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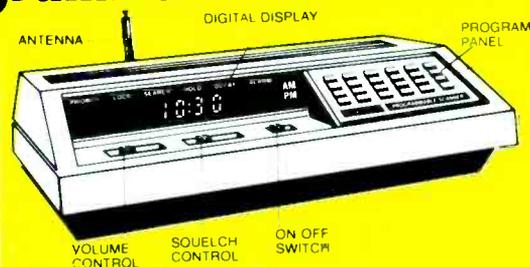
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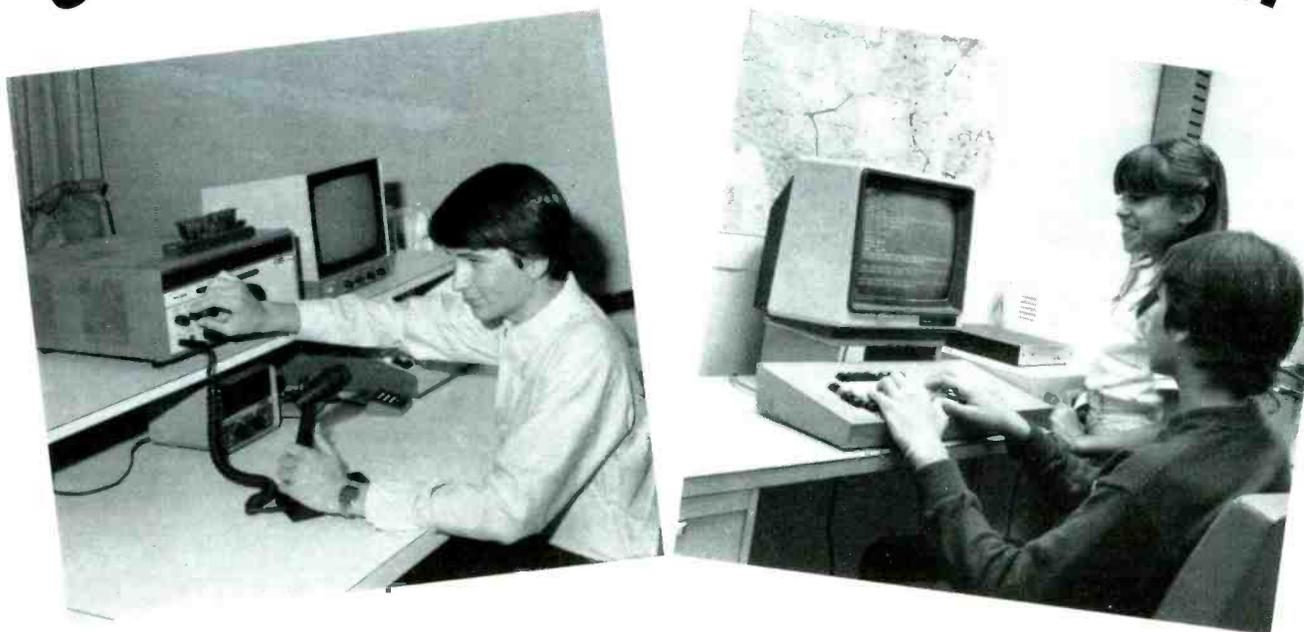
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POPULAR COMMUNICATIONS

Now Incorporating
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This month's cover: POP'COMM's own Alice Brannigan at the controls of the new Grundig Satellit 650 all-band portable. Photo by Larry Mulvehill, WB2ZPI.

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Wordy Gurdy

Several years ago I purchased a piece of communications equipment that had been imported from overseas by a small company. The equipment, although complex, was exactly what I had been looking for. I'm a member of that select group of hobbyists who like to read instruction manuals before operating electronics gear, and I was in for an unpleasant surprise when I took a look at the instructions for that particular hunk of hardware.

Essentially, the instructions were in badly fractured English and looked as if they had been translated from another language, word-by-word, using a cross-language dictionary. It was virtually impossible to make any use whatsoever of the manual. Even after I was able to get the equipment operating by means of guesswork, it was still impossible to go back to that manual and come up with little more than a vague notion of what it was trying to say about operating the equipment. It may well be that this hapless document was the inspiration for the Electronic Communications Privacy Act, for never have I received such an avalanche of mail, all from readers who are at a loss to figure out just what the ECPA is all about.

Especially confusing to listeners, and even certain members of the equipment industry, has been the ECPA's potential impact on the future of receivers, converters, and scanners capable of receiving certain (notably Cellular Mobile Telephone) frequencies. The wording in the ECPA is either too vague or ambiguous, and (worst of all) it was set down on paper by persons who are either unwilling or unable to express thoughts in terminology that is relevant to most of those who are supposed to be concerned with what it has to say. Some who have written to me think that equipment capable of picking up CMT frequencies has been outlawed; others say that the scanners should be unaffected. I've heard from scanner dealers asking if *this* or *that* model is being discontinued. It's amazing how much confusion the ECPA has caused; it's got a number of folks in a genuine quandry.

Undoubtedly, one of the things that added to reader concern was Radio Shack's decision to eliminate coverage of CMT frequencies in their new PRO-2004 scanner, since this model had originally been announced to include them. Many who wrote had the impression that the ECPA had been invoked against Radio Shack in order to force this frequency coverage change. Nothing could be further from the truth.

In a memo dated 13 January (which was before the ECPA went into effect), Radio Shack HQ notified its store managers that "the frequency coverage of the PRO-2004 has been changed to eliminate the segments that cover cellular telephone . . . This was done from unit number one at the time of manufacture and it is not a modification as it is part of the microprocessor chip program. The present stock has an addendum in the manual and future shipments will have the box and manual changed to reflect the new coverage."

The unsigned memo went on to explain: "Radio Shack does believe in open access to the air waves for the public; however, we also support the Electronics Communications Privacy Act . . . which extends privacy protection to cellular communications as well as all encrypted communications. The telephone has, like the mail, been considered a private form of communication and whether it goes by wire line, microwave, satellite or radio waves, Radio Shack feels that it should remain private. We do not feel that this in any way changes the traditional use of listening to the air waves by the public."

Radio Shack, which sells CMT equipment, is (of course) entitled to endorse the ECPA and to voluntarily change the announced specs for the PRO-2004. Changing announced specs prior to production is nothing new or revolutionary in the field of electronics. From the tone of Radio Shack's memo, we can only assume that references to CMT channels as well as those used by all other mobile telephones and stations using voice scramblers might well end up being yanked from their *Police Call* directories. Only time will tell how far Radio Shack will wave the flag for the ECPA; presumably, it could have a substantial ripple effect on several of their products.

To say the very least, it has had an effect upon a public and industry waiting and watching to see how the dust from the ECPA is going to settle. A reader in California wrote to me in January to express his surprise at opening the carton of his new PRO-2004 only to find that it didn't cover CMT frequencies as he had expected (and hoped). No less than eight Radio Shack store managers sent me copies of the company memo and expressed no little amount of disappointment at the company's decision.

One manufacturer of UHF receiving equipment (not Radio Shack), in an effort to get a better grasp on the implications of the ECPA, requested that a prestigious Wash-

ington law firm that has many communications clients, look over the ECPA and offer an opinion about what effect (if any) the legislation could or would have on receiving equipment.

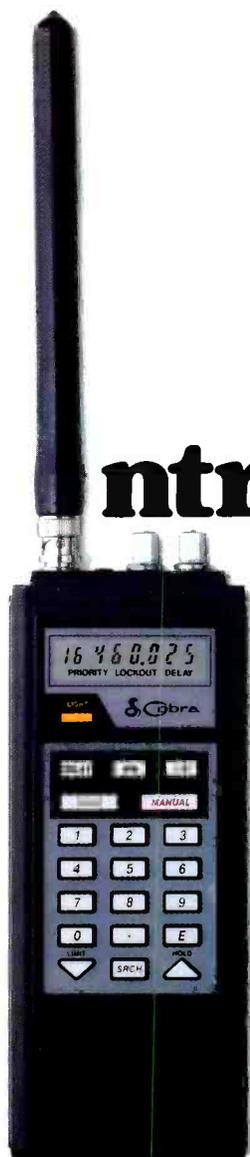
In response to this inquiry, attorney Dan J. Alpert of the firm of Baker and Hostetler, noted that while the original 1968 Wiretap Act "did not attempt to address the interception of text, digital, or machine communications," that "even under the former law, certain agencies have taken the position that the interception of cellular telephone calls has always been illegal because the calls occur *in whole or part by wire*, which was prohibited under even the former law."

Alpert pointed out that, "certain definitions in the relevant statutes have been changed in such a way as to specifically include cellular telephone calls under the Act. *Wire communications* is redefined to encompass the transfer of the human voice (an *aural transfer*) made in whole or part with the aid of wire, cable, or like connection between the point of origin and the point of reception. The radio portion of cordless telephone communications are excluded from this definition. *Electronic communications* covers any transfer of signs, signals, writing, images, sounds, data, or intelligence of any nature transmitted in whole or part by a wire, radio, electromagnetic, photoelectric or photooptical system. The radio portion of cordless telephone communications, again, are excluded, along with communications from tone-only paging devices or tracking devices. *Oral communications* refers to communications uttered orally by a person exhibiting an expectation that such communication is not subject to interception (under circumstances justifying such expectation)."

Under the ECPA, Alpert points out, "it is illegal for anyone to willfully intercept or use; endeavor to intercept or use; or procure any other person to intercept or use, or endeavor to intercept or use, any wire, oral, or electronic communication."

The attorney then advised the equipment manufacturer that the section which should be of most concern is the "revised Section 2512 of Title 18 of the United States Code. It is an offense, under the new law, to willfully send through the mail, carry in interstate commerce, manufacture, assemble, possess, sell or advertise any electronic, mechanical, or other device, if you know or have reason to know that the design of the

(Continued on page 74)



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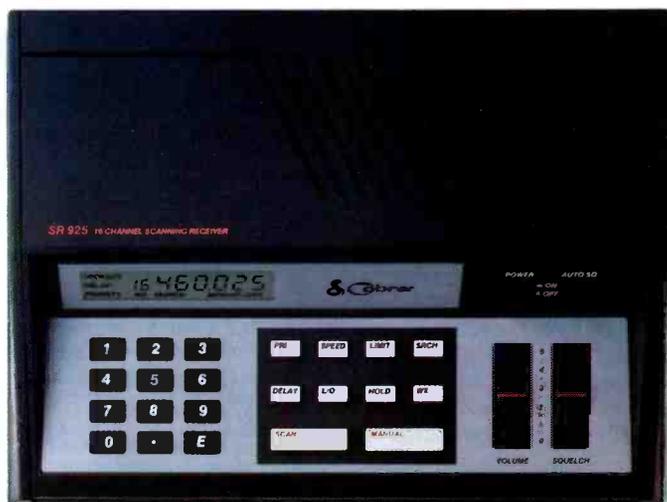
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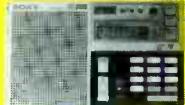


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- Extended warranty to 6 months
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- Installation of ICOM options purchased with your new R7000 at no charge
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Service manual
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MAILBAG 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.

DX'ing on 39.17 MHz?

I'm writing in reference to the February issue story, "Heavenly Contacts on 39.17 MHz?" I'm not surprised, but I'm upset. I don't doubt that Mr. Randi's documentation was accurate. There are a lot of phonies of all kinds out there . . . but publishing this stuff (for the lack of a vulgar word) is going to drive more people away from the truth than towards it. Let that kind of article float on the swill of magazines like the Enquirer.

Norman Davis
Covis, CA

When I saw Randi on the Carson show mentioning Popoff's use of 39.17 MHz, I knew there was a story there somewhere. Unfortunately, Randi didn't say very much on TV and the local newspapers gave only a brief summary of his TV revelations. The one other electronics publication that covered this story seems to have taken a newspaper summary and used it to further capsule the whole thing into a total waste of the small amount of space they gave the story. Bravo to POP'COMM for taking the trouble to root out the whole story and then having the guts to publish Randi's notable monitoring discovery.

P.J. Connors
Walla Walla, WA

Popoff may have violated the laws of ethics, but Randi violated the ECPA!

Marie D'Amico
New Bedford, MA

The Popoff 39.17 story alone was more than worth the price of my subscription.

R.D. Rutledge
APO New York

(Popoff) was only using psychological trickery in an attempt to "cure" people who most likely had no real physical ailments in the first place. Is he that much different than a medical practitioner who gives placebos or tranquilizers for treating psychosomatic problems? So what if he'd discovered the benefits of modern technology? But it was good reading anyway!

William L. Eastman
Paris, TX

Sonic Booms

Recently, I purchased a denture cleaner that operates with ultrasonics. However, I noticed that it also carries a sticker stating

that it has been approved by the FCC for RF radiation. Does this mean that I could actually monitor this unit on my radio? What frequency does it use?

Paul F. Howell, Sr.
Mechanicsburg, PA

You don't mention any make or model so the best I can do is cite one example that I once read about in an FCC report. That would be a Clairol unit designed to run 60 watts on 58 kHz. I'm afraid that all it would sound like on a radio receiver would be a rather undistinguished buzz. However, if you're interested in digging some colorful sounds while the ol' choppers are getting cleaned, you should have mentioned it to me before you went out and purchased your gizmo. I'd have been more than happy to ship you my neighbor's 15-year-old son, accompanied by his 240-watt stereo amp, both speakers, and his complete collection of Motley Crue, Twisted Sister and Iron Maiden tapes. I can guarantee that the sounds produced by this combo would have cleaned your dentures, as well as clearing up any sinus, bursitis, or skin problems you might have, along with arthritis, lumbago, neuritis, bunions, and gout. — Editor

Next Time, Try Silent Prayer!

I've written an inspirational poem, "The Prayer for SWL's," which I'm sending along for your literary opinion. Please don't publish it yet, just let me know what you think of it and how it made you feel.

B.J. Flinders
Owensboro, KY

The poem, which runs three single spaced typewritten pages, begins, "O Father of all those upon whose heads rest a crown of headphones." It ends with a plea for indulgence and QSL's for "those stout hearted and marvelous beings." The copy you sent hangs on my wall and is used here regularly for its inspirational benefits. I read it every Monday morning because it gives me the strength to face a week of the Advertising Manager's jokes — which I can assure you couldn't be any worse than this poem. — Editor

Rush To Judgment?

I never gave much credence to the complaints about rock music albums containing hidden messages if you play them in reverse or at incorrect speeds.

It wasn't until I got interested in communications that I realized that in the Rush album entitled *Moving Pictures* there is a selection containing a CW message. The piece has the unusual title "YYZ" and after playing it several times I figured out that the opening drum solo is a CW rendition of the letters

"YYZ." There's one that got past lots of people; now all we've got to do is figure out what "YYZ" means!

Harry Orenstein
Cle Elum, WA

At the risk of violating the Electronic Communications Privacy Act, I sought out the assistance of the FBI, CIA, NSA, and FCC to see if they could unravel the mysterious message. They all drew a blank. After intense investigation, I realized that "YYZ" is the identification used by the VOR navigational facility at the Toronto (Ontario) National Airport. Inasmuch as Toronto is Rush's home town, my suspicion is that "YYZ" is an insider's way of paying homage to Toronto. Either that, or drummer Neal Pert is a VHF communications enthusiast with a very strange sense of humor. On the other hand, maybe I'm off base and it's really coded instructions for rebel freedom fighters in Albania. — Editor

All's Fare

I've got a two-way communications station that I use in connection with dispatching taxi cabs I own. The problem is that there's another taxi company in the area that listens in on my communications and tries (often successfully) to steal my company's fares. What I'd like to do is insure privacy by modifying the equipment to inverted audio. The high frequencies of the voice would become low frequencies, the low frequencies to go out over the air as high frequencies. Is this a feasible idea?

Robert Cruikshank
Golden Valley, MN

Why not learn to speak Lithuanian? It would insure privacy and be a lot easier than what you propose. — Editor

Letter Be

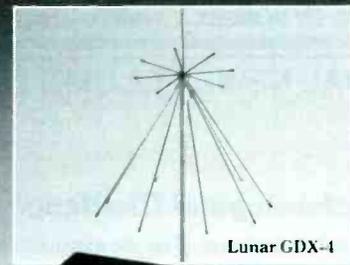
I have been an RTTY monitor for almost a year and have found it a very exciting aspect of DX monitoring. The maritime frequencies and INTERPOL frequencies get much of my attention. I can monitor regular RTTY as well as SITOR (ARQ) and FEC transmissions. I have noticed that once in a while when numbers are transmitted they appear on my display as letters of the alphabet. Could you provide a table of correspondences for being able to understand things such as this.

Justin Scofield
Buena Park, CA

When RTTY numbers print out or show up on a viewer as letters of the alphabet, they usually seem to correspond as follows for the numerals 1 through 0: Q=1, W=2, E=3, R=4, T=5, Y=6, U=7, I=8, O=9, P=0. A decimal point may show up as the letter M. — Editor

PC

Regency "Scanner Answer" Giveaway



Here's your chance to win a complete monitoring package from Regency Electronics and Lunar Antennas. 18 scanners in all will be awarded, including a grand prize of the set-up you see above: the Regency HX1500 handheld, the Z60 base station scanner, the R806 mobile unit, and a Lunar GDX-4 Broadband monitoring/reference antenna.

55 Channels to go!

When you're on the go, and you need to stay tuned into the action, take along the Regency HX1500. It's got 55 channels, 4 independent scan banks, a top mounted auxilliary scan control, liquid crystal display, rugged die-cast aluminum chassis, covers ten public service bands including aircraft, and, it's keyboard programmable.

Compact Mobile

With today's smaller cars and limited installation space in mind, Regency has developed a new compact mobile scanner, the R806. It's the world's first microprocessor controlled crystal scanner. In addition, the R806 features 8 channels, programmable priority, dual scan speed, and bright LED channel indicators.

Base Station Plus!

Besides covering all the standard public service bands, the Regency Z60 scanner receives FM broadcast, aircraft transmissions, and has a built-in digital quartz clock with an alarm. Other Z60 features include 60

channels, keyboard programming, priority control, digital display and permanent memory.

Lunar Antenna

Also included in the grand prize is a broadband monitoring/reference antenna from Lunar Electronics. The GDX-4 covers 25 to 1300 MHz, and includes a 6 foot tower.



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7707 Records Street
Indianapolis, IN 46226

Grand Prize (1 awarded)

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- 1—Regency HX1500 Handheld scanner
- 1—Regency R806 Mobile scanner
- 1—Lunar GDX-4 Antenna

First Prize (5 awarded)

- 1—Regency Z60 Base station scanner
- 1—Regency R806 Mobile scanner

Second Prize (5 awarded)

- 1—Regency HX1500 scanner

Contest rules: Just answer the questions on the coupon, (all answers in the ad copy) fill in your name and address and send the coupon to Regency Electronics, Inc., 7707 Records Street, Indianapolis, IN 46226. Winners will be selected from all correct entries. One entry per person. No purchase necessary. Void where prohibited by law. Contest ends June 30, 1987.

1. The Regency Z60 is
 - a digital alarm clock an FM radio
 - a scanner all of the above
2. The Regency R806 is the world's first _____ controlled crystal scanner.
3. The Regency HX1500 features
 - 55 channels Bank scanning
 - Liquid crystal display all of the above
4. The Lunar GDX-4 antenna covers _____ to _____ MHz.

Name: _____

Address: _____

City: _____ State: _____ Zipcode: _____

I currently own _____ scanners.

Brands owned: _____



Send in a photo (like this one of Mike Nikolich and his Regency monitoring station) and receive a free gift from Regency. Be sure to include your name, address and phone number.

CIRCLE 4 ON FREE INFORMATION CARD

The Technological Challenge Ahead

The stage has been set. The momentum increases. Some startling changes in mobile two-way communications are on the horizon. We've spent some time in this column discussing digital communications and computer-aided dispatching (CAD) . . . but there are other changes on the way for voice communications that will soon be upon us. It will be the technological challenge of the 1990's to have our scanning capabilities keep the pace. If we don't, the information we now receive on our scanners will soon be out of reach.

The common thread through much of this change is "frequency conservation." Now, you may not have thought about radio frequencies in this way, but it is every bit as necessary to conserve frequency spectrum as energy or water. That's because there is only so much of the stuff to go around and, in today's world, more and more people want to tap the useable supply. True, it doesn't get "used up" like petroleum, but more or less finite limits do exist. Yes, those limits have been pushed over the years. First from 40 MHz to 150. Then from 150 MHz to 470 MHz. Then to 900 MHz and on into the gigaHertz range. But the limits are there nonetheless and it is becoming increasingly difficult to make that limited resource go around. The cellular phone people want more of it. The public safety agencies want more. Truck lines, taxi companies, railroads, news media . . . you name it, they all want more of that stuff called the radio spectrum. And, of course, nobody now using parts of the spectrum wants to give any up to the other guys. That's what was behind the great technological drive to open up microwave frequencies in the 800-900 MHz region to practical communications. But that's been done. Now what?

The next major change that will be happening is in narrow band technology. The FCC has proposed taking some frequencies away from others, including part of the 220 MHz Amateur Radio band, and make a new land mobile communications band for users of something called Amplitude Compandered Single Sideband (ACSB). Now, it has been recognized for some time that Frequency Modulation (FM) is basically a "spectrum hog." It uses too much of the radio spectrum per communications channel. To make it less so, the FCC has, in the past, ordered "split channels" by reducing the amount of space each FM channel could use, thereby doubling the number of channels. But to narrow FM any further would seriously degrade performance. Enter ACSB. It has the promise of being able to put many voice communications channels in the space of just one FM channel. Sounds great, doesn't it? Don't bother trying to receive one of these new signals on your scanner, though. You won't be able to.

Who will be the first to offer a compatible ACSB scanner? Surely the problem of mixed modulation formats has been solved before . . . just look at the scanners that can receive FM public safety bands plus AM aircraft bands. However, ACSB presents some special problems for scanners because, unlike conventional FM or AM, no signal at all may be present between words. Some new ways of making a scanner work will need to be found. And widespread use of ACSB is probably just around the corner!

More Hazards Of Mobile Scanning

If it isn't trouble enough to keep track of various state laws against mobile scanning, now we find that audio headset use can further complicate your over-the-road ventures. I enjoy listening to my scanner on long distance journeys, but not all my traveling companions do . . . at least not all the time! So, I make use of a small ear-

phone on one ear, leaving the other ear open for conversation and road noises such as horns or sirens. SCAN has now learned that many states have recently enacted legislation prohibiting headset use in vehicles, apparently in response to the widespread use of "walkman"-type radios and cassettes. Fortunately, many of these new state laws apply only if both ears are covered, something that shouldn't be done in any case. But, in some states, you can run into trouble with just one earphone in use. As with most laws, there is a myriad of exemptions and conditions too numerous to list here. But the states that have such laws that you should check into before using a single earphone in your vehicle are: Alaska, Florida, Georgia, Illinois, Maryland, Massachusetts, Minnesota, New Jersey, Pennsylvania, and Washington (state).

As we said, there are other states with laws against headphone use in both ears, but the above states have laws that might get you in trouble with a single earphone. Maybe it is time for SCAN to publish a directory of friendly states for scanner owners to visit. Any state tourist bureaus in these states listening out there?

Over 100 Happy Winners In 7th Anniversary Sweepstakes

Earl Clarke of Hope Valley, Rhode Island was the lucky Grand Prize winner in SCAN's anniversary sweepstakes celebration. His prize was a brand new Uniden Bearcat 800 XLT scanner with 800 MHz scanning capability. Congratulations, Earl! Ten First Prize winners each received a NiteLogger automatic tape recorder activator for use in their monitoring stations. The winners were: Steve Grandahl, Livonia, MI; Ed Shaver, Mohawk, NY; Steve Shaff, North Hollywood, CA; Harry Flasher, Dayton, OH; Thomas Adams, Paris, TX; Darleen Clausen, Clinton, IA; L. Stantz, Binghamton, NY; John Deblasio, Jr., Hastings On Hudson, NY; Mark Tobin, West Bloomfield, MI; and Parker McCarter, Bradley, ME.

There were many other winners, too, of scanner interference filters, watches, and other prizes. The winners are: Charles Fechter (NJ), Art Eccleston (NY), Brent MacDonough (CA), Robert Mack (WI), John Fudge (CA), William Kidd (FL), Walter Olds (TX), Dr. J. Andrews (FL), Larry Fredrick (CO), David Beech (MN), Bill Neel (AZ), L. Green (VA), Col. R. Goering (CA), Dwane Weekley (WV), Timothy O'Neill (NM), Ken Trettin (WI), J. Klein (KS), Gary Hoffman (CA), Robert McGlenn (NY), Timothy Appar (NJ), J. Higley (MO), Sandy Hook (CT), Edwin Johnson, Sr. (IL), Lionel Johnson (IN), Fernando Schultz (WI), C. McKin (IN), John Salamankas (GA), Paul Walker (CA), Robert Palmer (CA), Richard Ahlers (PA), Gary Malkemus (NY), Julio Galindo (PR), Larry Salisbury (KS), Kail Malley (IL), Jack Holbrook (AZ), Bruce Holland (IN), George Collins (KY), O. Colecchia (MI), Stuart Simonoff (MA), Patricia Turnia (NY), Dennis James (VA), G. Armstrong, Jr. (NV), W. Dunaven (IL), Robert Jensen (AK), W. Hinch (MI), Harold Bennett (PA), Robert Sanden (IA), Steve Conrades (NY), Alan Jones (MN), Paul Longeway (MI), Harold Arnold (AL), John Pinto (CA), Leroy Hopkins (AZ), Francis Kupferschmidt (IA), J. Moran (AZ), Michael Kure (TX), Victor Karczewskli (IN), Kevin Burns (NY), Donald Martin (IA), Jim Harhay (OH), Paul Strong (CA), Greg Turley (CA), C. Christ (TX), Donald Strenge (FL), Gary Larsen (HI), Dixie Burkett (VA), Jason Barrett (CT), Samuel Burrell (KY), Charles Foss (ME), Daniel Cass (PA), Louis Castellano (NY), J. Bassett (IL), Ron Kosinski (IL), Francis Dashnaw (VA), Steven Mitchell (CA), Joanne Kiteley (CO), William Watson (LA),

(continued on page 74)

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CIRCLE 23 ON READER SERVICE CARD

Hearing The Honduran Hotbed

From The Midst Of The Central American Conflicts, Honduras Makes Itself Heard On Shortwave!

BY GERRY L. DEXTER

If Nicaragua is the stage for the Central American drama, then neighboring Honduras is right behind the drops.

Since the Sandinista revolution in Nicaragua and the U.S. government's increasing desire to prevent the Managua government from spreading its revolution, if not actually forcing it into reverse, Honduras, thanks to its geographic position, has become prop manager for the anti-Sandinista stage show.

Some years ago, things were relatively quiet in Honduras. There had even been a settlement reached with El Salvador over an eleven-year-old border dispute over which a five-day war had been fought in 1969—a war sparked by a series of soccer matches between the two countries.

But today this country of about four million has a lot more to worry about than minor border disputes. Much of the population may still go about their daily routine but they have been joined by a long parade of new types. A bi-lateral military assistance agreement has brought in U.S. military personnel, built airfields and has seen joint military exercises with the Honduran military. The population has been increased by thousands of ex-supporters of former Nicaraguan dictator Somosa and by thousands more who first supported and now oppose

the Sandinistas. Anti-Sandinista guerrilla armies now operate their war of resistance from camps and headquarters inside Honduras. There are CIA agents and, very likely, agents from Nicaragua and Cuba as well. More teachers, missionaries, medical people from the U.S. are on hand. There are the inevitable journalists and the Freddie Fastback types, and who knows what others, all of them buzzing around the periphery of the anti-Sandinista campaign like bugs around a lamp in the heat of a summer's night. You might call them WASP's—War and Support People! Whoever they are, they've turned Honduras into a jungle of intrigues, conflicting aims, propaganda, and disinformation.

The democratic (more or less) government in Tegucigalpa, with all of its other concerns, also has a minor resistance element of its own to worry about. The Communist Morazan Honduran Liberation Front, believed supported by Nicaragua, is sporadically active. In 1984 it managed, briefly, to take over a radio station in the Honduran capital to broadcast an opposition message.

Other opposition groups include the Honduran Revolutionary Union, Revolutionary Action Front, Juan Rayo Guerrillas,

Lorenzo Zelaya People's Revolutionary Command, Cinchonero Popular Liberation Movement, People's Revolutionary Movement, People's Revolutionary Union, and Worker's Revolutionary Party. All are relatively small and ineffectual and some may exist in name only.

As shortwave listeners, most of us are pretty far removed from this hodgepodge of conflicting courses—which is probably fortunate since it's easy to believe one could get mixed up with some very nasty folks if one were actually on the scene. Our listening posts are safe though, and from them we can at least pick up the broadcasters there.

When a new radio station appears on shortwave it may re-focus attention on what else is to be heard from the country in question. A new station has appeared from Honduras, sparking this review of what else there is to hear.

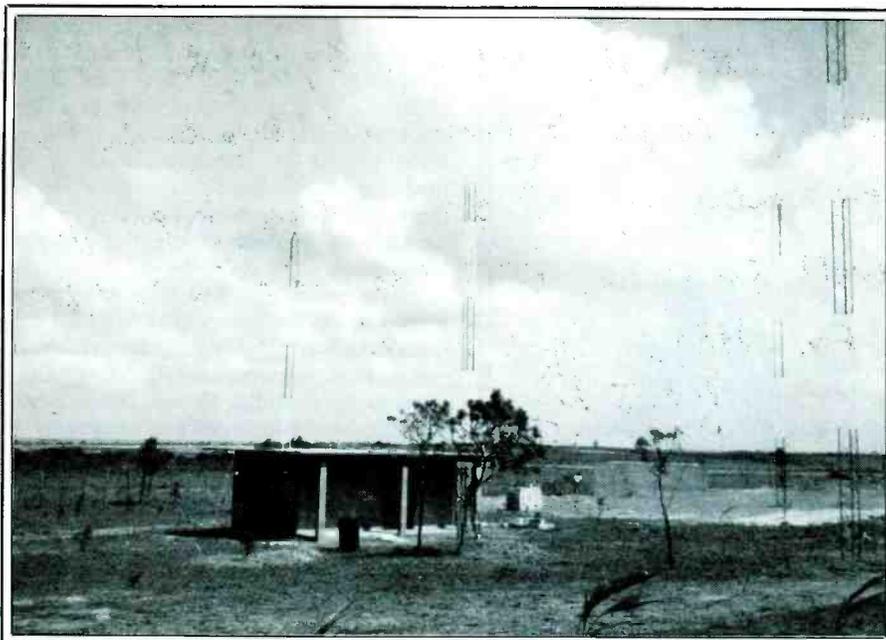
The new station, as many already know, is HRRI (Sani Radio) which appeared late last summer on 4755 kHz. HRRI is operated by the International Rescue Committee, based in New York City. The organization says it has been aiding refugees around the world since 1933 and its letterhead lists 16 offices from Botswana to Vienna. The station is currently being financed with funds



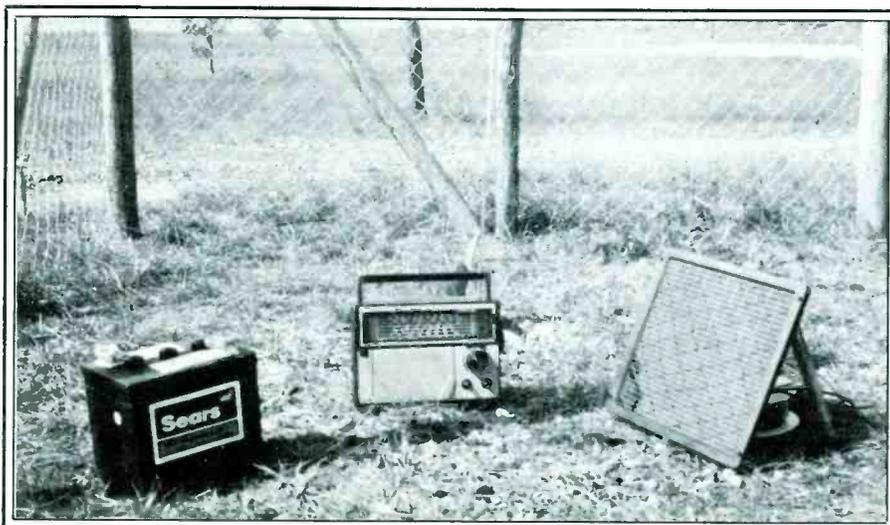
The HRRI studio trailer has two studios and a control room packed into its 30-foot length.



"Martina," a Miskito native, does a cultural-educational program on Sani Radio—HRRI.



HRRR's transmitter building with generator building in the background.



Equipment such as this will be used in village listening centers for reception of adult education classes.

from the U.S. Agency for International Development (USAID).

The station had its official opening on August 25 (postponed by one week after an accident in the area involving a Honduran military transport plane) although a number of U.S. listeners heard the station in its test phase as early as several weeks prior to the official start.

The station name, Sani Radio, (believed by many at first to be "Family Radio") comes from a Miskito Indian word for a vine that children sometimes use with two coconut halves to make a "telephone," just like you probably did with some string and two tin cans. The word "sani," combined with "radio" approximates the English language expression "through the grapevine."

Based in the hot (peak temperatures of 128°F) and barely accessible town of Puer-

to Lempira and with offices in La Ceiba, HRRR runs ten kilowatts and puts out a big signal on its 60 meter band frequency. Next year the station hopes to add some commercial content to its broadcasts in order to cover some of the operating costs. It also hopes to create a cooperative agreement for national educational broadcasting. It will also seek private and public funding both internationally and within Honduras, according to project manager Edward A. Pfister.

Broadcast hours run from 1200 to 1600 and 2100 to 0200 with programs in Miskito, Sumo, Spanish, and some English, providing an educational public service, mostly for the Miskito population in the area. Programs will eventually include bilingual primary and adult education broadcasts for some 40 village study centers in remote areas. English language reception reports

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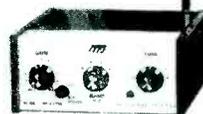
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are acceptable and can be sent to the station at Apartado 113, La Ceiba, Honduras.

Sani Radio is the second broadcaster to go on the air from remote Puerto Lempira, a place where it might ordinarily be hard to justify even one station—an event that has raised the suspicions of some observers of the shortwave broadcasting scene!

The first was La Voz de Mosquita, another broadcaster that went on the air to provide a service to the area's Miskito Indians. HRXX was the brainchild of an independent Baptist missionary, Rev. Landon (Lucky) Wilkerson who has been serving the Indians in that area since the mid-1960's. Global Outreach (GO), Box 1, Tupelo, MS 38802, is the U.S. support group for HRXX, although technically, Wilkerson is only GO's representative in the area, not officially with Global Outreach. Wilkerson, in a letter to DX'er John Moritz a few years ago, said the radio offers a "challenge to furnish truth to so many in many fields and now to counter the Communist Nicaragua atheist radio."

In the past, HRXX's Spanish, Miskito and English broadcasts ran 1200-1400 and 0000-0300. But the station has suffered several breakdowns since it first went on the air in 1981. It is supposed to return to the air soon, if it hasn't already, so watch its former frequency of 4910. Reception reports can be sent to the GO address or c/o Mission Bautista, Puerto Lempira, Departamento Gracias a Dios, Honduras.

Tune to 3250 almost any evening and you are likely to hear HRPC, Radio Luz y Vida, broadcasting from San Luis in Santa Barbara in the northwest mountains. HRPC is another religious outlet, providing service to the people living in the isolated areas of Honduras, Guatemala and El Salvador. Operated by the Evangelical Alliance Mission, the station is listed at just 250 watts and operates 2200-0400 using power from its own generator. Programs are mostly in Spanish but there is some English, usually on Saturday Nights. EAM also operates mediumwave on 1600 kHz and Radio Estrella de Oro on 1280 in San Pedro Sula. HRPC began on shortwave in 1979, using a converted Ham transmitter which put out only 50 watts. Reception reports should go to Apartado 303, San Pedro Sula.

Until HRR1 came on the air, the easiest of the currently active Hondurans was HRVC, La Vox Evangelica, in Tegucigalpa on 4820. Operated by the Conservative Baptist Mission of Wheaton, Illinois, HRVC is currently the most consistent and longest operating of the active stations in that country. It began on mediumwave in 1962 and added shortwave in 1965. Programs are all of a religious-cultural-educational nature and do include some English, normally around 0300, but these are not locally produced.

The least frequently heard is La Voz del Junco, a commercial station on 6075. HRMH supposedly uses two kilowatts from Santa Barbara in the western central part of Honduras. At one time the station was using



HRVC's QSL card.

a home brew transmitter which may account for some of its coming and goings. When it is on the air it's best heard in the early mornings although you shouldn't rule out checking for it in the evenings, too. QSL's from this one aren't quite as sure-fire as they are from the others but the station is still a pretty good replier. Letters go to Apartado 6, Santa Barbara.

Over the past decade or so there have been a number of broadcasters on the air from Honduras that are now temporarily or

permanently inactive. These include Radio Landia, a notorious non-verifier in Comayagua on 4965, Radio Lux from Olanchito on 4890, Radio Juticalpa, Juticalpa on 4780, Radio El Progreso, El Progreso on 4920 and El Eco Honduras/Radio Variedades in San Pedro Sula on 6000. As always with Latins, there's always a chance one or more of these will eventually stage a shortwave comeback.

For a couple of years now there have been reports that a new station would appear from Santa Barbara. Ondas del Ulua is said to have plans to use 4770. A Radio Cultural in La Entrada, Copan Department, has also been mentioned as a possibility.

While the licensed Honduran stations on shortwave amount to only a handful, one or more past or current anti-Nicaraguan clandestines are believed to be operating from Honduras.

So, if you tune in Radio Quince de Septiembre, the FDN contra station on 5950 or 6264 variable, or La Voz de la UNO, the station of the United Nicaraguan Opposition, most recently on 5890, or the occasionally active station supporting the Miskito Indians, Radio Miskito on 5565—you may well be hearing broadcasters from Honduras.

Unfortunately, there is no government shortwave voice from Honduras and most of those legitimate active stations pay little attention to the news situation. Even if they did, you'd have to speak Spanish or one of the Indian languages to get the information.

Still, one climbs a mountain because it is there and the Honduran shortwave broadcasting stations are "there." And they aren't that hard to hear and QSL if you haven't already done so.

PC

	HRPC RADIO LUZ Y VIDA SAN LUIS SANTABARBARA 1600 KHZ Y 3250 KHZ	HRYT RADIO ESTRELLA DE ORO LA VOZ DE SANTIDAD 1280 KHZ Y 97.3 FM
	Apartado 303 San Pedro Sula, Honduras, C. A.	
LA TARJETA DE VERIFICACION		
EMISORA: <u>Radio Luz y Vida</u>		FECHA: <u>6/19/85</u>
CONFIRMO EN SU SINTONIA DE NUESTRA RADIO <u>HRPC</u> EN LA FRECUENCIA DE <u>3250</u> KHZ EN LA BANDA DE <u>90</u> MTS, EN LA FECHA <u>25</u> DE <u>May</u> DE 19 <u>85</u> , DESDE LAS <u>0351</u> HASTA LAS <u>0400</u> HORA DE <u>GMT</u> .		
		MUY ATENTAMENTE FIRMA: <u>Don Moore</u>

A verification from Radio Luz y Vida.

NEW! Turbo Scan™ Scanners

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the world's largest distributor of radio
scanners, introduces new lower prices
to celebrate our 16th anniversary.

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List price \$499.95/CE price \$319.95
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The Regency TS2 scanner lets you monitor
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ments, Aeronautical AM band, Paramedics, Am-
ateur Radio, plus thousands of other radio fre-
quencies most scanners can't pick up. The Regency
TS2 features new 40 channel per second Turbo
Scan™ so you wont miss any of the action. Model
TS1-MA is a 35 channel version of this radio without
the 800 MHz. band and costs only \$239.95.

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List price \$299.95/CE price \$184.95/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.

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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
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List price \$699.95/CE price \$329.95/SPECIAL
10 Channel • 25 Watt Transceiver • Priority
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List price \$199.95/CE price \$114.95/SPECIAL
10-Band, 10 Channel • Handheld scanner
Bands: 29-54, 136-174, 406-512 MHz.
The Uniden Bearcat 50XL is an economical, hand-
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The new Fox scanner frequency directories will help you find
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marine radio service, taxi cab companies, tow truck com-
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broadcasters and more. Fox frequency listings feature call
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ambulance & rescue squads, local government, forestry,
marine radio, mobile phone, aircraft and NOAA weather are
available for \$19.95 each. RD001-1 covers AL, AR, FL, GA,
LA, MS, NC, PR, SC, TN & VI. RD002-1 covers IL, IN, KY, MI,
OH & WI. For an area not shown above call Fox at 800-543-
7892 or in Ohio 800-621-2513.

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List price \$369.95/CE price \$218.95
11-Band, 55 Channel • Handheld/Portable
Search • Lockout • Priority • Bank Select
Sidelit liquid crystal display • EAROM Memory
Direct Channel Access Feature • Scan delay
Bands: 29-54, 118-136, 144-174, 406-420, 440-512 MHz.
The new handheld Regency HX1500 scanner is
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Be sure to order batteries and battery charger from
the accessory list in this ad.

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List price \$349.95/CE price \$178.95/SPECIAL
9-Band, 16 Channel • Priority • Scan Delay
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Frequency range: 30-50, 118-174, 406-512 MHz.
Included in our low CE price is a sturdy carrying case,
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★★★ FREE DURACELL® Batteries Included ★★★

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RD55-M3 Uniden Radar Detector	\$97.95

★★★ SPECIAL SAVINGS COUPON ★★★

Bearcat® 800XL-MA

List price \$499.95/CE price \$289.95/SPECIAL
12-Band, 40 Channel • No-crystal scanner
Priority control • Search/Scan • AC/DC
Bands: 29-54, 118-174, 406-512, 806-912 MHz.
The Uniden 800XL receives 40 channels in two banks.
Scans 15 channels per second. Size 9 1/4" x 4 1/2" x 1 1/2".

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Add \$12.00 shipping per shortwave receiver.	
Add \$7.00 shipping per scanner and \$3.00 per antenna.	

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MODEL TS-2

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An Exclusive POP'COMM Preview:

New All-Band Portables!

**Two High-Tech Luxury Receivers On Their Way
To North America From Europe**

BY ALICE BRANNIGAN

Grundig, the huge West German consumer electronics manufacturer, has devoted forty years to building a worldwide reputation in portable radios, TV sets, and, more recently, in the field of stereo and VCR equipment. While American and Canadian listeners have long sought to locate Grundig's sophisticated portables, unfortunately Grundig devoted most of its marketing efforts to filling orders from nations outside of North America.

According to Esmail Amid-Hozour, that problem will end shortly because his company, Lextronix Inc., of Redwood City, CA has obtained the exclusive North American distribution franchise from Grundig. While much of the large Grundig product line will eventually be offered here, the company has decided to kick off its North American marketing campaign with two powerful all-band portable receivers. One piece of equipment is the high-performance Satellit 650 International Receiver; the other is the personal portable Satellit 400 Receiver. These sets, which are the latest in a long line of Grundig receivers, will be distributed here on a limited basis through carefully selected quality electronics dealers.

Amid-Hozour says that Grundig's Satellit 650 and 400 receivers can be compared, insofar as their precision technology goes, to the Mercedes Benz and other delights from West German engineers. To be sure, these are high-end products—the Satellit 400 sports a retail list price of \$449, while its big brother, the Satellit 650, is being offered for \$1149. These are receivers intended to satisfy the most picky, fussy, and demanding users who can fully appreciate the engineering and craftsmanship that has been built into both of these portables.

The Grundig Satellit 650 covers the long-wave 148 to 420 kHz band, the standard broadcast (510 to 1620 kHz) band, the shortwave (1600 kHz to 26.1 MHz) band, and the FM broadcast band. The receiver may be tuned manually, or by direct frequency entry from its keyboard, or from any of its sixty memory channels. It has two built-in speakers and provisions for an external speaker, in addition to a headphone jack.

Two built-in antennas are included, or the set may be operated with an outside antenna of the user's choice. The Satellit may be powered from its own internal batteries, from any external 12 VDC power source, or



The Grundig Satellit 400 (left) and Satellit 650 (right) are the first to bear the famous old name in the U.S. in several years. Information on their availability can be obtained from Lextronix, 3520 Haven Ave., Unit L, Redwood City, CA 94036. (415) 361-1611.

from 110/220 VAC (50/60 Hz) power lines.

You can select USB or LSB modes, in addition to standard AM. An SSB clarifier and variable pitch VFO control is a nifty feature, as is the slow/fast manual tuning. The LCD display not only reads out frequency information, it has a clock and even a calendar. Three sets of programmable on/off times provide added versatility.

Variable tone and AGC is offered, as is a front-panel switch that permits the user to select AM mode bandwidth (narrow/broad/super broad). A built-in preselector automatically tracks along with your tuning of AM signals. Actually, there are so many little extras in this receiver that it would take up more space than is available here to describe them in detail. Things such as automatic fine tuning, a warning when the set's internal batteries are running down, a prompt that lets you know when you're attempting to operate the set incorrectly, a battery meter, a tuning strength meter, input socket for tape/record players, and ever so much more.

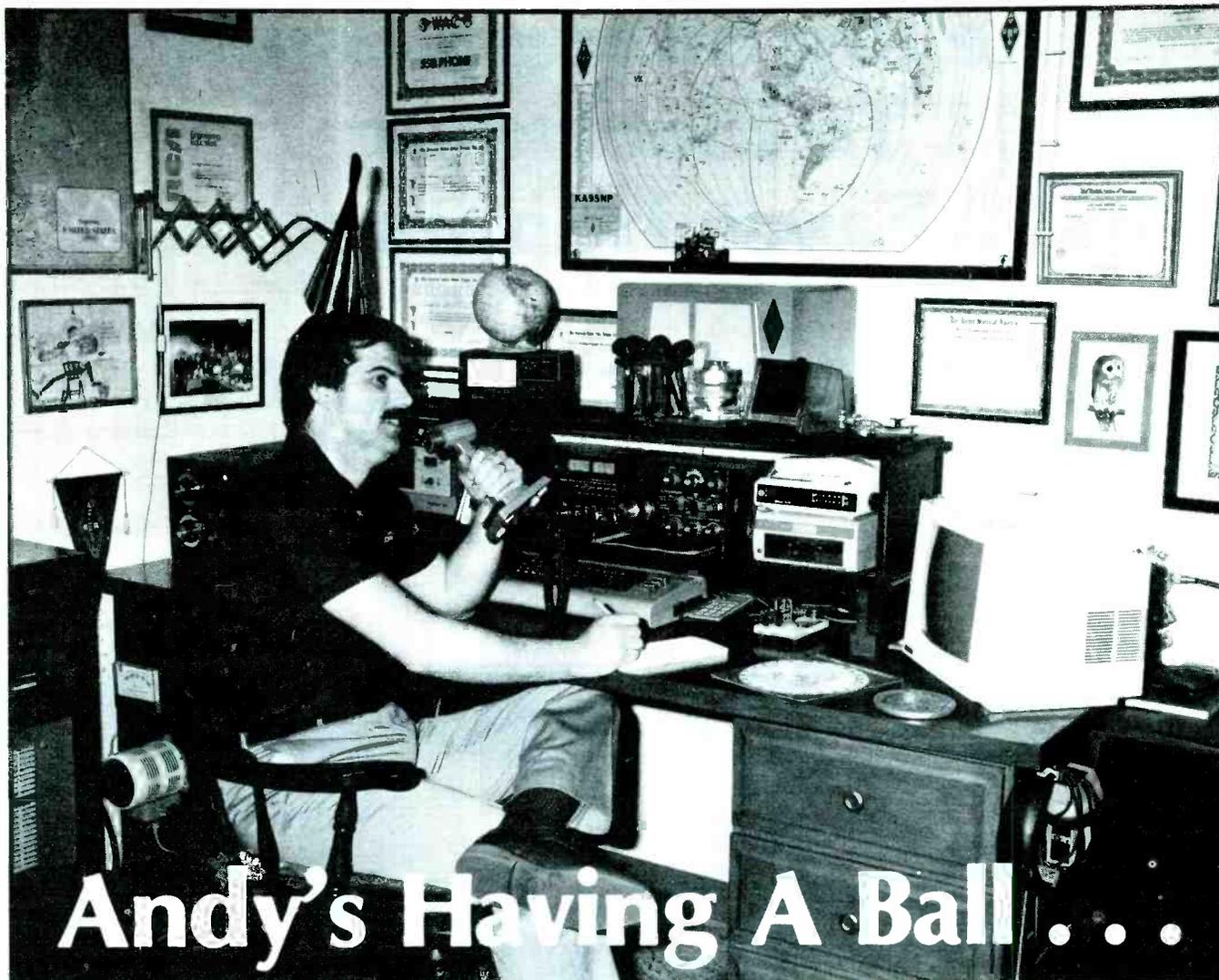
Despite all of the fancy trimmings, the Grundig Satellit 650 is relatively lightweight and it's user-friendly. What makes it especially easy to use is the fascinating half-hour VCR cassette that the company provides to show the owner the set's many features in actual use!

The Grundig Satellit 400 is a handy and more compact version of the Satellit 650. Actually, it contains many of the main features of the 650, combined with a twenty-four station memory. The same serious thought and workmanship that went into the 650 is present in the 400, but it's smaller and a bit easier to pack into your luggage when you're on the move.

We should also comment that both of these professional luxury receivers look extremely handsome, done up in gray with tasteful touches of red, green, blue, and yellow topped off with gleaming metal trim. Yes, "under the hood" there's a powerful receiver waiting to pull in stations from around the world, but the exterior of each set is easy on the eyes.

Both of these receivers come with a one year limited warranty, backed by a 24-hour parts/service center in California. All of the ingredients for Grundig's entry into the North American shortwave sweepstakes are being provided by Lextronix, Inc. from their Redwood City headquarters.

As you read this, Lextronix is in the process of making arrangements for both of these portables to be available at leading electronics dealers. Watch for them! As you can see on the front cover of POP'COMM this month, we got an exclusive sneak preview of the Satellit 650.



Andy's Having A Ball . . .

and you can too!

Andy is a Ham Radio operator and he's having the time of his life talking to new and old friends in this country and around the world.

You can do it too! Join Andy as he communicates with the world. Enjoy the many unique and exclusive amateur bands . . . the millions of frequencies that Hams are allowed to use. Choose the frequency and time of day that are just right to talk to anywhere you wish. Only Amateur Radio operators get this kind of freedom of choice. And if it's friends you're looking to meet and talk

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If you'd like to be part of the fun . . . if you'd like to feel the excitement . . . we can help you. We've got all the information you'll need to get your Ham license. Let us help you join more than a million other Hams around the world and here at home. Who are we? We're the American Radio Relay League, a non-profit representative organization of Amateur Radio operators.

For information on becoming a Ham operator
circle number 110 on the reader service card or write to:

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The Big Snoop's Guide To Electronic Eavesdropping

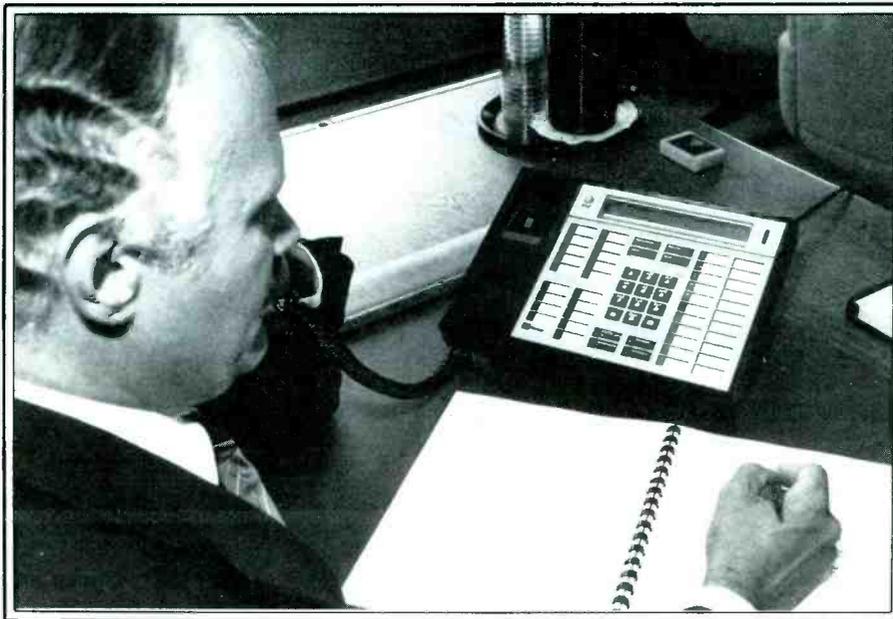
Attention: Eavesdroppers, Busybodies, Yentas, Private Eyes, And Everybody Else! If They Say That The Airwaves Are Wall-to-Wall With "Private" Messages, It Must Be True! But Do You Know Where To Listen And Where NOT To Listen?

BY HARRY CAUL, KIL9XL

Did you ever notice that a "Wet Paint" sign is an attractive lure that causes many folks to rush over and stick a finger or two on the painted object? Chances are that had the sign never been posted, few persons would have bothered to test the paint to see if it was still tacky. As yet, nobody has ever explained why anybody really needed to know its wet/dry status!

The lobbyists and political hacks who made so much of a commotion about the Electronic Communications Privacy Act (ECPA), in effect, hung out the "Wet Paint" shingle on certain portions of the airwaves. After the public's approximately 85-year ability to freely tune in on every frequency to inspect the proceedings, those who promoted the ECPA came to the conclusion that, after all, certain frequencies probably have things taking place that you and I shouldn't have the right to monitor on any of the millions of pieces of receiving equipment currently in the hands of the public. The ECPA, of course, makes as much sense as getting a law passed that suddenly forbade pedestrians to look at vehicles painted green, or at men wearing polyester sports jackets. Naturally, such things would become the instant focus of every person who ventured into the streets.

The ECPA seems to have accomplished this for the communications spectrum, only now instead of everybody wanting to check on how tacky the paint is, they want to see how tacky the communications are on selected frequencies. For sure, the idea was to slam the door on those who might want to listen in on various radio-borne telephone calls, and although the primary thrust of the ECPA was to provide that protection for cellular mobile telephone (CMT) communications, several other services are (or may be) also included in the off-limits chatter.



The problem is that the ECPA is vague and doesn't specify the exact frequencies you shouldn't tune in on your communications receiver if you want to uphold the ECPA, which (of course) you undoubtedly do. Fact is, the ECPA has thrust the entire matter of monitoring the airwaves for "private" communications into the spotlight and made it all the more tantalizing!

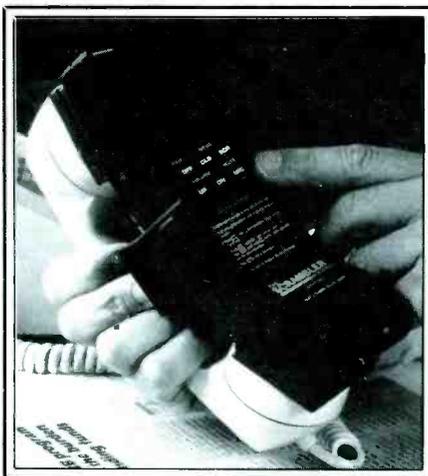
Aside from any moral or ethical considerations, traditionally, monitors had always been free to eavesdrop on radio-borne telephone calls and personal messages. The governing federal regulation was the Secretary of Communications section of the FCC's Communications Act of 1934, as amended. For the most part, that says that persons

overhearing such communications aren't allowed to make use of it or profit from what they hear, nor are they permitted to reveal the contents of the overheard messages to third parties. Few monitors had any difficulties staying within the tenets of those stipulations. Those who tuned in could hear actual telephone calls, the operators, the numbers ringing, even busy signals. The calls are made by our neighbors and from people around the nation and the world. The scope of their conversations covers business and political matters, stock market deals, things mostly illegal, juicy gossip, intimate details of personal relationships, horrendous arguments, routine family chatter and more.

Chances are that you've probably already



Looks as though only the 49 MHz handset portion of cordless telephones is not on the ECPA's endangered list.



The ECPA is virtually impossible to enforce against radio snooping. That's created a booming business in voice scramblers, although most people still can't, don't, or won't believe that many telephone calls can be so easily monitored by unknown parties.



CMT's have suddenly become off-limits to monitors who are expected to be on their honor when it comes to avoiding their frequencies.

stumbled onto some of these conversations in your meanderings across the MHz. This special report will let you know where they are so that, in the absence of specific information included in the ECPA itself, you can either avoid the off-limits channels or tune in on those that are (or seem to be) in the realm of the listenable. With all of the channels involved, this information should become a vital part of all stations equipped for monitoring between 1600 kHz and 900 MHz.

CMT's

The ECPA puts CMT monitoring on the off-limits list, so you can blank out your scanner's abilities to copy transmissions on those frequencies. The ECPA doesn't tell you what those frequencies are, so how are you to know what to avoid? Easy, read about them here!

There are special CMT frequencies allocated for wire line and non-wire line operations, and both services may be offered simultaneously by different companies within a given locality. The base stations for these

systems all operate between 870 and 890 MHz. Mobile units operate between 825 and 845 MHz. Any given base station may actually operate on only a handful of the numerous channels that lie within the 20 MHz allocated for CMT operations. Rather than searching out which specific channels may be in use in your area, best bet is to forget that your scanner picks up any of those frequency ranges. That should keep you on the safe side.

Other Mobile Telephone Calls

As shown in the accompanying chart, there are many non-CMT mobile telephone services operating in the VHF/UHF bands. Some are run by telephone companies (wire line companies) and some are operated by Radio Common Carriers (RCC's), all of which fit into the category of non-wire line companies. Frequency allocations are in the form of matched pairs, some awarded to telephone companies and some to RCC's.

Note that some RCC's use these frequencies for mobile telephone call services combined with two-way dispatching and one-way voice and/or tone paging.

Certain telephone companies have so-called IMTS (Improved Mobile Telephone Service) base station equipment that sends out a sound like a dial tone when the frequency isn't active with an in-progress call. Listening to this tone can eventually drive you batty. The biggest problem is that your scanner recognizes this tone as being a full-fledged transmission and it will cause the set to stop scanning and become transfixed to the channel. Early model Bearcats had a built-in filter to knock out the IMTS tone but, for reasons unknown, this feature was discontinued.

On our frequency chart, note that there are several 35 MHz Z-series mobile tele-

phone channel pairs. These were the first channels assigned for mobile telephone calls back in the late 1940's. Modern technology has considerably reduced the usage of these low-band frequencies and they have become far less active than they once were. The FCC is no longer licensing new mobile telephone systems in the 35 MHz band and, as these channels are phased out, they will be recycled and become one-way paging channels to meet the increasing need by the message delivery industry.

In all instances, unless you are located in a major USA or Canadian area, don't expect to find mobile telephone operations on each and every VHF/UHF channel available for such purposes. Your own local area might have only one or two frequencies that are operational, although if you have a good location and antenna system, you may be able to hear VHF base stations 75 to 100 miles away from your station.

In the United States, the ECPA now puts all of these mobile telephone frequency pairs in the realm of off-limits, although any of the RCC's transmitting one-way tone paging signals are still permitted to be monitored without any restrictions. The ECPA does not comment upon how persons having mobile telephones in their vehicles are supposed to find out if the channels are in use before they attempt to transmit—that is unless they violate the ECPA. Let's hope that, despite the fact that all of these channels lie within the receiving range of millions of scanners, everybody suddenly decides to pass them by from now on. Our handy chart shows you where the obstructions are located.

High Flying 'Phones

The experimental Airphone aeronautical telephone call service had been authorized for numerous channels (6 kHz spacing) between 944.604 and 945.994 MHz, with 37 base stations around the nation. The last rumor we heard was that the system was denied regular (non-experimental) operational status and might fade away after its test period.

Airliner telephone calls seem to regularly communicate with ground stations on UHF channels specially set aside for such purposes. There are many ground stations established around the nation to receive such calls, however, unless you've got one in your own city/town, chances are you won't be able to hear the ground (base) station. If you listen on the aircraft's 459 MHz paired frequency, though, you should be able to copy stations located several hundred miles into the distance (although only one side of the conversation).

Airliners (and even private aircraft) flying international routes are permitted to place 'phone calls through ship/shore marine operations using SSB on the high-frequency bands (that is, below 30 MHz). They are frequently heard doing so.

The ECPA specifically states that "it shall not be unlawful . . . for any person . . . to in-

Selected HF Guide

kHz	Paired	Chan #	Remarks				
1630	1630	N/A	Misc Canadian Stations	4063	4063	N/A	Inland Waterways
1690	49.93 Mz	1A	Cordless phones (older)	4087	4087	N/A	Inland Waterways
1710	49.845 Mz	7A	Cordless phones (older)	4116	4116	N/A	Inland Waterways
1730	49.86 Mz	13A	Cordless phones (older)	4357	4063	401	KMI
1750	49.875 Mz	19A	Cordless phones (older)	4364	4069	403	CFH VFC WOM
1770	49.89 Mz	25A	Cordless phones (older)	4367	4072	404	KGN KWJ91
2054	2054	N/A	Misc Canadian Stations	4369	4075	405	WAK WLC WLO
2086	2086	N/A	Inland Waterways	4376	4082	407	VFF VFR
2309	2131	N/A	WDU23	4379	4085	408	KVK VFZ
2312	2134	N/A	WDU29 WGG53	4382	4088	409	WBL WLC WMI
2397	2237	N/A	WDU26 WGG56	4385	4091	410	VAI WOO
2400	2240	N/A	WGG58 WKR	4388	4094	411	WOO
	2400	N/A	WMH	4392	4097	412	WOM
2442	2009	N/A	KFX	4395	4100	413	VCS
	2406	N/A	WDR	4398	4103	414	WLO
2450	2003	N/A	KLH KOE	4404	4110	416	KMI WOO
	2366	N/A	KQP WAN WAZ WGB WOU	4407	4113	417	KMI WOM
2458	2340	N/A	Misc Canadian Stations	4410	4115	418	CFW KQM VCS WBL WLC WMI
2466	2009	N/A	WFA	4413	4119	419	WLO
	2382	N/A	KOU	4423	4128	422	CKN WOO
2482	2382	N/A	WAK WOX	4426	4131	423	WOM
2490	2032	N/A	WDR	4429	4134	424	WOM
2506	2009	N/A	WAH		4130	N/A	Gt Lakes
	2406	N/A	KLE KLH WOU	6209	6209	N/A	Inland Waterways
	2458	N/A	KGN	6212	6212	N/A	Inland Waterways
2514	2118	N/A	WBL WLC Gt Lakes - Canadian	6506	6200	601	CKN
2522	2126	N/A	KOU KOW WOX	6510	6203	602	CFH CGF CGK CGZ
2530	2134	N/A	KBP KQP WCT	6513	6206	603	VFF
2538	2142	N/A	KCC WGB - Misc Canadian	6516	6209	604	CFW WAH
2550	2158	N/A	WBL WFA WLC Gt Lakes	6518	6518	N/A	Inland Waterways
2558	2166	N/A	WAK WAQ WLF WMH	6519	6212	605	VAI VCS WAH
2566	2009	N/A	KOU	8201	8201	N/A	Inland Waterways
	2390	N/A	WJO WNJ WOU	8214	8214	N/A	Inland Waterways
2572	2430	N/A	WLO	8722	8198	802	WOM
2582	2206	N/A	WBL WLC Gt Lakes - Canadian	8741	8217	803	KQM
2585	2086	N/A	KRV	8725	8725	N/A	Inland Waterways
2590	2198	N/A	WOX	8728	8204	804	KMI
2598	2206	N/A	KFX KOU WAK	8731	8207	805	WOM
2782	2782	N/A	Inland Waterways	8737	8214	807	VAI

HF Station Calls/Locations

CFH	Halifax NS	WAK	New Orleans LA
CFW	Vancouver BC	WAN	Lk Sidney Lanier GA
CGF	Halifax NS	WAQ	Ocean Gate NJ
CGK	Vancouver BC	WAZ	Lk Altoona GA
CGZ	St Johns NF	WBL	Buffalo NY
CKN	Vancouver BC	WCT	San Juan PR
KBP	Kahuku HI	WDR	Miami FL
KCC	Corpus Christi TX	WDU23	Kodiak AK
KGN	Delcambre LA	WDU26	Cordova AK
KLH	San Francisco CA	WDU29	Sitka AK
KMI	San Francisco CA	WFA	Tampa FL
KOE	Eureka CA	WGB	Norfolk VA
KOU	Los Angeles CA	WGG53	Cold Bay AK
KOW	Seattle WA	WGG56	Ketchikan AK
KQM	Honolulu HI	WGG58	Juneau AK
KQP	Galveston TX	WJO	Charleston SC
KRV	Ponce PR	WKR	Noma AK
KVK	Miami FL	WLC	Rogers City MI
WWJ91	Anchorage AK	WLO	Mobile AL
VAI	Vancouver BC	WMH	Baltimore MD
VCS	Halifax NS	WMI	Lorain OH
VFC	Cambridge Bay NWT	WNJ	Jacksonville FL
VFF	Frobisher Bay NWT	WOM	Miami FL
VFR	Resolute Bay NWT	WOO	New York NY
VFZ	Goose Bay LAB	WOU	Boston MA
WAH	St Thomas VI	WOX	New York NY

tercept any radio communication which is transmitted . . . by any . . . aeronautical communications system." Notwithstanding any other parts of the ECPA which might be construed to conflict with that statement, these aeronautical communications systems don't appear to be forbidden fruit.

Cordless Telephones

One of the greatest boons to the amateur or professional snoop has been the cordless telephone. So many people have these devices that it has been possible to punch up all ten of the cordless telephone 46 MHz channels and then sit back and take your pick of which of your neighbors is holding the most interesting conversation!

The newer units operate with the base stations on 46 MHz and the handsets on 49 MHz. Older cordless telephones (those made prior to October 1984) were designed with the base (pedestal) operational on frequencies between 1600 and 1800 kHz (near the standard AM broadcasting band), although even these units had their handsets on 49 MHz band channels. Today, the pedestal portions of cordless telephones op-

8738	8738	N/A	Inland Waterways	13191	12420	1230	WOM
8741	8217	808	KQM WOO	16519	16519	N/A	Inland Waterways
8744	8220	809	KMI WOM	17233	16460	1601	KQM WOM
8747	8223	810	CFH WOM	17236	16463	1602	KMI WAH
8750	8226	811	WOO	17239	16466	1603	KMI WAH
8753	8229	812	VFF	17242	16469	1604	VCS
8759	8235	814	CFW WOM	17245	16472	1605	WOO
8762	8238	815	KMI WOO	17252	16479	1607	CFH WLO
8775	8261	819	CKN	17255	16482	1608	VAI
8783	8249	N/A	Gt Lakes	17258	16485	1609	WOM
8784	8260	822	KMI	17261	16488	1610	WOM WOO
8787	8263	823	VCS	17264	16491	1611	WOM
8790	8266	824	WLO	17267	16494	1612	KVH
8793	8269	825	VFR WOM	17279	16507	1616	KMI WOM
8796	8273	826	WBL WLC WMI WOO	17292	16519	1620	WOO
8806	8282	829	WLO		17292	N/A	Inland Waterways
8809	8285	830	WLO	17304	16531	1624	KMI
8812	8288	831	KRV WOM	17310	16538	1626	CKN WOO
12333	12333	N/A	Inland Waterways	17326	16553	1631	WOO
13101	12330	1201	KMI VFF	17329	16556	1632	WLO
13104	12333	1202	KMI	17335	16562	1634	VFF
13104	13104	N/A	Inland Waterways	17357	16584	1641	WLO
13107	12336	1203	KMI WOO	22596	22000	2201	WOO
13116	12346	1206	WOM	22599	22003	2202	CFH
13119	12349	1207	VAI	22605	22009	2204	VFF
13123	12352	1208	WOM	22608	22012	2205	WOO
13126	12358	1209	WOM	22624	22028	2210	WOO
13129	12358	1210	WOO	22633	22037	2213	VCS
13132	12361	1211	WOO	22636	22040	2214	KMI
13135	12364	1212	KQM WLO	22639	22043	2215	WOM
13138	12367	1213	VCS	22643	22047	2216	WOM
13141	12370	1214	KVH CKN	22655	22059	2220	VAI
13144	12373	1215	WOM	22661	22065	2222	WOM
13166	12395	1222	KQM	22664	22068	2223	KMI WAH
13169	12398	1223	WOM	22677	22081	2227	WLO
13175	12404	1225	WLO	22680	22084	2228	KMI
13178	12408	1226	WLO	22689	22093	2231	CKN WLO
13185	12414	1228	WOO	22705	22109	2236	KMI WOO
13188	12417	1229	CFH KMI	22708	22112	2237	WLO

erate between 1600 kHz and 1800 kHz or between 46.61 and 46.97 MHz. These transmissions seem to be off-limits according to the ECPA, although the handsets associated with such equipment are specifically exempted from the ECPA. The handsets all operate between 49.67 and 49.99 MHz; those frequencies are also used by millions of "hands free" no-license FM transceivers used for short distance communications by campers, hikers, construction workers, bikers, and the like.

Using nothing more than an omni-directional antenna designed for the 50 MHz (6 meter) Ham band connected to my scanner for my cordless telephone handset eavesdropping, I've had spectacular results.

Ship/Shore Calls

As with aeronautical communications systems, the ECPA claims there's no prohibition in monitoring "any marine . . . communications system." That keeps the door open on an enormous number of great "private" communications frequencies from maritime ship and shore stations.

Pleasure boats plying the coastal waters

and inland waterways can usually be monitored exchanging telephone calls on VHF channels in the 162 MHz range. Some commercial vessels can also be monitored on these FM channels.

Pleasure and commercial vessels operating outside of communications range of VHF-FM stations will usually turn up on SSB (upper sideband) channels between 1600 kHz and 23 MHz. Many commercial vessels on inland waterways also use the HF/SSB frequencies, as do aircraft flying beyond the range of UHF stations.

Most coastal and inland waterways have at least one operational VHF marine operator channel, while major seaports have several.

On a worldwide basis, there are literally hundreds of high frequency channel pairs available for single sideband coastal and high seas telephone calls. In our listings we have included a selection of those channels available for use by base (shore) stations located in the USA and Canada. When it comes to HF telephone calls, it is (as usual) necessary to monitor only the shore station's frequency in order to monitor both sides of conversations. In some instances,

however, this doesn't work and it may be necessary to monitor both the shore station frequency and also the paired frequency used by the ship.

HF channels 16 MHz and above would normally be used only during daylight hours; those below 6 MHz would offer best results during hours of darkness.

Beepers Creepers

Our *Snoop's Guide* lists one-way radio paging channels. The channels in any given area might be used for voice or tone-only paging purposes, or a mix of those modes. The ECPA allows monitoring the tone signals but disallows the voice paging transmissions, so you'll have to be on your honor to listen only to the *diddle-de-boop-boop* tones and none of the often fascinating voice paging messages.

Miscellaneous Additional Information

At one time it was possible to tune across the HF spectrum and hear many point-to-point telephone calls from various nations of the world. While one does occasionally still

Scanner Guide

MHz	Paired	Chan. #	Service				
35.22	N/A	N/A	1-Way Paging				
35.26	43.26	Z0	Mobile telephone				
35.30	43.30	ZF	Mobile telephone				
35.34	43.34	ZH	Mobile telephone				
35.38	43.38	ZM	Mobile telephone				
35.42	43.42	ZA	Mobile telephone				
35.46	43.46	ZY	Mobile telephone				
35.50	43.50	ZR	Mobile telephone				
35.54	43.54	ZB	Mobile telephone				
35.58	N/A	N/A	1-Way Paging				
35.62	43.62	ZW	Mobile telephone				
35.64	N/A	N/A	1-Way Paging				
35.66	43.66	ZL	Mobile telephone				
35.68	N/A	N/A	1-Way Paging				
43.22	N/A	N/A	1-Way Paging				
43.58	N/A	N/A	1-Way Paging				
43.64	N/A	N/A	1-Way Paging				
43.68	N/A	N/A	1-Way Paging				
46.61	49.67	1	Cordless telephone				
46.63	49.845	2	Cordless telephone				
46.67	49.86	3	Cordless telephone				
46.71	49.77	4	Cordless telephone				
46.73	49.875	5	Cordless telephone				
46.77	49.83	6	Cordless telephone				
46.83	49.89	7	Cordless telephone				
46.87	49.93	8	Cordless telephone				
46.93	49.99	9	Cordless telephone				
46.97	49.97	10	Cordless telephone				
152.0075	N/A	N/A	1-Way Paging				
152.03	158.49	1	RCC Mobile telephone				
152.06	158.52	3	RCC Mobile telephone				
152.09	158.55	5	RCC Mobile telephone				
152.12	158.58	7	RCC Mobile telephone				
152.15	158.61	9	RCC Mobile telephone				
152.18	158.64	11	RCC Mobile telephone				
152.21	158.67	13	RCC Mobile telephone				
152.24	N/A	N/A	1-Way Paging				
152.48	N/A	N/A	1-Way Paging				
152.51	157.77	JL	Mobile telephone				
152.54	157.80	YL	Mobile telephone				
152.57	157.83	JP	Mobile telephone				
152.60	157.86	YP	Mobile telephone				
152.63	157.89	YJ	Mobile telephone				
152.66	157.92	YK	Mobile telephone				
152.69	157.95	JS	Mobile telephone				
152.72	157.98	YS	Mobile telephone				
152.75	158.01	YR	Mobile telephone				
152.78	158.04	JK	Mobile telephone				
152.81	158.07	JR	Mobile telephone				
152.84	N/A	N/A	1-Way Paging				
154.625	N/A	N/A	1-Way Paging				
157.45	N/A	N/A	1-Way Paging				
157.74	N/A	N/A	1-Way Paging				
158.10	N/A	N/A	1-Way Paging				
158.46	N/A	N/A	1-Way Paging				
158.70	N/A	N/A	1-Way Paging				
161.80	157.20	24	Marine telephone				
161.825	157.225	84	Marine telephone				
161.85	157.25	25	Marine telephone				
161.875	157.275	85	Marine telephone				
161.90	157.30	26	Marine telephone				
161.925	157.325	86	Marine telephone				
161.95	157.35	27	Marine telephone				
161.975	157.375	87	Marine telephone				
162.00	157.40	28	Marine telephone				
162.025	157.425	88	Marine telephone				
163.25	N/A	N/A	1-Way Paging				
171.285	162.685	YANKEE/ZULU	Air Force 1 and 2				
407.85	415.70	ECHO/FOXTROT	Air Force 1 and 2				
454.025	459.025	21	RCC Mobile telephone				
454.05	459.05	22	RCC Mobile telephone				
454.075	459.075	23	RCC Mobile telephone				
454.10	459.10	24	RCC Mobile telephone				
454.125	459.125	25	RCC Mobile telephone				
454.15	459.15	26	RCC Mobile telephone				
454.175	459.175	27	RCC Mobile telephone				
454.20	459.20	28	RCC Mobile telephone				
454.225	459.225	29	RCC Mobile telephone				
454.25	459.25	30	RCC Mobile telephone				
454.275	459.275	31	RCC Mobile telephone				
454.30	459.30	32	RCC Mobile telephone				
454.325	459.325	33	RCC Mobile telephone				
454.35	459.35	34	RCC Mobile telephone				
454.375	459.375	QC	Mobile telephone				
454.40	459.40	QJ	Mobile telephone				
454.425	459.425	QD	Mobile telephone				
454.45	459.45	QA	Mobile telephone				
454.475	459.475	QE	Mobile telephone				
454.50	459.50	QP	Mobile telephone				
454.525	459.525	QK	Mobile telephone				
454.55	459.55	QB	Mobile telephone				
454.575	459.575	QO	Mobile telephone				
454.60	459.60	QR	Mobile telephone				
454.625	459.625	QY	Mobile telephone				
454.65	459.65	QF	Mobile telephone				
454.70	459.70	6	Aero telephone				
454.725	459.725	7	Aero telephone				
454.75	459.75	5	Aero telephone				
454.775	459.775	8	Aero telephone				
454.80	459.80	4	Aero telephone				
454.825	459.825	9	Aero telephone				
454.85	459.85	3	Aero telephone				
454.875	459.875	10	Aero telephone				
454.90	459.90	2	Aero telephone				
454.925	459.925	11	Aero telephone				
454.95	459.95	1	Aero telephone				
454.975	459.975	12	Aero telephone				
462.75	N/A	N/A	1-Way Paging				
462.775	N/A	N/A	1-Way Paging				
462.80	N/A	N/A	1-Way Paging				
462.825	N/A	N/A	1-Way Paging				
462.85	N/A	N/A	1-Way Paging				
462.875	N/A	N/A	1-Way Paging				
462.90	N/A	N/A	1-Way Paging				
462.925	N/A	N/A	1-Way Paging				

come across such 'phone calls, for the most part this type of traffic has been shifted off the HF bands and is exchanged on microwave frequencies via artificial satellites. We have therefore not included information on overseas point-to-point calls inasmuch as most listeners are not equipped for such monitoring. This also goes for domestic mi-

crowave links carrying long-distance telephone calls across North America.

U.S. Army, Navy, and Air Force MARS frequencies in the HF bands can often be heard with "phone patch" traffic between the USA and overseas military installations (including naval vessels at sea).

FCC mobile units have auto-patch (direct

tone access) capabilities and can often be heard placing calls on 167.05 MHz. In the Washington, D.C. area, White House personnel and other VIP's have been heard with mobile telephone calls on 172.365, 172.395, and 172.425 MHz. Undoubtedly, there are other similar private federal mobile telephone systems.

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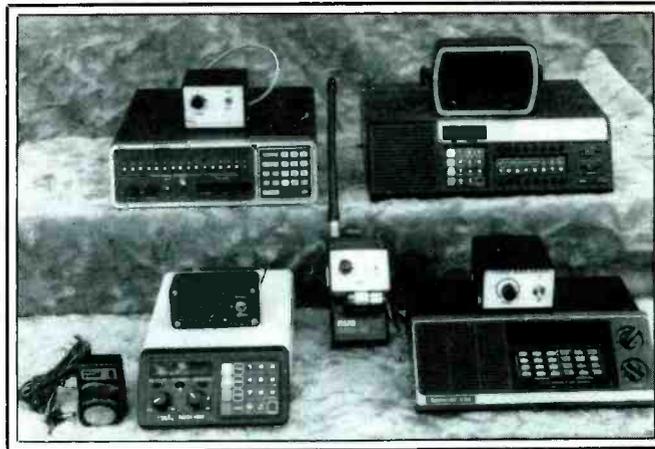
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*Mobile use subject to restriction in certain localities.
Celebrity look-alike — Joe Dimmick — Not to be construed as an advertisement or product approval by any celebrity.

CIRCLE 47 ON READER SERVICE CARD



Many better grade modern scanners, such as this Bearcat 800XLT can receive frequencies higher in the spectrum than the old 512 MHz UHF-T band limit. Converters are also available to permit older scanners to receive various frequencies above 500 MHz.



Clarifiers for unscrambling most non-digital voice scramblers have been in the hands of the public for years, although the ECPA now advises that they shouldn't be used. Be sure to get rid of yours soon!

The 30 to 50 MHz "low band," when skip conditions are right, can produce mobile telephone calls from distant areas such as the Caribbean area as well as Central and South America. Listen, especially, for West Indies phone calls in the 47 to 49 MHz frequency range.

It is worth noting that in many remote areas of the United States there aren't any

landline telephone facilities. Some folks located "way back up in the hills" and on small offshore islands (such as those that lie off the coast of Maine and Washington) have telephone facilities that are operational on VHF mobile telephone operator channels.

The Big Ear

Persons talking on the telephone general-

ly assume that their 'phone isn't tapped. The public has never firmly grasped the fact that, while there probably isn't a hardwire classical "tap" on their phones, modern technology has caused a great many telephone calls to be transmitted by radio in one form or another including by land microwave relays, satellites, as well as the HF, VHF, and UHF communications systems discussed in this

W5XJ

SOUTHWESTERN BELL TELEPHONE CO.
SAN ANTONIO, TEXAS

This will confirm that you heard W5XJ
San Antonio Mobile Service on 35.300 mc.
10/14/86 at 10:10 AM. Power: 2.50 W.
Antenna: Coax. Remarks:

(KX2262) *[Signature]*

K2XDV

NEW YORK TELEPHONE CO.
PORT CHESTER, N.Y.

This will confirm your reception of K2XDV
on 35.660mc. Dec 20, 1986 at EST
Power: 2.0 Watt FM SSB. Antenna: 100' Coax
Remarks:
This trans is operating as a satellite unit
for the NY-Beacon Highway System and your sampling
is simultaneous with W5XJN - No issue NY - Your reception on
at 5-90A would be normally poor. T. C. Barrett 10/20/86

W5XKR

SOUTHWESTERN BELL TELEPHONE CO.
AUSTIN, TEXAS

This will confirm your reception of "Austin
Mobile Service" station W5XKR on 55.300 mc/s.
October 30, 1986. Power: 2.50 Watts
Antenna: Coax. Remarks:

(KX2263) *[Signature]*

In the 1940's, when mobile telephones were still a novelty, the base stations freely QSL'd and made for interesting "skip" DX. Those days are gone forever. (QSL's courtesy of Tom Kneitel.)

Calendar No. 1064

99TH CONGRESS
2d Session

S. 2575

To amend title 18, United States Code, with respect to the interception of certain communications, other forms of surveillance, and for other purposes.

IN THE SENATE OF THE UNITED STATES

JUNE 19 (legislative day, JUNE 16), 1986

Mr. LEAHY (for himself, Mr. MATHIAS, Mr. THURMOND, Mr. ANDREWS, Mr. STAFFORD, and Mr. DeCONCINI) introduced the following bill; which was read twice and referred to the Committee on the Judiciary

SEPTEMBER 27 (legislative day, SEPTEMBER 24), 1986

Reported by Mr. THURMOND, with an amendment

[Strike out all after the enacting clause and insert the part printed in *italics*]

OCTOBER 1 (legislative day, SEPTEMBER 24), 1986

Referred to the Committee on Commerce, Science, and Transportation for a period of twenty-four hours

OCTOBER 2 (legislative day, SEPTEMBER 24), 1986

Committee discharged and placed on the calendar pursuant to the order of October 1, 1986

A BILL

To amend title 18, United States Code, with respect to the interception of certain communications, other forms of surveillance, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*

2 *tives of the United States of America in Congress assembled,*

The recently passed ECPA tells the public that it must ignore the ability of receivers to tune in certain frequencies.

special report. Such conversations can and are readily monitored by any and all persons having equipment that can bring in those frequencies.

Most members of the general public conduct their telephone conversations as if unknown ears aren't—no, couldn't possibly be—listening to what they are saying. Even when they are told otherwise, the concept appears so preposterous to them they usually refuse to believe the very real possibility, or else the warning quickly slips from their awareness as soon as they become deeply involved in conversation. Interestingly, such conversations sent out over the airwaves may contain X-rated language by which the FCC would find reason to bring action against a broadcast, Ham, or CB station transmitting same. No person using foul language, plotting a crime, or doing anything else in that vein has ever been prosecuted or fined by the FCC, nor have any Common Carrier station licenses ever been revoked or even threatened by that agency! As a result, communications over these frequencies have become a wide open free-for-all.

It's no wonder the CMT industry is anxious to keep the public from listening in on what's going on there! It was a swift move on their part to make it illegal to monitor such antics before the public got an earful and began screaming to the FCC about the language taking place with the FCC's tacit approval and under their licenses.

The text of the ECPA, as well as Sections

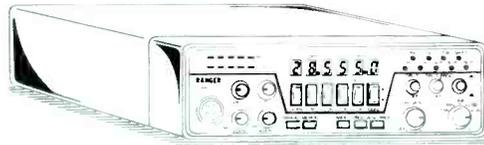
633 and 705(a) of the Communications Act of 1934, are documents that should be read, and understood and adhered to by all who endeavor to monitor two-way communications. We certainly advise doing so in order that the implications of those documents can be applied to all of your monitoring activities.

The HF and scanner frequency guides presented here offer a rather complete guide to electronic snooping in North America, including those frequencies and bands

that the ECPA now says you should avoid. Monitoring base station frequencies will often produce both sides of a given conversation. Column 2 lists the paired frequency used by the vehicle/ship/aircraft that is communicating with the base station on the indicated frequency. Some channels have been given names or designator numbers/letters; that information is shown in Column 3.

Now you know where to listen, and which frequencies to avoid! **PC**

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Up to five preset frequencies may be stored in the computer's memory.

The AR-3300 can be programmed to split transceive. Transmit on one frequency and receive on another. This is accomplished by programming the shift controls. Any two frequencies within its operating frequency range may be used. The frequency display will automatically show both frequencies.



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CIRCLE 30 ON READER SERVICE CARD

June 1987 / POPULAR COMMUNICATIONS / 27

Raised On Radio

Radio, The Way It Was In The Golden Era

BY ALICE BRANNIGAN

Broadcaster WSB grew up with Dixie from its days as an awkward hillbilly territory to its present status as a major commercial and cultural region of the nation. When Atlanta's WSB first went on the air in 1922, it ran only 100 watts and it was the first broadcasting station in the "Old South."

In its earliest days, WSB was little more than an attention getting device whipped up by *The Atlanta Journal*, the station itself run from a small spare room at the newspaper's offices. Despite its small size, WSB rapidly became hugely popular with its wide variety of programs that included stories, news, lectures, and spelling bees. By 1925 the station had outgrown the humble quarters of its first days. At that point the station moved to the top of Atlanta's elegant Biltmore Hotel where WSB became *The Voice of The South*. The callsign stood for *Welcome South, Brother!*

As WSB's audience and influence continued to grow throughout the southeast, it produced programs (by the early 1940's) such as the "WSB Barn Dance" that for a time turned Atlanta into the country music capital of the world. By the 1940's, WSB had increased its power to 50 kW and its transmitting site was moved to nearby Tucker, GA.

Today, WSB still holds down its 750 kHz frequency with a powerful signal that can be heard at night throughout much of North America. Not long ago, the station donated its files and archives (more than sixty years worth of logs, letters, recordings, photos, scripts, and equipment) to Georgia State University. This important and vast collection of memorabilia is a virtual history of broadcasting.

Our view of WSB shows the station at some point in the past when its entire operation was housed in the Atlanta Biltmore Hotel. A four-wire antenna was strung between two towers, each approximately 90 feet in height.

Thanks to J. R. Hollis of Martinsburg, WV for providing us with background information about WSB.

On An Island With You

Thanks to Joe Hueter of Philadelphia, PA we can take a look at station CHGS of Summerside on beautiful Prince Edward Island in the Canadian Maritime Provinces. CHGS went on the air in the mid-1920's. At that time it was running 25 watts on 1120 and used the callsign CHLC.



The elegant Atlanta Biltmore Hotel as it looked when WSB was headquartered there.

Not long afterwards the station upped its power to 100 watts and changed its callsign to CHGS. The callsign stood for *Holmans Guarantee Satisfaction*, a reference to its owners, the R. T. Holman store, also known as "The World's Largest Small-Town Store."

CHGS was located right in the store at 180 Water Street, a block-long three-story structure with a brick exterior. The CHGS antenna was a two-wire affair strung between two small masts mounted on the store's roof.

By the mid-1930's the station had moved to 1450 kHz and had reduced its power to 50 watts. Just prior to the outbreak of WWII, CHGS moved to 1480 kHz, and by the end of WWII it had returned to 100-watt operation. Listings do not indicate that CHGS existed past the 1950's. It was a nifty little station, however. In the early 1930's, when it normally operated only two hours and fifteen minutes per day (an hour and fifteen minutes at noon then another hour at sundown) the station still found time once every month to run a special broadcast for DX'ers from 1 to 2 a. m. (EST). They had a nice QSL card, too.

Security In The Olden Days

The item about the radio station in the department store reminded me about the use of secret codes that banks, stores and manufacturers used when exchanging information on those who were seeking credit. In order to keep nosy telegraphers from accessing confidential financial information, credit managers concocted these elaborate codes. One of the problems was that there were so many different codes in use that it took lots of time to locate the right one. Also, some of the same secret signals turned up in the codes of more than one company, and with different meanings. What's worse,

as the meanings of the codes got loose, new ones had to be made up. It was a mess!

We have here one of these codes, as used by the Equitable Mercantile Co., location unknown. The code word *Crow* asks, "What is his estimated worth?" Words running from *Adam* to *William* might be used to reply, specifying amounts between \$50 to \$300,000 "and upwards." The word *Pittsburg* advised that his "personal character and habits not good." By stringing together several of these words in a credit inquiry, and by responding in kind much could be learned.

None of that ECPA garbage for our ancestors—they knew how to achieve communications security long before the days of hackers and the CMT industry's lobbyists! *Right on!*

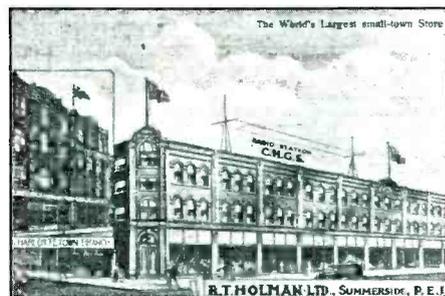
Antique Transmitter

Bill Turner, W2WV, of Clearwater, FL sent along a photo of an old (1921) Westinghouse Type TF transmitter. Even though the rig carries the legend "Licensed for Amateur and Experimental Use Only," Bill says that it was used by a small broadcasting station. Bill restored the transmitter and it is now in a museum.

Shortwaver

One of the more popularly chased short-wave broadcasters of the 1950's and 1960's was *Radio Surinam*, operated by Algemeene Vereeniging Radio Omroep. This was a commercial station that operated on 3395, 4852, 15405 and 15465 kHz (a broadcast outlet operated on 1035 kHz with 350 watts).

Radio Surinam, used the slogan *Surinam Calls The Caribbean*, and had programs in English, Spanish, and the language of Surinam (Talkie-Talkie). A QSL from this sta-



Holman's Department Store was the home of station CHGS.

The Equitable Mercantile Co.

CODE

—FOR—

Obtaining information by Telegraph

Is placed in the hands of each of our subscribers, also in the hands of all our associate Attorneys. We think the attorneys will readily understand its use without further explanation.

QUESTIONS.

- "CANARY.".....Is he (or the firm) good for. (See key for Amount and Time.)
- "CROW.".....What is his estimated worth?
- "DOVE.".....Does he pay promptly?
- "EAGLE.".....Is he much in debt?
- "HAWK.".....Is he in any financial trouble?
- "OWL.".....What is his stock estimated worth?
- "PARROT.".....Does he own any real estate?
- "PARTRIDGE.".....Is the real estate in his own or his wife's name?
- "PEACOCK.".....What is the real estate probably worth over incumbrances?
- "PIGEON.".....What is the prospect of his success?
- "PLOVER.".....Are his personal habits and morals good?
- "QUAIL.".....Has he ever failed?
- "ROBIN.".....What is his credit?
- "SNIPE.".....Telegraph, at our expense, full report per Code.
- "SPARROW.".....Write us by first mail full report; postage will be sent by mail.

DO NOT MISLAY THIS. If lost, write at once for another. Our latest Legal and Bank Directory will be mailed to Attorneys at any time for 50 cents—the bare cost. This Code is also on page 9 of the Directory.

AMOUNTS.

"ADAM".....	\$50 to	\$100
"CALVIN".....	100 to	200
"CHARLES".....	200 to	300
"DAVID".....	300 to	400
"GEORGE".....	400 to	500
"HENRY".....	500 to	750
"HIRAM".....	750 to	1,000
"JAMES".....	1,000 to	1,500
"JACOB".....	1,500 to	2,000
"JESSE".....	2,000 to	3,000
"JOHN".....	3,000 to	5,000
"LORENZO".....	5,000 to	7,500
"MOSES".....	7,500 to	10,000
"NATHAN".....	10,000 to	15,000
"PHILIP".....	15,000 to	20,000
"ROBERT".....	20,000 to	30,000
"RUDOLPH".....	30,000 to	50,000
"SAMUEL".....	50,000 to	75,000
"SOLOMON".....	75,000 to	100,000
"THOMAS".....	100,000 to	200,000
"WALLACE".....	200,000 to	300,000
"WILLIAM".....	300,000 &	upw'ds

TIME.

"BLACK".....	30 Days.
"BLUE".....	60 "
"ORANGE".....	90 "
"RED".....	4 Months.
"WHITE".....	6 "

ANSWERS.

- "ALBANY".....Not regarded a safe risk for that amount.
- "ATLANTA".....Regarded good for that amount and time.
- "ATTICA".....Estimated worth (see amount key).
- "BALTIMORE".....Always prompt in payments.
- "BANGOR".....Generally prompt in payments.

- "BOSTON".....Behind in payments.
- "BUFFALO".....Not much in debt.
- "CHARLESTON".....Often asks accommodation.
- "CHICAGO".....Heavily in debt.
- "CINCINNATI".....Do not know that he is in any financial trouble.
- "COLUMBUS".....Suits against him now pending.
- "DANVILLE".....Judgments against him.
- "DENVER".....Asking extension.
- "DUNKIRK".....Stock mortgaged.
- "ELMIRA".....Furniture and fixtures mortgaged.
- "ERIE".....Sheriff in possession. [key]
- "EVANSVILLE".....Stock estimated worth (see amount)
- "FLORENCE".....Owns real estate estimated worth over incumbrances (see amount)
- "GALVESTON".....No equity in real estate. [key]
- "GENEVA".....Real estate in his wife's name.
- "HANOVER".....Real estate in his own name.
- "HARTFORD".....Prospect of success good.
- "HUDSON".....Prospect of success fair.
- "ITHACA".....Prospect of success doubtful.
- "JACKSON".....Making money.
- "LOUISVILLE".....Doing a large business.
- "MEMPHIS".....Doing very little business.
- "MILWAUKIE".....Selling below cost.
- "MOBILE".....Losing money.
- "NASHVILLE".....Credits largely.
- "PHILADELPHIA".....Personal character and morals good.
- "PITTSBURG".....Personal character and habits not good.
- "PROVIDENCE".....Has heretofore compromised with his creditors.
- "QUINCY".....Has never failed nor compromised
- "READING".....Credit good.
- "RICHMOND".....Credit fair for small amounts.
- "SACRAMENTO".....Credit very moderate.
- "SAVANNAH".....Credit not recommended.
- "SPRINGFIELD".....Unworthy of credit.
- "TOPEKA".....Buys for cash.
- "TRENTON".....No mortgage on real estate.
- "UTICA".....Offering to compromise.
- "VICKSBURG".....Claim can be collected by law.
- "WHEELING".....Execution proof.
- "WORCESTER".....Worth nothing.
- "WINDSOR".....Cannot explain by Code; will write.

Speaking of communications security codes, this one probably dates back 100 years and was intended for exchanging credit information so that nosy telegraphers could not figure out the questions or the answers!

tion was submitted by Howard Siegel of New York, who logged the station on 15465 kHz in July of 1960. The QSL shows the small and neat single-story structure displaying a sign reading AVROS, the initials of the station's licensee in the city of Paramaribo.

It's one more of the colorful shortwave broadcasters from the past, but not so far back into the past that it's beyond the memory of many POP'COMM readers.

A Combo Station

Every time we have run photos or QSL's from early Experimental stations we receive letters asking for more. Guess that experimenters were the very heart and soul of early communications and our readers feel a certain kinship to those tinkerers of yesteryear.

Let's then pay a visit to Experimental station 9XH, of the C.F. Burgess Laboratories, 1001 East Main St., Madison, WI. This station operated from 1925 to 1930 (it eventually had the callsign W9XH). The elaborate station ran three transmitters. A large transmitter (shown at the right foreground) operated on 3748 kHz. Another rig (on the shelf) transmitted on 7496 kHz and was operated from heavy duty "B" batteries. (Burgess batteries, what else?) The rig at the center of the



An antique Westinghouse Type TF transmitter intended for Amateur and Experimental work. It was used by a small broadcast station anyway!

desk operated on 14990 kHz. At the far left are two receivers, one tuned to 4997 kHz and the other tunable from 3 to 20 MHz. The antenna was a vertical supported by a 70-foot pole just outside the window.

Station 9XH, by the way, could also operate under the Ham callsign 9EK in order to contact Amateur operators. Quite a versatile station for its era.

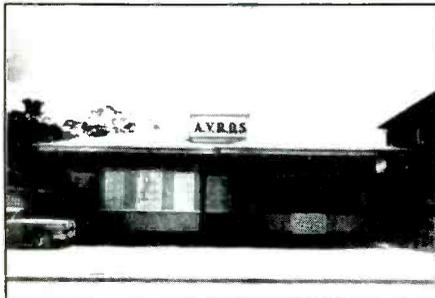
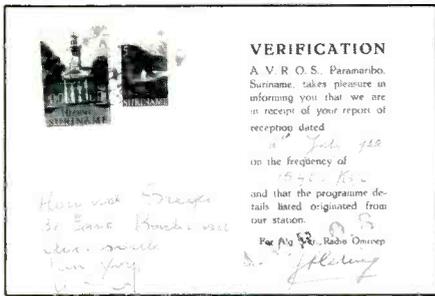
Smugglers Beware

What with all of the commotion in the me-

dia about how offshore drug smugglers are being tracked down by U.S. Coast Guard cutters as well as ships and aircraft from other federal agencies, let's not forget that this is nothing new. As I type this month's column, I'm monitoring for these communications, and simultaneously digging through my files to find a photo of the way it was done some 60 years ago.

Ah, yes, the good ship C.G. 198, a sturdy vessel of the U.S. Coast Guard in 1925. This vessel (callsign: NRRK), as shown in the photo, had a radio direction finder installed for a very specific purpose. It seems that during the days of bootleg booze (anybody out there ever hear of "Prohibition"?), the rum runner boats were often equipped with two-way communications for establishing delivery schedules with other vessels and with clandestine shore stations. The U.S. Coast Guard, which the rum runners tagged the "Dry Navy," carried federal Prohibition agents aboard the intercept cutters and one such agent is shown in our 1925 photo manning the radio direction finder aboard the C.G. 198. Just the thing for DF'ing in on rum runners.

The Coast Guardsman in his skivvy shirt (bending over just below the direction finder loop) is an unusual sight that you's seldom see in port these days, especially on deck



Doesn't look like much, but the building with the AVROS sign out front was a popular shortwave broadcaster (Radio Surinam) from past decades.

and only a few feet from a steely-eyed Officer of the Day. *That's* courage!

More Things Nautical

The Farralons are lonely barren islands about twenty-five miles west of San Francisco Bay. They are as bleak, storm-swept and rugged a group of islands as may be found anywhere in the world. There is nothing about their steep cliffs and rocky crags and their inhospitable, reef-fringed shores to appeal to anything or anybody except the birds and sea mammals that reside there in the National Wildlife Reserve.

Some sixty years ago, the Farralon Islands were host to a U.S. Navy direction finder station with the callsign NPI. This station operated on 375 kHz, and was second-

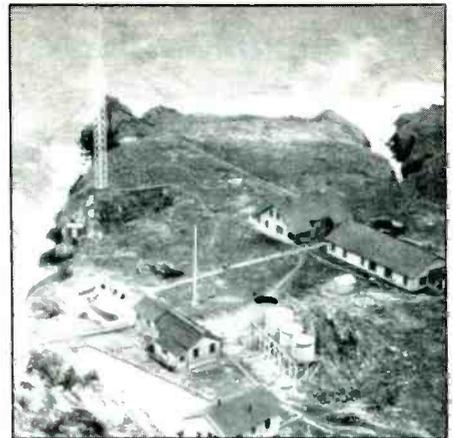
arily used as the only communications link with the mainland.

Our mid-1920's photo of the Farralons' South Island shows the radio station and living quarters for the station and lighthouse staff. The tall steel lattice tower can be seen next to the cliffs at the upper left. At the lower left is a combination tennis court and cistern to store rainfall collected for drinking. The roof of the largest building was made to serve as a shield in which the water was collected and then drained off into the tanks beneath the tennis court. The tennis court was actually the concrete protective roof covering the storage tanks!

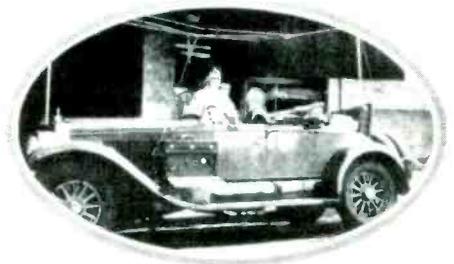
A Charmed Life

Know *The Charmed Life* was the slogan for an early and obscure station located in Seattle, WA. That slogan was created from the callsign of station KTCL, a 1-kW station on 980 kHz that was operated by the American Radio Telephone Company. This station went into operation in 1925 from its facilities in the New Washington Hotel. Surely, few modern observers of the broadcasting scene will recognize KTCL even though it created quite a stir with several daring innovations. One 1927 program, for instance, was a daily "woman's hour" featuring a segment called "Juniata's Shopping Tour." For that portion of the program, KTCL staff member Marie Hill was sent out in a Cadillac roadster equipped with complete transmitting facilities. From this rolling studio, Marie would park in front of the local stores that were KTCL advertisers and do her program. Her mobile broadcasting studio attracted large street crowds and an enthusiastic radio audience.

This was probably one of the first regularly scheduled programs to be sent to the studio from a radio-equipped remote studio. Regardless, the owners of KTCL seem to have come to the conclusion that the station needed a totally new image. In about 1928, KTCL was dumped and replaced by the owners' new image, KXA running 500

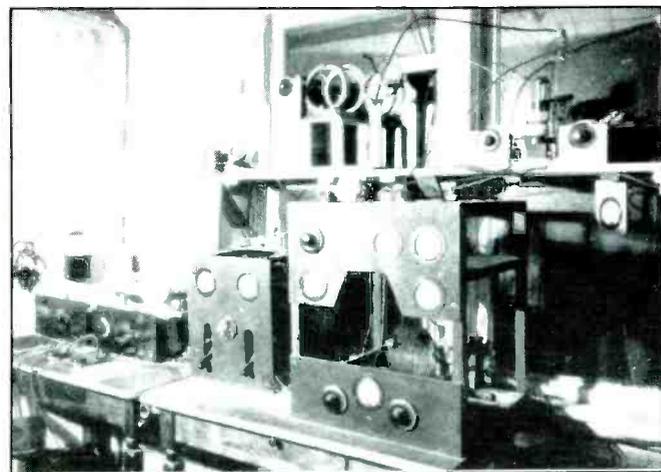


Naval radio station NPI operated on 375 kHz from the Farralon Islands off the coast of California. This place even had a tennis court!

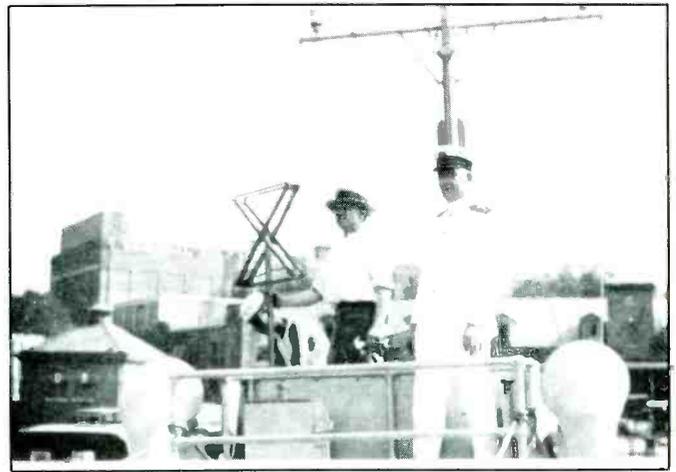


Marie Hill in her transmitter-equipped Cadillac during the short life of broadcaster KTCL, Seattle, WA.

watts on 570 kHz. KXA was located at 218 Bigelow Building, Forth Avenue and Pike. In the mid-1930's, KXA shifted to 760 kHz and further reduced its power to 250 watts. The frequency shuffle that affected most stations just prior to WWII saw KXA move to 770 kHz and run its power up to 1 kW from its transmitting plant at Second Avenue and Bigelow. KXA is still on 770 kHz, but it has had a full 50-kW signal for years.



Experimental station 9XH in Wisconsin operated on several shortwave frequencies during the 1920's. Ham contacts were also made using the callsign 9EK.



This U.S. Coast Guard cutter was equipped with a radio direction finder used to zero in on radio transmissions from offshore rum runners during the Prohibition years.

Seattle, Washington

February 21, 1936

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of this station on January 10, 1936 and verify same.

Yours very truly,

AMERICAN RADIO TELEPHONE COMPANY

K X A

Exit KTCL, enter KXA to take up where it left off. This KXA QSL card is from 1936.

Here's a salute to long-forgotten KTCL, a station that became history before its time, and an almost-forgotten page in KXA's archives. We were lucky enough to have a photo of KTCL's Marie Hill in her rolling radio studio. To follow that up, Joe Hueter of Philadelphia provided us with a peek at his KXA veri from 1936, with EKKO stamp.

Hi-Fi-Fo-FM

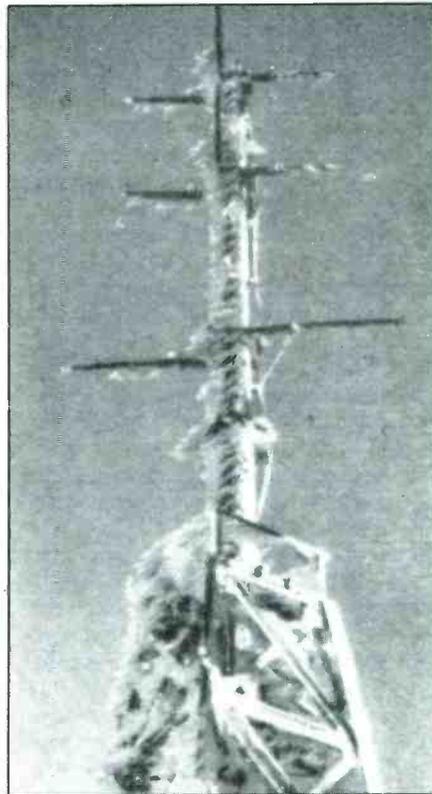
We don't seem to get around to touching upon the pioneer FM broadcasters too often, so let's take care of that right now as we look at a most unusual station located on top of New Hampshire's 6,300-foot high peak known as Mount Washington. With winter temperatures hovering around -30°F, and with winds howling at 150+ mph, it's hardly hospitable. What it does have going for it is line-of-sight, and that makes it appealing for a VHF antenna location. Within the 100-mile transmitting range of an FM broadcaster located there in 1941 would be two million potential listeners!

The station on Mount Washington first went on the air as Experimental Licensee W1XER on 43.90 MHz, owned by the Yankee Network in Boston, MA. By the summer of 1941, the callsign had been changed to W39B, indicating that it was authorized for commercial FM broadcasting.

W39B had a 50-kW sister station in Boston, W43B on 44.30 MHz. The two stations had a good grip on the FM audience in the Boston area, although it was quite an ordeal putting W39B on the air and keeping it there.

There is snowfall on Mount Washington every month throughout the year. On about half of the days each month, winds exceed hurricane velocity. In April of 1934, the wind there hit a record 231 mph. Designing an antenna and transmitter building for operation there was a big task.

Complete supplies for a full year's work had to be brought to the summit before the snows of winter shut down the cog-wheel railway and also the eight-mile roadway to the top. Food, clothing, medicines, as well as equipment was brought up, including a



The turnstile FM antenna at W1XER/W39B atop frozen Mount Washington. It had to have spring-loaded elements to keep them from snapping under the weight of tons of snow and ice.

single 10,000 gallon fuel storage tank and ten 2,500 gallon tanks.

The horizontal antenna elements arranged in a turnstile fashion around the supporting mast were designed with "auto-springs" in order to withstand the weight of thousands of pounds of snow and also the ice rime that formed almost instantly on almost any exposed surface. Sometimes "ice feathers" reached a length of two or three feet and a thickness of four to six feet.

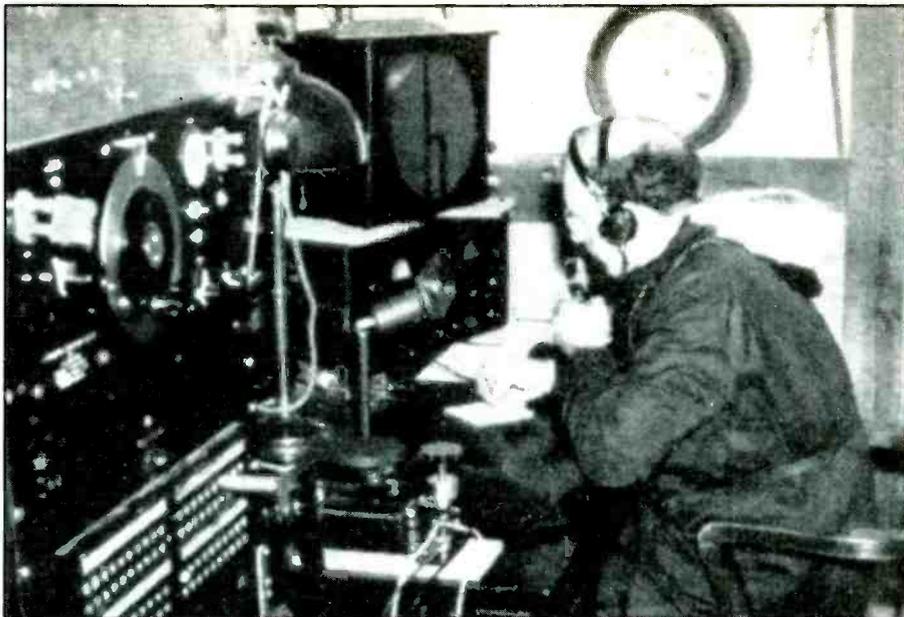
A solid cement foundation for the transmitter building was poured into pits that

were four feet deep into the mountain's solid granite. Outer walls were of fibre board backed by an eight-inch brick wall over a heavy steel frame. There were no windows in the structure; ventilation was by means of fans drawing air in through 300 three-inch holes in the cement foundation. Sometimes rain water would get into the vent holes and freeze before it could be pumped out. That meant melting the ice with live steam made from the water that had been trucked to the summit. Eventually a well was drilled and a water source was found at a depth of 1,100 feet.

Programs were sent to W39B by means of a UHF studio-transmitter link in Boston. This station later became known as WMTW on 98.1 MHz, while its sister station in Boston became WGTR on 99.1 MHz. Eventually WMTW left the air; WGTR later became WEEL-FM (then WHTT) on 103.3 MHz. There is apparently no direct lineage between the old Mount Washington station and the present station there, WHOM on 94.9 MHz.

Until Next Time

Looks like that's a wrap for this issue. Keep sending material for this section, photos, postcards, QSL's, or anything else that has to do with old-time broadcasting and communications. Since we are unable to return items submitted, if you need the QSL cards or letters for your collection, please send good quality (sharp contrast) copies made on an office copier.



Dressed like an arctic explorer, W39B operator Alex McKenzie is shown exchanging weather data with his Boston headquarters.

Historic Ham QSL's

"River of Gold"—what a great name for a country. Wouldn't you like to tell people you came from a place with a name like that? Of course, the river of gold in the place that once bore that name had nothing to do with the precious metal nor with the type of river that resembles the Mississippi.

Rio de Oro, as it was called (in Spanish) was afloat in the golden sands of the Sahara Desert of North Africa. It was also known as Spanish Sahara. This was a Spanish colony in northwest Africa consisting of two zones, Rio de Oro (extending from Cape Blaine north to Cape Bojador—73,362 square miles), and Saguiet el Hamra (extending from Cape Bojador to latitude 27°40'N—area 32,047 square miles). This colony was bounded on the north by Morocco, on the east and south by Mauritania, on the west by the Atlantic Ocean. It had a total population of only 25,000, mostly in and around the main town of Villa Cisneros in Rio de Oro, and the town of Smara in Saguiet el Hamra.

Amateur radio callsign prefix lists before 1950 didn't indicate any allocation for this area, and when the 1950 ARRL list came out it showed only an unofficial prefix. By 1953, it was listed as the Spanish Sahara and shown with the prefix EA9, although by 1955 the prefix was shown as being used for Ifni, Rio de Oro, and Spanish Morocco. No matter; by the beginning of 1976, Rio de Oro was abolished. After the 8th of January that year, the ARRL refused to allow contest or award credit for new contacts made with the place with the picturesque name.

In April of 1976, Morocco annexed more than 70,000 square miles of the



phosphate-rich Spanish Sahara. The remainder of the area was annexed by Mauritania inasmuch as Spain had pulled out of the entire colony. A guerilla movement ("Polisario") had proclaimed the area independent as soon as Spain left and (with the support of Algeria) launched attacks upon Moroccan and Mauritanian installations. With U.S. aid, Morocco fought back. Mauritania eventually signed a treaty with the Polisario and left the area, but in 1980 Morocco moved in to occupy those territories as the Polisario continued their guerilla attacks. After years of guerrilla fighting, Morocco still controls the entire region as the Polisario Front fights on in a war that gets no media attention.

Our QSL comes from the earliest days of Ham activity in (then) peaceful Rio de Oro, 1953. Station EA9DD was operated with the title "First Official Amateur Station in Rio de Oro." Its operator was Luis S.G. Viguera, whose callsign in Spain was EA4BH. Today the prefix EA9 is assigned to Ceuta and Mellita, small Spanish-owned enclaves on Morocco's Mediterranean coast.

EA9DD ran CW exclusively on the 14 MHz band. Gone but not forgotten! **PC**

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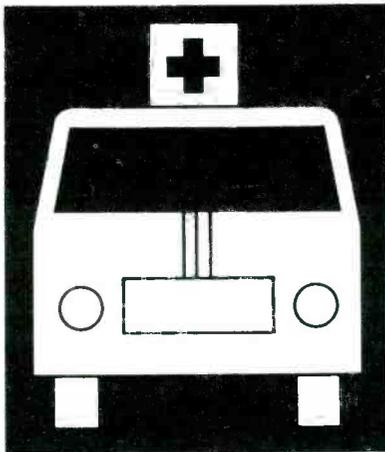
CITY _____ STATE _____

DATE _____ ZIP _____

EMTs Exposed to Tuberculosis During Lifesaving Attempt

Two emergency medical technicians in Decatur, Tennessee were exposed to tuberculosis after administering mouth-to-mouth resuscitation to a stricken man. Mechanical resuscitation would have been used, but the ambulance with the necessary equipment had broken down on the way to the emergency.

According to an account of the incident in the *Chattanooga News*, EMTs Dennis Hughes and Chris Finnell were responding to a report of a man who had collapsed in a Meigs County bar when the only Meigs ambulance that was in running condition backfired and lost power about two miles from the scene.



Normally, mechanical resuscitation would have been used in this case, but that equipment was in the disabled ambulance.

By giving Millsaps mouth-to-mouth resuscitation, both Hughes and Finnell exposed themselves to tuberculosis infection. The EMTs continued CPR for about 20 minutes until another ambulance from a neighboring county arrived at the scene.

Despite the efforts of the two EMTs, Millsaps was pronounced dead on arrival at Athens Community Hospital. "If we hadn't given him mouth-to-mouth, we would have opened ourselves to lawsuits for negligence

by the family," Hughes told the *News*.

After the attempted resuscitation, Hughes and Finnell were laid off without pay until TB tests were administered. They cannot work until the tests show that they do not have tuberculosis. If the tests come back positive for TB, the two men will not be able to work as emergency medical technicians under state law. "Doctors say there is only a slim chance we will have the disease," Hughes said.

Finnell said that his main concern was to try and help the victim. Even with the known risks, he said that he would do the same thing again.

Hughes would not speculate on whether Millsaps might have been saved if the ambulance was in better running condition and was able to arrive at the scene with the proper equipment. The EMTs reportedly hope that this incident will force the county to provide improved ambulance service.

For their attempted resuscitation, placing both their health and their jobs at risk, emergency medical technicians Dennis Hughes and Chris Finnell will receive the SCAN Public Service Award. The award consists of a special commendation plaque and a cash prize. Scott Carr of Dalton, Georgia will also receive a commendation plaque for making the nomination.

Congratulations to all of you. 

SCAN PUBLIC SERVICE AWARD

Hughes waited with the ambulance while Finnell was able to get a ride to the bar with friends. According to Hughes, the victim, Eddie Dean Millsaps, had collapsed but was still breathing when Finnell arrived at the bar. Millsaps went into cardiac arrest as Hughes arrived on the scene. Both EMTs administered CPR, even though they knew that Millsaps was a tuberculosis patient.

Best Equipped

Bob Bruce of Bakersfield, California writes that he is a "very serious" listener of public service, EMS, paramedic and aircraft frequencies, and also enjoys listening to shortwave and the Amateur bands.

This radio shack can definitely be put in the "very serious" category, with a Regency MX-3000 scanner, Cobra 2000 GTL CB radio, ICOM IC-H16 16-channel programmable VHF transceiver, ICOM IC-R70 shortwave receiver, Scanfair eight-channel crystal radio, JIL SX-100 multiband radio, Realistic Pro-2021, Realistic Pro-32 handheld and a weather alert radio.

Bob also has three interesting older radios—a 1941 Silvertone AM radio (on file cabinet); a 1951 Hallicrafters SX-100 shortwave receiver; and a 1941 Firestone Air-Chief AM and shortwave receiver (on



SCAN PHOTO CONTEST WINNERS

desk). Moving to a little more modern equipment, Bob uses an Atari-12000 computer connected to the IC-R70, and an MBC code reader that reads Morse code and radioteletype. Not shown in this photo are a Regency MX-4200 and Regency HX-1000 scanner, and a Tempo 10-channel programmable VHF transceiver.

Bob estimates that his total "scanner capacity" is 550 scanner channels. We thought you would like to know.

Congratulations, Bob!

Best Appearing

It seems there is no shortage of attractive shacks among our readers. James Noel of South Rockwood, Michigan, writes that he had been meaning to send in this photo for some time before he finally got around to submitting it. We're glad that he did!

James uses a Bearcat 210 scanner, Bearcat 100, Bearcat Four Six for mobile use, Realistic Pro-30 for air and mobile listening, Uniden CR-2021 communications receiver,



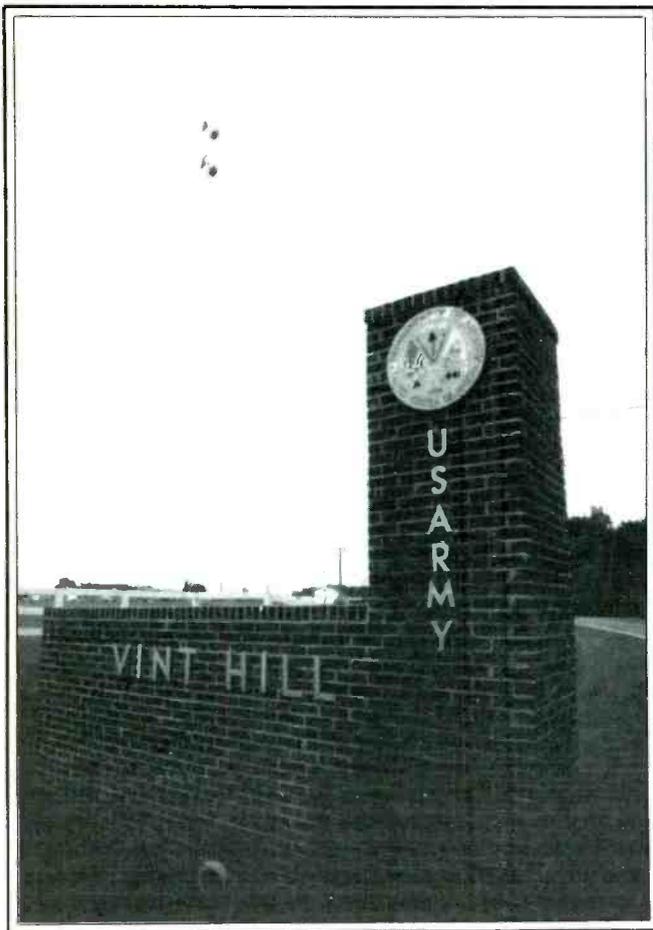
er, and a Liberty AM/FM/shortwave with a five-inch television and cassette recorder.

All of the equipment shown here can be run from a home-built power supply and battery charger that provides five amps per hour at 12 volts in the event of a power outage. A longwire antenna is used for shortwave and the scanners are connected to dipole and ground plane antennas.

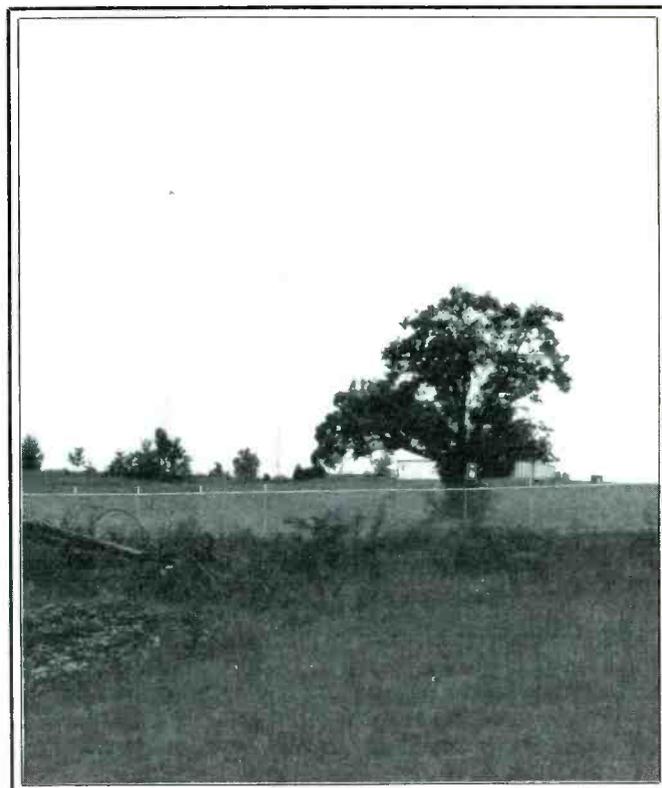
James is a volunteer fireman for the South Rockwood Fire Department and a licensed Amateur operator. He works as an electrician, and says that he really enjoys scanning and shortwave listening during his off hours.

A charter SCAN member, James got some of his ideas for the power supply and antennas from SCAN articles.

We hope you continue to enjoy SCAN and all the other things Popular Communications has to offer, James! 



Main gate at the federal compound known as Vint Hill Farm. Despite its deceptively rustic name and its location in the Virginia countryside, it seems to be at least one of the sites from which mysterious "numbers" transmissions originate.



The first close-up view of the communications facilities at Warrenton appeared in our July 1986 issue. We have been on the receiving end of additional data ever since.

Strength In Numbers

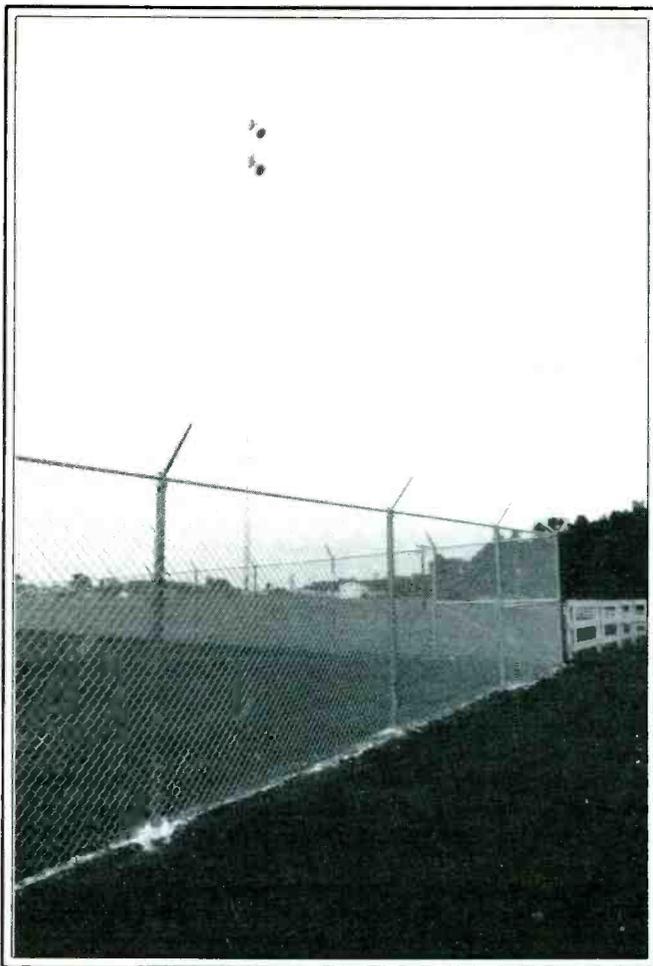
New Pieces Of The Puzzle Surrounding The Mysterious "Spy Numbers" Stations Are Found! How About Some New Frequencies To Ponder?

BY TOM KNEITEL, K2AES, EDITOR

It's been more than 20 years now that the shortwaves have been buzzing away with mystery transmissions consisting of groups of numbers. They come in RTTY and CW versions, also in AM and SSB voice modes with male and female announcers. Sometimes they're in Spanish, sometimes English, or Czech, Chinese, Polish, Portuguese, or Russian. Sometimes they appear to be live broadcasts; at other times they're obviously the type of automated recordings of the type used by the telephone company to advise callers that the number they've dialed has been changed. There are numbers galore, too; they come in groups of three, groups of four, groupings of five, sometimes in clusters of three followed by two others. DX'ers refer to such groups as 4F, 5F and 3/2F.

All such transmissions have generally come to be known as "spy numbers" broadcasts, the general assumption being that most are secret messages intended for use by espionage agents. Indeed, most of these transmissions easily give themselves to such a definition. Besides, it adds to the enjoyment of listening to and investigating the otherwise tedious program content. At least some of the numbers broadcasts, however, have been suspected of being connected with smuggling, drug trafficking, bank transfers, commodity and precious metals prices and trading, and with the transmission of mundane and corporate production and sales statistics.

Looking at the numbers groups from a coldly realistic viewpoint, they could be any and all of such things, and more. Switching plain-



A high chain-link fence crowned with barbed wire gives you the impression that they don't want anybody to get too close to the source of the numbers broadcasts.

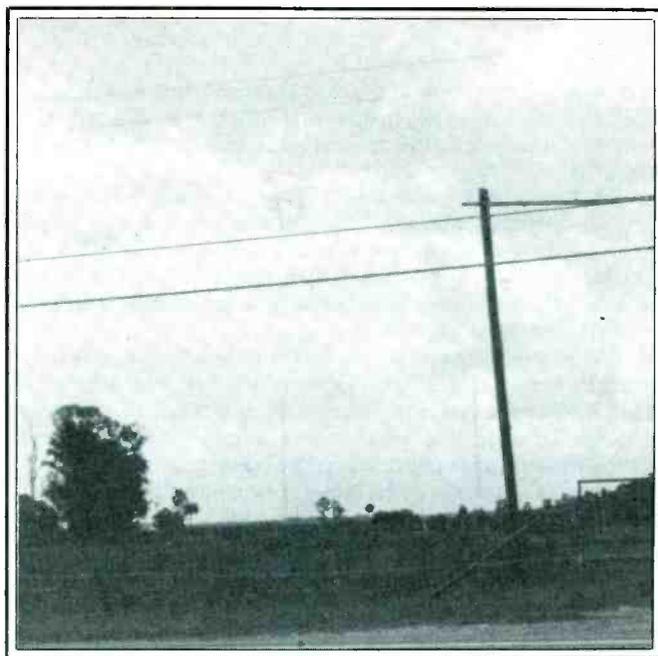
text into groupings of several digits (often five digits) is a very old and established form of encryption that dates back many decades before the first shortwave monitor intercepted the first "spy numbers" transmission.

Confessions and revelations by former espionage agents support the concept that some of their instructions came by means of shortwave numbers transmissions. These transmissions are said to be intended for use with so-called *gamma pads*. These are small sheets of padded codes intended for one-time use before the page is destroyed. Although a rather unsophisticated encryption method, it is almost impossible for an outsider to crack such a coding system.

Whence From?

Insofar as the transmissions most often regarded as being connected with espionage activities, those voice transmissions in Spanish that contain groupings of five figures (5F) come from Cuba. Those Spanish transmissions that consist of four figures (4F) appear to come from points within the continental United States. *Time* magazine once observed that some of those broadcasts came from south Florida. Indeed, in the early 1960's, one DX'er used a radio direction finder to zero in on two large radio towers sending out groups of numbers near Kissimmee, FL. Another large tower in the Florida Keys has been mentioned as a source of numbers transmissions.

The most frequently reported transmitting site for 4F Spanish numbers has been from within the security complex in the area of Remington, VA. This federal compound is known as the Warrenton Training Center (WTC).



One numbers investigator from within the ranks of the DX monitors took direction finder readings on some of the mystery transmissions and ended up at two transmission towers near Kissimmee, FL. But that was about 1963. These days, the Warrenton site appears to be the main transmission point in the United States.

The WTC is 45 miles west of Washington, D.C. and is a top-security federal installation surrounded by high fences and patrolled by an extremely hostile guard force. What is known about the WTC is that it is the site of the National Communications System, the U.S. Army's Vint Hill Farm Station, the Army's Electronics Material Readiness Activity (part of the Army's Intelligence and Security Command), as well as numerous transmitting facilities ostensibly operated by and for the State Department but suspected (by many) as being related to espionage activities.

The State Department transmitters located at this facility are often reported by DX'ers monitoring the utility ("ute") bands. These stations are distinguished by callsigns beginning with the letters "KKN" followed by two digits, such as KKN32, KKN50, etc.

DX monitors generally report these KKN stations using CW (sometimes RTTY) and sending repeating callsign markers. Other stations affiliated with these stations are located at various points around the world and are also widely reported by DX'ers who have listed their locations as London, Monrovia, Athens, etc.

The possible connections between the presumed diplomatic stations at the WTC and the mysteriously encrypted numbers transmissions have been explored at length, however, the whole story has yet to be told. There is a general presumption that it is more than just a coincidence that everything emanates from the WTC.

One new fragment of the puzzle has now surfaced and is being presented here in *POP'COMM* for the first time anywhere. We have reason to believe that the information is accurate, complete, and (most importantly) authentic, although (unfortunately) it can't be 100% guaranteed to be such. Assembling fragments of this type of information seldom offers iron-clad guarantees!

What we have come up with is an alleged list of frequencies associated with the National Communication System's Communication School at the WTC. This listing, which covers frequencies between 3 and 27 MHz, indicates that there are channel designator letters assigned to each individual frequency.

The information we were able to obtain doesn't indicate transmission modes, schedules, purposes, activity status, or those that may be used for receiving purposes only. All we have are the channel designator letters matched to more than eighty shortwave frequencies. The channel designator letters commence with "AA"

and end at "DE," with the corresponding frequencies ascending from 3215 kHz to 27325 kHz.

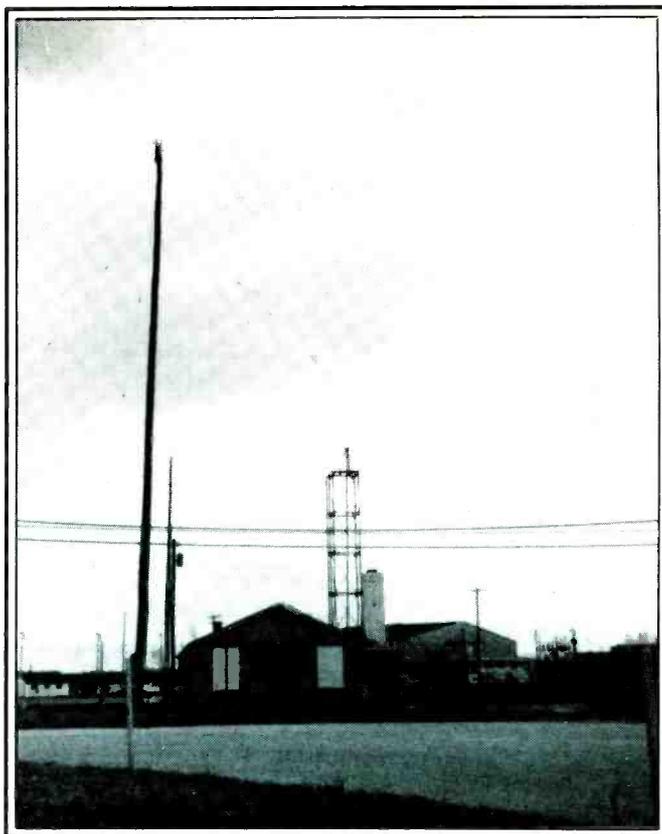
A cursory examination of the listing indicates that two channels ("CL" and "CS") show frequencies that are out of ascending order. There do not seem to be frequencies associated with the designator letters "CI" and "CK."

Although it seems that the NCS Communication School at the WTC is connected with the State Department, the frequencies shown don't match up with any known frequencies used by "KKN" stations. Channels "AT," "BA," "BF," and "CA" are active frequencies used for number group transmissions that have long been thought to come from the WTC complex.

In checking the frequencies against listings in Perry Ferrell's *Confidential Frequency List, 6th Edition*, and loggings sent in to POP'COMM columns in recent months, a number of interesting things were noted, although it doesn't necessarily mean or imply that the transmissions indicated have anything whatsoever to do with the WTC activities. In the listing presented here, those observations are shown after the word "Comment."

It's also worthy of mention that a great many of the frequencies don't seem to be ones that have been reported as being at all active with any transmissions. Most curious of all is the last frequency on the list; it turns out to be CB channel 32!

We leave it to those who are more adept than your author at interpreting this type of information; there's probably much more that can be extrapolated from this data than our brief look has provided. Those who wish to process the information given here are invited to submit any thoughts and interpretations. Our hope is that this newly obtained information will provide a significant piece of the riddle of the transmissions coming from the WTC facility.



Numbers transmissions, of course, come in many languages and from locations around the world. One European POP'COMM reader contends that this steel-shuttered building at an American military base in Europe is a numbers transmitting site.

Warrenton Training Center Communication School Frequency List

Freq. "AA" is 3215 kHz. Comment: German 5F groups, AM mode, reported 3217 kHz.

Freq. "AB" is 3220 kHz. Comment: German 5F groups, AM mode, reported 3217 kHz.

Freq. "AC" is 3237 kHz.
Freq. "AD" is 3250 kHz. Comment: Possibly paired with 3980 kHz.

Freq. "AE" is 3300 kHz. Comment: Possibly paired with 4061 kHz.

Freq. "AF" is 4460 kHz. Comment: CFL lists a tactical ID of "Tailpipe Perky" here in USB mode.

Freq. "AG" is 4520 kHz.
Freq. "AH" is 4540 kHz. Comment: A Canadian Forces frequency.

Freq. "AI" is 4545 kHz. Comment: German 5F groups, USB mode. CFL lists "3MH9," an unidentified CW station monitored here.

Freq. "AJ" is 4580 kHz. Comment: A USAF MARS frequency, USB mode.

Freq. "AK" is 4610 kHz.
Freq. "AL" is 4785 kHz. Comment: A USN frequency in Japan.

Freq. "AM" is 4830 kHz.
Freq. "AN" is 4870 kHz.
Freq. "AO" is 4885 kHz. Comment: USCG on Guam. Portuguese 5F groups reported on 4882 kHz, AM mode.

Freq. "AP" is 4890 kHz.
Freq. "AQ" is 4920 kHz. Comment: CFL reports encrypted RTTY here.

Freq. "AR" is 5065 kHz. Comment: A USN frequency in Greece.

Freq. "AS" is 5070 kHz. Comment: Spanish number groups reported here.

Freq. "AT" is 5090 kHz. Comment: German 5F (AM mode) Portuguese 5F (AM mode) groups reported here. CFL lists an AM/USB station here ID'ing as "134."

Freq. "AU" is 5097.5 kHz. Comment: One of the three "fractional" frequencies listed. More than likely an SSB or RTTY frequency.

Freq. "AV" is 5115 kHz. Comment: Spanish 4F groups (AM mode) here.

Freq. "AW" is 5207.5 kHz.
Freq. "AX" is 5250 kHz. Comment: Spanish number groups reported here.

Freq. "AY" is 5360 kHz.
Freq. "AZ" is 5790 kHz.
Freq. "BA" is 5810 kHz. Comment: An RFE feeder frequency. Comment: An interesting frequency with Spanish 4F (AM mode) and Portuguese 5F (AM mode) groups. Also used by NASA during Space Shuttle operations.

Freq. "BB" is 5830 kHz. Comment: CFL reports encrypted RTTY here.

Freq. "BC" is 5845 kHz. Comment: A feeder frequency for RFE.

Freq. "BD" is 5882.5 kHz.
Freq. "BE" is 6795 kHz. Comment: A Spanish numbers frequency. Also used for RTTY by the USN.

Freq. "BF" is 6840 kHz. Comment: A hot numbers frequency, with Spanish 4F, Portuguese 5F, and English 5F, (all AM mode).

Freq. "BG" is 6874 kHz. Comment: Spanish numbers here, also English 5F (AM mode).

Freq. "BH" is 7650 kHz.
Freq. "BI" is 8062 kHz.

Comment: German 5F (USB mode) reported on 8065 kHz.

Freq. "BJ" is 8186 kHz.

Comment: German 5F (AM mode) reported on 8190 kHz.

Freq. "BK" is 9052 kHz.
Freq. "BL" is 9112 kHz.

Comment: Spanish 5F (AM mode) reported on 9115 kHz.

Freq. "BM" is 9206 kHz.
Freq. "BN" is 9284 kHz.

Comment: CFL reports encrypted RTTY here.

Freq. "BO" is 9460 kHz.

Comment: German 5F (AM mode) reported here.

Freq. "BP" is 9470 kHz.
Freq. "BQ" is 9786 kHz.

Comment: Spanish numbers here.

Freq. "BR" is 9888 kHz.
Freq. "BS" is 9952 kHz.

Freq. "BT" is 10350 kHz.
Freq. "BU" is 10396 kHz.

Freq. "BV" is 10488 kHz.
Freq. "BW" is 10698 kHz.

Comment: CFL reports encrypted RTTY here.

Freq. "BX" is 10896 kHz.
Freq. "BY" is 11036 kHz.

Freq. "BZ" is 11526 kHz.
Freq. "CA" is 11606 kHz.

Comment: A USCG Pacific LORAN net frequency.

Freq. "CB" is 11692 kHz.

Comment: CFL reports an unidentified CW station sending encrypted traffic on this frequency.

Freq. "CC" is 12186 kHz.

Comment: Note proximity to frequency "CD," indicating that these two channels may be the upper and lower sidebands of the same carrier frequency.

Freq. "CD" is 12190 kHz.

Freq. "CE" is 12318 kHz.
Freq. "CF" is 13392 kHz.

Comment: CFL reports encrypted RTTY here.

Freq. "CG" is 13554 kHz.
Freq. "CH" is 13732 kHz.

Freq. "CI" was not shown on the list.

Freq. "CJ" is 14832 kHz.

Freq. "CK" was now shown on the list.

Freq. "CL" is 14679 kHz.

Comment: CFL reports an unknown RTTY station here ID'ing as DFZG. Note that this frequency is out of ascending frequency order.

Freq. "CM" is 14910 kHz.

Freq. "CN" is 15513 kHz.

Freq. "CO" is 15594 kHz.

Freq. "CP" is 15732 kHz.

Freq. "CQ" is 15820 kHz.

Comment: Used by USN in Guantanamo Bay, Cuba.

Freq. "CR" is 15840 kHz.

Freq. "CS" is 14876 kHz.

Comment: Out of ascending frequency order.

Freq. "CT" is 17630 kHz.

Freq. "CU" is 17660 kHz.

Freq. "CV" is 18560 kHz.

Freq. "CW" is 19470 kHz.

Comment: A Soviet Navy frequency.
Comment: An RFE feeder frequency.

Freq. "CX" is 19490 kHz.

Freq. "CY" is 20269 kHz.

Freq. "CZ" is 20940 kHz.

Comment: A Cuban Minrex (diplomatic corps) frequency.

Freq. "DA" is 22820 kHz.

Freq. "DB" is 23390 kHz.

Freq. "DC" is 24660 kHz.

Freq. "DD" is 26142 kHz.

Freq. "DE" is 27325 kHz.

Comment: This is CB channel 32.

PC

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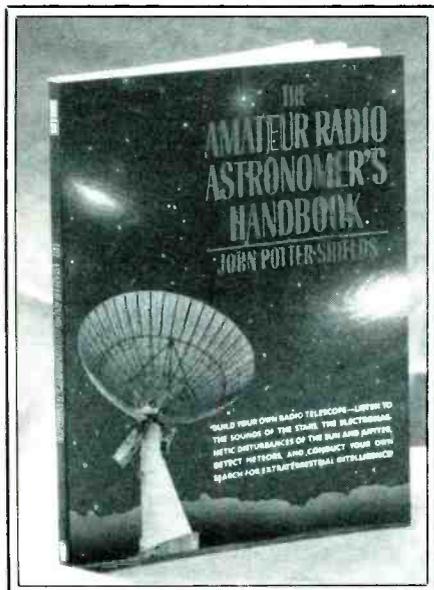
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BY R.L. SLATTERY



Stars In Your Ears

For too long, the science and art of radio astronomy has been the expensive first cousin of optical astronomy, available only to scientists and other professionals working with massive dish antennas paid for by universities, foundations, and governments. Even though you or I may purchase a high-grade optical telescope to peer out at the cosmos, we have tended to shun radio astronomy as being too complicated, arcane, technical, and costly.

A growing number of non-professionals, however, are now learning that DX'ing the cosmos can be more interesting and exciting than seeing it, and that the techniques used in getting small radio telescopes operating are neither difficult to master nor very expensive. The commercial availability of new/used satellite antennas, high-quality amplifiers and receivers, and modular components has at long last made radio astronomy a very practical and enjoyable aspect of the DX hobby. Now, DX enthusiasts with limited finances and technical expertise can give Carl Sagan a run for his money by entering into *Space*—*The Final Frontier*.

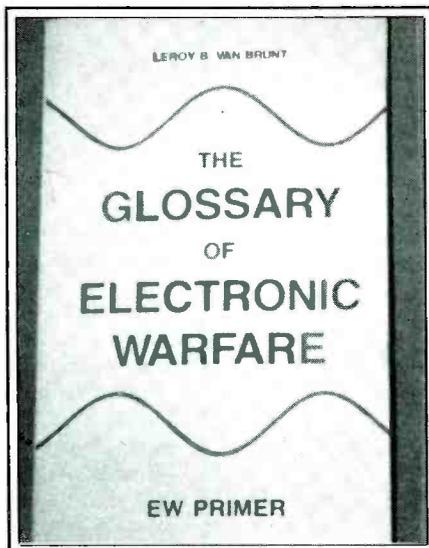
John Potter Shields' *Amateur Radio Astronomer's Handbook* is a large format 104-page book that begins with a comparison of optical and radio astronomy, then explains the behavior of radio waves, discusses the fundamentals of electronics, and then illustrates several projects ranging from simple to complex that will gently bring the reader into the world of cosmic DX. The projects are easy-to-build; the language throughout the book is non-intimidating.

Radio telescopes can be operated day or

night, even under a heavy cloud cover. They can detect solar disturbances, the strange surf-like noises coming from Jupiter, the passing of meteors, the violent processes at work inside pulsars, even exploding galaxies. You can also participate in the great scientific search for intelligent signals from extraterrestrial civilizations.

Radio astronomy by amateurs is growing rapidly as increasing numbers of hobbyists discover that the cosmos can be accessed at reasonable cost and without a lot of advanced technical training. You don't even need an FCC license to open up this previously invisible world. *The Amateur Radio Astronomer's Handbook* is your guide to getting into this. It's got more than 100 illustrations and photos, plenty of frequency data, plus everything you'd want to know about how and where to listen for the many things you can hear. This is an excellent book, we think the first of its kind and destined to be the basic text for this emerging aspect of the hobby.

Order *The Amateur Radio Astronomer's Handbook* from CRB Research, P.O. Box 56, Commack, NY 11725. The book is \$19.95, plus \$1 postage/handling to addresses in USA/Canada/APO/FPO.



Interesting Glossary

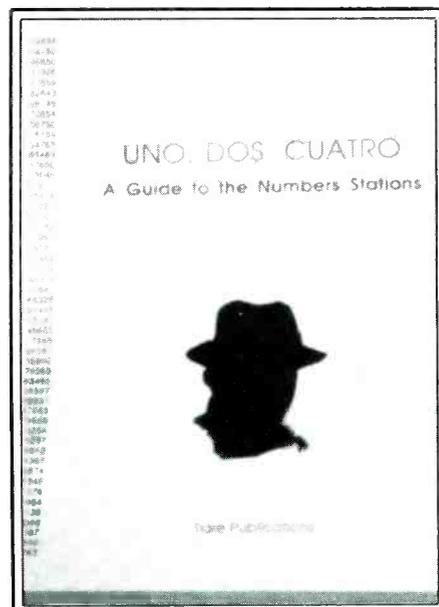
The Glossary of Electronic Warfare, by Leroy B. Van Brunt, is a 285-page book intended for a broad range of readers including weapon system designers, ECM, ESM, and ECCM system designers and those who work with such equipment, and for anybody else that would like a ready reference that makes understandable the terminology of Electronic Warfare.

The glossary is extremely comprehensive

and defines terms such as *Communications Deception*, *Fast Manual Frequency Shift*, *Delta Jamming*, *Pulse Jamming*, *Blanking*, and hundreds of other similar terms. At the front of the book there is a chapter that provides a primer on EW, outlining the basic objectives of jamming, counter-jamming, and other technologies that relate to electronic warfare.

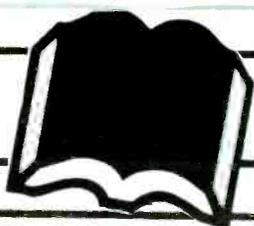
This is a professional book that is actually a companion volume to a formidable two-volume engineering-grade text on electronic countermeasures. *The Glossary of Electronic Warfare* is quite an interesting reference guide that is written in language that should easily understood by any person having a basic interest in and knowledge of communications. If you're a reader of *POP'COMM*, you're probably a person who will find this book useful and fascinating. There are some exceptionally clever techniques described, such as Direct Noise Amplification (DINA) jamming; that's when you feed received static into a transmitter and retransmit it with wideband amplification. That fools the victim into thinking the noise level has increased! Absolutely devilish!

The Glossary of Electronic Warfare is available at \$12.95 per copy to addresses in the U.S. and Canada, or \$13.45 international. All payments must be made in U.S. dollars and the only bank checks that will be accepted are those that are drawn on U.S. banks. Order it from EW Engineering, Inc., P.O. Box 28, Dunn Loring, VA 22027.



Numbers

Uno, Dos, Cuatro isn't a Spanish rendition of Lawrence Welk; it's a monograph on



the subject of so-called "numbers stations." Those are the shortwave stations that send out encrypted messages by means of numbers arranged in groups of four or five. Such stations have been heard by monitors for more than twenty years amidst speculation that the numbers contain spy messages, or drug prices, or whatever.

Although much has been written about the topic in many publications, there's always been an ongoing interest in numbers stations. This time we hear from someone who prefers to write under the pseudonym "Havana Moon" who boasts of being "a former member of the intelligence community," a claim the reader is left to either accept at face value or else reject due to the strange lack of information relating to the names of intelligence agencies and/or the type of duties performed. In other words, the claim might be totally hollow, or HM could be anything from the retired Director of the NSA to the fired night porter at the Managua KGB outpost. Nobody (except maybe HM) knows for certain.

In that the author didn't care to use his real name, much more relevant background information and credentials really should have been furnished in order to provide a treatise of this type with the credibility it deserves and needs. This is true, for instance, in the section of *Uno, Dos, Cuatro* dealing with a "mysterious FCC document." The author comes across here as having fudged about his "007" past. He looks to be a complete outsider baffled by things a communications hobbyist member of the intelligence community would have made it a point to know. Or, perhaps HM is deliberately playing coy at the expense of his narrative.

Then, in his discussion of phonetic alphabet stations, the author again cops out by "revealing" that unnamed "highly regarded experts contend that these are Mossad (Israeli Intelligence) transmitting stations." The author does not mention, and is apparently unaware, that *POP'COMM* positively identified these as Mossad stations in a by-lined story that ran in July of 1984. Since that time, the Mossad connection has been mentioned many times by numerous authors and has become common knowledge. HM's seeming unfamiliarity with this information is surprising in a treatise of this nature.

Elsewhere in *Uno, Dos, Cuatro*, the word "deleted" (surrounded by brackets) appears a number of times in the text. To explain this, HM frankly admits that, "some sanitization has been undertaken so as to protect the identity and location of . . . important

sources of information." While your reviewer can go along with a reasonable amount of "source protection," this treatise would have been much more authoritative had the author not been so obsessed with deletions, sanitizations, unattributed sources, unnamed "highly regarded experts," and his own curious personal paranoias.

The interest many people have in the numbers transmissions indeed has a bottom line—that is what messages are hidden in those numeral groupings. After all was said and done, this should have been the *denouement* of HM's treatise—a frank discussion of the type of code breaking efforts that are needed (and have been attempted) in order to make sense of it all. Instead, HM cites no less than three absolutely awesome sounding federal laws against code breaking and abruptly announces, "There will be no further discussion in regard cryptographic systems that may or may not be used by numbers stations." Why? Such matters have been openly discussed for years by dozens of authors! HM shouldn't have been so reluctant to give his study its necessary punchline.

What makes it all so ironic is at the beginning of the treatise, a "Foreward" by John Santosuosso singles out HM for his "courage" and mentions how "we are all indebted to Havana Moon." It does seem that (unless you're Rambo, Chuck Norris, Sharansky, Conan the Destroyer, or did a couple of military duty tours in Southeast Asia) "courage" has its definite limits, or at least several definitions.

Based upon the potentials of the subject matter, the claim that the author is a former "007," and the congratulations for his "courage," I expected something much more hard-hitting. I expected Marvin Hagler but found Marvin Hamlich instead. Nevertheless, HM produces many interesting numbers station anecdotes and a generous assortment of skeds, frequencies, foibles and facts as well as perpetuating (I strongly suspect) some popular fallacies. There's a large and excellent bibliography, too. HM offers no revolutionary guesses, revelations, nor comes to any startling new conclusions. It's well written and interesting despite its many pulled punches. For the many fans of numbers stations, we can recommend adding *Uno, Dos, Cuatro* to the reference shelf in the communications shack.

This is a staple-bound 78-page 8½ by 11 inch monograph. The price is \$13.95, plus \$1 shipping (\$2 on foreign orders). Payment must be in U.S. dollars. It can be ordered from Tiare Publications, P.O. Box 493, Lake Geneva, WI 53147. **PC**

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Power Rating: 2000 CW,
4000 PEP
Height: 11 Feet
Weight: 10 Lbs
Materials: Anodized
6063-T6 Aircraft
Aluminum Tubing
Requires 2 Separate Coaxial
Cables for Hook-up

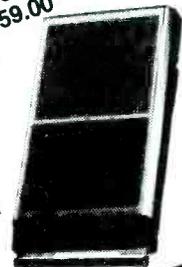
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BROADCAST TOPIK

BY MARK MANUCY, W3GMG

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

Each year, it seems, I get into a discussion about the radio loudness wars. Years ago, the loudness wars were conducted mainly on the AM band, but the past few years have shown that AM band audio processing is slight compared to the FM band.

On a recent trip to western Maryland, I heard FM stations that were so loud that they were nothing but distortion. It's really hard to believe that people actually listen to stations that sound so bad. The irony of it is that I had been called by a station in Maryland to help them improve their signal—a result of the fierce "loudness" competitions between stations in the area. It seems that all of the other stations were louder than they were, even though they were a higher power station. No engineer as yet had been able to improve the signal sufficiently—the station wanted to be as loud as all the others. My trip proved too successful in that I created a new level of competition. I never intended to do that, only to bring this station up to their satisfaction. Now, I'm told, another station in this market has ordered thousands of dollars worth of equipment to catch up with the station I worked on! Well, this is just too much . . . where will it stop?

Recently, I was given access to a new instrument that is used to measure the actual loudness and amount of processing used by radio stations. This device can be used anywhere—at a radio station, with a tape recorder, or with a radio. (I used it in an experiment that compared the FM on my Sony SRF-A1000 receiver with the FM on my Fisher 400 receiver.) In using this audio analyzer, it became quite obvious that the FM loudness wars are much more intense than those on the AM band. So many of the AM'ers are fighting for mere survival today that they are not pushing the sound as much as their FM counterparts. As a result, the music on the AM band, with a good radio, has become much more pleasant to listen to. (For info on this audio analyzer, send your request and an SASE to the address at the end of this column.)

The dynamic range of a good CD now approaches the 90 db range and an FM station is capable of about 60 to 65 db of dynamic range if everything is in tip-top shape, including the receiving end. With the processing going on today, the dynamic range is squashed down to less than 15 db on a highly-processed station and less than 20 db on a good music station. A classical station may display upwards of 25 to 35 db dynamic range if little processing is used. More is possible depending on how the staff has set up the audio chain. So, why is it so



Dan Brown among his collection of "oldies but goodies."

important to be loud for the sake of being loud? I have yet to understand this about the FM band.

I understand that the fuller the modulation index on the FM, the greater range a station has and the less noise is present in the receiver, especially when broadcasting stereo programming. But, even the "better" music stations seem to be caught up in this over-processing business. I can't count the number of times I've heard distortion as a result of sudden shifts in the loudness of an orchestra or pipe organ . . . sounds that the processors can completely destroy if not set up properly. The *pianissimo* becomes *forte* after the processor realizes what's going on. The noise on the record surface begins to stand out like the noise between FM stations during a *pianissimo*. If the selection of music ends *forte*, the announcer's level becomes *pianissimo* for two or three sentences before the processor catches up. Have you heard this happen? Now you know why. The AM station is limited to about 50 db of dynamic range. Today, however, the AM radio may not be able to capture even that much range.

So, what does all this mean? After listening to a few minutes of highly-processed audio, my ears tell my brain that something is

bothering them, then my brain sends a message to my hand to turn a knob—either the on/off switch or the tuning knob to make an adjustment. A teenager may be able to listen for a longer period of time than an adult, but eventually, the young person feels the need to turn off the squashed sound as well. It's just too much for the human ear to stand. The average time varies between 10 and 20 minutes before a tune-out occurs.

The difference between the peak audio value and the average audio value of the highly-processed FM station is 10 db. The classical music station with light processing may have a range of 20 to 25 db between peak and average. This is not to say that this value is the actual dynamic range of the station, although it may be. The scale on the modulation meter at any radio station is limited to approximately this value for meaningful readings. The scale of a VU meter on a tape recorder is also about the same. Some of the newer cassette decks have expanded the scale somewhat. A Sony TC FX600 cassette deck I own has a scale range of almost 50 db, one of the largest ranges I've seen on a tape recorder.

As time goes on, the requirements for better audio from FM and AM stations will become greater. The high-end consumer audio products already rival or exceed those of the broadcasting stations and the audience is becoming more demanding of better sound. It just seems illogical to play a CD on an FM station compressing the 90 db dynamic range of the CD down to 10 db.

The past few weeks have brought in some letters which are taking me to task on FM/TV skip. Therefore, I am going to open mouth and see if my foot still fits! First, we are not dealing with weak signals per se; there is so much noise from so many signals on the FM/TV bands in most reception areas, the question of weak signal reception does not compare with the weak signals one



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Station Update

Call AM	Location	Freq	Pwr	Ant
KVNA	Flagstaff, AZ	690	10/.5	DA-2
WWII	Shiremanstown, PA	720	2/0	NDA
KNUJ	New Ulm, MN	860	1/.25	NDA
WCHB	Inkster, MI	1200	50/1	DA-2
WFTW	Fort Walton Bch, FL	1260	1.52/0	NDA
WICO	Salisbury, MD	1320	.7/0	NDA
KWSK	Wishek, ND	1330	5/5	DA-2
KOHU	Hermiston, OR	1360	4.3/1	DA-N
WGHC	Clayton, GA	1370	2.5/0	NDA
KPEL	Lafayette, LA	1420	1/.75	DA-N
FM				
WARY	Vahalla, NY	88.1	.042	403'
WLBF	Montgomery, AL	89.1	44.6	323'
WTEB	New Bern, NC	89.3	100	481'
KZUM	Lincoln, NE	89.3	1.5	174'
KOPN	Columbia, MO	89.5	40	236'
KOJG	Cedar Rapids, IA	89.7	.210	88'
WEFT	Champaign, IL	90.1	10	325'
WJTG	Fort Valley, GA	91.3	100	459'
WPBX	Southampton, NY	91.3	2.0	155'
KFXX	Green Valley, AZ	92.1	1.83	407'
KCMJ-FM	Indio, CA	92.7	3	298'
KPSA-FM	La Luz, NM	92.7	3.0	215'
KXLP	New Ulm, MN	93.1	100	655'
KSD-FM	St. Louis, MO	93.7	99	1027'
WKKI	Celina, OH	94.3	1.62	448'
WLRW	Champaign, IL	94.5	50	392'
WMRF-FM	Lewiston, PA	95.9	2.0	407'
WASH	Washington, DC	97.1	26	690'
KSEQ	Visalia, CA	97.1	17	564'
WJJB	Hyde Park, NY	97.7	.3	1030'
WIYY	Baltimore, MD	97.9	13.5	950'
WSUL	Monticello, NY	98.3	2.5	360'
WWMC-FM	Mifflinburg, PA	98.3	3.0	150'
KZOU	Little Rock, AR	98.5	100	1188'
WYGO-FM	Corbin, KY	99.5	50	401'
KTYO	Santa Barbara, CA	99.9	33.5	1279'
WZBQ	Jasper, AL	102.5	12	140'
WHKY-FM	Hickory, NC	102.7	31	1535'
WPCX	Hyannis, MA	102.9	3	310'
WAAW	Murray, KY	103.7	100	661'
WAZU	Springfield, OH	103.9	50	492'
KRKA	Alva, OK	104.7	100	981'
KLVV	Pahrump, NV	105.7	24.5	3715'
WJOJ-FM	Milford, OH	107.1	1.2	511'
WCMN-FM	Arecibo, PR	107.3	50	1027'

Key: D = Daytime, N = Nighttime, DA = Directional Antenna, DA1 = Same Pattern Day and Night, DA2 = Different Pattern/Power Day/Night, NDA = Omni Antenna Day and/or Night, * = Special Operation or Critical Hours, N/C = No Change.

speaks of hearing on the VHF Amateur bands. Although back-scatter and other weak signals will certainly be present at FM/TV frequencies, the receivers and transmission modes used by Hams for weak signal reception are beyond what the normal BCL is interested in and, in most instances, even capable of. It's comparing apples and oranges. Some BCL's are certainly capable of very sophisticated setups but this is not found in the ordinary BCL shack.

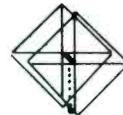
So that brings us back to ducting or "Tro-po." VHF FM and TV signals travel in straight lines like light beams. There is a

slight amount of bending caused by such things as mountain tops and the edge of the horizon, but for the most part the signal goes from point A to point B in a straight line. Now this Tro-po business is something else . . . fantastic. The U.S. Weather Service studies it every day! They send up radio-sonde equipped balloons twice a day from over 200 locations around the country. Of course, they are measuring the atmospheric pressure but that has a bearing on the ducting or Tro-po DX skip.

In simple terms, I have mentioned how a cool night rapidly becomes a warm day

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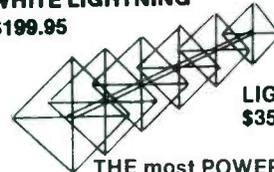


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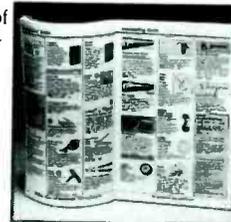
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Call Letter Changes

Location	Old	New	Location	Old	New
AM Stations			FM Stations		
Decatur, AL	WMSL	WAVD	Stuttgart, AR	KFNC	KXDX
Wasilla, AK	KCBR	KOBG	Redding, CA	New	KFRF
Jacksonville, AR	KDJC	KCHB	Cave Junction, CO	KBGG-FM	KBGG
Redding, CA	KCLM	KRDG	Melbourne, FL	WYRL	WMMY-FM
Lakewood, CO	KRXY	KMVP	Newnan, GA	WBUS	WWER
Cave Junction, CO	KBGG	KQNG	Lihue, HI	KIPO-FM	KRCD-FM
Atlanta, GA	WCNN	WGTW	Belvidere, IL	WYBR	WYBR-FM
Lihue, HI	KIPO	KRCD	Franklin, IN	WGAQ	WPZZ
Rockford, IL	WXTA	WYBR	Prestonsburg, KY	WBVS	WXFZ-FM
Nicholasville, KY	WJMM	WCGW	Augusta, ME	WRDO-FM	WMME-FM
Augusta, ME	WRDO	WMME	Gulfport, MS	WGCM	WGCM-FM
Boston, MA	WLKW	WADN	Jackson, MS	WSLI	WSLI-FM
Hattiesburg, MS	WGTB	WHLV	Moberly, MO	New	KZTZ
Laurel, MS	WLAU	WKYL	Las Vegas, NV	New	KJUL
Gulfport, MS	WTAM	WGCM	Gastonia, NC	WZXI	WLIT-FM
Bellevue, NE	KNPE	KKAR	Reidsville, NC	WWMO	WBIG
Las Vegas, NV	KEZD	KLAV	Shelby, NC	WMGF	WWMG
Oakland, NJ	New	WVNJ	Williamston, NC	WSEC	WPMG
Glens Falls, NY	WGFN	WSTL	Ardmore, OK	KEBQ	KROM
Aberdeen, NC	WEET	WSCT	Bellwood, PA	WHGM	WALY
Jacksonville, NC	WOPY	WJCV	Dayton, TN	WLCY	WTCX
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Tulsa, OK	KBBJ	KAKC	Jasper, TX	New	KJAS
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Hanahan, SC	New	WKAO	Pittsburg, TX	New	KXAL-FM
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Kilgore, TX	KOCA	KTXC	South Boston, VA	WJLC-FM	WPHR-FM
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Cordova, AL	New	WARF-FM	Wausau, WI	New	WCLQ
Dixons Mills, AL	New	WMBV	Milwaukee, WI	WBCS-FM	WLZR-FM

causing the "trapping" of radio signals in a duct-like trough of warm air that gives the signals free transport for hundreds, even thousands, of miles. The airport towers of Los Angeles and Honolulu have heard each other on 122 MHz many times, way beyond their normal range. Between California and Hawaii, each August, a Tropospheric duct forms. This is one of the reasons Hams have set up beacons. They can check this sort of thing on a regular basis if a low-power transmitter is on the air all the time.

We BCL's can use FM and TV stations to do the same thing. The weather service plots can be used to help in this project. If you wish to search a specific area, compare the atmospheric pressures of your city with those of other cities. If there seems to be decreases in pressures in the two cities, including 850 millibars in the overlap, then there is a good chance for a duct between the two cities.

Smog is a visual example of a duct. It is pollution in warm air sandwiched between two layers of cooler air. Another visual example is the wet appearance of a highway in the distance. The warm air rising from the road is so hot it will cause the light waves to bend, creating a mirage. These ducts are more frequent over coastal areas, but they

are capable of forming anywhere there is a mixture of warm and cool air. These are the most common forms of FM/TV DX.

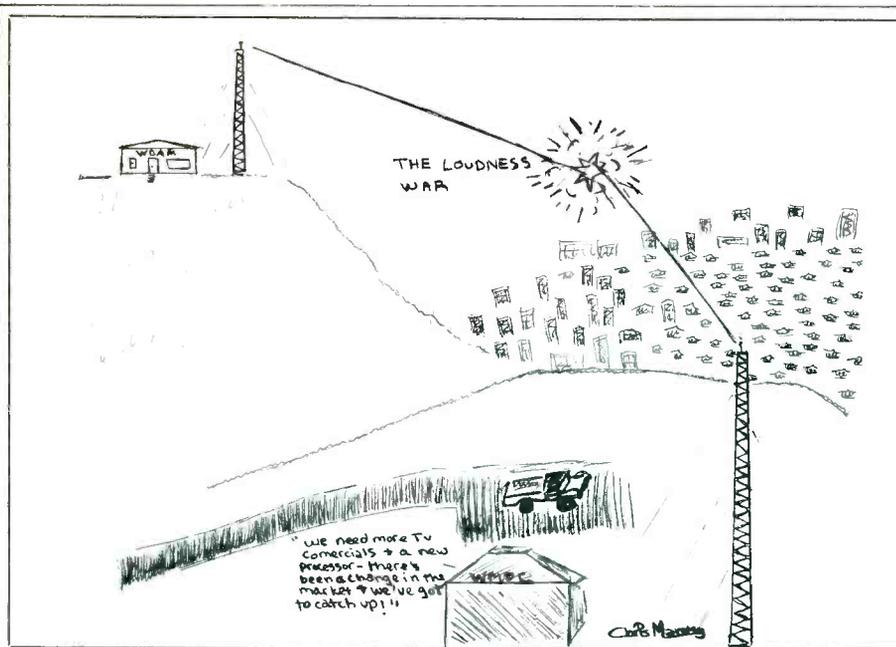
Our favorite DX topic for the past few months has been CJFT, the new Canadian station on 530 kHz. Don Jones sent me a copy of a QSL bumper sticker good enough to be reproduced here. That brings to mind the way stations are responding to reception reports today; the QSL's of yesterday are called bumper stickers today.

Scott Fybus tells of an interesting way to DX while away from home. A new station near him will sign on while he is in school so he plans to set up his VCR with a six-hour tape to record the first sounds from the new station. It is always fun to hear a new station sign on, Scott. I've heard several recycled stations sign on, but the only one I heard from hour one was a station where I turned the switch on myself!

A long letter came in from Ron Hammer, a long time DX'er who is just getting his shack back together after having almost three feet of water in the shack last year. I want to pass along Ron's grounding system for his shack. He runs #10 bare copper wire through the wall of his house to a spigot outside, fastens it with a clamp, and adds a rod in the ground under the spigot with the #10

wire attached, of course. During the summer he lets the water drip to keep the ground moist. He also has ground rods under each outside spigot with a #10 wire between the rod and spigot. Sounds like a rather complete network. When I lived in Florida, Ron, I did something similar. My Dad and our neighbor shared a 200-foot well and both yards had a system of pipes and spigots used for watering. On one side of our double garage was a spigot for the well, while on the other side was a spigot for the city water. I had a #8 solid copper wire between these pipes so I figured I was the teenager with the world's largest ground system . . . our well and yards and the city of Saint Augustine!

Chuck Boehnke tells me the ban on FM stations above 98.1 in Hawaii has apparently been lifted as he is hearing new stations come on the air. He also sent a clipping about something those of us stateside would rarely think of. That is, although Hawaii is a state, for hundreds of years the traditions of the islands have been different than those of the mainland to a great degree. When radio first came to the islands, it pretty much reflected the customs of the indigenous people. Today, the influence of the mainland has changed the sound of radio in the is-



Radio Loudness Wars—graphically speaking!

lands to the point that there is only one station now playing traditional Hawaiian music on a full-time basis. KAHU went on the air last November and, with this format, is apparently having some trouble attracting the dollars in advertising needed to keep going.

It's a sad commentary on our society how we lose touch with the past so quickly. With

so many stations on the air (over 10,000), there should be some way to provide for at least a few stations that program something other than today's music and news. Less than 10 years ago, Baltimore had two commercial classical music stations; today there are none, although we do have two public stations that play the classics and some jazz.

Washington used to have several long-hair stations while today only one commercial station survives, although it is an AM/FM simulcaster.

Hawaii and Alaska are unique in our United States and, therefore, I certainly hope that there is some way to keep their native heritages alive on the airwaves. How about a state supported shortwave station? Then the rest of us could enjoy these heritages as well.

A Manucy reincarnated? Colin Sanor tells me he lives on radio waves. . . . Now really, Colin, can that be true? I didn't know there was sufficient energy for more than one radio nut to survive in this manner! Just kidding. . . zap!!! Colin puts in a vote for Holiday, FL as the best DX spot. The only argument I'm going to give is about the summertime static in that area. I know what it's like because just down the road, Zepherhills is supposed to have the highest number of thunderstorms per year in the U.S. Boy, is that area ever growing! I was through there last year for the first time in 25 years. Colin wants more info on DX'ing while on a trip; I'll try to do that next month because I've run out of space this month.

For loop plans write to P.O. Box 5624, Baltimore, MD 21210. Box loop plans are \$5.50 and ferrite loop plans are \$7.50. An SASE with a note requesting loops brings free info on loops in general. A listing of AM stereo stations is \$2.50. Thanks for your continued support as we begin the fourth year of Broadcast Topix!

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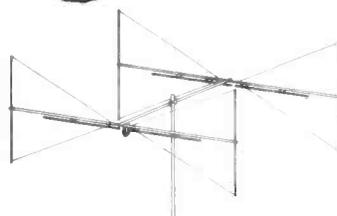
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Sun Powered

Let the sun charge your batteries when operating your radio equipment at remote locations. It's also a good idea to have solar and rechargeable batteries for your home emergency communications station, too. If the lights go out, you are still on the air! Solar panel prices are continuing to inch down, and the advent of sealed, maintenance-free rechargeable batteries (gel cells) makes portable solar-powered stations economical and practical.

A solar cell panel is made up of individual silicon cells that require intricate manufacturing and assembling processes. Robotics is helping to bring manufacturing costs down, but it's still very expensive to tie these individual cells together.

Silicon is the second most abundant raw material on earth, with carbon being the first. We have an almost unexhaustible supply of silicon for solar cell manufacturing.

Silicon crystals are grown in giant laboratory "fields" under extremely sterile conditions. Similar to germinating oysters with a grain of sand to produce natural pearls, crystals are grown to exact specifications.

When the crystal reaches wafer size, it is cut with a laser and chemically coated and screened. This produces a solid-state junction within a semi-conductor material. The two different regions are carefully doped to produce the desired electrical properties.

Boron and phosphorus, impurity materials, are added to the silicon to create this desired electrical property. The phosphorus-doped silicon forms N-type material—a donor of negatively charged electronics. The boron-doped silicon forms a P-type material, which attracts these electrons. The interface of the two dissimilar regions with a junction allows electrons to move in a preferred direction across the junction.

When sunlight strikes the photovoltaic cell, electrons are freed from their atoms by small bundles of light energy called photons. This creates a charge across the junction, developing dissimilar charges on the front and back of the surfaces. Electrical conductors develop an electromotive force across the cell, and voltage from the sun is created.

A single cell reacting to sunlight will typically develop 0.55 volts. The output current of the cell is directly proportional to its surface area and the amount of sunlight illuminating the cell. The key phrase here is "surface area."

These 1/2-volt cells are connected in series to develop an open circuit voltage of ap-



The Arco Solar M82 photovoltaic module.

proximately 18.6 volts direct current. Under load, this voltage drops to approximately 13.0 volts and is suitable for charging gel cells and regular automobile batteries. The larger the surface area of the solar panel, the greater the charging current.

A 14" x 14" square panel consisting of 32 three-inch cells is rated 17 watts at 18.6 volts DC. Under typical 12-volt battery conditions from a gel cell, it will develop just about 1 amp on a bright day. Although we haven't seen a sharp decline in solar panel prices, the 1-amp panel is generally a \$200 investment. This would be an ideal set-up for base station use or at a semi-permanent emergency communications set-up. But don't sneeze at 1 amp—it's enough to keep a station on the air that uses transistorized circuits. The average current consumption from any type of transceiver, from CB to Ham radio, is usually well under 1 amp. You can dramatically lessen this by removing the dial lights.

Certainly, transmitting is going to draw anywhere from 2 amps to 10 amps, but how much of the time are you actually on the air with the key down? If you need more charging current, you may wish to invest in some

of the larger panels that may generate up to 5 amps and may be available in the \$500 price range for used equipment.

If you operate a portable emergency station, you can find solar panels that are extremely lightweight and fit nicely in a backpack. My favorite is the Arco polymer panel that is so thin and lightweight you hardly know you are carrying it on your back. It easily develops 400 milliamps in sunlight, and that's more than enough to charge a set of handheld nickel cadmium batteries. In fact, if you aren't careful, you could actually *overcharge* the handheld batteries if you let them cook too long.

Your better solar panels will use a series diode to keep the battery from discharging back into the panel at night. The panels have been developed with an extra volt of force to overcome the .7 volt drop that most reverse polarity type diodes exhibit. You should never run a panel without this reverse polarity diode because it will rapidly discharge your batteries as soon as the sun is shadowed from the cells.

With smaller solar panel arrays, voltage regulation is a natural phenomena. When gel cells and Ni-Cds reach a full-charge

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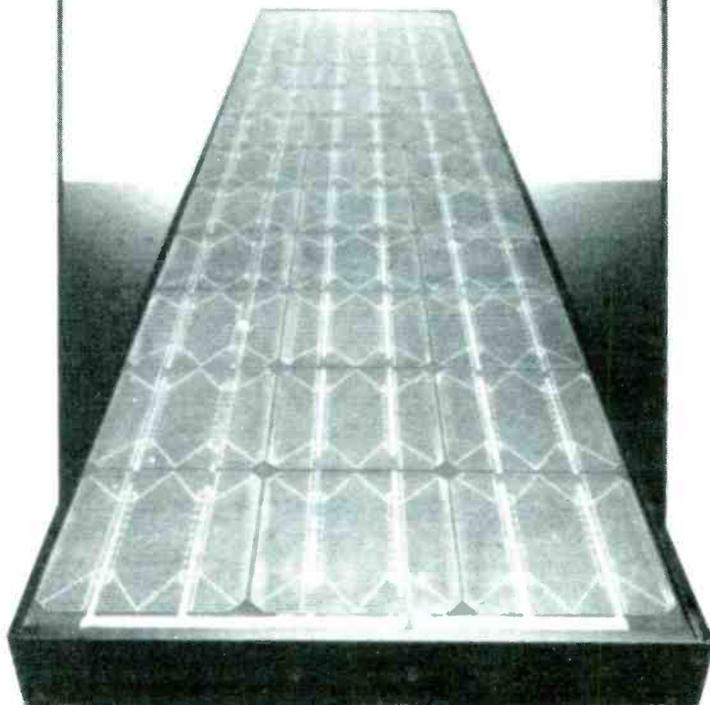
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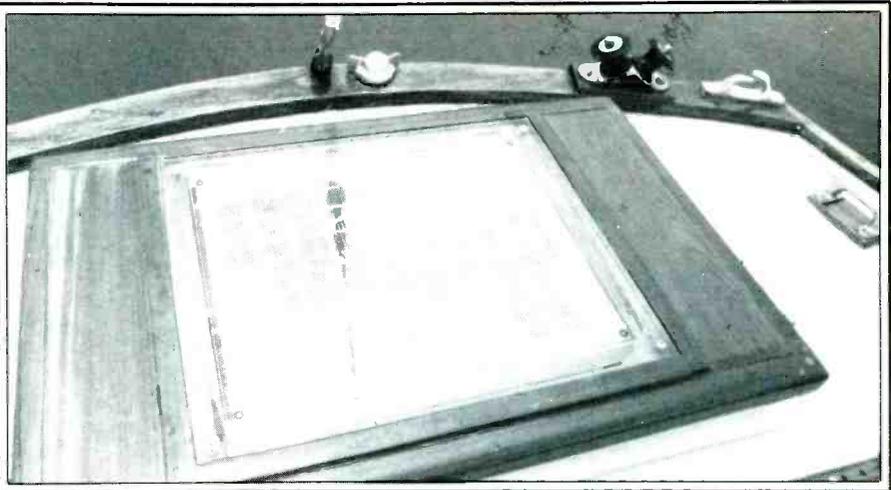
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A solar panel, made by PDC Laboratories in El Segundo, CA, is shown here mounted on a 27' Pearson Sloop.

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CIRCLE 15 ON READER SERVICE CARD

state, the voltage rapidly escalates. The
panel will see this rising voltage as an oppo-
sition to the natural flow of charging current,
and the current will dramatically decrease.
An easy way to tell whether or not your
small batteries are being overcharged is to
feel if they are warm. If they are getting
roasty-toasty, take your panel out of line.

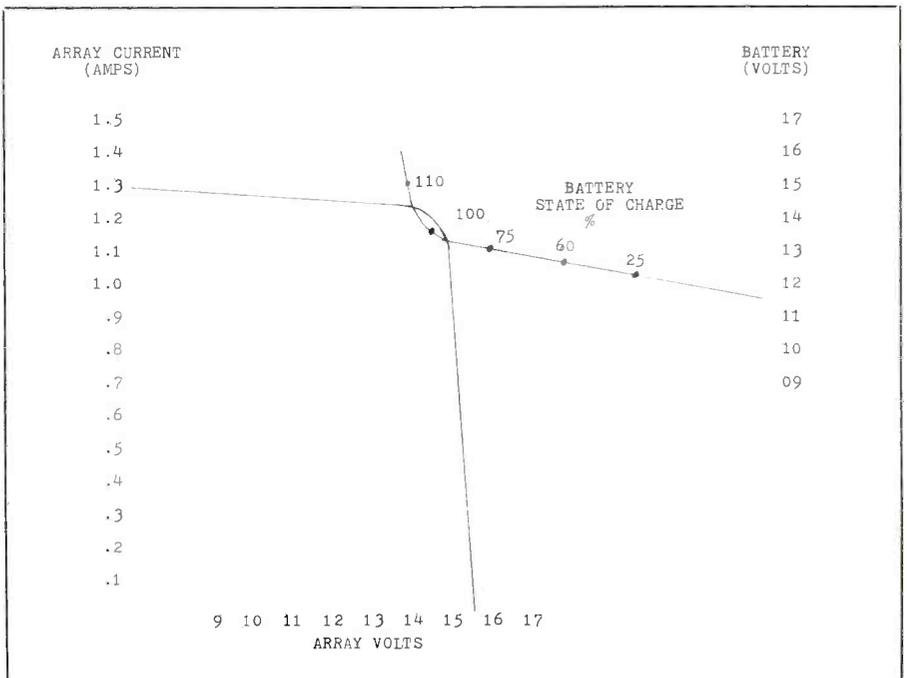
On an automobile battery, you would
need more than \$1,000 worth of new solar
panels to cause it to overcharge. Not much
problem here because of your large battery
capacity.

Solar panels don't wear out. If you can
find some used panels, check for cell integri-

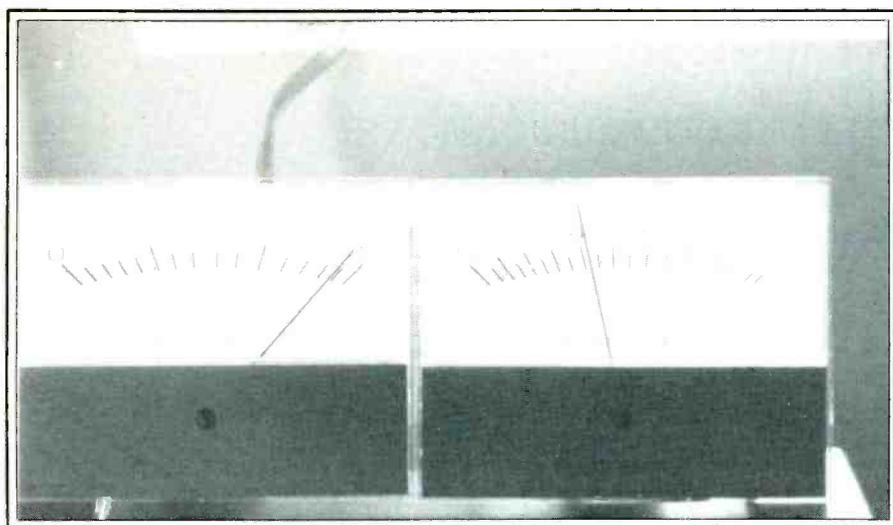
ty. About the only thing that can go wrong
with a panel is having a cell crack from mis-
use or letting moisture seep into the cell
structure. You can usually see this with a
visual inspection.

Another easy way to test a solar panel set
is to hook a volt meter on it, and see the
voltage at around 17 volts with no load.
Then hook it up to a #47 lightbulb, or for
that matter, the dome light on your vehicle,
and the voltage should drop to 12 volts and
the bulb should begin to glow brightly.

Don't worry about shorting out the con-
tacts on a panel—it won't ruin anything—it
just won't give you any output. You can also



Self regulation occurs because the current from the array decreases as the array voltage in-
creases. As the state of charge of the battery increases the terminal voltage increases. The
sudden rise in battery voltage at full charge is what the array needs to "see" to shut down the
current. (Courtesy BHC, Inc., Houston, Texas.)



Meters indicating charging potential of a solar array.

run a panel at no load without any damaging effects.

Keep your solar panel clear of shadows. One small shadow can dramatically decrease the output. Even bird droppings can cost you several hundred milliamps. Regularly clean the surface of your panel and make sure it is angled to the sun for maximum charging current. You have an approximate 20 degrees variance from being dead on to the sun before the panel begins to lose its zap.

Even on cloudy days the panel will put out a little bit. A 1-amp panel might give you 100 milliamps, but that's better than nothing. The back pack panel might give you 20 milliamps, and that's enough to float some handhelds with battery-saver circuits.

Don't bother holding your panel up to the campfire or Coleman lantern to try and get it to charge. The light source here is not great enough, and it just won't work. It takes the sun to give it its full output.

A breakthrough in solar panel pricing on

the horizon? Probably not. Although growing silicon cells in space may be more practical than here on earth, we are still many years away before our space solar gardens are ready for planting.

If you're looking for an inexpensive and fun way to keep your small radio set-up charging from the sun, start out with some small solar panels and you'll probably get bitten by the bug!

For additional information on solar power systems, contact the following companies:

Arco Solar, Inc.

Dept. PC
P.O. Box 9601
Mission Hills, CA 91346

Atlantic Solar Power

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Baltimore, MD 21227

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INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

Soviet Satellite TV Systems

Yes, the Soviets have satellite TV and cable TV networks, but you won't find a TVRO in anyone's living room or a dish in the back yard. The U.S.S.R. launched its first TV satellite in 1965. It was the world's first. Today the Soviet Union operates three multi-satellite systems which provide centralized TV and radio programming to virtually all areas of the country. Three networks distribute TV programming: Orbita, Moskva and Ekran. The Moskva and Orbita systems also provide telephone, data, and facsimile services to its users.

Central TV and All Union Radio

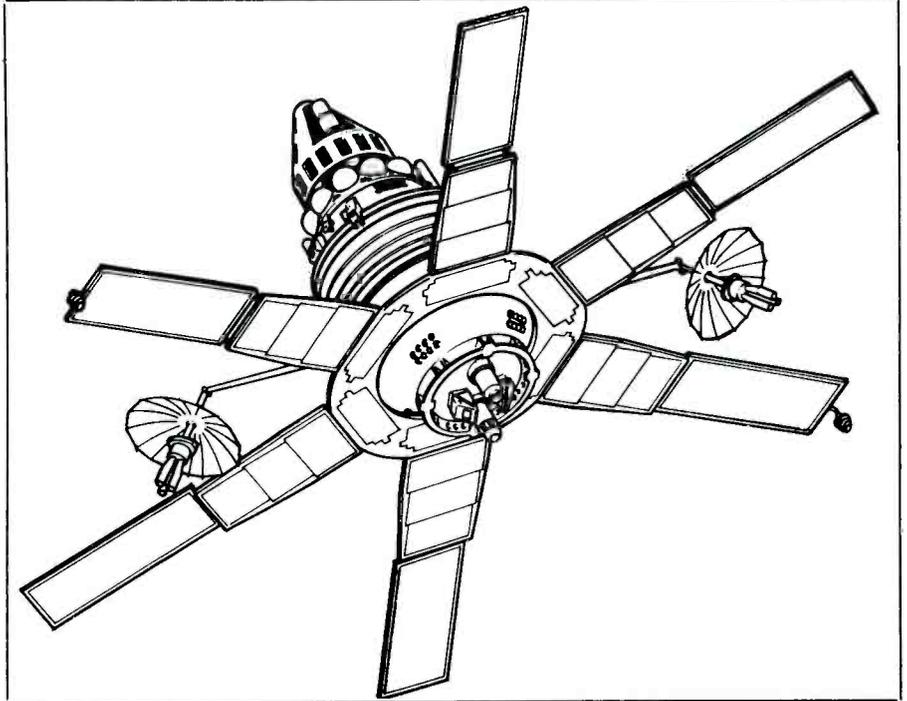
Most of the TV and radio programming used on Soviet satellites originates at the studios of Central TV and All Union Radio in Moscow. As you might expect in a security conscious country like the Soviet Union, all media is highly centralized and tightly controlled. This gives the government a monopoly on news and information.

Central TV provides four channels or services. First Channel, as it is known, broadcasts 14 hours a day and provides coverage of international affairs, and political, economic and cultural events. Second Channel programming consists of science, news, documentaries, sports and childrens programs. The Moscow Channel covers events which directly affect the capitol. The fourth is the Educational Channel which broadcasts lessons primarily for school-age students and for those who wish to continue their education.

Molniya Satellites

The TV satellite launched in 1965 was called Molniya 1. It was placed in a highly elliptical orbit. At first it was thought to have been a failed mission due to its unusual flight path. This orbit was designed to provide several hours of TV coverage, twice a day, to most of the populated areas of the Soviet Union, including the remote northern and far eastern sections. This type of orbit has been named for the satellite that first used it—the Molniya Orbit. The orbit and ground track can be seen in Figure 1. At perigee (the point at which the spacecraft is closest to the earth), the Molniya satellites maintain an altitude of approximately 630 km. The satellite reaches apogee twice during each orbit at which time it is 40,000 km above earth's surface.

In 1985, three new Molniya 3 (third generation) satellites were launched. This



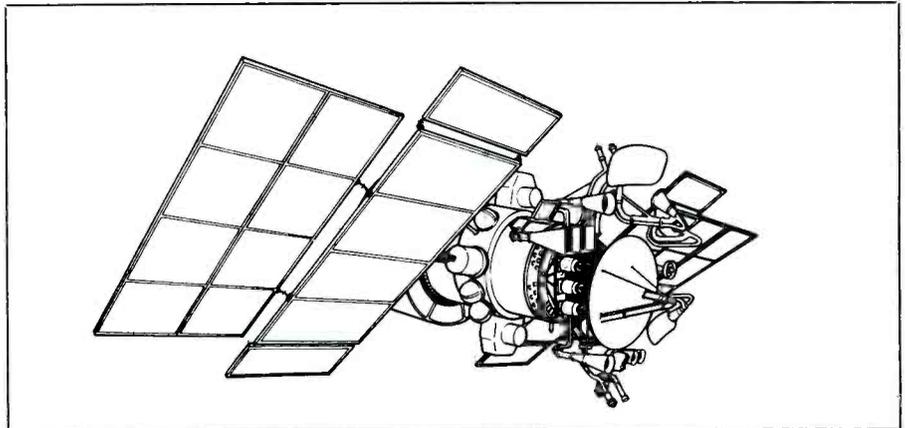
The Molniya satellite.

brings to eight the total number of spacecraft in this series. Each is spaced 90° apart in orbit. Four satellites spaced 90° apart can provide 24-hour-a-day service to viewers.

There were two earlier models of the Molniya, the 1 and 2. The second model was discontinued in the 1970's for unknown reasons, but the model 1 has continued in service. There are eight Molniya 1 satellites

in orbit each spaced 45° apart. The military has exclusive use of this series.

The "Hotline" between Washington D. C. and Moscow was first carried by a Molniya 1 and now by a Molniya 3 satellite. The Hotline consists of two voice and two encoded teletype channels. A second identical circuit, carried on an American Intelsat spacecraft, provides a backup circuit and confirms



A Gorizont satellite.

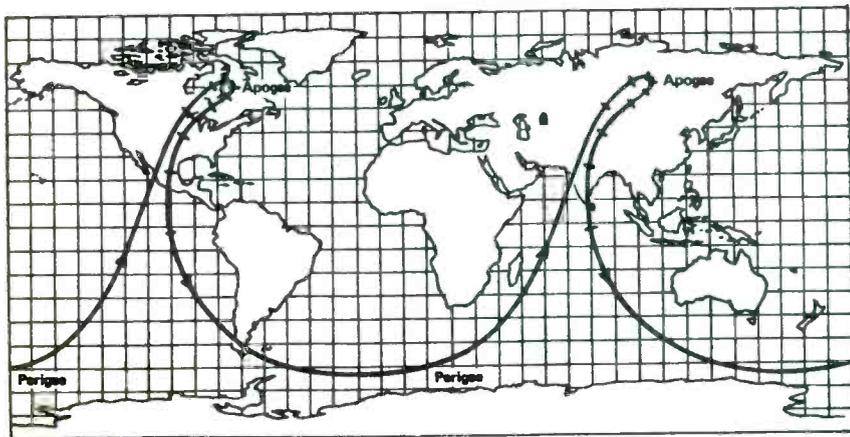
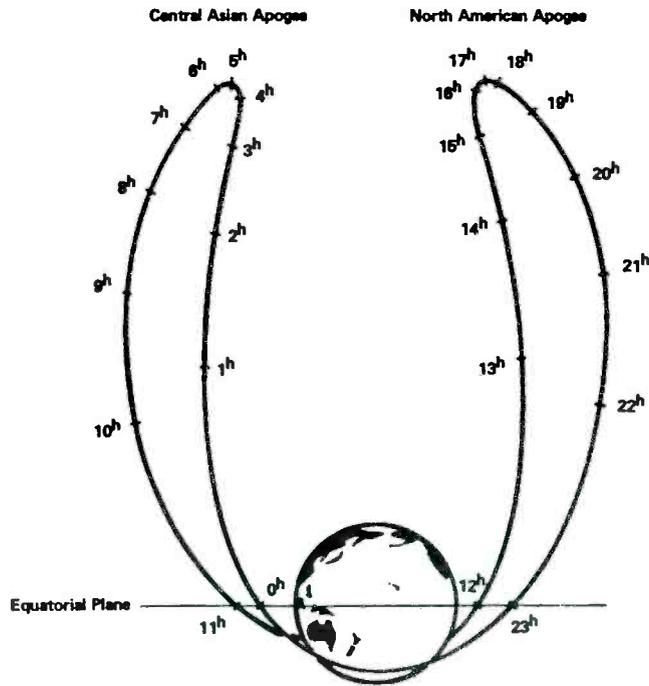


Figure 1: An orthographic projection of the Stabilized Ground Track of a Molniya satellite relative to a stationary Earth.

the message. Both of these satellites operate simultaneously.

The Orbita System

Programming from Central TV is sent to the Orbita ground station in Moscow through microwave links and cable. It is sent to the satellite in the 6 GHz frequency range and rebroadcast by the satellite in the 4 GHz range. 125 Orbita ground stations then distribute the TV programming via cable to local listeners and via microwave link to district TV centers (local TV stations). Over 1,000 rural collectives also receive signals from the Orbita network. The standard design for the Orbita ground stations is shown here, including its 25-meter dish.

Ekran Satellites

The Ekran satellite system is unique in the

technology it employs. It was designed to provide TV and telecommunication services to remote collectives and the Soviet Naval and Merchant fleets. The Ekran is a geo-stationary satellite. Three of these are located at 99°E according to the Soviet's Stationary positions plan for geo-stationary satellites.

An unusually high RF output power is used, 200 watts, in order to allow the receiving equipment to be kept simple and inexpensive. The satellite also carries a 96-element helical antenna array with a 28 db gain. The downlink frequency of 700-725 MHz was chosen for the same reasons, reliability and low-cost equipment.

Unlike other satellite systems in the U.S.S.R., Ekran is a direct broadcast satellite which does not require a major Orbita type receiving and distribution station. Only

Molniya 3
 Orbit: Molniya
 Inclination: 64°
 Period: 718 minutes
 Apogee: 40,000 km
 Perigee: 630 km
 RF output: 40 watts
 TV-downlink
 3.65-3.69 GHz
 3.75-3.79 GHz
 3.85-3.89 GHz
 uplink
 5.99-6.15 GHz
 Distribution: Orbita System—125 Regional Ground stations and over 1,000 district stations throughout the U.S.S.R.

Ekran
 Orbit: Geo-stationary
 Position: 99° E
 Altitude: 35,780 km
 RF output: 200 watts
 TV-downlink
 700-725 MHz
 uplink
 6.2 GHz
 Distribution: Direct broadcast to over 3,000 stations and the Soviet Merchant and Naval fleets.

Gorizont
 Orbit: Geo-stationary
 Altitude: 35,780 km
 Position: 14°W/40°E/53°E
 90°E/140°E/349°E
 RF output: 15 watts
 TV-downlink
 3.65-3.69 GHz
 3.70-3.74 GHz
 3.75-3.79 GHz
 3.80-3.84 GHz
 3.85-3.90 GHz
 uplink
 6.2 GHz
 facsimile/data transponders
 14/11 GHz
 1.6/1.5 GHz

Distribution: Moskva system—300 ground stations throughout U.S.S.R.

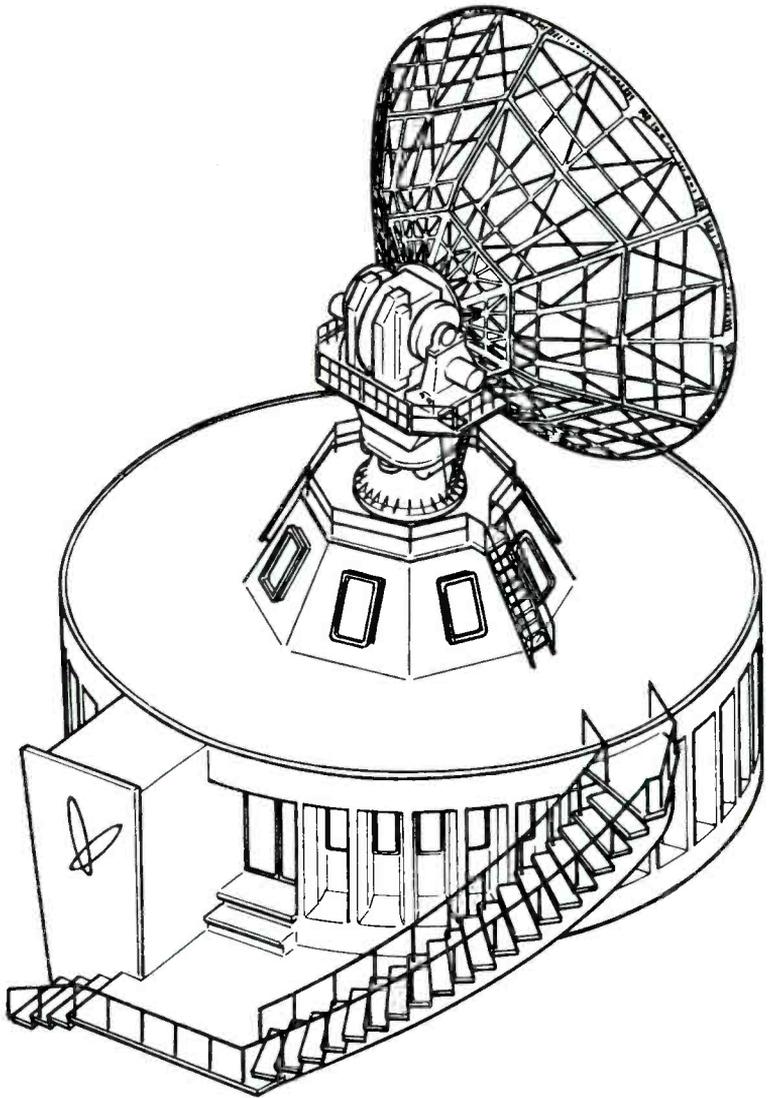
a Yagi antenna and a simple Ekran receiver are needed to receive this TV service. The government produces three models of Ekran equipment for the TV viewer, or more accurately "the collective." The smallest Ekran-K satellite receiver connects directly to a standard TV set and can be connected to up to eight TV receivers. The Ekran-K, will fit into a briefcase. The Ekran KR 10 is most often used on the community or collective level as it can power a small cable TV system for up to seven miles. These stations are often set up in a post office or community center. A third model, the Ekran KRP, is used by area TV stations for setting up cable networks and relaying Central TV's daily programming.

Ekran control station in Moscow transmits a 10-kW signal through a 12 meter, 54 db gain dish antenna to the spacecraft in the

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The Orbita Ground Station.

6.2 GHz frequency range. The Ekran system broadcasts up to 16 hours of programing a day.

Gorizont Satellites

Twelve years ago the Soviets launched their first Gorizont TV satellite. There are nine geo-stationary satellites in this series. They use standard 6/4 GHz transponders with an RF output of either 15 or 40 watts. The Gorizont spacecraft also carry telephone and facsimile transponders which use 14/11 GHz and 1.6/1.5 GHz. This system is the latest Soviet effort to provide continuous dependable and uniform TV, radio and telecommunications services to all of its citizens.

The Ground distribution system for the Gorizont is known as "Moskva." It consists of over 325 ground stations and their associated cable networks.

Two of the Gorizont satellites are also

used by Interkosmos. This is an Eastern Bloc equivalent of Intelsat which was formed in 1971 and has 14 member states.

State-Side Viewing

The only Soviet TV signals which can be seen in the United States are the Molniya 32 transmissions. Due to its elliptical orbit, the video can be tuned in with some practice. The Molniya 3's will reach apogee (the point at which they can be seen in the U.S.) over northern Canada. So, if you want to try your hand at tuning in a Molniya, turn your beam north. The Soviet Union uses the International standard TV transmission of 625 lines/25 frames per second. This will allow you to get a video signal but you will not get color or audio information since the U.S.S.R. system is not compatible with ours. The Molniya 3 transmissions can be found just below Channel 9 on your standard TVRO tuner.

PC

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CLANDESTINE COMMUNIQUE

WHAT'S NEW WITH THE CLANDESTINES

BY GERRY L. DEXTER

The radio war over Nicaragua has heated up by several degrees. Radio Liberacion, the new contra station beamed to Nicaragua, began broadcasts officially on January 15, using 50 kilowatts of power on the mediumwave frequency of 1,520 kHz. The station has a 12-hour-per-day schedule, operating from 6 p.m. to 6 a.m. Nicaraguan time (0000-1200 UTC). Its slogan is "The Voice of Those Who Have No Voice."

Spokesmen for the United Nicaraguan Opposition (UNO), the umbrella organization of the contras, say that the station will attempt to present an objective view and by doing so, hopes to earn credibility with its listeners. The Spanish language program schedule includes music, news, sports, drama, humor and commentary.

The location of the station has not been revealed but a likely guess is Honduras, perhaps within the confines of one of the military installations in that country. UNO spokesmen insist that the station's operating funds come from "private sources" and are not taken from the \$100 million in non-military aid approved by Congress last year. The U.S. State Department, and the CIA are said to be providing advice to the station.

Some early broadcasts by Radio Liberacion included instructions on how citizens could go about forming three-number resistance cells to carry out acts of sabotage within Nicaragua.

A Mexican-based listener who has considerable experience in monitoring Central American broadcasting, notes that the programming is very smooth, with identifications for "Liberacion" and use of the "No Voice" slogan mentioned earlier. He notes that the "broadcasters are professionals, the writers amateurs and neither creative artists nor battlefield revolutionaries." He feels it is "typical university student stuff" with popular song lyrics rewritten to fit a revolutionary setting, comedy break-in announcements and such. The news "is on a different level and probably handled by *La Prensa* professionals."

Radio Liberacion was heard by a few Florida DX'ers. The station is undoubtedly directional toward Nicaragua but listeners in some parts of the U.S., especially in the southeast, should be able to hear it. As for QSL's try the Nicaraguan Democratic Front, 1000 Thomas Jefferson St., Suite 607, Washington, D.C. 20007.

Some news stories have reported that Radio Liberacion was to replace the other contra clandestine stations, in particular Radio Quince de Septiembre. But it is our understanding that Quince, at least, was to con-



These photos of contra rebels appeared in a pamphlet called "Comandos 5, Boletín Informativo de Fuerza Democrática Nicaraguense."

tinue operating, serving the contra audience more specifically. At any rate, as of a month into the Radio Liberation operation, Radio Quince de Septiembre continues to be heard. It has recently changed frequencies again—replacing 5950 with 6130 and may have also changed 6264 to 6215.

Meantime, listener Richard Russell reports *La Voz de la UNO* at 1134 UTC on 5890 in Spanish with many mentions of Nicaragua. Richard wonders about an address for this one. Some QSL's have been received via the Washington, D.C. address

mentioned above. It's a good idea to send a prepared card QSL—a card you've made up yourself and which needs only a signature/rubber stamp.

On the other side of the world—listeners in the U.S. who are interested in receiving broadcasts related to the Tamil separatist movement in Sri Lanka will only get as close as hearing a "black" clandestine. The Voice of Tamil Eelam, though it uses the same name as the main Tamil clandestine, is actually run by the government. Some marginal receptions of this one have been made in the U.S. between 1330-1430 on 7010 or 9705. The station appears to be using the facilities of the Sri Lankan Broadcasting Corporation. The genuine Voice of Tamil Eelam operates with far less power and is thus heard over a more restricted area. It is also jammed while the black version is not.

A Reuters item forwarded by Eason Jordan in Atlanta reports a new clandestine on the air calling for the overthrow of Iraqi President Saddam Hussein. The station calls itself the "Voice of the Oppressed in Iraq" and operates on mediumwave. Broadcasts began on 30 December last year and claim to have the purpose of "unifying militant groups opposed to the Ba'athist regime and spread the news of the Iraqi nation's struggle." The station appears to be a joint effort by many of the groups opposed to the current Iraqi government and probably has the support and backing of the Khomeini government. The news report did not mention what frequency the station was using.

Richard Russell reports reception of the anti-Zimbabwe station Radio Truth on 5015. The station had earlier been said to have moved to a 90 meter band frequency but it continues to be heard on 5015 with its usual 0430 sign-on.

QSL news: The anti-Somalia station Radio Halgan which is aired over Ethiopian government radio, has sent a QSL letter along with stickers and booklets to DX'er Jerry Berg in MA. The reply came from the Somali Salvation Democratic Front, P.O. Box 838, Addis Ababa, Ethiopia. I've received a hand-written postcard QSL from P.O. Box 1686, Addis Ababa.

The saga of reports to various addresses of the anti-Afghanistan Voice of Unity being returned continues. Now the same thing is happening with the "corrected" address we gave you last month!

Before closing, here's our usual appeal for your notes, loggings, leads on addresses, news clippings and other info related to clandestines.

Thanks, and good hunting!

PC

SCANNER SCENE

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

Every once in a while, I come across something different or unusual on the scanner bands. Sometimes I just happen to stumble across the unusual while searching for new frequencies; other times I intentionally search out different sounds.

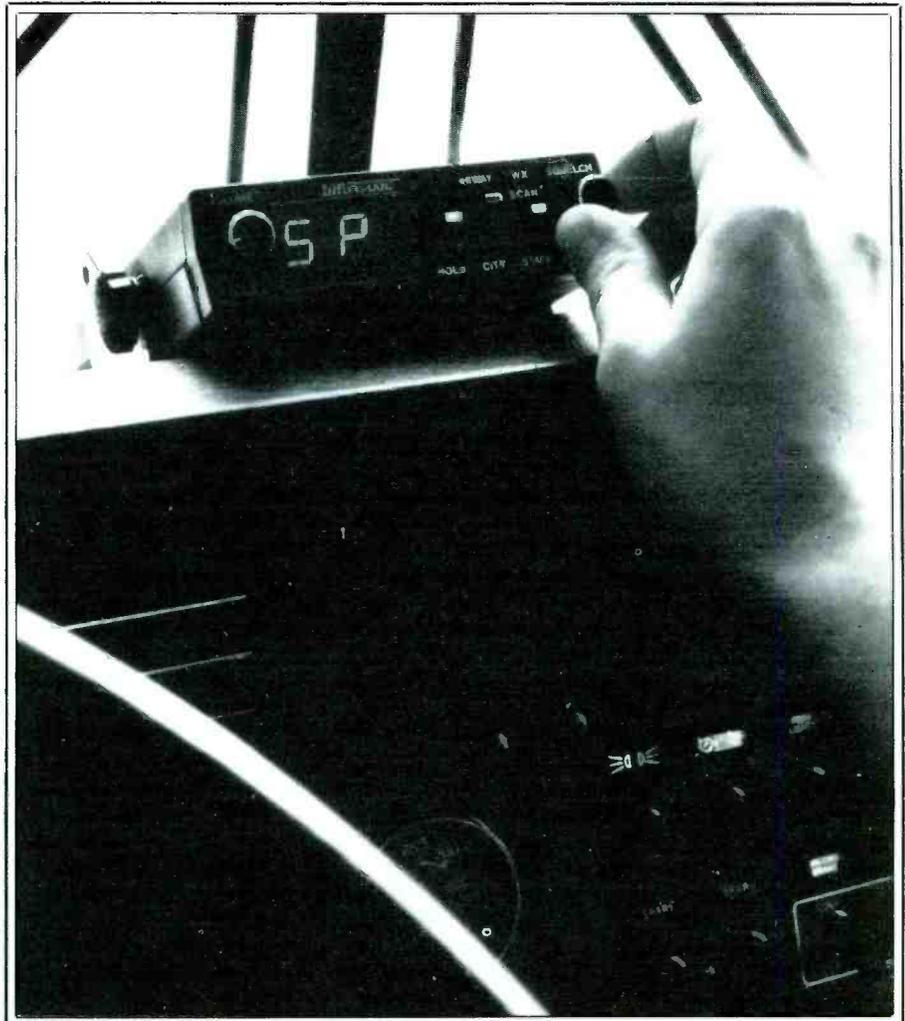
When my wife was admitted to the hospital earlier this year, I wasn't about to sit around like a jar of pickled beets next to her for six-plus hours a day. As I was leaving the hospital on the first day, I spotted what seemed to be a UHF rubber-ducky antenna pointing down from the hallway ceiling. When I reached up to touch it, I found it to be metal although it was shaped like a tapered UHF rubber-covered antenna, with the end tip and all.

On my visit to the medical center the next day, I brought along the pocket scanner. My suspicions were confirmed when I learned the antennas situated about every other room in the hall ceiling were there to receive heart monitors placed on patients on that particular floor. The monitors in each patient's room transmit on the UHF band and the antennas in the hall ceiling are hooked up to the receiver, or console, at the nurses station. At the console, nurses can keep an eye on heart patients and their conditions.

Hospitals using these monitors operate on business band UHF radio channels that allow one-way non-voice biomedical telemetry. In addition to hospitals and medical centers, convalescent centers also are eligible to use the frequencies. Some doctors seem to be licensed on a few channels as well. Almost all hospitals license their operations for a maximum power output of 3 watts; however, most units probably use even less power to allow frequency reuse within a hospital. For those technically oriented, the emission mode is classified as 10F9.

In any event, as my wife started to doze off, I went into the search mode on the handheld scanner and started to hear monitors on many frequencies, even though this was in a rural, 200-bed hospital much smaller than many suburban and city hospitals. It was a new experience listening to the heartbeats at their various rates and pressures. I eventually had more than a dozen channels on which I heard monitors; some were probably on other floors since we were on the top of five floors. One patient's heart sounded like it was barely pumping; others had a quick rate. One monitor was making such strange sounds, it was no wonder the patient was being observed.

The fun part came when I found the frequency being used by the monitor on the patient in the bed next to my wife! By taking the rubber-ducky antenna off my scanner, I



The Regency Informant scanner looks more like a radar detector (explain that to a cop) but is preprogrammed with local, state and national police frequencies for all 50 states. As you travel into a different state, the dial is adjusted so frequencies for that state can be received.

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started checking the dozen channels I had heard monitors on and searched for the strongest signal. Some signals were strong, but as I swung the scanner around with my arm, I would hear a little bit of noise on the signal. Finally, I found the frequency with no noise as I moved the scanner around in my hand. As my wife's roommate got out of bed, or the phone rang, I could hear her heart's rate quickening. When my parents showed up to visit later that evening, I told them what I was up to and they listened in, too. Even my wife, a registered nurse who usually doesn't bother much with my radios, had to have a listen.

The range of the monitor transmitters seems to be somewhat limited. As I left that one evening, I decided to keep an ear on my wife's roommate's monitor to see how far

the signal reached. As the elevator started moving down, I lost the signal two floors down. However, as I walked to the parking lot and was within view of their room's window, I picked up the signal again. If you stray to within a half-block or even less of a hospital, you still may be able to receive the heart monitor signals. If not, and you want to check it out, just park near a hospital within view of patient room windows, and you should hear some signals. If a friend or family member is hospitalized and feels well enough, you might amuse them by letting them "listen" to their heart.

There are several places in the UHF band to check for heart monitors. You could check the four low-power frequencies in the 457 MHz range: 457.525, 457.550, 457.575 and 457.600 MHz. Another place

is a set of 18 frequencies set aside exclusively for biomedical telemetry in hospitals:

460.6625 MHz	465.6625
460.6875	465.6875
460.7125	465.7125
460.7375	465.7375
460.7625	465.7625
460.7875	465.7875
460.8125	465.8125
460.8375	465.8375
460.8625	465.8625

Other popular places to check are the low power channels in the 467 MHz band:

467.750 MHz	467.850
467.775	467.875
467.800	467.900
467.825	467.925

It's possible that you might also hear monitors on some of the 12.5 kHz "splinter" or "offset" channels between regular business band channels. If you listen around enough, you'll stumble across heart monitors as well. It all depends whether or not you would enjoy listening to such signals. If not, go listen to some police or fire calls, trains, planes, garbage trucks or whatever you consider fun. That's what's great about the hobby—there's such a variety of things to listen to.

Flicks and HTs

When film crews go on location, chances are that the director won't shout "Lights! Camera! Action!" through a megaphone. These days, a walkie-talkie is more common. Film crews have a battery of frequencies that they may use for staging and direction on film sets, one channel or several of the channels may be in use at any time.

While Hollywood may have been a haven for movie making at one time, most movies are now done on location in places such as Miami, Jersey City and Oshkosh. True, production facilities are still in Hollywood; however, most movie makers prefer the real-life sets of both urban and rural areas. It's not uncommon to see a major star performing in front of a casino on Atlantic City's Boardwalk or to see film crews "rolling it" as an automobile rides the elevated tracks in Chicago. Any filming takes coordination of a multiplicity of crews and radio is the common link. Most major motion picture studios are licensed on several of the channels so they can move about the United States without worrying about interfering with regular users on a channel.

In addition to major film companies using the frequencies authorized in the motion picture radio service, you may also find network TV crews using these channels for made-for-TV movies, sporting and news events. While the motion picture radio service provides allocated frequencies for film makers, some movie producers may also pop up on business band radio channels, especially itinerant channels such as 35.04, 151.625, 464.500, 464.550, 469.500 and 469.550 MHz.

One TV station owned by a major network in a large city uses one of the motion

picture radio service channels as its F-1 and a 154 MHz business band radio channel as its F-2 for on-scene communications while working on a news story. Of the 10 VHF high-band radio channels available in the motion picture radio service, six are shared with the special industrial radio service and the other four are shared with the relay press radio service used by newspapers. On the 152 MHz channels, you're more likely to hear heavy construction crews, farmers, fuel oil fleets and ice delivery trucks, and on the 173 MHz channels, you'll hear newspaper photographers and delivery trucks.

The six channels shared with the special industrial radio service are: 152.870, 152.900, 152.930, 152.960, 152.990 and 153.020 MHz. The four channels shared with newspapers are: 173.225, 173.275, 173.325 and 173.375 MHz. Most major motion picture studios are licensed on all four of the 173 MHz channels.

Weird freqs?

If you've stumbled across some weird frequencies, we'd like to hear about them here at POP'COMM. These can range from wireless microphones and McDonald's drive-thru systems to grocery store pricing units. They all use radios that can be heard on scanners. We also welcome your photographs, letters, questions and comments. Write to: Chuck Gysi, N2DUP, Scanner Scene, *Popular Communications*, 76 North Broadway, Hicksville, N.Y. 11801-2909.

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CIRCLE 34 ON READER SERVICE CARD

LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

Glasnost starts to come to shortwave! Soviet leader Mikhail Gorbachev's announced new policy of openness seems to have led to a reduction in the amount of jamming of foreign broadcasts by the Soviet Union. Jamming of Russian language broadcasts from Radio Beijing stopped sometime during mid-October last year. At about the same time, jamming of Russian broadcasts from Radio Korea (South) and Radio Tirana also ceased.

Then, on January 20, the Russians stopped interfering with the BBC's Russian language broadcasts. Before we break out the bubbly and celebrate though, remember that jamming continues full blast against broadcasts from the Voice of America, Radio Free Europe/Radio Liberty, Deutsche Welle and Kol Israel.

One interesting sidelight of the cessation of jamming against Radio Beijing was the almost simultaneous stoppage of the so-called backward Russian transmissions from Beijing. People had puzzled for years over the reason behind these broadcasts (see "Great Shortwave Mysteries" in *POP-COMM*, May 1983) so it now seems that they were being used as a technique to get past the Russian jamming.

Speaking of China, there's a new Chinese shortwaver on the air. The Voice of Jinling operates from Nanjang in Jiangsu Province. The station operates from 1155 to 1600 on 4875 with programs in Chinese beamed at Taiwan and other parts of Southeast Asia. Programs apparently stress economic news and developments.

WCSN, the new station of the *Christian Science Monitor* should be operating with its full schedule of programs by now. The latest available schedule is: 1600-1800 to Northern Europe on 15270; 1800-2000 to West

and Southern Africa on 21640; 2000-2200 to Central and Western Europe on 9465; 2200-0000 to Central Africa on 7365; 0000-0200 on 7365 to Central and Western Europe; 0200-0400 on 9465 for Central Africa; 0400-0600 to West and Southern Africa; 0600-0800 to Northern Europe on 7365; 0800-1000 to West and Southern Africa and 1000-1200 to West and Southern Africa on 17640. Reception reports should go to: WCSN, Christian Science Monitor World Service, Box 860, Boston, MA 02123. Power of the new station will be 500 kW.

Dedication ceremonies for Adventist World Radio's new station, KSDA, in Guam, were held on January 18 even though the station wasn't on the air yet. It should be on by the time you read this. The most recent schedule we have is: 1100-1200 on 15440, 1300-1400 on 11920, 1400-1600 on 9830, 0800-1600 on 11840, 0900-1100 on 9465, 1100 to 1500 on 7365 and 2300-0200 on 15300.

ANARCON '87 The 22nd annual convention of the Association of North American Radio Clubs will be held July 17, 18 and 19 at the Novotel Hotel in Mississauga (Toronto) Ontario, hosted by the Ontario DX Association. The three-plus days will feature an excellent selection of talks, seminars, films, discussions, displays by clubs, shortwave stations and shortwave equipment dealers. There's certain to be a number of international broadcasters in attendance, too. The convention is hailed as "the event of the year for the radio monitoring hobbyist" and, indeed, many listeners make their plans for the next one right after they get home (and get caught up on their sleep!) You can get more information by writing to: ANARCON '87, c/o The Ontario DX Asso-



ANARCON
The 22nd Annual Convention of the
Association of North American Radio Clubs

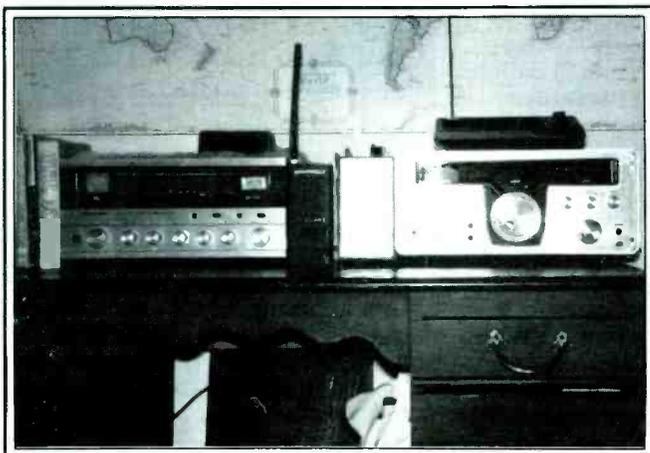
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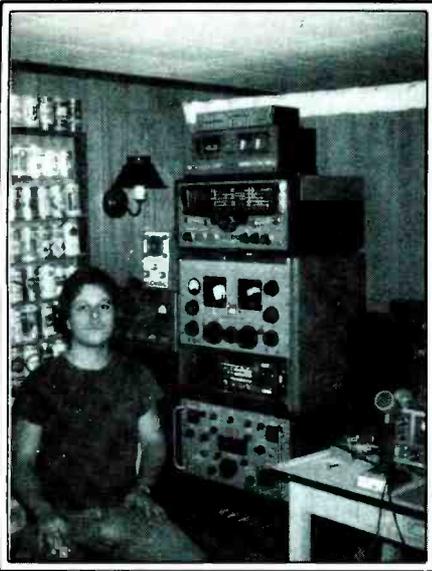
Back in October 1985, ANARC's Over-the-Horizon Radar Committee conducted a coordinated monitoring effort to determine the extent of interference caused by the Soviet OTH system. A 63-page illustrated summary of the findings of "The Woodpecker Project" is now available for \$7 in North America (\$9.50 for foreign airmail, just \$4 to those who participated in the project) Order from: The Woodpecker Project,



Here's the shack of Jim Ross, KA7URR, in Vancouver, WA.



Ontario DX Club members Ron Hopkins, Dave Clard and Cedric Marshall burn the midnight oil during a DX'ing session at the club's convention last October (Thanks Stephen Cannery, VE3FQ.)



This "super shack" belongs to Ed Delawski in Wilmington, DE and features some "oldies but goodies" including a Hallicrafters SX-101, Hammarlund SP600 and R390A. All receivers are fed into a solid state amplifier and equalizer.

1634 15th St. NW, Washington, D.C. 20009.

MAIL CALL: Jason Reese of Hendersonville, TN says he's just started SWL'ing and wonders if Radio Moscow QSL's. You bet, Jason, they've always been good QSL'ers, even in the most frigid days of the cold war. Jason also reports he heard Radio Moscow announce that they were now also broadcasting in the 74 meter band, which would be just about 4 MHz. He also reports this schedule for UN Radio via Beijing: Saturdays (English) 1200-1300 on 11600, 11755 and 15280; in Chinese from 0900-1100 on 9575, 9945, 11650.

U.N. Radio's location is one of the questions from Shawn Beranty of Worthington, PA. Well, studios and programming are at the United Nations in New York. Until last year most U.N. broadcasts were via the facilities of the Voice of America but that agreement is currently in limbo over a question of the increase in fees the VOA wanted to charge. Meantime, some U.N. programming is aired over Radio Beijing as noted above and also over the Voice of Nigeria which airs U.N. programs in Arabic, Swahili, French and English, the latter at 0600 on 15185, 0700 on 15120 and 1900 on 7255.

Shawn also wants to know what station uses a bird call interval signal. A number of them do, including Radio Australia, Radio New Zealand, Zambia Broadcasting Corporation, RAI in Rome, Radio RSA, Radio Baghdad and several others.

Amund Groner of Kamloops, B.C. says his town "must be way out in the boondocks as far as DX'ing is concerned." Amund says that some Ham friends tell him that, on a scale of 0 to 50, the San Francisco area rates about a 46, the Great Lakes area around 34

but Kamloops only 2. Amund wants to know if a more sensitive receiver or a longer antenna or more patience would help. Yes. Especially the patience part.

Welcome back to Michele Shute who says "you wouldn't believe all the SWL's I've met here in Pensacola." We're surprised you've run across so many, Michele, but not surprised that they were there. SWL's seem to be everywhere but it's a continuing puzzlement why so many choose to stay hidden. The question might make a good Masters or Doctoral thesis.

Caroline Eaton checks in from her new location in Alexandria, VA and says she's enjoying all the shack and antenna space house owning provides and says this new location is the best yet for shortwave listening. Caroline is also happy over her QSL from Radio Botswana.

Herb Kuehnert in Selinsgrove, PA has been DX'ing off and on since the mid-30's but he says "unfortunately" he lost most of his old QSL's in a fire some years ago. "Unfortunately" is hardly the word, Herb. Yes, SPW is an ancestor of today's Radio Polonia.

LET'S HEAR FROM YOU! Your comments, questions, news, shack photos, good quality copies of QSL's (or originals if you don't need them back) are always welcome. So are your loggings. Make them by country, double or triple space between items, use only one side of the paper and place your last name and state abbreviation after each. Thanks!

Abbreviations Used in Listening Post

AA	Arabic
BC	Broadcast/ing
CC	Chinese
EE	English
FF	French
GG	German
ID	Identification
IS	Interval Signal
JJ	Japanese
mx	Music
NA	North America/n
nx	News
OM	Male
pgm	Program
PP	Portuguese
RR	Russian
rx	Religion/lous
SA	South America/n
SS	Spanish
UTC	Coordinated Universal Time (ex-GMT)
v	Frequency varies
w/	With
WX	Weather
YL	Female
//	Parallel frequencies

SWBC Loggings (All Times Are UTC)

ALBANIA: R. Tirana, EE at 2330 s/on on 7120 (Beard, AL); 7065/9480 at 1842-1856 s/off (Palmer, WA); 2135 in SS on 9430 (Groner, BC); 1818 in FF, opens in EE at 1830 (Palmer, WA).

ANTIGUA: Deutsche Welle relay, 6040 in EE at 0125 (Moser, PA); 6045 at 0333 (Hamilton, NC).
BBC relay, 6120 at 0502; 6175 at 0008 (Moser, PA).

ARGENTINA: RAE, 9690 at 0112 w/mx (Eaton, VA); 0100 in EE on 11710 (Johnson, TX).

ARMENIAN SSR: R. Yerevan, 9765//11860 (via USSR/R. Moscow xmtrs) at 0330 in Armenian, nx in EE 0353-0357 & s/off at 0400 (Johnson, AZ).

ASCENSION ISLAND: BBC relay, 6005 at 2125 w/African svc (Moser, PA); 15260 at 2315 (Ross, WA).

AUSTRALIA: R. Australia, 1300 & later on 5995//6060//6080 in EE; 1325 in CC on 7205 (Northrup, MI); 9580 at 1237 (Moser, PA); 9710//11800 at 1227; 1300 on 11760 (Lavallee, S. Korea); 15155 at 2216 (Ross, WA); 15160 at 0430 (Johnson, AZ); 0450 on 15160//15320//17795 (Johnson, AZ); 17715//17750 at 0334 (Lavallee, S. Korea); 17750 at 0749 (Lane, Philippines); 17795 at 2225 (Groner, BC).

ABC Perth, EE at 1114 (Lane, Philippines).
ABC Brisbane, 0801 on 4920; 0627 on 9660 (Johnson, AZ); at 0814 (Russell, AL).

AUSTRIA: R. Austria Int'l., 6155 in EE at 0152 (Hamilton, NC); 0001 s/on in EE (Gilbert, CA); 1230 on 15320 (Beard, AL); 1243 in EE (Moser, PA).

BELGIUM: BRT at 0812 in EE on 9880; 0029 s/on in EE on 9925 (Moser, PA); 15590 at 1333 in EE (Russell, AL).

BELIZE: Radio 1 svc on 3285 at 0345 (Eaton, VA); ID at 0400 (Guidry, LA).

BENIN: ORTB Cotonou, in FF on 4870 at 0640 (Moser, PA).

BOTSWANA: R. Botswana, 4820 w/IS from 0355, anthem, rx mx, EE (Moser, PA); 7255 w/IS at 0345 (Russell, AL); 0432 w/nx (Gilbert, CA).

BRAZIL: R. Clube do Para, 4885 in PP at 0932 (Durant, NY).

R. Educadora Braganca, 4825 at 0848 (Ross, Ont.).

R. Globo, 11805 weak at 0045 (Johnson, AZ).

R. Relagio Federal, 4905 at 0145, talks in PP, clock ticks (Ross, Ont.).
Radiodifusora Amazonas, 4805 at 0004 (Hartley, OH).

R. Nacional Manaus, 0153 on 4845, clear ID's (Russell, AL).

R. Nacional, 9680 at 0023 (Hartley, OH).

Radiobras, 11745 in EE at 0228 (Hamilton, NC); EE nx at 0202 (Moser, PA).

BULGARIA: R. Sofia, 6070 in EE at 2230 on 6070 (Neff, OH); at 0010 (Beard, AL); 2131 in EE on 7115 (Moser, PA); 0415 (Johnson, AZ); 0400 w/EE nx at 0560 (Bolt, TX).

BURKINA FASO: R. Burkino, 4815 in FF at 2325 (Moser, PA).

CANADA: RCI w/EE on 5960 at 0017 (Moser, PA); 9625 w/nx at 1300 (Northrup, MI); 9755 at 0108 (Ross, WA); at 0650 (Beard, AL); 11945 at 2145 & 2125 on 15325 (Guidry, LA); 17820 //15260 at 1844 (Moser, PA).

CBC on 11720 at 1718 in EE (Moser, PA).
BBC (via Sackville) on 15260 at 1712 (Moser, PA).

CFCX Montreal at 1814 (Carlson, MA).

CFRX Toronto at 1240 (Beard, AL).

CHILE: R. Sistema Nacional, 15140 at 1918 w/hard rock & new wave (Eaton, VA). There are many reports of all-day reception-- Ed.

CHINA: R. Beijing at 1233 in Korean on 4620//5975; 9535//11600//11755 at 1218 in EE; 1355 on 9550 (Lavallee, S. Korea); 0850 in EE on 9700 (Shute, FL); 11970 at 0019 in SS (Ross, WA); 0050 on 15100 in SS (Johnson, AZ).

COLOMBIA: Armonias del Caqueta, Florencia at 0959 w/anthem, clock chimes, opening mx, ID in SS on 4915 (Shute, FL).

La V. de Centauros (editor ID) 5955 at 0230 w/"Radio Caracol cubre a Colombia (Groner, BC).

Coracol Neiva at 0430 on 4945 (Guidry, LA).

R. Macarena, Villavicencia, 5975 at 1156 w/ads, clear ID's (Russell, AL).

R. Sotatenza, Bogota, 5095 strong in SS at 1055 (Russell, AL).

COSTA RICA: TIFC, Faro del Caribe on 5055 in EE at 0340 (Hartley, OH).

R. Reloj, 6006 at 0600 w/ID, "Ave Maria" (Groner, BC).

CUBA: R. Havana Cuba, EE at 0400 on 6035 (Northrup, MI); 6090 at 0039 (Hamilton, NC); 1325 in SS on 9550; 1445 in SS on 9730 (Northrup, MI); 9740 in EE at 0500 (Carlson, MA); 2258 in EE on 11725 (Ross, WA); SS on 2230 on 11760 (Guidry, LA); 2200 in SS on 11970 (Ross, WA).

R. Moscow relay, 6000 at 0330; at 0325 on 4765 in language (Northrup, MI).

R. Rebelde, 5025 in SS at 0002 (Hartley)

CZECHOSLOVAKIA: R. Prague, 5930 in EE at 0110 (Groner, BC); at 0315 (Hamilton, NC); 7345 at 0746 (Beard, AL); 21705 in EE at 0030-0300 (Lane, Philippines). Good to see the higher freqs getting life back in them again-- Ed.

DENMARK: R. Denmark, 15165 at 1305 w/nx in Danish, ID in EE (Eaton, VA; Durant, NY)

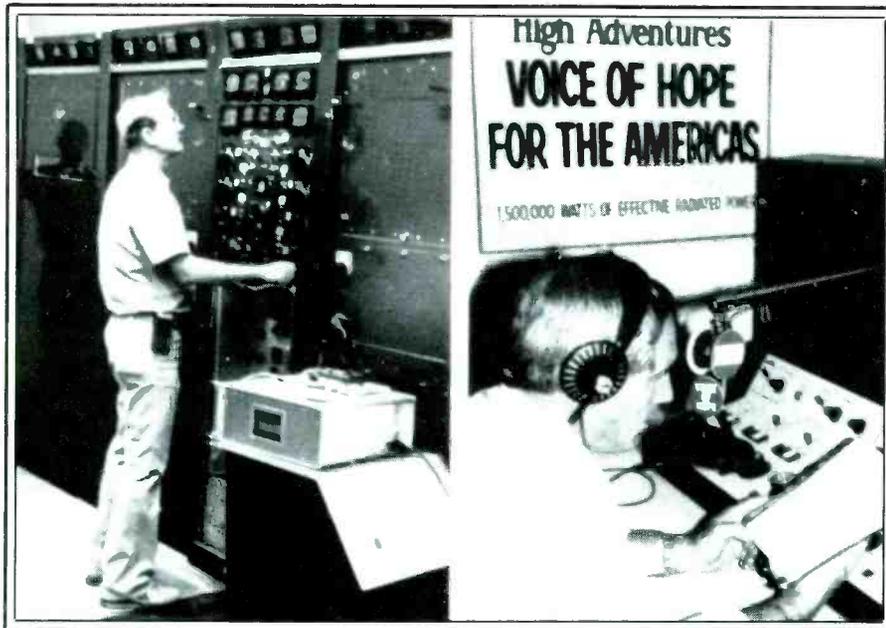
DOMINICAN REPUBLIC: R. Discovery, 6245 at 0143-0230 in EE & SS (Neff, OH).

R. Clarin, 11700 at 2139 in SS w/mx (Moser, PA).

EAST GERMANY: RBI on 9560 in EE at 0453-0515 (Johnson, AZ).

ECUADOR: R. Zaracay, Santo Domingo, 3394.7 noted to s/off at 0359 in SS w/Ecuadorian folk mx, soft rock (Palmer, WA).

La V. de Upano (Editor assuming ID), Macas at 0325, s/off 0242 (Groner, BC).



QSL's are now being received from KVOH in California.

R. Quito, 4920 ID as "La Voz de la Capital" w/pops at 0250 (Groner, BC).

HCJB's local svc at 0401 on 3220 (Palmer, WA); 6075 at 1212 in new svc to Japan in EE (Neff, OH); 6230 at 0435 (Hamilton, NC); 0633 w/DX Party Line pgm on 9870 (Neff, OH); 1206 on 11740 (Moser, PA); 17780 at 2137 (Reese, TN); 2045 on 17790 (Guidry, LA).

EGYPT: R. Cairo, 9900 at 2018 in EE & AA (Johnson, AZ); 17675 at 1242 in EE (Lane, Philippines)

ENGLAND: BBC (from various sites & relay points) 3955/3975 at 0645 (Durant, NY); 5965 at 12310 (Northrup, MI); 5975 at 0005 (Moser, PA); 6100 at 2140 (Reese, TN); 6175 at 0335; 7160 at 0400 (Northrup, MI); 9515 at 0027 (Ross, WA); 1538 on 9565 (Reese, TN); 9740/11750 at 1245 (Lavallee, S. Korea); 15255 at 2255 (Ross, WA); 15390 at 2130 in Portuguese (Guidry, LA)

FINLAND: R. Finland Int'l., in EE at 1419 on 11945 to 1425 off (Johnson, AZ); 15400 at 1422 (Moser, PA).

FRANCE: R. France Int'l., 7135 at 0340 in EE (Northrup, MI); 9790 at 2015 in FF (Johnson, AZ); 15195/15315 at 2106 (Guidry, LA); 15315 in EE at 1619 (Ross, WA).

FRENCH GUIANA: RFO Cayenne, 0836 on 5055 in FF (Shute, FL).

RFI relay on 6055 in EE at 0350 (Hamilton, NC); 9535 at 0400 w/nx (Bolt, TX); 9800 at 0451 in EE; at 0500 on 6055/9800 in SS (Reese, TN).

GABON: Africa #1 on 4830 at 0502 s/on in FF; 11940 at 0615 in FF (Johnson, AZ); 15475 at 2015 in FF & EE (Eaton, VA).

R. Japan relay, 9645 at 2303 in EE (Neff, R. France Int'l. relay, FF at 2154 on 9790 (Moser, PA).

GHANA: GBC on 3366 w/nx in EE at 0638 (Russell, AL); EE nx at 0604 on 4915 (Moser, PA); EE at 2245 (Amoroso, CA).

GREECE: V. of Greece, 7395 at 0654; 7430 at 0331; 9420 at 0136 in EE (Johnson, AZ); in Greek at 1400 on 9855 (Hartley, OH); 11645 at 1516 in EE (Moser, PA); 1533 in Greek followed by EE on 15630 (Moser, PA).

VOA Kavalla, 9700 at 1713 in EE (Moser, PA).

GUAM: KTRW on 9820 at 2211 w/IS, s/on in CC, 2215 s/on ID in EE then into CC (Johnson)

GUATEMALA: La V. de Atitlan, 2390 w/mx at 0445 (Russell, AL). Was there a positive ID on this? Extremely late for this to be on-- Ed.

TGNA, 3300 at 0300 in EE (Brooks, KY); 0427 w/ID, address, mx, freqs & s/off (Moser, PA).

HAWAII: WVVH time sigs on 5000 at 0453 (Hartley, OH).

HONDURAS: HRR1 Sani Radio, Puerto Lempira, at 0037 excellent sigs w/SS pgm, rock & Caribbean mx (Palmer, WA); tentative at 1227 (Neff, OH). HRVC in SS at 0236.

HUNGARY: R. Budapest in EE at 0200 on 6025 (Hamilton, NC).

INDIA: AIR on 11725/15335/17387 in EE at 1000 (Lane, Philippines).

INDONESIA: R. Republik Indonesia, mx w/o

ID at 1320 on 3321 (Northrup, MI). Jember listed for this freq.-- Ed.

IRAN: VOIRI, 9575 w/nx (Farsi?-- Ed.) at 1600 (Gilbert, CA).

IRAQ: R. Baghdad, 13650 at 1830 strong in AA (tentative); 13700 tentative at 1835 (Palmer, WA); 13650 at 1326 w/AA mx & chanting (Kneitel, NY).

IRELAND: R. Dublin Int'l., EE w/rock at 0540-0610. Announced medium wave & FM (Amoroso, CA). No freq listed so I presume 6910-- Ed.

ISRAEL: Kol Israel, 7410 at 0500-0515 w/EE nx including marine wx for Mediterranean & Red Seas (Johnson, AZ); 7465 at 0022 w/sports nx (Hamilton, NC); 9010 at 0510 (Beard, AL); 9435 at 0150 in un-ID language, EE at 0200 (Groner, BC).

ITALY: RAI in II at 2329 on 9575 (Johnson, AZ); 0100 w/OM reading nx in EE (Gilbert, CA).

JAPAN: R. Japan, 5990 at 0730 (Gilbert, CA); 6080 at 1259 w/ID (Lavallee, S. Korea); 9525 at 0450 (Johnson, AZ); 9725 at 0216 (Johnson, AZ); 0651 on 9760 (Ross, WA); 11815 at 2230 (Ross, WA); 11875 at 1236 (Lane, Philippines); 15235 at 2305 (Ross, WA).

KUWAIT: R. Kuwait, 11675 at 1801 w/pop mx, nx in EE at 1830 (Hamilton, NC); pop mx & talk re Iran/Iraq war (Eaton, VA).

LIBERIA: ELWA at 0630 w/EE rx pgm on 4760 (Shute, FL); 0701 on 11830 in EE w/rx pgm (Johnson, AZ).

VOA relay on 15600 at 1603 w/nx (Moser) LIBYA: R. Jamahiriya, 7150 at 2323 in EE w/"Africa for Africans" (Marcello, NY); 15415 in AA at 1408 (Hartley, OH).

LITHUANIAN SSR: R. Vilnius, 2320 in EE on 11750 (Ross, WA); 11860 at 2300 (Johnson, AZ). Via USSR xmtrs-- Ed.

LUXEMBOURG: R. Luxembourg at 2156 in GG on 6090, lost out to Cuba around 2250 (Russell, AL); 15330 at 1918 in FF w/pops/rock (Ross, Ont).

MALTA: Deutsche Welle relay, 6085 at 0114 in EE (Moser, PA).

IBRA Radio, 6110 at 2030 in EE w/rx pgms. Gave address as: IBRA Radio, P.O. Box 521 Station F, Toronto, Ont., Canada M4Y-2L8 (Durant).

MADAGASCAR: R. Madagasikara, 4959.6 tentative, FF at 0157 w/IS on stringed instrument, choral selection, OM announced "Radio..." (Ross, Ont.).

R. Netherlands relay at 2100 in EE on 9270/9540 (Moser, PA).

MALI: RTV Malienne, 2249 in FF on 4783 (Moser, PA).

MAURITANIA: ORTM on 4845 in AA at 0736 (Moser, PA); at 2353 (Hartley, OH).

MEXICO: R. Mexico Int'l., 9705 at 0400 in SS, several clear ID's (Russell, AL); 15430 at 2225 w/Mexican mx, nx (Eaton, VA).

XEWW La V. America Latina, 15160 w/classical mx at 1810 (Northrup, MI).

MONACO: TWR at 0808 on 7105 w/rx pgm in EE (Moser, PA).

MONTSERRAT: Deutsche Welle relay on 9545 in EE at 0116 (Moser, PA).

MOROCCO: RTVM on 17595 in FF 1540-1600 (Amoroso, CO).

VOA Tangiers, 11760 at 1709 thru heavy Havana QRM (Moser, PA).

NAMIBIA: R. Southwest Africa on 3295 at 0351 w/IS & ID in EE by YL (Eaton, VA).

NETHERLANDS: R. Netherlands on 6020 in EE at 0323 (Johnson, AZ); 9715 at 2102 in EE (Johnson, AZ); 13770/15560/17575 in EE at 1429 (Lane, Philippines).

NETHERLANDS ANTILLES: R. Netherlands Bonaire relay on 6165 at 0230 & 0607 in EE (Moser, PA); 9630 in Dutch to Australia/New Zealand (Johnson, AZ).

TWR Bonaire, 9535 from 0040-0505 w/"Caribbean Night Call" (Neff, OH); 11815 at 1157 w/EE announcements (Moser, PA).

NEW ZEALAND: R. New Zealand at 0848 w/ID in EE on 9600 (Shute, FL); 15150 at 1835 (Groner, BC).

NICARAGUA: V. of Nicaragua, 0055 on 6015, headlines in EE (Hamilton, NC).

NIGERIA: V. of Nigeria, 7255 at 0623, talks in EE (Eaton, VA); 0757 w/IS (Moser, PA); 11770 at 2030 w/nx in EE (Johnson, AZ).

R. Nigeria, Kaduna, 4770 in EE at 0600 (Johnson, AZ); 0415 w/nx in EE (Guidry, LA).

NORTH KOREA: R. Pyongyang, 1248 in Korean on 6540 (Lavallee, S. Korea); 1200 s/on in EE on 9600 (Moser, PA); 11735 at 2335 (Ross, WA); 13650 at 2335 (Johnson, AZ).

NORTHERN MARIANAS: KYOI Saipan on 9655 at 1848 in EE to 1900 then moved to 9670 (Durant, NY); 11900 at 1312 (Lavallee, S. Korea).

NORWAY: R. Norway Int'l., 9605 at 2223 in EE (Moser, PA); 9665 at 1700 (Beranty, PA).

PAPUA NEW GUINEA: NBC Pt. Moresby, 4890 at 0910 ending EE nx, ID for NBC (Ross, Ont.).

PARAGUAY: R. Nacional, 9735 w/ID in SS as "Aqui Radio Nacional de Paraguay, en el corazon de Latino America," freq announcements, national anthem, info mx (Shute, FL); guitar mx at 0112 (Eaton, VA).

PERU: R. San Martin, 4810 at 0235 in SS, pops, ID "Buena Musica Radio San Martin" complete w/sirens (Ross, Ont.).

R. Union, Lima, 6115 at 0836 mx & SS (Moser) R. Atlantida, Iquitos, 4790 at 0320 (Northrup, MI).

PHILIPPINES: FEBC at 2357 in EE on 15445 (Ross, WA).

VOA relay, 6110 at 1335 (Northrup, MI).

POLAND: R. Polonia, EE nx at 1600 on 9540 (Amoroso, CO)

ROMANIA: R. Bucharest, 5990/6155 in EE at 0207 (Moser, PA).

RWANDA: Deutsche Welle relay, Kigali at 0433 on 7225 in EE w/"Breakfast Call" (Johnson, AZ).

SAUDI ARABIA: BSKSA, 9720 at 1926 w/rx teachings (Eaton, WA).

SENEGAL: ORTS, 4890 at 2324 in FF (Moser, PA).

SINGAPORE: SBC on 5052/11940 at 1300 in EE, nx (Lane, Philippines).

SOLOMON ISLANDS: SIBC, 9545 at 0720, EE & Pidgin (Johnson, AZ); 0730 w/nx instead of s/off as listed in WRTH (Moser, PA).

SOMALIA: R. Mogadishu, 7200 at 0355 w/mx, ID's, mentions of Somalia in un-ID language (Russell, AL).

SOUTH AFRICA (REP. OF): SABC Domestic svcs, EE & Afrikaans, 3320 at 0256 (Kendall, IN).

R. Oranje svcs, 3215 at 0330, mx, time checks, ID (Johnson, AZ).

Radio 5 on 4880 at 0300 s/on (Johnson, AZ); 0410 in EE & Afrikaans (Ross, Ont.).

Radio RSA, 6010 at 0206, nx in EE (Moser, PA); 9615 at 0202 (Beard, AL); 11900 at 2145 (Guidry, LA); 15185 at 1705 in Afrikaans (Groner, BC); 15220/21590 in EE at 1326 (Lane, Philippines).

SOUTH KOREA: R. Korea, 7275 at 0338 w/nx in Korean (Lavallee, S. Korea); 9570/9750 in EE (Lane, Philippines); 9750 at 0643 in EE (Johnson, AZ); 15575 at 0014 in EE (Gilbert)

SPAIN: Spanish Foreign R., 6125 at 0100 in EE (Durant, NY); 9630 at 0100 (Beard, AL).

SRI LANKA: SLBC at 1400 w/instrumental & pop mx on 9720 (Durant, NY); 17850 in EE at 1030 (Lane, Philippines).

SURINAM: R. Surinam Int'l. (via Radiobros, Brazil), 17755 w/EE ID at 1725, back into Dutch. EE nx at 1736 then Dutch at 1741 (Russell)

SWAZILAND: TWR at 0335-0345 on 9640 in Somali w/rx pgm (Amoroso, CO).

SWEDEN: R. Sweden Int'l., 15345 at 1415 w/"Stamp Corner" (Beard, AL).

SWITZERLAND: Swiss R. Int'l., 0030 in SS on 5965 (Hamilton, NC); 6135 in EE at 0408 (Moser, PA); 9885 at 0416 in EE (Russell, AL); 9885/12035 at 2100 (Amoroso, CO).

Red Cross BC Corp., 6135 at 0320 w/Red Cross nx in EE (Russell, AL).

SYRIA: R. Damascus, 9950 in EE at 2115 (Amaroso, CA).

TAHITI: R. Tahiti, 0447 in Tahitian on 11825 w/mx (Johnson, AZ); 0530 in FF, island mx (Amaroso)

TAIWAN: V. of Free China, 9685/9785/11745 in EE at 0314 (Labe, Philippines); 0353 on 9885/11745 (Lavallee, S. Korea).

TOGO: RTT, Lome on 5047 at 0527 w/chimes, anthem, s/on in FF (Moser, PA).

TUNISIA: RTT, Tunis on 17610 in AA at 1355 (Russell, AL).

TURKEY: V. of Turkey, 9560 at 2300 in EE (Moser, PA); 0144 in Turkish (Eaton, VA).

UGANDA: R. Uganda, 4975 at 0406 w/nx in EE (Hartley, OH).

UKRAINIAN SSR: R. Kiev (via Moscow xmtrs) on 7165 in EE at 0030 (Hartley, OH); 11860 at 0326 s/off in EE (Johnson, AZ).

UNITED ARAB EMIRATES: UAE Radio, Dubai on 9550 in EE at 1600 (Beranty, PA); 9900 in AA at 0045 (Eaton, VA); 1600 on 11955 in EE (Levine, IL); 15300 at 1345 w/DX pgm (Beard, AL); 17775 at 1340 (Russell, AL); 21700 at 0530 (Lane, Philippines).

UNITED STATES: VOA on 5995 at 0145 (Neff, OH); 6000 at 0030 (Reese, TN); 6035 at 0400; 6040 in SS at 1340 (Northrup, MI); 6050 at 0505 (Reese, TN); 6110/9760 at 1306 (Lavallee, S. Korea); 6140 in SS at 1330; 9350 in EE at 1320 also 9455 at 0330; 9525 at 1340 in SS (Northrup, MI); 9815 at 0024 (Moser, PA); 11715/15160 at 1100-1200 (Lane, Philippines); 11720 at 0537 (Brooks, KY); 15155 at 0345 (Lavallee, S. Korea); 15410 at 1810 (Northrup, MI); 15580 at 1711 (Moser, PA); 17785 at 2045 (Guidry, LA). Various sites—Ed.

WRNO on 6185 at 0422 (Carlson, MA); 7355 at 0155 (Brooks, KY); 9715 at 0040 (Neff, OH); 2135 on 11705 (Guidry, LA); 15420 at 1840 (Northrup)

WMLK at 1945-2000 s/off on 9455 (Russell)

WINB, 15185 w/ID at 2100 (Guidry, LA).

KGEL, 6010 w/IS at 1030 (Russell, AL).

KCBL, 11735 at 1923, ID's as "Sunshine Radio" (Durant, NY).

R. Marti, 11930 w/SS to Cuba at 2017 (Ross, WA).

KVOH, 17740 at 2100 (Guidry, LA); 17750 at 2351 (Brooks, KY); 17775 at 1750 (Russell)

AFRTS, 6030 at 2309 (Moser, PA); 6125 at 1400 (Lavallee, S. Korea); 1515 on 9700 (Reese, TN); 11730 at 0518 (Moser, PA); 15330 at 2025 (Neff, OH).

WYFR at 1500 on 9870 (Moser, PA); 15170 at 2105 (Guidry, LA).

VOFC (via WYFR), 5985 at 0215 (Ross, WA).

WHRI, 7355 at 0454 (Carlson, MA); 7400 at 0540 (Neff, OH); 15105 at 1800 (Northrup, MI).

USSR: R. Moscow, 9515 at 0308 (Hamilton, NC); 5925 at 2231; 7220 at 2335; 7230 at 2359 (Reese, TN); 9450 at 1315; 9755 at 1340 (Northrup, MI); 0300 on 9860 (Bolt, TX); 11840 at 1720 (Moser, PA); 15130 at 2300; 15420 at 2230 (Ross, WA)

VATICAN: Vatican R., 9645 at 1459 s/off in EE, w/IS (Gilbert, CA).

VENEZUELA: R. Popular, 4810 at 0330 s/off, not certain if this was them (Northrup, MI).

Ondas Panamericanas, 0345 on 3215 (Northrup, MI).

R. Occidente, 3225 at 0350, mx, ID, in SS (Northrup, MI).

R. Capital, 4850 at 0549 in SS w/clear ID's (Russell, AL).

R. Tachira, 4830 at 0425 (Guidry, LA).

Ecos del Torbes, 4980 in SS at 0011 (Hartley)

R. Rumbos, 4970 at 0405 (Hartley, OH); 9660 at 1035, 1629 & 2209 (Russell, AL; Moser, PA; Johnson, AZ).

R. Nacional at 1000 in SS on 11850 (Durant, NY); tentative at 0042 on 11852 (Shute, FL); 11855 at 1605 (Russell, AL).

VIETNAM: V. of Vietnam, 10010 at 1110, presumed CC to 1125, off to 1130, ID & into RR (Gilbert, CA).

WEST GERMANY: Deutsche Welle (Germany & various sites) 3995 nx in GG at 0330 (Northrup, MI); 5960 in EE at 0500 (Moser, PA); 6145 at 0122 (Moser, PA); 15105 in SS at 2300 (Ross, WA); 15275 at 2118 in GG (Guidry, LA); 17780//21560 at 0900 (Lane, Philippines).

YUGOSLAVIA: R. Yugoslavia, 7240 at 2217 in EE. Poor. Also 6100, but 9620 not heard (Russell).

YEMEN (PDR): DYBS in AA at 0349 on 7190 (Russell, AL).

ZAIRE: La V. du Zaire, 15245 at 2208 in FF, African mx, knocked for a loop by WYFR at 2229 (Russell, AL).

THE PLAYERS: Robert S. Ross, London, ONT; Jim Ross, KA7URR, Vancouver, WA; Debbie Levine, Arlington Hts, IL;

Warren Gilbert, Sherman CA; G. Lavallee, South Korea; William Moser, Pittsburgh, PA; Caroline Eaton, KB4UFW, Alexandria, VA; Paul Johnson, Phoenix, AZ; Jeff Guidry, Raceland, LA; Mark A. Northrup, Ann Arbor, MI; Lee Amaroso, Grand Junction, CO; Tom Hartley, Chillicothe, OH; Robert Carlson, Mansfield, MA; James E. Brooks, Jr., Bardstown, KY; Michelle Shute, Pensacola, FL; Phil Hamilton, Tur-

nersburg, NC; Armund Groner, Kamloops, BC; Shawn Beranty, Worthington, PA; Richard Russell, Hartselle, AL; Joseph Beard, Albertville, AL; David S. Kendall, Huntington, IN; Alexander Durant, Albany, NY; Jason Reese, Hendersonville, TN; Billy H. Bolt, Ft. Worth, TX; Robert Palmer, Spokane, WA; Richard C. Lane in the Philippines; and Tom Kneitel, NY. 'Til next month, good listening! **PC**



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CIRCLE 40 ON READER SERVICE CARD

"Mark ———" (unreadable). New air times are Sundays 2330-0330.

Other recently active shortwave pirates include: Global American Network (WGAN) on 7475, Progressive Music Radio on 7415, Radio North Coast International on 7348, Rock and Roll Radio on 3400, Secret Mountain Laboratory on 7434, the Voice of Bob on 7412, and the Voice of Communism on 3410.

Federal agents have closed down a New York City radio station they said was illegally broadcasting and charged the Haitian owner with operating without a license and jamming the frequency of a Connecticut station.

"When we find a pirate station, we close it down," Kevin McKeon, a spokesman for the Federal Communications Commission's New York office, said.

An anonymous caller tipped the FCC that WIBS-FM (107.9), which broadcast Haitian music and community affairs in Creole and French, was interfering with reception of WEBE-FM, an "adult contemporary" station in Westport, CT. WIBS was the only Haitian-owned and -operated station in New York City.

Don't forget to mail in your pirate loggings every month, as well as copies of your pirate QSL's, news clippings, etc. And, pirate operators—how about data on your equipment, programming, future plans, etc. Photos are welcome!

Back with more next month!

PC

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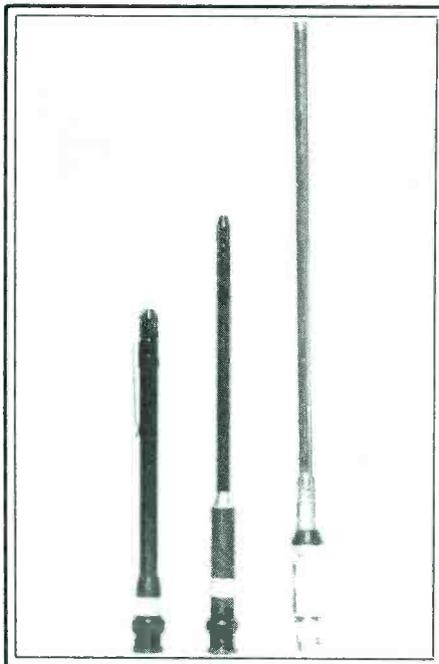
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CIRCLE 63 ON READER SERVICE CARD
THE MONITORING MAGAZINE

PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS



Three New Antennas

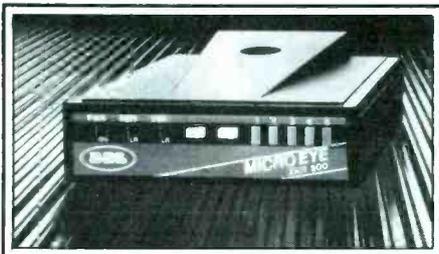
MFJ Enterprises, Inc. announced the release of several new high-quality antennas.

MFJ-1710, \$9.95 retail, is a $\frac{3}{8}$ -wave, 2-meter telescoping antenna with BNC. It comes with a convenient pocket clip and is $5\frac{1}{4}$ inches collapsed and $24\frac{1}{2}$ inches fully extended.

MFJ-1712, \$14.95 retail, is a $\frac{1}{4}$ -wave, 2-meter, $\frac{3}{8}$ -wave 440 MHz telescoping antenna with BNC. It is $7\frac{1}{4}$ inches collapsed and 19 inches fully extended.

MFJ-1714, \$16.95 retail, is a $\frac{1}{2}$ -wave 2-meter telescoping antenna with BNC. This unit is an end-fed, half-wave dipole, which is shorter, lighter, has more gain and places less stress on the connector than a $\frac{3}{8}$ -wave mounted on a handheld. When collapsed it performs like a rubber duck.

For more information contact MFJ Enterprises, Inc., P.O. Box 494, Mississippi State, MS 39762, or circle number 101 on the reader service card.



"Leader Series" Entry Level Radar Detectors

BEL-Tronics Limited has introduced a new line of detectors called the "Leader Ser-

ies," offering entry level consumers radar detectors with advanced technology, performance and features at competitive prices. The new line is ready for delivery to dealers immediately and starts out with three models, BEL Micro Eye XKR 100, BEL Micro Eye XKR 300, and BEL Micro Eye XKR 500.

Rudi J.C. Sagl, President, said that the three units have suggested retail prices from \$119.95 to \$199.95. "The Leader Series is designed as a general distribution line. The 100, 300, and 500 provide first-time radar detector buyers with excellent value in terms of performance and features. This is a line we expect to aggressively promote ourselves and to be effectively promoted by our dealers," Sagl said. According to Sagl, the wholesale pricing of the new line makes it extremely attractive to carry and offer.

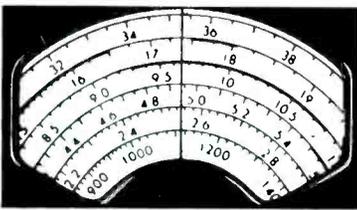
All three new units use BEL's hybrid half-horn micro strip circuitry and superheterodyne circuitry, feature separate audible X- and K-band alerts, and utilize a convenient pocket sized housing measuring $\frac{3}{4} \times 3\frac{1}{8} \times 4\frac{1}{2}$ ". They come with an easy to use, spring loaded visor clip and hook-and-loop strips for easy and versatile mounting.

The BEL Micro Eye XKR 100 is the least expensive of the new Leader Series models and, at a \$119.95 suggested retail price, the least expensive BEL-Tronics detector. In addition to an on/off switch, the unit features a "Power On" LED and a functional, pulsing visual alert.

The BEL Micro Eye XKR 300 is a step-up model featuring an "RSM" (Reduced Sensitivity Mode) switch, useful for driving in city and suburban areas where falsing is a problem. The 300 also has five LEDs—green for power on, amber for initial/weak signal alert, and multiple red LEDs to indicate strength of detected radar signal. The BEL Micro Eye XKR 300 has a suggested retail price of \$149.95.

At \$199.95 suggested retail, the BEL Micro Eye XKR 500 represents the high end of the Leader Series. In addition to the power and RSM switches, the 500 features a switch for BEL's exclusive "FSR" (False Signal Recognition) circuitry which analyzes a radar signal and will not set off an alert if the signal appears to be a false source. However, unlike the RSM mode, FSR is a "smart" circuit which tracks the change in the signal and will give an alert if the signal is deemed to be police radar at closer range rather than a "false" source. In addition, the unit has a five LED signal strength indicator.

For further information, contact BEL-Tronics Limited, 2422 Dunwin Dr., Mississauga, ONT, Canada L5L 1J9, or circle reader service number 104.



COMMUNICATIONS CONFIDENTIAL

BY DON SCHIMMEL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

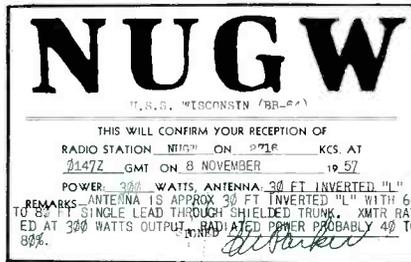
Readers of this column will perhaps recall the frequently appearing loggings of a station using a callup of "OM OM OM," etc. Mark Chinsky, NY has provided an explanation regarding this procedure. Mark says "OM" is used as a CW Prosign or Operating Signal by the Soviets and seems to signify that the station is ready to copy traffic. He has seen it in use on numerous Soviet HF CW Military and Naval networks. After many months of monitoring circuits where "OM" was used, it became clear to Mark that it was not a radio call sign. Many thanks for this enlightening information.

Every now and then a reader will request technical advice for an equipment problem. I do not consider myself a qualified all-around repair technician and therefore it is not possible for me to offer specific repair instructions. Your best bet is to take the equipment to a communications/equipment repair facility or to the particular dealer/distributor from whom the equipment was purchased.

After closing out the column last month, additional "Voyager" loggings were received. I want to thank everyone who supplied information on that historic flight.

David Latchaw, TX commented on a recent column subject by offering these remarks:

"The November 1986 Communications



A fine ute prepared reply QSL from NUGW aboard the battleship USS Wisconsin (BB-64). Tom Kneitel received this card for 2716 kHz reception in November of 1957 while the ship was on its final cruise. Built at a cost of \$11 million, it was launched on 7 December, 1943 and joined the 7th Fleet in the Southwest Pacific. Decommissioned in July, 1948, it was reactivated in 1951 for the Korean conflict. It was mothballed in March, 1958, thus leaving the USN without an active battleship for the first time since 1895.

Confidential column included a few comments of yours in regard to the paucity of newcomers into the ranks of listeners. I wholeheartedly support your views on the subject, and want to add my own emphasis to your suggestion that presentations of actual sounds heard off the air, and the opportunity to get hands-on exposure to the

equipment, be a part of any serious effort to attract newcomers to the ranks."

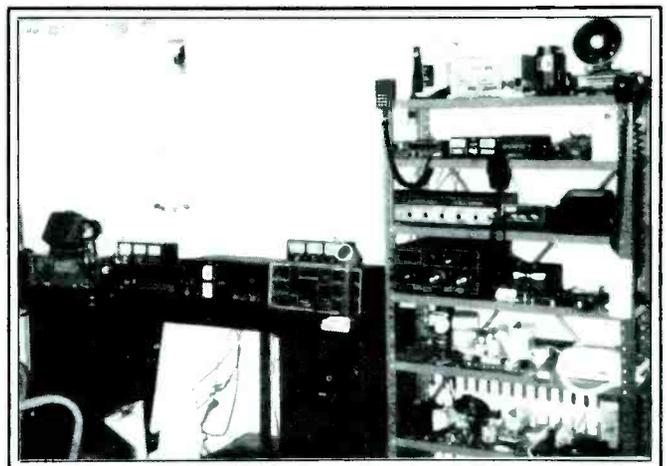
I hope, David, that the discussions on this subject will result in stimulating appropriate action by the various radio clubs and that in the years ahead we will see a pronounced increase in membership in those organizations. I do want to express my appreciation to all those readers who have written to me outlining their thoughts on expanding the recruitment efforts to bring more people into the SWL field.

A letter from an anonymous contributor contained an excellent clarification of the use of the call signs assigned to USAF aircraft when used for the travel of the President and/or Vice President.

"I have been a SWL off and on for 15 years or so and enjoy POP'COMM very much. My reason for writing concerns confusion about Air Force 1 and 2. I am an Air Traffic Controller (I prefer to remain anonymous) at a major airport and have been so for 12 years. I have worked both aircraft several times. AF-1 is normally SAM 27000, a Boeing 707, Military designation VC-137. While the President is on board, the call sign is AF-1. SAM 26000 is basically identical to 27000 although it is older. SAM 26000 is nothing more than a backup or standby aircraft. This is not the plane normally used by V.P. Bush. He uses a DC-9,



Like to DX on those low frequencies? This WWII U.S. Navy RAL-7 TRF receiver tunes down to 15 kHz and really pulls 'em in from far away. It weighs a ton and is filled with cast aluminum and ceramics. Thanks to Fred Gwyer, M.D., W9BIU, of La Grange, IL for giving us a look at this great old veteran that still performs like a champ.



Here's a fully-equipped monitoring station containing (among other ingredients), a Bearcat 210XL scanner, a Panasonic RF-3100 receiver, a Realistic DX-200 receiver, a KDK 2 Meter Ham band transceiver, a Realistic Navajo TRC-490 SSB CB rig, a Swan 350-D HF Ham rig, plus computers and many other wonderful delights. It belongs to POP'COMM reader Richard Kratt, KA3KTB, of Gibsonia, PA.

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Table 1

Frequency	Identifier	Time	Remarks
6010	RA	1723	Russian jammer over DW USSR service; very effective.
6087	RA	1717	Over Chinese Central broadcast service Taiwan BC to PRC. Not same as on 6010 and not very effective.
7165	RB	1811	Russian jammer over RFE/RL Lisbon relay.
7215	LU	1813	Over Iranian State Radio Arabic BC; very effective.
9520	MG	2252	Jammer with very loud car horn sounding ID over RFE German relay.
9530	BF & RB	2250	Russian jammers over VOA Russian service via Kavalla.
9565	9J	1834	Massive sweep jammer, along with White Noise type signal, over RFE/RL West German sites target.
9670	AL	2244	Several jammers but only ID can read is AL, working on VOA USSR service.
9918	TK	1828	Jammer working on Tel Aviv.

Along with his excellent loggings, J. Hall, WA reported he had run across many MCW jamming signals while monitoring.

Military designation C-9, for all flights within the U.S. The one used most often is SAM 31682, which is AF-2 when Bush is on board. The callsign "Nighthawk" is used by Marine Squadron 1 of Quantico, VA. When the President is on board, it would be Marine 1."

The clarification is appreciated and I have notated my reference books accordingly.

Due to my not hearing any news relating to the Soviet *Mir*, I incorrectly identified that Soviet Spacecraft. B. Britt, Grand Forks AFB, ND has taken me to task for the error and here is what he had to say:

"I'd like to comment on an obvious blunder made by Mr. Schimmel in the December 1986 Communications Confidential column of POP'COMM.

"A reader reported his reception of telemetry and voice signals from the Soviet

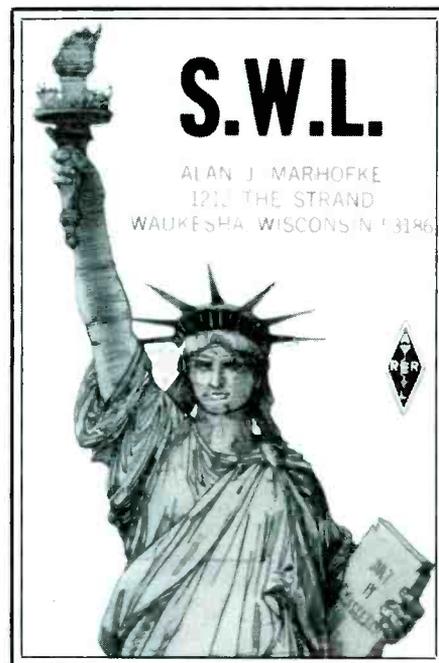
spacecraft, *Mir*. Mr. Schimmel, displayed incredible ignorance by explaining that while he was not up on military terminology, *Mir* probably stood for *Military Infra-Red*, or as he put it, a device for detecting ICBM launches. While *Mir* may indeed be monitoring for ICBM's, the name is for the continuously manned Soviet space station in Earth orbit. The name *Mir*, is the Russian word for *peace*. These facts were widely announced on both TV and newspaper alike, not to mention the radio coverage by everyone from the VOA to R. Moscow. While I admit it would be possible to miss the announcement on TV and news headlines, I fail to understand how he missed all the radio coverage. After all, that is supposed to be his job."

Although I did indeed miss news accounts of the *Mir*, I did check my reference

books and found several entries where IR was shown as the abbreviation for Infra-Red and defined as the type of satellite I described in the December column. I supposed that the M probably stood for Military and thus I speculated that MIR designated a Military Infra-Red satellite.

As a result of this "obvious blunder" and my "incredible ignorance," Tom Kneitel has notified me that I must give up my Space Cadet secret decoder ring forthwith! I certainly hope I do not make any future mistakes because I have had to turn in most of the tradecraft items he has so sparingly assigned to me.

Also in connection with the *Mir* subject, I want to acknowledge the letter received from Dave Borcher, CA in which he out-



An attractive SWL card from Alan J. Marhofke, Waukesha, WI. Why not send us one of your SWL cards, or a photo of your station?

Table 2

Frequency	Language Operator	Time UTC	Traffic Format
6228	SS/OM	0805	5F
6675	CZ/YL	1804	5F
6784	SS/OM	0932	5F
6802	SS/YL	0402	4F
6873	SS/YL	0911	5F
6873	SS/OM	0932	5F
6892	SS/OM	0503	5F
7439	SS/OM	0809	5F
7848	SS/OM	0810	5F
8113	SS/OM	0812	5F
8120/8135	SS/OM	1402	5F
8124	SS/OM	0510	5F

Numbers stations transmissions, all in AM mode, sent in by David Bush, Ohio.



Herb Shatz, NY at his operating position. His favorite monitoring targets are Coast Guard Air-to-Ground and Ship-to-Shore frequencies.

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49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81	82	83	84
85	86	87	88	89	90	91	92	93	94	95	96
97	98	99	100	101	102	103	104	105	106	107	108
109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132
133	134	135	136	137	138	139	140	141	142	143	144
145	146	147	148	149	150	151	152	153	154	155	156
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Frequency	Language Operator	Mode	Time	Traffic
5185	SS/YL	AM	0503	5F
5283		CW	0110	5F
5760		CW	0035	Cut numbers ADGIMNRTUW
6227		CW	1006	Cut numbers ADGIMNRTUW
6770	SS/YL	AM	0700	5F, 3 different tapes at same time
6867.8		CW	0203	Cut numbers ADEIGMNRTU
7585	SS/YL	AM	0625	5F, different BC followed at 0700
7885	SS/YL	AM	0828	5F, 2 SS/YL on at same time with different msgs
7887		CW	0638	Cut numbers ADGIMNRTUW
8112		CW	0619	Cut numbers ADGIMNRTUW
10324	EE/TL	AM	1300	3/2 F
11108	GG/YL	USB	1835	3/2 F
11352.3		CW	1805	5F
11468	SS/YL	AM	2117	5F
13377.5		CW	1733	Cut numbers ADGIMNRTUW
13871.3		CW	1524	5F

The details for this numbers station list were provided by Robert Margolis, IL.

lined facts regarding the Soviet Space Station.

Garie Halstead, WV reported on an unidentified English language USB net he picked up on 5695 kHz. He heard stations Charlie Whiskey, Charlie Papa and Charlie Bravo. Station Charlie Golf was called but never heard from. During the time he monitored the net, Garie noted the stations were having a great deal of difficulty in establishing communications yet two weather messages were transmitted. These messages consisted only of visibility and obstruction to vision categories. Garie said that there was a slight accent to the English spoken by the operators. I could not come up with an identification for this net but it would certainly seem that it is located in the Caribbean area, possibly one of the ex-British Islands or Guyana.

David Jackson, IL raised some points concerning two numbers broadcasts he heard. David, the transmission on 5240 kHz was the callup that takes place prior to the transmission of a message. This period serves two purposes, I believe. First, the addressee (believed to be represented by the trinome group, in this case 545) is alerted to whether traffic is upcoming or not and, second, it permits the intended recipient a period during which he can tune in the signal for the best possible reception.

For the Spanish language 4F/group traf-

fic, the callup is a trinome (probably the addressee indicator) repeated 3 times followed by the digits 1-0. Usually, after several minutes of this, ten tones are transmitted, then the group count is announced (usually twice) and transmission of the text commences. At the end of the message the group count is again given and the text is sent again. Upon completion of the repeat, the word "FIN" is announced and the carrier goes off the air.

The 5F/group traffic has a slightly different format. The callup has the Spanish word for "attention" followed by a trinome (probably the addressee indicator) and then the group count of the upcoming message. The sequence is sent for several minutes and then the text is sent. The message completion is designated by "FINAL FINAL" and the station goes down. Messages are usually repeated on another frequency at a later schedule.

This month we find many readers reporting numbers stations, and two readers sent in some rather extensive loggings of numbers stations. The first batch was received from David Bush, OH and the pertinent data has been listed in Table 2. All transmissions were in the AM mode.

I would like to renew my sincerest request for the submission of intercepts with several blank lines (approximately ¼" between individual loggings. I really hate to mutilate

good items when I cut selected intercepts apart. A recent group of letters had a total of 9 pages of single-spaced loggings and a great deal of valuable information was lost during the cutting process. Also, please include the time of intercept and a few remarks where possible. Loggings of just a callsign and a frequency along are of minimal value. I thank you for your cooperation and look forward to hearing from you soon!

AM	Amplitude Modulation mode
BC	Broadcast
CW	Morse Code mode
EE	English
GG	German
ID	Identifier/led/ication
LSB	Lower Sideband mode
OM	Male operator
PP	Portuguese
SS	Spanish
tfc	Traffic
USB	Upper Sideband mode
w/	with
wx	Weather report/forecast
YL	Female operator
4F	4-figure coded groups (i.e. 5739)
5F	5-figure coded groups
5L	5-letter coded groups (i.e. IGRXJ)

Intercepts
(All Times Are UTC)

201: Beacon FVS, Forest, MS at 1037 (Pickering, MS).
 206: Beacon GLS, Galveston, TX w/wx at 1039 (Pickering, MS).
 212: Beacon LMS, Louisville, MS at 1042 (Pickering, MS).



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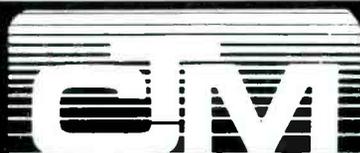
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—Fred Blechman, K6UGT

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CIRCLE 26 ON READER SERVICE CARD

- 221: Beacon AYI, Bay St. Louis, MS at 1044 (Pickering, MS).
- 227: Beacon SJY, Ryan-Hemet, San Jacinto, CA at 1427 (Szalony, CA).
- 228: Beacon BCZ, Butler, AL at 1046 (Pickering, MS).
- 233: Beacon LG, Daugherty Fld.-Beach, Lang Beach, CA at 1426 (Szalony, CA).
- 236: Beacon GNI, Grand Isle, LA w/wx at 1048 (Pickering, MS).
- 247: Beacon MO, Wisle, AL at 1050 (Pickering, MS).
- 252: Beacon PJR, Prentiss, MS at 1051 (Pickering, MS).
- 257: Beacon LKA, Mira Loma/Swan Lk., Chino, CA at 1424 (Szalony, CA).
- 260: Beacon JH, Hawkins Field, Jackson, MS w/wx at 1052 (Pickering, MS).
- 278: Beacon BLE, Lk. Providence, LA at 1054 (Pickering, MS); Beacon OS, Los Angeles Int'l. Apt., CA at 1423 (Szalony, CA).
- 284: Beacon PAC, Pascagoula, MS at 1223 (Pickering, MS).
- 302: Beacon L, Pt. Loma LS, CA; Beacon A, Los Angeles Harbor LS, CA; & Beacon O, Pt. Arguello LS, CA all noted about 1435-37 (Szalony, CA).
- 320: Beacon W, Cape San Blas, FL at 1055 (Pickering, MS).
- 326: Beacon PKZ, Pensacola, FL at 1057 (Pickering, MS).
- 332: Beacon IGD, Los Angeles Int'l. Apt, CA at 1412 (Szalony, CA).
- 346: Beacon THJ, Laurel, MS at 1100 (Pickering).
- 300: Beacon C, Rear Range, Mobile Pt. LS, AL at 1221 (Pickering, MS).
- 310: Beacon H, Egmont Key LS, FL at 1218 (Pickering, MS).
- 322: Beacon B, So. Side Light, S. Buffalo, NY at 0120 (Yekich, NY).
- 353: Beacon VNL, Bouglasa, LA at 1100 (Pickering, MS); Beacon NK4, un-ID at 0011 (Ross, ONT). Wonder if beacon reported as NK4 could be K4 of Joli Fou, Legend Lake with a defective keyer-- Ed.
- 356: Beacon ME, Key Fld., Meridian, MS at 1105 (Pickering, MS).
- 365: Beacon FNA, Florenville, LA at 1232 (Pickering, MS).
- 2031.5: LKQH, cruise ship SKYWARD in USB at 0205 wkg WOM (2490 kHz) w/patches (Symington, OH).
- 2514: WLC, Rogers City, MI in USB at 0126 w/wx for Gr. Lks area (Brumm, IL).
- 2558: Halifax Coast Guard, NS w/wx at 0204 in USB (Brooks, KY).
- 2572: WLO, Mobile, AL in USB to a ship at 0245. Ship near the Bahamas (Brumm, IL).
- 2598: VCP, St. Lawrence, Nfld., in USB w/notice to mariners at 0108; VCM, St. Anthony, Nfld., in ISB w/wx in USB at 0118 (Ross, ONT).
- 2614: NMF, USCG Commsta, Boston, MA in USB w/notice to mariners at 0445 (Brooks, KY).
- 2670: WSC2549, ship ATLANTIC SENTRY in USB at 0030 to Coast Guard Oak Island (D. Symington, OH).
- 2692: 5L gps in CW at 0304 (T. Kneitel, NY).
- 2700: Guetaria R., Spain in USB w/voice marker in USB at 0304. Announced listening on 2182 & 4079 kHz (Kneitel, NY).
- 2713: IKE, 2FT, T43, Splash, & Intermission-- all on naval maneuvers, USB at 0307 (Kneitel, NY).
- 2800: 4XZ, Israeli Navy, Haifa w/VVV marker in CW at 0254 (Kneitel, NY).
- 2815: Several Canadian ships talking to one another, USB at 0337 (Kneitel, NY).
- 2869: Japan Air 47 in USB to San Francisco Aeradio at 1058 w/position report (Symington, OH).
- 3032: Aircraft "560" to Andrews AFB in USB at 0322 (Kneitel, NY).
- 3166: CGD206, Alma, PQ, in USB at 0400 w/un-ID sta (Ross, ONT).
- 3170: OLB5, Czechoslovakia, time pips in CW at 0453 (Russell, AL).
- 4055: Beacon K, cluster type in slow CW at 1530 (Szalony, CA).
- 4069.2: NJVJ, USS CANISTEO in USB at 0200 to WOM w/patch (Symington, OH).
- 4134.3: WRS2924, tug MARION MORAN in USB at 1124 to NMN seeking aid for injured crew member (Symington, OH).
- 4148: R0, P9, V2, all un-ID in USB at 2200 discussing "Manual Star Wars" (R. Margolis, IL).
- 4310: MTI, Royal Navy, Plymouth, England in CW at 0333 w/call marker (Kneitel, NY).
- 4314: LZW, Varna R., Bulgaria, at 0125 in CW w/call marker (Kneitel, NY).
- 4400.8: Numerous USCG cutters calling CG Commsta Miami, USB at 0129 (Yekich, NY).
- 4448.5: Beacon U, in CW at 0130 (Kneitel, NY).
- 4500: VNG, Lyndhurst, Australia w/time signals at 1210 (Ross, Ont.).
- 4525: Y3S, Berlin, DDR time sta in CW at 0448 w/time pips (Russell, AL).
- 4623: 5L gps in CW at 0320; also noted at

- 0252 another day w/ungrouped CW ffc (Kneitel).
- 4633.8: SPW, Warsaw R., Poland w/CW call marker & data burst tape at 0254 (Kneitel)
- 4637: KYC359, un-ID sta in USB at 1529. Net of unknown nature w/OM & YL discussing legal matters thru YL. Apparently in Idaho; ID's given as 559, 562, KYC359 & KYC350 (Hall, WA)
- 4640: Ohio CD net central sta in Columbus, USB at 1430 wkg various county HQ's w/weekly radio checks (Symington, OH).
- 4641: C18 in USB at 1410 to A92I; US Army 52nd Infantry Division (Symington, OH).
- 4776: Beacon U, in CW at 0358 (Kneitel)
- 4901: "12Z 12Z 12Z 0" marker in CW at 0403 (Kneitel, NY).
- 5307: Beacon D, in CW at 0147 (Kneitel)
- 5320: NLEZ, USCGC POINT NEWELL in USB at 1618 wkg Group Corpus w/check-in; at 1227 in USB, NDCK, USCGC SANIBEL wkg Commsta New Orleans w/check-in (Symington, OH).
- 5547: New Zealand 17 in USB at 0449 at 1205 wkg San Francisco Aeradio w/position report (Symington, OH).
- 5550: N895F, Skystar 895F in USB at 1205 to New York Aeradio w/patch to company HQ (Symington, OH).
- 5574: PeopleExpress 24 in USB at 1225 wkg San Francisco Aeradio w/position report (Symington, OH). Guess we won't be hearing those ID's any longer-- Ed.
- 5642: EIP, Shannon, Eire VOLMET sta w/wx in USB at 0313 (Scalzo, PQ).
- 5658: Khartoum, Sudan in USB at 0017 wkg aircraft & Cairo; also hear Mogadishu, Somalia, on USB at 0019 to aircraft (Ross, Ont.).
- 6212: RT in Dutch/Javanese dialect from vessel AUSTRALIAN MAKER(?) via Lingga R. w/EE ID, but heavily accented. Only Lingga I know of is in Indonesia, near W. Sumatra. Op said he was shutting down sta & going home! (Hall, WA).
- 6214: Canadian CG Ice Breaker BERNIA, location unknown, asking for patch via VCS, 2345 in USB (Scalzo, PQ).
- 6227: SS/YL in AM-mode w/5F gps at 0818 (Hanlon, IL).
- 6301: 3RTG3, Japanese cargo vessel ORIENTAL HIGHWAY w/telegrams possibly via KST (Hall, WA). Time, made, not given-- Ed.
- 6374.A: HAR, Budapest Naval R., Hungary in CW at 0511 w/VVV & CQ (A. Nonymous, MO).
- 6434.2: PWZ, Rio de Janeiro Naval R., Brazil in CW at 0519 w/VVV (A. Nonymous, MO).
- 6509: NMN, USCG Commsta, Portsmouth, VA in USB at 1600 w/wx (Simon, NY).
- 6556: Jakarta, Indonesia LDCC/ATC wkg JAL flight 56 w/mix of EE & presumed local language. Nice sigs. USB at 1619 (Hall, WA).
- 6595: Outbanders? Wow!! A wildly obscure network sounds like fishing boats seems to be out of San Pedro, CA. Everybody sounds like they're pie-eyed drunk. Not the family hour by a longshot. Also someone sending numbers on this channel. Noted in USB at 0058 (Hall, WA).
- 6640: New York Aeradio to British Air 771 in USB in USB at 2150 w/patch to British Air ops in NY (Thomas, MI).
- 6673: 5F groups in Hebrew, off at 2255. Good audio but strong fluctuations in signal (Scalzo, PQ).
- 6683: SAM 30501 to Andrews AFB in LSB at 2359 w/patch (Symington, OH).
- 6783: PRP (possible offshore rig in Brazilian waters). YL/EE (w/Southern accent) shouting "Breaker Breaker" over simplex Portuguese telecom net, USB at 0034. Freq. heavily used by 3-4 SS & PP parties, one ID's as Papa Romeo Papa. Thru QRM from Canadian Forces Trenton Volmet, this activity turns up nightly from about 2330-0100 (Hall, WA).
- 6755: VOLMET sta in Edmonton, Alta., w/wx for Cold Lake, etc., not very strong. In USB at 0324 (Scalzo, PQ).
- 6761: Loring AFB, ME in USB at 1954 w/wx, then Pylon calls w/freq request. Next, Knight 917 reports operations normal, also request for a call sign. YL op responded "regular call is Polywog" & gave phonetic spelling (Brumm, IL).
- 6778: CLP6I, un-ID being called by CLP1 Havana, Cuba in CW at 0405. Usual chirpy note accompanied by sloppy fist (Hall, WA). Cuban MFA "Minrex" ops-- Ed.
- 6981.6: The only ID of this CW station was L. It was sending SS numerals spelled out-- Uno Cinco Tres Uno, etc., etc. Noted at 0312 (Kneitel, NY).
- 7690: International Telecommunications Center, Djibouti, in USB at 0355 with a YL in both EE/FF on a repeating tape announcing a test for circuit adjustment purposes (Kneitel, NY).
- 7706: 5L gps in CW at 0350 (Kneitel, NY).
- 7905.5: Beacon K, in CW at 0254 (Kneitel, NY).
- 8090: 5L gps in CW at 0223 (Kneitel, NY).

8241.5: GLXH, HMS INTREPID wkg Portishead (on 8765.4 kHz) w/patches, USB at 1930 (Symington)

8291: WPGJ, vessel AMERICAN MARKETTER to KWS643 in USB at 2326 (Hall, WA).

8294: KAE728, Honolulu, HI to KNOW, vessel MAUNAKAI in USB at 1744 (Hall, WA).

8448: A9M, Manama R., Bahrain in CW at 0402 w/call marker (Kneitel, NY).

8489: CLS, Havana Fisheries, Cuba in CW calling CQ at 0236 (Kneitel, NY).

8551.6: CTP, Portuguese Navy (NATO), Oeiras, Portugal at 0410 in CW w/VVV marker (Kneitel).

8565: D3E51, Luanda R., Angola calling CQ in CW at 0108 (Kneitel, NY).

8682: J2A8, Djibouti R. in CW at 1609 w/CQ call, but QRM'd by LGB on 8683. 1st log of this one for me (Hall, WA). Congrats!-- Ed.

8728.2: KML, San Francisco, CA (Dixon R.), w/patches for the SUN CATCHER at 0438 in USB. Excellent sig level (Bracks, KY).

8759.2: LPL3, Gen. Pacheco R., Argentina at 0311 in USB, YL/SS announcements followed by 5-tone ID signal (Kneitel, NY).

8765.4: 8PO, Bridgetown, Barbados in USB at 1522 wkg un-ID ship. Sta was QRM'd badly by USCG San Francisco (Margolis, IL).

9006: Rescue 462 (a/k/a Tiger 462) searching for civilian a/c while wkg Trenton Military R, USB at 1649 (Margolis, IL).

9042: Beacon K in CW at 0004 (Margolis)

9105: What the heck is this here at 1250? Sounds like a lot of birds chirping! (Kneitel, NY).

9106: ZHF44, this is a UK Antarctic station located at Faraday, Graham Land, Antarctica wkg in USB at 2323. Faraday wkg Rothera Base at Adelaide Is. The latter sta uses the call ZHF45 (Ross, Ont.).

9117.5: PCW1, MFA The Hague, Netherlands at 2107. Repeating marker of call sign in CW followed by 4 data bursts. Haven't heard Dutch MFA on this freq previously (Kneitel, NY).

9165: Beacon M in CW at 2015 (Margolis)

9242.3: AJE, AFRTS, Cougthon, England in LSB at 1404. This is an AFRTS feeder (Margolis).

9350: VOA feeder, Greenville, NC at 1120 (Russell, AL).

9485: NRV, USN/CG R. Barrigada, GU w/MCW "Cyclone Summary" at 1839 (Hall, WA).

9555: Jammer K7, presumed Soviet, at 0426 trying to cover RFE (Kneitel, NY).

9915: Jammer SU, presumed Soviet, at 2055 (Kneitel, NY).

9996: RWM, Moscow USSR in CW at 1247 w/time pips (Kneitel, NY).

10214: Beacon U in CW at 1255 (Kneitel)

10359.2: YL/EE in USB sending 3/2F at 1835 (Kneitel, NY).

10644-10646: Beacons O, P, & S in CW at 1303 all going full tilt (Kneitel, NY).

10562.2: FTK56A, AFP Paris, France in CW at 2025 w/FF nx (Kneitel, NY).

10740: GG/YL in USB at 2118 running 3/2F (Kneitel, NY).

11011: CEN, un-ID in CW at 1800 calling XAC2, also un-ID (Margolis, IL).

11180: SAM 86792 used by National Security advisor Poindexter wkg Andrews AFB in USB at 2205. SAM in-flight somewhere over Atlantic w/patches to Crown (WHCA) (Hall, WA).

11193: ASCOT 5417, an RAF transport of some sort. Wkg un-ID RAF ground sta in USB at 2154. Enroute UK to Goose Bay, Labrador. Ground station possibly RAF Milltown (Hall, WA). Right-- this freq used by Milltown Lossiemouth Naval Aeradio-- Ed.

11342: Aeroflot, NY to 862 at 2000 w/updated terminal forecast & PIREPS. In USB. (Thomas, MI).

11345: Eastern 505 to Eastern-Bermuda in USB at 2030 w/request for Miami wx. Then at 2042 they asked Eastern-Cayman for SelCall check (Thomas, MI).

11448: Y7L36, DDR Embassy in Havana in CW at 2106 w/QRA tape. Also ID's as CME310. Asks "28" to QSP MFA some hand-sent crypto stuff. Goes off air after QSU KG (Hall, WA).

11454.5: LBA10, Stavanger Naval R., Norway in CW at 1720 w/VVV QSX marker (Margolis).

11516: Beacon A in CW at 1410; on another day at 1302 a repeating marker "325 325 325 1" was intercepted, followed by high speed CW 5F ttc at 1305. Note similarity to logging on 4901 & 18366 kHz (Kneitel, NY).

11600: Active but cryptic CW station at 1939 sending every 5 mins short msg "1942ZN PM 47417 EQY BT BFJBC DDSEF IJGCCB AACHE BT" (rpts coded text). Sends 1947, 1952 & 1957 w/some time, address & 47417 but w/diff 3-letter item; EDQ/EDG, etc. Heard again at 2230 w/some same sort of pattern. Machine sent (Hall, WA).

11705: Jammers MG & LG, presumed Soviet, doing a job on Deutsche Welle at 1315 (Kneitel).

12087.7: Beacon N in CW at 1837 (Szalony).

12088.5: Beacon A in CW at 1838 (Szalony).

12429: KOA, Redwood City, CA to GPHH, R/V PARNELLA in USB at 1923. Vessels seems to be surveying undersea volcanic ridges in water of HI (Hall, WA).

12432: WPGK, vessel AMERICAN ENVOY in USB at 1924 to KWS643; at WHU947 in USB to WRC7298, a large trawler ALEUTIAN BOUNTY anchored near Dutch Harbor, AK; then KHT, Collins R., Cedar Rapids, IA in USB at 2102 to BVVY, tanker EXXON CHARLESTON, also WGWC, the OMI WABASH; then KACF, the JOSEPH D. POTTS to another vessel w/call KACK (Hall, WA). WBV at Ft. Richmond, NY in USB at 1448 to JOE MORAN; also heard KRFK, ship AMBASSADOR in USB at 1444 to M/V SENATOR (Symington, OH).

12435.4: Ship MARNIANA in USB at 2316 to WLT (A. Nonymous, MO).

12662: 7TA8, El Djaza'ir R., Algeria in CW at 1337 calling CQ (Kneitel, NY).

12750: CWA, Cerrito, Uruguay in CW at 2150 calling CQ (Margolis, IL).

12780.5: YUR, Rijeka R., Yugoslavia w/VVV marker in CW at 1902 (Kneitel, NY).

12795: UXN, Archangelsk R., USSR in CW at 2036 w/brief CQ then into ttc. Heavy QRM from UDK2 in Murmansk on 12797 (Hall, WA).

13092.5: UAH, Tallinn R., Estonian SSR w/CW call marker at 1336 (Kneitel, NY).

13638: Beacon O in CW at 1324 (Kneitel, NY).

13728: YL/SS in AM-mode at 2131 repeating "115 Atencion 976" then into 5F gps at 2133 (Kneitel, NY).

13962: Lively Ham-type net in Italian, USB at 2110 (Kneitel, NY).

14398.5: AHO, un-ID w/coded CW ttc for TRD, also un-ID at 1746-1757 (Margolis, IL).

14445: CFAR ttc in USB between CIW202 in Vancouver & VXV9 in the Galan Heights, Syria between 1523 & 1632 (Margolis, IL).

14607.5: INTERPOL Tokyo, Japan sending fugitive descriptions & warrant #'s in CW at 0115 to VRD in Hong Kong & HSQ in Bangkok (Hall, WA).

14751: Polish Embassy, Luanda Angola, in CW sending lengthy msg in Polish re one Olagey Rosapno. Possibly addressed to CME305 in Havana (Hall, WA). Kneitel's Guide To Embassy & Espionage

Communications lists MFA Luanda's call as SPP342-- Ed.

14817: JPA24, INTERPOL Tokyo, Japan in CW at 2356 sending "CQ IP Wiesbaden" & "CQ IP Athens" w/long msg re FRG swindler wanted in Coblenz for tourist scams (Hall, WA).

14828: CW ttc in FF to INTERPOL at Wiesbaden, FRG mentions the President of France (Margolis, IL).

15035: VSZ, Edmonton, Alta. in USB at 1920 w/wx (Ross, Ont.).

15705: Beacon U in CW at 1337 (Kneitel)

16807: DJZ, Bulacan, Philippines in CW at 1700 w/CQ & "press coming" followed by "press report via microwave communication DJZ as of [date]" then into news items in EE re Philippines. Also sent at 2100 (Margolis, IL).

16893: JFC, Misaki Gyogyo, Japan in CW at 2213 wkg un-ID ship w/callsign 7JCB (Hall, WA).

17029: JMC6, Tokyo, Japan in CW at 2130 w/wx for Kuriles. Nice sig, hand-sent ID (Hall, WA).

17128: DZE, Mandaluyong, Manila, Philippines in CW at 2239 w/CQ. Weak. (Hall, WA).

17151.3: NMC, USCG Comsta San Francisco, CA in CW at 1944 w/wx data (Kneitel, NY).

17160: VK30, un-ID in CW at 2217 w/machine sent VVV tape for several minutes until buried 'neath PWZ35, Brazilian Naval R., Rio de Janeiro (Hall, WA).

17176: DZG, Marilao, Manila, Philippines in CW at 2249 calling CQ (Hall, WA).

17404: KKN44, US Embassy, Monrovia, Liberia, at 1356 in CW running a call sign marker. These US Embassy stations all seem to devote an inordinate amount of time doing nothing more productive than running markers, don't they? Hmhmhm! (Kneitel, NY).

18227.5: Un-ID sta in CW at 1534 w/plaintext wx in EE (Margolis, IL).

18366: "366 366 366 1" marker in CW at 1403, then into ungrouped encrypted ttc. Heard the same day as the logging shown here on 11516 kHz which was similar (Kneitel, NY).

29822: W0UXO/B in CW at 2018 running a call sign marker. Heard until 2025 (Margolis, IL). This is a 10 Meter (Ham) band propagation beacon-- Ed.

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THE EXCITING WORLD OF RADIOTELETYPE MONITORING

Good news for those of you who are avid buffs of RTTY press agencies—the Associated Press has apparently returned to the HF radio airwaves.

I happened across the AP as it was broadcasting news dispatches in Spanish at 0300 on 7953.2. Transmission was at 100 wpm and was from New York City (“AP-NY” ended each news item). Two years ago, as some of you may recall, the AP’s Spanish language broadcasts were from Montevideo, Uruguay.

A new press agency is supposed to be in operation by the time you read this. It is Afghan News Service, according to *The New York Times*, and is to be financed by Congress through the U.S. Information Agency. News is to be generated and distributed by Afghan refugees in Pakistan, who are to be given journalistic training using U.S. funds. News items are to be sent throughout Europe and Third World countries.

If you’d like to view the news from several news agencies at once, tune in mid-morning (in the U.S.) to 16117, set your RTTY demodulators to 425/66R, and view Pan African News Agency from Dakar, Senegal. It pools news items from SHIHATA, Tanzanian News Agency; BOPA, Botswana Press Agency; NAN, News Agency of Nigeria; APS, Algerian Press Service; OPECNA, OPEC News Agency of Vienna, Austria; AZAP, Zaire Press Agency; JANA, the Libyan Press Agency; GNA, Gulf News Agency; among others.

By the way, TANJUG of Belgrade, Yugoslavia, is another news agency that sends pooled news items.

Last autumn and winter, I happened to notice more RTTY stations using SITOR (simplex teleprinting over radio, for those of you new to RTTY monitoring) than ever before. I would hear the chirping sound of the stations RTTY machines at all hours and on numerous frequencies. I could log only a few of them because most were found to be idling, sometimes for a couple of hours, before the RTTY machines were turned off. There went any vision of logging tons of new stations.

During the monitoring process, I read a letter from a reader of this column who stated that SITOR traffic is never encrypted. How wrong he was! Take for example this series of messages I found on 8951.7 starting at 1825:

“CSY KPJO KDFMM 50151 525. SXDT GFQO RGK HKGS KUM,” and, “DFJR LKTMR KL JFHSG LYP HJKJ TLD.” Also, “KBF HFMM KJPO WGKGOJD ODSDR WKJ TLD,” and, “HOKDS JG CFUW KWFF JG CFUW

* D - ICPD COPENHAGEN NR 644 W150 23/1050Z

D - INTERPOL WIESBADEN LONDON THE HAGUE SUISSE
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771 ST STOP

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HE IS PROBABLY TRAVELLING TOGETHER WITH DANISH NATIONAL BLANKENSTEINER FIRST NAMES DORTHE JUEL NEE NIELSEN BORN 15-09-55 NAESTVED/DENMARK STOP

BLANKENSTEINER MAY BE USING THE IDENTITY PHILIPSEN FIRST NAME LAILA NEE SOERENSEN BORN 15-09-51 IN COPENHAGEN STOP

PLEASE TAKE WHATEVER ACTION YOU DEEM APPROPRIATE STOP REGARDS END

INTERPOL COPENHAGEN

George, G3JZK, sent along this FEC-mode printout just to show an example of some of the exciting traffic that can be copied only while pursuing the RTTY aspect of the hobby. This INTERPOL traffic was on 10295 kHz.

ODS 0428 0428 KY KY HJKJ HJKJ KY KY.”

Speaking of encryption, I found a station, from I don’t know where, on 14909.9 at 1511, broadcasting encrypted messages at 100 wpm. Heading the messages, however, were numbered groups such as “0049 189163 05000 9532,” “0050 189163 06000 9535,” and “0069 206354 06000 8997.” The first set of numbers indicates the message number. The station signed off at 1516 with “HR A 1,” after answering a request on a different frequency for a repeat of message #0069. “HR A 1” means “here’s CW,” the mode to which this station immediately went. But all it sent were VVV’s.

Another station was found running similar type traffic, with a similar type of sign off, on 14913.9 from 1519 to 1520. Earlier, from 1454 to 1508, there was a station on 14911.9 that was running RY’s without a callsign at the same speed as was found on the other two frequencies.

I can only surmise that these stations were a network of Yugoslav embassies because the late Oliver P. Ferrell has listed in his *Confidential Frequency List* embassy traffic which originates from Belgrade, Yugoslavia on 14912.

Another station with encrypted traffic was found on 16301 at 1523. It was preceded by CW messages such as “VVV DE MFTNB/NNBT7VNT,” “VVV DE MRNTDT/

NNBOUK,” and “VVV DE RNNBTT/GNNB E7Y AWVTG TYY YB ETTG.” (Don Schimmel: take note of this.) At 1530, the station went to 16302 with the encryption at 100 wpm. It had a numbered header of “0041 188538 0966 0537.” The message was repeated before the station signed off at 1542.

Needing identification: I logged a station in Lubumbashi, Zaire, that was sending “PR Service” telexes to a station in Kinshasa, Zaire. What type of stations are they? I monitored them in ARQ at 1632 on 14429.

Another nameless station is one found on 16202.2 at 1332. It was routing unclassified messages between U.S. embassies in Africa and their counterparts elsewhere in the world. Traffic was also addressed to “RUEHC,” which is the U.S. Secretary of State’s office in Washington, D.C. The messages talked about such things as the National Science Foundation, how to receive medical benefits, and medical diagnoses for a disease caused by an insect bite. Judging from the appearance of the 100 wpm messages, it appears that they were sent via the U.S. military, most likely through a naval radio facility. Can anyone shed light on this transmission?

I logged a new type of RTTY signal on 13522.6 at 1419. I’ve never heard this variety before and know it’s not TDM or piccolo. The signal was constantly sweeping to both

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sides of this center frequency and was at 66 wpm with reverse polarity. Can someone tell me what I heard?

One way to be on top of the news as it happens is to combine your RTTY monitoring with listening to all-news AM radio stations. Last January, while listening to such a station in my area, I heard about the crash of a Brazilian jetliner shortly after takeoff from Port-Bouet airport at Abidjan, Ivory Coast. I immediately turned on my RTTY gear and tuned to the various frequencies where I could pick up TUH, Abidjan Aeradio. Finding an active frequency, I waited patiently for word of the crash as scads of aviation weather data were being transmitted. Reward came sometime later as a message relating to the crash flickered across the video screen. It advised aircraft aloft to avoid the general area of the disaster.

Back in action with RTTY on HF radio is VER, the Canadian Forces station at Ottawa, Ontario, Canada. A test tape from the station was transmitted recently on 4587, and in FDM won 7809, 7809.7, 7810 and 7810.7.

That's all the news for this month. Time for the loggings section. Unattributed loggings in this month's batch were gleaned from this editor's logbooks. Maybe next month you will send in your RTTY loggings!

RTTY Intercepts

4172.5: XCHH, the floating-crane ship HUASTECO located at the allfields near Compeche. In ARQ at 1257 UTC.

4175: 9MYJ, the Malaysian bulk carrier BUNGA KESIDANG sending telexes to Cuba, ARQ at 0530.

4175.5: CBHO, Chilean reefer CHOLGUAN wkg CBV, ARQ at 0132.

4179: UVAT, Soviet fish carrier VETERAN calling Sevastopol, 170/66N at 0355; UUGU, Soviet cargo ship PIONER ARKHANGUELSKA sending tel_xes & wx data at 0400, 170/66N (Tom Kneitel, NY).

4230.7: 980QJ, presumed Spanish Navy at 0236 calling 95XRA, 850/100R (Kneitel, NY).

4234.7: "YTUA" to "YIKO" or "YUCO" w/wx in EE for Spanish Sahara. Also ID as 95SPE, so may be Spanish Navy. At 0240 in 850/100R (Kneitel, NY).

4587: VER, Canadian Forces, Ottawa, Ont., sending test tape in reverse. Consisted of foxes & "REV ED TSET." Was 60N at 0711.

4590.4: FUJM, French Navy, Noumea, New Caledonia w/FF plaintext tfc to FAAG, French Navy, Papeete, Tahiti, 100R at 1413.

4607: 51DEL, presumed Spanish Navy w/coded & plaintext wx to 57BYP, 0739 at 100R. 51DEL then wks 54ILD at 0759.

4488: TNL, ASECNA Brazzaville, Congo w/RYYR QJHI tape, 525/66N at 0327 (Kneitel).

4607.7: 96OQZ/4, assume is Spanish Navy w/RYYR & SG's, 850/100R at 0132 (Kneitel, NY).

5093: RFFVBB at 0150 in ARQ calling RFFVAD (COMELGF, N'Djamea), RFFUGG (Air Lands), RFFUI (Air Eaafres), RFTJD (Comair Libreville), & AFFIFMWI (Air Aunis). Assume is French Air Force as sent FF tfc (Kneitel, NY).

5118: TYE, ASECNA type RYYR QJHI marker tape in garbled xmsn at 0306, 425/66N (Kneitel).

5185.6: MKK, RAF London, England, w/RYYI & foxes, 850/66R at 0317 (Kneitel, NY).

5195: ADN nx in EE from the GDR at 2151, 425/66N (Kneitel, NY).

5208: GMP, INTERPOL, W. Wickham, England running its "IPUK" marker, ARQ at 2241 (Kneitel).

5457.5: Continuous RYYR marker w/o any ID or other tfc, 525/66R at 2254 (Kneitel).

5612.2: SUC, Cairo Aeradio, Egypt w/RYYR at 0231 in 66R.

5683.5: A msg tells of an international seminar dealing w/the environment; the cost of this to include training, textbooks & transportation. Sent in ARQ at 2058 by an American oil company in Nigeria to the Netherlands. Few days later at 0052, this same un-ID sta sent tfc that mentioned 2 US owned diesel-electric drilling ships that are apparently offshore near Lagos, Nigeria.

Abbreviations Used in The RTTY Column

AA	Arabic
ARQ	SITOR mode
BC	Broadcast
EE	English
FEC	Forward Error Connection mode
FF	French
foxes	"Quick brown fox..." test tape
GG	German
ID	Identification/led
MFA	Ministry of Foreign Affairs
nx	news
PP	Portuguese
RYYR	"RYYR..." test tape
SS	Spanish
tfc	traffic
w/	with
wx	weather

5803.5: 9GC, Accra Aeradio, Ghana w/RYYR & QJHI tape, 66N at 2330.

5839.7: FTF84B/H1, AFP Paris, France w/nx in AA at 2309, 66N.

5840.9: FTF84B/H3, AFP Paris, France, w/nx in FF, 66R at 2205.

5848: TUH, Abidjan Aeradio, Ivory Coast w/RYYR & QJHI tape, 66R at 2345.

5875: Un-ID sta repeats CHARLIE YANKEE 0000Z. Was 100R at 2350, began sending encryption at 0000.

5879.3: 7OC, Khormaksar Aeradio, South Yemen w/RYYR at 2147, 66N.

5887.7: IMB32, Rome Meteo, Italy w/coded wx at 2203, was 66N.

6251.2: 58JDQS, Spanish Navy sta sending RYYR/SGSG to 56UAZ at 2126, 100R.

6263.5: OXFY, Danish general cargo ship DANICA BROWN in ARQ at 0105. Reported it was loaded up w/fireworks, cannon ammo, smokeless powder, rocket motors, detonating fuses & other pyrotechnical materials.

6718: Encrypted tfc from Halifax Military, NS to "I Delta November," 100R at 1954. The ID was made in voice (USB) mode.

6819: A Shell oil facility at Lagos, Nigeria telling of oil rig drill bits in msg to the Hague, Netherlands, ARQ at 2227.

6827.6: AAA6USA, US Army MARS sta w/RYYR tape at 0237, 170/100R (Kneitel, NY).

6835: GFLZ2, Bracknell Meteo, England w/coded wx, 66R at 2217.

6836.7: (Presumed) FDY, French Air Force, Orleans, France sending "FDZ QSL NR 11 ZBO 5 QTC," probably to FDZ, French Air Force, Villacoublay.

6837: Reports from an oil drilling company at Lagos, Nigeria to Shell Oil in London, 2328 in ARQ.

7809: VOA Kavala, Greece w/RYYR & info that Kavala file xmsn is now concluded; 425/100R at 0453 (Kneitel, NY).

7442.5/7478: VOA Manrovia, Liberia w/nx in FF at 0316, 425/100R (Kneitel, NY).

7690: TUH, ASECNA Brazzaville, Congo w/coded aviation wx at 2314, 66N.

7809: VER, Canadian Forces, Ottawa, Ont., w/RYYR & foxes at 1829, 100N. This was an FDM bc simulcast on 7809.7/7810/7810.7.

7819.6: 5NK, Kano Aeradio, Nigeria w/RYYR at 0250, 525/66R (Kneitel, NY).

7953.2: AP New York back on the airwaves w/nx in SS at 0300, 100R.

8023.7: FTI2H3, AFP Paris, France w/nx in FF at 1919, 400/66N (Kneitel, NY).

8142.5: OLLX4, CTK Prague, Czechoslovakia w/RYYR at 1925, 425/66N (Kneitel, NY).

8165: 5YD, Nairobi Aeradio, Kenya w/coded wx at 1446, 100N.

8299: UIMH, a Soviet ship calling URB2 at 0300, 170/66N (Kneitel, NY).

8348: UBKS, a Soviet ship calling UJY at 1928, 170/66N (Kneitel, NY).

8350: ELE16, M/V ORANGE BLOSSOM sending a position report to NMF, ARQ at 1932 (Kneitel).

8951.7: Encrypted tfc, ARQ at 1825.

9041.2: 5YE, Nairobi Meteo, Kenya w/coded wx at 1956, 100R.

9136.8: MKD, RAF Akrotiri, Cyprus w/RYYI & foxes, 66N at 1728; also on 9137.5 in another circuit at 1727.

9145: TASS, Havana, Cuba w/RYYR at 1408, 66R.

9318.5: DHJ51, Gregel Meteo, FRG calling CQ & running RYYR at 1243, 425/66N (Kneitel).

9964.5: CSY, Santa Maria Aeradio, Azores w/RYYR at 2127, into coded wx at 2131, 850/66N (Kneitel, NY).

10137.4: TNL97, Brazzaville Meteo, Congo calling CQ & sending RYYR at 2311, 66N.

10220.4: RCC Havana, Cuba calling ITT

Control, NY & asking for missing texts at 2014, 425/66R (Kneitel, NY).

10270: RKA25, TASS Moscow, USSR w/nx in EE at 2020, 66R.

10282.5: MKK, RAF London, England w/RYYI & foxes at 2019, 170/66N (Kneitel, NY).

10295: Un-ID INTERPOL sta idling in ARQ from 1952-2015 (Margolis); FSB71, INTERPOL HQ in Paris, France w/FF bulletin showing names, vital stats, passport #'s of suspected heroin smugglers from PRC, Hong Kong & Thailand, at 1257 in FEC mode (Kneitel, NY).

10383.2: 5YE, Nairobi Meteo, Kenya w/aero wx at 1930, 66R.

10467.7: RFTJR sending encrypted tfc to RFXXH, French Naval stations in ARQ at 1849.

10475: MAP Rabat, Morocco w/nx in AA at 1549, 66R.

10496: MKD, RAF Akrotiri, Cyprus w/RYYI & foxes at 1847, 66N (Margolis); At 1843 in 170/66N (Kneitel, NY).

10590: MFA Havana, Cuba w/encrypted tfc at 2140, 60N. Spotted "al Cobra del Jaguar" mentioned in the texts.

10595.3: MAP Rabat, Morocco w/nx in FF, 66R at 1543.

10600: BAC27, PTT Beijing, PRC w/RYYR at 1302, 425/66R (Kneitel, NY).

10670: Prensaminrex, Havana, Cuba w/nx of Cuban gov't in SS at 1532, 66R.

10805.5: NA Buenos Aires, Argentina w/nx in SS at 2210, 66N.

10893.7: TELAM, Buenos Aires, Argentina, w/nx in SS at 2230, 66N.

11027.5: 9RL310, Kinshasa Aeradio, Zaire w/RYYR at 1715, 66R.

11063: LZU2, Sofia Meteo, Bulgaria w/coded wx at 1330, 66R.

11110: LZG2, BTA Sofia, Bulgaria into EE nx at 1316, about 600/66R (Kneitel, NY).

11124.5: DFL26/H2, DPA Hamburg, FRG w/nx in EE, 1822 at 66N.

11423.5: SPW, Warsaw, Poland w/telexes in Polish to ships 1500-2000.

11443.5: 9JZ, Lusaka Aeradio, Zambia w/coded wx at 1825, 66R.

11453.5: IMB33, Rome Meteo, Italy, w/coded wx at 2112, 66N.

11497: SOL349, PAP Warsaw, Poland but signal so potent that I believe it to be sent from some place closer to NA than Warsaw! Noted w/RYYR at 1355 & into EE nx at 1400, was 66R.

11536: KCNA Pyongyang, North Korea w/nx in FF at 1820, 200/66N (Kneitel, NY).

11574: 9KT29, KUNA Safat, Kuwait w/nx in EE at 1400, 66N (Margolis, IL); intercepted w/the same at 1322, 400/66N (Kneitel, NY).

11636.7: KRH51, US Embassy, London, England w/foxes at 1701, 100N.

11638: DDK8, Hamburg Meteo, FRG, w/coded wx at 1327, 425/66R (Kneitel, NY).

12315: YZJ3, TANJUG, Belgrade, Yugoslavia, w/nx in EE at 1330, 425/66R (Kneitel, NY).

12500: SYRP, M/V ANANGEL MIGHT sending a telex in Greek, ARQ at 2042 (Kneitel, NY).

12519: GBBa, passenger liner SEA PRINCESS sending telexes at 2044 in ARQ. The ARQ was 85 Hz bandwidth instead of the usual 170 Hz (Kneitel, NY).

12524: UOTF, believed to be a Soviet vessel w/the name KAPITAN WAKULA, w/RYYR & calling Rodio Murmansk at 1338, 170/66N (Kneitel, NY).

12693.5: 980QJ, probable Spanish Navy calling 95XRA & w/RYYR & SGSG at 1339, 850/100R (Kneitel, NY).

13092.2: KPH, San Francisco, CA calling CQ & sending tfc list at 2100, FEC mode (Kneitel).

13445.5: MKK, RAF, London, England wkg unknown sta at 1346, 66R.

13482: DF570/H1, Hamburg, FRG w/nx in GG (DPA) at 1357, 66N.

13521: INA Baghdad, Iraq w/nx item about Bangladesh just putting their 1st nuke on line. Was 66R at 1402.

13522.6: Un-ID type of RTTY mode at 1419, 66R; freq constant shifts up/down!

13530: RWV53, Moscow Meteo, USSR w/coded wx at 1341, 900/66R (Kneitel, NY).

13537.9: ADN nx in GG from Berlin, GDR at 1425, 66R. Was //14619.

13737: 5YD, Nairobi Aeradio, Kenya w/RYYR at 1923, 200/66N (Kneitel, NY).

13920: RNK39, TASS Moscow, USSR w/nx in EE at 1925, 425/66N (Kneitel, NY).

14373: YIL73, INA Baghdad, Iraq w/nx in EE, was 66R at 1348.

14391: 5L gps possibly from GDR embassy in Havana, Cuba, 100R at 1307.

14422: Un-ID sends 5L gps at 1316, 66R.

14429: "PR Service" telexes from Lubumbashi, Zaire to Kinshasa, Zaire, at 1632, ARQ mode.

14462: CLP1, MFA Havana, Cuba w/5F gps at 1401, 66R.

14497.4: CSY66, Santa Maria Aeradio, Azores w/coded wx at 1441, 66N.

14550: SPW, Warsaw R., Poland w/tfc list & PAP nx briefs to ships in Polish, FEC mode at 1356-1440.

14563: Un-ID sta w/nx in EE 2142-2200, 100N.

14638: VOA w/RURY at 2107, 425/100N (Kneitel, NY).

14639.8: CME326, Czech embassy, Havana, Cuba w/bills of lading & t/c in Czech at 1539, 100N.

14688: Encrypted msgs w/line feeds & numeric headers noted in 100N at 1345. Sender goes to CW after each msg!

14690.3: Faxes w/o ID, 1422-2200, 66R.

14786.5: 9PL, Kinshasa Aeradio, Zaire w/aviation wx at 1457, 66R.

14799.5: ADN Berlin, GDR runx nx in SS at 1450, 66R.

14800: ADN, Berlin, GDR w/nx in EE at 1450, 66R.

14810: "Del Cobra al Jaguar" + encryption sent by MFA, Havana, Cuba at 1929, 66R.

14856.5: MKD, RAF Akrotiri, Cyprus w/RYI's & faxes, 66R at 1445.

14909.9: Un-ID sta possibly a Yugoslav embassy somewhere sending several encrypted msgs at 100n, 1511-1516 UTC, s/off w/"HR A1" which meant was going to CW mode.

14911.9: Constant stream of RY's w/o ID, 1454-1508, 100N. Think it's a Yugoslav embassy somewhere.

14913.9: Encryption same as above, 100N at 1519, s/off at 1520 w/"QRU QSL? LOK HR A1 K."

14914.2: YWM1, Maracaibo Navrad, Venezuela sending RY/SG to 5KM, Bagota Navrad, Colombia at 1812, 100N.

14932.1: APS Algiers, Algeria w/nx in AA at 1524, 66N.

15865: RBK79, TASS Moscow, USSR w/sports nx in FF at 1340, 850/66R (Kneitel, NY).

15930: RBJ78, TASS Moscow, USSR at 1342 w/nx in FF, 425/66R (Kneitel, NY).

16135: RBJ72, TASS Moscow, USSR w/nx in EE at 1346, 300/66R (Kneitel, NY).

16147.5: RFFVF, French Air Force, Villacoublay, France relays t/c from RFTJD, COMAIR, Libreville, Congo to RFFVA, French Air Force, Paris. Was ARQ at 1405. Compare with Kneitel's logging on 5093 kHz-- Ed.

16150.5: MKD, RAF Akrotiri, Cyprus w/RY's & faxes at 1415, 66R.

16210: SOQ221, PAP Warsaw, Poland w/RY's at 1451. Announces //13785 for SON278. NX in EE at 1500, rrR.

16234.2: 4UZ, UN Geneva, Switzerland sends Int'l Labor Organization t/c to a sta on another freq at 1443, 100R.

16243: Y7A64, ADN Berlin, GDR w/nx ib GG, 1437 in 66N.

16302: One short encrypted msg + rpt sent aftr CW lead-in. Was 100N at 1530-1538.

16348: CLN530, TASS Havana, Cuba w/nx in EE at 1350, 425/66R (Kneitel, NY).

16397.5: FTQ39, DIPLO Paris, France w/nx in FF at 1326, 66N.

17206.5: ZSC64, Capetown R., RSA w/plaintext & coded wx at 1750 in FEC mode.

18047: DFZG, a Yugoslav embassy somewhere w/RURY at 1502, followed by 3F coded msgs & encrypted t/c, 100N.

18220.9: CNM76X9, MAP Rabat, Morocco w/RURY & time/freq sked at 1515, 66R.

18230: GFL25, Bracknell Meteo, England w/coded wx at 1516, 66N.

18542.5: VOA w/RURY at 2004 but very weak, 425/100N (Kneitel, NY).

18602.5: VOA Greenville, NC calls VOA Tangier, Morocco w/RURY & "Pls Repeat All" at 1450, 100N.

18688.8: Constant RYRY w/o ID, 60N at 1317. Probably MFA, Havana, Cuba; manually typed msg in SS at 1332 & a signal that pushed the needle on the VU meter to +15!

18696.4: DPA Hamburg, FRG w/nx in EE at 1336, 66R (Margolis, IL); DFS70H1, same sta w/EE nx at 1405, 425/66N (Kneitel, NY).

18785: FTS78, DIPLO Paris, France w/nx in FF, 66N at 1520.

18810: Y2V38A, ADN Berlin, GDR w/nx in GG at 1522 followed by 5L t/c from MFA, Berlin, 100R.

19313: 4UNF, UN Addis Ababa, Ethiopia w/msgs in EE at 1430, 100N.

19387: Un-ID sta w/nx in GG at 1437 & a 5L msg, 133R.

19405: INTERPOL t/c in ARQ at 1422, but sig was weak & hard to receive.

19448: TASS nx in EE at 1800, 425/66R (Kneitel, NY).

19553.7: Un-ID sta sending "JOKU JDLG KR D KYKS K" & ended xmsn. Was at 1806 in ARQ. Who, what, where??

19905: Encryption w/ZZZZZ from MFA, Havana, Cuba at 1844, 60R.

20417: MFA Havana, Cuba w/encryption, 100N at 1530.

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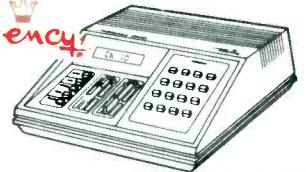
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ANTENNAS AND SIGNAL IMPROVING ACCESSORIES

Tropical Band Zig-Zag

The zig-zag dipole or sawtooth dipole or whatever you wish to call it has shown great promise as a means of crowding full-length dipoles on a small lot. If you don't fold them back on themselves and trim them properly, they continue to match a 50-70 ohm coaxial line and do well. I have used them successfully as segmented dipoles on the 40-75-160 meter Ham bands with even some European and Caribbean contacts in the crowded 3790-3800 DX window on the 75M sideband. DW on 3995 came booming through. The work with the Ham zig-zags helped in coming up with a segmented zig-zag for the 75, 90, and 120 meter SWB bands. 60 meters is included, too.

Our particular arrangement is not the pure zig-zag dipole form of Fig. 1A. Neither is it the right-angle plan of Example B. In this latter plan I did better with the ends angled in opposite directions. Plan C was the poorest of the three and was also dropped.

An important factor in good dipole performance is to get the high-current feed

point high in the air. Thus, I started with an inverted-V dipole on 60M that was dropped down to the 10' level with a separation of 25' between the center 22' mast and the two side 10' masts, Fig. 2. From here the antenna was zigged from one end and zagged from the other end as shown in the top view of Fig. 3. Somewhat more than half the way down the one side of each sawtooth are the insulators that conclude the 60M inverted dipole. The second pair of insulators were connected just short of the 10' masts C and D. By jumping the first pair of insulators you now have a dipole working on 75 meters. Refer to Table 1.

The next pair of insulators are located down the other side of each sawtooth a short distance for 90 meter tropical band

operation. A final pair of insulators establish 120 meter operation when all the insulators along each leg are jumped. A length of rope attached to each end insulator is fastened to a metal fence post and can be pulled up to tighten each leg. All jumpers are accessible from a short ladder.

Good operation is possible on each of the tropical bands using the appropriate jumpers. Fair all-band operation is possible operating on the 90 meter dipole. However, things peak up when you set the jumpers for a particular band.

The apex angles of the two sawtooth ends can be adjusted according to space available. Stretch out the angles as much as you can. Total space occupied by our zig-zag was approximately 42' by 75'. You can re-

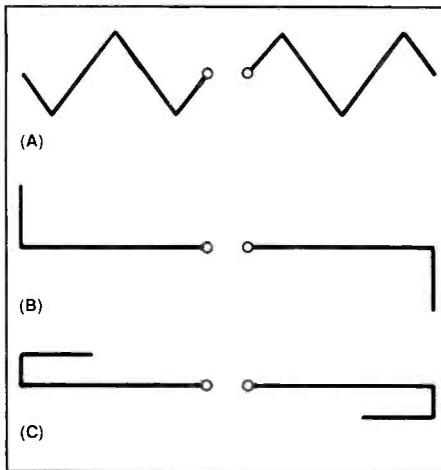


Figure 1: Zig-zag dipoles.

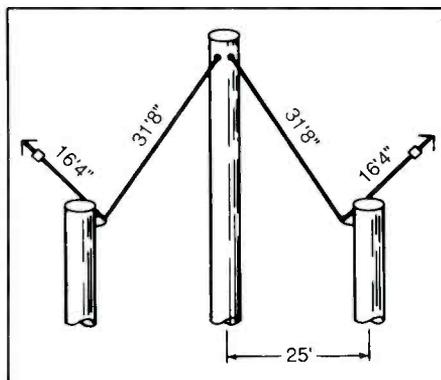


Figure 2: Inverted dipole on 60M (side view).

Table 1 Jumper Logic	
60M $\lambda/4$	$31'8'' + 16'4'' = 48'$
Close First Set Of Jumpers	
75M $\lambda/4$	$31'8'' + 16'4'' + 11' = 59'$
Close First And Second Set Of Jumpers	
90M $\lambda/4$	$31'8'' + 16'4'' + 11' + 12' = 71'$
Close All Jumpers	
120M $\lambda/4$	$31'8'' + 16'4'' + 11' + 12' + 27' = 98'$

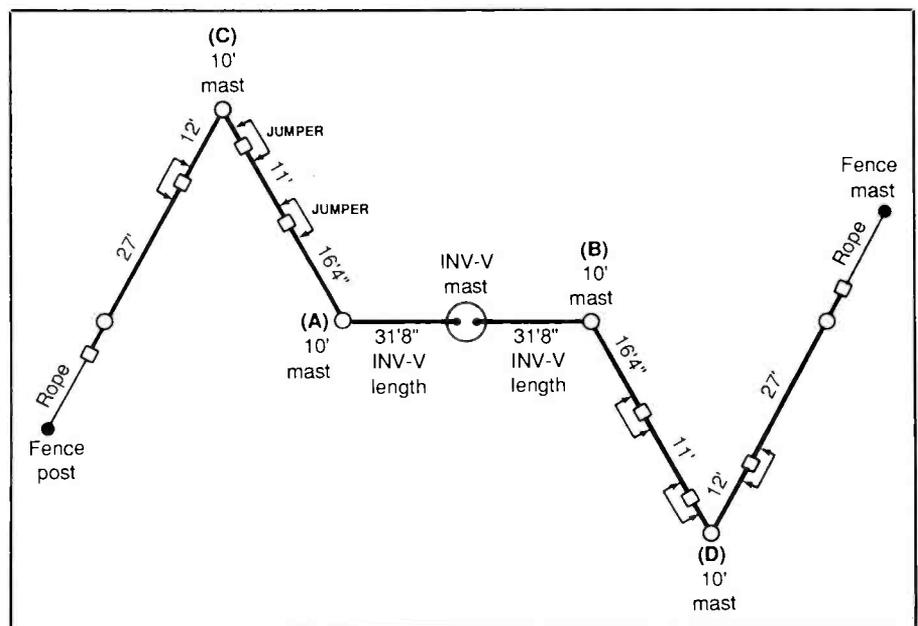


Figure 3: Top view of tropical band zig-zag.

duce the width an additional amount by positioning the end sawtooth on the same instead of opposite sides of the inverted-V. Remember that a straight 120 meter dipole would extend out almost 200'. Even a full-length 75 meter dipole stretches out approximately 120'. Thus, there is a considerable saving of space using a zig-zag dipole.

The zig-zag construction is relatively simple using a single high mast and the four 10 footers. The antenna wire height is 10' or slightly lower and above the yard traffic. The end 26' lengths drop down lower as they slope toward the fence post. If you wish to keep these lengths at 10' level, use two additional 10' masts for the final supports.

A single guy rope usually holds each 10' mast erect when it is placed directly opposite to the strain side. Three guys are used for the high mast. Insulated antenna wire is fed through the eye-ring bolt that is mounted at the top of each 10' PVC mast section, as shown in Fig. 4.

It is surprising how a really long antenna can be fit into a small available space and produce good results. Look over your property carefully if you are a tropical band enthusiast. Segmenting can also be a good approach because the usual random longwire doesn't give you the same dipole peaking possibilities on an individual band. Of course a high straight dipole on each band is the ultimate. However, the ultimate is seldom possible when you don't live in open country. A tropical installation like the one described can be taken down, rolled up and

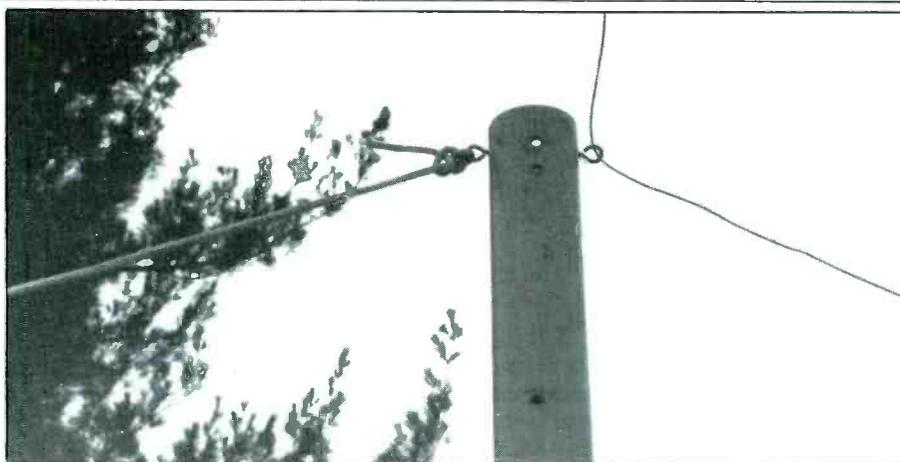


Figure 4: Feeding zig-zag through eye-ring at top of 10' mast.

stored during the high-static months when there is little tropical band DXing.

A Flexo switch or a tuner can also be an assist for tropical band DXing for several reasons. The Flexo switch gives you several choices, one of which may give you a somewhat better signal-to-noise or signal-to-interference ratio in trying to ID a weak signal and may perk up signals on a band other than the one for which the dipole is cut. A tuner can be an assist in peaking signals on a band lower in frequency than the one for which the dipole is cut.

Mail continues to come in about the Flexo switch. The correct drawing was repeated at

the very end of the column in the December 1986 issue of POP'COMM, page 56. Remember to ground the case of the switch box. Drawing is arranged for easy understanding of the switches. Check and double check your switch wiring. It is a bit tricky to match the two switch decks correctly. An alternative is to buy two entirely separate single-pole four-position switches. A coaxial line or any other line pair can be connected to the output, connecting the output of the switch to the antenna input of the receiver. I usually use a coaxial line and mount a SO-239 chassis mount on the switch case or, a chassis mount phone jack. **PC**

HUGE

70 PAGE

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You have more operating modes to listen in on: upper or lower sideband, CW, AM wide or narrow, and FM wide or narrow.

You can even watch television programs by plugging in a video monitor into the optional video output.

Scan in steps of 5, 10, 12½, 25 and 100 KHz. Store any frequency and

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related operating mode into any of the 99 memories. Scan the memories. Or in between them. Or simply "dial up" any frequency with the frequency entry pad.

Plus there's more, including a 24-hour clock, multiplexed output, fluorescent readout, signal strength graph, and an AC power adapter.

The FRG-8800 HF communications receiver. A better way to listen to the world. If you want a complete communications package, the FRG-8800 is just right for you.

You get continuous worldwide coverage from 150 KHz to 30 MHz. And local coverage from 118 to 174 MHz with an optional VHF converter.

Listen in on any mode: upper and lower sideband, CW, AM wide or narrow, and FM.

Store frequencies and operating modes into any of the twelve channels for instant recall.

Scan the airwaves with a number of programmable scanning functions.

Plus you get keyboard frequency entry. An LCD display for easy readout. A SINPO signal graph. Computer interface capability for advanced listening functions. Two 24 hour clocks. Recording functions. And much more to make your listening station complete.

Listen in. When you want more from your VHF/UHF or HF receivers, just look to Yaesu. We take your listening seriously.

YAESU

Yaesu USA

17210 Edwards Road, Cerritos, CA 90701
(213) 404-2700

Yaesu Cincinnati Service Center

9070 Gold Park Drive, Hamilton, OH 45011
(513) 874-3100



Dealer inquiries invited.

Prices and specifications subject to change without notice.
FRG-9600 SSB coverage: 60 to 460 MHz.

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Hear it All!

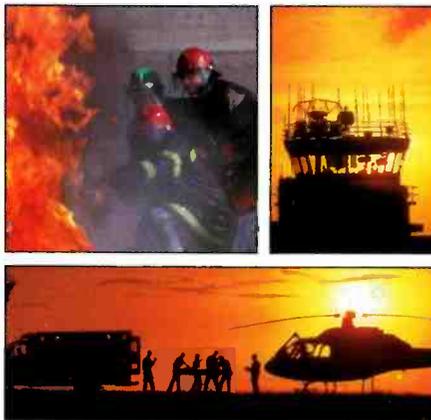


R-5000

High performance receiver

THE high performance receiver is here from the leader in communications technology—the Kenwood R-5000. This all-band, all mode receiver has superior interference reduction circuits, and has been designed with the highest performance standards in mind. Listen to foreign music, news, and commentary. Tune in local police, fire, aircraft, weather, and other public service channels with the VC-20 VHF converter. All this excitement and more is yours with a Kenwood R-5000 receiver!

- **Covers 100 kHz-30 MHz in 30 bands, with additional coverage from 108-174 MHz (with VC-20 converter installed).**
- **Superior dynamic range.** Exclusive Kenwood DynaMix™ system ensures an honest 102 dB dynamic range. (14 MHz, 500 Hz bandwidth, 50 kHz spacing.)



- **100 memory channels.** Store mode, frequency, antenna selection.
- **Voice synthesizer option.**
- **Computer control option.**
- **Extremely stable, dual digital VFOs.** Accurate to ± 10 ppm over a wide temperature range.
- **Kenwood's superb interference reduction.** Optional filters further enhance selectivity. Dual noise blankers built-in.
- **Direct keyboard frequency entry.**

- **Versatile programmable scanning, with center-stop tuning.**
- **Choice of either high or low impedance antenna connections.**
- **Kenwood non-volatile operating system.** Lithium battery backs up memories; all functions remain intact even after lithium cell expires.
- **Power supply built-in.** Optional DCK-2 allows DC operation.
- **Selectable AGC, RF attenuator, record and headphone jacks, dual 24-hour clocks with timer, muting terminals.**

Optional Accessories:

- VC-20 VHF converter for 108-174 MHz operation
- YK-88A-1 6 kHz AM filter
- YK-88S 2.4 kHz SSB filter
- YK-88SN 1.8 kHz narrow SSB filter
- YK-88C 500 Hz CW filter
- YK-88CN 270 Hz narrow filter
- DCK-2 DC power cable
- HS-5, HS-6, HS-7 headphones
- MB-430 mobile bracket
- SP-430 external speaker
- VS-1 voice synthesizer
- IF-232C/IC-10 computer interface.

More information on the R-5000 and R-2000 is available from Authorized Kenwood Dealers.

R-2000

150 kHz-30 MHz in 30 bands

- All modes
- Digital VFOs tune in 50-Hz, 500 Hz, or 5 kHz steps
- 10 memory channels
- Programmable scanning
- Dual 24-hour digital clocks, with timer
- 3 built-in IF filters (CW filter optional)
- All mode squelch, noise blanker, RF attenuator, AGC switch, S meter
- 100/120/220/240 VAC operation
- Record, phone jacks
- Muting terminals
- VC-10 optional VHF converter (118-174 MHz)



KENWOOD

TRIO-KENWOOD COMMUNICATIONS
1111 West Walnut Street
Compton, California 90220

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Specifications and prices are subject to change without notice or obligation.