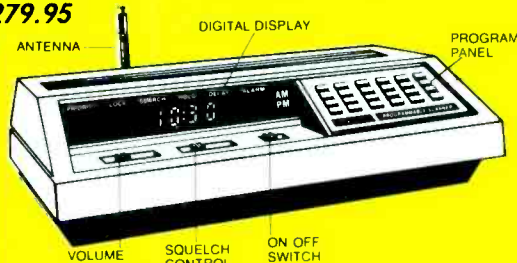
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CIRCLE 77 ON READER SERVICE CARD

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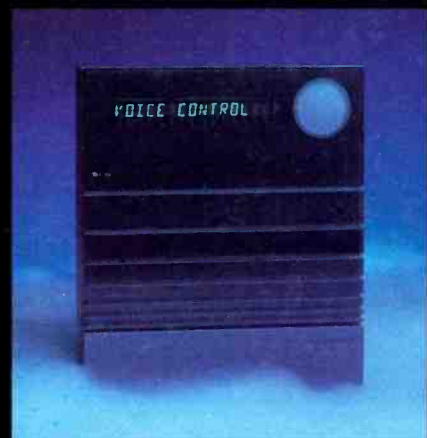
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Post this chart next to your receiver. It points the way to ute station action bands between 4 and 27 MHz. The best bands at a glance.

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With apologies to Marcel Proust, let's roam through the pages of radio history.

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Our award this month goes to a Michigan State Trooper for a job well done.

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Spring '86—where to tune; what to hear.

by Gerry L. Dexter

This month's cover: Jim Allbright of the Dade County Police Aviation division flies high over the city of Miami in the police helicopter. Photo by Larry Mulvehill, WB2ZPI.

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BEAMING IN AN EDITORIAL



April Showers Bring May Sours

About mid-December last year I began receiving a steady flow of reader mail that called to my attention the fact that April was on the way, and with it the April issue of *POP'COMM*. Some letters pointed out that there have now been three previous April editions of *POP'COMM* in which there had not been a single April Fools' Day story, and (just in case this hadn't occurred to me) I'd better wake up and smell the coffee.

Well, *excuse me!* I hadn't realized that I was flaunting a noble tradition by neglecting to participate in this seemingly harmless, happy, and hilarious Rite of Spring. After three years of waiting for me to join in, many readers have lost patience with me.

You think I'd forgotten? Not likely! I needed no reminders to clue me in on the fact that April was on the horizon, dragging along with it one of the most feared days on my calendar. My wall calendar shows the first day of April obliterated by a large scrawl of grease pencil.

Readers have finally caught up with me and I'm being pressed from all sides to knuckle-under. Let's face it, when you consider that France has thusfar produced the likes of Rene Descartes, the gyroscope, the Statue of Liberty, and Catherine Deneuve, this absurd 16th Century French custom is quite unworthy of that good nation.

I didn't always feel that way. I went right through from grade school to college dutifully observing April 1st. You name it—the handshake buzzer, the squirting camera, the candy container hiding giant spring-loaded snakes, the pepper-flavored chewing gum—all were within my scope of operation. Like many readers, I'd start looking forward to this day of hilarity months in advance.

Eventually I became more sophisticated. Like the time I perfected an ersatz Albanian accent in order to call "CQ DX" on 6 meters and then pretended not to hear the hundreds of stations all frantically responding to "ZA1AA." "Come in dat station callink me from north America," I'd say to further increase the frolic.

Then I discovered that I had a clear shot at a far larger group of fun-lovers by means of my access to the pages of national electronics magazines. At that point, my April depravity took upon itself much more sinister aspects.

Based upon the germ of an April idea I'd read in an old magazine, in the 1950's (anonymously) I penned an April-issue story about a newly developed type of negative "contra-polar" electrical force. Accom-

panying photos displayed contra-polar powered household devices—the desk lamp beaming out a ray of black light, the electric hotplate encrusted with frost and ice.

The real payoff to the story came months later when the magazine received a serious letter from a major publisher of encyclopedias. They said that they were putting together a new edition and were hoping to include a listing for "Contra-Polar Energy." They learned that we had given the world the original revelations on the subject and were trying to get in touch with the *Herr Doktor* we said had first harnessed this reverse electrical force.

You guessed correctly if you surmised that the "father" of CP energy wrote the company a lengthy "scientific" treatise on his most recent experiments. This included a negative-energy operated electric chair that promised "new hope for the dead." The encyclopedia never responded, I overplayed my hand.



NEW HOPE FOR THE DEAD

Seemed like a good idea at the time, but I suppose I overplayed my hand.

Inspired by my success, in 1963 I produced the April-issue honors for *CQ* magazine. I described the nefarious "I.E.M., An Anti-Radio Device." This was supposedly an invention of a Tesla-like Roumanian scientist, Dr. Vasilescu, who had established an antenna farm in the Carpathian Mountains atop Mt. Pietrosu (7,560 feet altitude).

His IEM device sucked radio signals out of the airwaves and turned them into electricity to be fed into the power lines of a nearby village. Whenever the IEM was tested, worldwide communications blackouts occurred. I documented the dates with official blackout records from our own National Bureau of Standards. These were only short-term localized experiments; the thought of running larger cities brought up the spectre of the entire broadcast and communications spectrum being stripped bare of signals over long periods of time. I claimed that Soviet Premier Nikita Khrushchev was soon to award

(Continued on page 74)

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RTTY/ASCII/CW SWL COMPUTER INTERFACE MFJ-1225 \$ **69.95**

FREE MFJ RTTY/ASCII/CW Software TAPE AND CABLE FOR VIC-20 OR C-64. ORDER MFJ-1225/MFJ-1264 FOR VIC-20 OR MFJ-1225/MFJ-1265 FOR C-64.

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INDOOR TUNED ACTIVE ANTENNA

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54 inch remote active antenna mounts outdoor away from electrical noise for maximum signal and minimum noise pickup. Often outperforms longwire hundreds of feet long. Mount anywhere atop houses, buildings, balconies, apartments, mobile homes, on board ship.

Use with any radio to receive strong clear signals from all over the world. 50 KHz to 30 MHz.

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List price \$699.95/CE price \$399.95/SPECIAL
10-Band, 20 Channel • Crystallless • AC/DC
Frequency range: 25-550 MHz, continuous coverage and 800 MHz. to 1.3 GHz, continuous coverage. The Regency MX7000 scanner lets you monitor military, F.B.I., Space Satellites, Police and Fire Departments, Drug Enforcement Agencies, Defense Department, Aeronautical AM band, Aero Navigation Band, Fish & Game, Immigration, Paramedics, Amateur Radio, Justice Department, State Department, plus thousands of other radio frequencies most scanners can't pick up. The Regency MX7000 is the perfect scanner for intelligence agencies that need to monitor the new 800 MHz. cellular telephone band. The MX7000, now at a special price from CE.

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List price \$299.95/CE price \$179.95/SPECIAL
8-Band, 60 Channel • No-crystal scanner
Bands: 30-50, 88-108, 118-136, 144-174, 440-512 MHz. The Regency Z60 covers all the public service bands plus aircraft and FM music for a total of eight bands. The Z60 also features an alarm clock and priority control as well as AC/DC operation. Order today.

Regency® Z45-EA

List price \$259.95/CE price \$159.95/SPECIAL
7-Band, 45 Channel • No-crystal scanner
Bands: 30-50, 118-136, 144-174, 440-512 MHz. The Regency Z45 is very similar to the Z60 model listed above however it does not have the commercial FM broadcast band. The Z45, now at a special price from Communications Electronics.

Regency® RH250B-EA

List price \$613.00/CE price \$329.95/SPECIAL
10 Channel • 25 Watt Transceiver • Priority
The Regency RH250B is a ten-channel VHF land mobile transceiver designed to cover any frequency between 150 to 162 MHz. Since this radio is synthesized, no expensive crystals are needed to store up to ten frequencies without battery backup. All radios come with CTCSS tone and scanning capabilities. A monitor and night/day switch is also standard. This transceiver even has a priority function. The RH250 makes an ideal radio for any police or fire department volunteer because of its low cost and high performance. A UHF version of the same radio called the RU150B covers 450-482 MHz. but the cost is \$449.95. To get technician programming instructions, order a service manual from CE with your radio system.

NEW! Bearcat® 50XL-EA

List price \$199.95/CE price \$114.95/SPECIAL
10-Band, 10 Channel • Handheld scanner
Bands: 29.7-54, 136-174, 406-512 MHz. The Uniden Bearcat 50XL is an economical, hand-held scanner with 10 channels covering ten frequency bands. It features a keyboard lock switch to prevent accidental entry and more. Also order part # BP50 which is a rechargeable battery pack for \$14.95, a plug-in wall charger, part # AD100 for \$14.95, a carrying case part # VC001 for \$14.95 and also order optional cigarette lighter cable part # PS001 for \$14.95.

NEW! Regency® XL156-EA

List price \$239.95/CE price \$129.95/SPECIAL
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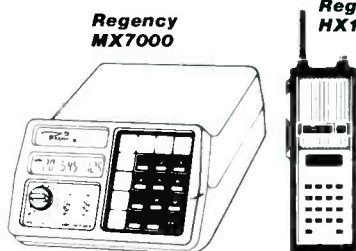
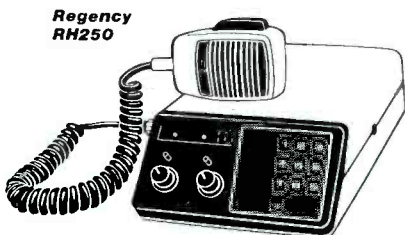
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CIRCLE 31 ON FREE INFORMATION CARD

MAILBAG LETTERS TO THE EDITOR

The most interesting questions we receive will be answered here in each issue. Address your questions to: Tom Kneitel, Editor, Popular Communications magazine, 76 North Broadway, Hicksville, NY 11801.

The Name Of The Game

You've mentioned that Alice Brannigan and several other POP'COMM authors don't use their actual names on their stories. What would be the reason for your concealing their true identities? Is this being fair?

Fred Martinson
West Allis, WI

The "Father of the American Navy," John Paul Jones, used a fictitious name during most of his life. John Wayne, Cary Grant, Mark Twain, Judy Garland, Marilyn Monroe, Isak Dinesen, Tom Jones, Alan Alda, Bo Derek, James Garner, Elton John, Jack Palance, Joan Rivers, Ringo Starr and even Hulk Hogan are all fictitious names created by people who, for professional reason, didn't elect to be known by their actual names. I don't believe that these people, or the many others who use professional pseudonyms, are being "unfair" or otherwise deceitful to the public.

In the instances of POP'COMM authors, this has been strictly a matter of the author's own request. One of our regular authors is a heavyweight network TV newscaster who wouldn't have the freedom to discuss certain things without the use of an alternate writing name. Others have assorted reasons. One author writes for several publications, each under a different byline. Several POP'COMM authors hold down executive or "sensitive" positions and aren't permitted by their employers to use their own bylines in national publications. One author who wrote for a recent issue told us that he didn't like his real name so he picked one that "projected a better image" (probably the same reason singer Henry John Deutschen-dorf uses the name John Denver).

Publications usually respect an author's request to use a pen name, seldom pressing for the reasons. We're mainly interested in the accuracy of the information in the manuscript submitted. Hope that clarifies this question; we do get asked about it from time to time. — Editor

Black Widow, What?

In the November Mailbag you mentioned once owning an "exotic and legendary Black Widow radio." Okay, my interest and curiosity was churned up. I never heard of a radio called a Black Widow. May I ask for some description of this radio for those of us who aren't "in the know." Nobody I've asked ever heard of this unit.

William Dixon
Montreal, Quebec



The wonderful "Black Widow" in its glory.



The semi-wonderful Jag XK-150 as it (and I) looked, circa 1966.

In the era just before transistorized Ham gear, going mobile with any hope of communicating further than your front bumper usually meant installing a rig the size of a footlocker beneath your dashboard. The Black Widow was an amazing mini-sized transceiver made in versions for the 220 MHz, 2, 6, and 10 meter Ham bands. While it put out "only" 8 watts, the design of the rig was so efficient that these sets were working real DX on the 28 and 50 MHz bands! It was called Black Widow because of its sting. The sets were virtually custom hand-assembled and became true legends to VHF'ers of the early 1960's. They cost \$165, and that was big bucks at the time. Despite its rather bizarre name, the Black Widow was in high demand with VHF'ers and you almost had to "know someone" at the factory to get delivery within a reasonable time. It was the biggest thing to come along since the tail fins on a '59 Cadillac! — Editor

Help Needed

I have a WWII military receiver called a BC-348-Q. This set (Serial Number 13292) was manufactured by Wells Gardner & Company. I would very much like to obtain a copy of the instruction manual, schematic, and service manual for this receiver. Although it is in reasonably good operating condition right now, someday it will require servicing.

If any reader has the information I need, I'd like to hear from them.

Herbert W. Lensner, (ex-8WBKV)
33 Gladstone Ave.
Lakehurst, NJ 08733

I need help to obtain the frequency range and any other information on the military radio called the URC-1-12. I think it is a transceiver. Readers are requested to contact me if they have this data.

Alan G. Henney
6912 Prince George Ave.
Takoma Park, MD 20912

Am seeking a source of operating and service manuals for an old G.I. radio known as the SCR-536. This set was supposed to have been made for a foreign government by an American manufacturer. In the set I have, there are two large crystals. No parts seem to be missing. A tag on the side of the set says that the frequency is "4980." Any help from readers would be appreciated.

Benjamin R. Nye, Jr.
299 Wanser Ave.
Inwood, NY 11696

Car 54 (And Australia), Where Are You?

I'm a taxi driver. Although I don't know much about radio, I have strong doubts about claims made by our taxi dispatcher who says that he "regularly talks to Australia and Europe" over the company's base station. The drivers think he's putting us on since the taxi radio is intended only for local coverage. That's why I'm writing to *Popular Communications*. Can a taxi radio be used to speak to Australia and Europe?

J.T. Flynn
Miami, FL

Sure, it's a cinch. In fact, speaking is a lot easier than getting replies. — Editor

A Flying Whatzit?

Please permit me to call to your attention an error in your story about the trip to Swan Island (December issue). You mentioned that the chartered airliner was a DC-3, and then you went on to refer to it as a "Dakota." It is my understanding that a "Dakota" was a C-47 type aircraft, and not a DC-3.

Max Rogers
Ardmore, OK

You're right and you're wrong. For one thing, I mentioned that "Dakota" was what the people on Grand Cayman called the aircraft. I never said I called it a "Dakota." To me, it was a Douglas DC-3. In any event, it's all a moot point since these famous planes answer to many different handles, including Dakota, Skytrain, DC-3, DST, C-47, -48, -49, -50, -51, -52, -53, -78, -117, the DF-151 and -195, and the R4D. Pilots usually call it a "Gooney Bird," their own name for this venerable old workhorse of the air. This design celebrated its 50th birthday last December. More than 13,000 eventually rolled off the production lines of Douglas and its licensees. Many are still in service throughout the world. — Editor

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The Value Of Open Communications

With the controversy surrounding the proposed "Communications Privacy Act" in the U.S. Congress, it may be a good time to reflect on what might have happened if such a law was in existence over the past decade. That's the era when scanner radio use grew from a very few people to over 8% of the U.S. population. What would we have gained or lost if these radios had been illegal to own, or available only by special permit? Certainly, only a tiny fraction of us would now own these radios, and only with a permit for special purposes. Very few people would have the right, for instance, to listen in to their local police departments or fire departments. But what would the loss really be?

Well, ten years ago, many police departments agreed that people should not be allowed to listen in to their communications. They saw no value in having citizens listen in and many wanted laws on the books that made the mere act of listening illegal. Fortunately, for us and the police, the Federal Communications Act of 1934 got in the way. In one case, Philadelphia, legislation that did become law was declared unconstitutional by the courts.

Over the years, however, as scanners became more and more popular, something most interesting happened. The police began to get help from citizens who became their "eyes and ears" when they put out a call about a hit-run vehicle or a missing child. They began to realize that there was more benefit to having people listen in than attempting to prevent it; after all, the criminal would not hesitate to listen in anyway. And, for scanner owners listening in, they began to have an understanding of the problems that the police face on a day-in, day-out basis. Hours of radio checks and boredom, punctuated by extreme risk and sometimes terror . . . not an easy life, and far removed from the average citizen's image of the policeman they only think of as giving out traffic tickets.

Recently we received a newspaper account of a bank robber apprehended because of a scanner radio listener. Countless Neighborhood Watch groups around the country rely on them. They

have become so vital to crime prevention that TV public service messages advocating their use have been aired.

Today, both the International Association of Chiefs of Police and the National Sheriffs' Association are on record as endorsing the use of scanner radios by private citizens. One can only imagine what it would be like today if the initial reaction to prevent it had prevailed.

New Address For Speedier Response

We have a new address to assure speedier response to inquiries. It is SCAN, P.O. Box 414, Western Springs, IL 60558. Writing is the best way to reach us, but if you want to call, our phone number is (312) 822-9745, and is generally answered from 2-4 p.m. central time, (3-5 p.m. eastern time and noon to 2 p.m. pacific time). At all other times, a recorder will take your message.

Summer Legal Report Available

SCAN has an updated survey of states which restrict the use of scanner radios in vehicles. The state-by-state summary is in a handy folder form, which makes it convenient to store for reference in your vehicle's glove compartment. It is available for just \$1.00 to cover printing, handling, and postage costs. Write to: SCAN Legal Report, Box 414, Western Springs, IL 60558.

Car Rental Discount Reminder

Speaking of auto travel, here's a reminder that your SCAN membership card is good for discounts at Avis. If you rent a car, be sure to show your card and receive a discount of up to 40%. There is now even a 5% discount off their "Super Saver" rates, which must be reserved in advance. If you are not a member and would like to find out more about SCAN, please write. If you are already a *Popular Communications* subscriber, there is a combination discount plan, so please enclose a recent mailing label.

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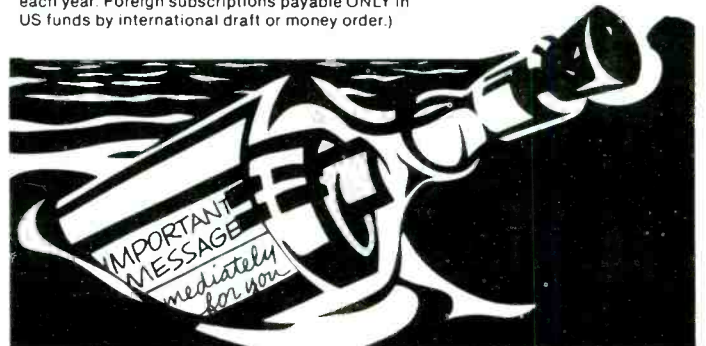
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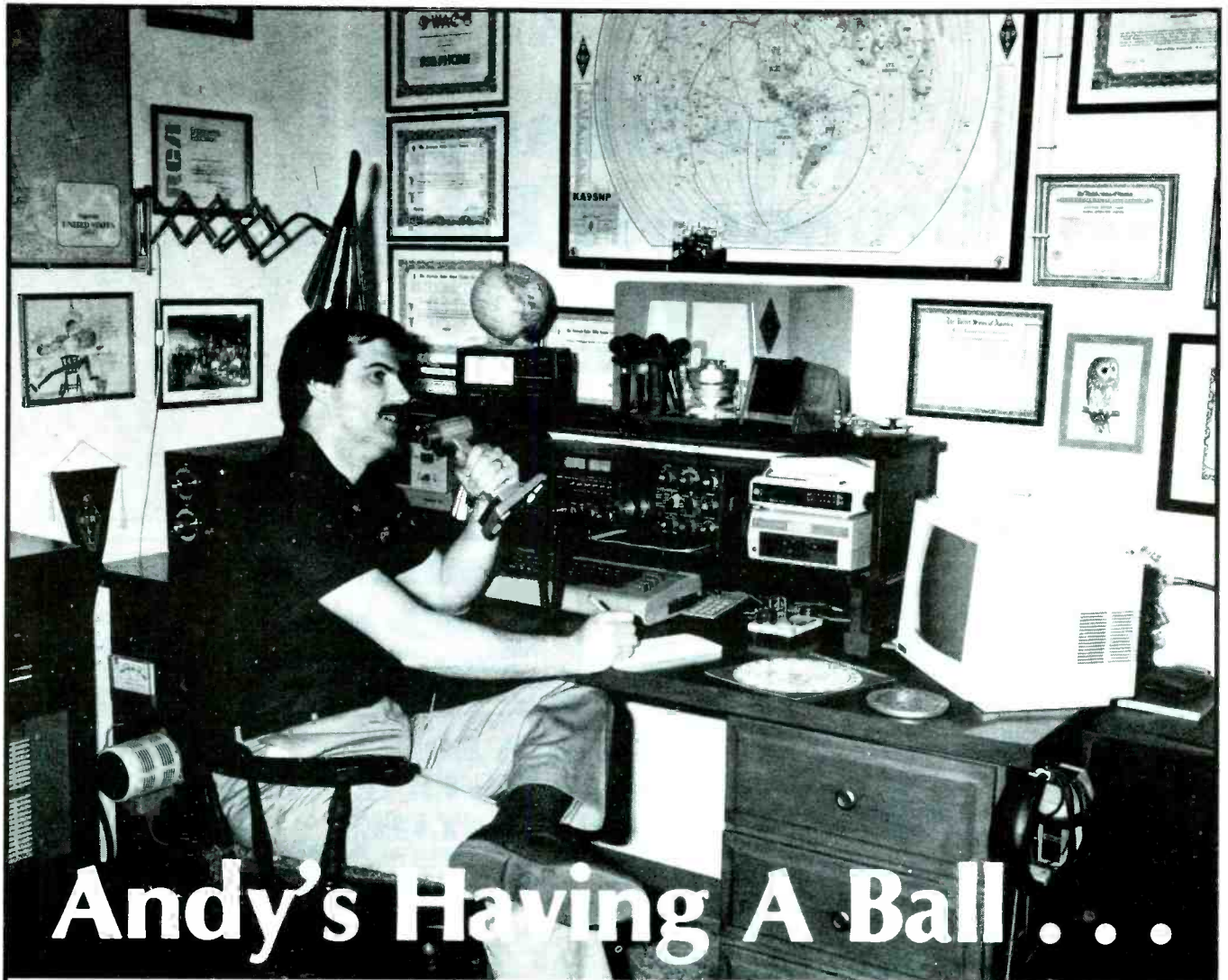
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An Inside Look At:

The Shadow Broadcast Empire!

A Reprise Of Secret Broadcasters Known As Clandestines

BY GERRY L. DEXTER

The music is that old Latin standard "Siboney." The words that follow the song run something like this: "en el aire, Radio Caiman. Estan escuchando Radio Caiman transmitiendo para Uds. pro las frecuencias de los 9.960 kiloHertz en la banda de los 31 metros . . ."

"Caiman" is Spanish for "alligator" and it is the newest addition to the zoo of clandestine radio stations operating on the shortwave bands, broadcasting from or to various trouble spots and potential problem areas around the world.

In November, 1983, POP'COMM carried a survey of the then active clandestine stations. A good deal has changed in radio's phantom world since then making it time for a "Clandestine Reprise."

Some of the shadows take different shapes now. New ones are spotted lurking in broadcasting's back alleyways. Others have slunk away, disappeared into history's list of secret voices who helped achieve the aims of their backers or who failed and gave up. Some cash in their chips only to return to play another hand or two before they leave the table and do yet one more vanishing act.

But in the big picture things haven't changed a whole lot. As has always been the case, clandestine radio stations still broadcast for the purpose of getting a particular political viewpoint across on the sly and generally aim their efforts at those inside a country where the radio's operators want to see change take place, usually change in an all-or-nothing fashion—the removal of the government currently in power.

If any new trends are evident this time 'round, it is that there are more stations operating now that are even less than shadows. Their presence is felt but they hide their identities. Those who pay for microphones, transmitters, and antennas are unannounced, unknown to the listener. Their purposes may be obvious, but their backers, for reasons of their own, choose to remain completely hidden.

Northern and Southern Africa, the Near

The collage consists of three distinct sections. The top-left section is a newspaper masthead for 'BOLETIN' with contact information for 'Comite FOM' in Los Angeles, U.S.A. The top-middle section features the 'FDN' logo, which includes a stylized 'A' with a triangle inside, and the text 'FUERZA DEMOCRATICA NICARAGUENSE' and 'NICARAGUAN DEMOCRATIC FORCE'. Below the logo is the slogan 'Con Dios y patriotismo, derrotaremos al comunismo' and its English translation 'With God and Patriotism, we shall defeat Communism'. The top-right section lists names: 'EDYTORIAL: Harry Rodas, Roger Calder, Mario Otero', followed by 'Directorio de Circulacion: Jose Luis Castillo', 'Directorio de Suscripciones: Argenis Mendez', and 'New Orleans, Louisiana EE.UU. VOL. 2 NO. 8 Agosto 1, 1985'. The bottom section is a large black and white photograph of a man in a suit and tie, looking slightly to the right.

NICARAGUA ROLE IN TERROR PLANS CHARGED BY UNITED STATES

Americans in Honduras said to be the Targets

WASHINGTON, July 18—The United States told Nicaragua today that it had intelligence reports indicating that individuals supported by Nicaragua were planning terrorist attacks against United States personnel in Honduras.

It is noted that if such attacks took place, "the United States should be expected to react accordingly."

In a message delivered to the leftist Government in

vision personnel came under attack in Central America.

A White House official said of the warning, "Our response to such an act against Americans will be appropriate to the loss incurred. The time and place of our response will be of our own choosing."

The White House national security adviser, Robert C. McFarlane, said today that the United States had no intention of invading Nicaragua or of breaking

The FDN publishes this newspaper in New Orleans, Louisiana.

East, Far East, and Central America continue to attract the most clandestine broadcastings, as they have for the past several years.

It should probably be mentioned once again that clandestine stations are as different from pirates as apples are from oranges. Clandestines are backed by governments (usually secretly) or are operated by revolutionary groups, liberation committees, or political parties on the "out," and sometimes multi-factions are involved. Pirates, on the other hand, are normally operated by private individuals seeking mainly to provide entertainment—if not for an audience, at least for themselves. Both are unlicensed, but there the similarity ends.

The current radio rogues' gallery, while different from our list two-and-a-half years ago, is, overall no less mysterious. It remains largely difficult to verify tied into today's headlines and is a continuing source of fascination for shortwave listeners.

The country-by-country survey which follows is listed by target country, i.e. the country to which the broadcasts are aimed,

not necessarily from where the broadcasts come. The GMT times and frequencies given are often variable and always subject to change.

Afghanistan The Voice of the United Muslim Fighters of Afghanistan has become the Voice of Unity with broadcasts at 1530 to 1630 on 15.050; also 11.630 and 15.555 on occasion. Also known as Unity Radio of the United Mujahedin of Afghanistan.

The Voice of Free Afghanistan is reported to be operated by the Society for the Protection of Human Dignity and Freedom based in Paris. Studios are in Pakistan and low power transmitters are said to operate from within Afghanistan. Cassette tapes are also made at the studios and distributed to fighters within Afghanistan. This station may be the same—or an outgrowth—of the Voice of Afghanistan, which most recently was operating from 1130 to 1215 on frequencies between 3.210 and 3.255 and that, in turn, may be an outgrowth of the original Radio Free Afghanistan, which runs the low power FM network under the noses of the Soviets. Got that straight?



Radio Venceremos

THE WORKERS' VOICE

by Mercedes del Carmen Letona

Four years ago Radio Venceremos took the air by storm and broke the information muzzle that the military dictatorship had imposed on the popular struggle for almost fifty years. Today, after four years of strategic breakthroughs, the people forces have arrived at a new and decisive stage of the war.

The development of the people's Army and the unyielding will to struggle to the peasants and workers, in spite of 50,000 deaths, half a million refugees, massive bombings and the assassination of popular leaders, defeated the plans of those who tried to stop a people decided to conquer the future.

Last year was only the beginning of the integration of all the people into the struggle.

Our people are no longer alone, when they strike and struggle to conquer their legitimate rights. They have FDR-FMLN as their vanguard, which knows how to integrate the entire torrent into one single struggle. Today the Salvadoran working class has an Army which fights and defends its right, an Army which combats and defeats the oppressors Army, an Army which is recognized worldwide and was born from the roots of its own people.

Now that the popular struggle is advancing it will be clearer than ever that the FMLN is the armed hand of the workers. Now things are different. The National Guardsmen and the death squads can no longer silence the voice of the people. No one can shut out the people's voice. An Army of thousands of combatants is defending it.

No one can bomb Radio Venceremos, nor can its members be abducted in the quiet of the night. Neither thousands of soldiers with artillery and planes, nor the CIA, nor the U.S. advisers, have been able to silence Radio Venceremos.

Radio Venceremos will accompany each popular demand, each struggle, each mobilization, each strike each denunciation of the injustices carried out against the workers; we will make it all, along with the revolutionary military advance, an unstoppable current which will bury forever the injustice and exploitation in our homeland.

Our brother workers, unionized or not, our peasant brothers, cooperative members, brother students and teachers, heroic and self sacrificing women of the markets, small businessmen, farmers, christians, the refugees, that is: all of our people who forge our nation and its wealth, but who live through the exploitation, the injustice, and the misery: they must know that we will echo their demands and voices, and that no one can silence us nor buy us off.

Radio Venceremos will be the workers', peasants' and guerrilla voice. We will be in each popular struggle and each battle of the workers' Army.

We announce that within a short time Radio Venceremos will begin broadcasts in FM to reach the same level of struggle that our people have begun to wage. The broadcasts will reach the four war fronts, covering



Commander Mercedes del Carmen Letona, member of the General Command of the Rafael Arce Zablah Brigade and the General Command of the People's Revolutionary Army.

70% of the national territory and at least ten of the fourteen departmental capitals.

Shortly, our FM signal will reach Santa Ana, Sonsonate, and Ahuachapan in the West, San Salvador and the area surrounding it in the central zone, and Cojutepeque, Sensuntepeque, San Vicente, and part of La Paz Department and Zacatecoluca. The East will be covered almost in its entirety, including three of the four departmental capitals: Gotera, San Miguel, and Usulután and the majority of important eastern towns and cities such as Jiquilisco, El Triunfo, Jucupapa Chinameca, Santiago de Maria, Berlin, and others.

The people should be alert to the beginning of our guerrilla broadcast. They represent the capacity and strength of the people to disseminate its ideas and have their origins in the struggle of all those brothers who fought against the dictatorship's muzzle despite such difficult conditions.

Four years from our birth we greet our brothers from Radio Farabundo Martí and all the valiant worker of the national and international media, who under very difficult conditions, also give their valuable contribution to the conquest, with peace, with justice for our homeland.

REVOLUTION OR DEATH!!!!!!
WE SHALL OVERCOME.

A story about Radio Venceremos in the FMLN publication Senal de Libertad.

The United States has gotten into this part of the game as well, with a Radio Marti-like *Radio Free Afghanistan* program said to have begun broadcasts last fall over Radio Free Europe/Radio Liberty facilities. Still unheard at this writing, it is supposed to be scheduled Tuesdays through Saturdays at 1345-1400 on 17.750, 17.895, and 21.510 and at 2315-2330 on 7.295, 9.625, 9.660, and 11.970.

Angola *A Voz de Verdade* (The Voice of Truth) airs its broadcasts on 4.950 at 0300 to 0415 (perhaps not daily) and the *Voice of the Resistance of the Black Cockerel* (*Voz Resistencia do Galo Negro*) is scheduled Monday, Wednesday, and Friday at 0430 to 0630 on 4.950 or 4.973. Both are run by the opposition UNITA party and generally believed to be hosted by South Africa. A third station, identifying as *Radio Unita* has been heard around 0400, and again on 4.950. The supporters of this one should be obvious, but it is not yet known whether this is a new outlet or a new name for one of the other two.

Another station, *Radio Cubanos en*

Africa, broadcasts to Cuban troops in Angola on 6.045 at 0530, but does not appear to operate on a regular basis. It, too, is believed to air from transmitters in South Africa and probably has connections with one of the anti-Castro organizations.

Burma *The Voice of the Burmese People* (also reported as the *Voice of the People of Burma*) went off the air last June, apparently as a token move by the Chinese when Burmese leader U Ne Win visited Beijing. Don't be surprised if it pops back on one of these days. Last schedule was 7.570 from 0030-0300 and 1200-1435.

Kawthalay Radio a/k/a the *Voice of Kawthalay*, is voice of the Karen National Union, which seeks independence for the Karens. Its fortunes have depended largely on how successful the Karens and other opposition groups have been at keeping Burmese troops out of rebel-held territory. Lately, they have not been so successful and the station is off the air at present, although Karen leaders had hoped to get it back on before the end of 1985. The station has never been heard in the U.S. through its

many years of on and off operations. Check 9.775 between 0030 and 0130.

Chad Libya has cut back on many of the clandestine stations and programs it was operating or supporting, but it continues to make transmitter time available for *Radio Bardai*, more recently known as *Radio Chad*, scheduled from 1800 to 2020 or later on 6.009. During the winter months this can sometimes be heard into the midwestern United States. It's backed by the *Front du Liberation Nationale du Tchad*, headquartered in Libya, but letters to that group in Libya are returned by the post office there.

Chile *La Voz de la Resistencia Chilena* is still aired over Algerian Radio at 0000 and 1030 on one or more of these frequencies: 9.510, 9.640, 9.685, 15.215, and 17.745.

China Clandestine activity directed at the Middle Kingdom declined during the summer months, but it has picked up again. The group of anti-Chinese outlets that make a practice of airing brief, periodic transmissions as though operating under stress from within China itself were all silent during the summer, a cessation believed to have been tied to a Soviet effort to improve relations with Beijing. Now, at least some of them seem to be back on the air. A fake *Central People's Broadcasting Station* has resumed its former practice of mixing news items from the real CPBS with those of its own. Formerly operating sporadically between 0900 and 1200 on 7.525, it has been heard recently in Asia around 0000 and 1430-1445.

Radio Sparks, the *Voice of the Emancipation Army*, may have resumed operations on 7.184 at 1400, 1415, 1430, 1445, and 1500 although previously it, too, broadcast during the 0900-1200 period. *October Storm*, also believed reactivated, runs during the same 1400-1500 period, but on 9.267.

The other two entrants in this "gang of five," the *Voice of the People's Liberation Army* and the *Contingent of Proletarian Fighters* have, to our knowledge, not yet come back out of the rice paddies. Some say all of these stations are Taiwanese backed, but most agree the Soviet Union is behind them, either from transmitters near the Sino-Soviet border or from a ship in the South China Sea.

Radio Ba Yi (August First), which has been around for a few years, was also silent during the summer, and returned in late August (one would think on August 1!). Apparently this summer hiatus is routine. No current schedule is available, but try the 0900-1200 segment on 12.120. It is believed to be operated from a transmitter in the Vladivostok area.

Cuba *Radio Caiman*, introduced at the beginning of this article, is the newest of the anti-Cubans. It began life in the spring of 1985, airing two hour music blocks twice a day. Because of the style of one of the often-played male vocalists, the station was soon nicknamed "Radio Nat King Cole." There wasn't much else one could call it as there were never any voice announcements, at least not until late September when it began

regular programming. The anti-Cuban track is lightweight and much of the very professional programming seems aimed at young people in Cuba. Broadcasts run anywhere from 50 minutes to 1½ hours and start at 1100 and 0000 on 9.960. The frequency is stable, the signals are strong, but no mention is made of any backing organization.

Radio Mambi, the voice of the Cuban Patriotic Council (Junta Patriótica Cubana), has had FCC visits on several occasions in recent years. It has kept silent until recently. Of late there have been reports of this one on 7.085 around 0100.

La Voz de Alpha 66, run by the Alpha 66 group, is maintaining a fairly consistent schedule of Tuesday, Thursday, and Saturday (GMT days) at 0100 on 6.666.

Not to be outdone, or to give listeners the opportunity to hear everything both stations have to say, *Radio Antorcha Martiana*, run by the Movimiento Insurreccional Martiano, has its broadcasts on the same days at the same time. Fortunately, they didn't choose the same frequency. They're on 7.080.

La Voz del CID, operated by Huber Matos' Cuba Independiente y Democrática group, has cut back on the number of program services it used to air. Of late it has been running just one—Radio Camilo Cienfuegos—which can be found daytimes on 9.940 and 11.680 and evenings on 6.305, 7.3525, or 7.400. CID programming, mostly music without CID identification, continues to air over Radio Clarin in the Dominican Republic on 11.700 during the daytime.

El Salvador The Farabundo Martí Liberation Front's *Radio Venceremos* continues to roll along, operating with all the self-assurance and consistency of a commercially-licensed city station. Broadcasts are at 0000-0100, 0200-0300, 1215-1315 (Sundays 1400-1500) and 1830-1930 (Sundays 2000-2100) on 3.670 and 6.557 generally, but sometimes uses such frequencies, as 6.805, 6.855, 6.545, and 7.059.

An Associated Press story out of San Salvador reports on some competition for *Venceremos*—another *Radio Venceremos!* According to the story, the fake *Venceremos* doesn't do a very good job of pretending to be the real thing. Although it refers to FMLN guerrillas as "ours," it makes not-too-subtle light of their efforts. The counterfeit broadcasts are said to have increased lately and to take place while the real *Venceremos* is on, using nearby short-wave frequencies. The El Salvador government denies any knowledge of the station, as might be expected.

Radio Farabundo Martí, mouthpiece of the FMLN's Popular Liberation Forces, claims to operate from Chalatanango Department inside El Salvador. Broadcasts are not as regular as those of *Venceremos*. The most recent schedule is 1230-1300, 1830-1900, and 2300-0000 on 6.740. A year ago the station took on a public relations representative in Los Angeles that promptly vanished after mailing out one set of materials with an appeal for funds!

BOLSHEVIK MESSAGE



NO. 1

PAPER OF THE
COMMUNIST PARTY OF IRAN - THE COMMITTEE ABROAD

(2ND SERIES)
JULY 1985

BOLSHEVIK MESSAGE - NEW SERIES

The paper before the reader is the first issue in the new series of publication of the *Bolshevik Message*, formerly the paper of the "Organisation of the Supporters of the Communist Party of Iran Abroad" (OSCPA). As the reader will see by reading the statement, published in this issue, about the recent re-organisation in the ranks of the supporters of the CPI abroad, the OSCPIA has now formally ended its activities, and the supporters of the CPI are organised as "Associations of the Supporters of the CPI" in respective countries. The *Bolshevik Message* is now being published by the Communist Party of Iran-the Committee Abroad. The tasks and perspectives of *Bolshevik Message* will be explained in the next issue of the paper. We invite all our readers to write to the *Bolshevik Message*.

Editorial Board

FREEDOM, EQUALITY, WORKERS' GOVERNMENT

Let us rise

You won't find any cartoons, sports, or other features typical of a U.S. newspaper in this organ of the Communist Party of Iran.

Ethiopia The Eritrean Popular Liberation Front's *Voice of the Broad Masses of Eritrea* continues its broadcasts and also identifies as the *Voice of the Eritrean Revolution*. The transmitters may be in the town of Orotta about 12 hours from Sudan. The last known schedule was from 0400-0630, 1430-1630, and 1800-2000 on widely varying 3.725, 3.760, 4.410, 6.240, 6.250, 6.275, 6.305, 7.387, 7.450, 9.930, 9.940, 9.950, 9.985, 14.328, and 14.340. Take your pick of one frequency per band.

The Voice of the Tigre Revolution uses the facilities of Broad Masses and seeks independence for Ethiopia's Tigre state. It's scheduled Tuesday, Thursday, and Sunday at 1345-1415 and 1700-1730.

The Voice of the Eritrean Popular Revolution, Somali-supported, is on via Radio Magadishu at 1630-1730 on 6.095.

Iran Even with a scorecard it is difficult to keep track of the players in the convoluted Iranian opposition. Allegiances and alignments continue to shift, stations change names and information is often sketchy or conflicting.

The Voice of the Fedai'i announces itself as the voice of the guerrillas of the Feda'lyan-e-Iran and operates from 1700-1745 and 0900-0945 on 3.941 and 4.680. It is communist-run and seeks the establishment of a "Democratic People's Republic."

The oldest of the Iranian clandestines, dating back many years before Khomeini



No 124

Fri 1 June 84

A Publication of the Union of Moslem Iranian Students Societies Outside Iran, supporters of the People's MOJAHEDIN Organisation of Iran

INSIDE

- Khomeini regime's Gulf policy p. 7
- News from prisons p. 3
- News of Resistance in Iranian Kurdistan p. 3

NCR delegation headed by Mr Rajavi at Italian Socialist Party congress



Verona (Italy) May 12 - Mr. Mansour Rajavi, leader of the Iranian Resistance, meets Prime Minister Bettino Craxi at the banquet dinner he gave in General Secretary of the Italian Socialist Party. Behind Mr. Rajavi stand Dr. Manoochehr Hesarkhani (right), the NCR's representative in Rome, and Mr. Hossein Naghadi, a member of the NCR's diplomatic cadres.

On the occasion of the martyrdom of the PMOI co-founders

A review of the history of the People's Mojahedin Organisation of Iran

May 25 was the twelfth anniversary of the execution of the three co-founders of the People's Mojahedin Organisation of Iran by the Shah's dictatorship. The three were Mohammad Hanif-Nezhad, Saeed Mohsen and Agghar Radzadegan, none of whom were aged above thirty at the time of death. Two other central committee members of the Mojahedin, Mahmud Aggari Zadeh and Rezaoul Meshkinfaa, were shot with them. The Mojahedin Organisation was born in 1965, seven years before the date of the executions. Hanif-Nezhad, a native of Tabriz and a graduate in agricultural engineering, was the leading founder. His two companions

action was thus built on a powerful code of struggle and a strong, dynamic and anti-dozmatic ideology. Historically, this birth was a continuation of the Constitutional Movement (of 1906) and the Nationalist Movement of Iran that was led by Dr. Mohammad Mossadegh. Ideologically, it adhered to the progressive and genuine Islam. The three founders strongly believed that their socio-political practice could only be implemented in an organic collective relationship and within the framework of an integrated organisation enjoying internal unity. The organisation they founded is still enjoying its internal unity after almost

Iran Liberation is published by the Union of Moslem Iranian Students Societies Outside Iran which, in turn, backs the People's Mujahedin of Iran.



The Council for the Liberation of Suriname



Surinamese forward to liberation

took power, is the *National Voice of Iran*, operated by the Iranian Tudeh (communist) party from transmitters at Baku in the USSR. It is on from 1730-1815 and 1930-2000 on 5.915 and 6.025.

Radio Iran speaks for supporters of former prime minister Shapour Bakhtiar and is carried over the facilities of Radio Baghdad at 0200, 0400, 1300, and 1830 on 3.360, 7.170, 9.400, 9.584, 11.640, 11.750, and 16.650.

The Free Voice of Iran, also broadcasting from Baghdad, backs former Iranian General Owaisi and operates on 3.367, 7.180, 9.585, and 11.765 from 0300 to 0400 and 1500-1530.

The Voice of Iranian Kurdistan speaks for the Kurdish Democratic Party lead by Abdul Rahman-Qassemlly and seeks autonomy for Kurds living in Iran. It is scheduled at 0330-0430, 0900-1030, and 1300-1500 on 7.400 and 9.405.

The Voice of the Mujahedin-e-Khalq, also from Baghdad, now calls itself *Voice of the Crusader* and broadcasts on behalf of the Mujahedin-e-Khalq (Crusaders of the Masses) at 0230, 1100, and 1700 on 3.498, 4.198, and 5.955.

Radio Nejat-e-Iran, also known as *Salvation of Iran* and the *Voice of the Liberation of Iran*, airs from 0330-0530 and 1630 to 1830 on 9.027 and 15.555. It is backed by the National Resistance Movement of Iran.

The former *Voice of Iran*, which was also believed to have been operated by the National Resistance Movement, has apparently merged with *Nejat-e-Iran*.

The Voice of the Iranian Revolution, operated by Komala, the Kurdistan division of the Communist Party of Iran, airs at

0915-1015 and 1430 to 1630 on frequencies between 6.366-6.383, 6.420-6.440, and 7.245-7.300.

Radio Vatan, despite occasional reports of reception, is believed to have also merged with *Nejat-e-Iran*. This station was given to the Shah by the late Egyptian leader Anwar Sadat and after Sadat's death was financed by his estate and the late Shah's sister, Ashraf.

Another communist outlet is *Radio Iran Toilers*, aired over the facilities of Radio Afghanistan on 6.085 and 7.200 at 1600-1700 and 0230-0300.

The Voice of the Iranian Communist Party claims its transmitters are in Iranian Kurdistan. It is scheduled from 0315-0415 and 1730-1830 on frequencies between 4.468-4.500 and 6.500 to 6.530.

Iraq Considering its on-going war with Iran, there is surprisingly little in the way of clandestine radio aimed at Iraq. The counterpart to the *Voice of Iranian Kurdistan* is the *Voice of Iraqi Kurdistan*, which supports a free Kurdistan carved out of Iraqi territory. It is a pro-Soviet outlet operating from Baku, Azerbaijan SSR in the USSR. The last known schedule was 1200-1300 and 1400-1500 on 6.305.

The Voice of the Iraqi Revolution speaks for the opposing faction of Iraq's ruling ba'ath Party and is pro-Syrian in disposition. It is believed to be located in Syria or the USSR. The last known schedule was 1300-1415 on 7.005.

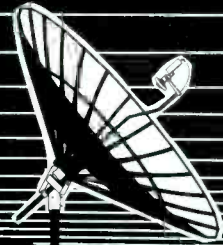
Kampuchea Voice of the National Army of Democratic Kampuchea and the *Voice of Democratic Kampuchea* are both stations of the Khmer Rouge, the Party of Democratic Kampuchea. The latter station operates over Radio Beijing transmitters, most recently at 1300-1400 on 4.120, 5.250, 11.675, and 15.130 and at 2330-0030 on 7.350, 8.345, and 9.440; also 0400-0500 on 11.725 and 15.400, and 0900-1000 on 11.870 and 15.100. The Army station is believed to operate from within or near rebel-held territory in Cambodia near the border with Laos. It is on variable 5.199 from 2315-0100, 0430-0600, and 1000-1400.

Korea A new entry on the Korean scene is *Echo of the Public*, claiming to be in Seoul (of course) but actually in North Korea (of course). It is scheduled from 1100 to 1400 on 5.885 and is well heard in the U.S.

The Voice of the Revolutionary Party for Reunification, another North Korean effort, has made two changes in recent months. First it began being carried by regular Pyongyang frequencies and added English to Asia and Africa at 1500-1650 and 1700-1850 on 9.625, 9.977, and 11.880. A few months after making that move, it changed its name to the *Voice of Salvation*.

In the meantime, the South's long-running *Echo of Hope* continues to be heard in the early mornings in the U.S. on 3.985 and 6.348, though we don't have an exact schedule. The transmitters are those of the Korean Broadcasting System at Suwon and we have reason to believe the programs are recorded in the KBS building in Seoul.

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Libya *The Voice of the Libyan People*, once a Sudanese effort, went silent after the coup in the Sudan. Operated by the National Front for the Salvation of Libya, it has now found a new home—perhaps Egypt—and runs 1800-2000 and 0400-0600 on 11.975.

Malaysia *The Voice of the People of Malaysia* is operated by the breakaway Marxist-Leninist faction of the Malaysian Communist Party, believed to broadcast from Southern Thailand. Early mornings, U.S. time, offer the best opportunity to hear this one on its variable frequency of 7.075. But, although it comes into Malaysia like gangbusters (and is jammed), there are no known U.S. loggings.

The Voice of Malayan Democracy, the mainstream communist outlet, broadcasts from 0430 to 0545 and 1215-1330 on 6.700 and 8.998 and can occasionally be heard here.

Namibia *The Voice of Namibia* program, produced by the Southwest Africa People's Organization, airs Saturdays at 0415 via Tanzania on 9.748, 1630 to 1730 on 7.245 via Algeria, 1700-1730 via Angola on 9.535 and 11.955, 1830-1930 via Algeria on 9.505, and via Tanzania at the same time on 9.748. It is also at 2000-2100 via the Congo on 15.190 when Brazzaville appears to be active.

Nicaragua *Radio Miskut*, operated by the MISURA Political Commission in Hon-

duras and which beamed broadcasts to the native Indian population in Nicaragua, now has a doubtful status. Its broadcasts have been quoted by some press accounts, but it has not been heard by U.S. listeners in some time, even though it was widely heard in its early days. Last known schedule was 2100-2215 and 0100 and 0200 on 6.965.

Radio Quince de Septiembre, the voice of the much-in-the-news FDN contras, is still active and best heard in the 0400-0545 slot on various frequencies such as 5.555, 5.580, 6.215, 7.195, 5.500, 5.565, 5.690, and 5.365.

ARDE's *La Voz de Sandino* has fallen on hard times, reflecting the difficult days ARDE itself has experienced thanks to depleted funds and factional infighting. Keep an ear out, however, as it is spotted once in a while. Check between 2230-2330 or 0400-0500 on 5.760 or 5.874 for the station.

Radio Monimbo describes itself as the "voice of freedom for Nicaraguans," but it may also be Radio Caiman's older brother. The similarities between the two are enough to make one think twice. Both take a "laid-back" approach, both produce fairly strong signals, both operate on stable frequencies, both sound very professional and neither announces any sponsoring organization. Does that tell us anything? The name. Monimbo, is that of a Nicaraguan town where Indians first revolted against the rule of Somoza. Monimbo operates on 6.230 at 0000-0100 and 0200-0300, occasionally up to half an hour past usual sign off times.

Somalia The United Voices of the Somali Opposition Forces do the programming for *Radio Halgan*, which is hostile to the government of Somali President Mohammed Siyad Barreh. Programs air from 1700 to 1800 over the Voice of Revolutionary Ethiopia on 9.595.

South Africa *Radio Freedom*, the program of the African National Congress, is carried Tuesdays and Thursdays at 0415 on 9.748 via Tanzanian radio, 1730 to 1800 on 7.245 and 9.505 via Radio Algiers, and via Ethiopia on 9.595 between 1930 and 2000.

Sri Lanka The Tamil separatists, specifically PLOTE—the People's Liberation of Tamil Eelam—operates the *Voice of Tamil Eelam* on frequencies varying between 6.900 and 7.300 on Wednesdays, Saturdays, and Sundays from 0130 to 0330 and 1030 to 1230. The Sri Lankan government jams the broadcasts, which have never been logged in the United States.

Sudan *Radio SPLA*, the official voice of the Sudan People's Liberation Army and Sudan People's Liberation Movement, has apparently added all of Sudan to its concerns rather than just its previous emphasis on independence for the southern areas. It's being heard occasionally by Florida DX'ers around 1300, with some English, on 9.600, a frequency also used by Radio Moscow's Cuban relay.

The Voice of the Sudanese Popular Revolution is, at best, in a transitional stage. Operated initially by Libya's Khadafy and

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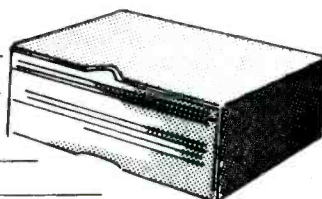
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Escuche: R15

RADIO 15 DE SEPTIEMBRE



Infórmese del proceso
insurreccional del pueblo
nicaragüense por nuestras

FRECUENCIAS:

5.565 Kcs. — Banda de 60 mts.
6.200 Kcs. — Banda de 49 mts.
6.900 kcs. — Banda de 41 mts.
7.000 Kcs. — Banda de 41 mts.

HORARIO:

5:30 A.M. 12:00 M 4:30 P.M.—
8:30 P.M. — 11:00 P.M. Hora local.

**Voz
oficial de**



Fuerza Democrática Nicaraguense

COMBATIMOS PARA TRIUNFAR

Don't believe the frequencies in this ad for
Radio Quince de Septiembre.

THE MONITORING MAGAZINE

September 23, 1985

Dear Mr. Goetsch:

Thank you for confirming your reception of "La Voz de Alpha 66" on September 3, 1985.

Alpha 66 is a revolutionary organization with members in exile and inside Cuba, fighting against the traitor Fidel Castro, against the worst dictatorship of Latin America: the Communist dictatorship that can only be compared with the barbarous repression of Hitler and Stalin.

We will always fight. We will not stop until seeing our country free. We love the United States of America and are very grateful to this wonderful country, but we want to come back to our homeland and we know that one day we will return to a free Cuba.

Our radio programs are directed to the people of Cuba, to the underground, to those who do not take the word FREEDOM for granted ...

Thanks again for reporting our radio program. We appreciate your interest and will always welcome your letters.

Cordially yours,

Sara M. Medina
Sara M. Medina

sm

The anti-Castro La Voz de Alpha 66 sends a letter verification.

then hostile to former President Numayri, it did several schedule flip-flops in the uncertain days during and just after the coup in the Sudan and then went off the air completely.

Surinam The Surinam Liberation Council continues to run *Radio Free Surinam*, only now it is a program rather than a separate station. The group couldn't raise the required funds and was unable to maintain the operation in its initial format. Now it's on over La Voz del CID's Radio Camilo Cienfuegos, airing for 10 to 20 minutes daily at 2030 on 9.940 and 11.680.

Turkey The Turkish Communist Party operates two of the longest-running clandestines. *The Voice of the Turkish Communist Party* airs at 0400, 0500, 1200, 1300, 1600, 1700, 2000, and 2100 on 9.585, and also at 0800 and 0900 on 11.820 *Bizim Radio* (Our Radio) does its thing at 0200, 0300, 0600, 0700, 1400, 1500, 1800, and 1900 on 9.585 and at 1000 and 1100 on 11.820, and also at 1015 and 1445 on 9.500 and 2000 and 2030 on 5.915. Transmitters for both are in Roumania and East Germany.

Vietnam *Vietnamese Resistance Radio* is on the air at 0200-0300, 0500-0600, 0900-1000, 1500-1600, and 2200-2300 on 7.320. It is said to be operated by the United National Front for the Liberation of Vietnam, a loose coalition of various opposition groups. Transmitters may be in China or some other Asian nation unhappy with Vietnam's occupation of Cambodia. Unheard in the U.S.

Zimbabwe *Radio Truth*, another South

African-based station, is one of the few to be heard using English. Good African conditions should bring this one in with its bird call interval signal and sign on at 0430 on 5.015.

Most of the material for the above survey was taken from this author's *Clandestine Confidential Newsletter*, which provides the latest from the clandestine scene every other month and also produces several specialized clandestine station lists. For a basic guide to clandestine monitoring, see this author's book, *Clandestine Confidential*, published by Universal Electronics.

The clandestine broadcasting landscape continues to be a kaleidoscope of changing patterns, shifting identities, comings and goings. About 30 to 40% of the stations in the above list can be heard, usually with some digging, by U.S.-based DX'ers. Some are as easy as the BBC (well, almost) and others offer a challenge equaling that of Bhutan or Tristan.

Tracking the clandestines is one of the tougher yet more rewarding aspects of shortwave broadcast listening, and if you haven't yet tested these secret waters, you are missing out on some fascinating mystery and intrigue. No one knows who really operates many of the stations, just as no one knows where the next will pop up. The Philippines? Peru? Guatemala? A new Cuban? Another voice on the anti-Afghan airwaves? One thing is certain: we won't get the current ones completely figured out before more puzzles are placed on the table.

If you haven't yet gotten in on the action, you should give it a try. **PC**



The author spending a Sunday afternoon, stationed at the end of a runway. Note the binoculars and hand-held scanner, also the tolerant wife.



The Sony Air-8 is one of a new breed of programmable hand-held scanners that cover the VHF aero band. For those who have searched for Sony Air-8 scanners and couldn't locate dealers carrying them, check with JRC Scanners, D-31 Urb, San Antonio, Las Americas Avenue, Ponce, PR 00971. Julio (WP4CHP), at JRC, advises that he stocks this unit.

Flying High With The VHF Aero Band!

Many New Horizons To Scan Between 118 And 136 MHz

BY RICK MASLAU, KNY2GL

Lying unobtrusively between the high frequency end of the FM broadcast band and frequencies used by artificial satellites is the VHF aero band. Communications here extend from 118 to 136 MHz, with channels spaced at 25 kHz intervals; that makes for more than 700 frequencies to explore. If you haven't yet checked out these frequencies, now is as good a time as any to add VHF aero band monitoring to your list of things to do.

First, of course, you'll need the basic hardware. The most inexpensive way to get started here would be by means of a tunable receiver covering these frequencies. We've seen little tunable VHF hand-held sets for only \$20, with fancier all-band (including VHF aero) portables ranging up to about \$100. While these aren't the optimum way to go (you never know the exact frequency you're seeking or monitoring), they are fine

for the casual or beginning listener who is interested in zeroing in on general aeronautical chatter—control towers, airliners, private aircraft, etc.—without being very critical as to what's coming through.

For best results, the route to take is the one that includes a scanner. While some older scanners covered the VHF aero band alone, most of the current generation high/low/VHF band keyboard programmable scanners include the 118 to 136 MHz band. There are also hand-held programmables for this band now on the market.

If you're monitoring from home, you'll certainly want an outside mounted antenna to drag in those distant signals. Any scanner antenna that will receive the VHF high-band (150 to 174 MHz) should do well here, too, although you can also get excellent results by using a 2-meter ham band (144 to 148 MHz) omnidirectional antenna.

Any inexpensive VHF ground plane will do well here, too. For best reception, cut the vertical antenna element to 21 inches and the 4 horizontal radials to 26-1/2 inches.

With a decent scanner and outside-mounted antenna system, you should be able to reach out. Aircraft flying at only 7,000 feet will be heard from 120 miles away, but those at an altitude of 15,000 feet will be monitored if they're within 175 miles of your antenna! Airliners and military aircraft usually fly above 30,000 feet and reception should be good with stations more than 225 miles away.

Scanning

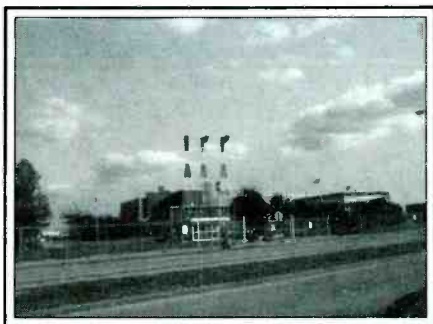
With 720 frequencies from which to select, it's apparent that many will produce no activity (or virtually no activity) within your receiving range. Even so, there is no location in the United States or Canada that will



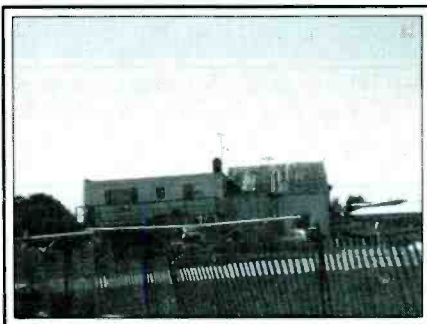
Pilots of ultralights, hot air balloons, and soaring craft prefer 123.3 and 123 MHz. They also seem to prefer hand-held transceivers. Here's ultralight pilot Lowell Richards (right) checking his hand-held transceiver for his transcontinental flight.



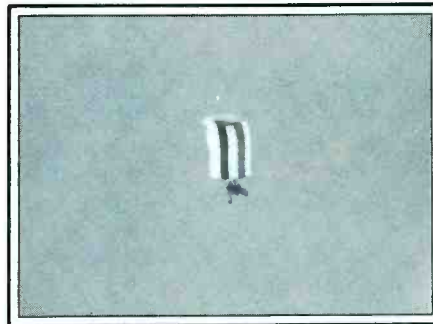
Airline company frequencies are in the 128.825 to 132 MHz range, offering an inside view of what's really going on. It will surprise you!



One of the FAA's Air Route Traffic Control Centers. Such facilities may be monitored on a large number of VHF frequencies.



The favorite frequency at small airports is 122.8 MHz, but channel crowding has forced some onto 122.7 and 123.0 MHz!



This strange craft is an ultralight chassis married to a parachute. The pilot was operating on 123.5 MHz!



Helicopters often talk on 123.05 MHz.

be devoid of activity. While individual locations (near specific airports) will, of course, produce a high concentration of activity on a particular group of frequencies, many channels are used on a national basis and are worthy of exploration regardless of your location.

Here are some random ramblings and observations on various and sundry frequencies that are worthy of your attention.

Unicom: Unicom stations are intended for providing pilots of small aircraft information about available ground facilities (fuel, taxis, car rentals, hotel rooms, etc.). At airports having FAA control towers, Unicom operations normally take place on 122.95 MHz, however, at small airports without control towers, these stations take on more duties. At such airports, the Unicom facilities provide pilots with information on wind

speed and direction, runway condition and usage, and similar information. The most popular small airport Unicom frequency is 122.8 MHz, although that frequency has become so crowded that other frequencies had to be added to accommodate those airports requiring this service. Look for additional Unicom frequencies on 122.7 and 123.0 MHz. At private landing areas closed to public use, Unicom frequencies operate on 122.725, 122.75, and 122.975 MHz.

Helicopters: The frequency 123.05 MHz is very popular with helicopter pilots, with 123.075 second on the list.

Aircraft-to-aircraft: Small plane pilots aren't supposed to chit-chat with one another over the air, nevertheless they can often be found doing just that on 122.75, 122.85, 122.9, and 122.925 MHz. Helicopter pilots talk to one another on 123.025 MHz (and in the Los Angeles area they prefer 122.75 MHz). Airline pilots swap small talk on 123.45 MHz.

Multicom: Multicom stations are set up for air/ground operations at ranches, tiny landing strips, and often for police/fire air/ground operations. There's always something interesting to hear on Multicom frequencies such as 122.85, 122.9, and sometimes 122.925 MHz.

Aeronautical Weather: Check out 122.0 MHz for the FAA's "Flight Watch" weather communications.

Airliners: The "company frequencies" of all major airlines are situated between 128.825 and 132.00 MHz. Put your scan-

ner into its "search" mode and sort through this range to see what you can come up with. Besides the routine gate assignment and left-behind baggage chatter, you can often monitor pilots bitterly complaining about unrepaired mechanical problems and discussing VIP's aboard who require (or demand) special attention.

Smaller airlines (also known as "commuter airlines") often can be found operating on 122.825 and 122.875 MHz, while air taxis and air ambulances sometimes pop up on 123.3, 123.5, and 131.95 MHz.

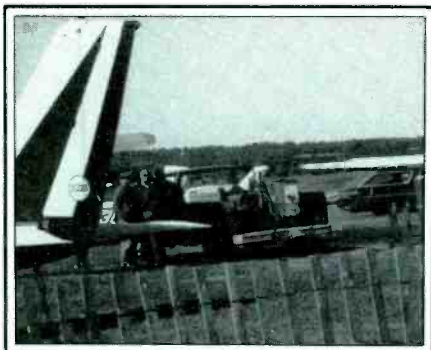
Flying Schools: Schools, soaring clubs, hot air balloons, ultralights and several other miscellaneous aeronautical activities usually end up on 121.95, 123.3, and 123.5 MHz.

Airport Utility Vehicles: Communications between on-field utility vehicles (fuel, maintenance, baggage transfer, fire/crash trucks, etc.) and taxiing aircraft can be monitored on 122.775 and 122.85 MHz. You'll have to be relatively close to a mid-to-larger size airport to copy any communications of this type.

Goodyear Blimp: Listen for this one on 132.0 MHz.

Emergencies: The aero emergency frequency is 121.5 MHz, although search/rescue (from the CAP and other groups) will turn up on 122.9 and 123.1 MHz.

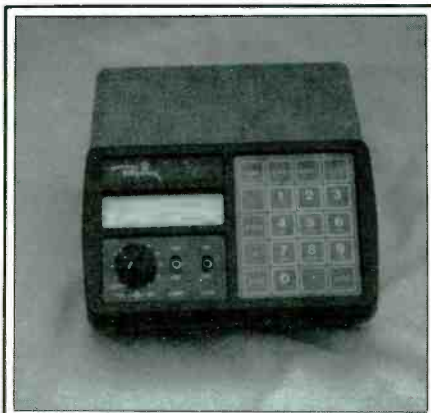
Air Shows: At special air shows, check for communications on 123.1 MHz. This is often used as a "sort of" control tower frequency as the antique or racing aircraft arrive and depart.



Airport utility vehicles can now operate on 122.775 and 122.85 MHz.



This tiny craft was only a little larger than some radio-controlled models, yet it was two-way equipped for VHF!



Punch-up some of these VHF aero band frequencies on your favorite scanner and check out the action. That's only a small sample of what's happening!

Canadian Operations: In Canada, 126.7 MHz is in wide use. This holds true even in remote areas.

Federal Government Operations: Here are some of the U.S. federal agencies that are sometimes noted in the VHF aero band. Near military landing areas, you can often monitor activity on 126.2, 130.65, and 134.1 MHz. Operations of the FAA can be noted on 118.375, 118.575, 135.85, and 135.95 MHz. The Department of The Interior is prone to popping up on 117.975, 121.935, 123.585, and 132.015 MHz. The Dept. of Agriculture's Forestry Service aircraft operations can be monitored on



A WWII-vintage B-29 bomber, monitored on 123.1 MHz, was a rare treat as it arrived for a local airshow. You don't monitor very many B-29's these days!



Bearcat's 20/20 scanner combines the VHF aero band with the public safety bands. That's made it a winner!

118.925, 118.95, 118.975, 122.9, and 122.925 MHz.

Aircraft Industry: Designers and manufacturers of aircraft (and major components of aircraft) operate in the sub-band 123.125 to 123.575 MHz.

FAA To Private Pilots: The FAA communicates with private pilots primarily through its Flight Service Stations (FSS). While specific facilities don't operate on all available FSS frequencies, you might wish to monitor the following for activity: 121.975, 122.1, 122.2, 122.6, and 123.6 MHz. Also check 122.05, 122.15, 122.3, 122.4, 122.5, and 123.65 MHz.

FAA To Airliners: The FAA, through its Air Route Traffic Control Centers and individual airport control towers, communicates with airliners (and also private and military aircraft) on a myriad of frequencies. This is a highly complex network and no single frequency or group of frequencies is in nationwide use. These are the so-called air-traffic control (ATC) channels and they are all situated within the following sub-bands: 118.0 to 121.4, 123.675 to 128.8, and 132.05 to 135.95 MHz.

Airport Ground Control: Taxiing Air-

craft at larger airports require instructions on ground movement in order to assign priorities and avoid ground collisions. These communications take place on a group of frequencies reserved especially for this type of use. While each individual airport with ground control facilities will have a specific frequency assigned, these frequencies invariably lie within the range of 121.6 to 121.975 MHz. Don't expect to hear much on these frequencies if you aren't within about 10 to 15 miles of a mid-to-large airport. By the way, when an airliner is sky-jacked, these are the frequencies used to negotiate with the skyjackers while aloft and on the ground.

That's a general roundup of the major and minor frequency components of this exciting communications band. In recent years, aero band monitoring has been growing in popularity and this should be of help to you in finding your way around.

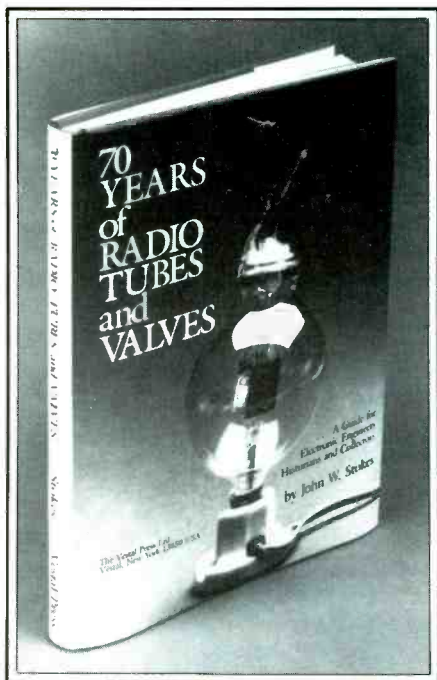
To the VHF aeronautical band monitor, the definitive reference source to the intricate details of what can be monitored is contained in the *Air-Scan Directory*. This large size 120-page book is the only complete and comprehensive guide to aero communications, covering virtually every 118 to 136 MHz facility in the United States, with selected facilities in Canada and Mexico included. Many FAA-unlisted private landing areas are covered, as well as aero-related communications in the 30 to 50, 138 to 174, and 400+ MHz bands. *Air-Scan* covers general (private), commercial, and military operations. *Air-Scan* can be obtained for \$10.95 (plus \$1 shipping to USA/Canada/FPO/APO) from CRB Research, P.O. Box 56, Commack, NY 11725. (Canadians please pay by Postal Money Order made out in U.S. funds.)

The author has always found VHF aero communications to be a continuing 'round-the-clock source of monitoring enjoyment. Try it yourself!

PC

BOOKS YOU'LL LIKE!

BY R.L. SLATTERY



Vacuum Tube History

Vestal Press is probably the nation's largest publisher of books about antique musical instruments and radio gear from the good old days. Although their catalog brims over with books on many subjects that fascinate me, one that especially caught my eye is entitled *70 Years of Radio Tubes and Valves (A Guide For Electronic Engineers, Historians And Collectors)*, by John W. Stokes, a radio historian who hails from New Zealand.

Today, we hear so much about IC's (better known as "chips") and other miracles of silicon technology, it's easy to forget that until about 1960 the technology of communications centered squarely upon the vacuum tube. Indeed, many readers of *POP'COMM* have probably never even owned a piece of communications equipment designed around a set of these beloved "bottles."

Lee deForest started it all by taking the so-called "Edison effect" and adding a grid between the electron emitter and the plate. That was the revolutionary discovery that brought communications out of the primitive "spark" days and into the era where giant strides in technology could be made.

This wonderful book is the fully illustrated story of the vacuum tube—how it developed and grew up. The golden age of radio development (1927 to 1937) is given intense and especially well-detailed coverage. Stokes has illustrated his book with hundreds of photos, old ads, and charts that bring his chosen topic into vivid life. Moreover, the large-format 246-page book is quality printed on heavy slick paper. It's hardcover bound and dressed up in a beautiful and colorful dust jacket.

If you have any interest at all in the

glorious route radio took between the spark gap and the semiconductor, you'll really enjoy this handsome volume.

You can order *70 Years of Radio Tubes and Valves* from Vestal Press, P.O. Box 97, Vestal-123, Vestal, NY 13850. It is \$21.95 plus \$2 shipping to addresses within the USA (\$2.50 for surface mail outside the USA).



Tripping The Satellite Fantastic

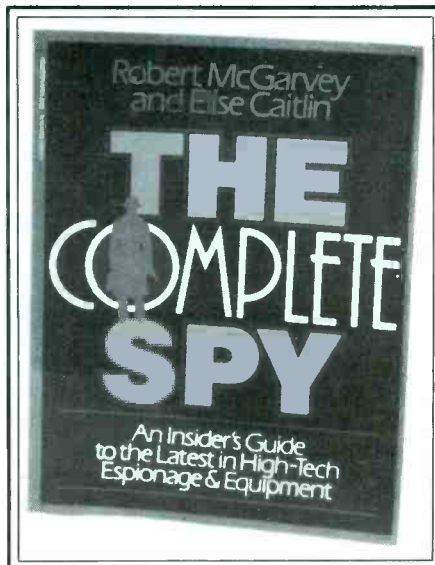
The World Satellite Almanac is a complete guide to satellite transmission and technology, all in one concise and handy 544-page volume. Written by Mark Long (former *POP'COMM* satellite TV columnist), the *Almanac* is an A-to-Z compendium of data on satellites of all nations, including those sending FM and TV, communications, weather and data, in the C and Ku bands.

Information given about satellites includes purpose, type of signals being sent, launching date, location, owner, user(s), signal coverage, transmitting and receiving frequencies and modes, and also physical data about the actual satellite vehicles themselves. "Footprint" maps and even drawings of the satellites are presented to round out this very complete picture of the current status of satellite technology.

Appendix listings provide loads of names/addresses of satellite operators, equipment manufacturers, service organizations, and satellite-delivered services around the world. There's a glossary of satellite terminology, and information on international satellite standards.

We have seen a number of different tries at putting together this type of compendium. Some have been quite good, but most have large gaps in their coverage. *The World Satellite Almanac* promises, and abundantly delivers far past your expectations.

If you're seeking satellite stats, they all seem to be included in *The World Satellite Almanac*. This book is \$39.95 (postpaid) from World Satellite Almanac, P.O. Box 70697, Pasadena, CA 91107.



A Very Complete Spy!

Spies, take note! Here's the first complete illustrated guide to the latest in high-tech equipment useful and vital to the pursuit of amateur, professional, and governmental espionage.

Whether you're an old pro, a rank amateur, or a hopeful operative, this book will zap your consciousness as it covers more than 150 different types of espionage gear in all price ranges (\$6 to \$10,000), and explains their uses and applications. Full descriptions and photos are included, along with a very interesting text in *The Complete Spy*, by Robert McGarvey and Elise Caitlin.

Thorough coverage includes bugs and wiretaps, anti-bugging devices, surveillance and detection of surveillance, secret cameras, alarms, explosive sniffers, metal detectors, securing your secrets, personal protection, weaponry, lockpicks, disguises, and devices the authors aptly label as "space age exotica."

Complete information on current prices, plus the names and addresses of many sources for electronic and other equipment is provided in the appendix to *The Complete Spy*.

It is a big, fat 192-page large format book, a veritable consumers' guide and handbook to common and very uncommon hardware used in the espionage trade. This is stuff that will dazzle your imagination and could possibly make your life a little better, or someone else's a little worse (or both)!

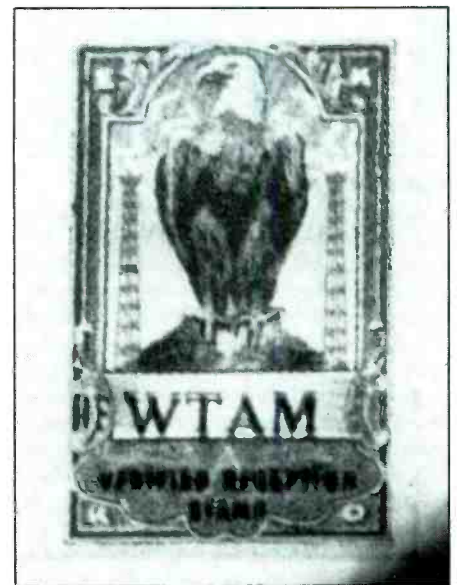
The Complete Spy is \$9.95, plus \$2 postage/handling to addresses in USA/Canada/APO/FPO. Order it from CRB Research, P.O. Box 56, Commack, NY 11725.



The Hot Springs, Arkansas, Chamber of Commerce station, KTHS (1040 kHz, 10 kW) created good will with this red-orange EKKO stamp.



Denver's KLZ (1063 kHz, 500 watts) sent out this orange EKKO stamp in the 1920's.



WTAM (770 kHz, 1 kW), in Cleveland, rewarded its listeners with this verification stamp in the early days of broadcasting.

Broadcasting's Greatest EKKO

A Radio Stamp Collecting Fad That Lasted More Than 20 Years – Now Forgotten!

BY TOM KNEITEL, K2AES, EDITOR

It was a stroke of genius! In 1924, when radio broadcasting was a rapidly growing industry and everybody with a receiver was a DX enthusiast, someone came up with the idea of making a stamp collection/radio connection. And why not? In 1924 stamp collecting was a well-established hobby and the tie-in was a natural.

That's when The EKKO Company (111 West Monroe St., Chicago, IL) made its brilliant move. EKKO announced that they were publishing a stamp album containing spaces for "beautifully engraved" verification stamps from more than 650 North American broadcasting stations. The album was a 96-page edition, 9½" x 11" in size, with spaces reserved for "all recognized sta-

tions in the U.S. and Canada, arranged alphabetically by states and call letters." It was handsomely bound in a two-color cover and even contained a logging section and a "list of the official names and other interesting features of stations." The album was \$1.75 (in Canada, \$2.50).

But, you ask, what are verification stamps—and from where did they come? EKKO had all of the bases covered here, too!

As the result of what must have been a masterful public relations and sales campaign directed at American and Canadian broadcasters by EKKO, a great many broadcasters had become convinced that they should verify listeners' reports by means of verification stamps. And, yes, EKKO would

supply stamps to the broadcasters for this purpose!

Thus was born the EKKO stamp, a phenomenon within the DX hobby that was the right idea arriving at the right time.

EKKO stamps were actually quite beautiful. The stamps sent out by American stations displayed an eagle between two radio towers, surrounded by an ornate border with the word EKKO spelled out with one letter at each corner of the design. The stamps were high quality engravings produced by the famous American Bank Note Company; moreover, the design was available in many colors such as gold, yellow, maroon, gray, dark blue, light blue, red, plum, ochre, and others. The call sign of the

simple expediency of obtaining all of the stamps directly from The EKKO Company at ten cents each, collecting the stamps became very popular during the 1920's and 1930's. And, if stations such as WSB (Atlanta), WSM (Nashville), WJKS (Gary), and others wanted to print up their own stamps, so what? That gave DX'ers a shot at collecting two stamps from each, the station's own stamp and the one that EKKO would supply for only a dime!

It isn't clear exactly when The EKKO

Company went out of business, but my guess would be some time in the late 1930's or around the beginning of WWII. Of course, some stations were left with huge inventories of EKKO stamps that they continued to send out for many years afterward. Station WBBR (New York City) sent me an EKKO stamp in 1948, and since it was the only one ever sent to me with a QSL, I must assume that the hobby of collecting EKKO stamps had long been dead and buried.

Few modern DX'ers nor stamp collectors

The ekko Broadcasting Station Stamp Album

Begin collecting ekko stamps today!

Here's just what you have wanted for a long time—a convenient, permanent and authentic means of recording all the stations you have heard over your set.

The Ekko Broadcasting Station Stamp Album contains spaces for the beautifully engraved stamp of each of all the recognized stations in the United States and Canada more than 500 in all. With the album are furnished PAPER or INDEX-TON CARDS. You send these cards to the station, together with facts that prove you have heard their broadcast and 10 cents to cover the cost of verification and mailing. The station then sends you its Ekko Stamp as verified proof of reception. You then paste the stamp in your album. From the Ekko Album and the stamps posted in it you can tell at a glance what stations you have heard in their locale.

The stamps are beautifully engraved in different colors. Each station has its own stamp showing call letters. The album is 9 1/2 x 11 inches, bound in a two cover \$1.75 in Canada \$2.50 in Canada. You too can join this new radio game that is sweeping the country. Buy your cover of the Ekko Album and begin collecting Ekko Stamps today.

Price \$1.75 in Canada \$2.50 in Canada

For sale by radio dealers and book-stores everywhere. If your dealer cannot supply you, write direct, post-paid, on receipt of price. Money back if not satisfied.

THE EKKO COMPANY • 111 West Monroe Street • Chicago

Dick Ipsen of Napa, California was kind enough to send us this ad for the EKKO Stamp Album he found in an old magazine.



A beautiful complete set of EKKO stamps mounted in the EKKO album. A great piece of history! It's owned by radio historian Will Jensby, W0EOM/6.

have ever heard of EKKO stamps, much less seen one. Not long ago reader Johnny Sandison (popular air personality on CKTV in Regina, Saskatchewan) sent us a few exquisite mint condition EKKO stamps. That made us try to find out more about them to share with our readers. Ironically, a few weeks after Johnny Sandison sent POP'COMM some EKKO stamps, radio historian Will Jensby (W0EOM/6) sent us a photo of an album brimming over with most of the 700 different EKKO stamps that were eventually issued.

Wonder whatever became of most of those many EKKO stamps, and how many collections still exist? Nobody knows. **PC**

162.5-172.5 MHz RECEIVER

R-1170/ARR-52A 162.5-173.5 MHz AM-FM video solid-state sonobuoy receiver has five plug-in modules and 31 crystal-controlled channels. Conversion possible for 2-meters, VHF weather, satellite TV. (See 10/74 CQ Mag.) Requires 18 VDC; 7.5 x 2.5 x 10, 9 lbs sh. Used\$39.95



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FRONT to BACK RATIO: 60 DB True
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SWR: 1:1
HORZ. to VERT SEPARATION: 20-25 DB
WIND SURVIVAL: 100 MPH
POWER MULTIPLICATION: 125X
AUDIO GAIN: 30 DB
WIND LOAD: 12.5



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JG 8 + 8 Killer

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BACK REJECTION: 60 DB True
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LENGTH: 37 Feet
SWR: 1:1
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POWER MULTIPLICATION: 150X
AUDIO GAIN: 40 DB
WIND LOAD: 12.0



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PACKET MANIA

The hottest trend in radio today is packet radio. Packet is error-free communications, and involves linking a special converter called a TNC (terminal node controller) with a transceiver or receiver and your computer. With a TNC you can copy RTTY, AMTOR, code, or packet communications. Madison offers both the AEA PK-80 or the Kantronics Communicator, both priced at \$229.00, as optimum ways to get started in packet. Call for further information.

CIRCLE 4 ON READER SERVICE CARD

Handy Ute Finder

Post This Chart Next To Your Receiver – It Points The Way To Ute Station Action Bands Between 4 and 27 MHz!

BY HUBBEL GARDINER, KNE0JX

One of the best things about utility station ("ute") monitoring is the huge assortment of categories of stations you can hear—ships, aircraft, coastal, military, diplomatic, and more. In fact, ute stations are generally considered to be any and all radio transmitting facilities operating below about 30 MHz, excluding broadcast and ham stations.

When I first got started in ute station monitoring, it seemed that the shortwave spectrum was a random jumble of voice, CW, RTTY, and stations on land, sea, and air. To my novice perception, it appeared that ute stations of all categories and using all modes just popped up anywhere in a helter skelter manner. After a few months at the dials, however, I began to notice that there was actually some form and order to the placement of the ute stations. The fact was, it turned out to be a matter of a rather well-structured system with stations, by international agreement, relegated to specific frequency bands. Ship stations using CW mode use certain bands just for that purpose; same with aeronautical stations, point-to-point ("fixed") stations, etc.

A place for everything, and (theoretically) everything in its place! Neat!

The ute bands could then be explored and, based upon my current specialty interests, day or night, I could zero-in upon those stations I was seeking. I learned that during the day, aeronautical stations were buzzing away between 15010 and 15100 kHz (15.010 and 15.100 MHz, if you prefer), and that at night the same amount of aero station activity could be found in the 5450 to 5730 kHz band. Mind you, this wasn't the discovery of the century. When I tried to give this important news to other ute monitors, they looked at me as if I had announced that I recently discovered that April follows March!

But I did find that many ute monitors found it hard to keep track of exactly where each of these band-segments were located across the spectrum. This was a problem I had also encountered, but eventually solved.

What I had done was take the time to prepare a chart showing the various categories of stations and transmission modes, and then arrange them according to frequency.

Since that time, I've used an office copier to make up duplicates of my chart for those other ute monitors who told me that they'd find it useful to their own station operations. Then it occurred to me that POP'COMM might like to run this chart for those who'll find it to be a quick and handy reference.

Local Time	250-850 mi.	850-1700 mi.	1700+ mi.
Midnight	3-4.7 MHz	6.7-8.9 MHz	6.7-11 MHz
4 AM	3-4.7 MHz	4.7-6.7 MHz	6.7-8.9 MHz
8 AM	3-6.7 MHz	6.7-11.1 MHz	11.1-18 MHz
Noon	4.7-6.7 MHz	8.9-13.2 MHz	13.2-18 MHz
4 PM	4.7-6.7 MHz	8.9-13.2 MHz	13.2-18 MHz
8 PM	3-6.7 MHz	6.7-11.1 MHz	11.1-18 MHz

You may find that this communications efficiency chart will come in handy. It's based upon a similar chart the U.S. Air Force provides its pilots (and that's why the frequency ranges shown relate to the USAF's HF SSB channels). For general listening purposes, extend the high/low limits of the frequency bands. The USAF notes that for distances below 250 miles, the frequency band used isn't critical. Distances are stated in terms of statute miles.

I'd like to point out and emphasize that this chart is intended only as a general guide to where stations indicated tend to congregate in the largest numbers. Many stations turn up in spots that are out of kilter with this chart.

Stations that fall into the "Point-to-Point" category include spy, Interpol, press, diplomatic, commercial, military, aeronautical, and other "fixed" units. These stations utilize voice, CW, RTTY, ARQ, and other transmission modes.

Stations listed as "Aero" on the chart include those on the ground transmitting weather (VOLMET) broadcasts, and also ground and aero mobile stations engaged in air/ground two-way communications.

And remember, during hours of darkness you'll find most stations active on frequencies below 12 MHz. During daylight hours, the majority of activity is about 9 MHz.

Hope you find this chart as useful as it has been to me!

kHz	Service	Modes
4000-4063	Point-to-Point	All
4063-4143	Ships	SSB
4170-4179	Ships	RTTY/ARQ
4180-4187	Ships (calling)	CW
4188-4219	Ships (working)	CW
4220-4349	Coastal	CW
4350-4357	Coastal	RTTY/ARQ
4357-4435	Coastal	SSB
4438-4650	Point-to-Point	All
4650-4750	Aero	SSB
4750-5450	Point-to-Point	All
5450-5730	Aero	SSB
5730-5950	Point-to-Point	All
6200-6222	Ships	SSB
6256-6270	Ships	RTTY/ARQ
6270-6281	Ships (calling)	CW
6282-6325	Ships (working)	CW
6325-6493	Coastal	CW
6495-6505	Coastal	RTTY/ARQ
6506-6525	Coastal	SSB
6525-6765	Aero	SSB

6765-7000	Point-to-Point	All
7300-8195	Point-to-Point	All
8195-8294	Ships	SSB
8297-8357	Ships	RTTY/ARQ
8360-8374	Ships (calling)	CW
8377-8435	Ships (working)	CW
8436-8704	Coastal	CW
8705-8718	Coastal	RTTY/ARQ
8718-8812	Coastal	SSB
8815-9040	Aero	SSB
9040-9500	Point-to-Point	All
9775-9995	Point-to-Point	All
10005-10100	Aero	SSB
10150-11175	Point-to-Point	All
11175-11396	Aero	SSB
11400-11650	Point-to-Point	All
11975-12330	Point-to-Point	All
12330-12435	Ships	SSB
12491-12527	Ships	RTTY/ARQ
12540-12561	Ships (calling)	CW
12565-12650	Ships (working)	CW
12604-13069	Coastal	CW
13071-13100	Coastal	RTTY/ARQ
13100-13170	Coastal	SSB
13260-13357	Aero	SSB
13360-14000	Point-to-Point	All
14350-14990	Point-to-Point	All
15010-15100	Aero	SSB
15450-16360	Point-to-Point	All
16460-16593	Ships	SSB
16660-16705	Ships	RTTY/ARQ
16720-16748	Ships (calling)	CW
16754-16858	Ships (working)	CW
16860-17194	Coastal	CW
17197-17231	Coastal	RTTY/ARQ
17233-17357	Coastal	SSB
17360-17550	Point-to-Point	All
17900-18030	Aero	SSB
18030-21000	Point-to-Point	All
21750-21870	Point-to-Point	All
21870-21997	Aero	SSB
22000-22136	Ships	SSB
22192-22227	Ships	RTTY/ARQ
22228-22246	Ships (calling)	CW
22250-22309	Ships (working)	CW
22312-22557	Coastal	CW
22561-22594	Coastal	RTTY/ARQ
22596-22717	Coastal	SSB
22720-23200	Point-to-Point	All
23200-23350	Aero	SSB
23350-24890	Point-to-Point	All
25010-25070	Point-to-Point	All
25071-25075	Ships (calling)	CW
25076-25090	Ships	RTTY/ARQ
25091-25106	Ships (working)	CW
26175-26960	Point-to-Point	All

PC

Remembrance Of Things First

With Apologies To Marcel Proust, Let's Roam Through The Pages Of Radio History

BY ALICE BRANNIGAN

First things first, and I'd like to lead off talking about a couple of firsts. Maybe not so famous, but nonetheless, they were firsts.

Jay Hollander of California reports that he's been researching the word "radio." His dictionary says that the word radio is derived from the Latin word radius, denoting a ray or a radiation. Furthermore, the use of the word radio to replace the term wireless didn't begin until the era of World War I (1914-1918). What Jay is looking for is the first recorded time and place the word radio was known to have been used, and who it was that concocted the word.

As far as I have been able to determine, the very first time the word ever appeared anywhere was in the sentence, "Radio kol sheholekh misaph haplam vuad sophoe." This translates into, "Radio, a voice that goes from one end of the world to the other." The translation is from the Hebrew language and it appeared in a book written about 1800 years ago, the *Talmud* (Yoma, fol. 21)! Although several claims have been made to the first use of the word (all from the early part of this century), none challenge the antiquity of the reference I've cited.

Next, when I read about the notion that the Cellular Mobile Telephone people took to getting the federal government to protect the privacy of their communications, it made me dig back through my files and records to see what I could find about the first mobile communications systems.

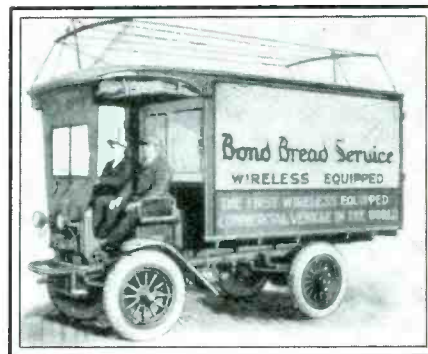
Oddly enough, before it was done for the first time, the idea was more of a joke than something to be taken seriously. I came across a novelty postcard dated 1904 showing a "Wireless Tailophone." This consisted of two "cowgirls" and a burro. One was talking into the burro's ear and the other cowgirl was getting the message by—you got it—tailophone!

The first actual mobile telephone in use seems to have been devised in 1907 by a Dr. M. C. Overton, a Lubbock (Texas) physician. Realizing that his travels across long and desolate stretches of the prairie put him out of touch with his office, and therefore with the ability to find out which patents to visit, he invented the mobile telephone.

Installing a standard telephone in his car, the instrument was connected to a reel of about 50 ft. of cable. He could then stop at



The "wireless tailophone," shown on this 1904 joke postcard, proves that life imitates art. Little more than 20 years later, wireless telephones (of a sort) were in operation!



The world's first commercial mobile radio-telephone installation was a bakery truck making deliveries in Philadelphia. This was in early 1922.

any location where he spotted a utility pole, climb it, clip his cable to the telephone lines, then go back to his car to call his office and his patients. Clever!

Still, it wasn't quite the dream fulfilled. That took further advances in technology.

The first commercial vehicles using radio equipment were rolled out onto the streets of Philadelphia (PA) in early 1922 by The Bond Bread Service. This system permitted

the bakery drivers to keep constantly in touch with their dispatcher.

Our photo of this unique mobile unit reveals a complex framework of wires atop the delivery truck. It is difficult to see, but the driver is wearing a pair of headphones. A sign on the side of the truck proclaims "Wireless Equipped," and also, "The First Wireless Equipped Commercial Vehicle In The World."

And here's another (claimed) first, the first person supposedly to have obtained a QSL from "every known station in the world." True, according to Ripley's Believe It Or Not (28 August 1944 column in the Washington, DC, *Times-Herald*), Ollie Ross of Vallejo (CA) accomplished this feat by verifying 1367 stations in 76 countries. Ripley should have saved that joker's claim for his April 1 column! Gerry Dexter had that many stations and nations verified the week after he got his first crystal set!

A Haunting Question

Maybe this also belongs in the April issue, along with the claims of DX'er Ollie Ross. Reader Robert Sheaffer of Monte Sereno (CA) sent an item about a supposedly "haunted" radio station; the item originally appeared in the April '85 issue of one of

those strange little psychic magazines. Unfortunately, the station (supposedly on the air since 1980) mentioned in the story doesn't appear in *White's Radio Log*, the *Vane Jones Log*, or the *FM Atlas*, and that casts some question on the veracity of the entire story.

Moreover, Bob Sheaffer is having a minor problem grappling with the notion that anybody but a man could possibly write my material. Bob, look around; they're letting "the fairer sex" vote, read, and write these days. A few of us can even scribble more than our names once we can get free of our stoves, weaving looms, and washboards! Once in a while, a couple of us (such as Lani Pettit, Evelyn Hampton, Sheryl Paszkiewicz, Sara Vickers, Barbara Harris, and others) have been taught how to twist the dials on a communications receiver. Next thing you know, Bob, they may even let us operate motor vehicles! Hi! Hi!

First, Last, And Always!

And, speaking of ladies involved in radio, I've noticed plenty of POP'COMM coverage on outrageous historic radio personalities, the likes of Dr. Brinkley, Norman Baker, W.K. Henderson, and Father Coughlin. Permit me, please, to point out that once they pried Mrs. Ruth Drown away from her ironing board, she was no slouch either.

Mrs. Drown, an osteopath, came up with a new use for radio during the late 1920's. She decided that she could heal her patients at long distance while they were at home, at work, in their cars, or even while they were relaxing at the beach. Her system, devised while she was working in the electrical assembly division of Southern California Edison, used the reputed healing aspects of radio waves sent out from her transmitting site located in Los Angeles.

A small sample of a patient's blood was placed within the transmitter. This not only permitted an instant diagnosis of the medical problems, it also advised Mrs. Drown which knobs and dials on her transmitting apparatus needed to be adjusted in order to send out the healing signals on the patient's own individually resonant radio frequency.

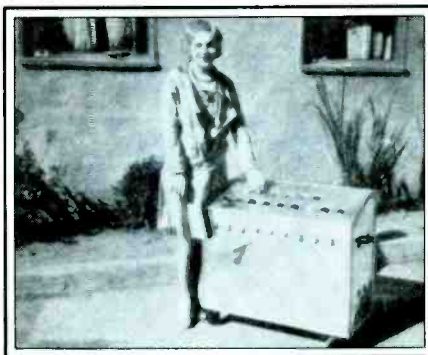
Mrs. Drown claimed that this process was so effective for diagnosing and curing so many different maladies that she found a waiting market for her invention within the ranks of the teeming quasi-medical profession in the Los Angeles area.

The broadcast treatments continued for years and many patients agreed that Mrs. Drown's ministrations did offer significant relief. In 1950, a team of doctors from the University of Chicago looked into the broadcasts and decided that Mrs. Drown's diagnoses were so vague and all-encompassing that it seemed inevitable that she would be able to make "an occasional lucky positive guess."

A sample of blood was then provided to Mrs. Drown for a diagnosis; this patient had tuberculosis. Mrs. Drown concluded that the patient had cancer that affected most major organs of the body, plus problems



Bob, it's easy to tell the YL's from the OM's. The ladies are the ones who can tune a receiver with one hand and "whomp up" a mess of vittles with the other. Do I really look like someone whose name is Murray or Harold, or even a boy named Sue?



Try this on yer bursitis, Bunky. The one and only, first, genuine, long-distance radio healing machine along with its inventor (the machine is on the left). If the patient was out of state, did the doctor have to call "CQ DX"?

with the heart, glands, spleen, gall bladder, spinal nerves, ears, and intestines; also she said the patient was blind in one eye.

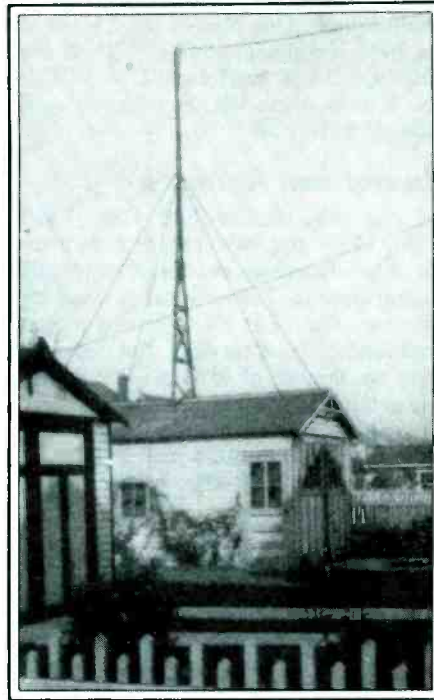
Mrs. Drown was then asked to beam her healing radio signals at an anesthetized lab animal that had a bleeding wound. Her friends were on hand to witness that the animal's cure would be unimpaired by the skeptical medical team.

The more power she transmitted toward the animal, all the worse the animal bled. The medical team reported that eventually her friends all "found the sight beyond their capacities."

So much for those who say that ladies haven't done their share toward the advancement of radio. Mrs. Drown was a real "first," and thankfully, a "last."

First French/English Broadcaster

The first station to transmit French and English programming was CKAC in Mon-



From this humble voltage-fed Hertz type antenna located in Los Angeles, Mrs. Drown beamed relief to the afflicted.

425 METERS — E.P.T. — 2000 WATTS	
Daily	4:00 p.m. (except Sundays) Weather, news, sports
Monday	4:30 p.m. Musical hour
Wednesday	1:45 p.m. Classical concert
Friday	4:30 p.m. Dance orchestra
Tuesday	7:30 p.m. Kidzone stories in French & English
Thursday	2:30 p.m. Classical concert
Saturday	10:30 p.m. Dance orchestra
Sunday	4:30 p.m. Radio concert
Midnight Friday	4:30 p.m. Live and direct broadcasts of each month, at 12:30 a.m.

LA PRESSE is the National French Canadian Newspaper and the largest circulated daily newspaper published in Canada.

QSL from Montreal station CKAC is dated 1924. This station is still on the air!

tréal, Quebec. In 1922 this station was running a healthy 7.5 kW on 706 kHz with programs that went from early afternoon until late at night. In 1925, CKAC took a short sojourn to 698 kHz, but soon after switched to 730 kHz, a frequency still used by CKAC. Transmitter location: St. Hyacinthe.

Upon first moving to 730 kHz, CKAC dropped its power to 1.2 kW, but apparently that wasn't going to produce the desired signal strength, so a 5 kW transmitter was placed in service. CKAC stayed at the 5 kW power level for a long time, but for more than 20 years has been running a full 50 kW. These days, CKAC runs an all-French program format.

Our QSL from CKAC was submitted by Michael A. Schulsinger of Springfield, Ohio. This QSL confirms reception on 18 November 1924 and is signed by J.N. Cartier, CKAC's Director. On this QSL, the station's owners are noted as being La Presse, "the National French Canadian Newspaper and the largest circulated daily newspaper published in Canada."

Here's a bit of Canadian trivia I'll add for good measure. The first (and only) coin ever minted with Morse code in it came from the

beautiful land of the Maple Leaf. Check out the 1943 nickel with all of the *di* and *dah* markings. If you can't copy CW, I'll help you; it translates to *We win when we work willingly*. How true!

Hometown America

Frequencies such as 1230, 1240, 1340, 1400, 1450, and 1490 kHz provide a vividly colorful panorama of hometown broadcasting stations. Today, most of these stations are authorized for 1 kW during daylight hours and 250 watts at night. Not that many years ago virtually all of them ran 250 watts day and night, and a few ran less power.

WJNO, in West Palm Beach, Florida, for instance, began in 1936 with a 100 watt transmitter on 1200 kHz. Its first owners were Hazlewood, Inc.



WJNO, a true hometown broadcaster, began its career as a 100 watt station. WJNO has been serving West Palm Beach (FL) for 50 years.

After the big 1940 frequency shuffle when most stations in the Americas were moved to new frequencies, WJNO ended up on 1230 kHz, but had been given permission to raise its power to 250 watts. By the post-war years the licensee of WJNO had become WJNO, Inc.

The WJNO of 1986 is owned by station WRMF of Indianapolis, Indiana. Still on 1230 kHz, WJNO now runs 1 kW days and 250 watts at night.

Our view of this hometown broadcaster was taken at the beginning of its broadcasting career. It shows WJNO at 1500 North Flagler Drive in West Palm Beach. A one-story stucco building, not unlike many Florida structures of the 1930's, is flanked by a pair of Royal Palms on a well-manicured lawn.

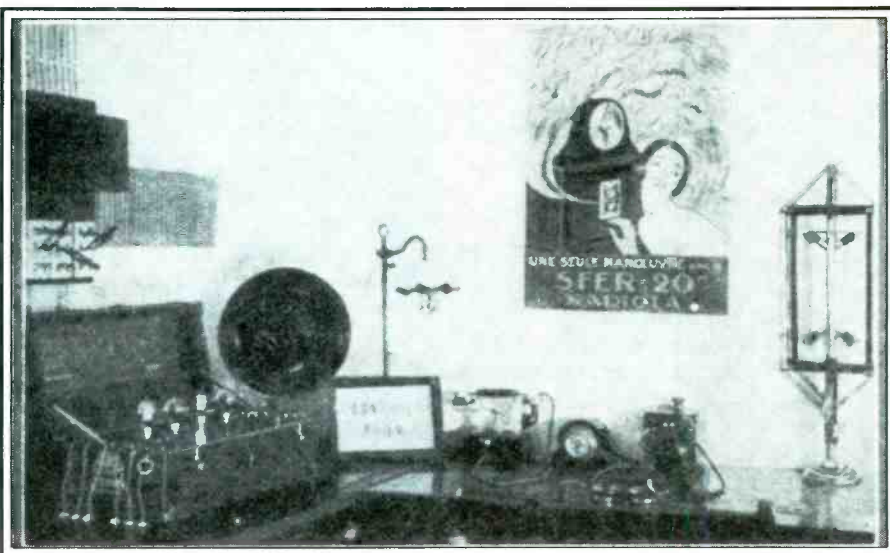
On WJNO's 50th birthday, we congratulate this station and wish it many more years of serving its hometown.

From The Orient

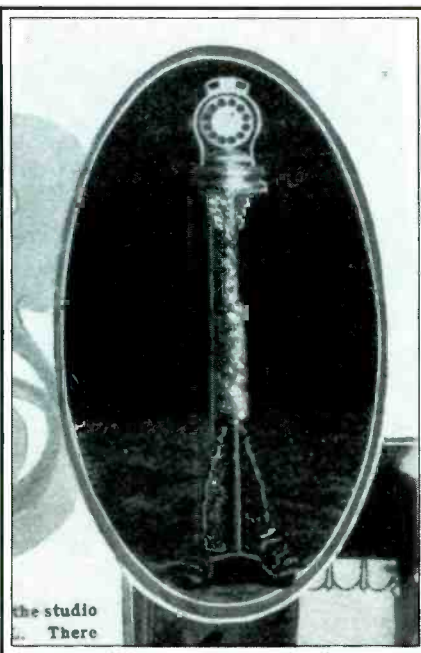
The Orient has never ceased to offer intrigue and challenge to persons in North America, especially DX hounds. And so it was in 1928 when station XOL, Tientsin, China, was in operation.

XOL ran 250 watts on 625 and 877 kHz, causing many DX'ers to strain at their headphones in a valiant effort to capture this distant station. A few (a very few) succeeded. Mostly, the only reward for trying to hear XOL was an owl-eyed look in the morning!

One 1928 photo of the Chinese govern-



XOL in China looked like this in 1928. This is a view of the control room. Not so fancy, I'm afraid.



The XOL studio was also rather plain, however, the elaborate studio microphone was as fancy as they came anywhere in China!

ment's XOL shows the station's modest control room. Okay, so it wasn't elaborate, but in 1928 there were only three broadcasting stations in North China and, after so many years of being isolated from the rest of the world, even XOL's equipment was relatively sumptuous.

The XOL studio wasn't too snappy in the looks department, either, but the highly ornate XOL studio microphone was about as elegant as any station could ever want.

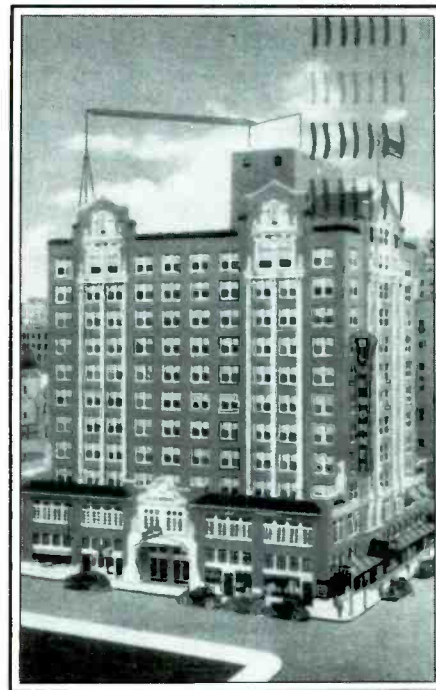
Lost And Found Department

By way of Tom Kneitel, we received word from Jan D. Lowry (of Broadcast Pro-File, Hollywood, CA) about two recent mystery photos run in these pages.

Jan confirms the October issue photo as being Long Beach, California, about 1928. Furthermore, the broadcast station shown in the photo was station KFON in the Jerçins Trust Building, 120 East Ocean Avenue (at Pine). This station ran 100 watts on 1280 kHz in the mid-20's.

Also in the October issue we asked for information on the station located in San Antonio's Blue Bonnet Hotel. Jan advises that three different broadcasters were at that location at some point in time.

When the Blue Bonnet Hotel was new (in 1928), KGRC set up a 100 watt station there with studios on the second floor and trans-



A mystery solved! San Antonio's Blue Bonnet Hotel was home for no less than three different broadcasters between the mid-1920's and the mid-1930's.

mitter on the roof. Two steel towers were erected atop the hotel for KGRC, but in July of '28, KGRC pulled up stakes and moved to the St. Anthony Hotel.

In February of '29, in moved station KGDR to make use of the old KGRC facilities. That lasted only until December of that same year, when the station shut down and moved to Austin (this station is presently known as KNOW).

In December of 1930, station KMAC checked into the Blue Bonnet Hotel and remained there until 1935. At that point, KMAC moved its studios to the Smith-Young Tower, its transmitter being relocated to 319 Avenue A. After 1937 the hotel was not used as the studio or transmitter site for any broadcasting station. We thank you, Jan, for this terrific information.

This Month's Mighty Mystery

This month we have a postcard dated 1919. It shows the Dupont Hotel and office building in Wilmington, Delaware. Two



This month's "whozat" photo is dated 1919. Maybe you can figure out what station used the two large towers atop this building in Delaware. We can't.

large towers dominate the roof of this building. In view of the 1919 date, these towers weren't associated with Wilmington's early broadcasters, WHAV and WOAT. Anybody want to guess at the purpose of these towers? Maybe Mrs. Drown was testing there!

A Lasting First

Finally, one more fabulous first—KGKY, the first broadcast station in western Nebraska. Maybe that singular honor doesn't have a lot of impact, but certainly its beautiful letterhead should.

KGKY was first put on the air in 1930 by its owner/founder/manager, L.L. Hilliard of Scottsbluff, Nebraska. In its early phase, it was a 100 watt station on 1500 kHz.

When the big 1940 frequency shuffle came along, KGKY was shifted to 1490 kHz and authorized to increase its power to 250 watts. By that time it had also become a CBS affiliate. In 1946, it was still the only broadcaster in town and was operating from studios at 1517-1/2 Broadway, with transmitter on South Broadway. L.L. Hilliard was still the dominant factor in KGKY's operation. But these were KGKY's final years.

Only two short years later there were drastic changes in KGKY's existence. For

Historic Ham QSL's

If you dust off that history book, you'll be able to perk up your memory about the various military steps the United States has felt the need to take in order to protect American citizens and interests in the Caribbean and Central America. Grenada and the "Contras" in Nicaragua may be fresh in your mind, but it's really an old story; that brings us to a rare old QSL card from station HH7C in Haiti.

A few issues back we brought you a QSL card from a couple of American Leathernecks who were stationed in Nicaragua during the 1926-1933 period when the U.S. Marines occupied that nation. HH7C was the official U.S. Marines' ham station in Haiti when the Leathernecks occupied the Caribbean nation for a lengthy period between 1915 and 1934. The Marines were sent to Haiti following an outbreak of political violence that threatened to destabilize and spread to other nearby nations.

Our QSL card is from August of 1931,

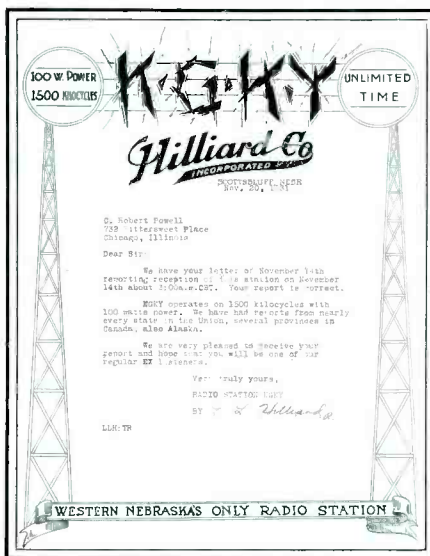
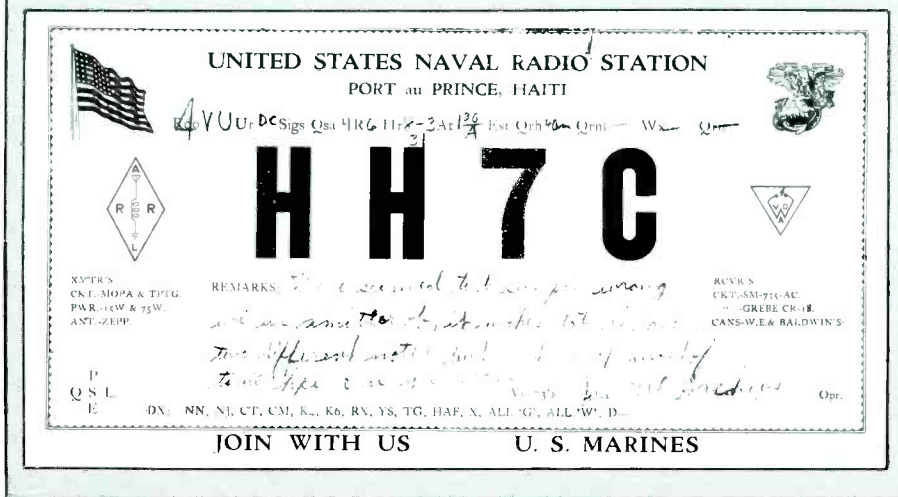
when HH7C was running two transmitters (15 and 75 watts) into a 7 MHz band Zepp antenna. The operator, Joe W. Backus, complains, "There must be sumpin' wrong wi ur xmitter OB, it makes dots as dashes, two different notes . . ." A definite problem!

This is a resplendent red/white/blue QSL card, large (9" x 4 1/2"), and made up on stiff cardboard. Across the bottom of the card is a short USMC recruiting blurb, but that's nothing compared to what's on the flip side of the pasteboard.

The reverse has an exterior photo of the station showing two solid masts, each about 200 feet in height. They were most likely used primarily for the USMC's military communications (callsign: NSC, frequencies: 58, 132, and 500 kHz).

Beneath the photo is a lengthy USMC/USMCR recruiting dissertation explaining how a career in The Corps can be appealing to hams because of the increasing use of radio around the world.

All in all, quite a spectacular QSL!



KGKY's 1931 red/black letterhead has got to be one of the most showy ones we have ever seen. It easily overpowers the contents of the letter itself. Bravo, KGKY!

one thing, another broadcaster had commenced operating in Scottsbluff, KOLT, a 1 kW station on 1320 kHz. KOLT had taken over the CBS spot in town, too. Also, it looks as though they had taken over KGKY since records show KGKY had moved to KOLT's 1320 kHz frequency and was running 1 kW. Fact was, KGKY was not only sharing time with KOLT, it was sharing KOLT's studio and transmitter facilities by 1948. In other words, KGKY was being absorbed into KOLT; shortly thereafter, it would cease to have a separate identity.

Today, KOLT is still in operation, running 5kW days and 1 kW nights. It has been joined in Scottsbluff by KNEB with 1 kW on 960 kHz. Only the old-timers recall there being a station KGKY in town.

But KGKY had a really wonderful red and black letterhead and, if that's all that's left to remember this station, then so be it! We were fortunate enough to have gotten one of KGKY's QSL letters to share with you.

Looking forward to your continued support of these features!



SCAN member Ron D. Smith has nominated Michigan State Trooper David Haire for this month's Public Service Award. Trooper Haire, exhibiting great bravery, made the unusual rescue attempt. The following is reprinted with permission of Associated Press:

A state trooper leaped aboard two runaway boxcars that were speeding by at up to 40 mph and brought them to a halt in an effort to save an elderly couple trapped inside an automobile being dragged along the tracks.

SCAN PUBLIC SERVICE AWARD



Trooper David Haire, 38, managed to set the brakes and stop the boxcars after the crushed car had been dragged about a mile. One of the crash victims later died.

"I saw them coming at me, but it was hard to say how fast," Haire said after Thursday's accident in the Detroit suburb of Northville. "And I saw the man waving at me out of his window and he seemed to be shouting, but I couldn't hear what."

"I ran up as fast as I could and at the right moment, I reached out and leaped for the ladder of the lead car."

"I don't remember if it hurt or not, but when I grabbed it, it just seemed to pull me right aboard."

Haire said he found a wheel that looked

like it might work the brakes, and began turning it.

"It took a while, but we started slowing down and coming to a halt," he said.

The boxcars, belonging to Chessie Railroad, apparently broke away at a railyard in Novi, west of Detroit, and rolled downhill about five miles before being stopped. Investigators estimated the cars reached 30 to 40 mph as they rolled through several crossings.

The freight cars rumbled through a busy crossing at Seven Mile Road and slammed into two cars, knocking one aside but dragging along one belonging to George Yokich and his wife, Calene, both 68, said Trooper David O'Dell.

Haire said he was in his patrol car when he spotted the runaway cars dragging the Detroit couple's vehicle. He said the Yokichs' car was on its side, wedged under the lead freight car which was loaded with auto parts.

He said he raced after the cars because he knew they were headed for an overpass "and I was afraid the automobile would fall off the tracks there and hit the street below."

Haire began a four-day leave after the accident, which he called "the worst experience" of his 12 years as a state policeman.

"I don't know how he was able to do it all," said Sgt. Leonard R. Goretski. "I'm very proud to have him as a Michigan state trooper."

Chessie general foreman H.J. Bowles said the railroad would investigate how the cars rolled out of the railyard.

Mrs. Yokich died after being cut from the crushed car. Her husband was in stable condition Friday at St. Mary's Hospital in Livonia, hospital spokesman Audrey McConachie said. She said Yokich was being treated for contusions and tested in case of more serious injury.

The driver of the car that was pushed aside at the crossing was treated and released, O'Dell said.

Trooper Haire receives our Public Service Award, including a \$100 cash award and a commendation plaque. SCAN member Smith also receives a special commendation plaque for making the nomination.

If you have a nomination to make, please send a letter plus background material (such as a newspaper clipping) to SCAN Public Service Award, P.O. Box 414, Western Springs, IL 60558.

SCAN

Our congratulations to this issue's winners of the SCAN photo contest.

Best Appearing

This neat, functional shack set-up was submitted by Walter F. Bauer of Largo, Florida. Included in his equipment set-up is a Telefunken radio, Cobra 142 GTL CB, Bearcat 220 scanner, cassette recorder, and



SCAN PHOTO CONTEST WINNERS

Realistic DX160 shortwave receiver. A lot of equipment, very neatly arranged. Congratulations, Walter!

Best Equipped

Norman P. Maine of Bristol, New Hampshire sends us this entry. Equipment includes a computer and monitor. Bearcat LDX-1000 shortwave radio, Bearcat 100 and 300 scanners, Heath frequency counter, and Realistic TRG-212 CB. Norman also has other equipment, such as a computer printer, that just wouldn't fit into this photo. A very well equipped station.



Your Entry Wanted

Both Mr. Bauer and Mr. Maine will be receiving a free Uniden Bearcat Alert Warning Radio as this month's prize. You can enter, too! Send a sharp black and white photo to SCAN Photo Contest, Box 414, Western Springs, IL 60558.

SCAN

Selected English Language Broadcasts

Spring 1986

BY GERRY L. DEXTER



Note: This list of English language broadcasts was accurate at the time of compilation, but stations often make changes in the hours and frequencies of their broadcasts with little advance warning. Hundreds of broadcasts are aired in English every day on the short-wave bands, many of them directed to an audience in North America. This is a representative sampling and not a complete reference. Some broadcasters air only a part of their program in English during a given hour or may run the English segment into the next hour. Numbers in parenthesis indicate a starting time for English that many minutes past the hour. Many broadcasters such as the Voice of America, BBC, AFRTS, and Radio Moscow operate in English around the clock and only representative times and frequencies are listed for these. All times are in GMT.

Time	Country	Frequencies
0000	East Germany (15)	6.080, 9.730
	England	5.975, 6.075, 6.120, 6.175, 7.325, 9.570, 9.915, 11.750
	China	9.820, 11.685
	Canada (RCI)	5.960, 11.850
	Israel	5.915, 7.410, 9.435
	Japan (15)	9.645
	Portugal (30)	6.095, 9.680
	Spain	9.630, 11.880
	Ukraine (30)	5.905, 7.165, 7.205, 9.765, 11.790, 11.860
	Vatican (50)	6.015, 9.605, 11.845
	Albania	7.065, 9.760
	Belgium (30)	5.910, 15.590
	Bulgaria	9.700
	Luxembourg	6.090
	Cuba	6.100, 6.140
0100	West Germany	6.040, 6.085, 6.145, 9.545, 9.565, 11.785
	Czechoslovakia	6.055, 7.345, 9.630, 9.740, 11.990
	Austria (30)	6.000, 6.155
	Greece (30)	7.430, 9.420, 9.905
	Israel	5.915, 7.410, 9.435
	Nicaragua	6.015
	USSR	5.980, 6.170, 7.115, 7.160, 7.175, 7.205, 7.310, 9.720
	Ecuador (HCJB)	9.870, 11.910, 15.115
	Albania	7.120
	Italy	9.575, 11.800
	Cuba	6.100, 6.140, 9.740
	Argentina	9.690, 11.710

Time	Country	Frequencies
0200	South Africa	5.980, 6.010, 9.615
	East Germany (30)	6.080, 9.730
	Switzerland	6.135, 9.625, 9.725, 9.885, 12.035
	Israel	5.915, 7.410, 9.435
	Japan	9.645, 15.195
	Taiwan	5.985, 6.065
	Egypt	9.475, 9.675
	USA (AFRTS)	6.030
	Brazil (Radiobras)	11.745
	Hungary	6.025, 6.110, 9.520, 9.835
	Roumania	5.990, 9.510, 9.570
	Poland	7.145, 7.270, 9.525
	Netherlands (30)	6.165, 9.590
0300	Czechoslovakia	5.930, 6.055, 7.345, 9.630, 9.740, 11.990
	Austria (30)	6.000, 6.155
	China	9.640, 11.860, 11.980
	Greece (40)	7.430, 9.420, 9.905
	Portugal (30)	6.095, 9.680
	Taiwan	5.985, 6.065
	Turkey	9.560, 9.730
	Albania	7.300
	France (15, 45)	6.175, 7.135, 9.800
	Iraq	6.050, 11.750
	Hungary	6.025, 6.110, 9.520, 9.835
	Poland	7.145, 7.270, 9.525, 9.540, 9.740
0400	Switzerland	6.135, 9.725, 9.885, 12.035
	Sweden	9.695
	Austria (30)	6.000, 6.155
	Netherlands Antilles (TWR) (30)	9.535
	Nicaragua	6.015
	Swaziland (TWR) (30)	3.200, 7.295
	USSR	5.980, 6.170, 7.310
	France (15, 45)	6.175, 7.135, 9.800
	Botswana	4.820, 7.255
	Zambia	3.346, 4.910
	Belize	3.285
	Bulgaria	7.115

Time	Country	Frequencies	Time	Country	Frequencies
0500	West Germany	5.960, 6.120, 6.130, 9.690, 11.705		Norway (Sun)	7.210, 9.530, 15.305
	England	5.975, 6.175, 9.510		Philippines (FEBC)	11.850
	Nigeria	7.255		South Korea	9.570, 9.750
	Spain	6.125, 9.630		USA (AFRTS)	15.430
	Ghana	3.366, 4.915	1500	Switzerland (30)	9.885, 11.840, 11.935, 15.430
	Lesotho	4.800		Philippines (Radio Veritas)	9.595
	Costa Rica (Radio Casino)	5.954		England	9.915, 11.750
	Kuwait	15.345		Greece (35)	11.645, 15.630, 17.565
	Netherlands (30)	6.165, 9.715		Vatican (45)	11.810, 15.120, 17.730
0600	Austria (30)	6.155		USA (WRNO)	11.965
	USSR	7.300, 9.580, 11.790		Ecuador (HCJB)	15.115, 17.890
	Ecuador (HCJB)	6.230, 9.870, 11.910	1600	Norway (Sun)	7.155, 9.615, 15.305
	USA (AFRTS)	6.030		USA (WINB)	15.295
	Canada (CFCX)	6.005		France	11.705, 15.315, 17.795, 17.845
	Australia	9.580		UAE	15.300, 15.320
	East Germany (30)	6.080, 9.560		Australia	9.580
0700	Monaco (30) (TWR)	7.160	1700	USSR	11.840, 13.705, 15.100
	Taiwan	5.985		USA (WRNO)	11.965, 15.420
	USA (WYFR)	6.015, 7.155, 9.852.5		USA (AFRTS)	15.345
	Canada (CFRX)	6.070	1800	Canada (RCI)	15.260, 17.820
	Cuba	9.525		USA (KCBI)	11.905
0800	Australia	6.060, 9.580		USA (WMLK)	15.110
	Vanuatu	3.945, 7.260		Kuwait	11.675
	Canada (CFRX)	6.070		Brazil	15.155
0900	Falkland Islands	3.958	1900	Kenya	9.725
	Japan	5.990		India	11.620
	New Zealand	9.600, 11.780		Iran (30)	9.022, 9.765
	Papua New Guinea	4.890		Saudi Arabia (30)	9.705
	USA (AFRTS)	6.030		Afghanistan	9.660, 11.880
1000	Australia	6.060, 9.580		USA (United Nations)	15.125, 15.650, 21.170
	Solomon Islands	5.020, 9.545	2000	Israel	7.410, 9.009, 9.435, 9.815, 11.700, 11.960, 12.025
	USA (AFRTS)	9.590		USSR	9.685, 9.765, 9.885, 11.840
	Netherlands (30)	6.020		USA (KCBI)	11.790
1100	England	5.965, 6.195, 11.775		Algeria	9.685, 15.215, 17.745
	China	9.820		Cameroon	9.355
	Israel	11.605, 11.700, 12.025, 15.560, 15.645, 17.590, 17.685		Nigeria	11.770
	Japan	5.990		Cuba (10)	11.795
	North Korea	9.750, 9.977	2100	Syria	9.565, 12.085, 17.825
	Singapore	5.052, 11.940		Canada (30)	11.945, 15.150, 17.820 (+ 15.325, 17.875 Sat, Sun)
1200	Australia	6.060, 9.580		Taiwan	9.8525, 11.805
	Austria (30)	15.320		Iraq	9.610
	China	9.535, 9.640, 9.820		Yugoslavia	9.620
	Finland	11.945, 15.400	2200	Australia	15.320
	Kenya	11.740		England	5.975, 6.175, 9.915, 15.260
	Turkey	17.865		Israel (30)	7.410, 9.435, 9.815, 11.960, 12.025
	Ecuador (ECJB)	15.115, 17.890		Taiwan	6.155, 7.355
	Bangladesh (30)	5.525, 17.645		Turkey	6.105, 9.560, 9.730
1300	South Africa	7.270, 15.220, 17.780		Lithuania	9.685, 11.960
	Switzerland (30)	9.870, 9.885, 11.905, 11.955, 15.570	2300	East Germany (15)	6.070, 6.125, 6.165
	China	9.550, 9.730		Sweden	6.045, 9.696
	Canada (RCI)	9.650, 11.955, 15.440, 17.820		Thailand	9.655, 11.905
	Finland	11.945, 15.400		Japan	15.420
	Norway (Sun)	6.040, 9.590, 15.305, 17.770		Spain	5.960, 7.105, 9.780
	UAE	15.320, 17.775		USSR	5.980, 7.115, 7.160, 7.175, 7.195, 7.205, 9.720, 9.765
	Belgium	15.590		Poland (05)	7.125, 7.270
1400	Sweden	9.695, 15.345			
	Australia	6.060, 9.580			
	Finland	11.945, 15.400			

SATELLITE VIEW

BY LANCE McGRAW

INSIDE THE WORLD OF TVRO EARTH STATIONS

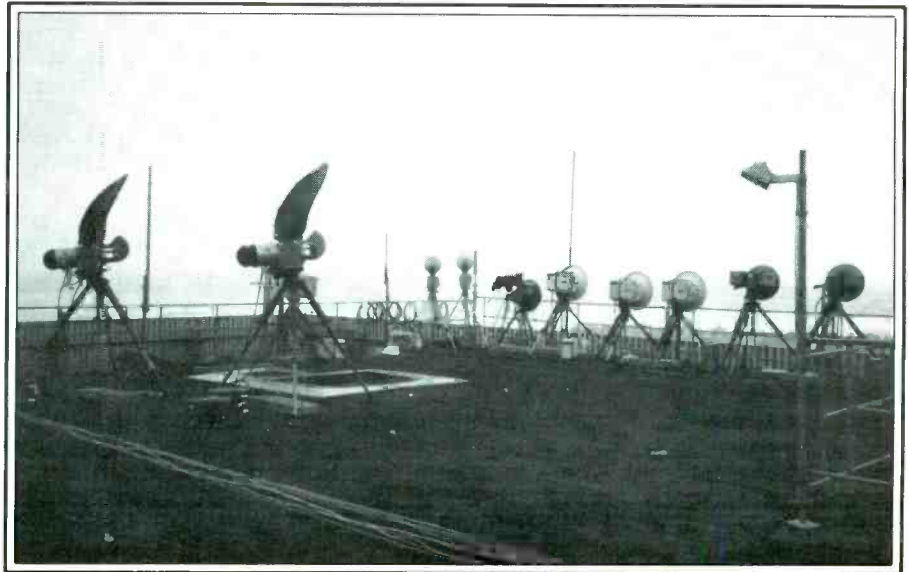
When President Reagan went to Geneva to discuss world affairs with the Soviet Union, the World press went along. Suddenly, a city with only a few television microwave channels went into overload.

There are a limited number of microwave channels and they are coordinated carefully. Accurate records must be kept of who is on what channel. Otherwise, mass interference will result. As an example, ABC and CBS each wanted to use a total of 12 frequencies in the 7 GHz frequency where only 8 exist. The problem was minimized by carefully making a map of the area and marking out what path each transmission would take. Microwave signals can cross at right angles and have no effect on each other. There is also the matter of polarization. Some signals are vertically polarized and others are horizontally polarized. There are even circular polarizations.

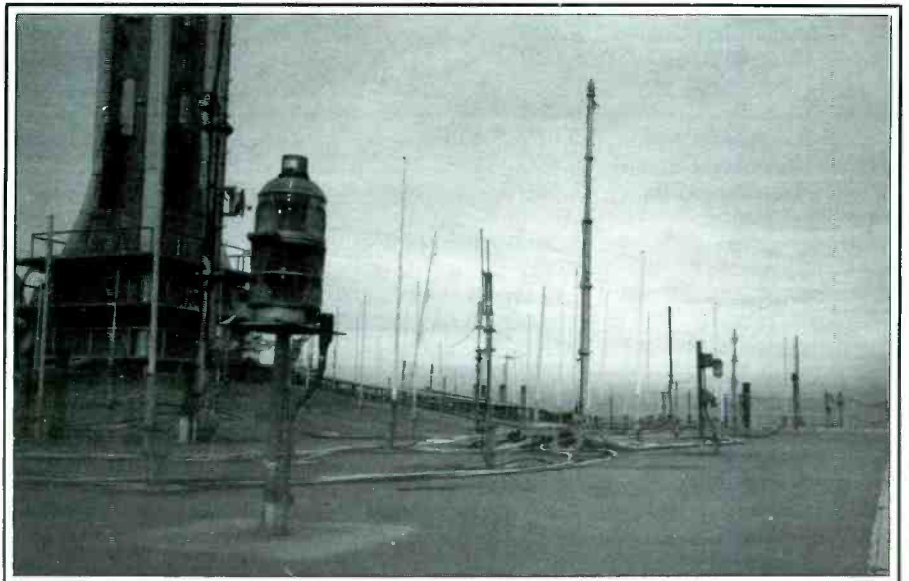
Most of the on-site transmitters used two-foot dishes. That would give the signal a very narrow beam and lessen the chances for interference to other users.

As in the case of the microwave units, the same problems hold for the two-way radios that were used. Most of the communications were on 450 MHz or UHF. Repeaters were used extensively to increase the range of the hand-held units. A repeater is a receiver/transmitter combination that simultaneously transmits what the receiver hears at the same time. A single antenna is used so that the transmit and receive coverages are similar. For instance, CNN would transmit on the frequencies of 450.3125 MHz and receive on the frequency of 455.3125 MHz. By using this system, all hand-helds become, in effect, base stations and allow users to hear all communications for a great range. As an example, some of the walkie-talkies that the networks are using operate at power levels of 3 to 5 watts of delivered RF power. Without the repeater the range of operation in the real world would be about 1/4 mile or less. With a repeater that same unit could talk 20 to 30 miles. That is quite a difference.

Frequencies are coordinated as the same problem exists as with the microwave units. All users register their operating frequencies and, hopefully, there are no conflicts. If there are, the results are not quite as serious as a few years ago when everyone was "Rock Bound" or used crystals. To change frequencies then became quite an expensive operation, with crystals costing up to \$20 each, with each unit requiring two crystals. Multiply these numbers by 50 or 60 units and the cost could really add up. Today, many of the radios are synthesized. Change a few switches or reprogram a prom and new frequencies are at hand. Technology



The roof of Geneva's Intercontinental Hotel became an instant antenna farm. Microwave antennas were everywhere!



Another view of the rooftop communications antennas, this time those used for UHF two-way chatter between crews.

has taken giant leaps, and with the advent of the microprocessor controlled radios, headaches of changing frequencies are a thing of the past. In addition to CNN, some of the other users and frequencies were:

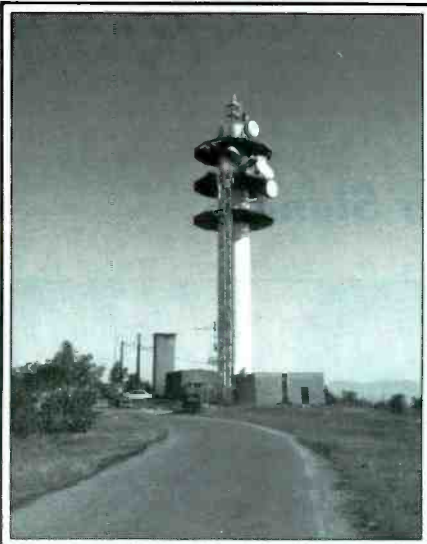
	Receive	Transmit
ABC	450.8575	455.8575
CBS	455.6125	450.5125
NBC	161.700	161.700

NBC was not using a repeater and was em-

ploying the simplex mode of operation (that is to say transmit and receive functions were done on the same frequency). Also, during this particular trip, the U.S. State Department was operating on the following frequencies: 407.200, 409.625, 407.600, and 408.600.

The next time a major news event occurs in your area, plug some of the mentioned frequencies into your scanner and listen in on some of the action.

While in Geneva, I wanted to take a look



Microwave tower just south of Geneva. The satellite uplink antenna is located on the middle platform. Plenty of barbed wire surrounds this complex.



This Post Office relay van sports a hydraulic mast for ease in relaying broadcast signals.

at some of the facilities that would be used for transmitting the television signal from Geneva to the rest of the world. In Geneva, there was a shortage of direct transmitting facilities, so the Swiss had to pass some of the overload to the French. Geneva is located on the border of France, so there was no major problem getting the signal to them. In fact, the television tower in the photo is located on a ridge to the south of Geneva and within easy reach by microwave.

I was given permission to visit the French microwave relay site and noted a few major differences from our American counterparts. The first—and the most outstanding—was the military personnel guarding it.

You had to be cleared by them and the station personnel before entry was permitted. Second, the facility was surrounded by a large fence topped with barbed wire. Lastly, there was a lookout tower that was manned again by the military that would "take care of" unapproved visitors. In Europe most of the broadcast facilities are run by the Post Office. There is no FCC per se, however, there is the Postal Telephone and Telegraph department. The PTT insures proper operation of the transmitters as well as all other communications in the country, such as Ham radio operations.

Additionally, the PTT provides all telephone service as well. It is rather unique to see their broadcast remote trucks with telephone symbols on the side.

The weather is very severe on the Swiss/French border, so special treatment must be given to the actual transmitting antennas. If ice or snow were allowed to build up on the antenna, the S.W.R. would rise rapidly. When power levels of several hundred kilowatts are involved, there would be much heat developed in the transmitter finale, as well as a chance to arc the transmission line.

The television transmitting antenna atop of Mount Blanc is over 50 feet high and mounted on a poured block of concrete. It is very cold at this elevation, therefore, the antenna and its enclosure is heated so that ice is melted rapidly to prevent buildup. When I was there in September, the temperature at the base of the mountain was 81 degrees and at the antenna location it was 32 degrees. Think of what it would be on a cold winter's day. When your antenna is over 12,000 feet in the air, your odds of being struck by lightning are very good. To minimize damage to the antenna, there are lightning rods installed at the peak of the antenna.


UHF frequencies are used for television. The countries in Europe are close spaced by our way of thinking and if VHF were used as in this country, there would be much inter-



This isn't a Saturn rocket. It's the TV transmitter located 12,750 feet atop Mt. Blanc. A protective dome assembly with VHF link antennas are mounted near its base. (All photos by Lance McGraw)

ference from each other. Here, the shorter range of the UHF signal is relied upon. Also, the television signal system uses more bandwidth than the American system. Here in the states our television system uses 525 inches and a bandwidth of 6 MHz. In Europe the system uses 625 inches and a 10 MHz bandwidth. The advantage of the additional lines are a sharper picture. Since most of the VHF frequencies in Europe are used for police and military, television transmissions found their home in the UHF spectrum. There are a limited number of channels per country, therefore, all users could operate on a non-interference basis in that part of the spectrum. Here in the States we tend to think of television as one of our "Inalienable Rights." We have many programs and channels to choose from. There is also a smattering of commercials that go along for the ride to pay for these programs. In Europe, there is a dissimilar system.

To start with, most television in Europe is Government sponsored and controlled. There are, for the most part, no commercials and programs that must harmonize with local politics. Another unique feature is there are limited broadcast days in certain countries. There are early sign-offs with statements like, "see you in the morning." There are even some locations that take a break in the middle of the day. Freedom comes in many forms, and choice is one of them. Be glad that in the States we have many stations that are privately owned and are independently programmed. **PC**



Wondering when the new Dick Smith Electronics Catalog was coming out?

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Receiving Those T-Band Scanner Signals

In a number of metropolitan areas across the country the landmobile radio services have been allocated frequencies on unused UHF TV channels. Channels are selected which will not cause interference with the area UHF TV stations. The so-called T-Band section extends between 470-512 MHz and includes TV Channels 14 through 20. Some active and tentative assignments are given in Table 1. It is best to call your local FCC district office to obtain the specifics for your region.

Scanner listening on these assignments can be improved by using one of the regularly-available, low-cost commercial UHF antennas, particularly the corner reflector and Yagi types. Mount them to obtain vertical polarization instead of horizontal. This will usually require some reworking of the mounting hardware. The results will surprise you, especially if you live in the near or far fringes of a metropolitan area. I live in the near fringe of Philadelphia and, by putting a Yagi into operation, I receive signals well that are just not there at all when I switch over to a multi-band omnidirectional scanner antenna.

An antenna I converted very simply was a Winegard 7-element 75-ohm UHF Yagi. The gain is 12 dB. The model is available from R.F. Electronics, 1086-C, N. State College Blvd., Anaheim, CA 92806, at a cost of \$9.95 plus shipping. These Yagis have an approximate bandwidth that covers 10 adjacent UHF TV channels or more than 60 MHz. Hence, one Yagi chosen for operation on Channel 16, 17, or 18 provides coverage on the entire landmobile T-Band. Or, purchase one that matches best the one or two allocations of your metropolitan area. Find out what channels are active in your area. Assignments are not only made in the city proper but include the surrounding counties as well. Such a Yagi mounted in the central area of the city will do well for omnidirectional pick-up. In addition you can mount it to display maximum sensitivity toward a scanner-active suburban area. The ultimate would be the use of two or more switchable Yagis or even a small TV rotor. You could easily mount a small 3-element, 150-MHz Yagi on the same mast. Look for more coverage on this topic later.

Yagi Modification

The first step is to change the Yagi over to vertical polarization. On the Winegard this can be done easily by rotating the U-bolt saddle 90°. First drill out the support rivet seen at the center of Figure 1 to free the saddle.

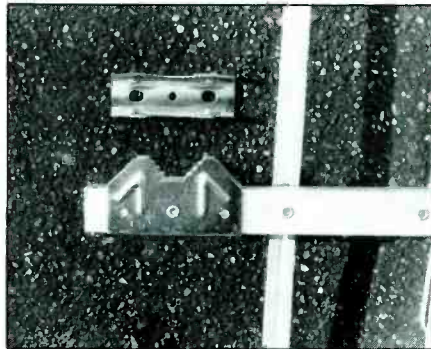


Figure 1: Yagi end and U-bolt saddle that must be rotated 90°.

You can now remove and rotate the saddle. Drill the new holes required to fasten the saddle and provide U-bolt insertion.

Figure 2 shows the Yagi mounted on a short, 3-foot section of 1-inch PVC piping. This Yagi uses a split-element Gamma matching section with a female F-connector permanently attached. Fasten a male F-connector to the antenna end of your transmission line.

Figure 3 shows the transmission line attached with the weather shield pulled over the F-connection. The antenna mast is made up of two 10-foot sections of PVC piping telescoped together. The short 3-foot section is telescoped into the top of the mast. The line is taped to the mast at two positions on down to the level at which it takes off for the radio room.

How To Test Scanner Antennas

The best way to test a scanner antenna installation is by "on-the-air-listening" that includes the ability to switch quickly between two antennas. One of these can be an all-band omnidirectional scanner antenna that is mounted permanently at one spot and is not changed. This will be your reference comparison antenna. Presently I have such a reference mounted on a PVC pipe clamped to my roof vent pipe. Space the antenna or antennas to be compared at least 30 feet away; mine is about 60. Use approximately the same antenna height and length of transmission line; that is not overly critical, but just be reasonable.

The set-up in the radio room is shown in Figure 4. The antenna switch is a Radio Shack (15-1249) pushbutton VCR/TV/FM switch for 75-ohm lines. This switch uses female F-connector inputs and output, permitting a complete 75-ohm line and F-connector installation.

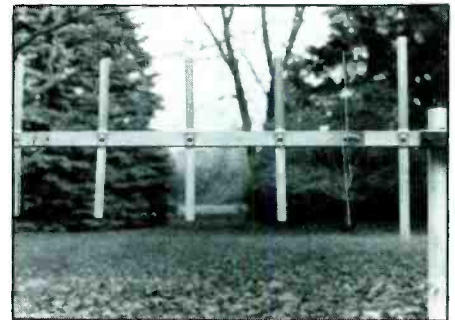


Figure 2: Yagi after changeover to vertical polarization. Note split match and female F-connector of driven element.

Table 1:
T-Band Landmobile Assignments

City	UHF TV Channel
Boston	14, 16
Dallas/Fort Worth	16
Chicago	14, 15
Detroit	15, 16
Houston	17
Los Angeles	14, 20
Miami	14
New York City	14, 15
Philadelphia	19, 20
Pittsburgh	14, 18
San Francisco	16, 17
Washington, DC	17, 18

Unless you want to dig into your scanner and add an S-meter circuit, you must test results aurally. Aural techniques work out very well, but you must know what to listen for. You must also be patient and wait for stations in test directions to come on the air and, then, make quick changeovers to evaluate performance.

Testing on strong, high-level signals is the most difficult. When signals are strong they produce complete quieting even though the signals from the two antennas may be significantly different in signal level. This indicates that you should not test on locals or the very strong, more distant stations. However, you can sometimes get a glimmer by setting your squelch full to the left. This is the point that requires a strong signal to break through. You will hear both signals at the same level. But pay no attention to the signal. Instead, listen for background noise level or "rush." You may well hear that background-level quieting is not as good with the signal from

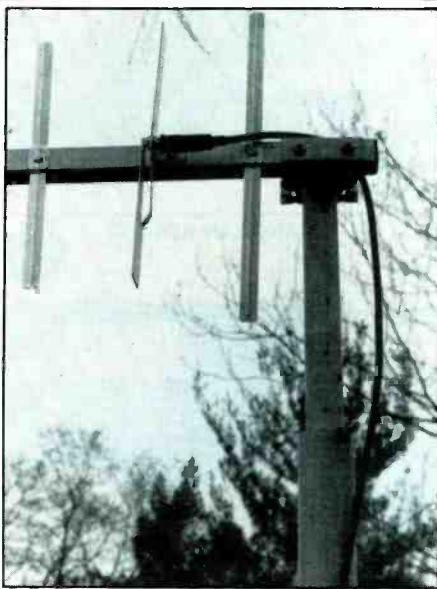


Figure 3: Top-of-mast arrangement and transmission line.

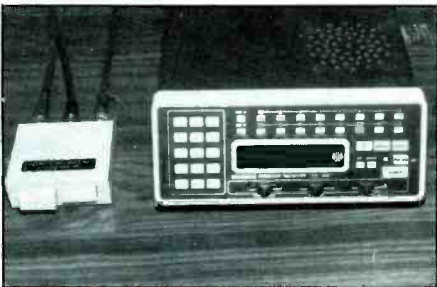


Figure 4: Scanner and coaxial antenna switch.

one of the antennas as compared with the other. This indicates that the signal from this antenna is below the level of the other.

In the case of a less strong signal you may wish to set the squelch near to the point at which noise begins to open the squelch circuit. At this point you can make a comparison between the two signals picked up on the antenna. The stronger signal may break the squelch while the weaker signal will be broken-up and may not reproduce without distortion.

When there is a significant difference in signal levels, the difference in antenna performance is apparent immediately. For example, a weak signal coming out of Philadelphia may easily break through the squelch and reproduce well from the test antenna. However, the same weak signal picked up on the reference antenna could not be heard for any setting of the squelch control. It is this difference in performance on the weaker signals that demonstrates clearly how well one antenna performs in comparison to another. Keep a frequency record of these signals so you can go back to them time and time again in checking out the performance of your scanner antennas.

Some additional work will be done here on gain antennas for both the 150 and 450 MHz bands. One project will be to mount a second T-band Yagi toward New York City to take a listen when there is abnormal over-the-horizon propagation in that direction. **PC**



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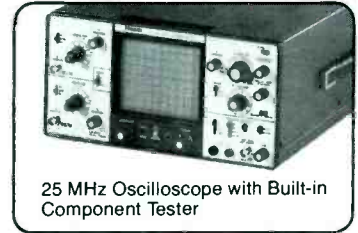
FCC Certified Terminal Node Controller



Automatic Antenna Tuner



Antenna Noise Bridge/300 kHz to 30 MHz SWL Antenna/VLF Converter/Touch Tone Decoder for Remote Control Reception



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2749.5: LWB, Buenos Aires Aero, Argentina w/aircraft arrival messages & other aviation traffic, 850/100R at 0317 (Margolis). Noted at 2310 (Kneitel).

2787.5: Madrid Naval R., Spain, w/plaintext & encrypted messages between various "AIG" units at 0305, 850/100R. From 0332-0350, 72JKL sent RYRY/SGSG test to 78EAL, followed by WX for Spanish Sahara.

2805: CCS, Santiago Naval R., Chile, w/5L groups to various naval units, 0253, 850/66R.

2808: "RETJ," Madrid Naval R., Spain, RYRY & foxes at 0257, 850/66R.

3175: "LPAZ" w/RYRY at 2332. 50 baud at about 800 Hz (R) shift (Kneitel).

3267: TELAM news, Argentina, in Spanish at 2340, 850/50R (Kneitel).

3840: "RPTIG," Portuguese Naval R., Ponta Delgada, Azores, w/lengthy traffic in Portuguese, 0036, 850/66N.

4111.5: Encryption & plaintext traffic in Spanish at 0051. Also RYRY but no ID. Believed to be from Mexico. 425/100N.

4124: Un-ID meteo station, could be Prague, Czechoslovakia w/coded WX for E. Europe at 0118, 425/66N.

4177: Y5CC, ARKONA, an E. German sailing vessel, 0438 w/Telexes to Y5M, Ruegen R., ARQ mode.

4196: 73HSX, un-ID Spanish Navy unit, RYRY/SGSG test, 0700 in 850/100R.

4279: Encrypted messages between various "AIG" units sent at 2022 via Madrid Naval R., 850/100R.

4371.5: Un-ID ship s/off SITOR traffic at 2030. Unusual since this is a voice-only frequency!

4372: LIPB, FJORDNES, a Norwegian cargo vessel, ARQ to unknown shore station at 2030. This is also a voice channel.

4372.5: Soviet research ship VOLNA using this voice channel to send telexes to Odessa R., ARQ at 2031.

4442.5: RCG72, Kiev Meteo, USSR w/coded WX at 2310, 1000/66R.

4549.5: LRO9, DyN, Buenos Aires, Argentina, Spanish news, 2348, 850/100R.

4764.3: CCS, Santiago Naval R., Chile, 5L groups to "EF," "BB," etc., 0620, 850/66R.

4785.1: DJH85, Gregel Meteo, W. Germany, w/coded WX, 0618, 425/66N.

5023: Foxes, RYRY, 1 to 0 count, but never an ID, 1250, 850/45N (Kneitel).

5026.5: MKD, RAF, Akrotiri, Cyprus, RYRY & foxes at 2058, 350/66R.

5066: ZVK, Rio de Janeiro Aero, Brazil, RYRY at 0232, 850/50R (Kneitel).

5177: EIP, Shannon Aero, Eire, w/aviation WX 2235, 425/66R.

5135: Y7A54/59, MFA, Berlin, E. Germany, RYRY & QRA tape at 0021, 425/66N. Callsign usually noted here is Y2F.

5144: RWW73, Moscow Meteo, USSR, w/coded WX, 2247, 1000/66R.

5220: SUA94, MENA, Cairo, Egypt, Arabic news at 2110, 425/66R.

5232: RYRY tape w/"CQ DE 2KY/B6Y" at 2323, 425/66N. Message in 5# groups from 2327 to 2331.

5240: 4OC2, TANJUG, Belgrade, Yugoslavia, English news at 0002, 425/66N.

5442: "CPU," location unknown, RYRY at 2120, 425/66R. Encrypted traffic at 2200. May be tactical call; doubt if in Bolivia as callsign would seem to indicate.

5544: CAK, Santiago Aero, Chile, RYRY at 0926, 850/66N.

5558.5: SUU, Cairo Meteo, Egypt, coded WX at 2145, 425/66R.

5683.5: Un-ID station turning on/off its SITOR machine for several hours, no text, at 2220. At 2222 (425/60R RTTY) an aviation WX transmission but RTTY rig was shut off immediately after each transmission. Wonder if it's USAF. Definitely not 6VU on 5684.5 as both were operating simultaneously.

5684.5: 6VU, Dakar Aero, Senegal, w/coded WX for Canaty Is., 2218, 1000/66N.

5755: Y7K21/Y7K25, E. Germany, RYRY tape at 2235, >525/50N (Kneitel).

6345: 73HSX, a Spanish Navy unit via Madrid Naval R., RYRY/SGSG to 78QLD at 0725, 850/100R. Noted //4196 kHz, s/off 0730.

6357: 72JKL, Madrid Naval R., Spain, RYRY/SGSG to 78EAL, 0201, 850/100R.

6460: UJQ, Kiev R., USSR, at 1003 w/messages in Russian to ships, 170/66N.

6490: FUE, Brest Naval R., France, RYRY/SGSG at 0748, 850/100N. Followed by a "non protege" (unclassified) message to FAAC at 0755, encrypted message at 0803.

6736.2: ETD3, Addis Ababa Aero, Ethiopia, w/RYRY & "DE ETD3 REQ GRK STOP" at 2036, 850/66N.

6829: ZAO2, PTT, Tirana, Albania, w/RYRY & QRA at 0715, 425/66N, followed by message to PTT, Prague which was on another frequency.

6833: "A5K," possibly a French mil post in Coribbean, at 0721, 850/66R with the following tape sent repeatedly to "HBA": "Voici une bande essai RYRY... au clair de la lune man ami pierrot prete moi ta plume pour ecrire un mot. Ma chandelle est mort. Je n'ai plus de feu va chez la voisin. Je crois ou il y est ouvre moi ta porte pour l'amour de Dieu, Lundi, Mardi, Mercredi, Jeudi, Vendredi, Samedi, Dimanche. HBA de A5K de A5K int recu ma bande." (My punctuation may not be correct). At 0750, A5K was working HBA in French. At 0753 several 5L groups were sent. A loose translation: "Here is a test tape. RYRY... My friend Pierrot lends me his pen for writing a note by moonlight. My candle is out. I haven't any more light coming from my neighbor's house. I believe your door is open to me, an account of God's love, (an) Monday, Tuesday, Wednesday, Thursday, Friday, Saturday (and) Sunday."

6780: CAI7E, Hanga Roo Aero, Easter Island, RYRY at 0340, 850/66N.

6880: NNN0MCL, MARS, USMC Camp Lejeune NC, "WX88" net, //4625.5 kHz, at 2230, 170/75R, RYRY & foxes then roll call. Mentioned 2656 4042.5 & 14385 kHz (Kneitel).

6920: Kiev Meteo, USSR, w/coded WX at 2105, 425/66R.

6942.5: USIA, Kavalla, Greece, RYRY at 2330, 425/75R (Kneitel).

6972: YOG59, ANGERPRES, Bucharest, Romania, English news at 1905, 475/66R.

6992.6: AFRTS broadcast AP/UPI news to U.S. Army personnel in Europe, 2301, 85/66R (Frequency Division Multiplex mode).

6999: 8Q9, Male Aero, Maldives (Indian Ocean) w/NOTAM's & aviation weather at 0815, 850/66N. Excellent signals.

7376: JMI2, Tokyo Meteo, Japan, w/coded WX at 2150, 850/66R.

7423: 5YD, Nairobi Aeradio, Kenya, RYRY at 425/50N, at 2113 (Kneitel).

7425: Y2V5, ADN, Berlin, E. Germany, RYRY and QRA test tape at 2054 then English news to S. Asia, 375/66N.

7428.5: TELAM, Buenos Aires, Argentina, Spanish news, 0516, 850/66R.

7456: LRO42, NA, Buenos Aires, Argentina, news in Spanish at 0516, 850/66R.

7473.5: TJK, ASECNA, Douala, Cameroon, w/RYRY at 2250, 475/66N.

7560: RPT30, TASS, Moscow, USSR, w/RYRY at 1100, 425/66R. French news at 1119, beamed to Europe/Africa.

7592: YZD6, TANJUG, Belgrade, Yugoslavia, French news to Far East, 1856, 425/66R.

7658: YZD, TANJUG, Belgrade, Yugoslavia, English news at 1948, 425/100R.

7730: J5G, Bissau Aero, Guinea-Bissau, RYRY & "DE J5G TESTING PSE GRK 5/5" tape at 0822, 425/66R. Had a different tape at 1915 w/RYRY & "PSE QJH1."

7839.5: RYRY w/out ID probably MFA in Havana. Noted at 0625, then Spanish traffic & encrypted messages. Was 425/60N.

7842: CNM20/1X, MAP, Rabat, Morocco, w/news in French at 1027, 425/66R.

7850: ZAA, ATA, Tirana, Albania w/French news at 1926, 425/66N.

7855: ROK24, Moscow Meteo, USSR, w/coded WX at 1330, 1000/66R.

7915.5: 9KT26, KUNA, Safat, Kuwait w/Arabic news at 1335, 375/66R.

7944: RYRY tape w/no-ID from 0812-0817 then s/off. Was 425/66N. Back at 0821 w/RYRY but this time tape began with the word "TEST" sent 8 times. Encrypted message at 0826, was sent w/5F groups inserted in encrypted text.

Number groups always contained the same digits, i.e. 11111, 22222, 33333, etc. S/off 0831.

7946.3: DHJ51, Gregel Meteo, Germany, at 0835 w/coded WX, 425/66N.

7954.3: LRN85, DyN, Buenos Aires, Argentina, Spanish news at 2300, 850/75R. (Kneitel)

7954.5: CVI79, Montevideo, Uruguay, Spanish news at 0350, 850/100R.

7960.9: MKD, RAF, London, England, foxes & RYI tape at 2126, 170/66N.

7980: Y3K7, Potsdam Meteo, E. Germany, w/coded WX at 2120, 850/133R.

8022: FTI12/H3, AFP, Paris, France, Arabic news at 2023, 350/66N.

8023.5: FTI2/H3, AFP, Paris, France, French news at 2022, 350/66N.

8031.6: AP & UPI news broadcast by AFRTS for U.S. military, 85/66R FDM at 2004.

8040: CLN215, PTT, Havana, Cuba, RYRY at 2327, 500/66R.

8043: BJZ71, Wuhan, China, coded WX at 2333, 425/66R.

8060: TASS, Havana, Cuba, English news at 1333, 425/66R.

8061.5: ANSA, Rome, Italy, French news at 2011, 425/66N.

8070: ZRH, Cape Naval R., Fisantekraal, RSA, RYRY & foxes at 0007, 850/100R.

8082.7: ROM5, Tashkent Meteo, USSR, w/coded WX at 0055, 425/66R.

8084.9: RVL21, Khabarovsk, Meteo, USSR, RYRY w/o ID at 0010, 500/66N, followed by coded WX.

8122.5: TNL, Brazzaville Aero, Congo, w/coded WX at 2215, 550/66N.

8328.5: ZIEMIA CHELMINSKA, a Polish bulk carrier w/telexes in Polish to SPH, Gdynia, ARQ at 2055. SQKD, PROFESSOR RYLKE, a Polish cargo/container ship w/telex to SPW, in ARQ at 0106. This frequency is at least 20 kHz away from where coastal stations using SITOR are to be found. This out-of-the-way frequency seems to be used by Polish ships working Polish coastal stations.

8345: SQKT, an un-ID Polish vessel w/Polish telex to SPA, Gdynia at 0933 in ARQ.

8895: USIA news in English on this odd frequency, 2311, 425/75N.

9184: TLO, ASECNA, Bangui, Central African Republic w/WX at 2155, 425/66R (Margolis). Noted at 0126, 850/50R (Kneitel).

9190: RDZ75, Moscow, USSR, coded WX at 1340, 1000/50R.

9216.3: SUA, ASECNA, Niamey, Niger w/test tape of RYRY & "QRK5 GA TFC," 600/66N at 2145.

9377: "LIMA NUEVE HOTEL" to "JULIET DOG LIMA," "TANGO NUEVE FOXTROT" & "GOLF SEIS MIKE" w/5L encrypted traffic at 2342, 850/50N (Kneitel).

9788: FTJ8, DIPLO, Paris, France. French news at 1328, 425/50N (Kneitel).

9966.3: Y2V9, ADN, Berlin, E. Germany, English news at 1346, 375/66N.

9968: Un-ID station w/Spanish traffic in progress. Not diplo. Noted 1118-1120 s/off, 850/66R.

9969: MKD, RAF, Akrotiri, Cyprus, w/RYI tape & foxes at 1854, >850/50R (Kneitel).

10127: DFK25, DPA, Hamburg, W. Germany, w/RYRY & English traffic at 1050, 425/66N.

10132: TNL, Brazzaville Aero, Congo, at 1918 w/RYRY/QJH1 tape, 850/100R. Note different tape & shift from same station on 10137 kHz.

10137: TNL96, Brazzaville Aero, Congo, RYRY/CQ tape at 2349 followed by aviation WX, 600/66N.

10153: SOK215, Warsaw, Poland, at 1320 w/English text regarding Polish trade, 400/50N (Kneitel).

10157: KUNA, Safat, Kuwait, w/news in Arabic at 1409, 425/66N.

10258: RDZ71, TASS, Moscow, USSR, at 1331, English news, 425/50R (Kneitel).

10332: "DFZG," possibly a Yugoslav embassy, RYRY & encryption at 1020, 425/100N. S/off at 1025.

10381.8: AFRTS transmission of AP/UPI news to USAF personnel at 0920, 85/100N FDM mode.

10383: 5YE11, Nairobi Meteo, Kenya w/aviation WX, at 1936 in 850/66N.

10390: AYA26, INTERPOL, Buenos Aires, Argentina, at 0004 in ARQ repeating "IBPV" (Kneitel).

10510: LOL, Buenos Aires Naval R., Argentina,

at 0011 in 425/75N w/RYRY & calling PWZ (Kneitel).

10543: Y2V54, ADN, Berlin, E. Germany, English news at 0945, 425/66N.

10640: 9RL73, PANA, Kinshasa, Zaire, French news at 1844, 425/66R.

10669.8: MFA, Havana, Cuba, w/RYRY & no ID, Spanish traffic & encrypted messages at 1505, 350/100N.

10731: 7RP90, Algerian embassy, Madrid, Spain, w/traffic in French to 7RX40, Algerian embassy in Tripoli, Libya. Heard at 1430, 170/66N.

10732: FDY, French Air Force, Orleans, France, RYRY & "le brick" tape at 0955, 425/66R.

10805: NA, Buenos Aires, Argentina, RYRY w/o ID at 1001, 850/66N. Began Spanish news at 1005.

10814.5: 9VF249, ANSA, Singapore, English news to Australia & S.E. Asia at 1941, 425/66N. French news at 1855.

10895: LRB39, SAPORITI, Buenos Aires, Argentina, Spanish news at 2350, 850/50R (Kneitel).

10905.6: NAU, U.S. Navy, San Juan PR with ID & foxes in an FDM transmission at 2001, 85/100R.

11006.5: NPX, U.S. Navy, South Pole Station, Antarctica, w/unclassified message at 1107. Was 850/100N. Much garbling caused by atmospheric disturbances but copy still readable. Such garbling of RTTY was the major reason that the National Science Foundation, which had HF radio stations at the South Pole for voice/RTTY until early last year but then switched to 2 satellite links to the U.S.A.

11030: AXM34, Canberra Meteo, Australia, w/coded WX at 1105, 850/66R.

11063: LZU2, Sofia Meteo, Bulgaria, CQ/RYRY tape at 1212 followed by coded WX, 425/66R.

11228: "Teutonic" (USAF aircraft) talking to MacDill AFB (FL) in USB then switching over to 850/75 encrypted RTTY (referred to as CV-796 mode) heard at 1332 (Kneitel).

11450: RDD77, Moscow Meteo, USSR, coded WX at 1445, 1000/66R.

11453: IMB33, Rome Meteo, Italy, w/coded WX at 1223, 425/66N.

11494: SOL249, Warsaw, Poland, PAP news in Polish at 1230, 425/66R.

11500.2: "RFLIGC," French Army Police, Cayenne, French Guiana (ex-Devil's Island), w/RYRY & "le brick" tape at 1045, then traffic to "RFFBDA" (MP Commander, Paris). Was 600/66R.

11580: "RXFIAC," possibly Portuguese naval station at 1312, 850/50R, testing RYRY/SGSG "ZBZ INT" then repeating tape of "1WERTYUIOPQW-RTYUIOVH." (Kneitel).

11638: DDK8, Quickborn Meteo, W. Germany, w/coded WX at 1245, 425/66R.

12061: "RFLIG," mil commander of French Army, Cayenne, French Guiana, w/unclass messages to "RFLIA" & encrypted messages to "RFLID" at 2001, 575/66R.

13366.5: SYD, Nairobi Aero, Kenya, w/RYRY at 1944, 350/66N.

13482: DPA news in English at 1150, >525/50N (Kneitel).

13524: Y1071, INA, Baghdad, Iraq, at 1156, 425/50R. Giving sked as news to S.E. Asia 1200 to 1700 on 14373 kHz; to Europe & N. Africa 1200-1700 on 13524 kHz. Monitored at 1303 w/English news, frequency unstable & drifting.

13540: EFE, Buenos Aires, Argentina w/Spanish news at 1916, 425/66R.

13567: MKD, RAF, London, England, w/foxes & RYRY at 1415, 170/66R.

13647: OL15, CTK, Prague, Czechoslovakia, w/French news at 0010, 425/50N (Kneitel).

13735: ADN news in English at 0010, 425/50N (Kneitel).

13998: FTN99, DIPLO, Paris, France, French news at 0024, 425/50N (Kneitel).

14362: SOO236, PAP, Prague, Czechoslovakia, news in Polish at 0027, 425/50N (Kneitel).

14373: Y1L73, INA, Baghdad, Iraq, w/English news at 0030, 425/50R (Kneitel).

14497.5: CSY, Santa Maria Aero, Azores, w/RYRY, NOTAM's & aviation WX at 1250, 850/66N.

14508: D4B, Sal Aero, Cape Verde, w/RYRY at 2135, 850/66N.

14510: RIC75, TASS, Moscow, USSR, w/English news at 0035, 425/50N (Kneitel).

14513: AEM1UX & others in U.S. Army MARS network at 0040, <170/45R. Exchanging telegrams, (Kneitel).

14569: Y7A58, ADN, Berlin, E. Germany, w/news in German at 1335, 425/66R.

14574.3: CNM59/X9, MAP, Rabat, Morocco w/news in English at 1338, 425/66R.

14605: Y3E, ADN, Berlin, E. Germany, w/news in German at 1341, 425/66R.

14632: YZC2, TANJUG, Belgrade, Yugoslavia, w/English news at 1333, 525/50R (Kneitel).

14635.3: MFA, Havana, Cuba, w/5F groups to MFA, Prague, Czechoslovakia at 1342, 170/100N.

14723.9: TNL, Brazzaville, Congo, w/RYRY at 1848, 425/66R.

14760: MAP news in English at 0055, 425/50R (Kneitel).

14805: "CUBAN EMBASSY HAVANA" to "CUBAN EMBASSY ETHIOPIA, ZAMBIA...etc." w/Spanish traffic at 1903, 525/50N (Kneitel).

14883.1: Buenos Aires Naval R., Argentina, w/unclassified messages at 2120, 425/100N.

15397.4: FTQ39, DIPLO, Paris, France, w/French news at 0139, 425/50N (Kneitel).

15480: APS news in English at 0115, 850/50N (Kneitel).

15555: LZPI, BTA, Sofia, Bulgaria, W/English news at 0115, >525/50N, QRM from R. Netherlands SWBC on 15560 kHz (Kneitel).

15597: KRH51, U.S. Dept. of State, London, England, w/foxes at 0124, 850/75N. Listed on 15595 kHz but definitely 2 kHz higher (Kneitel).

15647: 9KT331, KUNA, Safat, Kuwait, w/news in Arabic at 1334, 375/66N.

15705: YZJ6, TANJUG, Belgrade, Yugoslavia, w/news in French at 1330, 425/66R (Margolis). Same at 1525 (Kneitel).

15776: ZRH, Cape Naval R., Fisantekraal, RSA, with RYRY/SGSG/foxes & AMVER reports to NMN (USCG) at 1320, 850/100R.

15930: RB178, TASS, Moscow, USSR, w/French news at 1327, 425/66R.

15947: GXQ, RAF, London, England, w/RYRY & foxes tape at 1312, 170/66R.

15955: 3BT2/3/9, Plaisance, Mauritius, at 1528 w/coded WX, 850/50R (Kneitel).

15963: Y7A62, ADN, Berlin, E. Germany, w/German news at 1310, 475/66N.

16275: Havana, Cuba, w/Spanish traffic at 2050. Probably diplo. Was 525/50N (Kneitel).

16348: CLN530, TASS, Havana, Cuba, w/English news items from Pravda at 1830, 425/66R (Margolis). Same at 2012 (Kneitel).

18100: Un-ID meteo station w/WX for Middle East countries at 1453, 850/66N. Any reader know for certain what station this is?

18160: RTU47, TASS, Moscow, USSR, w/English news at 1337, 425/66R.

18256: YWQ18, Marquetia Meteo, Venezuela w/coded WX at 1350, 850/66N.

18274: HBD60, MFA, Berne, Switzerland, w/traffic in French or 5L groups at 1420, ARQ.

18404.5: RCT57, TASS, Nikolayev, USSR, w/news in French at 1418, 425/66R.

18613: CLN565, PTT, Havana, Cuba, w/RYRY & QRA tape, also calling PTT Shanghai, PRC, at 2230. Was 425/66R.

18660: "PROTOMINREX," Havana, Cuba, w/Spanish telegrams at 2047, 525/50N, hand keyed (Kneitel).

19790: "RPFN" (CTU89), Monsanto Naval R., Portugal, at 1334, calling PWZ. Was 850/50R (Kneitel).

20078.1: FTU8, DIPLO, Paris, France, w/French news at 1435, 425/66N.

22194: FNYZ, THRESE DELMAS, a French sailing vessel working FFT91, St. Lys R., at 1605, ARQ.

22220.5: DLDP, LILIENTHAL, a W. German freighter, relaying WX to other ships at 1551, ARQ.

22782.5: WFN62, USA, New York, NY, w/English news at 2227, 425/100N.

(Unattributed listings above are Margolis.)

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CIRCLE 39 ON READER SERVICE CARD

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

"Out Of Band" Scanning Tricks

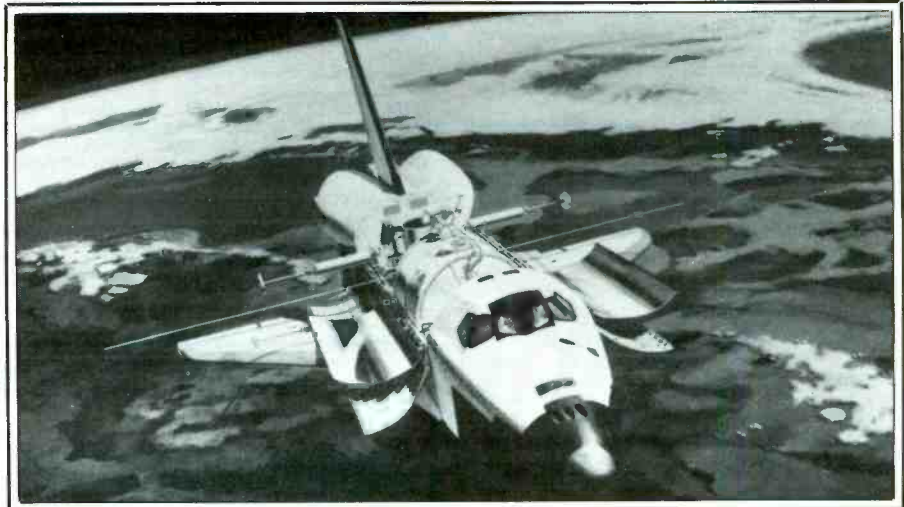
It may be April, but most of us scanner users are no fools. We know most scanners really can tune out of band—but only if you know how.

Most of the newer breed of scanners on the market now cover the 138-144 and 148-150.8 MHz military land mobile and 406-420 MHz federal government land mobile bands, including the 28-30, 50-54, and 420-450 MHz ham bands. Most of the older models of programmable scanners in use will tune in these bands with a few simple programming tricks.

The easiest to tune out of band are a series of Regency programmables. To get the Regency D100, D300, D810, K100, K500, M100, and M400 to accept out-of-band frequencies (such as those bands specified above), touch the decimal key first before entering the frequency into a given channel or into a search limit and the frequency can be entered. The decimal key needs to be entered each time before programming in an out-of-band frequency. The M100 can be modified, however, so the decimal does not have to be entered each time. If you've got bumbling fingers and never soldered anything before in your life, I wouldn't attempt this procedure; just live with the decimal key each time. If you're familiar with the inside of a radio (you know what makes the noise inside), try this:

The limiting of frequencies on the M100 can be permanently eliminated by installing a jumper from pin 34 to ground of IC109, the 40-pin microprocessor chip on the main board (it's the one on the right side, just below the middle). If you look to the right of IC109, you'll see two holes drilled in the PC board marked "limit test opt." By soldering in a jumper wire between the two holes, you eliminate the need to enter the decimal point each time for out of band listening. (Editor's note: The M100 also can be simply modified to eliminate muting on frequency entering, have the beep pitch lowered, or change from a 10.7 MHz IF to a 10.8 MHz IF in problem reception areas. If you would like to read about these and other scanner modifications, let me know here at *POP'COMM*. Just remember that you void your warranty when you tinker with the insides!)

If you have one of the older Regency ACT-T16K receivers, out-of-band reception is possible by following this trick: Place the unit on any channel manually (in the manual mode, not the scan mode), then touch "9" and then "CL" (for clear). This was a factory test mode that was set up in



By tricking the Bearcat 250 to receive below 146 MHz on VHF high band, ham radio operator astronauts aboard the space shuttles can be heard communicating with earthbound hams on 145.550 MHz. (Artwork courtesy of NASA)

these radios to open up microprocessor limits. I used to own one of these radios, and if I remember right, after punching in the "MA-9-CL" code, the only time you ever had to re-enter it was if you replaced the 9-volt memory battery.

The Regency M100 is capable of normal reception in the following bands when using programming tricks: 28.4-52.2, 134.8-191.6, and 382-555.6 MHz. Other units are similar in range. Some of the newer models actually can receive further out of range than they are advertised to handle without any programming tricks. For instance, the Regency HX1000 hand-held scanner is advertised to receive 30-50, 144-174, and 440-512 MHz. However, the HX1000 actually can receive 26-66, 116-196, and 305-544 MHz without any tricks; just enter the desired frequency, even if it is out of the specified band.

The Bearcat scanners take a few extra tricks to get them to go out of band. You'll have to go through a series of steps, depending on the radio.

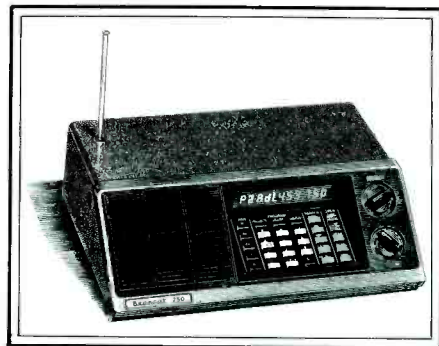
For the Bearcat 100 hand-held, out-of-band programming will allow the unit to operate between 50 and 54 MHz. First, press 49 limit, then press 50 limit. Next, press "search," "hold," and "manual." Then, press "406" "limit" and "405" "limit" (the display shows "error"). Next, press "search," "hold," "(down) limit," and "search." The radio now will operate up to 54 MHz to cover the 6-meter ham band.

The Bearcat 210XL will operate between

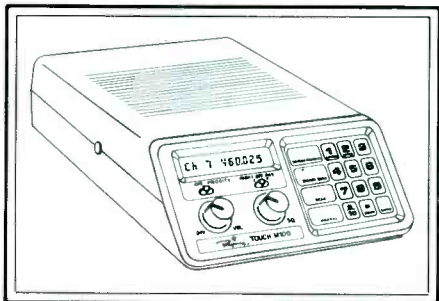
50 and 144 MHz if you follow these instructions: First, select a channel position for the search. Press "manual," "50 limit," and "50 limit." Next, press "search," "hold," and "manual." Next, press "144 limit" and "143 limit" (display will read "error"). Press "search" and radio will search above 50 MHz. To enter any received frequency in the radio's memory, just press "manual."

To get the Bearcat 300 to operate between 136 and 144 MHz, follow these steps. To search the band, first select a channel position and enter a low band or aircraft frequency. Press "157.6 limit" and "165.6 limit." Open the squelch, press "search," press "enter," and close the squelch. The radio will now search between 136 and 144 MHz. To enter a frequency between 136 and 144 MHz into the Bearcat 300, first add 21.6 MHz (double the IF) to the desired frequency and enter it into both "limits." Open the squelch, press "search" and "enter." Close the squelch, press "1" and press "limit." Open and close the squelch and the new frequency is in the memory.

The Bearcat 250 can be tricked into two stunts—out-of-band frequencies and split-channel searching. The Bearcat 250 out of the box is capable of only 10 kHz channels on VHF low band, 5 kHz channels on VHF high band, and 25 kHz channels on UHF. The 25 kHz spacing on UHF can be a real pain if you want to monitor the new 12.5 kHz spaced channels between the 25 kHz channels on UHF (frequencies such as 450.3875 or 461.8125) because the Bear-



The Bearcat 250, no longer manufactured but one of the more popular models, can "learn" several new programming tricks.



The Regency M100 10-channel scanner is popular for modifications and readily programs out-of-band signals.

cat 250 is not able to accept the frequencies. You can still hear the channels off-frequency, if you want, but these programming tricks will make life a little easier. The Bearcat 250 is advertised to handle 32-50, 146-174, and 420-512 MHz, however, with programming tricks, you can tune in 10.85-51.805, 143.85-184.805, and 307.45-512.2375 MHz. We came across two sets of programming tricks for the Bearcat 250, so we'll present both and let you use whichever you find easiest to work with. Here's the first, listed by steps.

- 1) Press "manual." (Display reads channel number and frequency entered.)
- 2) Press "auxiliary" and "store." (This activates self-destruct and bulk erases the 64-position storage memory.)
- 3) Press "manual" to select the channel you want the out-of-band frequency to be programmed into.
- 4) Remove "delay" function, if necessary.
- 5) Remove "lockout" function, if it is necessary.
- 6) Enter any frequency between 146 and 174 MHz.
- 7) Set lower search limit of 146.000 MHz.
- 8) Set higher search limit of 146.200 MHz.
- 9) Open squelch so noise is heard.
- 10) Press "store." (The zeroes roll and the unit is continually searching between the limits and storing frequencies in the 64 position memory.)
- 11) Press "recall." (The unit stops the program load and displays the first frequency loaded in the storage memory.)
- 12) Press "manual." (This arms the unit to accept new search limits. The frequency entered in step 6 will be displayed.)

13) Press "148" and "limit" to set the new lower search limit.

14) Press "150" and "limit" to set the new upper search limit.

15) Press "recall." (Unit displays the first loaded frequency in storage memory.)

16) Press "search (down arrow)." (This starts the unit searching below 146 MHz.)

17) Close the squelch (eliminate the noise). The unit will continue to search down. When you are near the frequency you want, open the squelch so noise is heard and the scanner will stop searching. If you pass what you want, press the search up arrow to get at the correct frequency.

18) Open the squelch so noise is heard to keep the search from continuing.

19) Turn the radio off and then back on. (The desired frequency will be entered and can be scanned as any other frequency.)

20) Press "manual" to return the radio to normal operation.

21) Press "manual" to step to the next channel to program.

To enter another frequency in the same range (VHF high band in the above example), repeat steps 4, 5, 6, and 16 through 20. Pressing "speed" will change the search rate. If the search has passed the desired frequency, searching up can be done as long as you do not re-enter the original search limits programmed in steps 7 and 8. As the desired frequency is approached, open the squelch and use search up or down to approach the frequency. Once initiated, searching outside the stated coverage is continuous. For instance, going down from VHF high band, the search will enter UHF at 512.2375 and go down through 307.45. It then will search VHF low band beginning at 51.805 and go down to 10.85 before starting over again at 184.805 MHz.

Search can be started in the UHF range by using UHF frequencies in steps 6, 7, 8, 13, and 14. The same applies for VHF low band.

To search any area of the UHF band in 12.5 kHz steps, rather than the standard 25 kHz steps, use UHF frequencies in steps 6, 7, and 8 and use VHF high band frequencies in steps 13 and 14. To search the VHF low band in 5 kHz steps rather than the standard 10 kHz steps, use VHF low band frequencies in steps 6, 7, and 8 and VHF high band frequencies in steps 14 and 15.

Here's another method to trick the Bearcat 250 to operate between 401 and 420 MHz. The sequence is listed in steps.

- 1) Press "420 limit" and "421 limit."
- 2) Press "search (up arrow)" in slow speed.
- 3) Open squelch so noise is heard.
- 4) Press "lockout" (frequency in readout jumps 25 kHz).
- 5) Set new "limit" above frequency on readout.
- 6) Press "recall" (frequency in step 3 will appear).
- 7) Press "search (down arrow)."
- 8) Close squelch to start search.
- 9) Use "search (up arrow)" or "search (down arrow)" as needed.

10) Open squelch to stop search at desired frequency.

11) Press "lockout" to store frequency.

12) Press "recall" to retrieve new frequency.

13) Turn scanner off and then on.

14) Return to the same channel and frequency will be in memory.

To program the Bearcat 250 for split channel searching (5 kHz on low band and 12.5 kHz on UHF), follow these steps:

For low band, enter a low band frequency into "store." Next, press "recall" to display a frequency. Enter any two VHF high band frequencies into "limits." Press "recall" to display the low band frequency and then press "search (up arrow)" or "search (down arrow)" to start 5 kHz split channel search mode. This will prove helpful in logging some low band skip on 5 kHz split channels.

For UHF split channel searching, first enter "450 limit" and "451 limit." "Store" one or two frequencies within the above "limits." Next, enter "155 limit" and "156 limit." Press "recall" until UHF frequency is displayed. "Search (up arrow)" or "search (down arrow)" manually until desired frequency is reached. Then use steps 10 through 14 as listed above for searching 401-420 MHz to enter the desired frequency into the memory.

There still is one other simple trick to monitor out-of-band signals without going through all the fancy hoopla listed above; it's called doubling the IF. Most scanners have an intermediate frequency—or IF—of 10.7 or 10.8 MHz in the receiver section. Your owner's manual should list this information. Regency scanners have an IF of 10.7 MHz and Bearcat scanners have an IF of 10.8 MHz. The Bearcat 250, however, has an IF of 10.85 MHz. Let's say you want to listen to an FBI link operating on the frequency of 419.225 MHz and you have a Regency scanner. First, double the IF of 10.7 and you get 21.4 MHz. Add this to 419.225 MHz and you get 440.625 MHz. If you enter this frequency into your scanner, you'll hear the FBI link. You also may hear any hams that may be operating on that 440.625 MHz frequency. The same works for VHF high band: If you want to listen to Air Force crash crews operating on 140.100 MHz, add 21.4 MHz and you get 161.500 MHz. By programming that frequency into your scanner, you'll hear communications on 140.100 MHz. There is some signal reduction by using this method. With the Bearcat 250, there is a 27 dB reduction on VHF and 8 dB reduction on UHF. However, it's an easy way to get around all the fancy keyboard tricks.

If you know of any other programming tricks for your scanner, we'd like to hear about them here at POP/COMM. We know of no programming tricks that will work with Radio Shack scanners or other brands at this time, but someone out there might know of something. Let us know what new tricks you've taught your scanner. Write to: Chuck Gysi, N2DUP, Scanner Scene, Popular Communications, 76 North Broadway, Hicksville, NY 11801-2909.

PC

VHF Automatic Direction Finders

In an emergency, it's important to have direction-finding equipment to locate nearby or distant transmissions. Direction-finding techniques will allow you to home-in on those transmitters with little difficulty. If you know the position of two or more transmitters (such as the local VHF weather stations), you can use triangulation methods to determine your own position in case you are lost. Direction finding with radio equipment is an important tool for the emergency communicator.

The simplest form of direction finder is the 3-element Yagi antenna—commonly called “beam antennas.” These antennas will maximize signal reception in only one direction—the direction of the smallest element. When a station is transmitting, simply rotate the beam to the strongest signal strength, and that will indicate the general direction from where the signal is coming.

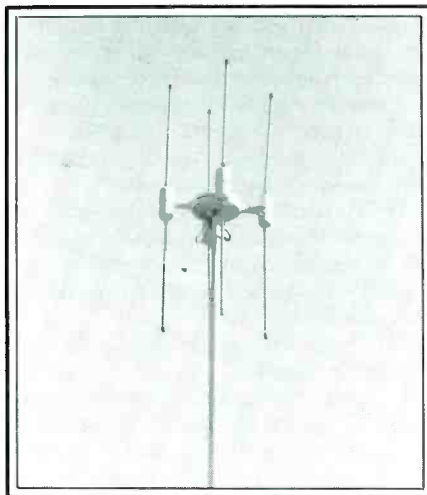
It would normally take three separate Yagi beam antennas to cover the 30 to 50 MHz, 151 to 170 MHz, and 430 to 490 MHz bands. However, one manufacturer, Grove Enterprises, has produced a relatively small beam antenna with good directional capabilities that covers all three bands. It tends to be more directional on the VHF and UHF frequencies as opposed to low-band frequencies 30 to 50 MHz. This antenna, tied into your scanner receiver, will allow you to home-in on those elusive signals that your radio receiver is picking up. Unfortunately, few scanner radios have S-meter readouts, so you must judge by the amount of signal quieting in the direction of greatest signal strength as you rotate the beam in a circle. Since most two-way radio transmissions last only a few seconds, you must be quick to rotate the antenna all the way around!

Automatic Direction Finders

If you are willing to spend a few hundred dollars for automatic direction-finding capabilities, may I introduce you to the marine and avionics “add on” automatic direction finder, abbreviated ADF, that easily plugs into any scanner or two-way VHF transceiver. This new breed of automatic direction finder sells new for \$300, but I've seen them used for as little as \$100, and they work just great.

The marine and avionics automatic direction finders operate on frequencies between 120 MHz and 170 MHz. Their best accuracy is centered around 140 MHz to 165 MHz, but they will operate a little bit above and a little bit below listed specifications.

These automatic direction finder add-ons will not give reliable readings on the 30 to 50



A VHF direction-finding antenna.

MHz public service band, nor are they intended to operate at UHF frequencies, 450 to 512 MHz. They were specifically designed for the marine VHF market (156 MHz) as well as for the aeronautical market in locating emergency position indicating radio beacons (121.5 MHz). If you tie them into your tri-band scanner, you will find that they indeed will pull in low-band and UHF signals, but it just won't read out accurate bearing directions. On the VHF band, these marine add-on devices work like a champ.

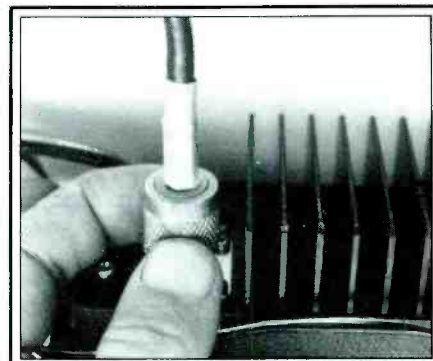
Theory Of Operation

The ADF equipment consists of a 4-pole Adcock antenna mounted on a non-conducting fiberglass mast, and a readout unit that interconnects with your existing marine or ham VHF mobile, scanner, or hand-held unit. The readout unit consists of indicators that spot the incoming signal direction in either liquid crystal display, pointer needle, or LED. In addition, the more sophisticated units will also feature a digital relative bearing indicator that goes along with the pointer to give a numerical readout of the incoming signal direction.

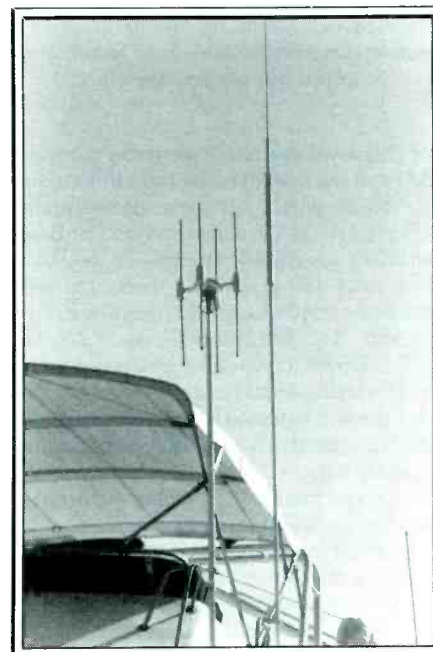
A loudspeaker is part of this unit and it lets you hear the incoming signal; and of course, there are intensity controls to turn up the brightness of the display.

One additional feature that might be found on the automatic direction finder readout unit that attaches to your existing VHF radio would be direction memory indicators that will record three different incoming bearings and store them for future reference to triangulation.

These add-on direction finders don't have any radio receiver in them at all. They rely on the audio output of your receiver VHF



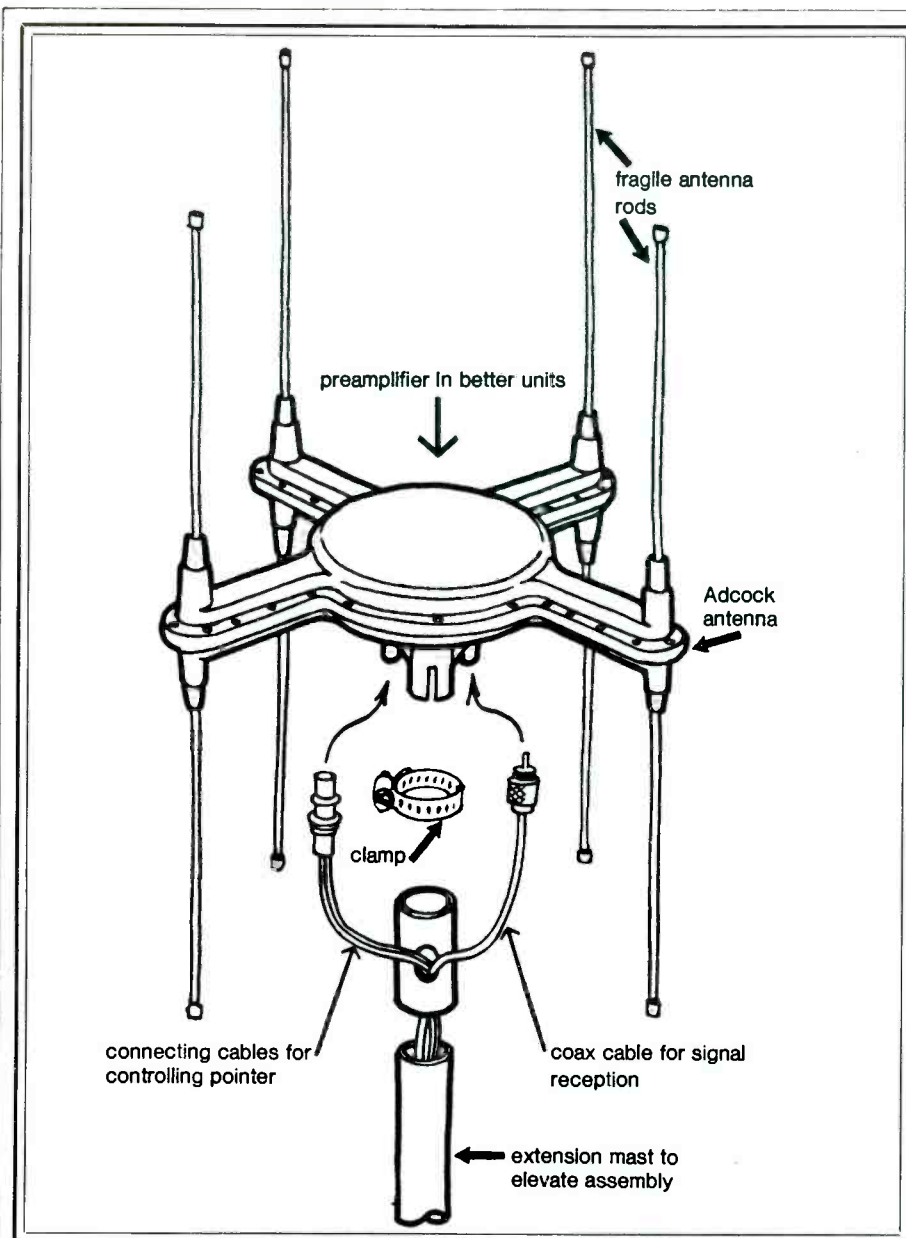
Small boats may cause antenna connectors to vibrate loose. Tighten them up for good operation of your radio equipment.



Many larger yachts are equipped for direction finding.

set, your scanner radio, or your marine or ham walkie-talkie. You simply plug the readout unit into the external speaker jack or the earphone jack of your scanner set, and the audio output of your existing radio does all the work in determining the incoming bearing direction along with the 4-pole Adcock antenna.

The Doppler principle provides the basic mechanism for the generation of FM signals which contain phase information related to the received FM signal bearing. Your automatic direction finder will produce a heterodyne signal that will mix with the incoming audio from your radio receiver. The 4-bay Adcock antenna is electronically rotated by



Details of the Adcock DF antenna.

high speed switching of the individual elements. The instantaneous time of arrival of the signal will vary as the function of the physical location of the rotating antenna. This causes the apparent received frequency of the incoming wave to change sinusoidally at a rate equal to the antenna rotation rate. Frequency deviation, " f_d ," is given by the relation:

$$f_d = \frac{\text{velocity}}{\text{wavelength}}$$

This works out that f_d is the deviation frequency, V is the tangent of the velocity of the circle of rotation, and the wavelength. The 4-bay fixed antenna is switched electronically approximately 50 times per second in a circle. With just four antennas, good and precise Doppler information is obtained as opposed to a system that might contain as many as 32 elements in a circle. Over 150 MHz one might expect, with the Adcock 4-bay antenna, plus or minus two degrees at a distance of 50 miles.

Don't get overwhelmed at all by these big

words; the system is quite simple to add on to your existing VHF set. The Adcock antenna contains only two cables—the coax cable for the signal, and the control cable that electronically switches the antenna. Both cables go to the back of your automatic direction finder readout unit. A single coax patch cord interconnects your existing VHF radio to the ADF readout unit. Your original VHF scanner antenna or car antenna also plugs into the ADF readout unit, and you can easily switch from the ADF Adcock antenna to your active communication antenna at the flick of a button. Some ADF's also have a built-in relay that automatically switches in your communications antenna for transmit.

Finally, a regular shielded audio cable interconnects your earphone or speaker jack to the input of the ADF readout unit. The audio is then amplified (nice for hand-held scanners) and brought out to the external speaker jack, as well as to the internal built-in speaker on your ADF readout unit.

The only other connection is 12 volts for the ADF readout unit.

The Adcock antenna will accept any frequency from 120 MHz to 170 MHz without loss of bearing accuracy. Each of the rods is approximately one-quarter wavelength long and they are spaced precisely to develop the necessary Doppler shifts for bearing readouts.

The typical current consumption at normal audio levels is less than 400 milliamps for the ADF network. This means that you can build up a small 3-amp-hour gel cell battery in a carrying case and tie this system into your hand-held, and walk down the street while trying to T-hunt a hidden transmitter. While you might look a little silly with a 4-bay Adcock antenna on a pole above your head, that's the price one pays as a T-hunter. In a marine installation, the 4-bay Adcock antenna is as common as any Loran or side-band antenna.

The 4-bay Adcock antenna offers unit gain to incoming signals. You will probably notice a drop in signal strength when you go from a beam antenna down to your Adcock assembly for direction finding. However, you will actually notice an increase of reception when you go from a hand-held "rubber" duckie to the 4-bay elevated Adcock antenna.

One of the biggest problems in VHF direction finding is multipath reception of the incoming signal. While your FM receiver has the characteristic of tending to capture the strongest signal and to reject all others, most of the time the direct wave will be stronger than the multipath wave and you will receive an accurate bearing of the incoming station. At least this is the case on sea water.

On land, it's a much different story, and you may have to do some repeated bearing taking before relying on any one single bearing if you are stationary. If you attempt to T-hunt with this set-up in a vehicle, your best bet is to make sure the vehicle is moving so you can average out the errors from the true direction of the incoming signal. In large cities, it's quite normal for the VHF pointer to go literally crazy as you move among the tall buildings. Indeed pointing to the strongest incoming signal, and many times in big cities, incoming signals are stronger via multipath than they are directly from the outlying transmitter.

Out on the open road, you can watch the needle faithfully point to the location of the transmitting antenna. Sure, you're still going to get some bending and multipaths from big mountain ranges; but after a while, you will finally be able to track down the elusive transmitter.

Listening to the audio input in your active direction finding may catch you offguard because of the annoying heterodyne tone that accompanies each and every incoming signal. This tone is necessary for Doppler shift operation, and you just have to put up with it. Some of the better units use audio filters that tend to reduce the tone before it is brought out to the receiver, but nonetheless, the high-pitched sign is always there. You can live with it, and after you have



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An ADF add-on unit made by SI-TEX/ KODEN.

made your bearing determination, switch it back to the normal mode from the normal antenna. The tone will cease and you will hear gorgeous amplified audio.

The ADF unit requires only a few hundred milliamps of current, so you can play a system like this along with a hand-held portable on a gel cell nearly all day at medium audio levels. Using an earphone will prolong the life of your rechargeable battery for longer T-hunts.

If you are involved in emergency radio as well as marine VHF radio search and rescue operations, the VHF ADF will work nicely in your operation. Just remember, when you use it on shore in a fixed location, watch out

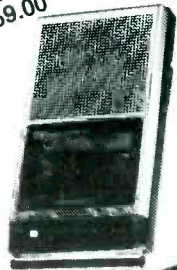
for momentary false bearings because of multipath reception. It's always a good idea to keep your antenna well away from other 2-meter antennas by at least 50 feet to prevent this problem from occurring. You should also make sure that your shoreside Adcock antenna is not near any large metal surface that might re-radiate the stronger concentrated VHF signal from the wrong direction than the true direction.

Aboard a boat, the system works nicely in tracking down anything between 120 MHz and 165 MHz. It also works on tracking down the marine VHF emergency position indicating radio beacon, Class C type, that transmit on 156.800 MHz, the International distress and marine calling frequency.

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Summary

Keep your add-on automatic direction finder package ready to go at any moment. This means charging the portable battery pack, leaving the 4-bay Adcock antenna fully assembled, and everything ready for an immediate hook-up to a portable scanner or portable two-way transceiver. When it comes time to track down a hidden transmitter or locate an emergency position indicating radio beacon, plug in the antenna and speaker connections, dial up the right frequency on your scanner or transceiver, and look at your ADF for the instant readout of signal direction. Don't forget—move around a lot to insure you are not picking up a reflected signal.

Ham radio operator who enjoy "T hunting" can usually track down a hidden transmitter within two hours after acquiring the signal. When I mean hidden, I mean hidden—would you believe hidden transmitters in used car lots, inside storm drains, and high in trees! If it takes two hours for a ham to track down a purposely hard-to-find hidden transmitter, it should only take half that time to track down an emergency position indicating radio beacon or another operator that may be signaling for help. Those marine and avionics direction finders work great with any VHF high-band scanner or transceiver. See your local marine electronics dealers for a set in action. For a spec sheet on a new unit, write Apelco Corp., 1107 N. Ward St., Tampa, Florida 33607. **PC**

PIRATES DEN

FOCUS ON FREE RADIO BROADCASTING

What's a pirate radio station? This is a question I get asked regularly, and not only by shortwave listeners and hams. People think they know what a pirate is—including relatives, friends, friends of relatives, friends of friends, and on down the line.

Sometimes, my dilemma begins like this at a family reunion or other social gathering: "So, Darren, your mother says you write for a magazine."

"That's right, Aunt Bessie," I reply, and anticipating the next question, I add, "I write about pirate radio stations."

"Say, that sounds interesting," says Bessie, obviously a bit uncomfortable that her nephew writes about something labeled "pirate."

At this point in the conversation, whether I'm talking with Aunt Bessie from Plevna, Montana, or a friend from Chicago, people will try to relate what I have just told them to an experience they have had.

"You know, Darren," says Bessie in a stealthy whisper, "there's a guy in Plevna with a C.B. who talks to people in Florida! Maybe you'd like to put him in one of your columns!"

What do I do now? Do I . . .

A. Tell Aunt Bessie that although there are some pirates who operate on C.B. frequencies, I don't write about C.Bers in Plevna who talk to Florida; B. Explain for 30 or more minutes the difference between pirates, C.Bers, hams, and kids with 100 mW Radio Shack broadcasting kits, or; C. Smile, nod my head, tell her, "That'd be swell," and to send me the name and phone number of this "guy" when she gets back to Plevna.

I usually take the coward's way out. I choose C.

But it's not just friends and relatives who have problems defining pirate radio stations. In fact, it's easier for me to deal with people who have no opinion of what a pirate station is than it is to put up with those who have a bit of exposure, and plenty of pre-conceived notions.

For example: Not long ago I was stuck in rush hour traffic and thought that some friendly discourse over a local two-meter repeater was just what I needed to help pass the time.

The first ham to answer my invitation to talk said something like, "I was just reading your column in *Popular Communications*, and recognized your call sign."

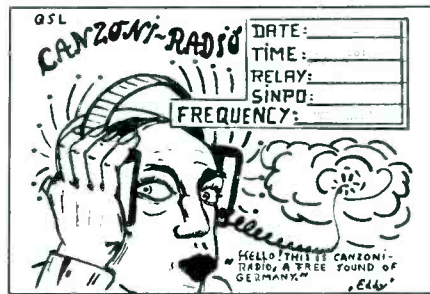
I knew I was in trouble.

"Darren," said Ray the ham in a solemn voice, "Why do you do it?"

"Do what, Ray?" I asked.

"Encourage hams to be pirates," he said.

According to Ray, by discussing pirate radio activity, I am telling hams to take their transceivers and play rock n' roll music. Ray



Canzoni Radio is a German-based pirate that may appear soon on North American airwaves. They are negotiating relay details with U.S. pirates.

argued that only hams had the technical know-how to put a transmitter on the air, so all pirates must be hams, and that by "glorifying" their misconduct in *POP'COMM* will only breed more misconduct.

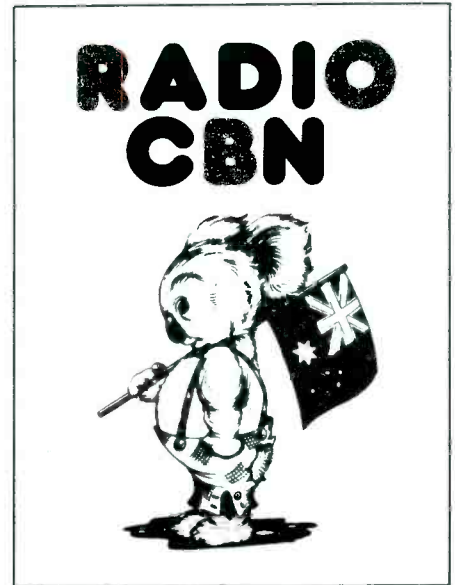
Armed with facts from a survey of pirates conducted by Dr. John Santosuosso, a political scientist from Lakeland Southern College, I prepared to counter Ray's kidney punch with a knockout blow.

According to this survey, the number of pirate operators who hold amateur licenses is far below what Ray had suggested (I didn't have the exact figures with me, but Ray wouldn't know that).

But I was unable to deliver my punch; the repeater on which I was talking to Ray was suddenly jammed by excited "ham-pirates" who began to whistle, jam, and play music over what I had to say. The last thing I heard was Ray yelling "Now you see what you've done!" I shut the two-meter rig off and endured the rush hour alone.

The problem of who has the right define and designate the term "pirate" (SWL's, hams, or Aunt Bessie's) and in what context, has been raging for quite some time.

Even shortwave pirates (the ones I try to talk about here) can't decide on what they'd

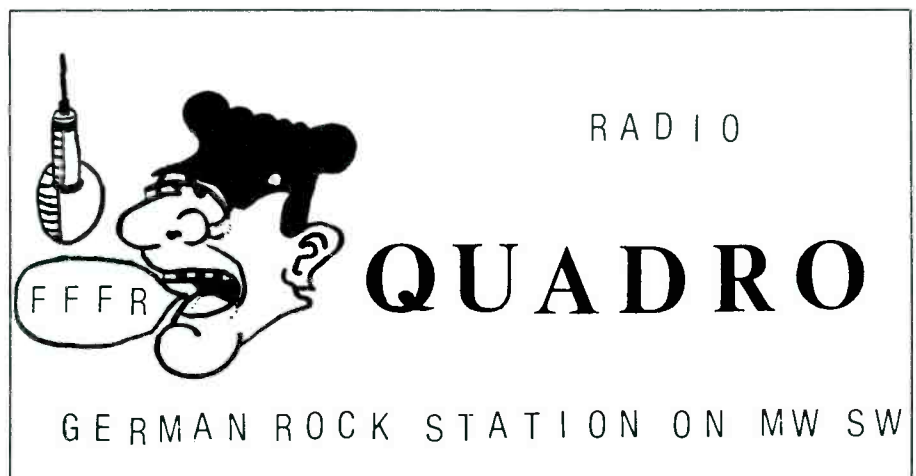


CBN is a popular Australian pirate based in Sydney.

rather be called. Some of the labels they paste to themselves include free radio stations, hobby and amateur broadcasters, radio anarchists, and who knows what else. I get the impression that the majority of pirate operators prefer the term "free radio stations." It has been suggested more than once that I change the name of my column to reflect this preference.

What follows my little tirade is a description of "pirate" radio broadcasts that have been sent in by you, the reader. These "pirates" do not operate in ham bands, jam repeaters, or talk to C.Ber's in Florida. Most are not hams, nor do they intentionally disrupt radio communications. Just about all of them are interesting to listen to, and are exciting to find on the radio.

There are all different types of illegal radio transmissions. Not all of them are pirates, at



Another German pirate, Radio Quadro, has been widely heard in Europe.

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least as far as we discuss them here. Which ones are? You decide, then send your loggings to me.

Across The Dial

U A Express In Texas, Walt Sepaniac heard this pirate on 7140 kHz from 0608 until sign off at 0705 GMT. DJ's Uncle Tom and Father O'Casey played Top 40 music, and claimed UA stands for "unauthorized absence" from the military. Live time checks were made in eastern standard time. The address of the UA Express is PO Box 40554, Palisades Station, Washington, DC 20016.

Voice of Laryngitis Daniel Lieb in Illinois heard the VOL at 2330 GMT on 7425 kHz as they played selection two of the Laryngitis Top Ten.

Voice of Placelessness Christopher Swayze of Ontario discovered the VOP on 1638 kHz at 0600 GMT. Although reception was poor, rock music by Rush could be discerned.

WCQD Bob St. Amant in Minnesota heard WCQD on 7390 kHz at 0325 GMT. The station was playing rock music from the '60s and '70s. WCQD calls itself a "free radio" station, and was encouraging listeners to show their support of free radio by petitioning the FCC to establish a citizen's broadcasting service.

WNYT Heard by Tom Kneitel from Long Island. Weak but audible on 1620 kHz. Noted at 0145 and still on after 0500 with non-stop (mostly) rock, professionally done musical ID's between records. A New York City weather forecast at 0458. No location, address, or other information was announced during the program.

By the way, several pirate broadcasters have announced that they receive their mail in care of the POP'COMM offices and that POP'COMM will forward letters to them. It's a hoax on the part of such stations inasmuch as POP'COMM has never acted as a pirate station mail drop (and we have mentioned this in these pages previously). So, once again, if you're trying to reach a pirate broadcaster by mail, sending your letter to the station in care of POP'COMM will be of no benefit and your reception (or whatever) will never be received by the broadcaster. Invariably, such letters end up in "File 13."

In Conclusion

The Association of Clandestine radio Enthusiasts, A*C*E, is an excellent source of information on pirate, clandestine, and spy-numbers transmissions. For membership details and more information, write A*C*E, Dept. PC-3, PO Box 452, Moorhead, MN 56560. Please include a stamped and addressed envelope.

Listeners are invited to participate in Pirates Den by sending comments, loggings, reproductions of QSL cards, newsclippings, etc. that they would like to share with other readers to Pirates Den, c/o Popular Communications, 76 North Broadway, Hicksville, NY 11801. Please tune in again next month. **PC**

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There are a lot of low power stations now operating at night on the Canadian clear channels: 540, 690, 740, 860, 940, 990, 1010, and 1580. All the powers are under 500 watts, many are below 100 watts. The stations operating are using their daytime antennas and doing surprisingly well with the low power. Some are only staying on until midnight, but there are others that are going 24 hours. Many more stations are now using the PSSA (Post Sun Set Authority) to operate with low power until 6 p.m. local time. The month of April, however, takes most local sunsets beyond 8 p.m. anyway. But, do search the Canadian frequencies shown above for some good nighttime DX. The low power stations would probably like to get a report from you anyway since many are skeptical about how far the low power can be heard. Elsewhere I have provided a list of daytime-only stations that might be operating at night on the Canadian Clear Channels with low power. See what you can hear! There are several power levels involved at some stations. At sunset the station will reduce to one power level, and then at 6 p.m. local time may reduce to another lower power. Each station is different, some just staying on until 6 p.m. local time, others signing off at sunset as always.

The letters I receive more often than not have questions that relate to propagation. That is the way radio signals behave. Many do not know what they are asking about, so let me try to explain propagation as simply as I can. My information will only relate to the MW broadcast band.

The fading of a signal up and down is propagation at work. There are two signals that leave the broadcast tower—the ground-wave and the skywave. It is the groundwave that we hear in the daytime. At night both are present, and your location with respect to the transmitter will determine the quality of reception. First, as a general rule, most clear channel broadcasters use higher towers than the regional and local channel broadcasters. This makes the transmission of the signal more efficient than the shorter towers. The taller tower gives a boost to the ground wave signal, which is the primary signal of a station. The conductivity of the soil, which I have mentioned in previous columns, plays a very important role in “conducting” the signal from the tower to the receiver. Sea water does the best job, followed by rich pastoral soil (no city concrete), marsh lands, then rocky areas and sandy or desert areas. The ground wave is present both day and night, however, at night the skywaves from other stations on the same frequency may reduce the ground wave coverage of the local station. This interference is called QRM. A station on a

Here is a list of daytime stations which operate on Canadian clear frequencies. Although many of these stations have only been authorized a few watts and feel it is not worthwhile to operate at night, others may be heard.

540 kHz

WGTO Cypress Gardens, FL on with 5 kw
 KVIP Redding, CA
 KWMT Fort Dodge, IA
 WDMV Pocomoke City, MD
 KNMX Las Vegas, NV
 WLIX Islip, NY
 WETC Wendell, NC
 WARO Canonsburg, PA
 WYNN Florence, SC
 WDXN Clarkesville, TN
 KNAK Delta, UT
 WRIC Richlands, VA
 WYLO Jackson, WI

690 kHz

WVOK Birmingham, AL
 KVOI Tucson, AZ
 KBBA Benton, AR
 KRMX Pueblo, CO
 KBLI Blackfoot, ID
 KTCR Minneapolis, MN
 KSTL St. Louis, MA
 WADS Ansonia, NY
 KRCO Prineville, OR
 WYIS Phoenixville, PA
 KUSD Vermillion, SD
 KPET Lamesa, TX
 WZAP Bristol, VA
 WNNT Warsaw, VA
 WELD Fisher, WV
 WAGO Oshkosh, WI

740 kHz

WBAM Montgomery, AL
 KMEO Phoenix, AZ
 KBRT Avalon, CA
 KYME Boise, ID
 WVLN Olney, IL
 KBOE Oskalossa, IA
 WNOP Newport, KY
 WCAS Cambridge, MA
 KBAD Carlsbad, NM
 WGSM Huntington, NY
 WMBL Morehead City, NC
 WPAQ Mt. Airy, NC
 WVCH Chester, PA
 WBAW Barnwell, SC
 WSVQ Harrogate, TN
 WIRJ Humboldt, TN

Table 1

WBGY Tullahoma, TN
 KCMC Texarkana, TX
 WMBG Williamsburg, VA
 WRNR Martinsburg, WV
 WRPQ Baraboo, WI

860 kHz

WHRT Hartselle, AL
 WAMI Opp, AL
 KIFN Phoenix, AZ
 KOSE Osceola, AR
 KWRF Warren, AR
 WKKO Cocoa, FL
 WAEC Atlanta, GA
 WGOM Marion, IN
 KWPC Muscatine, IA
 WSON Henderson, KY
 WBGR Baltimore, MD
 WSBS Gt. Barrington, MA
 KARS Belen, NM
 WFMO Fairmont, NC
 WQXZ Taylorsville, NC
 KISD Medford, OR
 WTEL Philadelphia, PA
 WAMO Pittsburgh, PA
 WLBG Laurens, SC
 WUCR Sparta, TN
 KFST Ft. Stockton, TX
 KPAN Hereford, TX
 KSFA Nacogdoches, TX
 KWHO Salt Lake City, UT
 WEVA Emporia, VA
 WOAY Oak Hill, WV
 WNOV Milwaukee, WI

940 kHz

WINE Brookfield, CT
 WLQH Chiefland, FL
 WCND Shelbyville, KY
 WGKP Webster, MA
 WCSY South Haven, MI
 WIDG St. Ignace, MI
 KSWM Aurora, MO
 KVSH Valentine, NE
 WCIT Lima, OH
 KGRL Bend, OR
 KWRC Woodburn, OR
 WESA Charleroi, PA
 WGRP Greenville, PA
 WVLV Lebanon, PA
 WECO Wartburg, TN
 KTON Belton, TX
 KADO Texarkana, TX
 KBRE Cedar City, UT
 WNRG Grunty, VA
 WKGM Smithfield, VA
 WAMM Woodstock, VA

local channel that may have a coverage radius of 20 or 30 miles in the daytime may only have 6 to 10 miles coverage at night.

The skywave does weird things to the station operating with more than 1,000 watts. With 5,000 to 50,000 watts it is possible to have coverage from the ground wave at

night out to the point where the skywave hits the ground for the first bounce. When this happens, the two signals interfere with each other, causing the reception to vary considerably, and it is usually poor. Once the receiver is not beyond the ground wave, reception is strictly dependent on the sky-

WFAW Ft. Atkinson, WI
WCSW Shell Lake, WI

990 kHz

WEIS Centre, AL
WWWF Fayette, AL
WPIK Flomaton, AL
KBLS Santa Barbara, CA
KRKS Denver, CO
WNTY Southington, CT
WDWD Dawson, GA
WGML Hinesville, GA
WCAZ Carthage, IL
WITZ Jasper, IN
WERK Muncie, IN
KAYL Storm Lake, IA
KRSL Russell, KA
WNNR New Orleans, LA
WSOM Clare, MI
WABO Waynesboro, MS
KRMO Monett, MO
WCEL Southern Pines, NC
WBTE Windsor, NC
WJEH Gallipolis, OH
WTIG Massillon, OH
KRKT Albany, OR
WVSC Somerset, PA
WLKW Providence, RI
WAKN Aiken, SC
KWAM Memphis, TN
KAML Kennedy-Karnes, TX
KTLE Tooele, UT
WNRV Narrows, VA
WANT Richmond, VA

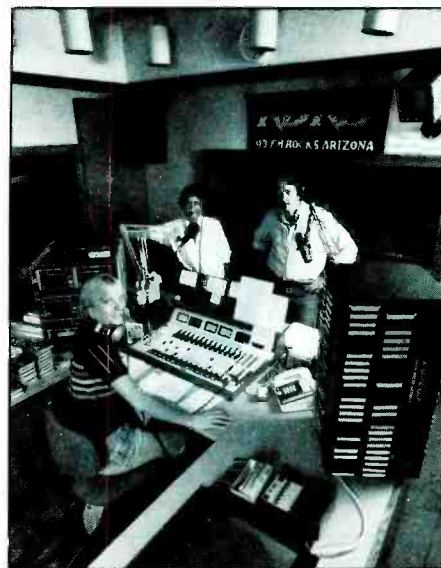
1010 kHz

WPYK Dora, AL
KCMP Brush, CO
WCNU Crestview, FL
WCBF Tampa, FL
WGUN Atlanta, GA
WCSI Columbus, IN
KSMN Mason City, IA
KIND Independence, KA
WBCE Wickliffe, KY
KDLA De Ridder, LA
WKQT Garyville, LA
WYST Baltimore, MD
WITL Lansing, MI
KCHI Chillicothe, MO
KXEN St. Louis, MO
WCNL Newport, NH
WWWZ Albemarle, NC
WFGW Black Mountain, NC
WELS Kinston, NC
WIOI New Boston, OH
WTGC Lewisburg, PA
WHIN Gallatin, TN
WORM Savannah, TN
WMEV Marion, VA
WPMH Portsmouth, VA

WCST Berkeley Spgs., WV
WXYQ Stevens Point, WI

1580 kHz

WEYY Talladega, AL
KPCA Marked Tree, AR
LFDF Van Buren, AR
KLOQ Merced, CA
KPIK Colorado Spgs., CO
WENO Chattahoochee, FL
WHTZ Mt. Dora, FL
WCCF Punta Gorda, FL
WKIG Glennville, GA
WKUN Monroe, GA
WFVR Aurora, IL
WDQN Du Quoin, IL
WBBA Pittsfield, IL
WCCR Urbana, IL
WIFE Connorsville, IN
WJVA South Bend, IN
WAMW Washington, IN
KCHA Charles City, IA
KXRK Davenport, IA
WAXU Georgetown, KY
WMTL Leitchfield, KY
WPKY Princeton, KY
KLUV Haynesville, LA
WQTK St. Johns, MI
KDOM Windom, MN
WAMY Amory, MS
WSLL Centreville, MS
WORW Hattiesburg, MS
WESY Leland, MS
WPMP Pascagoula, MS
KTGR Columbia, MO
KESM El Dorado Spgs., MO
KNIM Maryville, MO
KAMI Cozad, NE
WTYO Hammonton, NJ
WCRV Washington, NJ
KZIA Albuquerque, NM
WLIM Patchogue, NY
WZKY Albemarle, NC
WJIK Camp Lejeune, NC
WUIV Icard Township, NC
WVVO Columbus, OH
KLTR Blackwell, OK
WHEZ Columbia, PA
WAJE Ebensburg, PA
WANB Waynesboro, PA
WORG Orangeburg, SC
WBBR Travelers Rest, SC
WHHM Henderson, TN
WSKT Knoxville, TN
WLIJ Shelbyville, TN
KIRT Mission, TX
KTLU Rusk, TX
KWED Seguin, TX
KBYP Shamrock, TX
WILA Danville, VA
WPUV Pulaski, VA
WTTN Watertown, WI



Master Control KDKB (FM), Mesa, Arizona. Standing: News Director Pat Powers, Keith Larson; Chris Shebel, sitting. Note three different types of microphones for specific types of voices. TV monitor is for security.

ground wave signal and actually reduce the coverage of a station. The directional arrays of a station (multi towers) may be set up in such a way as to reduce the high angle radiation to prevent this type of signal cancelling by reducing the amount of signal leaving the tower at a high angle. This can also reduce interference to other stations operating on the same channel.

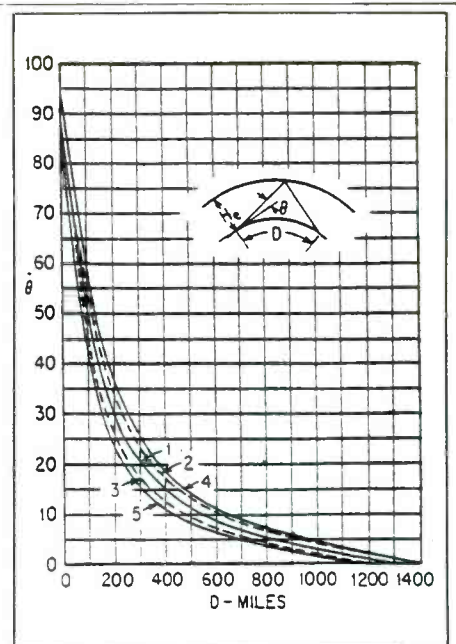
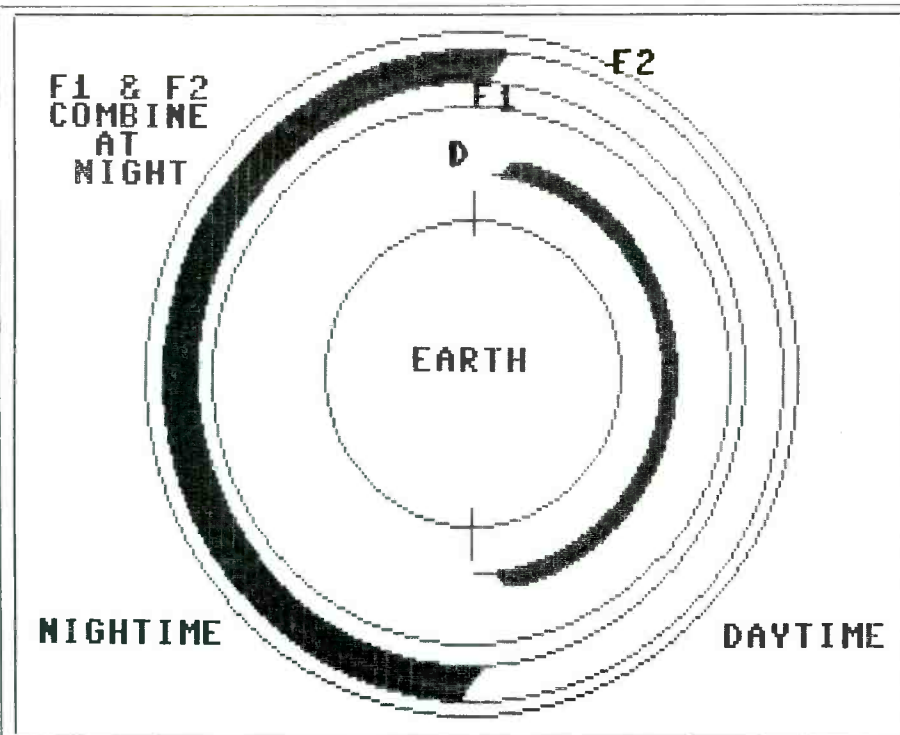
The ionosphere is at its best for skywave propagation at sunset and varies in efficiency until sunrise, which is the minimum. There are several layers to the ionosphere. They are the D, E, F1, and F2 layers. During the day the D layer absorbs the MW signals so the skywave is not present. At night the D layer disappears and the F1 and F2 combine, and together with the E layer reflect the MW signal back to the earth.

Before abandoning propagation completely, let's run through a couple of the charts shown in this column to show you how it really works. The vertical radiation chart shows two things. To the left of center on the chart, it is easy to see that, for the same power (one kilowatt) into each height of tower, the .625 wavelength tower puts the signal out much farther. As a matter of fact, the taller tower will have a signal level of almost 280 millivolts at one mile away compared to 175 millivolts for a tower of .25 wavelength. On the right of the chart, note the taller tower's signal stays closer to the ground or has a lower angle of radiation. The degrees of height noted refer to one wavelength being 360 degrees. A wavelength is converted into feet by dividing the

wave. The skywave is that signal which is reflected from the ionosphere back to the earth, and can be changing constantly. This fading is called QSB.

Let's get back to the tower height again for a moment. The taller tower's skywave signal leaves at what is called a "low angle," which

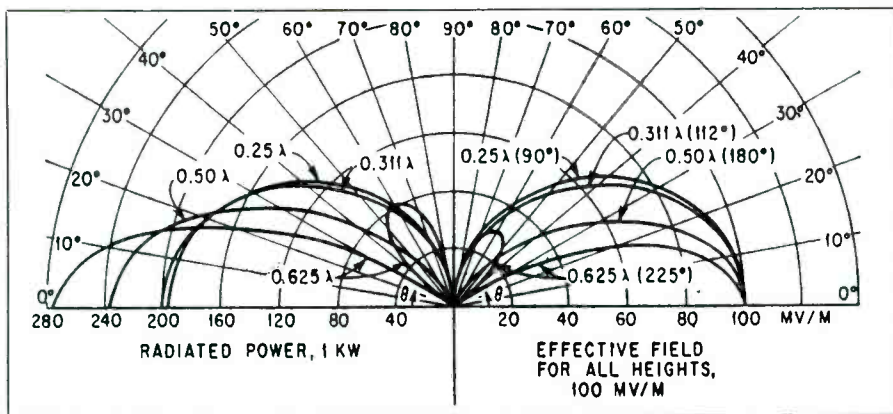
travels farther before hitting the ionosphere and, as a result, has a longer "skip distance" and is heard farther away. The shorter broadcasting tower skywave signal leaves at a "high angle" and therefore is returned to the earth at a shorter distance. This distance could be so short as to interfere with the



"Boomerang" chart.



KDKB main production room. Larry Nielson at the controls. Steve Trolla, standing. Built by and photos courtesy of Bob Van Bunler.



Vertical Radiation chart.

frequency (kHz) into 984,000. A .25 wavelength tower on 1240 kHz is 198 feet ($984,000/1240 \times .25 = 198'$). A .625 wavelength tower would be 495 feet high at 1240.

A tall tower at 1600 kHz would be at least 300 feet high, a half wave tower. However, at 600 kHz, 300 feet is the minimal height accepted for sufficient radiation to meet FCC standards. And a half wave tower at 600 kHz is 825 feet high!

The importance of this to the DX'er is shown by looking at the graph, which looks like a boomerang! Negating the five different curves shown we see that the vertical side of the chart is marked 0 to 100 in vertical degrees. The horizontal is marked in miles, which corresponds to the skip zone. Given about 5 degrees for the .625 wavelength tower, we see that measures close to 700-800 miles on the chart. Given about 15 degrees for the .25 wavelength tower, the distance is only 300-400 miles or about half the taller tower! This is why the higher power stations generally use the taller tower . . . to

get the best coverage for each watt. The vertical radiation angles are figured (roughly) by using the vertical radiation chart mentioned above—all to give a little insight to the mystery of radio signals. By the way, receiving antennas are just as important, but I don't expect my readers to install 500 foot towers to do their DXing!

Now that I've taken you through the easy part, let's stop! The other points to be made are about sunset and sunrise. Although the sunrise time is the minimum for the sky-wave, the band is generally much quieter at this time of day, therefore, DX may be heard when static would cover it up at sunset. My favorite time of the day for listening to stations within 400-600 miles is the period just after sunrise. To me, the band has a real nice "sound" at this time of day. Don't give up on the band at any time of day; it is persistence that gets the station logged. These "talks" are presented to help you sharpen your DX-ing skills.

The Canadian chart is one promised some time back as I came upon conductivity

charts. This one is compiled by the Radio Division of the Department of Transport in Canada. The U.S. chart was shown during the summer of 1984 in this column.

Mail Call

George Vanish is another Sony SRF-A100 owner, and for one of the same reasons I found nice about this radio—it fits easily in the suitcase! His home shack is interesting, also. The main receiver is a Hallcrafters SX-99, but he also uses 4 or 5 auto radios off a 12 volt battery. With separate antennas he is able to record several frequencies simultaneously. He picks up these radios at flea markets for a couple of bucks, so if they don't work, out they go!

Kraig Krist, who lives near Washington, DC, says goodbye to WOAI. The Leesburg station (WAGE), which recently shifted to 1200 kHz, is too strong at his QTH to hear WOAI anymore. This is just the beginning, Kraig. With more deregulation coming it won't be long before the hourly station breaks are eliminated and then no one will

Call Letter Changes

Location	Old	New	Freq
AM Stations			
Heflin, AL	new	WBSH	N/A
Sheffield, AL	WSHF	WHCM	1290
Fort Deposit, AL	WQTX	WLUL	N/A
Bridgeport, CT	WNAB	WJBX	1450
Miami, FL	WCBJ	WWFE	N/A
Orlando, FL	WHOO	WMMA	990
Homestead, FL	WQDI	WRBA	1430
West Palm Beach, FL	WPCK	WIRK	1290
Winchester, KY	WWKY	WHRS	1380
Concord, MA	new	WWCC	N/A
Sterling Heights, MI	new	WWRM	N/A
Waite Park, MN	KKCM	KRAR	1390
Clinton, OK	KKCC	KXOL	1320
Myrtle Beach, SC	WMYB	WCSE	1450
Austin, TX	KMMM	KOKE	1370
Lamesa, TX	KIOF	KUFO	690
El Paso, TX	KYSR	KDXX	920
Conroe, TX	KIKR	KNRO	900
Provo, UT	KDOT	KLZX	960
Lynchburg, VA	WLGM	WHRQ	1320
Yakima, WA	KBNG	KAJR	N/A
Greenfield, WI	WZUU	WMVP	1290
Sabana Grande, PR	WPRX	WBOZ	880
San German, PR	WBOZ	WSOL	1090
FM Stations			
Corning, CA	new	KVCC	N/A
Los Angeles, CA	KHTZ	KBZT	97.1
Madera, CA	KXMK	KHOT-FM	92.1
Key Largo, FL	new	WVBH	N/A
Tampa, FL	WFLA-FM	WPDS	93.3
Jacksonville, FL	WKTZ	WLCS	96.1
Waycross, GA	WMUI	WASE	N/A
Elwood, IN	WBMP	WEWZ	101.7
Dubuque, IA	KLXL	KIYX	102.3
Somerset, KY	WDCL	WDCL-FM	89.7
Smiths Grove, KY	new	WBLG	N/A
Jackson, MI	WIBM-FM	WIBM	94.1
Brookhaven, MS	WMRQ	WBKN	92.1
Herkimer, NY	WYUT	WLIR-FM	92.7
Hempstead, NY	WLIR	WLIR-FM	92.7
Wapakoneta, OH	WQXC	WQOQ	92.1
Oklahoma City, OK	KAEZ	KIMY	107.7
Roseburg, OR	KRSB	KRSB-FM	103.1
Portland, OR	KCNR-FM	KKLI	97.1
Lock Haven, PA	WCNM	WWZU	92.1
El Paso, TX	KYSR-FM	KBNA	97.5
Llano, TX	KFFQ	KLKM	N/A
Fort Worth, TX	KXOL	KWJS	94.9
Bountiful, UT	new	KSEJ	N/A
Amherst, VA	WCNV	WYYD	107.9
Colonial Beach, VA	WPOT	WGRQ	N/A

know "who's on first." I'll tell you, it wouldn't hurt all of us to write a letter to our congress-people and tell them in no uncertain words that no way should the hourly station break requirement be dropped by the FCC. We'll never figure out who we are listening to and this is one rule that helps keep honest people honest. I'm not kidding, they are thinking about dropping ID requirements.

Bob Scantlebury sent me an interesting clipping from the *Boston Phoenix* of September 17, 1985. At the CES show near that date, Carver Electronics, the maker of top notch audio gear, set up a demonstra-

tion of a Stereo AM broadcasting station with a bandwidth of 15 kHz, a bandwidth equal to that of FM broadcasting. The antenna was made from an Erector set! They used a CD player as the audio source and used pre-emphasis such as used by FM stations to help overcome the noise of the AM system. There was no mention of the stereo system used. The press and public just don't know they're two systems. The article goes on to say that "AM stereo may turn out to be worth something after all." I'll reserve my comments on AM pre-emphasis for later.

Bob, along with others, wanted to know if

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Station Updates

Call	Location	Freq	Pwr	Ant
AM				
WZEL	Young Harris, GA	770	.75/0	O
WGGM	Chester, VA	820	10/1	DA-N
WRFD	Columbus, OH	880	50/0	DA-D
WBYG	Sandwich, IL	930	.71/2.2	DA-2
WYKR	Wells River, VT	1100	5/0	O
WKKE	Pearl, MS	1190	50/0	O
KLAZ	Little Rock, AR	1250	2.5/5	DA-2
WEBB	Baltimore, MD	1360	5/1.5	DA-2
KMIN	Grants, NM	1400	1/1	O
KNTA	Santa Clara, CA	1430	1/2.5	DA-2
WKCK	Orocovis, PR	1470	1/2.5	O
FM				
WFCH	Charleston, SC	88.5	29.6	306'
WBSN-FM	New Orleans, LA	89.1	10	525'
WPNE-FM	Green Bay, WI	89.3	100	940'
KMFC	Centralia, MO	92.1	1.86	400'
WPMW	Mullens, WV	92.7	3	328'
WZEZ	Nashville, TN	92.9	100	400'
WBOS	Brookline, MA	92.9	17	868'
WQID	Biloxi, MS	93.7	100	984'
WLYZ	Nashville, GA	95.3	1.8	412'
WFLR-FM	Dundee, NY	95.9	.778	600'
KLLI	Hooks, TX	95.9	1.4	450'
KSAY	Clinton, IA	96.1	100	984'
WXJY	Nantucket, MA	96.3	N/C	394'
WMJJ	Birmingham, AL	96.5	100	1027'
WJAD	Bainbridge, GA	97.3	100	1000'
WKYN	St. Marys, PA	97.5	31.6	617'
KTCW	Pasco, WA	98.3	N/C	195'
WYMG	Jacksonville, IL	100.5	50	492'
WFMA	Rocky Mount, NC	100.7	100	984'
WOWQ	Du Bois, PA	102.1	28.2	664'
WZTZ	Johnstown, OH	103.1	1.5	444'
WITU	Cobleskill, NY	103.5	N/C	492'
KOZO	Boise, ID	105.1	52.5	2588'
WAKQ	Paris, TN	105.5	2	390'
KLZZ-FM	San Diego, CA	106.5	7	1103'
KASH-FM	Anchorage, AK	107.5	N/C	-290'

KEY: D = Daytime N = Nighttime DA = Directional Antenna DA1 = Same Pattern Day & Night DA2 = Different Pattern/Power Day/Night O = Omni Antenna Day/Or Night § = Special Operation or Critical Hours N/C = No Change

the loop antenna plans were still available and they are. They will be kept on file as long as someone is interested, and are \$5.50 for the four and two foot box loops, and \$7.50 for the ferrite loops with the preamp.

A note from D. Weller the other day said how well his new Sony auto radio, XR-33, performed. He was pleased with the wide bandwidth available for AM reception, although it was not usable for DXing at night. He also noted that the local channel stations using the C-Quam stereo had very limited range before the "apparent motion" made listening in the car impossible unless the car was stationary. He said the motion of the announcers voice back and forth while driving down the road at the same time was a bit more than expected. The Kahn systems he listened to did not have that problem, although some of the Kahn stations he heard did not have a good audio sound. One of those he mentioned I've heard, and I don't think it is the Kahn unit. He also mentioned WBZ does some interesting stereo with their

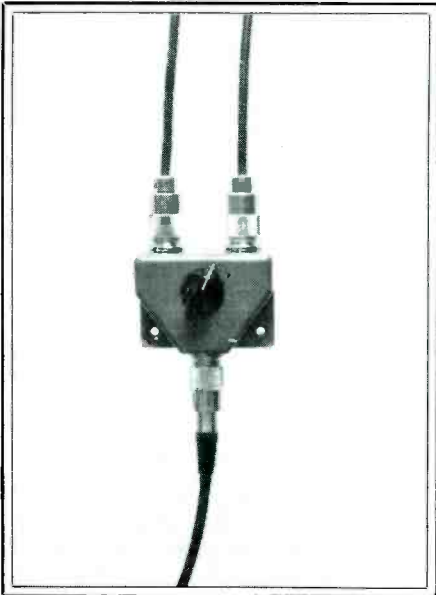
talk shows. The Sony XR-33 is the only auto radio that receives both AM stereo signals switching automatically between C-Quam or Kahn.

In other news the FCC is working on ways to upgrade AM broadcasting; one proposal being looked into is a blanket grant for a power increase for every station. The amount of increase is still being discussed, but figures from doubling to ten times are being kicked around. I don't think they are talking about increasing 50 kw stations to 500 kw, but 5 kw to 50 kw is a possibility, although stretching a bit. If they increase all the 5's to 50, the 50's will scream. Also, discussions are under way for the power levels on the new 1605-1705 kHz band. Better log those TIS's on 1610 kHz while you can! The other stations that will be blocked with the opening of this new band are the Caribbean stations above 1600 kHz.

That's about "30" for this month. Keep those letters and pictures coming to P.O. Box 5624, Baltimore, MD 21210.

PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS



Two-Position Coaxial Switch

MFJ Enterprises, Inc. introduced its two-position coaxial switch, the MFJ-1702. This switch has one pole, two output positions, and low insertion loss—less than 0.2 dB. Its maximum frequency range is 500 MHz, and it has less than 20 milliohms contact resistance SO-239 connectors.

The MFJ-1702 is designed for high performance for a reasonable price. It has a VSWR of 1:1.2 and it gets better than 60 dB isolation at 300 MHz and better than 50 dB at 450 MHz. The power rating is 2.5 kW PEP, 1 kW CW. Unused terminals are also automatically grounded for static/lightning/RF protection.

Ham operators will find that they can rely on this durable two-position coaxial switch because MFJ includes a one year unconditional guarantee, and an additional 30-day money-back guarantee if the product is purchased directly from MFJ Enterprises, Inc. If not totally satisfied with the product, return it within 30 days and your money will be cheerfully refunded (less shipping).

Orders for the MFJ-1702 can be taken by the phone (call toll free 800-647-1800) or send \$19.95 plus \$5.00 shipping and handling to: MFJ Enterprises, Inc., P.O. Box 494, Mississippi State, MS 39762.

The Arrow — Straight Shooter 38

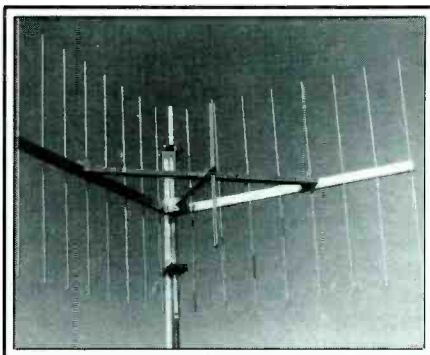
A triple conversion superhetrodyne speed radar detector has been introduced. The Arrow Straight Shooter 38 superhet radar detector offers customers a host of outstanding features. It is a state-of-the-art super hetrodyne unit with new triple conversion circuitry that is priced to capture a large share of the superhet radar detector busi-



ness. "Our new Arrow Straight Shooter '38' offers users the ability to detect police radar more quickly and accurately than most other products in its price and performance area," Judy Kendall, President of Heart Marketing stated. "Model '38' becomes just one of our Arrow units in a total line which will offer users the opportunity to select the model and price they desire, while having the knowledge that they are getting a performance proven unit which is capable of providing excellent protection on the highway."

Kendall noted that the "38" model handles both X and K band radar frequencies, triple conversion filter system, special shielding for low interference with other units, synchronized audio and visual warning, has a power on LED Green Light, a red Warning Light, with automatic sensitivity control, and has an audible buzzer with geiger counter sound effect so that the closer the driver comes to the police radar source, the louder and more frequent the sound becomes.

For more information on the Straight Shooter "38," or any of the other Arrow Radar Detectors, write: Heart Marketing, Inc., 314 S. Main St., Englewood, Ohio 45322, or circle number 104 on the reader service card.



8 dB VHF Corner Reflector

A new, ruggedly-designed corner reflector operating in the 148-174 MHz frequency range and exhibiting 8 dB gain has been announced by The Antenna Specialists Co. Weighing just 26 lbs. the new antenna, Model ASPR603, is constructed of high-strength corrosion-resistant aluminum al-

loys, providing a wind velocity rating of 105 mph. The antenna measures just 48" x 54" (each side). The radiator is a folded dipole, dc grounded with a quarterwave matching section for broad bandwidth (26 MHz). VSWR is 1.5:1. The antenna provides a vertical beamwidth of 62° and a horizontal beamwidth of 67°. It terminates in a 3-ft. RG-213 cable with male "N" connector. Typical front-to-back ratio is 25 dB. For detailed specifications, write to: The Antenna Specialists Co., P.O. Box 12370, Cleveland, OH 44112-0370, or circle number 102 on the reader service card.



Economical Security Camera

Mountain West announces Photo Trap, a unique new security camera that snaps one bright, clear picture when triggered. Any device with a normally open dry contact (motion detector, door contact, holdup switch) can be used to trigger the camera. Conventional disc film can quickly be developed at any 1-hour photo lab to give the police (or company security department) an immediate print of the crime.

Applications include all areas of security, covering burglary, vandalism, shoplifting, holdup, employee theft, etc. Take a picture of "smash and grab" burglaries, entry/exit to a restricted area, unauthorized use of company equipment, or even an intruder. Photo Trap can be used as a stand-alone device or connected into an existing security system. Disguise the camera to catch the criminal in the act, or display it openly to help deter the criminal to begin with. This small unit measures just 4 1/16" wide x 3 3/16" high x 1 1/8" deep.

Automatic film advance and exposure control insures the picture quality, while superior Kodak technology guarantees you performance and reliability for your security. Mounting is easy with the included bracket, and Photo Trap costs less than conventional surveillance cameras.

Photo Trap was specially designed for offices, company security departments, and small businesses. For more information, write Mountain West, P.O. Box 10780, Phoenix, AZ 85064-0780, or circle number 103 on the reader service card.

RADAR REFLECTIONS

RADAR DETECTORS AND THEIR USE

BY JANICE LEE

Afraid Of Radar? Rent Some Piece Of Mind

As state police and transportation officials prepare for a major crackdown on highway speeders, a Jackson, Michigan, dealer offers a service for evading radar traps: rent-a-detector.

For \$14 a week or \$10 a weekend, local motorists can now rent a \$115 Fuzzbuster which will beep and flash a warning when it detects police radar.

"This service is aimed more at the family motorists going on vacation than the professional driver," said Bob Adkins, owner of Jackson Electronics in Grand Rapids, Michigan.

"Most people want the peace of mind that when they set their cruise control for 60 to 65 mph on the highway they're not going to get pulled over," he added.

The plan drew critical comments from a state police official who emphasized that the state stands to lose millions of dollars in federal highway funds if drivers don't curb their speeds.

Adkins and other dealers have experienced a boom in sales of detectors since the Michigan Supreme Court gave Fuzzbusters the green light in 1982.

Most highway speeding tickets, said Adkins, are issued to motorists traveling 60 to 65 mph rather than really high speeds.

"Instead of sitting beside the road waiting to catch drivers who're going a few miles over the limit the police should be patrolling the highway helping stranded motorists," he said.

While Jackson Electronics appears to be the only business currently renting Fuzzbusters, other dealers report healthy sales.

"I have a real problem with the whole concept of renting detectors," said State Police Sgt. LeRoy DuMond. "It's ironic that while we stand to lose necessary funding for our highways, something is being sold that will encourage people to circumvent the law."

According to a state transportation department survey for the first nine months of fiscal year 1985, 51.7 percent of Michigan motorists exceed the 55 mph highway speed limit.

Type Acceptance Of Speed Measuring Or "Radar" Equipment

Section 90.203 of the Commission's Rules specifies the applicability of the type acceptance requirement to the various forms of Radiolocation transmitting equipment. Type acceptance is the process by which the FCC determines whether certain transmitting

Speed Measuring Radars Type Accepted Under Part 90

Grantee	Type Number Or FCC ID	Record Available	Grantee	Type Number Or FCC ID	Record Available
Automatic Signal Division, LFE Corporation	RD-2	No	M.P.H. Industries, Inc.	A-06-000011	No
	RD-R2	No		BO9-000831	Yes
	RD-R2F	No	Sentry Research Corporation	SR-3	No
	S-5	No		SR-4 MUNI-DUAL	No
Boeing Aerospace Company	PACER II	No	SR-8 SPEEDREADER	No	
	PACER III	No	SR-10	No	
Broland Corporation	LXM-1988	Yes	Smith & Wesson Electronics	1-022-2438-00	No
Champion Electronics, Inc.	JF100	No		1A-022-2000-00	No
	CMI, Inc.	JF100	No	Tribar Industries Ltd.	4400-C
CSD7ZX EN1000		Yes	MUNI QUIP DRS-2		No
Decatur Electronics, Inc.	DCP	No	MUNI QUIP DRS-3	Yes	
	HAC	No	MUNI QUIP MDR-1	Yes	
	RA-GUN	No	MUNI QUIP T3	No	
	715	No	MUNI QUIP T3-S	No	
	715B	Yes	DL566F-K-GP	Yes	
	724	No	DL566F-MDR-2	Yes	
Electro Pneumatic Corp.	SST-5	No	DL566F-MDR-1A	Yes	
	SST-5A	Yes	Union Switch & Signal Div.	DR-40	Yes
FAR 23	Yes	DR-50		Yes	
59366-1	No	DR-50A		Yes	
General Signal Corporation	022-0153-00	No	West Bend Autotronics	DHH6000	No
Kertron, Inc.	HR-4	No		MVR5000	No
	HR-8	No		R7000	No
Kustom Electronics Corp.	HR-12	No	4000CP	No	
	KR-10	No	BVD8V2WBR40P	Yes	
	KR-11	No	West Bend Radar Systems	WBR 40	Yes
	MR-7	No		WBR 60	Yes
	MR-9	No	WBR 70	Yes	
	TR-6	No	Westinghouse Air Brake Co.	DR-30	No
	CHY8BJK50	Yes		DR-40	No
	CHY8BJK50LA	Yes		DR-50	Yes
	CHY8BJK100	Yes			

equipment meets the applicable technical standards contained in the radio services rules. Generally, these standards apply to the quality of the radio frequency signal generated by the equipment. These parameters include power output, occupied bandwidth, modulation parameters, frequency stability, and spurious emission.

The FCC's Rules do not address the performance of radiolocation equipment as it relates to its accuracy of indicated measurements, the effect of calibration or misuse of the equipment on the accuracy of the indicated measurement nor the susceptibility of the equipment to various weather, structural, or other environmental conditions as it relates to the accuracy of indicated measurements.

The Commission's files contain information related only to its requirement for type acceptance. There is no other information in the Commission's files which would be helpful in resolving disputes related to the accuracy or performance of speed measuring equipment. However, in response to numerous inquiries concerning speed measuring equipment, speed measuring equipment type accepted as of the date of this notice is listed herein.

Persons desiring to obtain copies of those files that are available for inspection or duplication may inspect and copy (at their expense) the file(s) at the Commission's Laboratory Facility, 7435 Oakland Mills Rd., Columbia, Maryland, between 8:00 a.m. and 4:30 p.m., Monday through Friday. Alternatively, copies of available files may be obtained, at current contract cost, through the Commission's duplicating contractor, International Transcription Services (ITS), 1919 M St., N.W., Room 246, Washington, DC 20554, telephone (202) 857-3815 and 2100 M St., N.W., Suite 140, Washington, DC 20037, telephone (202) 857-3800.

It is emphasized that type accepted equipment must be used in accordance with applicable FCC operating regulations and under a valid radio station license issued by the Commission. In addition, the licensee is cautioned that changes to type accepted equipment are not permitted except as specifically provided for under Section 2.1001(b) of the Commission's Rules.

PC

Janice Lee is the Editor of Monday, A.M., the newsletter of Electrolert, Inc.

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LISTENING POST

GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

If you're keeping track of how many shortwave stations are on the air in the United States, you can make another mark on the wall. WHRI began test broadcasts early in December. The call letters, which stand for World Harvest Radio International, are licensed to LaSea Broadcasting Corporation, owned by the Rev. Lester Summerall organization, which also operates television Channel 40 in Indianapolis, Indiana.

The 100 kilowatt transmitter of WHRI is located near Nobelsville, Indiana about 25 miles north of Indianapolis, and will beam religious programs to Europe, the Middle East, North Africa, the Caribbean, and South America. Test announcements were inviting reception reports to P.O. Box 50250, Indianapolis, Indiana 46250. WHRI wasted little time in getting on the air, going from construction permit to test broadcast status in just over seven months. Frequencies include 5.990, 6.100, 6.155, 7.355, 9.615, 9.720, 11.770, 11.780, 11.865, 11.970, and 15.350.

In the meantime, High Adventure Ministries' KVOH in California still hoped to meet an on-the-air deadline before the end of the year. If it succeeds, 1985 will have seen as many new U.S. shortwave broadcasters come on the air as existed at all in this country from the early 1960's to the early 1980's!

NDXE Global Radio, planned for Opelika, Alabama, issued a press release stating that the station's new target date is now July 4, 1986, to coincide with the rededication of the Statue of Liberty. NDXE owner H. Dickson Norman hopes that President Reagan will throw the switch putting NDXE on the air.

Well-known DX'er Arthur Cushen of New Zealand is quoted in the bulletin of the American Shortwave Listener's Club with information that Radio Cook Islands has cut back on the 24-hour-a-day schedule they formerly had. Earlier rumors had them leaving shortwave entirely, so at least we haven't lost it all. We don't know what their revised schedule is for 11.760.

On the plus side, earlier reports of a possible cancellation of Brazil's Radiobras have proved false. Radio Netherland's Media Network program says the service will continue, as it's considered to be a good investment for Brazil.

In The Mailbag

We have a thick file of letters this month, so let's get to them.

First up is one from Orn Arnason of Knowlton, Quebec, who provides some information about Iceland's shortwave broadcasts in answer to a question we had some time back. Mr. Arnason speaks Icelandic and has listened to the station for some 35 years! He says that, originally, the programs



Chuck Vesi of Niles, Michigan looks like he's hearing a good one. We like the Hallicrafters S-38; a nice touch!



K.J. Hobbs of Hamilton, Ontario with his HQ-150, scanners and transceiver checking in on the Trans Canada ham net.

consisted of a relay of the daily "noon news" from the local state station in Reykjavik. An omnidirectional antenna was used for many years and the station has tried 12.175 (where they were for a long time, Editor) as well as 13.950 and 13.797. For about 11 months, experiments using a directional antenna were carried out and a relay of the "evening news" has been added to the schedule. The frequency 13.797 continues in use for the noon news. Two other frequencies, 12.113 and 9.957, were added for broadcasts of the evening news. News is also sent twice daily in Morse code, although Orn isn't sure of the times for these. The frequencies for the voice transmissions were changed in November and here's the latest schedule: 15.385 from 1215-1245 to Scandinavia, 1245-1315 to West Europe, 1315-1345 to Eastern Canada and the U.S., 9.675 from 1855-1235 to Scandinavia, and 9.655 at 1935-2015 to West Europe, 2300-2340 to Eastern Canada and the U.S. The station's address is the Iceland State Broadcasting Service, Skulagatas 4, 101 Reykjavik, Iceland. Excellent Orn, and many thanks. Looks like these new frequencies will be more difficult and more prone to QRM than those used in the past.

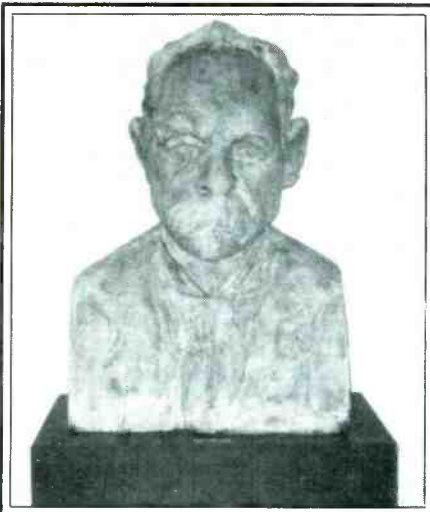
If you live in the Pacific Northwest, you're invited to join UNID (United Northwest Inland DX'ers), a new club which plans a regular newsletter covering SWBC and utility listening. The club holds regular monthly meetings in Spokane and has a growing awards program. For more info, send an SASE to Gary Stone, E. 603 Empire, Spokane, Washington 99207.

We all experience the ol' Electrical QRM Blues now and then and this month we have some tips from an authority—Mike Suhar who works in the telecommunications department at Dayton Power and Light in Dayton, Ohio. Mike has done some extensive research and the results show that, in Dayton at least, a great number of electrical interference complaints are traced to customer-owned equipment, rather than power

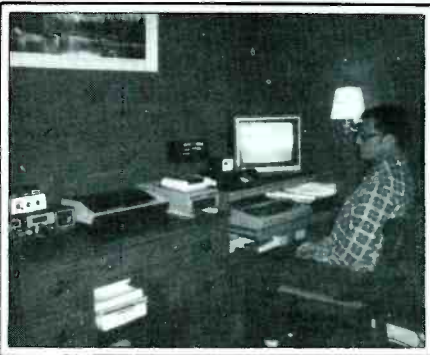


Radio Vilnius in the Lithuanian SSR sends this QSL card. (Courtesy Chuck Vesi)

line components. The most likely culprits have proved to be fish tank heaters, heating pads, electric blankets, and doorbell transformers (the latter especially in the summer if the unit is installed in the attic). If you have electrical interference problems, Mike says to take a battery-powered radio, turn off the circuits in the house, and if the noise goes away you know the trouble lies within your four walls. If not, check with your neighbors next. If you suspect the power company is at fault, keep a log of weather conditions both when the problem exists as well as when conditions are quiet since power line problems tend to be weather dependent. Twelve



Radio Marti is now sending out this QSL card.



Joseph Sepulvado of Nekoosa, Wisconsin in his shack and looking ready for action.



This well-equipped listening post belongs to Max Duryee, Registered Monitor KVA4DD of Virginia Beach, Virginia.

kilovolt power company systems are far and away the most likely to create problems, according to Mike's research.

Speaking of electrical interference problems, James R. Coyle of Johnson City, New York issues a warning about those touch-turn-on capacitance floor and table lamps. James bought one and the thing messed up the entire shortwave dial, even when it was off. James had to install a line switch to remedy the problem.

Don Hallenbeck of Pittsfield, Maine wants to know "what the Sam Hill is going on with the shortwave frequencies?" Don says all the action seems to be concentrated in the 49 meter band. Ah, it's the curse of ol' Sol and his lack of spots, Don. The higher frequencies don't propagate well during periods of low sunspot counts, so everyone and his brother hops down to the lower bands, figuring they'll get through. Often the result is QRM'ing each other nearly out of the ball game. In your case, based on what you said in your letter, a better receiver—one with more selectivity—might help your situation.

Duane Winkler of Rock Island, Illinois got a reply from Radiobras for a report he sent to Radio Nacional da Amazonia, which said they don't confirm reports for Amazonia due to lack of time and personnel. The government owned stations in Brazil seem to be tightening up on their QSL policies,

Duane. You might try sending a prepared card, with Brazilian mint stamps affixed. Maybe they'll sign and return it to you.

Gerald Arrington of Los Angeles poses that age-old question of whether he should buy Receiver A or Receiver B. It's a policy of ours not to make receiver recommendations, Gerald, but at least now we can point you toward some help. It comes in the form of a new book, *Radio Receiver—Chance or Choice*, by Rainer Lichte. He reviews dozens of the currently available receivers and tells what's good and what's not so good about each, and examines a number of accessories such as preselectors and active antennas as well. The book has a price tag of \$18.50, but if you're contemplating spending several hundred dollars on a radio, it's a pretty cheap insurance policy. The book is published by Gilfer Shortwave, P.O. Box 239, Park Ridge, NJ 07656.

We get questions occasionally from folks trying to locate schematics for older receivers. Ned Carlson of Normal, Illinois says Zenith in Chicago should be able to supply schematics for any of its older models. For radios built between 1930 and 1953, try Panaxis Productions, P.O. Box 130, Paradise, CA. Schematics are \$10.00. Other help might be available from Mr. Scott Webster at Vintage Radio and Electronics, 1414 7th Street, Rockford, IL 61108, or Puett Electronics, P.O. Box 28572, Dallas, TX 75228 (Puett's catalog is \$1).

Karl Witsman wants to hear from others who use Radio Shack receivers, and you can write to him at P.O. Box 419, Oakwood, IL 61858.

Ron Seymour gets the impression he's the only shortwave listener in the entire St. Louis, Missouri metro area. He'd like some contacts if you're out there under the arch somewhere. Write Ron at 3639 Meramec Ave., St. Louis, MO 63116.

And that's it for this round of "Letterbox."

We look forward to hearing from you soon. Your comments, questions, answers, clippings, program schedules, QSL card copies, station information and, of course, loggings are welcome. Loggings should be by country, with space between items and your last name and state abbreviation after each.

Listening Reports

Let's spin the dials and see what's being heard. All times are GMT.

AFGHANISTAN R. Afghanistan (via USSR relays) on 4740 at 1220 (Batman, LA).

ALBANIA R. Titana, 9500 at 1406 in English to Asia/Australia (Pastrick, PA); 7080 in English at 0635 (Seymour MO); 9760 at 0007 w/news in English (Shute, FL).

ALGERIA R. Algiers, 9640 at 2000 w/news, ID ("R. Algiers International"), music (Miller, GA); 17745 at 2009 w/English news (Mayo, ME).

ANGOLA R. Nacional, 2725 at 0400. Has V. of Namibia pgm. w/Portuguese ID's at this time (GMT Sundays) (Batman, LA).

ANTARCTICA AFAN McMurdo w/AFRTS programming at 0900 on 6012 (Batman, LA).

ANTIGUA Deutsche Welle Relay, 6040 at 0128 in English (Carlson, IL); 0109 "Microphone on Europe" (Lyster, BC); 0125 in English (Seymour, MO); 6120 at 0511, strong to 0550 s/off (Seymour, MO); 6130 w/interval signal 0455-0500 (Carlson, IL); 6085 at 0115 "Focus on Bonn" & mailbog (Snyder, VA) w/discussion (Hunt, NC).

ARGENTINA RAE on 9690 at 0132 in English, heavy QRM (Lyster, BC); 0122 Argentine music (Seymour, MO); 0109 w/news (Williams, NJ).

ASCENSION ISLAND BBC Relay, 7105 w/World Service to Africa at 0400 (Sgruletta, NY).

AUSTRALIA R. Australia, 6045 news in English at 1230 //5995 & 6060 (Mayo, ME); 6060 at 1230 in English (Hunt, NC); 9580 at 1451 about books (Mayo, ME); 1600 w/news (Seymour, MO, & Witsman, IL); 1252 music, world news "International Report" (Pastrick, PA); 11910 in English at 0529 (Seymour, MO); 15320 at 0523 w/pop & classical music (Carlson, IL); 2200 news, C&W records (Hunt, NC); 17795 at 2158, ID, world news (Mayo, ME).

ABC Perth on 9610 at 1407 w/news in English (Shute, FL); news/music at 1400 (Hunt, NC).

VNG (time station) on 12000 at 2139 w/pips & voice ID (Mayo, ME).

AUSTRIA R. Austria International, 6000 at 0353 w/interval signal, 4-language ID, into English (Carlson, IL); 0334 w/Austrian news (Williams, NJ).

BELGIUM BRT on 5910 at 0118 in English (Williams, NJ); 0109 w/music, talk (Mayo, ME); 15590 at 1320 w/English to N. America (Pastrick, PA).

BELIZE R. Belize, 3285 at 0514, Caribe music, in English (Johnson, NE).

BENIN ORTB Contonau, 4870 at 0625 in French w/music (Fravel, WV); 2157-in French, ID, tam-tam (Mayo, ME).

BOTSWANA R. Botswana, farm animal interval signal from 0355 on 4820 (Leach, NE, & Hunt, NC); IS from as early as 0330 to 0400 s/on w/anthem, English & local languages (Sielawa, MO); IS at 0348 tune (Fravel, WV); Vernaculars at 0426 (Lyster, BC); 7255 at 0355 w/interval signal (Mayo, ME).

BRAZIL Radiobras, 0200 w/sports in English on 11745 (credit misplaced & not on the report--Ed.); 0218 in English (Mayo, ME); 0249 giving address (Srgulletta, NY).

R. Surinam International, via Radiobras, 11755 at 1750-1821 in Dutch but some news & announcements in English (Hill, MA).

R. Excelsior, Sao Paulo, 9585 at 2000, very weak (Batman, LA).

R. Rio Mar, 9695 at 1245 (Batman, LA).

R. Clube do Para, 4885, 0256-0335 in Portuguese w/kid's vocals, ID 0300, news/speech sound effects (Paszkiwicz, WI); 0449-0504 w/music program but heavy CW QRM (Fravel, WV).

R. Poti, 4965 at 0026-0115 in Portuguese w/news, ballads, jingles, sound effects. ID as "R. Poti de Natal..." (Paszkiwicz, WI); around 2200-0300 weak w/clear ID at 0200 (Sielawa, MO).

R. Nacional Boa Vista, 4875 at 0153-0230, Portuguese w/vocal groups, ID, pop music, time checks, news & music bridges (Paszkiwicz, WI).

R. Cultura do Para, Belem, 0000-0300 s/off w/anthem. Positive ID at s/off (Sielawa, MO); on 5045 at 0156 w/news in Portuguese (Leach, NE).

R. Brazil Central, Goiania, good on 4985 after 2200, weakening around 0400 but heard until 0700 (Sielawa, MO).

R. Anhanguera, Goiania, 4915 between 2300-0500 peaks around 0000, many ID's & strong (Sielawa, MO).

R. Relogio, Rio de Janeiro, around 0000, weak, many mentions of Rio de Janeiro (Sielawa, MO).

R. do Maranhoo, Sao Luiz, 2300-0400, many ID's, relatively good signals (Sielawa, MO).

R. Bandeirantes, 9645 at 0629 w/upbeat DJ, jingles, ID's, time checks (Shute, FL).

R. Globo, 0140 on 11805, all Portuguese (Leach, NE).

R. Liberal, 3325 at 0645, music w/echo announcer

& ID, possible station jingle at 0700 (Fravel, WV).

R. Ribeirao Preto, 3206 at 0618, music program in Portuguese, time checks & announcer (Fravel, WV).

BULGARIA R. Sofia, 7115 at 0408. w/news in English (Seymour, MO).

BURKINA FASO RTV Burkina, Ouagadougou, 0558 w/IS, anthem & s/on in French on 4815 (Fravel, WV). At 0616 w/music & nice signal (Shute, FL).

CAMEROON R. Garoua, 5010 at 0315 w/"We Are The Children" (Hunt, NC) (Early for them to be on--Ed.); French w/GRM from a Latin to 2310 s/off (Sielawa, MO).

R. Douala in French to 2310 s/off (Sielawa, MO).

R. Yaounde, 4850 in French. QRM from R. Columbia after 2200 (Sielawa, MO).

CANADA Radio Canada International, 5960 at 0110 in English (Mayo, ME); 9755 at 0141 in English (Lyster, BC); 15260 (via Ascension--Ed.) at 1800 in English w/African service (Seymour, MO); 11955 at 1300, English (Pastrick, PA); 15325 at 2000 in French (Lyster, BC); African service in English at 1920 on 17820 (Lyster, BC); also on 17875 but not // (Lyster, BC).

CBC Northern Quebec Service, 11720 at 0000 w/"As It Happens" (Winfield, TX); 2238 in English, 2300 "The World At 6" (Miller, GA).

CFRB/CFRX, Toronto, 6070 at 1608 w/interview (Seymour, MO); 1430 talk show & ads (Mayo, ME); at 1700 (Coyle, NY); 0730 talk, WX, pops (Miller, GA); 1800 ads, weather, news (Carlson, IL); 0200 competing with R. Moscow (Srgulletta, NY); at 0812 (Johnson, NE).

CKWX/CKFX, Vancouver, 6080 at 1740, BCB relay (Lyster, BC).

CFCX, Montreal, 6005 at 1700 (Coyle, NY).

CHU, time station, 7335 at 0508 (Lyster, BC).

CHAD RNT, N'djamena, 4905 at 0508 in French, apparent news 0530, ute QRM (Fravel, WV); to 2200 s/off w/anthem, weak (Sielawa, MO).

CHINA R. Beijing, 9550 in language w/IS at 1800, heavy QRM (Lyster, BC); World news in English on 9820 at 0008 (Shute, FL); 0040-0050 w/listener comments; also 0053 on 11970 in English to s/off at 0056 & 11650 in Spanish at same time (Lyster, BC); 11980 at 0056 in Spanish, off & back on at 0100 (Lyster, BC); 15520 in Chinese (Mayo, ME).

CLANDESTINES V. of Palestine program via R. Algiers, sometimes audible on 6145 at 0130 under Deutsche Welle. Best after DW s/off at 0150 (Batman, LA).

La V. del CID, 6305 at 0632. Pop music in Spanish (Shute, FL); 9940 at 1430 & again at 1930, very good (Batman, LA).

R. Quince de Septiembre, 5570 at 0400-0430 in Spanish, shouting by woman, machine gun fire, "Democratia de Nicaraguense, la voz de libertad." Also 2335 to 2338 s/off (Paszkiwicz, WI); 4950 in Spanish at 2330 (Batman, LA).

R. Iran, in Farsi language, 1905 to 1925 s/off on 11640; the //15650 channel barely audible under VOA (Batman, LA).

R. Truth, weak on 5015 at 0410. Many ID's (Batman, LA).

V. of Broad Masses of Eritria, 0510 on 6250 w/ID in English (Batman, LA) More details on this one, please-- Ed.

R. Caiman, 9960 at 0117, rock & anti-Castro (pro-El Salvador) talks (Leach, NE).

R. Antorcha Martiana, 7083 at 0232, anti-Castro talk (Leach, NE).

La V. de Alpha 66, 6667.5 at 0225, talk & ID 0230 (Leach, NE).

COLOMBIA R. Sutatenza, 5095 at 0429 in Spanish w/commercials & ID (Mayo, ME); 0454, Latin music (credit not indicated); 0130-0300 lessons in trigonometry, English & history (Witsman, IL); 0202 news, music, ID by man in Spanish (Leach, NE); 2230 to 0600 (Sielawa, MO); around 0400 (Dodt, VA).

Cadena Caracol, Neiva, 4985 Spanish w/Latin music to 0700 (Sielawa, MO).

R. Nacional (tentative), 11793 w/music at 1415 (Shute, FL).

Ondas del Meta, Villavicencio, 4885 at 0527, Latin music (Fravel, WV).

COOK ISLANDS R. Cook Islands, 11760 at 0750, music, woman announcer, R. Australia (Miller, GA); 0511 w/talks & island music (Leach, NE).

COSTA RICA TIFC, Faro del Caribe, 5055 at 0308 w/religious program in English. Announced frequencies of 5055, 6175 & 9725. Spanish ID 0600 & off (Mayo, ME); 0320 in English on 5055 (Williams, NJ); English 0300-0400 (Dodt, VA).

R. Reloj, 4832 solid during evenings (Dodt, VA); Latin music, ID "R. Reloj, numero uno en Costa Rica, gracias a usted" (Carlson, IL);

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Music 2300-0100, QRM from R. Tachira on 4830 & 5ABC on 4835. Once in "paralelo" with 4855 (Sielawa, MO) No idea what or why Reloj would be on 4855 too-- Ed.

R. Columbia, 4850 very good 2200-0700 (Sielawa, MO); several ID's, talk on Cuba 2330 (Hunt, NC).

CUBA R. Havana Cuba soon to replace 5980 with 6190. Noted 6100/6140 at 0340 w/Latin American songs. Contest announcement on 6100 at 0558 (Carlson, IL); 0340-0400 w/mailbag program (Witsman, IL); 0110 w/world news, Cuban culture (Williams, NJ); 0710 on 9525 in English (Lyster, BC); 11715 at 2230 in Spanish, also French at 2037 on 15230, & Spanish at 2034 on 15300 (Lyster, BC).

CYPRUS BBC Relay, Limassol, 11760 at 0547 w/world service (Fravel, WV).

CZECHOSLOVAKIA R. Prague, 5930, weak at 0130 (Lyster, BC); 0109 w/news in English (Seymour, MO); 0150 w/"Made in Czechoslovakia" (Snyder, VA); 0410 in Spanish (Shute, FL); 7345 in English at 0108 (Williams, NJ); 0122 English (Carlson, IL).

E. GERMANY R. Berlin International, 15240 at 1545 w/DX program in English (Hunt, NC); 6125 at 2208 in English (Seymour, MO).

ECUADOR HCJB, 6215 in Eastern European language at 0247. ID & s/off 0259 (Fravel, WV); 9745 at 0230 w/DX Party Line (Williams, NJ); 9870 news in English at 0628 (Seymour, MO); 15115 at 1411 in English (Pastrick, PA); 17790 at 1950, 2803 on 21477.5 in language (Mayo, ME).

R. Catolica Nacional, 5055 woman w/ID in Spanish at 0055 (Hunt, NC); Heard 2200 to 0303 s/off (Sielawa, MO).

R. Zaracay, 3395 at 0208, woman w/talk & music in Spanish (Leach, NE); 0225 w/Spanish music (Fravel, WV).

La V. de Upano, 5040 at 0154 w/closing announcements & off w/religious theme (Sgrulletta, NY); to 0159 s/off w/Andean vocals, ID, time check, frequency, national anthem & theme, address, "Ode To Joy"-- a lengthy s/off! (Paszkievicz, WI); 0045 on 5039, man & woman announcers (Hunt, NC).

R. Pastaza, 3316 at 0358 to 0404 s/off in Spanish, ID, theme from "Exodus" (Paszkievicz, WI).

R. Quito, 4920 at 0210, talk, music. Man in Spanish (Leach, NE); frequent "La V. de Capital" ID's (Sielawa, MO).

R. Nacional Progreso, 5063, 0249-0400, Andean vocals, ID "Progreso de Loja, musica tropical" (Paszkievicz, WI).

R. Splendit, 5024 in Spanish 0330 w/music, man, woman announcers (Fravel, WV).

HD2IOA, Guayaquil, time station, 7600 at 0135, time announcements in Spanish (Williams, NJ); 0200 w/ID (Carlson, IL); 0152-0158 (Fravel, WV).

ENGLAND BBC on 3955 at 0340 w/comedy program (Hunt, NC); World news at 0300 (Mayo, ME); 1715 on 11775 w/jazz, game show (Lyster, BC); 15105 in French at 1847, into English for 3 minutes at 1902 (Lyster, BC); weak, in English on 21710 at 1435 (Mayo, ME).

EQUATORIAL GUINEA R. Nacional, Malabo, 6250 at 2138 to 2208 s/off in Spanish, talk, ID, time check, African vocals, s/off announcements, gong, anthem (Paszkievicz, WI).

R. Nacional, Bata, 5005 one time, then 5003 another! Spanish talk & music, variously 0440-0532 (Fravel, WV).

FALKLAND ISLANDS FIBS, 3958 at 0503 to 0715 s/off. English w/long classical music, time check, rock, severe ham QRM. Mention of "Falklands calling" & "BFBS presents..." Played "God Save The Queen" at s/off (Paszkievicz, WI); 0244-0305, variety of music (Leach, NE). FINLAND R. Finland International, 11945 at 1400 w/"Helsinki Calling" in English (Hunt, NC); 1300 w/"Northern Report" (Miller, GA); 15400 at 1311, English to N. America (Pastrick, PA); 1300 w/"Helsinki Calling" (Miller, GA); "Concert North" at 1415 (Mayo, ME); 1430 on Finnish newspapers (Hunt, NC).

FRANCE R. France International, 3965 at 0205 (tentative) w/French pops & woman announcer (Sgrulletta, NY); 7135 in Spanish to East & Central Africa from 0414 (Fravel, WV); 11705 at 1600 in English w/news (Hunt, NC); 17620 at 1633 w/letters on "Paris Calling Africa" (Mayo, ME).

FRENCH GUIANA RFI Relay, 9800 at 0420 w/news in English (Seymour, MO); 0415 w/news in English (Shute, FL); 0415 w/news & contest info (Williams, NJ); 0314 w/news in English (Mayo, ME).

GABON Africa #1, 15475 at 1915 w/ID in English by woman, in French by man, mix of music & English/French (no credit-- Ed.); 4810 at 2100 to 2302 s/off, French, very strong (Sielawa, MO); at 2200 w/ID at 2233 (Johnson, NE).

GALAPAGOS ISLANDS La V. de Galapagos, 4810 at 0202 to 0215 s/off in Spanish w/news & announcements, ID, frequency, anthem; RTTY QRM (Paszkievicz, WI); 0150 to 0215 s/off (Batman, LA).

GREECE V. of Greece on 5990 at 1752 in English (Lyster, BC); 7430 in Greek at 0634 (Shute, FL); 11645 in English w/news at 1540, off at 1550 (Hunt, NC).

GHANA Ghana BC, 4915 vernaculars/English 2100 to 2300 s/off (Sielawa, MO); 3366 at 0620 w/man & woman announcers, time check, music (Fravel, WV).

GUATEMALA R. Cultural, 3300 at 0300 in English (Coyle, NY); at 0500 in Spanish (Batman, LA); 0259 into English religious program (Mayo, ME); 5055 at 0428 in Spanish, ID, steel drum music (Witsman, IL).

La V. de Nahuala, 3360 at 0138 in Spanish. ID at 0156 (Paszkievicz, WI).

R. Tezulutlan, 4835 at 0207 to 0333 s/off in Spanish. Instrumentals, talk, ID's (Paszkievicz).

GUINEA-R. Nationale on 7250 w/ID in French at 1330 (Batman, LA). Odd time-- Ed.

HONDURAS HRVC, La. V. Evangelica, 4820 at 0133, talk/music (Leach, NE); 0454 religious program in Spanish, ID & announcement in English & s/off (Johnson, NE); Spanish at 0300 (Coyle, NY).

R. Luz y Vida, 3251 at 0330, weak w/music program in Spanish (Fravel, WV).

HUNGARY R. Budapest, 6025 in English at 0218 (Carlson, IL); 9835 at 2100 in English, not very good (Paszkievicz, WI); 0214 in English w/program on folk music (Williams, NJ).

ICELAND Icelandic State Bc. Svc., 13797 at 1240 in Icelandic. Fades quickly. No ID, so tentative (Batman, LA).

INDONESIA R. Republik Indonesia, Ujung Pandang, 4719 at 1240-1300 in Indonesian, music & talk by woman, ute QRM. No ID, so tentative (Paszkievicz, WI).

R. Republik Indonesia/V. of Indonesia, 15150 at 0958 w/English ID, into Mandarin (Winfield, TX); 11790 at 1500 w/world & local news in English (Hill, MA).

IRAN VOIRI on 9022 at 2005 w/news in English, ID as "R. Iran" (Mayo, ME).

IRAQ R. Baghdad, 9610 at 2130 ID, Arabic music, news about the war, commentary (Miller, GA); 2145 in English (Leach, NE); battle results at 2140 in English (Hunt, NC).

ISRAEL V. of Israel, 7410 in English at 0210 (Carlson, IL); 2242 in English features/mailbag (Seymour, MO); 1308 on 17630 in Hebrew (Mayo, ME).

ITALY RAI on 5990 at 0117 w/news in English (Seymour, MO).

JAPAN R. Japan, 9675 at 2104 w/news in English; 9605/9675 at 2104 w/English s/off (Lyster, BC); 9570 at 0358 w/ID & news in English at 0400 (Seymour, MO).

JYJ (time station) on 10000 at 1130, pips, voice ID every 10 minutes (Winfield, TX).

KAMPUCHEA V. of the People of Kampuchea (tentative) 1245 on 11937.2. Marches, un-ID language to 1258, then another language to 1312 s/off (Sgrulletta, NY).

KENYA V. of Kenya general service, 4805 at 0452 to 0500 s/off w/possible national anthem (Fravel, WV); around 0400 s/off w/rapid fade. English w/African music, weak (Sielawa, MO).

KUWAIT R. Kuwait, 11675 at 2045 in English. Talk & rock music (Hunt, NC).

LIBERIA Liberian Bc. System, 3255 at 0454 w/local commentaries, music, ID, frequencies. Vernaculars at 0530 (Johnson, NE).

VOA Relay, 15600 in English at 1643 w/"Nightline Africa" (Mayo, ME).

LIBYA V. of the Arab People, 9655 at 2304, continuous music to announcements in Arabic at 2330 (Fravel, WV).

LITHUANIAN SSR R. Vilnius (via R. Moscow), 7430 in English at 2320 w/address for reports (Carlson, IL).

LUXEMBOURG R. Luxembourg on 6090 at 0000 w/news, American pop, English (Hunt, NC).

MADAGASCAR R. Madagasikara, 5010, weak around 0500, un-ID language, many mentions of Antananarivo (Sielawa, MO).

MALAWI MBC on 3380 at 0253, s/on in African language (Batman, LA).

MALTA R. Mediterranean, 6110 at 2238 in English w/news & ID at 2300 (Leach, NE).

MALI RTM in French w/news, music, talk on cinema 2228-2300 on 4783 (Hill, MA); 4785/4835 good 2200-0000 s/off w/anthem. Returns 0600 (Sielawa, MO).

MAURETANIA ORTM, Nouakchott, 4845 presumed, 0608 w/Islamic music, long talks in Arabic (Paszkievicz, WI); 0603-0610 fade out (Fravel, WV); around 2200 & again at 0555 s/on (Sielawa, MO).

MEXICO La V. de la America Latina, 15165

at 0700 w/DJ tag team, ID, news (Carlson, IL). To answer your question, the station relays BCB station XEW but the SW call (XEWW) is seldom announced-- Ed.

MOZAMBIQUE R. Maputo, 4734 at 2128-2212 in language, possible Portuguese. Soul/pop, tones, ID, news, national anthem. Mentions of Maputo (Paszkievicz, WI).

NAMIBIA R. Southwest Africa, 3295 at 0205-0400 w/all night service, pop music, ID in English 0300 & 0400 otherwise all music (Mayo, ME).

NETHERLANDS R. Netherlands, 17605 at 0015 in Spanish w/pop music (Mayo, ME); 13770 at 1524 in English, weak (Seymour, MO); 21540 at 1601 w/church service in Dutch (Mayo, ME).

NETHERLANDS ANTILLES R. Netherlands Bonaire Relay, 6165 at 0548 w/"Newsline" (Mayo, ME); 6165/9715 w/"Media Network" at 0600 (Seymour, MO); 0258 w/"Shortwave Feedback" (Carlson, IL); 9590 w/"Media Network" at 0314 (Mayo, ME).

Trans World R., Bonaire, 9535 w/religious program at 0357 (Seymour, MO); 0300 w/same (Leach, NE); "Focus on the Family" at 0356 (Williams, NJ); 0430 on 11815 w/"Caribbean Night Call" (Winfield, TX).

NICARAGUA V. of Nicaragua, 6015 at 0215 in English, into Spanish 0232, English again at 0415 (Carlson, IL) English has reportedly been extended-- Ed.; 0103 in English (Lyster, BC); 0415 w/mailbag program & address (Leach, NE); Spanish at 0430, the English to s/off (Lyster, BC); 0440 w/news in English, comments, talks (Seymour, MO).

NIGER ORTN, 5020 at 2058-2202 s/off in French w/announcements, mention of Niger, drums/flute IS (Paszkievicz, WI); pop music at 0550 (Batman, LA).

NIGERIA R. Nigeria, 4990 at 2302 w/English news, music, ID, anthem & off at 2308 (Johnson, NE); s/off 2310 (Sielawa, MO).

V. of Nigeria, 7255 at 0530 w/world news, ID, news of Nigeria (Winfield, TX); 0500 s/on in English (Mayo, ME); 0618 French (Shute, FL); 2000 w/news, ID, music, off 2029 (Miller, GA); 0521 in English w/news, African songs (Carlson, IL); 15120 at 2125 in English about local events (Hunt, NC).

NORTH KOREA R. Pyongyang, 9977 at 2335 in Spanish, talk by man & woman (Paszkievicz).

NORTHERN MARIANAS KYOI, Saipan, at 1630 on 9665, rock & requests for \$10 listener donations to keep station on the air (Pastrick, PA); 1505 on 11900 (Leach, NE); 15405 at 0000 (Mayo, ME); s/on 2200 w/ID's in English & Japanese w/money appeals (Hill, MA).

OMAN BBC Mosirah Island Relay, 0030 s/on in language on 7235, poor (Batman, LA).

PAKISTAN R. Pakistan, 9465 at 1700 w/world news in English, music/songs to 1729 s/off (Mayo).

PAPUA NEW GUINEA R. Manus, 3315 0724-0802, music till 0747, announcer w/drums (Fravel).

PARAGUAY R. Nacional, 9735 in Spanish, classical music 0040, ID & s/off 0155 (Hill, MA); ID 0155, jingle at 0201, more talk (Sgrulletta).

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PERU R. Andina, 4995.8 at 0228 in Spanish. Talks, lively vocals, break in transmission 0250-0255, ID 0300 (Paszkievicz, WI).

PHILIPPINES FEBC on 11890 at 1430 to India. News & religious program (Winfield, TX).

VOA Relay, 9760 at 1445 w/classical music, end of English to SE Asia (Mayo, ME).

PORTUGAL R. Portugal, 15105 at 1600 in English w/music & news (Coyle, NY); 1607 w/news (Mayo, ME).

ROMANIA R. Bucharest, 11940/15250 at 1308 in English (Pastrick, PA); 11940 at 2104 in English to Europe (Williams, NJ).

RWANDA R. Rwandaise, tentative on 3330 at 0347-0407 in French w/vocals, news, mention of Uganda/Rwanda. QRM'd by CHU in Canada (Paszkievicz, WI).

SAO TOME R. Nacional, 4805 at 0718-0837 in Portuguese. Vocals, announcements w/gong & bird chirps, mentioned R. Nacional & Centro Africo, ID 0738 (Paszkievicz, WI).

SAUDI ARABIA BSKSA, 9870 in Arabic w/Arabic music at 2100 (Hunt, NC).

SENEGAL ORTS Dakar, 4890 Arabic music & French commentary by man at 2350 (Hunt)

SINGAPORE BBC Far Eastern Relay in English on 9740 at 1500 s/on (Batman, LA).

SOUTH AFRICA (REPUBLIC OF) Radio RSA, 7270 at 0420 w/"African Review" (Seymour, MO); 0259 s/on w/English (Mayo, ME); 9610 at 0248 in English (Mayo, ME); 0200 English to N. America (Winfield, TX); 0155 w/IS //5980 (Carlson, IL); 0214 w/mailbag (Williams, NJ); 11900 at 2110 English (Snyder, VA); 17780 at 1415 English to Africa/Europe (Pastrick, PA); SABC on 4880 in Afrikaans to 2200 s/on in English at 0300, 4835 s/on at 0350 in English (Sielawa).

SOUTH KOREA R. Korea, 9750 at 1400 w/news, commentary & mailbag (Miller, GA); 1413 w/talk (Shute, FL).

SPAIN Spanish Foreign R., 6125 at 0500 in English, also 9630 at 0035 in Spanish, English from 0100 (Carlson, IL); 11800 in English w/ID, news, press review (Winfield, TX).

SRI LANKA SLBC in English on 9720//15425 w/pop & country 1300-1400 (Hill, MA).

SUDAN R. Omdurman (tentative), 5039 at 0408-0432 in Arabic w/Koran, flute music, possible mention of Omdurman (Paszkievicz, WI); 0400 to fade out 0500, Arabic & Koran recitations (Sielawa, MO).

SWAZILAND Trans World R., 0300-0600 in English on 5055 w/religious programs (Sielawa, MO); 0530 on 7295 w/religious talks & music

(Winfield, TX); 9640 at 0355 s/on in Somali (Mayo, ME).

SWEDEN R. Sweden International, 9695 at 2325 w/frequency announcements; 15345 at 1410 in English (Hunt, NC).

SWITZERLAND Swiss R. International, 9725 at 0420 in English w/"Swiss SW Merry-go-round" (Mayo, ME); ID in English at 0145; 0200 on 6135//9885//12035 (no credit); 12035 at 1315, English to Europe (Pastrick, PA); 15750 in English at 1355 (Mayo, ME).

SYRIA R. Damascus, 12085 at 2015 pop music, local news/highlights (Hunt, NC).

TAIWAN V. of Free China, 7130 in Chinese before 1300, unknown after that but occasional English ID's (Batman, LA); 11825 at 2108 in English, via WYFR (Snyder, VA); 9955 at 2200-2300 (Hill, MA).

V. of Asia, 5980 at 1300 in Chinese (Batman).

TANZANIA R. Tanzania, tentative, 9684.1 at 0402-0423 in English w/news. Also 4785 at 0300-0337 fade-in language. Koran type music, ID w/mentions of Tanzania. Time pips & news at 0400 recheck (Paszkievicz, WI); Tentative at 0620 w/presumed national service in Swahili (Johnson, ME); 5050 0300-0400 in Swahili, weak (Sielawa, MO).

TOGO RNT on 5047 at 2230. Music at fair level but talk almost inaudible (Hill, MA); Strong, in French around 2130-2300 (Sielawa, MO).

TUNISIA RTT on 7225 at 0544 in Arabic w/music program (Fravel, WV).

TURKEY V. of Turkey at 0313 on 9560. Turkish peace effort w/Greece (Winfield, TX).

UGANDA R. Uganda, 5027 in local language around 0300 to 0530. Heavy QRM from R. Rebelde on 5025 (Sielawa, MO); 5026 at 0400 in English w/news (Hill, MA).

UKRAINIAN SSR R. Kiev, via R. Moscow sites, 11790 at 0030 w/news, ID in English (Leach, NE); 0047 in English (Lyster, BC); 5905 in English at 0040 (Seymour, MO).

UNITED ARAB EMIRATES UAE Radio, Dubai, 9565 at 0340 in English w/world news (Hunt, NC); 17775 in English to Europe at 1334 (Pastrick, PA); 21605 at 1329 English ID, news, talk //15320 & 17775 (Mayo, ME); 17775 at 1340 English (Hill, MA).

UNITED STATES United Nations R., 15120 at 2108 w/"Caribbean News Roundup" (Lyster).

R. Marti, 11960 in Spanish w/rock, jingles, ID & address at 2215 (Carlson, IL).

KCBI, 11790 at 2050 w/"Texas Me & You" (Carlson, IL); 11905 English to Europe (Pastrick,

PA); 1651 s/on w/religious program, R. Earth at 1900 (Mayo, ME); 1850 w/R. Earth (Witsman).

WINB, 15150 at 1925 w/news & hymns (Hunt, NC); 15185 at 2000 w/heavy QRM (Witsman).

WRNO, 6185/7355 at 0400 in switch to 49 meter band frequency (Sgrulletta, NY); 9852.5 rock/disco at 2330 (Hunt, NC); 11705 at 2126 w/Beattles (Shute, FL); 15420 at 2022, 6185 at 0422 (Lyster, BC).

AFRTS at 1248 on 6030 weather/headlines/talk (Pastrick, PA).

WYFR, 9510 at 1902 to Europe/China w/religious programs at 1902 (Seymour, MO); 11830 at 1420 in English w/religious programs (Pastrick, PA).

VOA on 9565 at 0730 in Arabic. What relay? (Shute, FL) Radio Database International claims Greenville-- Ed.; 17640 on French at 1911; 17785 at 2118 (Lyster, BC).

URUGUAY S.O.D.R.E., ID'ing as R. Sodre in Spanish at 0943 on 9620 (Batman, LA).

USSR R. Moscow World Service, 4825 in English 1310-1345, not sure of site (Paszkievicz, WI); 5900/5920/5950/5980 at 1641 in English. World Service also 6150 at 0708, 11840 at 1723, 7260 at 0356, 6170 at 0423 (Lyster, BC). Some of these are via Havana-- Ed.

R. Petrozavodsk, 4780, 0501 to fade-out at 0531 in Russian, man/woman announcers, talk & classical music (Fravel, WV).

UZBEK SSR R. Tashkent in English 1200-1230 on 5945/5985/9600/11785. News, commentary, mailbag, sports (Hill, MA) Via Moscow sites-- Ed.; 5985 at 1200-1230 poor to fair (Batman, LA).

VATICAN Vatican R., 6015 at 0054 w/English (Seymour, MO); 0030 in French, 0050 in English (Myso, ME); 15120 at 1545 African service in English (Mayo, ME); 1555 in English (Seymour, MO); 21725 at 1445 in Spanish (Mayo, ME).

VENEZUELA R. Mara, Spanish on 3275, 0345 to 0355 s/off (Hill, MA); poor 0118-0130 (Fravel) Ecos del Torbes, 4980 very good in Spanish at 0405 s/off (Dodt, VA); 0030 news (Hunt, NC); to 0400 s/off (Sielawa, MO).

R. Capital, 4850 at 0020 in Spanish, news w/fast talking, ID (Hunt, NC).

R. Monagas, 3325 at 0404-0414 weak w/QRM. Music program (Fravel, WV).

R. Tachira, 4830 at 0250, Latin music, ID (Hunt, NC); peaks after 0200 w/many ID's (Sielawa).

R. Rumbos, 9660 at 0250 w/Latin music, man w/ID (Hunt, NC).

R. Mundial Bolivar, 4770 at 0158-0202 in Spanish, announcements then sudden s/off (Paszkievicz, WI); 2350 Latin music, ID at 2355 (Hunt, NC).

R. Yaracuy, 4940 at 2238 in Spanish. Mention of San Felipe (Shute, FL).

R. Valeria, 4840 at 0046 w/Latin music, Spanish, ID (Johnson, NE); 0315 to s/off 0400, soap opera, commercials, jingle, anthem (Paszkievicz, WI).

La V. de Carabobo, 4780 at 0325, female vocals (Hunt, NC).

YVTO (time station), 6100 w/pips, Spanish announcements at 0623 (Leach, NE).

R. Occidente, 3225 at 0346 to s/off 0359, music. Closed with anthem. (Fravel, WV).

VIETNAM V. of Vietnam, 10040 at 1325 s/off in French, 1330 on in English. Just readable & //15010 (Mayo, ME).

YUGOSLAVIA R. Yugoslavia, 9620 at 2215 in English (Hunt, NC).

ZAMBIA ZBS, 4910 s/on at 0255 w/anthem, faded at 0400 (Sielawa, MO).

May We Recommend . . .

A reception report to a privately owned (non-government operated) shortwave broadcaster has a better chance of earning you a QSL card if you enclose an International Reply Coupon (IRC) with your report. These are sold at most Post Offices.

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We overdid it a bit with the likes of RCI and Radio Australia, but otherwise, an above average list. The Players: Stanley D. Mayo, Yarmouth, ME; Ronald T. Seymour, St. Louis, MO; James T. Coyle, Johnson City, NY; Kenneth Hill, Somerville, MA; Larry R. Fravel, Clarksburg, WV; S. Lyster, Keremeke, BC; Shawn Snyder, Virginia Beach, VA; Alex Batman, Baton Rouge, LA; Michele Shute, Pensacola, FL; Steven Johnson, Omaha, NE; Martin Winfield, El Paso, TX; Karl R. Witsman, Oakwood, IL; Billy Hunt, Durham, NC; Jeff Leach, Omaha, NE; Jerzy T. Sielawa, Rola, MO; Bob Dodt, Jr., Triangle, VA; John Miller, Thomasville, GA; Timothy S. Williams, Parsippany, NJ; Sheryl Paszkiewicz, Manitowoc, WI; John Sgrulletta, Mahopac, NY; Ned Carlson, Normal, IL; Robert Pastrick, Conway, PA.

Thanks to all of you. Til next month, good listening!

PC

NEW AND EXCITING TELEPHONE TECHNOLOGY

Telephone Security

With increasing regularity the question of telephone security raises its ugly head. Legislators try to pass laws that will calm the fears of the electorate. Companies sell services and equipment to check for taps or scramble phones. With all of this activity, is the telephone—in any form—a secure device? No. If someone really wants to know what is being talked about, they can listen in.

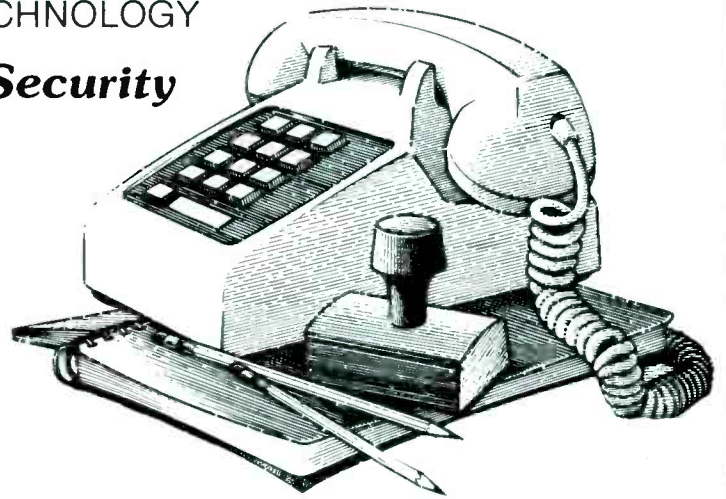
Government departments know telephone traffic is “leaky.” The embassies of a major power are covered in posters saying “Telephones are not secure.” In fact, even face-to-face communication is not secure if a sophisticated antagonist wants to know what is being said. The developments at the U.S. Embassy in Moscow over the years should illustrate this point. If two people have to talk about a secure matter, the best way to do it is to walk about in a noisy area such as a street or machine shop, and remember to keep moving. Of course, if one of the people is wired with a tape recorder, even that is not secure.

Most individuals have no reason to worry about eavesdropping. Who really wants to know if you are calling the local tire store to check the price on a new set of radials? The only people that need to worry are government agencies doing secure work, and criminals. I hope that few of our readers fall into the latter category.

The least secure phone calls are any that at some time in their path are transmitted via RF. This includes: Cordless phones, radio-telephones and cellular phones, land based microwave links, satellite links, HF links, Ham radio phone patches, ship-to-shore calls, and remote radio links sometimes used in rural areas. Although phone companies are using HF long distance links less and less, an enormous amount of traffic is being sent via satellite.

Scrambling will not necessarily buy peace of mind. It may exclude the casual listener, but if a signal can be scrambled, it can be descrambled. During World War II, Bell Labs was testing some scrambling equipment on shortwave. They had been running the tests for three days when they received a phone call. On the line was a radio amateur who had heard their signals and, just for the hell of it, figured out how to descramble them.

The popular press likes to write stories about industrial espionage. They never give examples of companies that have been penetrated, mainly because very few ever have been. Two years ago the business press was all excited when the president of United Technologies accused the chairman of the company of bugging his home and office. Was any proof provided? Was the press pre-



sented with pictures of the “captured” hardware? No, it was just an example of classic Black PR.

The best way to find out what the competition is doing is to talk to them. People like to brag. Two hours in a local bar can glean more information about what a company is up to than three months of listening to company employees on the phone talking to their girlfriends. During World War II in Britain, they had posters up in the pubs saying “Careless talk costs lives.” It still does.

Any competent technician can build a device that goes across a pair of telephone wires to listen into whatever is coming across the line. Voice, computer data, telex, and the numbers being called are all easily intercepted. Some devices are quite simple and merely switch on a tape recorder whenever the phone goes off hook. Between a telephone set and the Central Office, there is up to ten miles of wire. At either end or anywhere along the line, a listening device can be placed. Unless a very clumsy job has been done, it will never be detected. The hard part of a phone tap is having to listen to hours of boring chatter to pick out the occasional gem.

There are companies that claim they can sweep phone lines for bugs at incredibly high prices. They have never answered my challenge, which is: How much would they pay me to place a tap on their lines without them being able to detect it? John Walker, the spy recently arrested on the east coast, earned his living assuring people that they were not being bugged or tapped. The FBI had his own phones tapped for some considerable time and he was blissfully unaware of it. What do these companies sell? Peace of mind for the paranoid. Don't forget, there are cheaper, faster ways of gaining information than tapping phone lines. The average member of the public has no reason to fear eavesdropping. Just bear in mind it can be done.

The most secure phone connection would be two phones connected with a fiber optic

cable containing no breaks or splices. On the cable would be an alarm that would sound if the cable was broken or the light source failed. This would only work between two instruments with no capability of switching to other sets to make a truly useful system.

People say the most amazing things on telephones. They assume that as only two people are in the conversation, only two people can listen. Most “loose” talk is only amusing and a window on life. We have all heard ship-to-shore calls with wives asking husbands if their laundry is being done, along with concerned inquiries about the health of the family cat.

One aspect of telephone surveillance that is overlooked is “Itemized Billing.” Your telephone bill comes with a listing of all toll calls. The information provided includes: The number called, the date of the call, the time the call was made, and the duration of the call. For proof that someone is calling a bookie, this is all that is needed. Leaving old phone bills lying around can tell people plenty about your habits.

Another form of surveillance that is found in most large companies and nearly all hotels is called SMDR (Subscriber Message Detail Recording). This takes the form of a computer printout. The typical printout contains the following information: The extension that placed or received the call, whether the call was originated or received, the length of the call, and the trunk that the call came in or went out on. This gives companies a good view of their telephone usage and costs, as well as alerting them to any malfunctioning equipment. It also lets them know which employees are using the phone and who they are calling and for how long. Hotels use SMDR in order to bill guests for calls made. These become hotel records, just as the hotel register is, and could be used as evidence at another time.

The basic rule on security has not changed in 6,000 years, since Sun Tzu wrote *The Art of War*. If you want to keep a secret, keep your mouth shut.

PC

WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS

International Amateur Radio Arrangements

The United States has arrangements for third-party traffic and for reciprocal operating privileges in the Amateur Radio service with the countries listed below.

Third Party Arrangements

The United States has arrangements to permit FCC-licensed amateur stations to exchange messages for third-parties with amateur stations in these countries: Antigua and Barbuda, Argentina, Australia, Belize, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, The Gambia, Ghana, Grenada, Guatemala, Guyana, Haiti, Honduras, Israel, Jamaica, Jordan, Liberia, Mexico, Nicaragua, Panama, Paraguay, Peru, St. Christopher and Nevis, St. Lucia, St. Vincent and the Grenadines, Swaziland, Trinidad and Tobago, United Kingdom (special event stations with call-sign prefix GB followed by a figure other than 3), Uruguay, and Venezuela.

The U.S. also has an agreement with the International Telecommunications Union permitting third-party traffic with its amateur station 4U1ITU in Geneva, Switzerland.

International amateur radiocommunications are limited by the international *Radio Regulations*. They must be in plain language and consist only of messages of a technical nature relating to tests and to remarks of a personal character for which, by reason of their unimportance, recourse to the public telecommunications service is not justified. Business messages are prohibited.

At the end of an exchange of international third-party traffic, the FCC-licensed station must transmit the callsign of the foreign amateur station in addition to its own callsign (see Section 97.84).

Reciprocal Operating Arrangements

The United States has arrangements to grant reciprocal operating permits to visiting alien amateur operators. An alien amateur operator licensed by one of the following countries, who is also a citizen of that same country, may apply for a permit to operate his/her amateur station in area where telecommunications are regulated by the FCC. A United States citizen is not eligible for an FCC-issued reciprocal permit. Aliens are also eligible to qualify for an FCC amateur radio license.

Argentina, Australia, Austria, The Bahamas, Barbados, Belgium, Belize, Bolivia, Botswana, Brazil, Canada*, Chile, Colombia, Costa Rica, Denmark, Dominican Republic, Ecuador, El Salvador, Fiji, Finland, France, Federal Republic of Germany, Greece, Grenada, Guatemala, Guyana, Haiti, Honduras, Iceland, India, Indonesia, Republic of Ireland, Israel, Italy, Jamaica,

Japan, Jordan, Kiribati, Kuwait, Liberia, Luxembourg, Monaco, Netherlands, Netherlands Antilles, New Zealand, Nicaragua, Norway, Panama, Paraguay, Peru, Philippines, Portugal, St. Lucia, Seychelles, Sierra Leone, Solomon Islands, Spain, Suriname, Sweden, Switzerland, Trinidad and Tobago, Tuvalu, United Kingdom, Uruguay, Venezuela, and Yugoslavia.

*The arrangement with Canada permits operation by Canadian amateur operators in the United States without obtaining a reciprocal operating permit and vice-versa.

An alien amateur operator may apply for a permit by completing FCC Form 610-A, available from any FCC office or, in some cases, from United States missions abroad. The permit is valid for one year or until the expiration date on the alien's license, whichever comes first. The application and a photocopy of the alien's amateur license should be sent to: Federal Communications Commission, Gettysburg, Pennsylvania 17325, United States of America.

United States amateur operators wishing to apply for a reciprocal permit in a foreign country should contact the telecommunications regulatory authority for the country to be visited. The regulations of that country apply.

Amateur operation in areas where telecommunications are regulated by the FCC must comply with Part 97 of the Commission's Rules and the international *Radio Regulations*. Operator privileges in the United States are those authorized by the operator's own government, but not to exceed those of the FCC Amateur Extra class (see Section 97.7).

Maximum Reimbursement Allowed For An Amateur Volunteer Administered Examination

The Commission announced that the maximum allowable reimbursement for out-of-pocket costs for a volunteer administered amateur radio examination will be \$4.29. This amount is based on a 3.2% increase in the Department of Labor Consumer Price index between October 1, 1984 and September 30, 1985.

Each volunteer examiner and each volunteer examiner coordinator may be reimbursed by examinees for out-of-pocket expense incurred in preparing, processing, or administering examinations for amateur operator licenses above the Novice class. The amount of such reimbursement fee from any examinee for any one examination at a particular examination session, regardless of the number of examination elements taken, must not exceed \$4.29.

This announcement is made pursuant to

Section 97.36 of the Commission's Rules for the Amateur Radio Service.

FCC Amends Channel Assignment Procedures For 800 MHz Private Land Mobile Radio Services

The Commission amended the rules governing the channel assignment procedures for the 816-821 MHz and 861-866 MHz private land mobile bands.

The amendment provides a preference for fully loaded trunked systems seeking additional channels in the 816-821 MHz and 861-866 MHz bands.

The Commission currently maintains a waiting list for the 200 trunked channels allocated for the 816-821 MHz and 861-866 MHz bands. These 200 channels are available to all applicants using trunked technology and are not designated by service groups.

The FCC said it was amending the rules because it recognized that trunked technology increases spectrum efficiency by accommodating more users on a given number of channels and that larger trunked systems are more efficient than trunked systems using fewer channels. It also recognized that there has been a substantial amount of growth in the number of trunked systems, indicating a competitive market. Therefore, the FCC found it appropriate to take additional steps to encourage the use of larger, more efficient trunked systems because they would increase spectrum efficiency and provide a higher quality of communications service.

The existing waiting lists will be reviewed and first priority will be given to applications from entities expanding fully loaded trunked systems.

All future applications filed with the Commission for the 816-821 MHz and 861-866 MHz bands will be ranked in the same manner.

Applications will be ranked by priority and will be placed in chronological order, based on the date of receipt at the Licensing Division of the Private Radio Bureau in Gettysburg, Pennsylvania. Frequencies will be granted to the highest ranking eligible applicant who is able to use them based on channel loading, the site specified, the Commission's mileage separation standards, and other applicable standards.

Additionally, the FCC said it will impose a waiting period on existing trunked systems which have failed to meet minimum loading standards and whose authorized channels have been reclaimed. Those systems will not be placed on the waiting list for six months from the date of the issuance of the superceded license.

Illegal Video Transmitters

The Federal Communications Commission has noted a large increase in the number of manufacturers and equipment suppliers marketing video transmitters to the general public for non-licensed operation. These video transmitters are designed to connect to a video source, such as a video cassette recorder or camera, and transmit the signal over-the-air to a nearby television receiver. The FCC regulations do not permit this type of operation and, accordingly, the manufacturing, marketing, or use of these transmitters is both a violation of the FCC Rules and federal law.

It should be noted that the Commission has occasionally received petitions and requests to allow the transmission of video information on the TV broadcast frequencies. Most recently, two petitions seeking to allow this form of operation were reviewed by the Commission. These were filed by RF Power Labs and Mr. Robert C. Greene to allow operation on the UHF and VHF television frequencies, respectively. Both of these petitions were denied by Commission action. The denials were issued because of concern about possible interference to licensed TV broadcast stations. No information has been submitted that would support claims that interference would not occur. Thus, there is no expectation that the regulations would be amended to permit video transmissions on the television frequencies.

Because the marketing of these video transmitters violates both the Commission's regulations and the Communications Act of 1934, as amended (Title 47 of the United States Code), those persons or companies, including retailers, distributors, or importers, found to be marketing this equipment would be subject to the penalties contained within Sections 501 and 503 of the Communications Act. Penalties range as high as a \$10,000 fine and/or one year in jail for the first offense. Equipment may also be seized under the provisions of Section 510 of the Communications Act.

FCC Reiterates It Is Not Considering Banning Religious Programming

In response to a revival of rumors, the FCC has reiterated that it is not considering, nor has it ever considered, a petition by Madalyn Murray O'Hair, or anyone else, to ban religious programming over the airwaves on radio or television.

The Commission emphasized that it is prohibited by the Communications Act of 1934 from censoring broadcast material and by the First Amendment from interfering with freedom of speech in broadcasting.

The FCC noted, however, that in 1975 it unanimously denied a petition by Jeremy D. Lansman and Lorenzo W. Milam asking the agency to, among other things, "freeze" applications by religious institutions for TV or FM channels reserved for educational stations. The Lansman-Milam petition had routinely been assigned the rulemaking number RM-2493.

Since that time the Commission has received over 16 million pieces of mail and a corresponding number of telephone calls on the mistaken belief that the FCC was considering, in RM-2493, a ban on broadcasting religious programming. Despite all efforts to advise the public of the action on RM-2493, the rumors still persist.

Thus, once again in a further attempt to stem the rumors, the FCC is not empowered by any statute to prohibit radio and television stations from presenting religious programming, nor can it direct any broadcaster to present, or refrain from presenting, announcements or programs on religion.

FCC Adopts Regulation Restricting Access By Minors To Obscene And Indecent Telephone Transmissions

The Commission adopted a regulation restricting minors' access to "dial-a-porn" telephone message services.

Under the regulation adopted by the FCC, "dial-a-porn" services must require an authorized access or identification code or prepayment by credit card before transmission of the messages. With respect to the authorized access to identification code, "dial-a-porn" providers must issue the code by mail after reasonably ascertaining, through a written application procedure, that the applicant is not under 18 years of age. Further, "dial-a-porn" providers must establish a procedure whereby codes will be canceled immediately when providers are notified that such codes are lost, stolen, or misused, or no longer desired.

The regulation becomes effective 30 days from the date the order is published in the Federal Register.

The Commission concluded its regulation represents the most effective available means to limit minors' access to the messages but, at the same time, offers the least restriction on adults' access.

"Dial-a-porn," which offers transmissions of actual or simulated sexual behavior to a telephone caller, became prominent when it was offered by *High Society Magazine* and Car-Bon Publishers over New York Telephone Company's facilities. Although New York Telephone does not operate the service, it provides the Dial-It Mass Announcement Network Service (MANS) capability under a New York intrastate tariff which gives the subscriber, in this case *High Society Magazine* and Car-Bon Publishers, absolute control over the content of the message.

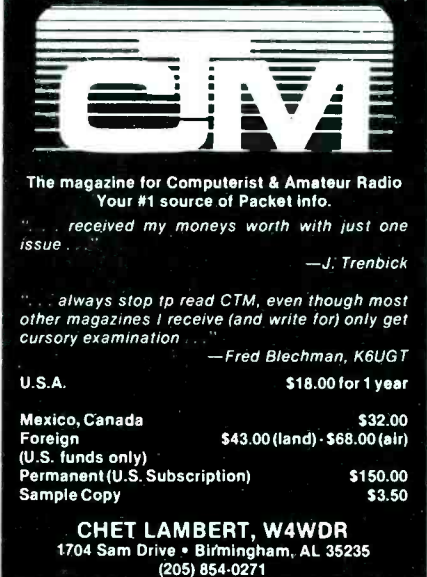
On September 16, 1983, the Commission began an inquiry to determine whether it had the authority to prohibit obscene or indecent transmissions by common carriers or message providers. Shortly thereafter, Congress amended Section 223 of the Communications Act, thus authorizing the FCC to impose civil fines, not exceeding \$50,000 a day, upon parties who, for commercial purposes, use their telephones or permit others to use telephone facilities under their control to transmit obscene or indecent messages to persons under 18 years old.

In its initial inquiry, the Commission considered restricting minors' access to "dial-a-porn" by requiring the implementation of network blocking alternatives, by blocking access from coin-operated telephones, and by restricting the advertisement of such services. The FCC issued regulations requiring "dial-a-porn" services to operate between 9:00 p.m. and 8:00 a.m. E.S.T., or to accept payment by credit card before transmission of the messages begins. Services requiring prepayment by credit card were permitted to operate 24 hours a day without other restrictions.

On November 2, 1984, however, the U.S. Court of Appeals for the Second Circuit (New York) invalidated the Commission's initial decision, and directed the Commission to reexamine the alternatives to determine whether a less restrictive method of protecting youths from "dial-a-porn" exists.

On March 1, 1985, the Commission adopted a Second Notice of Proposed Rulemaking in order to develop a more comprehensive and technically complete record on this issue. It asked for comment on three basic methods of restricting access by minors to "dial-a-porn" message services: screening and blocking outgoing messages from a subscriber's premises, access or identification codes for those who wish to use "dial-a-porn" services, and limiting operational hours consistent with the guidelines imposed by the court.

After examining the record, the Commission concluded that the various screening and blocking techniques proposed were either technically infeasible, overinclusive, ineffective, or improperly placed the burden of preventing access on the telephone subscriber. The proposal to limit the "dial-a-porn" services' operational hours was rejected. In contrast, implementation of an access code regulation requires "dial-a-porn" providers to install access code equipment at their premises or to assume the financial responsibility for equipment installed at telephone company facilities. **PC**



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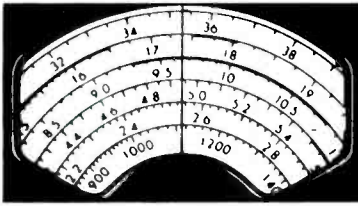
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COMMUNICATIONS CONFIDENTIAL

BY MIKE CHABAK

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

Continuing with last month's thoughts on the Strategic Air Command:

Bombers and tankers use a three to five letter word, followed by two numbers. These are all contained in a USAF publication, *AFKAI-1*, which is the Air Force daily changing callsign book. Exactly how many words are in it is unknown, but each day the same list is randomly shuffled by NSA computers. The NSA (National Security Agency) is better known as the United States electronic/communications intelligence gathering organization. It also has a prime function of providing the codes and ciphers that are used by virtually all U.S. government and military agencies.

Exactly how the changing callsign list is implemented is unknown. Presumably, SAC HQ receives it and parcels it out to the 8th and 15th Air Force. They, in turn, assign portions to each Air Division, and they give to the wings under their command.

Most of the word callsigns are made up of conventional words, such as PIANO, BANJO, FUZZY, LAYER, ACORN, FOGGY, ROUT, SWAY, and so on. A portion are only phonetically pronounceable, such as FILAR, PASH, SEPAL, HAMBY, ARTER, DINAR, FOST, and so on. The two numerics following the word are the aircraft mission numbers. As such, during a given time period, you could hear HUTTO 15, HUTTO 63, HUTTO 44, HUTTO 29, etc. In this instance the callsign is being used by aircraft from the same wing unit, involved in the same mission.

Due to the random shuffle procedure, it is also possible to hear, for example, KARMA 21 on Monday, KARMA 95 on Wednesday, and KARMA 44 on Thursday. In each instance, they are assigned to a different wing/aircraft and are not static in nature. It is just the luck of the draw that any appear to be frequently used.

There is, however, a small percentage of aircraft callsigns that are static. These belong to ANG/AFRES tankers. Not only can you hear them on SAC channels, but also on the commercial aeronautical ATC and USAF GCCS nets. The use of these static callsigns would indicate an aircraft involved in a training exercise. By the way, although the SAC tanker fleet services only SAC aircraft, the ANG/AFRES units can, in addition, be called upon to refuel MAC and TAC aircraft. To prevent confusion, the static callsigns are chosen from words, other than those utilized in the *AFKAI-1* list.

There is no significance in a three, four, or



A single, short SAC broadcast could quickly scramble air crews to action.

five letter word regarding the type of aircraft. Hence, from the aircraft callsign alone there is no way to determine if it is a B-52, FB-111, B-1B, KC-135, or KC-10A.

Callsigns Without Numbers

These callsigns range from six to fifteen letters and represent an actual single word or two words. Normally they are composed of six to nine letters; examples of these are: SUBSONIC, BEAN POLE, KING CRAB, EXPOSURE, AEROBATIC, JACK FROST, DIFFICULT, MILKY WAY, EGG WHITE, and so on. These are primarily used by SAC commstas, major command posts, and the ABCP family. Like the aircraft callsigns, they are changed daily. It must be noted that a small percentage do appear to be static in nature, utilized almost daily over an undetermined period of time. Who and why is not known.

Some of these worded callsign stations have a distinctive two tone signal at the end of their comms, while others do not. These tones are generated during unkeying and it is assumed they may indicate that the particular commsta is using the modernized Scope Signal 3 equipment. As such, the unkey tones may be an integral part of the SS3 system.

As with any tactical callsign system, there

are exceptions to the rule. Occasionally a six to fifteen word callsign will include numbers, such as WHITE RIDGE 53, or an aircraft type with three numbers, such as CAMEL 104. Why is unknown, but these oddly configured tac calls may be used by ABCP/recon types for specialized applications.

Airborne Command Posts

SAC has several ABCP (AirBorne Command Post) type aircraft, not just the one we are familiar with. Basically they are:

***ABNCP** AirBorne National Command Post. These EC-135C aircraft are the airborne counterpart of the underground SAC command and control center at Offutt AFB NE. One is always in the air, 24 hours a day, 7 days a week, 365 days a year, with one or more on ground alert. (SAC has 14 EC-135C ABNCP aircraft.)

The ABNCP carries an officer of general rank and has the authority, if SAC HQ at Offutt is destroyed and the NCA is incapacitated, to transmit and implement the order for our nuclear retaliatory strike.

***ABLCC** AirBorne Launch Command Center. There are 1,000 Minuteman ICBMs, of which ten each are assigned to a specific underground LCC (Launch Control Center). In the event of war, if any of the 100 LCCs are knocked out, or in any other

way are incapable of firing their ten missiles, the ABLCC will do it. For this purpose, several ABLCC aircraft are designated to orbit in the general vicinity of our Minuteman bases. They have such an overall control capability that it is said that just three ABLCC aircraft can launch the entire 1,000 Minuteman force. The ABNCP and the ABLCC are part of PACCS: the Post Attack Command & Control System.

***ABCCP** AirBorne Communications Command Post. Also known as an AirBorne Communications Radio Relay. These EC-135s would take over as airborne SAC commstas, since it is quite apparent that all SAC ground commstas would be hit at the onset of war. Their prime onset war function is integrated with PACCS—to insure worldwide broadcast coverage for the go-code.

***ABTFCP** AirBorne Theater Forces Command Post. As the name implies, it provides an airborne command and control for U.S. (and allied) strategic and tactical military forces in areas such as Europe and the Pacific. Another counterpart provides C&C for the Commander in Chief Atlantic and Pacific forces.

***NEACP** National Emergency Airborne Command Post. There are four E-4B aircraft (modified Boeing 747s) for this role. Manned by SAC crews, the NEACP is to be used by the President and the Joint Chiefs of Staff. As such, NEACP represents the NCA (National Command Authority). Unlike the

ABNCP and ABLCC, the NEACP can only issue the go-code for the retaliatory strike; it cannot implement it in any other way. The NEACPs are capable of tying into nationwide telephone and BCB radio networks, and if required, make announcements to the general public. Since there are four NEACPs, it is assumed that each would take turns at flying training missions, while the others remain on ground alert.

As such, at any given time, there are more than one ABCP type aircraft in the air. Determining which callsigns belong to an ABCP (and which specific type) requires a monitor with a good deal of experience with SAC communications. ABCPs usually use the six to fifteen word/two word callsign series, but have also been known to use the three to five letter plus two to three number aircraft type callsign. ABCPs can operate not unlike the SAC ground commsta, and it is believed they can utilize more than one callsign while airborne. SAC ABCPs and NEACPs do turn up on the USAF GCCS frequencies, too, but as I said, it takes experience to determine this.

Looking Glass

Looking Glass is a term used to designate ABCP operations. It is never used operationally, but can be heard on SAC HF channels. When so, it usually indicates that a high ranking government official is being treated to a demonstration. To simplify matters, the

ABCP participating in the demo can be referred to and use the Looking Glass callsign.

USN ABCP

The U.S. Navy ABCP counterpart is the EC-130Q TACAMO aircraft (Take Charge And Move Out). There are two squadrons—one based on the east coast USA, the other on Guam. One TACAMO from each is always airborne at all times. They carry a one mile and a six mile long antenna, which are reeled out when on station. The aircraft flies slow enough to allow the bulk of the antennas to hang vertically. The Navy ABCP is designed to provide a VLF comms relay to submerged U.S. fleet ballistic missile submarines. In the near future, the EC-130Q will be replaced by modified Boeing 70's, designated E-6A.

SAC LCCs

The LCCs are the SAC underground ICBM launch control centers. One LCC is required for each Titan 2 missile, but only one LCC is required for every ten Minuteman missiles. LCCs do appear on SAC HF channels, and use the six to fifteen word/two word type callsign. Here, too, determining if a callsign was an LCC requires extensive experience with SAC comms.

Recon Aircraft

Those of you who yen to hear an SR-71, U-2, TR-1, or Elint 135 probably have, but

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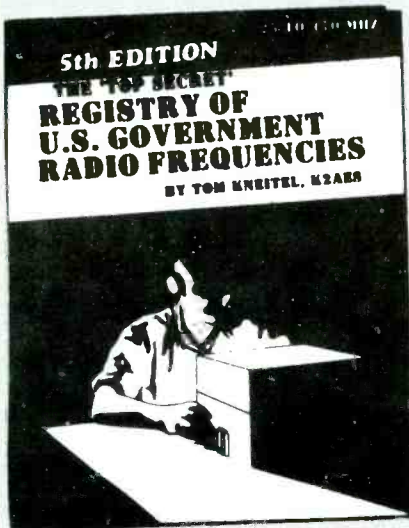
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you never realized it. Undoubtedly they would use the typical SAC aircraft callsign type, making them undistinguishable from a bomber or tanker. And to make things even more difficult, there is no reason to believe that they would not also use the six to fifteen word/two word types.

In a few rare instances, monitors have reported a very peculiar transmission on SAC channels. An example: BIMBO 39 either contacts a commsta or passes the following type message in the blind, a-la the "Skybird, Skybird, this is BIMBO 39" routine. "I am XX miles over international airspace, on course, time XXXX zulu . . ." This in the clear transmission is used to legally establish the presence of a recon aircraft, which is in the vicinity of a foreign nation's border. If, for example, BIMBO 39 was off the coast of Asiatic USSR, not only are the Soviet's tracking the aircraft, they are also monitoring USAF frequencies. This message serves to inform them of what they already have guessed—a U.S. recon aircraft is in their vicinity. Since both sides regularly conduct recon missions, this fact is stated very plainly, in order that the other side does not misinterpret the motivations of the aircraft they are tracking. When it comes to spying, certain aspects do have ground rules both sides normally follow.

Aircraft Messages

SAC aircraft transmit a variety of messages. The most familiar is: "ops normal, negative relay . . ." Most of these come from tanker aircraft. SAC bombers, recon, ABCP types fly a preplanned flight profile, and if everything is nominal, there is no need to state the obvious.

The other major aircraft comms heard on the air/ground channels are direct phone patches, the pass-to or relay-to types, and requesting working frequencies for Phone patches often are to airbase metros, and the aircraft merely wants the weather conditions expected at their time of arrival. Other phone patch traffic can be encoded messages or cryptic statements.

The "pass-to or relay-to" messages usually involve the JJ Weather or JJ ADBAR reports. Both JJ WX and JJ ADBAR appear to be related to training exercises. When there is considerable comm activity (i.e. an exercise), the JJ reports are quite evident. When comms are relatively quiet, no JJ reports are normally heard.

Comm Initiation

Normally, when an aircraft initiates comms, it is of this example: "Skybird, Skybird, this is ELKIN 55 . . ." Skybird is the equivalent of CQ. It simply means, "any SAC commsta hearing my call, please respond." If the aircraft has been in previous contact with a specific commsta, it would first try to re-establish comms with—"SUBSONIC, SUBSONIC this is ELKIN 55 . . ." In either example, the aircraft R/O may also include the HF channel " , on Quebec."

Since aircraft tac callsigns may sound like

one thing, but are actually spelled differently, an aircraft which the commsta R/O has not worked before will be requested to first spell his callsign, then go ahead with the traffic. This callsign spelling, via phonetics, is a routine procedure. In fact, often the aircraft R/O will request the commsta to spell its callsign, too. After, comms could take this form: (from ELKIN 55) "Pass to ELKIN CONTROL & EXAMINE, I spell, Echo Lima Kilo India November CONTROL and EXAMINE, I spell, blah, blah, blah . . . JJ Weather . . ."

If the CONTROL has the same callsign as the aircraft, most probably it is the aircraft's own airbase or wing CP. If different, it could be the air division or command center the aircraft is required to inform. The other reference (EXAMINE) serves a similar purpose. For JJ WX, it is probably a centralized weather collection source.

JJ Weather

The full title is: JOPREP JIFFY (Weather or ADBAR). JOPREP is assumed to stand for Joint Operational Report. JIFFY may indicate a condensed version of that report. Let's take a quick look at these reports.

JJ Weather has between eight and ten itemized references. ITEM ONE is either ONE BRAVO or ONE ECHO. Since these are the only two designations used for item one, it can be assumed they signify the report to be either of a low or high altitude weather observation type.

The ONE BRAVO version has eight items, with often item eight not given or indicated as none. Items two, three, and four include the aircraft's tac callsign, time of observation, and the air route corridor during said observation. Items five, six, and seven are normally one phonetic letter each. As they often are the same, report to report from different aircraft, it is presumed they indicate very generalized conditional states.

The ONE ECHO version has items two, three, four, five, and six, indicating aircraft callsign, observation time, flight level, and geographical coordinates. Items seven through ten (sometimes not all are given) are probably more specific in their reference meanings, pertaining to weather conditions encountered.

JJ ADBAR

The exact spelling of ADBAR is not certain. Phonetically it sounds like either ADBAR, ADVAR, ATBAR, or ATVAR. No matter, what JJ ADBAR refers to is unknown, but educated guesses can be made.

JJ ADBAR normally has between eight and fifteen items references, either being ALFA or WHISKEY (occasionally XRAY, too). Example of the JJ ADBAR presentation: "ITEM ONE - ALFA . . . ITEM TWO - ALFA . . . ITEM THREE - WHISKEY" and so on. In this format the guess is that the JJ ADBAR report refers to aircraft system performances, with Alfa or Whiskey meaning go or no-go status. Xray then could be used to indicate (via its item number) that the par-

ticular system/device it refers to is not installed aboard the aircraft.

JJ ADBAR reports can also be in the neighborhood of only two or four items. These often have various alpha numeric references per item. Here the guess is that these short ADBAR reports refer to results of (simulated) bomb runs/airborne missile launches. Of course these are just educated guesses, which may or may not reflect the real purposes of the JJ ADBAR reports.

Monitoring does indicate that the aircraft sending both JJ Weather and JJ ADBAR reports are probably bombers, since call signs identifiable as belonging to tanker aircraft never seem to send JJ ADBAR, just JJ Weather.

In any event, the JOPREP JIFFY reports are apparently by-products of training exercises then in progress.

Request HF Frequency For

This is another typical comm heard on the SAC air/ground channels. Normally a station contacts a commsta and requests the working frequency for station so and so. The commsta would always reply with the channel ident and not the actual numerical frequency. These working frequencies are routinely one of the non-air/ground channels, and extensive monitoring of these lesser utilized frequencies indicates that all aspects and levels of SAC can be heard there.

At times, when you switch over to the working channel, you hear only the station making a radio check. Other times cryptic phrases are passed back and forth. One familiar type comm encountered on these non-air/ground channels is the request to secure the net.

Typical example: BONE YARD contacts MASONARY and requests to secure the net. MASONARY would then say, "request you authenticate Mike Hotel . . ." BONE YARD would reply with a single phonetic letter, such as Delta. Then BONE YARD would ask MASONARY to authenticate a double phonetic series, such as Papa Echo. After MASONARY replies with its single phonetic letter, if the challenge and reply authentications were correct, MASONARY allows BONE YARD to secure. Many of this type, request to secure/challenge and reply, involve ABCP type aircraft coming off station and its ground controller. The controller is probably SAC HQ at Offutt, but could also be the ACCS/ARS command post which the ABCP aircraft is assigned. In addition to Offutt, the others are located at Ellsworth AFB SD, Grissom AFB IN, Hickman AFB HI, Seymour-Johnson AFB NC, and Mildenhall UK. By the way, the abbreviations stand for: ACCS—Airborne Command & Control Squadron and ARS—Airborne (radio) Relay Squadron.

There are also a broad class of transmissions heard on air/ground and the lesser used channels that contain alpha numeric texts, but are not using the structured formats of Skyking DNA or the EAM/CTM

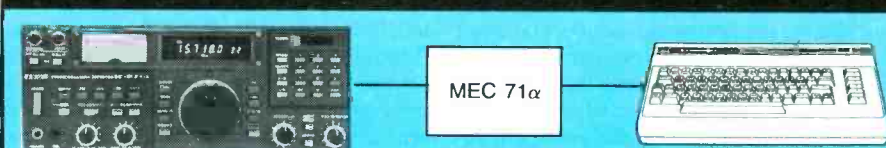
broadcasts. In addition, they contain the usual time reference and the two phonetic letter authentication. Transmissions are either made in the blind or to a specific station. Sometimes a comm exchange follows, but otherwise there is no reply. Who transmits and are designated to receive these transmissions could range from SAC HQ to the individual wing CPs. The purpose of these comms is unknown, just another one of the many enigmas of SAC comms.

SAC Comm Activities

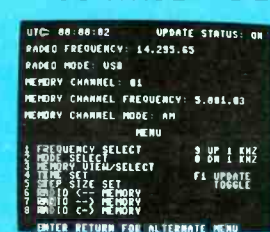
During daylight hours in North America, it is normal to hear a fair amount of activity. After dark it might dwindle down to virtually

nothing except for the Skyking and CTM broadcasts. When large training exercises are in progress, things liven up considerably. Once a year, SAC conducts the Global Shield exercise. This is simulated all-out nuclear war and involves virtually all of SAC except for the alert bombers and the primary PACCS aircraft. During such times, comms are hectic, with most of the SAC channels carrying plenty of traffic. You will also hear deliberate jamming of transmissions with audio noises that can range from rock music to buzz saw and other nerve shattering sounds. Also, the USAF Electronic Security Command will be hard at work sending phony messages. A major exercise

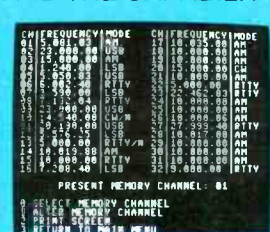
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would be easy to spot, for other than the large amount of comms, virtually all traffic must be challenged and authenticated. So, if you don't normally monitor SAC and happen to tune in and hear hectic activity, calm down. It is not the start of World War III, merely a large training exercise.

Wrap Up

This basically is SAC communications. It is quite obvious that it was impossible to cover all types of comm formats, for their variety are as numerous as the stars in the night sky. But by understanding what was discussed here last month and this month, you should at least have a better understanding of the generalities surrounding these communications. Unless you are a rabid SAC buff, most will find SAC comms to be intriguing, but little more beyond that. Copying the call signs serves no useful purpose, for all the good it will do you, you could assemble a similar list by merely listing every three to fifteen letter word or two word combo found in the dictionary. QSLing SAC is a no-no, so don't even think about it, even if you could figure out who was who.

I want to point out that this entire discussion and subsequent speculations were completely derived from monitoring and from information contained in unclassified public access publications.

I would also like to thank the two individuals who provided invaluable assistance in compiling this SAC discussion. Both wish to remain anonymous, so I'll just say, thanks guys.

One Final Word

When you monitor SAC comms be aware of the reality. You are tuned into the Air Force Command, whose job it is to deter aggression, by presenting to a potential adversary a very able force, ready to retaliate if

given no other choice. Because of this, SAC continually practices and perfects every aspect of its overall operation. This is basically what you and I hear on the SAC channels.

It is said that if the unthinkable ever occurs, the flurry of SAC comms will dissolve into a single (and we believe short) EAM broadcast message, being repeated over and over by all SAC commstas. Even if you do monitor it, you probably won't realize what it is, but depending on your proximity to a priority target, within 6 to 30 minutes everything for you will become academic. So take a minute to think about what you are monitoring. It is basically a game, but the biggest and scariest game in town.

Intercepts Section BY DON SCHIMMEL

Many readers provide intercepts relating to Hurricane Gloria, but John Collins, Florida, furnished the most descriptive material with his copy of the exchange between Albrook AFB, Panama and TK26, a Hurricane reconnaissance aircraft. Excerpts of the conversations follow: TK26 estimated their arrival in Antigua at 0800 and indicated they would continue to pass observations on the storm for another hour. The storm was then described as "quite a storm, an absolutely beautiful great classical storm. The highest winds we picked up was 126 knots just on the eastern side—the northeast quadrant had the most activity in it. Coming in the last time (there were) numerous lightning strikes around the area, as a matter of fact we had a couple of them extremely close to the airplane and on the last six, we did notice the eye was closing in on the top—It looks like a pretty big movement of traffic up to 7,000 to 10,000 feet inside the eye. However, the eye itself was still somewhat visible, even though we couldn't see the surface winds—

Wish it had been daylight or enough moon so we could have seen the water, then we could have seen some good winds there. Do you have any questions?"

Albrook told TK26 that they had experienced a once in a lifetime opportunity and added "Appreciate the detailed information. Too bad the moon wasn't full, you would have quite a picture out there. Yes, the winds are hitting about 130 which about the maximum you could estimate. Other crew all primed and ready to go and will pass along the information concerning loss of altitude, airspeed, and increase of G's. They can't wait to get out there, so, I think tomorrow will be pretty impressive, nothing further at this time. Forecasters would like to pass along a well done, especially a storm like this, you deserve a gold one."

Our thanks to John for sharing this superb bit of monitoring.

Several readers have inquired as to when they could expect to see their loggings in the column. As with any national monthly, there is some lag between my receiving items and the appearance of those items in the magazine. While I do try to choose items from each submitter, sometimes I cannot use some because they are duplicates of frequencies that have recently appeared in the published loggings. Also, some intercepts are forwarded incomplete, lacking too many elements of information. Finally, and this does happen every once in a while, I am simply unable to decipher the handwriting!

Another POP'COMM reader, Bud Stacey, Alabama, has some questions about communications he has heard in the 26 MHz band. Here is what he had to say: "I monitor this band from time to time, trying to catch the remote pick-up broadcast support stations. While tuning, I have found several AM and FM Spanish language telephone communications. The FM transmissions are in the lower 26 MHz range, while the AM transmissions correspond to US CB channels 1 thru 8 (26.965 to 27.055 MHz). Since my Spanish isn't too good, I can only catch bits and pieces of the conversations, and I don't know where they originate. Maybe someone can shed a little light on the subject."

Here is the listing of the different telephone communications observed by reader Stacey:

- 26010 FM, Conversation in SS between OM & YL, with beeps every second. At end, one long tone. Heard at 1831.
- 26050 FM, at 1827, SS voice traffic: Pulse dialing at 1829 then busy signal. Heard ringing later.
- 26420 FM at 1636. SS conversation then dial tone & dialing.
- 26010 FM at 1744. Lots of dialing & tones, as if placing overseas call, again at 1813.
- 26380 FM at 1649. More telephone calls.
- 26420 FM at 2114. Same as above.
- 26050 FM at 2117. Dial tone with SS voice mixed in, sounded as if they couldn't figure how to dial.

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26050 FM at 2107 with continuous dial tone.

In regard to the AM transmissions, Stacey stated "These seem to utilize an operator to dial for the parties involved. Also, when this operator signs off, or unkeys, there is a short 'pip' like a subdued 'Roger Beep' on export CB rigs." Editor note: Perhaps one of our readers can enlighten us with some information/identification of these telephone transmissions from South of the Border.

Now, for this month's loggings.

124: CKN/C13E, Vancouver BC, CW weather at 1031 (James Borglum, CA).

280: IPA, Isla de Pascua (Easter I.) beacon at 1057 (Borglum, CA).

373: PQ, Tate Yama, Honshu I., Japan beacon at 1258 (Borglum, CA).

385: GUM, Agana NAS, Guam beacon at 1340 (Borglum, CA).

390: HBT, Humboldt, AK, beacon at 1253 (Borglum, CA).

396: ZBB, Bimini, Bahamas beacon at 0419 (George Osier, NY).

438: CFH, Maritime Command, Halifax NS in CW w/N. Atlantic iceberg info. Also beacon info for ECNA at 0149 (Osier, NY).

513: BG, Fairfax, KS, beacon at 0725 (Chris Cooper, WI).

515: OS, Columbus, OH beacon at 0731 (Cooper).

516: YWA, Petawawa, ON beacon at 0752 (Cooper, WI).

517: FN, Clinton, IA beacon heard all hrs. Also heard here at 0755 an ID of RRRQ (Cooper, WI). RRRQ listed as Rock Rapids IA on 515 kHz-- Ed.

520: TO, Topeka, KS beacon at 0755 (Cooper, WI).

521: INE, Missoula, MT beacon at 0802 (Cooper).

522: ORC, Orange City, IA beacon at 0805. Also heard GF beacon at Cleveland OH (Cooper).

524: VOC, Iowa City, IA beacon heard all times. Also heard AJG, Mt. Carmel, IL, & HEH, Newark OH at 0812 (Cooper, WI).

526: OJ, Olathe, KS beacon at 0815 (Cooper).

529: NB, No. Bay, ON beacon at 0830 (Cooper).

530: CFYI Int'l. Airport TIS station repeating air terminal info (possibly Toronto) at 0835. Also KFE940, Dallas/Ft. Worth TX Int'l. Airport TIS station with repeating info tape at 0500 (Cooper, WI).

1610: TIS station repeating expressway info for Chicagoland area, also giving temp & WX data at 0100. QRM from broadcaster in Anguilla gives this station a loud low heterodyne with "cricket" sound in background (Cooper, WI).

1613: RAB, Rabinal, Guatemala, beacon at 0305 (Cooper, WI).

1665: LAG, Lago Agrio, Ecuador, beacon at 0414 (Cooper, WI).

1684: MER, Mercaderes, Colombia, beacon at 0613 (Cooper, WI).

1721.5: S, un-ID beacon at 0208 (Tom Kneitel).

1746: Multiple sonar-like pips every night at 0700 (Cooper, WI).

2670: NMF, USCG Boston, MA, USB w/notices to mariners at 0510 (Jack Wilson, KY).

2680.4: DHJ59, Wilhemshaven Naval R., FRG, in CW at 0325 w/VVV & calling "G23B" (Kneitel).

2716: USS WILLIAM V. PRATT (DDG-44), a Guided Missile Destroyer, in USB at 1125 working Norfolk Port Control (Kneitel, NY).

3044: VRG (probably a tactical ID) calling AJA in CW at 2322 (Kneitel, NY).

3090: 5L groups, USB, SS/YL at 0137 (Kneitel).

4066.1: USS ENTERPRISE (CVN-65), Aircraft Carrier (nuclear propelled), in USB at 0112 working CSS-1, San Diego (CSS-1 an 4360.5) w/phone patch (Daryl Symington, OH).

4097.1: 3FIP2, SS GALILEO in USB at 0423 w/phone patch to thru WOM, Miami (4391.5 kHz) (Symington, OH).

4131.1: Several marine stations in USB at 0538. A popular phone patch frequency (Wilson, KY).

4224: ZRQ, Cape Naval R., Simonstown, RSA in CW V-marker at 0156 (Darrell Lingenfield III, PA).

4241: ZSD, Durban, RSA in CW at 0205 (Lingenfield, PA).

4249: ZLP2, Iritangi Naval R., New Zealand in CW w/call tape at 1214 (Osier, NY).

4277: ZLB2, Awarua, New Zealand in CW w/call tape & traffic at 1055 (Osier, NY).

4279: CTP93, Oeiras Naval R., Portugal in CW w/V-marker at 0610 (Lingenfield, PA).

4283: ZS, NAVCOMCEN, Silvermine, RSA in CW at 0205 (Lingenfield, PA).

4298: PPO, Olinda, Brazil, in CW with WX in Portuguese/English at 0225 (Osier, NY).

4303: CTV, Monsanto Naval R., Portugal, CW w/call tape at 0435 (Osier, NY).

4317: ZSC33, Cape Town, RSA in CW at 0237 w/call tape (Osier, NY).

4623: NGR, USN Neo-Makri, Greece, calling NUKO (all USN ships) & CQ in CW at 0103. This freq. also noted with CW 5L groups at 0216 (Kneitel, NY).

4637.5: KFC699 & other stations with towboat traffic in USB at 0705. Mile numbers given, fuel reports & inspections (Ted Moran, IL). Noted at 1202 w/ID "KFC699 Houston Base" working Units 3 & 4 (Kneitel, NY).

4670: 4F groups, SS/YL, USB at 1139 (Kneitel).

4704: Halifax Military, in USB at 1200 working "5PP", also 850/75 encrypted RTTY and unknown data transmission mode (Kneitel, NY).

4725: USAF (SAC) in USB at 0602 w/coded traffic (Wilson, KY).

4746: USAF (SAC) in USB for OZZIE 55 & CEN-55; WX for Bermuda at 0605 (Wilson, KY).

4755: XJP81, St. Johns, NB, in USB at 1214 working VCRJ & VCWX (ships; one was 420 miles SSW Bermuda) (Kneitel, NY).

4781: 5L groups, CW at 1207 (Kneitel, NY).

4835: USS INCHON (LPH-12), Amphibious Assault Ship (Helicopter), in USB at 1238 working Shipyard Control (Kneitel, NY).

4850: 5L (phonetic) groups, USB, YL, fall owed by EE/OM asking "repeat please" at 0618 (Paul Doi, AZ).

4868: FDY, Orleans (Air Force), France, in CW at 0510 (Lingenfield, PA).

4886: KKN44, U.S. Embassy, Monrovia, Liberia, in CW at 0221 w/VVV tape and "QX 4/7/11/17/23" (Kneitel, NY).

5097: CFH, Maritime Command, Halifax in CW w/traffic list at 0754 (Glenn Finerman, NY).

5205: Victor 1 Tango working Whiskey 7 Hotel, USB at 1248 during Hurricane Kate. Sounded like Florida National Guard (Kneitel, NY).

5240: FDY, Orleans (Air Force), France, in CW w/VVV at 2136. At 0357 beacon "X" noted here (Kneitel, NY).

5258: CMU967, Havana, Cuba (Soviet Navy) in CW w/VVV at 1316 (Kneitel, NY).

5307.1: D beacon at 2304 (Kneitel, NY).

5308.1: O beacon at 2304 (Kneitel, NY).

5308.4: Z beacon at 2304 (Kneitel, NY).

5355: CCS, Santiago Naval R., Chile, in CW at 0132 (Lingenfield, PA).

5390: Canadian 2-way net, French language, a YL op at one station, 1323 (Kneitel, NY).

5426.8: LBA2/6/10, Stavanger Naval R., Norway, w/call marker at 2142 (Kneitel, NY).

5616: N.Y. Radio, USB at 0530 w/aera traffic (Wilson, KY).

5683: A type C-130 aircraft carrying meteorologists back from observation of Hurricane Gloria, USB w/phone patch to McDill AFB; storm stats, flight sked & CNN interview at 0056 (Dwayne Walker, IL).

5697: USCG Portsmouth & Boston exchanging info about Cutters reporting vessel sightings, positions, etc. at 2200 (George Green, GA).

5748: 5F groups, GG/YL recorded voice, USB at 2314 (Kneitel, NY).

6337: ZRH, Fisantekraal (Cape Naval R.) RSA in CW at 0321 (Lingenfield, PA).

6371: 6VA, Dakar, Senegal, CAP at 0621. Off frequency, usually on 6386 kHz (Lingenfield, PA).

6428.5: VHP3, Canberra, Australia in CW w/call tape at 0730 (Finerman, NY).

6462: FUM, Papeete (French Navy), Tahiti, in CW w/call tape at 0815 (Moran, IL).

6506.4: USCG Kodiak, AK, in USB at 0215 (Szalony, CA).

6573: SS/YL "Atencion 744/65" into 5F groups at 0823 (Moran, IL).

6598: Un-ID CW station w/high-speed xmsn of encoded traffic (Cyrillic letter codes) at 0430 (Camel, IL).

6649: ICAO So. American air traffic control in USB at 0825 (Moran, IL).

6673: Aircraft NOAA 42 in USB w/Vortex Report on Hurricane Gloria to KJY74, Miami Monitor at 2230 (Symington, OH).

6679: San Francisco R., VOLMET b/c, USB at 0827 (Moran, IL).

6693: Halifax Military & St. Johns Military in USB at 1307 working "8060" (Kneitel, NY).

6740.5: 5L groups, CW at 0530 (Symington).

6761: USAF (SAC), Evergreen calling Blueberry. Tenacity (McDill AFB) calling Evergreen & passing coded traffic followed by Skyking b/c (Wilson, KY).

6842: 3/2F groups, EE/YL, "End" at 2230 (Moran, IL).

6868.5: 5L groups, CW at 0406 (Kneitel, NY).

6948.4: 5F groups, SS/YL, AM mode at 0635; "finale finale" at 0643 (Finerman, NY).

7520: 5F groups at 0432, MCW mode; sent 68T TTTT then carrier off at 0433 (Finerman).

7655: 5F groups, SS/YL, at 2212. Possibly live; YL w/odd accent, maybe Russian or French. Didn't sound like the usual b/c (Moran, IL).

8090: 5L groups, CW at 0237 (Kneitel, NY).

8438: 7TA6, Algiers, Algeria in CW at 0840 (Lingenfield, PA).

8496: Havana (Cajimar), Cuba, in CW working another station (not heard) (Camel, IL).

8588: HPP, Panama IntelMar R., in CW w/freqs & traffic list at 1257 (Osier, NY). Ed. Note: HPP also monitored 12698 & 16868 kHz. HPP now handling traffic formerly handled by HPN60 (Puerto Armuellas). HPN60 went QRT Sept. '85. HPP also operates 4275/6423.5 kHz w/CW traffic list run every odd hour (GMT) followed by RTTY traffic list & USB traffic list sent every even hour (GMT).

8720: CLS, Industria Pesquera, Havana, Cuba, CW call tape at 1219 (Osier, NY).

8984: USCG COMSTA New Orleans, USB w/phone patch to aircraft 1704; switched to 5696 kHz. Flight being terminated because of low fuel (Wilson, KY).

9094: 5F, CW w/cut #'s at 0600 (Kneitel)

9126: 5L groups, CW at 1336 (Kneitel, NY).

10563: FTK56A, Paris, France, CW w/VVV tape at 1907 (Kneitel, NY).

10646: French Telecommunications Network, Paris, USB at 1810, EE/FF/YL voice mirror (Kneitel, NY).

11630.5: 5L groups, CW at 2156 (Moran, IL).

12022.5: KKN50, U.S. Dept. of State, Washington, DC, w/CW call tape at 2050 (Kneitel, NY).

12220: 5L groups, very slow CW at 1743 (Kneitel).

12281: 7FO in CW w/call tape at 1651 (Osier, NY). Indonesian allocation-- Ed.

12328: WHD576, Medical Advisory Service working Research Vessel ENDEAVOR regarding injured crew member (Green, GA).

12660: WSL, Amagansett, NY, in CW w/WX & call tape at 2125 (Moran, IL). When did they reactivate this station?-- Ed.

12660: 7TAB, Algiers, Algeria in CW w/call tape at 1452 (Osier, NY).

12737: PPR, Rio de Janeiro, Brazil, in CW w/call tape at 2259 (Osier, NY).

12750: CWA, Cerrito, Uruguay, CW w/call tape at 2301 (Osier, NY).

12829: XFM, Manzanillo, Mexico, CW w/call tape at 0016 (Osier, NY).

13042: DDK, Quickborn, GFR, CW call tape at 1401 (Osier, NY).

13079: HEF, Pass Berne, Xwitzerland, CW w/call tape at 1549 (Osier, NY).

13080: HEC13, Berne, Switzerland, CW w/call tape at 1407 (Osier, NY).

13241: Aircraft SAM 30501 in LSB at 1940. This was a VIP flight working Andrews AFB. Landing at Dublin carrying new ambassador (Symington, OH).

13387: 4F groups, EE/YL in USB at 1413, this was very clear & not a tape (Osier, NY).

13800: This was center freq. of 13779-13811 kHz where very strong buzz w/pitch changes noted at 1920 (Moran, IL).

14360: KWS78, U.S. Embassy, Athens, Greece, in CW w/call marker at 1311. Monitored late last November on day the Egyptian airliner was skyjacked to Malta from Athens (Kneitel).

14467: NNNONAP, MARS station aboard USS MILWAUKEE (AO-2), oil tanker, in USB w/phone patch at 2200 (Symington, OH).

14968: CMU967, Havana, Cuba (Soviet Navy), in CW at 1955 working RMPV (Kneitel, NY).

15032: McClellan AFB (CA) working aircraft 40630 at 0040 (Green, GA).

15619: 5F groups, CW w/cut #'s at 1522 (Kneitel).

16015: RMP, Rostov, USSR, in CW with XXRMP followed by odd letter traffic at 1341 (Osier, NY).

16800x: Un-ID CW stations exchanging 5 character (mixed F/L) groups at 2345. Heard stations FUG, KCH, LAX, NVM. Receiving stations requested many repeats (Mr. K, MO). Possibly military training net.

16865: UJY, Kaliningrad, USSR, CW w/VVV at 1312 (Lingenfield, PA).

16876.1: FUG3, LaRegine Naval R., France, in CW w/call tape at 1645 (Moran, IL).

17170: PPL, Belem, Brazil, CW at 2235 (Lingenfield, PA).

17344.5: EHY, Pozuelo del Rey, Spain, USB w/high-seas telephone traffic at 1630 (Moran, IL).

20345: D6B403, Moroni, Rep. of Comoros (Comoros Islands), USB at 1655 (Lingenfield, PA).

27926.6: WPD, Tampa, FL, in CW w/CQ at 1817. A harmonic or image of some lower frequency (Kneitel, NY).

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