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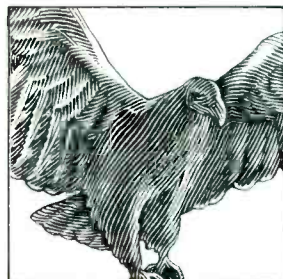
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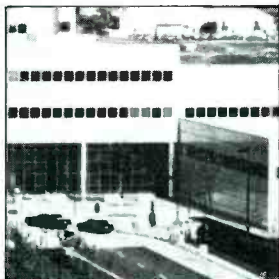
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AUGUST 1988

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This month's cover: A look at super station WYFR. Photo by Larry Mulvehill.

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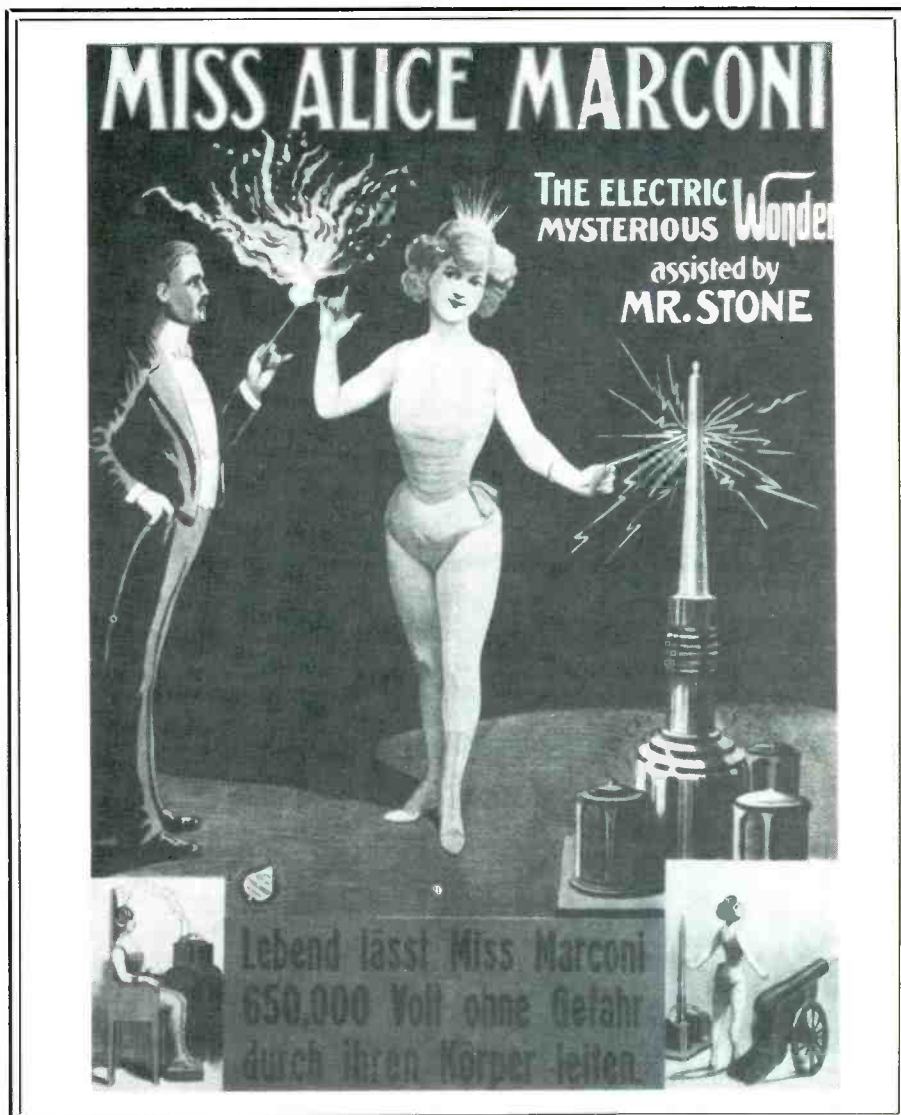
For several years we have been running a regular schedule of radio history and nostalgia features written for us by an author who has chosen to use the pen name Alice Brannigan. Oddly, speculation as to the real name and true identity of this author has always been high, attracting as much mail (including requests for photos of Alice) as the mass of historic items submitted for use in the section she writes for *Pop'Comm*.

A popular theme running through such letters expresses doubt, or outright disbelief that "a woman could write this type or material," although not one single person has yet attempted to offer any explanations as to why. The editor of a leading scientific journal tells me that because of similar reader letters he received in response to material he publishes from women authors, he once suggested that those authors might wish to either use male pen names, or else initials instead of spelling out their first names. All flatly refused. Shades of Mme. Amantine Lucile Aurore Dupin (1804-1876), who became a world-famous novelist only after she started writing under the pen name George Sand. There are so many women active in communications today, it seems strange to encounter a common belief that only a man would have an interest in exploring radio history, and the ability to put it on paper.

Other correspondents either object to, or question, Brannigan's use of a pseudonym, although there haven't been any reasons set forth. Have these readers also complained about the professional use of pseudonyms by the people known to the public as Cyndi Lauper, Diane Keaton, Ann Landers, Madonna, Bernadette Peters, and Angie Dickinson? In our own pages, Harry Caul is a pen name, so is Havana Moon, yet there has never been any mail demanding to get to the bottom of their actual identities. Was there ever a fuss at *QST* with readers asking about the use of the pen names *The Old Man* and *Larson E. Rapp*? Does anybody really care to learn the actual name of a west coast publisher of police frequency directories? Who was *CQ's* popular *Scratchi*?

We have always invited our authors to use pen names if they feel more comfortable using them. Probably 20% to 30% of the material in any given issue appears under pen names, yet Brannigan is the only one that has triggered such a lively and spirited series of speculations and investigations. We at *POP'COMM* are far more interested in the content of material considered for publication than we are with what name the author (for his/her own reasons) uses.

I won't even attempt to describe all of the complex schemes and extraordinary efforts employed by some to unravel what they feel



One reader claims to have discovered Alice's true identity. He claims that she is actually 1910 vaudeville performer "Alice Marconi, The Electric Mysterious Wonder." He backed up his claim by sending us one of her posters.

is the perplexing challenge of Alice's identity. There have been innumerable cryptologic attempts at discovering messages suspected to have been hidden within her name. This, despite the fact that the name has already been described herein as a anagram, and its meaning revealed. Further to that, Alice has written of an article she had previously authored in another national publication under her real name. Her photo appeared with the story. Hardly seems very mysterious to me.

Other readers have written us to tell how they are maintaining lists of tidbits of information about Alice gleaned from her writings over a number of months. These mor-

sels are carefully analyzed. I assume the idea is that eventually a sufficient amount of data can be collected in order for it to be assembled into a complete profile. The NSA would be proud.

Of course, there are some who reject any of these machinations, having already made a firm determination as to Alice's hidden identity. They proudly announce to us that they know the identity of this author. Favorite choices include those whose names regularly appear in Alice's writing, such as Will Jensby, Joseph Hueter, Howard Kemp, and others. Some propose that Alice and I are one and the same. Still others

(Continued on page 71)

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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.

Spotlight On Sunspots

I keep reading about the improving DX conditions, and I agree that I'm hearing more DX than I did a year ago. I also understand that improved DX conditions are the result of cyclic fluctuations in the number of sunspots. What nobody has yet said, or written, is how much longer good DX conditions will last, and if they'll be any better than they are now.

Paul Liu, KH16CX,
Honolulu, HI

DX conditions, caused by the eleven year cycle of increased sunspot activity, began improving about a year ago. Although it's mostly a matter of educated guesswork, DX conditions should continue to be reasonably good for about six years. They're expected to continue to substantially improve, peak in 1990, then slowly taper off. Even as DX conditions diminish, by 1993 they'll probably be at least as good as they are now. About 1995, DX will again cool down until the following sunspot cycle begins in early 1997. —Editor

Guess We're On The Right Track

Dexter's quarterly listing of *Selected English Language Broadcasts* is great. Please keep them coming. Also, we need more pictures of Alice Brannigan!

Jimmy H. Keys,
Houston, TX

Good magazine! I've been reading it since the first issue. Keep it up.

Leon Kelln, Jr., KB5BYB,
Amarillo, TX

Let me compliment everybody on the POP'COMM staff for the fine work done ever since the first issue in 1982. The information in your pages has opened a new world for me. I especially enjoy the information you've presented on HF aircraft frequencies and have spent many hours monitoring these communications.

William Riley,
Taylor, MI

Words cannot describe the fantastic response we have received from *Popular Communications*. The response to our Signal Intensifiers was thought to be "un-top-pable," but the response to your mentioning our Vak-Tenna was truly astounding. We

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John Martin, Pres.,
Electron Processing Inc.,
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Opening Pandora's Box

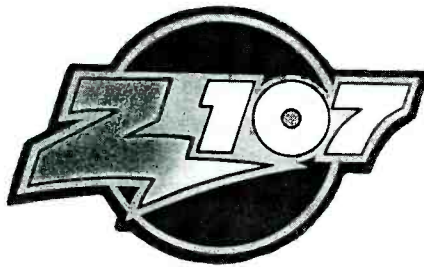
I understand that inside my epoxy-sealed cable-TV control box there are trimmers that can be adjusted to bring in scrambled channels. Is there any way to get into these boxes without breaking the epoxy seals?

Orrin Young,
Dallas, TX

Inside the box, the individual trimmers may also be sealed in epoxy. Probably the best approach would be to dissolve the epoxy with a solvent. A rather effective epoxy solvent is made by Testron, Inc., P.O. Box 130, Floral Park, NY 11002. It's not inexpensive (about \$39 per quart, plus shipping), but it does a good job and doesn't harm plastic. —Editor

Open The Information Valve, Please!

I was intrigued by your April editorial regarding restrictions against domestic media use of USIA material. These restrictions have been in force since 1948 when Congress passed the Smith-Mundt Act. This Act has been challenged numerous times by in-



dividuals and the media alike. Some Congressmen have even questioned this law.

I am the News Director of KZFX-FM and have occasionally used information from VOA broadcasts and USIA RTTY feeds in news and public affairs programs. It galls me to no end that I could be prosecuted for violation of a federal law simply because I think it's important for my listeners to know what our government is saying about the country overseas. I find the VOA's *America File* and *Europe File* quite informative. For some VOA GS employee to claim that material in the "A" and "E" Files isn't propaganda is absurd. Besides keeping embassy staffs worldwide informed of official positions on world issues, USIA RTTY transmissions are FILLED with propaganda. And why not?

"They" do it, so "we" have no choice but to do it, too. No one else is going to do it for us and, besides, the battle for hearts and minds has been going on long since before the Vietnam War popularized the phrase. If adult Americans can't tell the difference between impartial news and propaganda by now, then maybe it's high time the Smith-Mundt Act was modified or repealed so the people of this country could get a chance to make the distinction.

Please call upon your readers to write to their congressional representatives to get the Smith-Mundt Act modified or repealed. This archaic law serves only to frustrate journalists who are trying to do what they've been trained to do—report on the facts and let the public draw their own conclusions. Not all reporters and journalists are jerks, bubbleheads, or subversive agents. Some of us are hard-working, normal, fairminded types working in a field we love.

You don't know how important your magazine is to me. I learn something from every issue—frequencies, new products, even info on how to cut down on computer hash interfering with RTTY reception. I used to buy POP'COMM on newsstands but soon I found that a subscription was far more practical.

KZFX-FM ("Z-107") is a classic rock station. The latest ARB says we're #4 in Houston with the 25 to 54 adult group.

Brian K. Hill,
News Director, KZFX-FM,
3050 Post Oak Rd., Suite 1100,
Houston, TX 77056

Pro-2004 Modification Comment

I was at a local Radio Shack and was discussing monitoring with the salesman there. I pointed out that the PRO-2004 scanner could easily (and at no cost) be modified to reinstate the missing portions of the unit's 800 MHz coverage. I ended up giving him four copies of the POP'COMM August '87 feature on modifying the PRO-2004. He promised to give them to those who purchased PRO-2004 scanners and was interested in restoring those frequencies. What I am saying is that there are lots of ways of getting people into our hobby. Let's all use them. Keep up the good work.

Thomas A. Frank, KA2CDK,
Newport, RI

No question that the PRO-2004 modification caught the imagination of many scanner owners. A number of readers from various areas have written to say that when they purchased their PRO-2004, the salesperson specifically suggested modifying the unit per our instructions. —Editor

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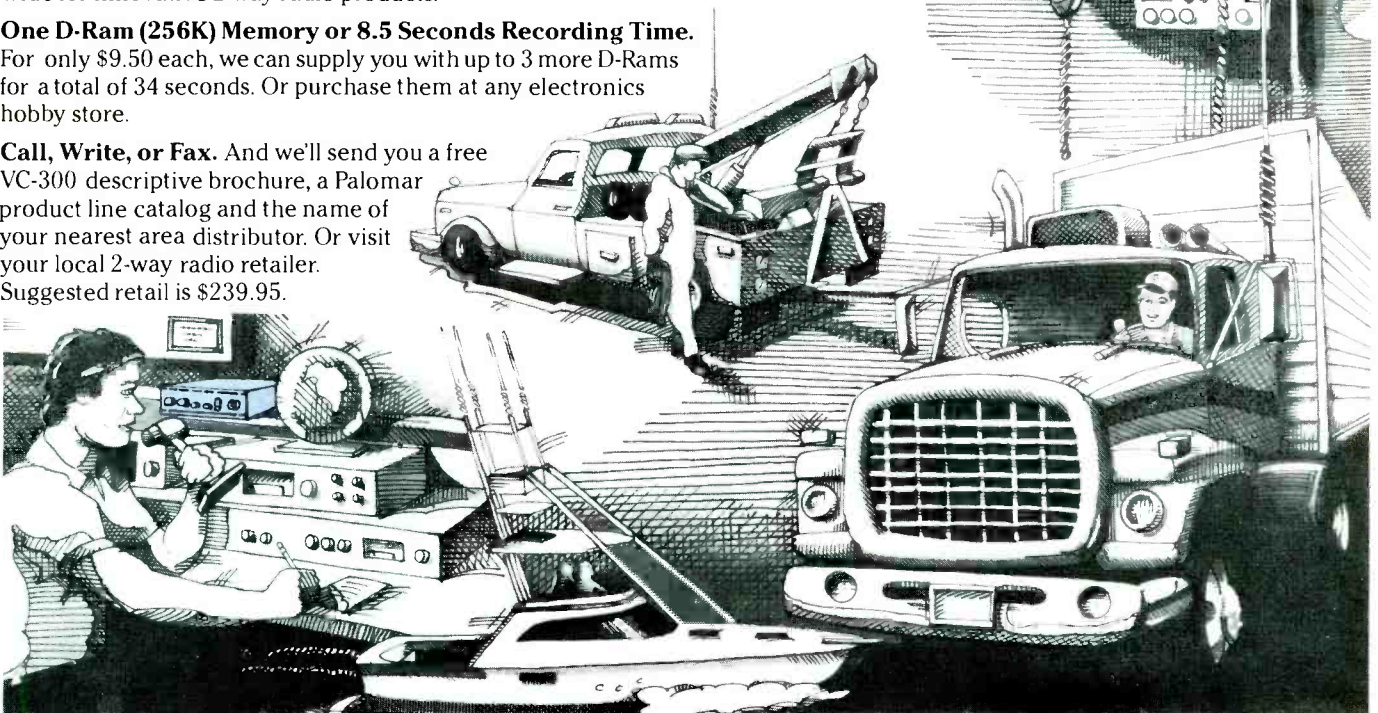
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CIRCLE 9 ON READER SERVICE CARD



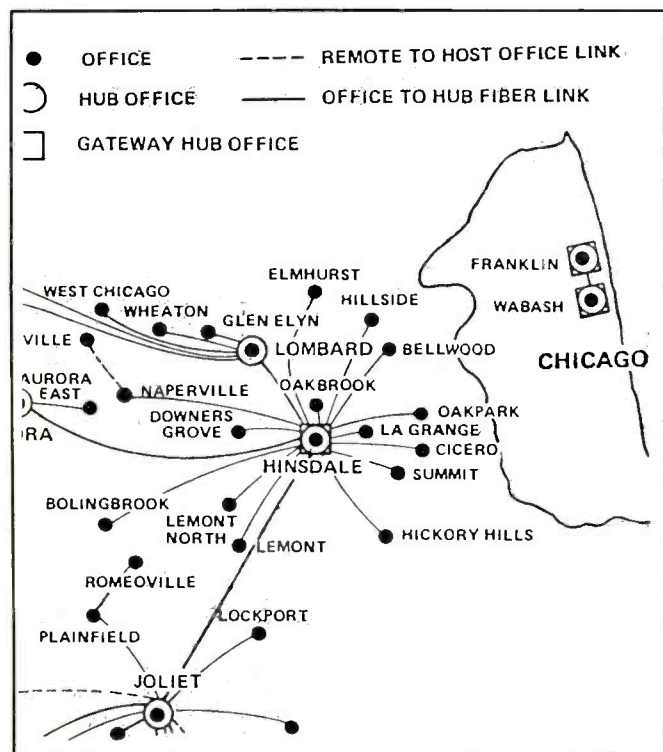
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OFFICIAL NEWS COLUMN OF THE SCANNER ASSOCIATION OF NORTH AMERICA

A Roadmap For Communications Disaster

We've commented on the vulnerability of telephone communications before in this column. Now, as this column is being written, a real life example is being played out in our backyard. SCAN has been without telephone communications for a week (except for sporadic service within our own exchange). It is impossible to reach even the nearest hospital, which happens to be in the neighboring town of Hinsdale, Illinois. Even phones in a neighboring Area Code were knocked out . . . and the latest reports are that it could be another month or so before full service is restored! During this phone communications blackout, several friends and neighbors have commented, "you sure are lucky to have a cellular phone in your car", as though it had some magic way to communicate. But the cellular phone is useless, too, just as we predicted in a previous column that it would be, because it relies on connection to the wireline phone network. Even car to car cellular communication is non-existent because of the reliance on the phone network. As an emergency communications tool, except in rare instances, cellular phones are useless. What I am "lucky" to have in my car, is a two-way radio that doesn't rely on the phone network! Whether it be Amateur, GMRS, CB, police, fire, ambulance, or even delivery truck two-way radio . . . this is the communications glue holding us together. The hospital even equipped their personnel with portable two-way radios for communications from floor to floor if necessary. The "network" had failed us.

What sort of natural disaster caused this catastrophic failure? A tornado? Flood? Earthquake? No, early reports are that it was simply a short circuit in the unmanned Hinsdale "gateway hub" office that started it all. You would think that a single fire in one small switching office building in the suburbs would be a minor event. This is no longer the case with the modern telephone network. The map helps illustrate the road to communications disaster.



The real culprit is the system which routes all calls through so-called "hubs". Despite what many of us have been led to believe about the system, it is not very flexible. All those stories about re-routing calls to avoid overloads and busy signals sounds great. On a large scale, however, the network isn't flexible at all. Each office on the map serves an area of usually more than a single town. All calls to numbers out of that immediate office area get forwarded to a "hub" . . . and then onto a "gateway hub" or super hub. Unfortunately, the super hub in Hinsdale was destroyed and there were no provisions for another hub to take up the slack. Because cities as far away as Joliet, Illinois (which even has a different Area Code) have the misfortune of being tied to the Hinsdale super hub, the phone blackout area was huge.

All sorts of communications other than ordinary phone circuits have been affected. Cellular phone, although transmitted by regular radio, goes to the super hub after reaching the wireline part of the network. Also gone were air traffic control links from O'Hare and Midway airports . . . they also fed into the Hinsdale super hub to reach the air traffic control center in Aurora (far left side of the map). Automatic teller machines, state lottery machines, school computer systems, and the Illinois Department of Transportation expressway monitoring system all went down as well. We'll live on over the current phone blackout problems, but a lingering concern is in the minds of many people: What if this had been a wide spread disaster taking out two, three, or half a dozen of these super hubs?

Our Mailbag Overflows . . .

The response of SCAN members and POP/COMM readers continues to amaze us. The other day there was so much mail that it didn't fit into our large oversized postal box and the post office had to put in sacks for pick-up! We really appreciate the comments—both positive and critical—even though we find ourselves unable to personally answer them. Of course, the response to our call for volunteers is most gratifying. Recently we called for volunteers for the next update of the SCAN frequency file and received an avalanche of applications from qualified members with 800 MHz monitoring capability. If you are one of these volunteers, you will be hearing from us shortly. We also received a number of applications from highly qualified experts to be part of our revitalized SCAN Technical Advisor service. In both cases there are individuals willing to share their knowledge and donate hours of their time to make scanning better for all of us. They do so without any expectation of remuneration, just the satisfaction of doing a good job helping others. Our hats off to them!

Speaking of the Technical Advisor Service, thanks to those experts who have volunteered, we are now able to start taking inquiries from those of you who need answers to scanner related questions. Here are the ground rules:

1. Please print or type your question clearly. (You'd be surprised how difficult it is to decipher handwriting—even if it's clear to you!)
2. Enclose a stamped self-addressed envelope. (Business size preferred.)
3. Try to be brief and specific. If you've tried some things that didn't solve your problem, be sure to mention them.
4. Please confine your inquiry to one question. If you have more than one question, please mail separately.
5. Be sure to mail your inquiry to: SCAN Technical Advisor Service, P.O. Box 414, Western Springs, IL 60558. (Addressing mail

(Continued on page 75)

WYFR – Spanning The World By Shortwave

***This Modern Powerhouse Station
Has 60 Years' Experience!***

BY GERRY L. DEXTER

Most shortwave stations in the United States, and its possessions, are still wearing short pants. A few aren't even out of the crib yet. Only one or two—maybe three—can brag about having a real history. One of them is WYFR—Your Family Radio, based in Oakland, California.

WYFR can trace its beginnings back to the early days of shortwave radio broadcasting in this country. All the way back to 1927, when station W1XAL began experimental shortwave broadcasts from Boston, featuring a schedule of educational and music programming. In 1936, the station was moved to Scituate, Massachusetts some 20 miles south of Boston. It operated there out of what was once a powerhouse located on the grounds of a test facility the military had used in WWI. Three years later, the station took the call letters WRUL, which stood for "World Radio University for the Listener."

During the Second World War, the government took over all US shortwave broadcasters for transmissions by the newly formed Voice of America. In some cases, the VOA continued to control these transmitters beyond the end of the war.

When WRUL returned to its own programming in the late 1940's, it was using the slogan the "Voice of Freedom" (that was still in the thick of the cold war). Headquarters were later moved from Boston to New York City.

Around 1960, the station was carrying some anti-Castro programming. It is now believed, by many, to have had links with the CIA and its Radio Swan/Radio Americas operation on Swan Island, both before, and after, the Bay of Pigs invasion of Cuba.

During the decade that followed, the station was passed to ownership of CBS, and then the Mormon church. The call letters were changed again—to WNYW (Radio New York Worldwide). In 1967, a fire at the transmitter site destroyed a great deal of the station's equipment.

In 1973, WNYW was purchased by the Family Stations group and the call letters were changed to today's WYFR—Your Family Radio.

Family Radio was founded in 1958, and

WORLD WIDE BROADCASTING CORPORATION
INTERNATIONAL RADIO BROADCAST TRANSMITTERS

WRUW WRUS WRUL WRUA WRUX

Hatherly Beach, Scituate, Mass., U. S. A.

Your report dated

September 4, 1947
received. Thank you.



Our program log verifies

that you were listening to

WRUS as reported.

A

All "Short wave listener reports" will receive prompt attention.

Issued To: Thomas Kneitel

Forty years ago, WYFR was known as WRUL. (Courtesy Tom Kneitel.)

had its first broadcast—on KEAR in San Francisco—the next year. Today, Family Radio owns AM or FM stations in San Francisco, Sacramento, the San Joaquin Valley, Long Beach and San Diego all in California, plus Shenandoah, Iowa, Philadelphia, New York City and Baltimore.

Family Radio's programs are also aired by a number of other non-owned stations, including Radio Anguilla on 690 kHz in the Caribbean.

Program time on WYFR taken by religious programming not produced by Family Radio is given free to these broadcasters. All operating expenses of the various stations are covered by listener contributions. Family Radio is a non-profit organization.

Family Radio feeds its programming via satellite to many stations, holds Bible conferences, and sponsors overseas tours for its listeners (China last year). It now provides a 24 hour network news service to its stations, although the news personnel also babysit the satellite feeds and must monitor transmitter readings for several Family Radio stations via remote control.

The organization soon discovered that the Scituate site would have to be replaced. The forty acre site had, over the years, been tightly surrounded by residential neighborhoods. The nine rhombic antennas were positioned too closely together and, in short, the site simply wasn't capable of fulfill-

ing the needs Family Radio wanted to accomplish with the station.

A new site was located some twenty miles north of lake Okeechobee in Florida. Its 664 acres of flat, grassy, partly swampy land have proved the perfect answer.

The first WYFR 100 kW transmitter went on the air from the Okeechobee site on 23 November, 1977. Broadcasts from Scituate continued until 16 November, 1979 when the last transmitter was closed down and moved. Since then, WYFR has added several more transmitters to its collection. Today there are eight—100 kW transmitters and 2 of 50 kW. There are ten double rhomboid and nine log periodic antennas which can pump out a signal in a variety of directions.

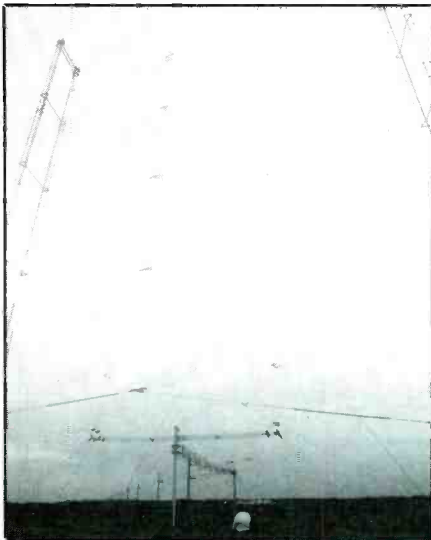
WYFR's programs are produced at the group's Oakland headquarters and aired in English, French, German, Italian, Russian, Spanish, Portuguese, Hindi and Mandarin, aimed at Europe, Africa, the Americas, Canada, India and China.

'Round the clock programming began in December, 1984. This means that some of the transmitters are in use for up to 22 hours per day which makes it difficult to keep them maintained as thoroughly as the engineering staff would like.

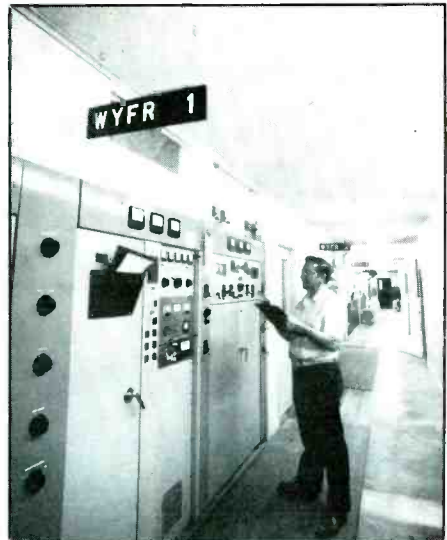
On 1 January, 1982 shortwave listeners were startled to suddenly hear the Voice of Free China loud and clear on their radios.



A look inside the master control room of WYFR. Running the show at his desk is David Budenham.



An interesting look at WYFR's dipole curtain antenna. It's passive reflecting screen is aimed at Europe.



Transmitter engineer, Edward Marcy, takes a reading off WYFR-1 in transmitter hall.

The reason was soon discovered. A two month trial exchange of transmitter time between WYFR and VOFC. That trial marriage has become permanent. VOFC has vastly improved its reception by listeners in North America and also uses the facility to broadcast to Europe, the mideast, Africa and Central and South America. Common WYFR frequencies which carry VOFC in various languages are 5985, 7355, 9555,

9850, 11740, 11805, 15130 and 15215.

WYFR, in turn, uses VOFC transmitters on Taiwan to beam programs in Mandarin to China from 2100 to 0000 and 1100 to 1605. Commonly used frequencies include 5275, 6210, 6300, 6565, 9465, 9930, 9955, 11550 and 15055. Since these broadcasts are beamed away from the US, however, they aren't as often reported by US listeners, though they certainly can be

heard here. With the VOFC facilities available, WYFR says it can now reach over half the world with its signal.

WYFR verifies correct reception reports, which may be sent to 290 Hegenberger Road, Oakland, CA 94621. Visitors to the Florida transmitter site are generally welcome. The technical office is located at 10400 NW 240th St., Okeechobee, FL 33472.

PC

THE SHORTWAVE PROPAGATION HANDBOOK Second Edition

George Jacobs, W3ASK
and
Theodore J. Cohen, N4XX

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EQUIPMENT REVIEW:

This Important New Terminal Reads Everything: CW, RTTY, FAX, TDM, FDM, SITOR, ASCII, And Packet!



It stood to reason that eventually some design engineer was going to figure out how to evolve an RTTY/CW reader to the point where it can copy just about any type of non-voice signal you're likely to encounter. Universal Shortwave Radio (1280 Aida Drive, Reynoldsburg, OH 43068) just introduced such a unit, the M-7000. I was able to get my paws on one to see what it was able to do. The one I got was one of the first off the production line, the operating manual was still in its formative stages at the time.

Impressive? No doubt about it. Imagine a unit that weighs only 9 lbs. and is the same size as the earlier M-600A and M-6000 designs (16" by 3" by 13"). You unpack it from its carton, connect it to your receiver with a single patch cord (no tools required). You then hook a video monitor and/or a printer to the M-7000 by means of another one or two plug-in patch cords. The whole operation takes only a few minutes. Then you plug the power cord into 115 or 230 VAC (50/60 Hz) and you're ready for action.

And the action, in the case of the Universal M-7000, is wide ranging. It will copy CW from 5 to 120 w.p.m., plus RTTY signals between 45 and 250 baud (having any shift from 30 to 1200 Hz). It copies ASCII signals from 75 to 1200 baud, plus SITOR Modes A and B (commonly referred to as ARQ and FEC). It will read Packet Radio (AX. 25) signals. It reads four different channelization modes of Frequency Division Multiplex (FDM), also Time Division Multiplex (TDM)—also called Moore Code—in two and four channel, 86 through 200 baud. It copies four drum speeds and three I.O.C.'s of FAX for your printer, or (with an optional internal accessory) it can put a reduced resolution FAX image on your video monitor's screen.

It does fancy stunts, too. Like being able to run the RTTY Third Shift Cyrillic Alphabet from Soviet ships in its authentic form on your video monitor. Another trick—when you tune in an RTTY station (by means of an indicator that advises when you're properly tuned), you can press a button on one of the keypads and the M-7000 will figure out the proper shift and baud rate (sometimes even the correct polarity) and adjust itself accordingly. On your video monitor there's a status line that advises you of the baud rate, shift, and polarity selected. Or,

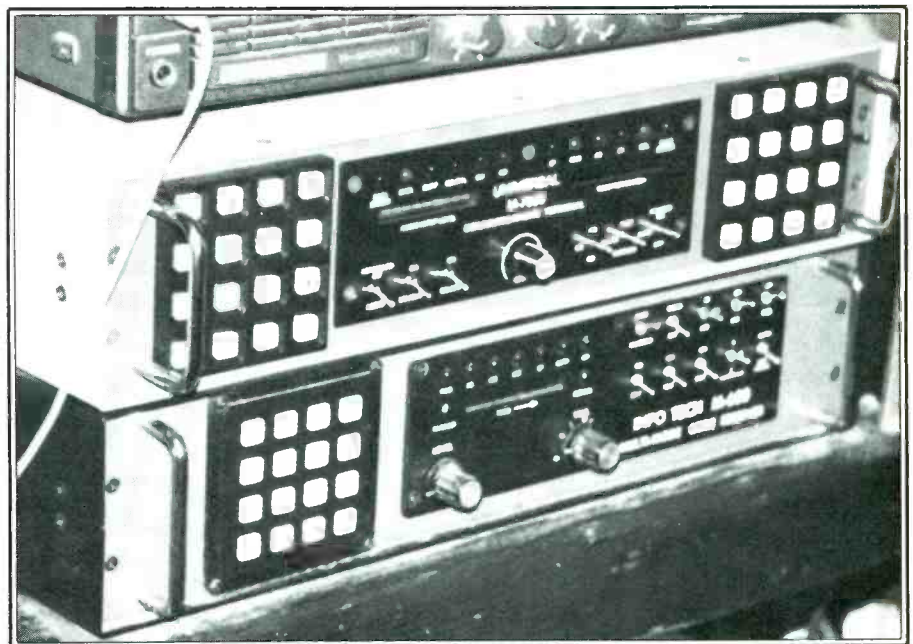
you can manually shift it through all of its available baud rates and shifts. Preset shifts of 60, 85, 170, 850, and 1200 Hz are programmed in for convenience, but the M-7000 may be manually set for any shift from 30 to 1200 kHz. Same with baud rates. The most common ones—45, 50, 57, 75, and 100—can be quickly selected, or you can tune the entire 45 to 250 baud range.

As If That Weren't Enough!

But wait, there's more! You can place the Universal M-7000 into a "Literal" mode and it will display non-printing control characters (bell, space, etc.) on your monitor. If you switch the M-7000 into "Data Bit" mode it will display the incoming bit pattern as binary data (1's and 0's). There's a scroll up/down that lets you search through four standard pages of video memory, then print what ever is on the screen on your printer.

It decrypts bit inversion security traffic. The M-7000 has provisions for two receiver inputs to allow diversity reception. An audio tone (*beep*) has many functions, such as confirming instructions you feed the M-7000, or when there's an RTTY signal for the bell. Of course, you can shut off the beeper if you'd rather not hear the thing.

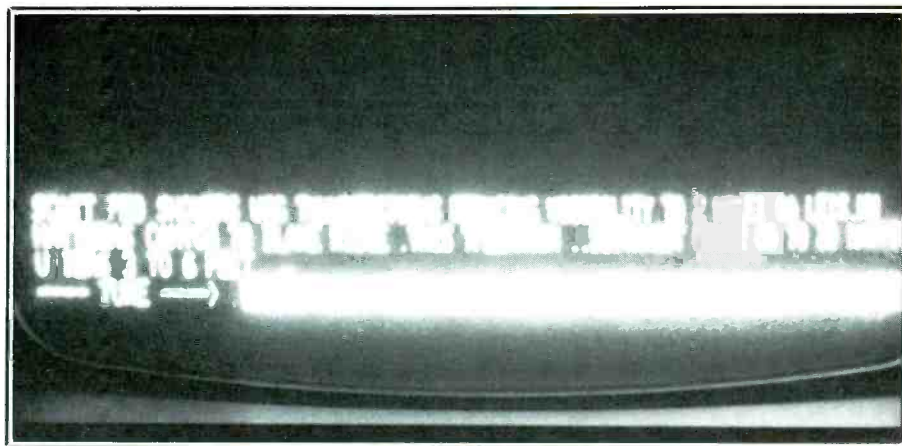
In fact, you can readily access the



A size comparison between the new Universal M-7000 (top) and one of its predecessors, the Universal M-600 (bottom), reveals that more features don't need to take up more space.



With a push of a button, the M-7000 can be made to put Cyrillic (Soviet) characters on your video monitor. This RTTY transmission was from a Soviet ship.



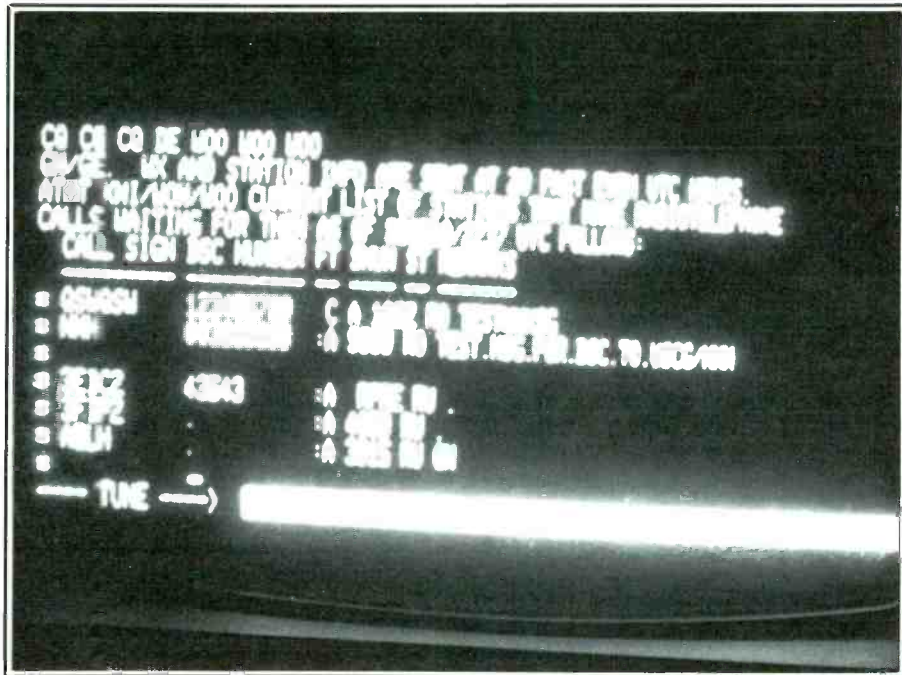
A weather forecast in CW mode is easily copied by the M-7000.

M-7000's software and reprogram it to customize many of its functions to suit your requirements and preferences. That's how you shut off the beeper, or set the (optional) date/time accessory, or program in eleven recallable memories, and many other operations.

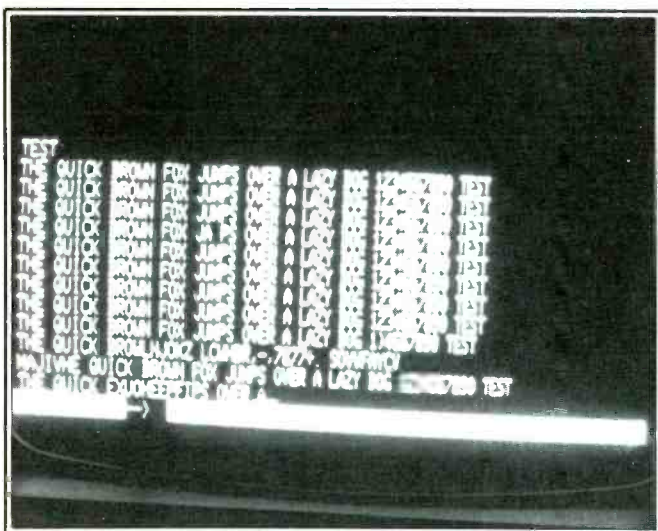
Front panel switches activate the M-7000's squelch, user-programmable selective calling function, printer, gain, and certain keyboard functions. A switch permits manual selection of wide/normal/narrow filters in the event the user doesn't agree with the filter automatically selected by the M-7000. You can also switch to mark-only or space-only operation.

Furthermore, there's a scope output on the rear panel, and you can operate the M-7000 via a remote terminal interface to a computer or dumb terminal.

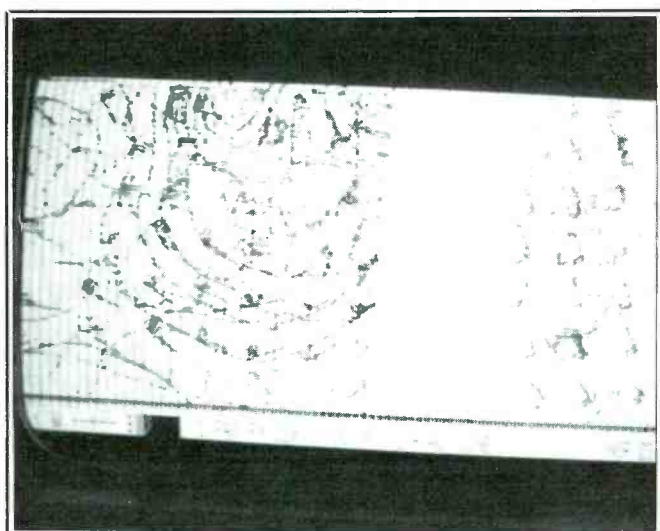
Fact is, these are merely the major highlights of this amazing hunk of hardware. It's a sophisticated piece of equipment that is



We copied this FEC (SITOR-B) transmission on 8053 kHz.



This Frequency Division Multiplex (FDM) test transmission can be received only on a sophisticated communications terminal such as the M-7000.



So far as we know, the M-7000 is the only reader that can put FAX transmissions up on a video monitor. This weather chart (actually, two charts side-by-side) is proof.

scheduled for use by federal agencies as well as at many commercial communications facilities. For the hobbyist, it's a major boon.

However . . .

While the Universal M-7000 can be hooked up for operation in only a few minutes, it's important to realize that this highly versatile and complex piece of precision communications equipment is going to take some time on the part of the user to achieve its maximum potential. In other words, you should expect to spend some (I found most enjoyable) time relaxing with the M-7000 as you use the operating manual and experiment with the many things it can do.

Unlike some less-sophisticated terminals which let the user become adept at all aspects of their operation within a couple of hours, getting the most out of what the exotic M-7000 has to offer will need more time and effort. The operating instructions provide plenty of information, but you'll want to be sure to read the material carefully for best results.

Let's face it, there are two sixteen-button keyboards offering the equivalent of sixty-four buttons with which to deal. (Note that several of the buttons remain unassigned for future expansion of the M-7000's potentials as new decoding functions and software is devised at some points in the future.)

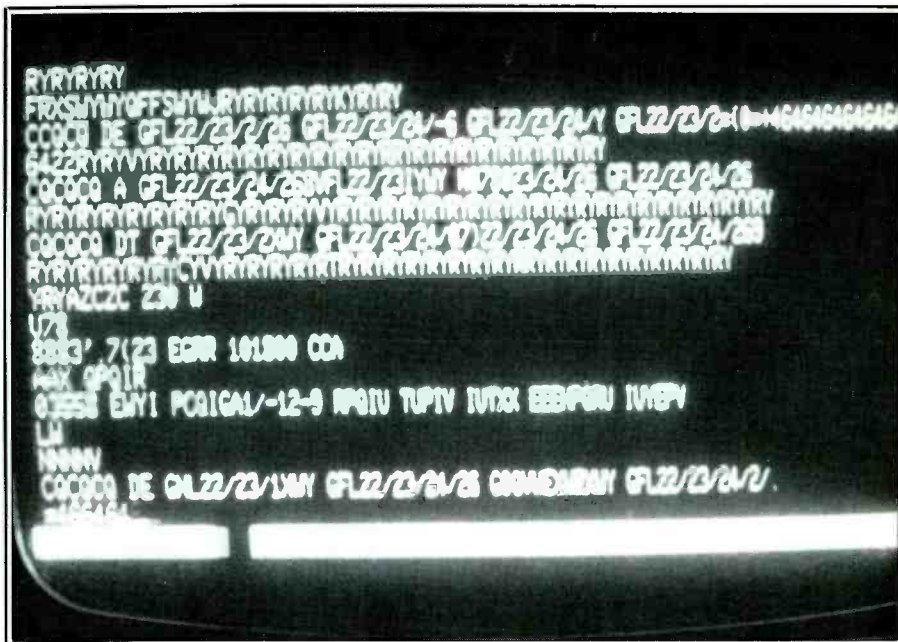
Fred Osterman, at Universal Shortwave Radio, has prepared an introductory manual aimed at the hobby user that makes operating the M-7000 as relatively simple as possible, considering the sophistication of the unit. I've seen a portion of this material in its early stages and it's excellent.

Like A Kid In A Candy Shop

When I got ahold of the M-7000, I didn't know what to try first—here was an array of potential delights having instant dazzle appeal. Having had several years' experience with an RTTY reader made figuring out the CW, RTTY, ARQ, and FEC mode functions rather easy. Still, I wanted to dig into FAX, FDM, and whatever else the M-7000 offered that I'd not previously explored.

It wasn't long before I found one of those wide buzzsaw signals that denote FDM operation. With a little tinkering and the help of the M-7000's manual, I was able to bring up a stream of AP/UPI news briefs with the unit set on FDM Mode C, Channel 8. Several other tries at duplicating this feat on other frequencies were successful on a basic level, although I've still to master the nuances of FDM reception beyond these basics.

FAX reception also produced a number of weather charts without an inordinate amount of fussing. Since I was using a video monitor rather than a printer, the clarity was less than a hardcopy rendition would have offered. But you could easily see that they were weather charts, with weather fronts and other symbols defined. FAX signals sound like a wagon wheel that needs oil to stop the squeaking, and the M-7000 has in-



Standard ARQ (SITOR-A) transmissions are read by the M-7000, like this one from station GFL in England.

dicators that let you know when they're tuned in properly. Thusfar, although I've copied weather charts, I haven't come across a station transmitting news photos.

Haven't yet gotten around to working with the TDM mode, but then I've only had the unit for a relatively short time and I'm still becoming familiar with its operation on other modes. In general, I'd have to say that

I haven't had so much fun since the hogs ate my brother.

Universal's got a definite winner in their new M-7000. If you're into "ute" monitoring, or are thinking about delving into those realms, then I'd certainly suggest looking into what this exciting and important new piece of equipment has to offer you.

Reviewed by Tom Kneitel, K2AES, Editor

M — 7000

BI MAN	FRAME LEFT	FRAME RIGHT	
BI AUTO	BIT/CHAR UP		
SPLIT SCREEN	BIT/CHAR DOWN		
DATABIT	LITERAL	PROGRAM	HELP

LEFT KEYBOARD

SRO	STATUS PRINT	SCREEN PRINT	CW
Line/Gray			
SPEED UP	SCROLL UP	UOS/PAR IOC	SITOR
SPEED DOWN	SCROLL DOWN	Case Chge Direction	ARQ
ASCII	SCREEN CLEAR	BAUDOT	FAX

1	2	3	MARK FREQ
4	5	6	SPACE FREQ
7	8	9	SHIFT
	0	BAUD	

RIGHT KEYBOARD

NOR/REV	FILTER TUNE	START STOP	MEMORY SELECT
POS/NEG			
SHIFT UP	VFT GROUP	ATC	ARQ CHANNEL
SHIFT DOWN	SHIFT	INPUT SELECT	AUTO TUNE
Alphabet	DEMOD MODE	AGC	PACKET

ALTERNATE

NORMAL

The Universal M-7000 has what amounts to four programming keypads. It's a versatile, although sophisticated, piece of equipment that requires some effort on the part of the user to explore all of its many functions and potentials. But it's easily worth the effort when you see the results.

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Wt. 2 lbs., 10 oz.)

AR160
(6 1/2" D x 4 1/8" W x 1 1/2" H
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	AR800	AR2002	AR160
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MHz	140-174		436-512
	436-512		
	830-950		

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CIRCLE 18 ON READER SERVICE CARD

“Spy Numbers” Anomalies



Defense Intelligence Agency (DIA) headquarters near Washington, D.C. A previously unpublished photo.

Conjecture on Overmodulation and Distortion

BY HAVANA MOON

One of the more common anomalies associated with the five-digit Spanish apparent spy transmissions is what appears to be severe overmodulation, distortion or a somewhat “muddy” sound. It’s often impossible to obtain a clear copy on many “numbers transmissions” in the AM mode. And—at many times—the sideband mode only provides slight improvement.

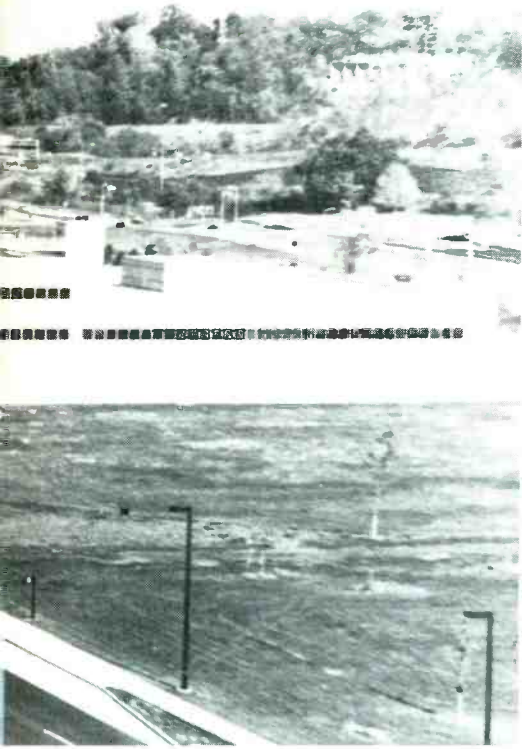
Here’s a possible theory. A sideband can be superimposed on an existing carrier by a different transmitter. And—if you dare—you might try this experiment: Find an existing carrier in the 7 MHz portion of the spectrum. Seven MHz seems to be a haven for unmodulated carriers and heavens knows what else. It just seems that this frequency range is somewhat akin to a bad neighborhood. Anyway, tune your SSB transmitter to either 1.4 or 1.3 kHz above or below the carrier frequency of the unmodulated carrier frequency and transmit.

If you have a friend in another city, have this friend listen to the carrier frequency. This friend will hear what appears to be a severely overmodulated or distorted AM signal with only one sideband—the upper or whichever you have chosen.

Now, what if the carrier is being transmitted from Bauta, Cuba, and information is



KGB headquarters, Moscow, USSR. This is a previously unpublished photo of a building it is strictly forbidden to photograph!



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3228 kHz	7404	10740
4543	9450	11545

German Three / Two Digit

4395 kHz	5315	6708
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Selected Warrenton / Remington Frequencies

4397 kHz		6802
4670 (Also Jupiter, Florida)		6840
5090		10665
5812		11532

Selected Five-Digit Spanish Frequencies

3090 kHz	4445	6810
3280	4780	6815
3690	5080	7527
4125	5135	8090
4030		

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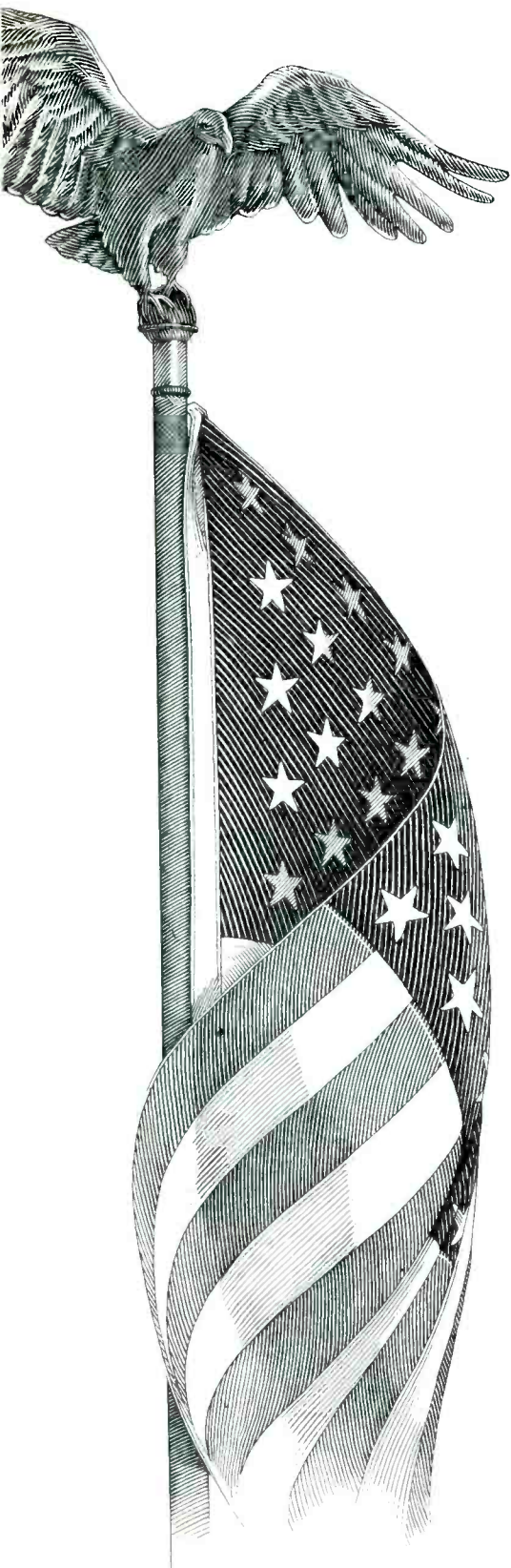
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Scanning The Veterans Administration

The First Trial Compilation of This Federal Agency's Communications System

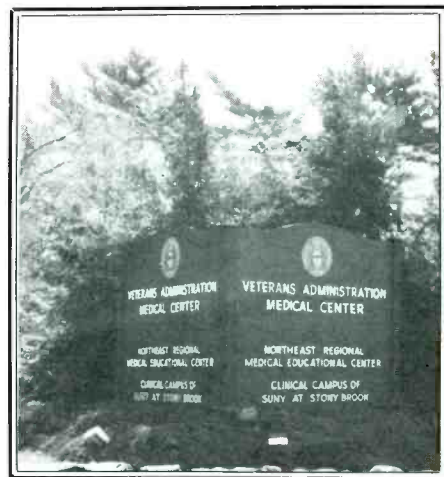
BY TOM KNEITEL, EDITOR



The Veterans Administration (VA) has thusfar been somewhat left in the shuffle and clamor to monitor federal communications. Other than scattered and isolated individual mentions of frequencies at specific VA facilities, this organization's communications have been left out in the cold. This has been pointed out to me by many scanner owners who tried to get the ball rolling by passing along whatever information they had on these operations. Mark J. Landgraf, of Albany, NY provided me with a considerable amount of data he had put together.

More than 105-million veterans and their dependents are potentially eligible for VA services. These services and benefits extend through many levels of insurance, loans, educational benefits, vocational training, disability compensation, etc.

From a communications standpoint, the most relevant VA facilities encompass the agency's hospital and medical care facilities, which comprise the largest health care system in the free world. More than 90% of the VA's employees are associated with medical care in one of the agency's 172 medical centers (hospitals) or related activities. In addition to medical centers, the VA's health care system includes nursing homes, domiciliaries, and clinics. On an average day, al-



Main gate of a sprawling VA facility covering many acres.

most 100,000 inpatients (plus thousands of outpatients) are under the care of the VA health system. The VA also operates the 109 National cemeteries.

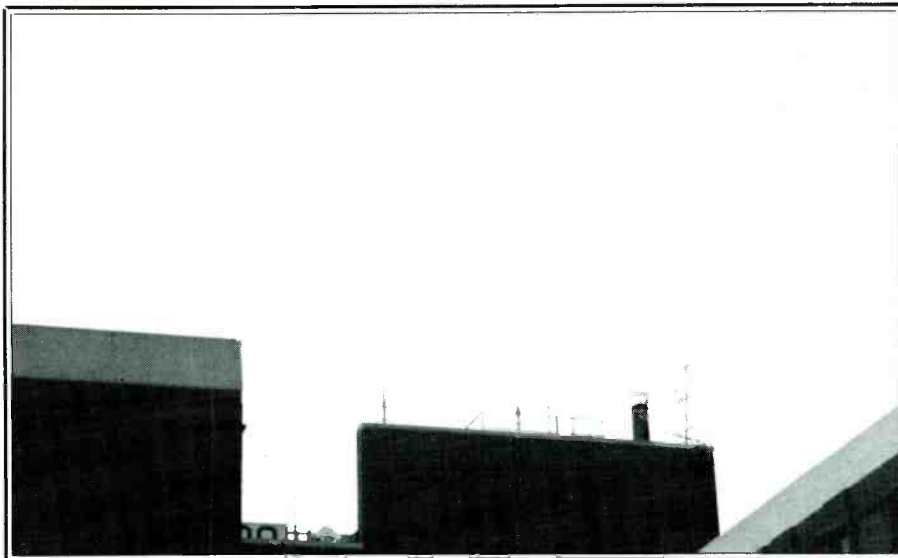
While some VA medical centers are located in the midst of urban areas, others are placed in large and sprawling suburban, or rural sites. In addition to two way communi-



Some VA medical centers are like self-contained mini-cities. They have their own police and fire departments.



Atop this central building at a VA medical center are a number of communications antennas.



Closer view of the antennas capping the tallest building at a VA medical center.

cations between these facilities and their associated ambulances, VA sites use communications for their own police and fire departments, for maintenance of the physical plants, and other general operations. Some medical centers also have one-way radio paging transmissions.

What we have done here is collect and assemble as much information as we have thusfar encountered and been sent. Where possible, the known, presumed, or suspected use for each frequency shown is given. Where the use of a frequency hasn't been determined, it is listed under the general category heading of "OP" (Operations). Note, that although not shown here, some VA medical centers are understood to have helicopter landing pads, with related communications on 123.05 MHz.

The listed VA facilities are shown here accompanied by code letters indicating the type of activity at that location.

Being a trial compilation of communications facilities, no claims are made for completeness or accuracy. Obviously there is information than can be added to what's presented here, as well as some corrections. The hope is that this information will serve as a basic framework upon which, with your help, a more complete and accurate listing can be compiled. Therefore, it is hoped that those who can add frequencies and activity information to this listing will send in whatever data they wish to share.

Abbreviations

AM	Ambulances
CL	Clinic
DO	Domiciliary
EM	Emergency
FD	Fire Department
MC	Medical Center
NC	National Cemetery
NH	Nursing Home Care
OP	Operations
PA	Paging
PD	Police Department

Veterans Administration

Alabama

Birmingham MC	AM 155.34
	OP 163.00 163.375 171.3875
Montgomery MC	AM 155.28 155.34
Tuscaloosa MC NH	AM 155.28 155.34
	OP 163.00 163.375 168.00
Tuskegee	AM 155.34
	PD 155.01
	OP 154.98 162.225 163.375
	173.7125

Arizona

Phoenix MC	OP 164.175
Prescott MC DO	OP 164.10 169.00
Tucson MC NH	OP 164.175 169.00

Arkansas

Fayetteville MC	AM 155.28 155.34
	OP 163.00

Little Rock MC NH	AM 155.28 155.34
	OP 164.175

California

Fresno MC	AM 155.34
	PD 163.00
	PA 168.00
Livermore MC	AM 155.40
	PA 164.00 168.525
	OP 164.50
Loma Linda MC	AM 155.34 155.40
	PD 168.525 168.525
	PA 171.3875
	OP 163.00
Long Beach MC NH	AM 155.34
	PD 168.525 168.575
	PA 171.3875
	OP 170.40
Los Angeles MC DO	AM 155.34
	PD 168.525 168.575

PA 171.3875
 OP 164.175 167.825 419.45
 OP 419.15
 NC
 Martinez MC AM 155.40
 PD 163.00
 PA 169.30
 Palo Alto MC NH PD 164.50
 PA 168.525
 Riverside NC OP 164.175
 San Bruno NC OP 170.00
 San Diego MC AM 155.175 155.325 155.385
 PD 168.525
 PA 163.00
 OP 171.3875
 NC
 San Francisco MC AM 155.34
 PA 164.9625
 OP 168.575
 Sepulveda MC AM 155.34
 PD 168.525 168.575
 PA 171.3875
 OP 166.825 169.275 170.175
 Statewide EM 406.325 409.325 413.825
 417.60
Colorado
 Denver MC OP 166.20 169.00
 Ft. Lyon MC NC PD 154.77 154.905 154.935
 OP 164.50 164.70 166.20
 Grand Junction MC NH AM 155.34 155.40
 PD 155.01 155.37
 OP 162.225 164.175 168.00
Connecticut
 Newington MC AM 155.34
 PA 166.225 168.525
 OP 40.45 167.825
 West Haven MC NH PD 169.125
 PA 164.70
Delaware
 Wilmington MC OP 164.9625 167.825
District of Columbia
 Washington MC OP 164.075 168.325 169.125
 409.325 414.325 414.40
Florida
 Bay Pines MC DO NH NC PD 163.375
 PA 164.175 168.525
 OP 164.20
 Gainesville MC NH OP 163.375 164.175 168.525
 Lake City MC NH OP 163.375 164.10 164.175
 168.00 168.525
 Miami MC NH AM 155.295
 OP 163.375 164.20 164.175
 164.70 168.525
 Riviera Beach CL OP 163.375
 Tampa MC AM 155.325
 PD 163.375 164.20
 PA 168.525 169.60
 OP 164.175 164.20
Georgia
 Atlanta PD 166.20 167.1125
 OP 164.50 170.175
 Augusta MC NH OP 164.175 168.00 168.525
 Dublin MC DO NH OP 163.375 168.525
Hawaii
 Honolulu NC OP 168.525
Idaho
 Boise MC AM 155.28 155.34
 OP 168.00
Illinois
 Chicago MC AM 155.28 155.34
 PD 164.70
 PA 164.175 409.30

OP 165.6875 166.20 166.825
 171.3875
 Danville MC NH OP 164.50 166.20 168.00
 168.525
 Downey AM 155.28
 OP 30.37 166.20
 Hines MC AM 155.28 155.34 155.40
 PA 408.425
 OP 40.45 169.20
 Lakeside AM 155.28
 OP 409.30
 Marion MC OP 163.375 168.00
 N. Chicago MC NH PA 409.30
Indiana
 Ft. Wayne MC NH AM 155.28 155.34
 OP 166.20 173.025
 Indianapolis MC NH AM 155.28 155.34
 OP 164.20 168.00 169.60
 Mation MC NH NC AM 155.34
 OP 164.20 166.20 168.00
Iowa
 Des Moines MC OP 163.00 168.525
 Iowa City MC PA 166.20
 Knoxville MC NH AM 155.40
 PD 155.19 155.61 155.85
 168.00
 PA 162.225
Kansas
 Leavenworth MC NH NC OP 166.20 168.00 168.525
 Topeka MC NH PD 166.20
 OP 164.175 168.00 168.525
 171.3875
 Wadsworth OP 164.175 167.975
 Wichita MC OP 36.16 164.175 168.525
Kentucky
 Lexington MC NH NC FD 153.77 154.37
 OP 162.225 168.525
 Louisville MC NC OP 164.50 168.525
Louisiana
 Alexandria MC NH NC OP 153.98 168.525 171.3875
 New Orleans MC AM 155.28 155.34
 OP 163.00 166.20 409.325
 Shreveport MC OP 168.525 171.3875
Maine
 Togus MC NH AM 155.34
 OP 163.00 168.525
Maryland
 Baltimore MC CL NC OP 40.45 163.05 164.9875
 409.325
 Ft. Howard HO NH FD 46.28 46.46
 OP 46.56 162.5875 164.50
 164.9875
 Perry Point MC NH FD 46.18 46.54
 OP 164.35 164.9875 173.6375
Massachusetts
 Bedford MC NH AM 155.34
 PD 162.225
 PA 168.5375
 OP 168.525
 Boston MC CL PA 164.50 170.175
 Brockton MC NH AM 155.34
 PA 164.20 169.60
 OP 163.00 163.375
 Northampton MC NH PA 167.85
 OP 173.7125
 W. Roxbury MC AM 155.16 155.28 155.34
 PA 164.175
Michigan
 Allen Park MC NH OP 168.00 168.525 408.425
 409.30

Ann Arbor MC AM 155.34
 OP 164.20 168.525
 Battle Creek AM 155.28 155.34
 OP 162.225 162.5875 164.175
 168.00 168.525
 Iron Mountain MC NH OP 163.375 168.00
 Saginaw MC OP 162.225 164.175 168.00
 168.525

Minnesota

Chicago Lakes PA 163.25
 Minneapolis MC NC OP 30.17 162.125 162.225
 St. Cloud MC NH OP 30.19 164.70 168.525

Mississippi

Biloxi MC DO NH NC AM 155.28 155.34
 OP 168.525
 Gulfport OP 168.00 168.525
 Jackson MC NH AM 155.34
 OP 162.225 164.70 168.525

Missouri

Columbia MC NH AM 155.265 155.34
 PD 155.475
 OP 155.73 163.00 169.60
 Kansas City MC AM 155.34
 OP 162.225 168.575
 Poplar Bluff MC NH OP 163.00 164.9625
 St. Louis MC NH NC OP 163.375 168.00 168.525

Montana

Ft. Harrison MC AM 155.28
 PD 39.82
 OP 164.175 169.00
 Miles City MC NH PD 39.82
 OP 164.9625 168.00

Nebraska

Grand Island MC NH PD 39.82
 OP 163.00 166.20 168.00
 Lincoln MC OP 162.225 166.20 168.00
 Omaha MC OP 158.76 163.375 166.20

Nevada

Reno MC NH OP 170.175

New Hampshire

Manchester MC NH PD 162.275
 OP 30.19 166.20

New Jersey

East Orange MC NH AM 155.34
 OP 164.175 169.00
 Lyons MC NH OP 30.35 38.99
 Somerville OP 30.18

New Mexico

Albuquerque MC NH OP 162.225 168.00
 Santa Fe NC OP 162.225

New York

Albany MC NC AM 155.28 155.34 155.40
 PD 169.60
 PA 163.25 164.175
 OP 168.00
 Batavia MC AM 155.175 155.34
 PA 162.225 408.425
 OP 171.2625
 Bath MC NC AM 155.28 155.34 155.40
 PD 39.14 39.46
 PA 162.225
 OP 164.70
 Bronx MC PD 166.675
 PA 170.35
 OP 165.5625
 Brooklyn MC NC PD 164.9375
 OP 409.30

Buffalo MC NH AM 155.34
 PD 168.00
 PA 164.175 166.675
 Calverton NC OP 165.1875
 Canandaigua MC NH AM 155.28 155.34
 PD 169.00
 FD 46.42
 PA 163.375
 OP 168.00
 Castle Point MC NH PD 166.225
 PA 164.50
 OP 155.745
 Farmingdale NC OP 165.1875
 Montrose MC NH PA 168.525
 OP 164.175
 New York MC PA 164.70
 OP 168.525
 Northport MC PA 164.175
 OP 168.525
 St. Albans MC OP 164.9375
 PA 168.00
 Syracuse MC NH OP 163.00 168.525

North Carolina

Asheville MC NH OP 164.175 164.70
 Durham AM 155.28 155.34
 OP 169.60 173.7375
 Fayetteville MC NH AM 155.28 155.34
 OP 164.175 168.525
 Salisbury MC NH NC OP 164.175 168.00

North Dakota

Fargo MC NH AM 155.34 155.40
 OP 163.00 171.3875

Ohio

Brecksville MC NH AM 155.34
 OP 164.20 173.6125
 Chillicothe MC NH AM 155.22 155.28 155.34
 PD 39.38 39.72 39.78
 FD 154.13 154.445
 OP 168.00 168.525
 Cincinnati MC NH AM 155.28
 FD 154.385
 OP 166.20 168.525 409.325
 Cleveland MC AM 155.34
 OP 164.20 173.6125
 Dayton MC DO NH NC OP 164.175 164.70 166.20
 169.275 169.60

Oklahoma

Muskogee MC AM 155.34
 OP 168.525 171.2625 171.3875
 Oklahoma City MC AM 155.34
 OP 163.375

Oregon

Portland MC NC AM 155.34
 OP 164.10 168.525
 Roseburg MC NH NC PD 155.70
 OP 166.225 168.525
 White City DO PD 155.61 158.91
 FD 154.13
 OP 166.225 168.525 169.1125

Pennsylvania

Altoona MC NH OP 163.00 168.525
 Butler MC NH FD 33.82 33.88
 OP 163.00 168.525
 Coatesville MC NH OP 164.175 168.525
 Erie MC NH OP 163.00 164.20
 Lebanon MC NH AM 155.34
 PD 37.24 37.26
 OP 164.175 168.00
 Philadelphia MC NC PA 163.05 164.9625 169.85
 OP 170.475
 Pittsburgh MC NH OP 164.70 166.225 168.00

Wilkes-Barre MC AM 155.16 155.22
OP 164.9625 168.525

Puerto Rico

San Juan MC OP 162.225 168.525

Rhode Island

Providence MC AM 155.28 155.34
PD 171.3875
PA 164.20

South Carolina

Charleston MC OP 164.175 168.525
Columbia MC NH OP 156.015 164.175 168.525

South Dakota

Ft. Meade MC NC OP 164.125 168.00
Hot Springs MC DO NC PD 39.10
OP 162.225 164.175 168.00

Sioux Falls MC NH OP 153.815 163.00 168.00

Tennessee

Chattanooga CL NC OP 168.525
Memphis MC NH NC AM 155.28 155.295 155.34
OP 163.00 168.525

Mountain Home HO DO NC AM 155.28 155.34
OP 166.225 169.00

Murfreesboro MC NH AM 155.28 155.34
PD 37.26
OP 164.175 168.525

Nashville MC NC AM 155.28 155.34
OP 163.375 168.00

Texas

Amarillo MC AM 155.28 155.34
OP 163.00 168.525

Austin OP 164.175

Big Spring MC NH PD 37.18
OP 163.375 168.00

Bonham MC DO NH PD 168.00
PA 163.375

Dallas MC AM 155.325
OP 167.975 168.525

Ft. Sam Houston NC OP 164.10
Houston AM 155.28 155.34
OP 163.375 164.10 164.175
168.00 171.3875

Kerrville MC NH NC AM 155.34
PD 37.18
OP 162.225 168.00

Marlin MC OP 166.20 169.025 169.125
San Antonio MC AM 155.28 155.34
PD 168.00
FD 168.525
PA 163.375

Temple MC DO AM 155.28 155.34
OP 168.525 169.125 171.2625

Waco MC NH OP 40.45 164.20 169.025
169.125

Utah

Salt Lake City MC NH AM 155.16 155.28
OP 155.985 169.00

Vermont

White River Jct. MC NH AM 155.28 155.34
FD 46.38
OP 164.20 168.525

Virginia

Hampton MC DO NH OP 163.0375 164.9625 168.525
Richmond HO NC AM 155.34
OP 164.10 164.9375 166.20
409.325 409.40

Salem MC NH OP 164.10 168.00 168.525

Washington

Seattle MC AM 155.34
OP 162.225 164.10 166.225

Spokane MC AM 155.28 155.34
OP 164.175 166.20

Tacoma MC NH AM 155.34
PD 156.09
OP 166.225 168.00

Vancouver MC AM 155.34
OP 164.9875 169.60

Walla Walla MC AM 155.28 155.34
OP 164.50 169.60

West Virginia

Beckley MC NH OP 163.375 168.525
Clarksburg MC AM 155.265 155.34
OP 168.00 168.525
OP 164.20 164.70
FD 33.90
OP 164.9875 168.525 409.325

Huntington MC
Martinsburg MC DO

Wisconsin

Madison MC AM 155.325
OP 163.00 168.00 409.325
PD 409.325 414.325
PA 164.175
OP 168.525
OP 155.925 164.175 169.60

Tomah MC NH
Wood MC DO NH NC AM 155.34
OP 164.175 168.525

Wyoming

Cheyenne MC NH OP 163.00 168.00
Sheridan MC OP 36.16 164.9875 170.175

All Areas OP 164.675 164.70 166.20
168.00 168.525 406.325
409.325 409.40 414.325
414.40

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CIRCLE 118 ON READER SERVICE CARD

Talking On A Star

BY MSgt. GEORGE W. CRAWFORD

When you hear "meteor burst communications," it sounds like a term in the latest science fiction novel. But it isn't really new—or novel. After all, star dust has been around a long time and the meteor burst program literally uses this dust to fill a void in military communications in Alaska. Civilian amateur radio operators were using this concept to transmit data forty years ago.

When Alaskan Air Command, with headquarters at Elmendorf AFB, Alaska, decided it needed a reliable backup communications system, it called in its experts, the people at Air Force Communications Command's 1931st Communications Wing, also at Elmendorf. The 1931st CW deputy for plans and programs, Lt. Col. Sky Tudor, said, "The person who guided this program from conception to installation is Forrest Rogers, my assistant deputy. He is still involved in this program which has provided an outstanding backup system in case the regular system that AAC uses should fail."

A commercial satellite system provides the bulk of AAC's communications. Radar data from AAC's 13 long-range radar sites, scattered throughout Alaska, is fed to the satellite positioned 23,000 miles above the equator. The data is beamed back to earth, to the Region Operations Control Center at Elmendorf.

However, the earth stations at the radar sites are subject to natural disasters, officials said. In addition, the stations are difficult to protect due to terrain and geographical locations; also, during wartime, they could be jammed or completely incapacitated.

If the earth station at a radar site failed, a link in the vital network would be lost. The site would become isolated and its critical radar data could no longer be fed to controllers at Elmendorf. Prior to meteor burst, there was no backup system.

In 1983, the people of the 1931st began testing meteor burst as a backup system. They selected meteor burst because its inherent characteristics, combined with state-of-the-art computer technology, make it a system which can survive under the worst of conditions; in fact, the system actually improves under some conditions. It is also difficult to jam and intercept. Another plus is that, unlike other communications, it continues to work during heavy sunspot activity. Another plus is the system isn't costly.

The concept relies on ionized electrons in meteor trails to reflect radio waves in the low to very high frequency range. Trails are used to reflect hundreds of brief radio messages each hour at distances up to 1,380

miles. With the number of usable meteors entering the earth's atmosphere—upward of 100 million to three billion each day—the probability of hitting a suitable trail is very high.

The system mechanics are simple. Radar data is collected in meteor burst data buffers at the radar sites. The buffers store the data and wait for a meteor path. Meteor terminals at the sites and the central collection station at Elmendorf continually probe the sky for usable meteor trails. When a trail becomes available, the stored data is transmitted. Computer systems at the collection station assemble and collate the data. The system is designed with a message-holding instruction which allows the radar terminals to retransmit a message if it's received incomplete at the collection station.

Tin City AFS, on the Bering Strait about 90 miles north of Nome, was chosen as a test site. Equipment was installed there at AAC headquarters and testing began in January 1983. Following a full year of successful testing, the 1931st wrote specifications for the system to be installed at all 13 sites and a request for proposal was issued. The 1931st's experts evaluated the proposals and an Anchorage firm, Alaska Communications, was selected to install the system.

People at ALASCOM conducted in-depth surveys at each site to determine what was needed and began design and development of the Meteor Burst system. Actual work began at all sites in May 1985.

The ALASCOM people went to Meteor Communications Corporation in Kent, Wash., for the design, development and manufacture of the communications hardware and computer software. Software had never been developed for such a large and complex Meteor Burst system, and since it's software driven, the project was a major undertaking. Transmitters, receivers and software were built from "scratch." In October 1985, installation of equipment at the sites began.

With the equipment in place, testing began at each site and on Dec. 17, 1986, AACs and the 1931st accepted the system and put it on line. Since then, whenever the satellite system has been down for maintenance, Meteor Burst has been pressed into service.

In April 1987, AAC commander, Lt. Gen. David L. Nichols and ALASCOM executive vice president and general manager, George Shaginaw, officially put the system into use. **PC**

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CIRCLE 31 ON READER SERVICE CARD

Radio Recalled

Leafing Back Through Wireless and Radio History

BY ALICE BRANNIGAN

Time has a way of letting all sorts of unusual facts drop to the floor and roll behind the furniture where they are lost for long periods of time. So it was when I was digging up some information on two major 50 kW American broadcasting stations.

One such case was that of WCFL, Chicago, IL. That's the 50 kW station on 1000 kHz. WCFL went on the air in 1926, as *The Voice of Labor*, being owned by the Chicago Federation of Labor. At that time, it ran 1 kW on 610 kHz, later moving over to 970 with 1.5 kW, then 5 kW. Just before WWII, WCFL moved to 1000 kHz with 1 kW, then (from its Downers Grove transmitter location) it increased power to 10 kW. Later the station began running 50 kW.

A strange tidbit about the beginnings of WCFL appeared in *Radio Cast Weekly* of July 4, 1926. The publication noted that the proposed station, WCFL, was one of twenty-four Chicagoland applicants for a new radio station to operate on a wavelength of 491.5 meters (610 kHz). Because of frequency congestion in the Chicago area (about thirty stations were already in operation by 1926), "no additional channels were available," and therefore all of the applicants were "denied a broadcasting license."

The publication went on to observe, "It is understood, however, that WCFL will go on the air soon, with or without a license and that it will use the channel now shared by KGW, Portland, and WEA, New York." I suppose that in those days, a station could get away with making such a threat. Since WCFL was soon licensed on 610 kHz, it looks like the threat caused the Department

of Commerce to back away from its intransigent position on station licensing.

Thanks to Richard Ispen, Napa, CA for rooting out the information on this well-manicured 50 kW station that, more than sixty years ago, managed to get a broadcasting license by sheer force of determination, threat, and bluff.

Hard To TOP That Tale

Next, we get to Washington, DC's 50 kW station, WTOP on 1500 kHz, long owned by CBS. It may have some odd ancestors locked away in its attic.

What eventually became WTOP, started life in 1928 as WTFF, with a potent 10 kW signal on 1480 kHz from its transmitter in Mount Vernon Hills, VA and studios at 339 Pennsylvania Avenue, in Washington, DC. The licensee of the station was the Independent Publishing Company.

By 1931, Independent Publishing had changed the station's callsign to WJSV, and moved to 1460 kHz, where it shared an uncomfortable co-channel situation with 10 kW station KSTP in St. Paul, MN. WJSV was negotiating with NBC to become its local Blue network outlet (in 1931, NBC's station WRC in Washington had been carrying both the Red and the Blue network programming). For some reason, WJSV didn't finalize arrangements with NBC.

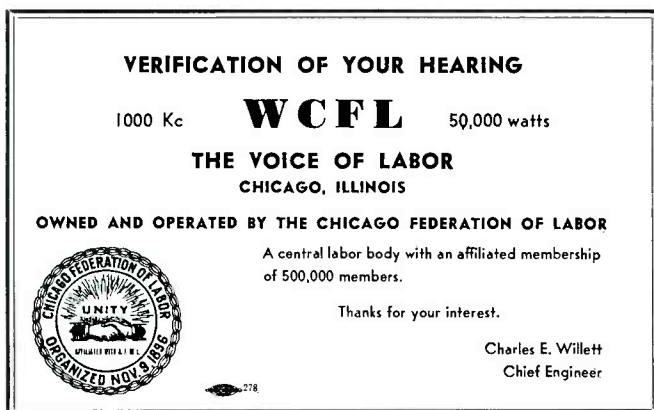
In 1932, WJSV relocated its transmitter to Alexandria, VA. More than a relocation, it was essentially a totally new facility. Even when running at less than full power, and using only a single vertical wire for an antenna, WJSV was being reported by listeners

throughout North and South America, Europe and Australia.

By the mid-1930's, WJSV's ownership changed to the Old Dominion Broadcasting Company (located in the Earle Building) of Washington. It was a "basic station" of the CBS network. Immediately prior to WWII, WJSV's ownership again changed, this time to CBS itself. The station was then running 50 kW on 1500 kHz. CBS also changed the callsign from WJSV (*A Voice From The Heart of The Nation*) to WTOP, since it operated near the TOP of the broadcast band.

The unusual ancestor that fell out of WTOP's family tree when we gave it a shake was the anonymous-sounding Independent Publishing Company. This company was actually the publishing arm of the Ku Klux Klan (KKK)! Of course, that was so long ago, that it's been covered over by many layers of the sands of time. Still, it's a relative that's even tackier than my Uncle Mike, and for years, nobody's admitted knowing him, either.

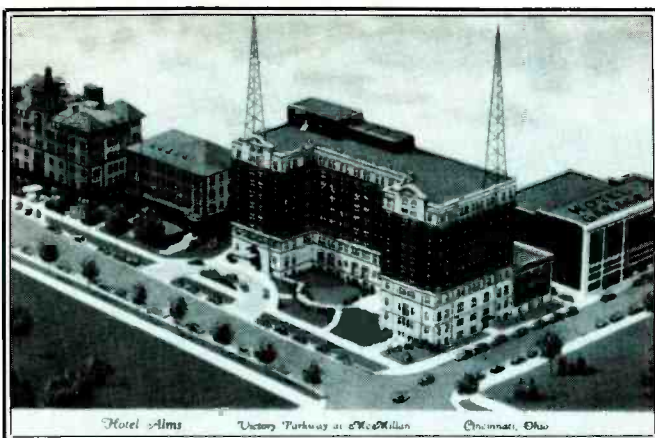
On September 21st, 1939, WJSV recorded (on transcription discs) its entire broadcast day from sign-on to sign-off. I haven't the slightest idea why they did this, and I know of no other station from the 1930's that ever did anything similar. This was more than eighteen hours of programming, which included Arthur Godfrey, the Louis Prima Orchestra, and a special Congressional address by President Roosevelt. The whole thing has recently been transferred to twelve audio cassettes and packaged in a bookshelf album called "Septem-



This WCFL veri is dated 1956, thirty years after the station's owners figured out how to get it licensed when the idea was rejected by the government. (QSL courtesy Tom Kneitel.)



One complete day's worth of WJSV's 1939 programming is now available in a twelve-cassette audio tape set. It covers more than eighteen hours from sign-on to sign-off.



The beautiful Hotel Alms in Cincinnati. For several decades it was the home of station WKRC.

Transmitter: 12th Ave., Port Arthur, Ont.
CKPR
 337.1 Metres - 50 Watts - 890 Kc.

We Thank You for your report on
JAN 2 1931
 our program of _____
 and trust that we may hear from you frequently.

Your report has been checked with our official log and found to be correct, so please accept this card as your verification.

STUDIOS
Royal Edward Hotel
 FORT WILLIAM, ONT.

P. H. Master
CKPR
 DOUGALL MOTOR CAR CO. LTD.
 Owners-Operators

Canadian CKPR was a hotel station at one point in its past. (Courtesy Joe Hueter.)

550 KILOCYCLES RADIO STATION 1000 WATTS

WKRC
 IN THE HOTEL ALMS
 CINCINNATI, OHIO

E. S. MITTENDORF
 GENERAL MANAGER

February 21, 1931

Mr. Joseph Hueter
 1610 N. 18th St.
 Philadelphia, Pa.

Dear Sir:

We are pleased to verify your reception of Station W K R C, on February 18, at 11:30 p. m., at which time you heard our program.

Trusting that you will continue to be a listener to our programs, we are,

Very truly yours,
 STATION W K R C

E. S. Mittendorf
 E. S. Mittendorf
 Station Manager

LD

ASSOCIATE STATION OF THE COLUMBIA BROADCASTING SYSTEM

A 1931 QSL letter from WKRC gave due mention to its hotel address and also displayed the trademark of the Gruen Watch Company. (Courtesy Joe Hueter.)

ber 21, 1939: A Day From The Golden Age of Radio," a/k/a Catalog #28352. It's being offered for \$29.95 (plus \$3.75 shipping) from Wireless, c/o Minnesota Public Radio, 274 Fillmore Ave. East, St. Paul, MN 55107. If you live in MN, please include \$1.80 sales tax.

Music From The Starlight Roof

Speaking of radio's "Golden Era," live performances of dance bands playing at hotel ballrooms were heard after dark from almost every point of the compass. Indeed, in order to facilitate such broadcasts, many hotels either owned radio stations, or else arranged for them to be located on the premises. Not only did the transmission towers sprouting from the roof add a distinctive and impressive look to the structure, the broadcasts from the hotel each evening provided free coast-to-coast publicity.

Hence the popularity of hotel orchestras such as Isham Jones, and Elmer Kaiser's Radio Melody Masters. One of the many stylish hotels widely known on the airwaves was the 500-room, 11-story Hotel Alms, located on Victory Parkway at McMillan in Cincinnati, OH. That was the location of WKRC for many years, and the station's



Frank Orfutt restored this mid-1940's National HRO-5TA1 communications receiver. He says that he's making the world safe for old radios.

two 120-ft. steel towers became landmarks on the hotel's roof.

WKRC started up in 1923, with 1 kW on 710 and 920 kHz under the ownership of the Kodel Radio Corp., 507 Pearl Street. Shortly thereafter, WKRC was running 500 watts on 900 kHz. Around 1928, saw the station move into its Hotel Alms quarters and operating on 1220 kHz. The station's slogan was, "Home of The Gruen Watch," denoting the timepiece company which was headquartered there, too.

By 1929, WKRC was running 750 watts

and timesharing on 550 kHz with station WEAO in Columbus. Not long after, ownership changed to WKRC, Inc., and the station's power was increased to 1 kW. By the 1940's, however, ownership had again changed, this time to the Cincinnati Times-Star newspaper. Through all of it, the location remained the Hotel Alms.

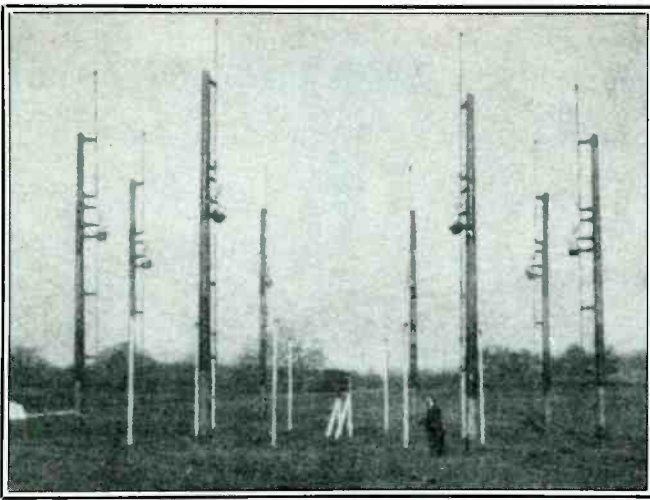
If you live in or near Cincinnati, you'll recognize WKRC. It remains the current local resident on 550 kHz, running 5 kW. It's owned by Taft Television and Radio these days.

Thanks to Joe Hueter, Philadelphia, PA for providing us with a peek at his 1931 QSL letter from this grand old broadcaster.

A Canadian Hotel Station

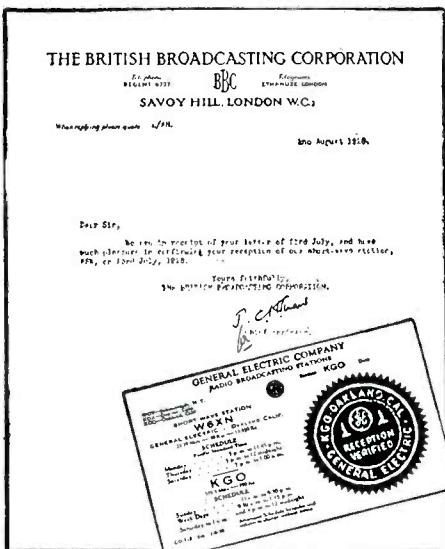
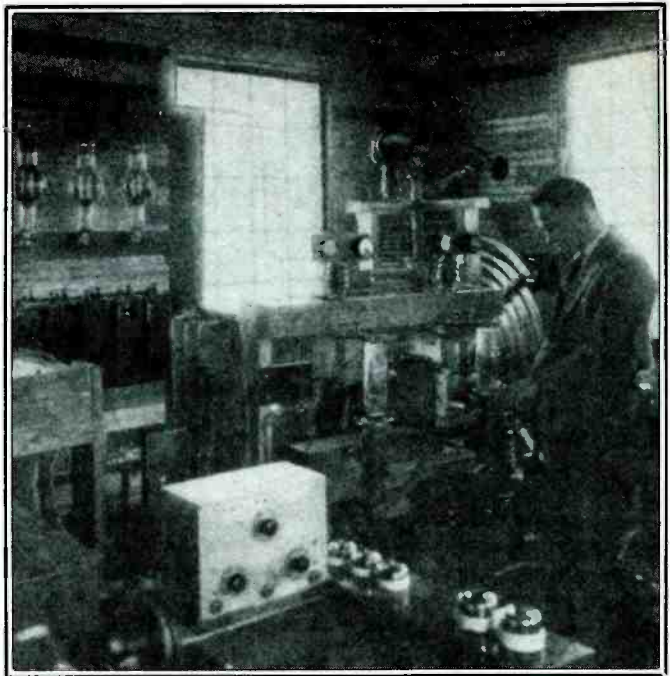
Not that hotel stations were limited to the USA. Canada was equally represented. One excellent example is CKPR.

CKPR, owned by the Midland Broadcasting Corp., began broadcasting with 50 watts on 1120 kHz (later 930 kHz) from Midland, Ont. In 1931, the station was purchased by the Dougall Motor Car Co., which changed its frequency to 890 kHz and its transmitter location to 12th Avenue, Port Arthur, Ont. The studios were moved into the stately 9-story Royal Edward Hotel, Fort William, Ontario.



First radial group of vertical shortwave antennas of Westinghouse station 8XS in 1928. This was at Saxonburg, near Pittsburgh, PA. Station 8XS was the shortwave relay of AM station KDKA.

Interior of 2XI as it looked in early 1924. This experimental shortwave relay station was operated by General Electric on Van Slyck Island, NY.



A 1928 shortwave broadcast veri letter from the BBC's 5SW in Chelmsford, England. The 1929 QSL card is from W6XN in Oakland, CA. W6XN was the shortwave relay transmitter of GE's AM station KGO.

In June of 1933, CKPR changed frequency to 780 kHz where it upped its power to 100 watts. That didn't last very long because by early 1934, the station was told to cut back to 50 watts. By March, CKPR had hopped over to 930 kHz, and in February of 1935, it had again increased its power to 100 watts. A year later, CKPR took its 100 watts and changed over to 730 kHz. In December of 1938 there was a major change as CKPR shifted to 580 kHz with 1 kW.

Although still in Fort William by the mid-1940's, CKPR checked out of the hotel and moved its studios to Radio Hall on South May Street. At that time, the

transmitter site was on Memorial Avenue in Port Arthur. Dougall Motor Cars still owned CKPR.

Eventually the station increased power again to 5 kW (1 kW nights) and, by the late 1960's, relocated to Thunder Bay, Ontario. It's still in Thunder Bay, where it continues operation on 580 kHz with 5 kW/1 kW. A QSL card we have from CKPR is dated 1932 during its stay at the hotel. Thanks again to Joe Hueter for sharing this QSL and view of the hotel.

He Fixed It Up

Frank Orcutt, of Alameda, CA sent along a photo of a National HRO-5TA1 communications receiver. His hobby is restoring classic communications equipment, and then using the finished product.

The National HRO-5TA1 was originally manufactured in 1946 and 1947 and sold for \$275 at that time. It's an 11-tube receiver covering 500 kHz to 30 MHz via plug-in coils. The set was designed with a separate power supply. Frank got this warehouse tweaked and peaked, and reports that it's just like new again!

Pioneer Shortwave Stations

Many who write to this column generally regard shortwave broadcasting as a 1930's development. Yet, in 1920, when Dr. Frank Conrad of Westinghouse began broadcasts from Pittsburgh over 8XK, 8ZZ, and KDKA, he also ran experiments with a shortwave transmitter from his home using the callsign 8XS on 2 MHz. Later in the same year, a more or less regular sked was maintained on frequencies as high as 5 MHz.

The success of those experiments led to the establishment of shortwave relay transmitters at the sites of various Westinghouse broadcast band stations. In 1923, KFKX

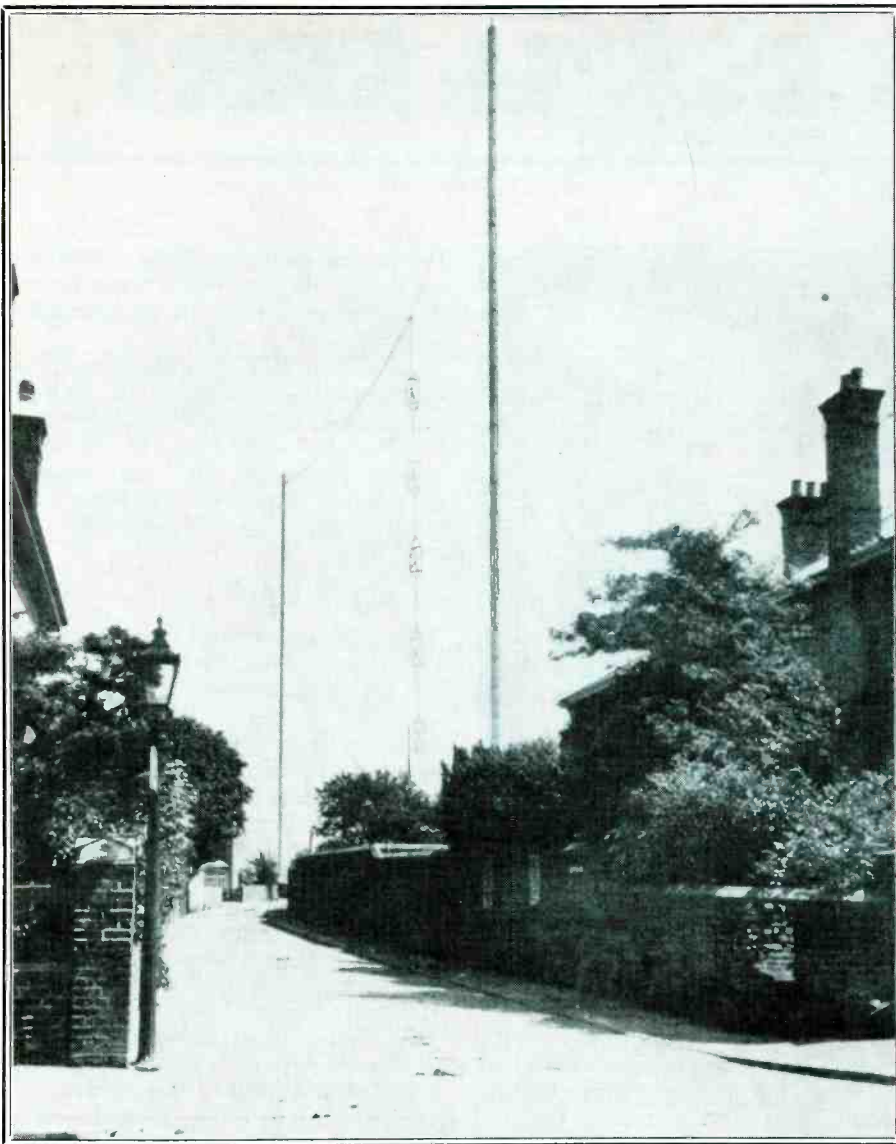
(1040 kHz, 5 kW) in Hastings, NE was licensed to function as a relay station for rebroadcasting the 8XS shortwave signals from Pittsburgh. Eventually, signals from 8XS were rebroadcast by stations in London, Melbourne, and Johannesburg. The BBC's rebroadcast of 8XS on New Year's Eve, 1923, was probably the first special international broadcast.

Meanwhile, General Electric in Schenectady, NY was also experimenting with shortwaves. In 1923, GE had a 3 MHz 20 kW transmitter in operation using newly designed water-cooled transmitting tubes. This station was located on Van Slyck Island in the Mohawk River and was licensed as 2XI.

The first shortwave broadcaster on the Pacific Coast was GE's station W6XN at Oakland, CA. It commenced broadcasting in 1928, relaying signals from KGO (780 kHz, 5 kW) in Oakland on 9145, 12850, 13605, and 18290 kHz using 10 kW into an omnidirectional antenna.

The first known European shortwave broadcaster was PCJJ at Eindhoven, Holland. The station began operating in 1927 on 9590 kHz and evolved into station PCJ or, as it is presently known, Radio Netherlands. In the fall of 1927, just after PCJJ started broadcasting, the BBC established station 5SW at Chelmsford on 12 MHz with a 7.5 kW transmitter. This transmitter was later shifted to 11750 kHz and became 25 kW station GSD in Daventry. That was on December 18th, 1931.

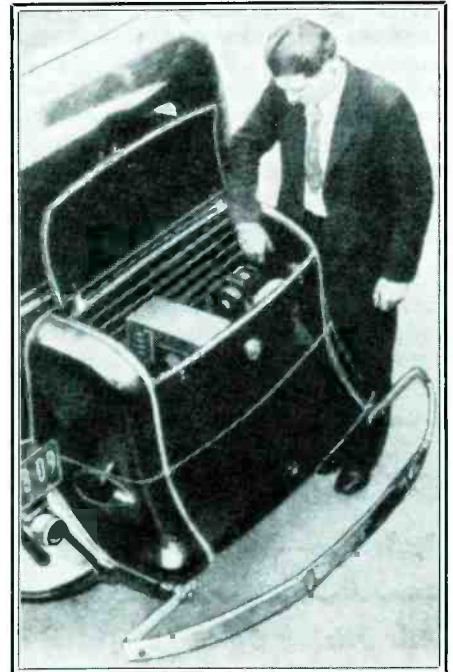
On a more modest scale, station NRH (later TI4NRH) at Heredia, Costa Rica began broadcasting on May 4th, 1928. A frequency of 7690 kHz was used with a QRP 7.5 watt transmitter. Still, it received reports from throughout the world. TI4NRH was on the air for many years and it, as well as its operator (Amando Cespedes Marin), be-



A rare 1929 view of the 5SW antenna at Chelmsford. Test transmissions were tried between 5700 and 12500 kHz, and 5SW eventually selected 12000 kHz for most transmissions. In July of 1929 a demo transmission from 5SW was picked up in New York and sent out over the NBC Network.



Dispatching over W2XAT, a spectacular experimental police radio station operating on "UHF" (60 MHz) in 1934.



W2XAT's mobile units had trunk-mounted equipment. The rear bumper of each vehicle served as a disguised antenna.

came famous within, and much revered, by the DX community. T14NRH deserves a special story and we hope to prepare just such a feature at some time in the future.

UHF Police, Sort Of

In the 1930's, most police communications took place between 1500 and 2500 kHz. Since those were all one-way dispatching systems, new 30 MHz two-way systems were being developed and tested. The equipment used on 30 MHz was still considered experimental in the early 1930's. At least one bold police department tried forcing the frequency frontier to new heights.

That was in the community of New Rochelle, NY. In 1934, the police there obtained a license for experimental station W2XAT to be used for police communications on 60 MHz. Not only was the frequency outrageous, the entire W2XAT system was years ahead of other contemporary police radio facilities.

This system used two frequencies and permitted full-duplex AM-mode operations so that the officer in the patrol car and the dispatcher could converse simultaneously, just like over a 1980's cellular telephone. A 'phone patch at headquarters could also permit cars to communicate directly with any telephone subscriber. Another feature of the base station was the "candlestick" type telephone used as the microphone. By lifting the earphone piece from the hook that supports it when not in use, the transmitter would be activated. French type telephone handsets in the police cars were also able to activate the transmitting equipment when lifted from the cradle.

There was a dial on the mike/telephone at headquarters that could be used to select any one of several remote transmitter/receiver sites for improved coverage. Another unique feature of this system was that the mobile installations were all suitable for undercover surveillance work since there were

no antennas to be seen.

While the mobile units of 30 MHz systems had required the use of 7 ft. whip antennas, the 60 MHz system was designed to be used with the vehicle's rear bumper as a disguise antenna. During the installation of the transceiver in a vehicle's trunk, the rear bumper was re-installed using insulated bushings to separate it from the frame of the car. The lead from the radio equipment was then attached through one of the bushings. Apparently, the fact that such signals were horizontally polarized, didn't create much of a problem for the 15-watt mobile rigs since the system worked well. Maybe in 1934, nobody had told them that it was a bad idea!

As I said, the whole experiment was very advanced for 1934. It incorporated useful features included only in modern systems used today by a few larger metro police departments.

See you next month? Hope so!

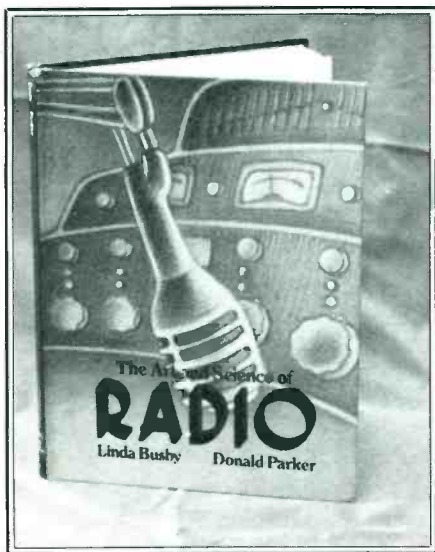
BOOKS YOU'LL LIKE!

BY R. L. SLATTERY

An Overview

The Art and Science of Radio, by Linda Busby and Donald Parker is an interesting overview of broadcast radio. In 214 pages, containing many photos and charts, the authors cover all of the important aspects.

Beginning with the development of radio, the authors discuss the technical basics of radio and signal propagation. They then delve into the equipment and systems used in broadcasting. Also included, is how to get into writing for broadcast, broadcast journalism, elements of programming, station ownership and operation, radio sales and promotion, government regulations relating to broadcasters. The book is topped off with predictions for radio's future.

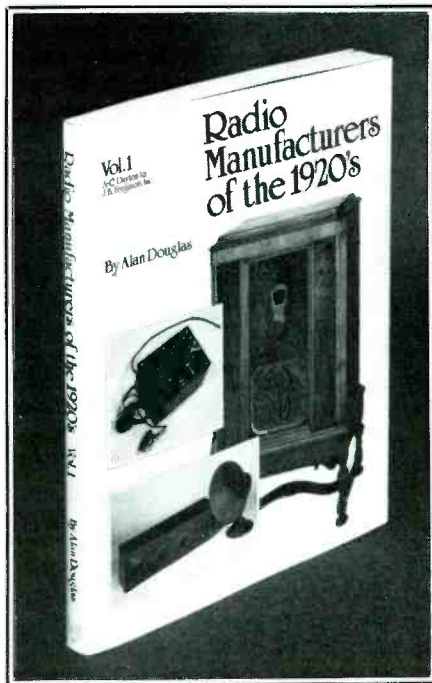


This is a hardcover book with a bibliography and suggested discussion topics at the end of each chapter. One of the authors is on the staff of a university, the other is an industry executive. The book was probably written for the primary purpose of being a basic introductory college-level text on broadcasting. As such, it is an excellent way for the average communications hobbyist to explore the many facets of the fascinating broadcast industry. For any person who is considering the possibilities of embarking on a career in radio broadcasting, this would make a fine primer.

The Art and Science of Radio comes from Allyn and Bacon, Inc., 7 Wells Avenue, Newton, MA 02159. Check with the publisher for details of availability.

Early Radio Manufacturers

The 1920's were the years when the foundations of America's great radio industry were being laid; a time when ambitious



folks were jumping into the business to seek their fortunes in that wonderful new gadget known as "radio."

A new series of books is being issued to chronicle the leading radio manufacturers of the early era. This represents a life-long interest on the part of author Alan Douglas. His extensive reference library is the source of the information contained in his series, which is called *Radio Manufacturers of the 1920's*. Arranged alphabetically (by company name), the first of a projected three-volume set has just been issued. The other two volumes will follow in the near future.

Volume 1 covers A-C Dayton to Ferguson. Every firm of any significance is examined, and we assume that when Volume 3 comes out it will end with Zenith.

Each company included is covered in considerable depth, with many photos of its products, facilities, founders, etc. This is supplemented by reproductions of ads for the firms' equipment. The book's text covers the entire history of each company, including its founding, successes, problems, and eventual fate.

Many wonderful anecdotes are included, such as the fact that the Don Juans of the 1920's (known at the time as "sheiks") were the inspiration for the development of the single-knob tuning control. They didn't want to have to use both arms to tune their radios.

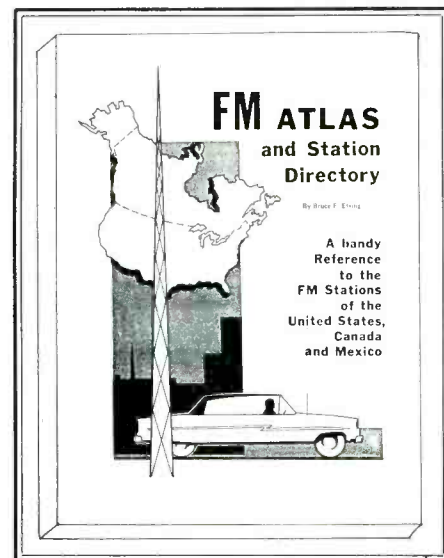
Volume 1 of this series contains hundreds of photos. It is a 225-page large-format book printed on high quality slick paper.

This volume contains a wealth of information for persons interested in that era of radio equipment production. It's beautifully done.

Volume 1 of *Radio Manufacturers of the 1920's* is available for \$19.95 for the soft-cover edition, \$29.95 for the hardcover edition. Postage/handling in the U.S.A. is \$2, or \$2.50 to Canada; N.Y. State residents add sales tax. Order from Vestal Press, P.O. Box 97, Vestal-123, NY 13851-0097.

Fee Fi Fo FM

It was almost two years ago that Bruce Elving prepared the 10th Edition of his popular *FM Atlas and Station Directory*. Since then, many stations have changed callsigns, some have gone silent or changed equipment parameters and/or program formats. During that period, 480 new FM stations and 390 new translators became active in the 88 to 108 MHz band. These many changes called for a total revision of the *FM Atlas*, and that has just appeared in the new 11th Edition. Whether a person is an FM DX enthusiast, or someone who enjoys FM broadcast listening strictly for its entertainment and educational value, or if a person is an active member of the broadcasting industry, the *FM Atlas* is the authoritative directory of stations and their operations.



While the previous edition was 164 pages in length, the 11th Edition fills 176 pages. The atlas section has FM maps showing the exact locations of stations, frequencies and callsigns for American and Canadian stations. The directory listings show American, Canadian, and Mexican FM broadcasters, as well as American translator stations. Ar-

ranged by locations, and cross indexed by frequency, information given includes call-signs, antenna height/polarization, whether commercial or non-commercial, if the station transmits an SCA/SCMO subcarrier, whether the station shares time on its frequency, programming and SCA formats, transmitting power, and if it transmits in stereo or mono. There isn't much more than that anyone would ever need to know.

Bruce also devotes editorial space to a basic discussion of the present state of FM broadcasting, as well as trends for the future. He also allocates space to current FCC attitudes towards FM broadcasting and stations. In all, the new *FM Atlas* is an up-to-date information source on everything taking place in the 88 to 108 MHz portion of the spectrum.

The new revised 11th Edition of *The FM Atlas* can be ordered from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. Price is \$9.95 per copy, plus \$2 postage/handling to addresses in USA/Canada/APO/FPO. New York residents please add 75 cents sales tax.

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THE MONITORING MAGAZINE

They're Here!

MODERN ELECTRONICS

FUN PROJECT BOOKS

You'll want these two exciting project books, packed with complete plans for building a wide variety of useful electronic devices. The *First and Second Books of Modern Electronics Fun Projects*, both Howard W. Sams publications, are now available.

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All projects are based on material published in *Modern Electronics*, with updates and revisions. They've been built and tested by the original authors. Chapters are divided into Intro To Electronic Projects, Home Electronics, Audio/Video Electronics, Security Electronics, Computers, Test Equipment, and Electronic Designing. There's something for everyone!

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- * Surround-sound audio enhancer
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- * Home convenience—selectable phone ringer musical tunes, touch-sensitive light controller.
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	Second Book of Modern Electronics Fun Projects	\$12.95 ea.	
		Total	
		*Shipping	
		Grand Total	

*Shipping charges \$2 per order. Orders processed day received, but please allow 30 days for delivery.

Build A Simple Multiband Mobile Monitor Antenna!

Do It Yourself All Band Scanner Antenna For Your Car

BY PATRICK M. GRIFFITH

Having been an avid public safety band monitoring enthusiast for over fifteen years, and a professional public safety dispatcher for over seven years, I routinely listen to my scanners over 100 hours per week. Since I spend a great deal of time traveling in and around Denver, much of my monitoring is done from a mobile standpoint.

Over the years, I have tried a multitude of mobile antennas, some of them factory made and some home made. One of the most efficient antennas that I have used for simultaneous monitoring of the three primary business and public safety bands (30 to 50 MHz, 144 to 174 MHz, and 440 to 512 MHz) is also one of the most simple and least expensive, the *harmonic tuned whip*.

If properly tuned, a single whip antenna can provide good efficiency on all three bands at once and, in some cases, can rival the performance of even the most expensive factory made single band gain antennas. This multiband performance is ideal for

today's multiband scanner's. Here is how it works and how you can build one.

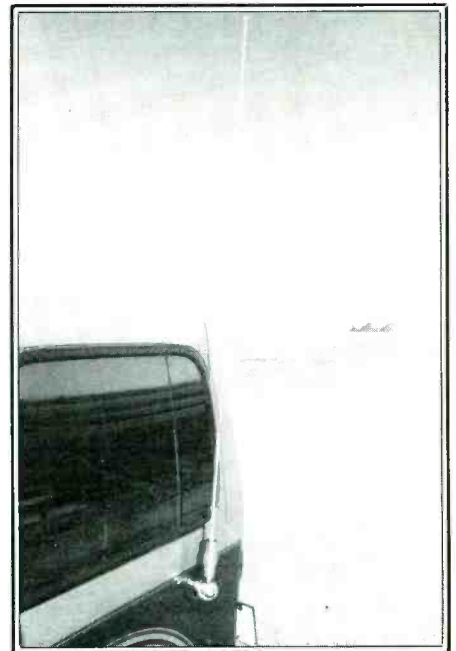
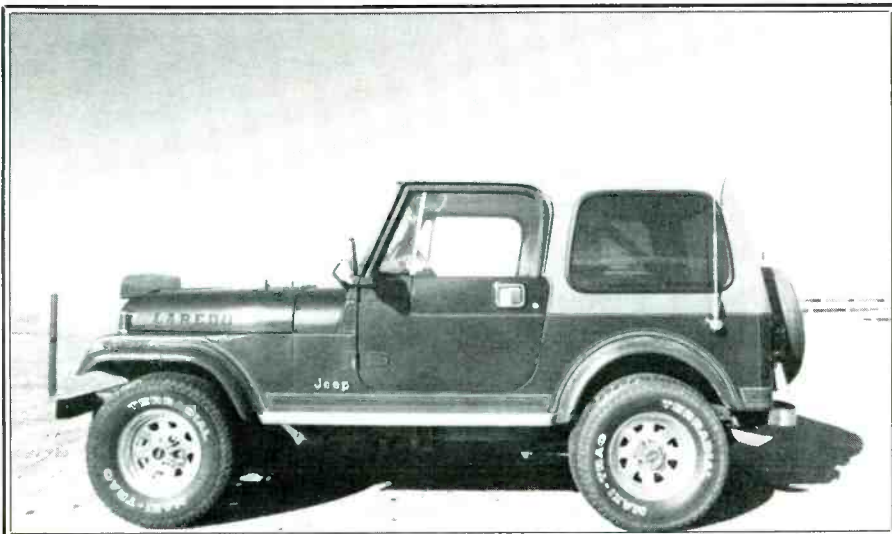
It has been well known for many years that a dipole antenna, operated at a higher odd multiple of the design frequency, will exhibit current distribution and reactance patterns acceptably similar to that of a half wave dipole tuned to the actual operating frequency. This is known as *harmonic operation*. A common example of harmonic operation is the long wire antenna used by many hams and SWL's. A long wire antenna is essentially one half of a dipole antenna with a good ground system taking the place of the 'missing' half. Although these antennas are usually externally tuned to resonance by some type of antenna tuner, they often exhibit a good match and offer high performance at the higher frequencies without an external tuner. This occurs because these antennas are several times longer than the 'half dipole' they replace resulting in harmonic tuning at the higher bands.

What makes harmonic operation of particular interest to the monitor or scanner enthusiast is the simple coincidence (or is it) that the center of the VHF high band and the center of the UHF band are exactly odd multiples of the top of the VHF low band. Therefore, a $\frac{1}{4}$ wave whip antenna tuned to the top of the low band at 50 MHz, which will give good performance over that entire band, will also be resonant as a $\frac{3}{4}$ wave antenna at 150 MHz (the 3rd multiple of 50 MHz) and as a $\frac{9}{4}$ wave antenna on 450 MHz (the ninth multiple of 50 MHz).

Using the standard formula ' $234 \div F$ (frequency in MHz) = length (in feet)', we find that a $\frac{1}{4}$ wave antenna tuned to 50 MHz is 4.68 feet in length or approximately $56\frac{1}{4}$ inches.

For those who have no need for high performance on the VHF low band, or those who don't desire a long whip on their vehicle, the same technology could be used to tune a $\frac{1}{4}$ wave whip to the VHF high band

Photos show a tri-band harmonic tuned whip antenna in use on the author's vehicle. The thicker section directly above the spring is a commercial 'slider' unit that allows the whip length to be adjusted for fine tuning.



and also use it as a 3/4 wave whip on the UHF band. Such an antenna would be only 18 3/4 inches in length.

Harmonic operation is nothing new, but is rarely applied to use in the higher frequency bands, although, this author has witnessed the use of harmonic operation by a law enforcement agency. Several years ago when I was a public safety dispatcher in north-central Illinois, a rural county sheriff's department near my home upgraded their radio system and switched from low band simplex communications, to a high band repeater system. Being a small department with a limited budget, their patrol cars were expected to last for a longer period of time than those of most agencies. The sheriff didn't like the idea of pulling off the old low band whips which would leave gaping holes in the side of his almost new cars. And then, to add insult to injury, new holes would have to be drilled in the roofs for the new high band antennas. Besides, the sheriff reasoned, the old low band whips were still in perfectly good condition. The county radio technician satisfied both the desires of the sheriff, and the requirements of the new radio system, with harmonic operation. The low band whips were left in place and simply retuned to act as 3/4 wave antennas on the new high band frequency. This actually gave excellent performance because the longer antennas actually provided a small degree of antenna gain. It also had the interesting side effect of confusing the local monitoring enthusiasts who couldn't figure out why the department had shifted off of their old low band frequency and why we couldn't find their new low band frequency!

This author has been using a harmonic tuned antenna for several years, and I have found it's performance to be excellent. In the mountainous terrain in and around Denver, signal strengths can vary greatly as a mobile unit passes through valleys and weak signal 'shadow' areas. The apparent gain that this antenna supplies on the VHF high band and UHF frequencies seems to help me receive some signals in areas that I previously could not. And performance is more than acceptable on the VHF low band where signals tend to follow the terrain and 'bend' into the valleys and around obstructions. For it's low cost and simplicity and it's high performance on the three major bands, this antenna has my vote as the best for mobile monitoring. Why not try it for yourself?

The author has been a monitor enthusiast since the late sixties and has been employed as a public safety dispatcher for over 7 years. He is currently employed by the City of Federal Heights Colorado as a COMMUNICATIONS SPECIALIST. He is a member of the Associated Public Safety Communications Officers, Inc. (APCO) and of the American Radio Relay League (ARRL). He is also a frequent photographic contributor to POP-COMM. In February of this year he was chosen as Colorado Dispatcher of the Month by the Colorado chapter of APCO.

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BROADCAST TOPIK

BY MARK MANUCY, W3GMG

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

There is another new network on the horizon, actually it has already dawned. January 4th, 1988, saw the beginning of the Sun Radio Network on a 24 hour basis. This is a talk radio network based in Tampa, Florida. The network actually began several months earlier, operating usually less than 24 hours. As of the middle of March, the network had grown to about 140 affiliates, adding about three a week. The birth of Sun was through the efforts of Chuck Harder, who has a talk show called For The People. He helps consumers solve different problems they might encounter, from the quite simple, to a complicated rip-off. Chuck also does a daily two hour show on WMCA in New York. Through the use of satellites, it sounds like he is in the studio of WMCA even though he may be sitting in the studio of SUN Network overlooking a swimming pool, or gazing on to the Gulf of Mexico from the window of his home in Cedar Key, Florida.

The Sun Network's "home" is a converted house which has been modified many times by Chuck's right-hand man, Bill Muncy. The house has a center "court" between the two wings, which has the swimming pool, and a large patio for the employees and guests to enjoy. The front part of the house has the bookkeeping and offices for the "For The People" organization and the back half contain two studios and master control for the operation of the programming. Behind master control is network and affiliate operations. It is really fun to see a small staff of people actually make a 24 hour network operation run. Knowing how the New York operations work, makes this upstart network really exciting. One fun item to throw out is the rent Sun pays for their "house". It is less than a top New York based network executive would pay for a parking place.

Of the 140+ stations on the Sun "line", about a dozen are with them 24 hours. The vast majority of the other stations are with them over 30 hours per week. At this point in time, they have about twice the number of affiliates as ABC Talk radio! Check around the dial and tune in on one of the newest national networks, operating from your neighborhood garage. It's called yankee ingenuity and we'll see how far it will carry. They've made a big dent in talk radio so far.

By the time you read this, I'll be putting the final touches on my DX'ing plans for a trip to Florida this July. Not only will it be necessary to check on old friends, but I'll also have more new ones to find this year. There continues to be more new stations coming to the airwaves all the time.

When I take a trip, even if it's over a route I've traveled many times before, I always check for new stations. There is the possibility that one was missed in updating a list. If you are driving, just make minimum written notes so as not to endanger the passengers. At the top of a small note pad write the current location (5 mi south of Mytown, Md.). Then if you're using an ETR, write the frequencies in a vertical list. If you hear a call mentioned, or other type of ID, write it beside the frequency. Maybe you can ask someone else in the car to do the writing for you. Remember, the search buttons on the ETR's are not the way to DX. They will not stop on every station, the weaker ones will never be heard. With the MTR radio, the best thing to do is start at one end of the dial, and work your way to the other end. The approach I take with any radio is to know what stations I want to hear, search them out first, in order from top to bottom, or vice-versa. Make a list in order of frequency and check them off as you pick them up. If you want to make programming notes while traveling please use these hints. If you are driving, either stop the car, or have someone else drive. Have someone else take the notes or dictate to them or to a tape recorder. These procedures apply to AM or FM.

The new terms mentioned in the preceding paragraph should be added to your vocabulary. ETR stands for "Electronically Tuned Radio" (digital) and MTR is the "Manually Tuned Radio".

For a rough guide, plan to hear one kilowatt AM's about 20 miles either side of the highway you travel, five kW up to about 50 miles, and 50 kW's over 50 miles. For FM, the three kW stations are generally good for about 20 miles, 20 kW stations up to 40-50 miles, and 100 kilowatts over 50 miles. However, with the FM stations, their tower height and the terrain affect reception tremendously. The quality of the radio will also determine the distance you will be able to

hear a station. If you use an auto radio, any noise from the engine or nearby power lines will also reduce the hearing distance (DX).

Each month there are questions about catching more stations when DX'ing. If you go back through some issues of the last year or so, there were other tips on DX'ing. A lot of us, I'm sure, do not have access to a car radio while on vacation. One may not have control of the auto radio (Dad does) or the spouse (or Mom or Dad) is driven nuts by the constant "station hopping". "Why can't you settle on one clear station?" Even though they don't understand, I do. This month let's spend a little time trying to catch the stations we can with the radio we have.

Here's how: The best answer is perseverance. You have to hang in there, sometimes for long hours waiting to hear a certain station. This separates the DX'ers from the listeners. I have found the best way to DX with an average radio is with a station listing book. When I started as a kid back in the '40's, I used White's Radio Log. I never have kept a separate log, just underlined the station in the book. Today, there are several inexpensive guides available. While I am speaking of AM DX'ing, bear in mind that most of these techniques apply to FM and SW as well.

With the station listing in hand, one can determine the "general range" of one's radio by looking at the power listing of the different stations in the guide. For FM, not only the power, but the antenna height is important. Here's why it is important. A 10 kW FM station with an antenna at 1000' will be heard a much greater distance than a 20 kW station whose antenna is only 200' high. Without the tower height, it is difficult to determine which station is the more powerful.

The antenna "pattern" holds the same mystery on AM, however, this is much more complicated than listing the height of a tower. Whether a station is DA-1 or DA-2 still doesn't tell you in which direction the power is going. It would be very difficult to



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Station Update

Call	Location	Freq	Pwr	Ant
AM STATIONS				
WLPF	Lake Placid, FL	730	.5/0	DA-D
WBIX	Jacksonville Beach, FL	1010	50/50	DA-1
WGL	Fort Wayne, IN	1250	2.3/1.5	DA-2
KCUE	Red Wing, MN	1250	1/.11	NDA
WHLD	Niagara Falls, NY	1270	5/.144	NDA
KHRT	Minot, ND	1320	2.5/.310	NDA
WRIV	Riverhead, NY	1390	1/.064	NDA
KASI	Ames, IA	1430	1/.032	NDA
WJJL	Niagara Falls, NY	1440	1/.055	NDA
WNYG	Babylon, NY	1440	1/.038	NDA
KMMX	San Antonio, TX	1480	.5/.09	NDA
WPXE	Starke, FL	1490	.65/1	NDA
WLBN	Lebanon, KY	1590	1/.024	NDA
FM STATIONS				
WNUB-FM	Northfield, VT	88.3	.285	-488'
New	Beaumont, TX	89.7	9.0	567'
New	Tyler, TX	91.3	10	541'
K228CY	Redding, CA	93.5	.01	KXGO
KRLT	S. Lake Tahoe, CA	93.9	5.0	-340'
New	Staunton, VA	94.3	3.0	328'
New	Winslow, AZ	95.1	100	993'
KJQN-FM	Ogden, UT	95.5	75	2292'
New	Lahoma, OK	95.7	3.0	328'
WAQX-FM	Manlius, NY	95.7	25	500'
WKKD-FM	Aurora, IL	95.9	2.85	338'
WKAL-FM	Rome, NY	96.1	7.4	600'
WWJO	St. Cloud, MN	98.1	100	1000'
KQKQ	Council Bluffs, IA	98.5	100	1086'
New	Rockdale, TX	98.5	3.0	328'
WGGQ	Waupun, WI	99.3	2.5	360'
WOMP-FM	Bellaire, OH	100.5	48.4	500'
WXXP	New Kensington, PA	100.7	50	492'
WFMZ	Allentown, PA	100.7	11.5	1047'
New	Coleman, MI	101.5	3.0	328'
New	Franklin, VA	101.7	1.49	469'
New	Galva, IL	102.5	3.0	328'
New	Edgewood, OH	102.5	3.0	328'
WSYA-FM	Montgomery, AL	103.3	100	1007'
New	Royal Center, IN	103.7	3.0	328'
New	Rapid City, SD	104.3	100	986'
WNCK	Woonsocket, RI	106.3	1.15	518'
New	Galena, IL	107.5	3.0	328'

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.

describe the antenna pattern of the station in words.

What is needed is a mini-map showing each station. It would be very expensive to show every station on each channel! Wow! Maybe this is some of the mystique of BCB DX'ing! AM DX'ing is by hit and miss as far as knowledge of the stations antenna pattern is concerned. If you have a station directory listing the operating parameters of the stations, all you will know is whether the station uses a DA or not. DA stands for directional antenna. The suffix 'N' means

night only, '1' means same pattern day and night and '2' means different patterns and or powers day from night. The suffix 'D' means the daytime station is directional. However, there are a few stations which are directional during the day and non-directional at night. Knowing whether the station is directional might explain not hearing it.

Once you have established the approximate "hearing range" of your radio then with the guide book you will be able to know which stations you should be able to hear. The guide book also gives an edge on identi-

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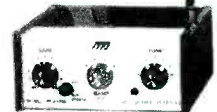
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Call Letter Changes

Location	Old	New	Location	Old	New
AM Stations			FM Stations		
Sarasota, FL	WWZZ	WSGX	Hilo, HI	New	KHHI
Atlanta, GA	WKLS	WNIV	Honolulu, HI	New	KOAU
Elkton, KY	WSRG	WOAM	Hiawatha, KS	KHIA	KJTH
Alexandria, LA	KDBS	KRRV	Alexandria, LA	LRRV	KRRV-FM
St. Cloud, MN	KNSI	KCLD	Hurlock, MD	New	WAAI
Camdenton, MO	KADI	KFXE	Nantucket, MA	WXJY	WNTX
Las Vegas, NV	KFMS	KRAM	New Prague, MN	New	KCHK-F
Fulton, NY	WOSC	WZZZ	St. Cloud, MN	New	KCLD-FM
Rome, NY	WKAL	WFRG	Oxford, MS	New	WOXD
Erie, PA	WBLQ	WLKK	Magee, MS	WSJC-FM	WMJW
Sioux Falls, SD	KYKC	KKFN	Pascagoula, MS	WPMO-FM	WKNN
Milan, TN	WXKY	WWHY	Jamestown, MO	New	KSDJ
Cibolo, TX	New	KWRP	Cozad, NE	KOOC	KAMI-FM
Conroe, TX	KMUV	KPHD	Rome, NY	WKAL-FM	WFRG-FM
W. Valley City, UT	KRGO	KZQQ	Syracuse, NY	WRRB	WRHP
Crozet, VA	WKZN	WJLT	Canton, OH	WTOF-FM	WBXT
Agudilla, PR	WUNA	WNOZ	Edgewood, OH	New	WZOO-FM
			Lawton, OK	KRLG	KKRX-FM
			Medford, OR	New	KOPE
			Bedford, PA	New	WAYC-FM
			Ellwood City, PA	WFEM	WKST-FM
			Cayce, SC	WZLD-FM	WYYS
			Darlington, SC	WDAR-FM	WMWG
			Sioux Falls, SD	KIOV	KKLS-FM
			Crozet, VA	WJLT	WJLT-FM
			Spotsylvania, VA	New	WYND-FM
			Tacoma, WA	KNBQ	KBSG
FM Stations					
Mena, AK	KUOL	Kena-FM			
Searcy, AK	KSER	KWCK-FM			
Phoenix, AZ	KLZI	KESZ			
Chester, CA	New	KRKQ			
Seaside, CA	KMBY	KMBY-FM			
Coachella, CA	KCHV	KRCK			
San Francisco, CA	KKCY	KHIT-FM			
Jesup, GA	New	WLPT			

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

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fyng the station since you will know what the call letters are. Check with our update section for recent changes.

A big help in hearing stations is a pair of headphones. It is difficult to hold a radio to your ear and see the dial at the same time. The headphones also eliminate outside noises and allow better concentration on the job at hand. All portable radios of today have built-in loop antennas which are directional. In order to hear a station which is close to a stronger station it is sometimes better to turn the radio so that the loop "nulls" the stronger station. If the desired station is in the same direction than that won't work. Normally the loop is in the same plane as the long side of the radio. This means that stations off the ends of the radio will be favored and those to the front and back will be in the "null". The directional pattern of the loop is a figure "8" with the "X" centered on the radio. Picture laying the "8" on top of the radio with the two loops of the eight extending off the ends of the radio. The loops are the favored directions. Tune in a station and rotate the radio. You should hear the signal fade and get strong as the radio is turned. If you can make the signal fade completely, then leave the radio in this position and tune slightly to either side of the station and see if you can find a station you haven't heard before. Try this trick on all your local stations. By moving the rod antenna on a portable FM radio

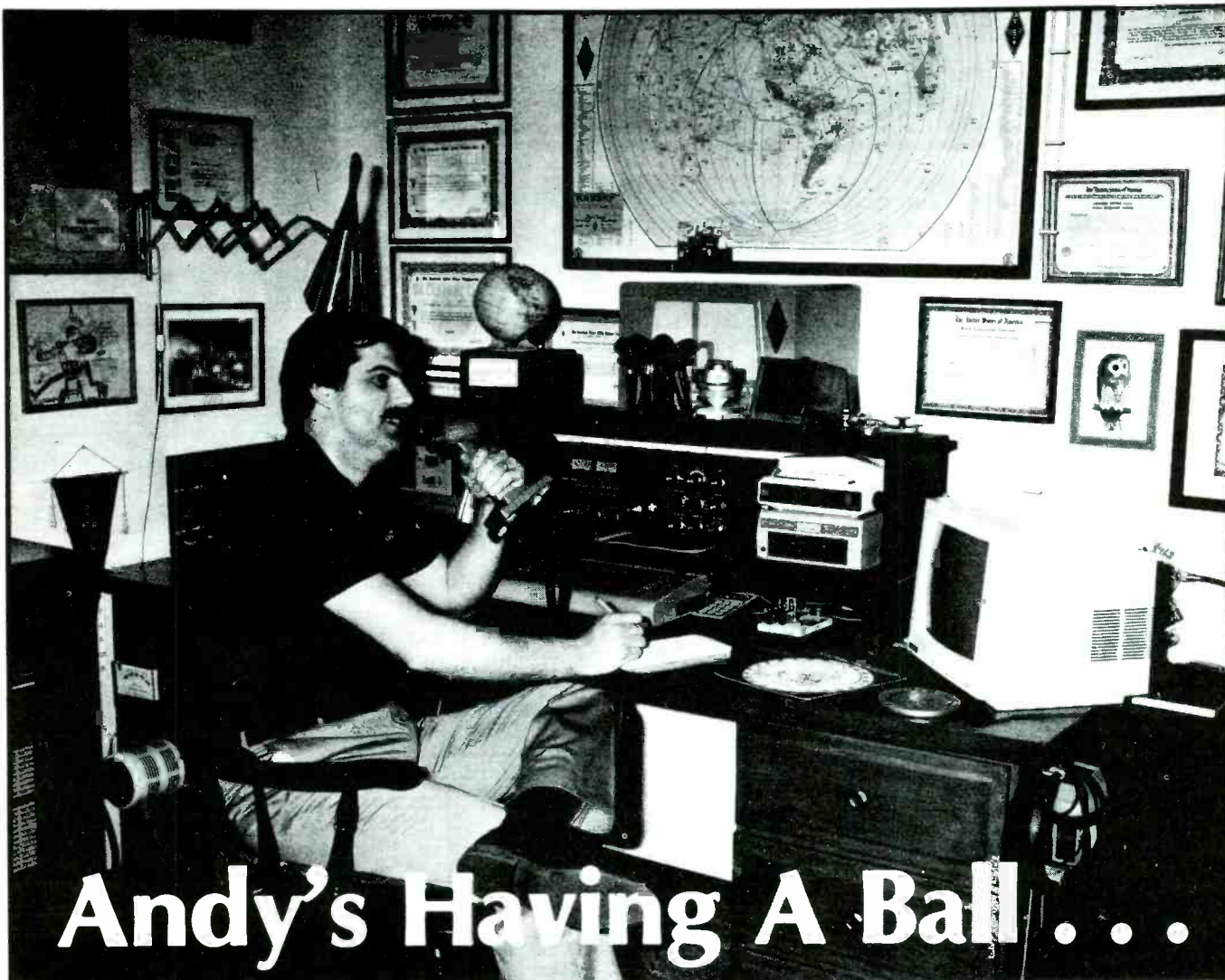
to "null" the station the same trick might be applied.

Joe Means sent a bunch of coverage maps to me that I'll share with you in the months ahead. Two this month are quite interesting, WOW and KFAB, both of Omaha, Nebraska. WOW is on 590 with 5,000 watts while KFAB is on 1110 with 50,000 watts. Study the maps closely and notice which station has the greater coverage. Which station has the most power and which station has the lower frequency?

Martin Blaise claims qualification for the AM/FM DX'ers club by having people call him a . . . , well I won't say what he did! In the list of stations he recently heard from 165 miles out is the same situation I just mentioned above. WOAI on 1200 with 50,000 watts and KTSA on 550 with 5,000 watts, both in San Antonio. Martin reports hearing KTSA, weak and WOAI, very weak. On the FM band, he reports hearing one station KRTS, on two frequencies! They are probably using a translator to provide better coverage in an area where they might not have a good signal. Normally the frequencies are a bit closer together but you might call the station and ask them. The difference between 104.9 and 92.1 is 12.8 which is not a normal IF frequency, but there is still a chance there might be something strange going on with your radio.

Well, that's about all the tape I have this month. PC

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11025: RPTIH, Horta Navrad, Azores, w/RORY, foxes & 1-0 count at 2136, 850/50N (J.M., KY).
 11027.5: 9PL, Kinshasa Aero, Zaire w/RORY at 0032, 425/50N (Manthey, NY).
 11070: LOR, Puerto Belgrano Navrad, Argentina w/tfc at 0115, 170/75N (Sullivan, CA).
 11100: CAK, Santiago Aero, Chile w/RORY at 1256, 800/50N (Williams, CO).
 11302: Dulra Uno Juliet w/RORY & SGSG to Bravo Cinca Victor, then "urgente" & "rutina" msgs at 0300, 850/75N (Gleitzi, PA).
 11308: Un-ID w/"this is a test message this is a test message ABCDE QRR test" iun sev times 2135-2145, ASCII 425/75R & ASCII 425/50R. Tfc (on USB? - Ed.) mentioned Baeing a/c 5131 & 7405 being on the ground at separate sites (J.M., KY). Intercepts in our Communications Column this month re Baeing a/c appear related to this-- Ed.
 11476: HMS70, KCNA Pyongyang, N. Korea w/nx in EE at 0330, 240/50N (Sullivan, CA).
 11484: NAU, USN San Juan, PR w/foxes, counting, & test at 1445, 850/75R (Hetherington).
 11638: DDKB, Hamburg Meteo, FRG at 0256 w/coded wx, 425/50R (Kneitel, NY).
 12002.5: RUTA, un-ID sta, w/foxes & counting around 1900, 850/75N (Agnew, DE). Could RUTA be a taunting indicator for USN at USAF in Spain? Any guesses as to an ID here?-- Ed.
 12131.5: Un-ID w/timetable of arr/dep in SS & mention of Puerto de Chaparrito. Was 170/57N at 2337 (Gleitzi, PA). This is one of several Mexican gov't stas regularly using this freq-- Ed.
 12323: CSY55, Santa Maria Aero, Azores w/msgs at 1840, 850/50N (Hetherington, FL).
 12750.1: NMF, USCG Boston, MA w/wx at 0020,

FEC (Sullivan, CA).
 13084: NMO, USCG Honolulu, HI clg CQ in FEC at 0030. Also at 0231 on 13084.5 (Sullivan, CA); Clg CQ in FEC at 0330 (Kneitel, NY).
 13524: Y1072, INA Baghdad, Iraq at 1521 w/nx in EE, 425/50R (Kneitel, NY).
 13530: RVW53, Moscow Meteo, USSR w/coded wx at 1523, 900/50N (Kneitel, NY).
 13571: HBD68, a Swiss embassy somewhere w/tfc at 0820, ARQ (Agnew, DE).
 13580.1: HMK25, KCNA Pyongyang, N. Korea w/nx at 0837, 250/50R (Sullivan, CA). Language?-- Ed.
 13603: Guessing at MFA, Rome, Italy w/foreign currency exchange rates, FEC at 1833 (J.M., KY).
 13995.5: VOA Manrovia, Liberia w/nx in EE at 0131, 425/75R (Sullivan, CA).
 14371: HZJ, Jeddah, Saudi Arabia w/wx at 1635, 425/50N (J.M., KY).
 14373: Y1L73, INA Baghdad, Iraq w/nx in EE at 1537, 425/50R. Was //13524 (Kneitel, NY).
 14428: CLP1, MFA Havana, Cuba w/5F tfc to CLP5 at 1638, 425/50N (J.M., KY).
 14460: GYU, RN Gibraltar w/foxes & RY's at 0005, 425/50N (J.M., KY).
 14540: MKK, RAF London, England w/RYI's & testing at 1322, 85/50N (Kneitel, NY).
 14568.2: HMF32, KCNA Pyongyang, N. Korea w/RORY at 0300, 500/50R (Sullivan, CA).
 14615: CLP1, MFA Havana w/circulars & nx to Embacubas at 2330, 425/50 (Don Schimmel, VA). Welcome to these pages, Don!! Don is the curator of PapComm's Communications Confidential column-- Ed.
 14776: RPTI, Ponta Delgada Navrad, Azores

w/RORY & foxes at 1557, 425/75R (Kneitel, NY).
 15842: Un-ID sta w/5L tfc at 1322, 425/75R (Kneitel, NY).
 15875: 5LA25, VOA Manrovia, Liberia w/nx in EE at 0010, 425/75R (Sullivan, CA).
 15876: CLN, PL Havana, Cuba w/RORY at 0239, 425/50R (Sullivan, CA). Npt PL, but CLN488 of PTT Havana on its Shanghai circuit-- Ed.
 15865: RBK79, TASS Moscow, USSR at 1256 w/nx in EE, 850/50R (Kneitel, NY).
 15930: RB178, TASS Moscow, USSR w/nx in FF at 1310, 425/50R (Kneitel, NY).
 16042: MKK, RAF London, England w/RYI's & foxes/counting at 1315, 425/50N (Kneitel, NY).
 16182: Un-ID w/RORY & foxes at 2154, 170/50R (J.M., KY). Two possibilities are SKP31, Stockholm Radio 2, & SDUB, Varberg R., both in Sweden-- Ed.
 16221.8: DEAT76 w/RORY, foxes & QTC at 1315, 225/50N. Interpal or waltzi? (Williams, CO). Interpal usually uses ARQ. It's an FRG-type callsign, & the only FRG sta listed here is one of Frankfurt Main, which is the receiving end of a reduced-carrier SSB (R3E) circuit from 9RL365, Kinshasa, Zaire-- Ed.
 17204.8: NMC, USCG San Francisco, CA clg CQ in FEC at 1800 (Sullivan, CA).
 17215: GKP6, Patishead R., England w/predictions of optimum wkg freqs, & Telex #'s at 1915, ARQ (Gleitzi, PA).
 17225: CUL, Lisbon R., Portugal w/"Cultex" svc to ships (QXK 16688.5) at 1645, ARQ (Hetherington).
 17525: OLV3, CTK Prague, Czechoslovakia w/nx in EE at 1340, 425/50N (J.M., KY).
 17570: RTU44, TASS Moscow, USSR w/nx in FF at 1344, 425/50R (J.M., KY); Same at 1321 (Kneitel).
 18040.2: ZRH, Cape Town Navrad, RSA clg NMN at 1334, 850/75R (Kneitel, NY).
 18191: CLN603, PL Havana, Cuba w/nx at 2211, 425/50N (Sullivan, CA). Language?-- Ed.
 18421.5: LBQ54, Telam Buenos Aires, Argentina at 1935, 650/50R (Sullivan, CA). Xmsn details not reported-- Ed.
 18514.6//18515.9: VOA Manrovia, Liberia w/RORY to VOA Greenville, NC at 1307, FDM 85/75N (Williams, CO).
 18586: PTT(?) Havana, Cuba w/RORY & foxes tagged "GLOBE HAV" at 1301, 425/50R (Williams).
 18697.5: DFS70L3, DPA Hamburg, FRG w/nx in EE at 1342, 425/50N (Kneitel, NY).
 18756: Un-ID Interpal sta w/tfc in FF at 2255, ARQ (Sullivan, CA).
 18785: FT578, DIPLO Paris, France w/nx in FF at 1352, 425/50N (Schimmel, VA).
 19064: CLP1, PL Havana, Cuba (type of xmsn not reported-- Ed.) at 2030, 1000/50N (Sullivan, CA). CLP1, which is MFA/Havana doesn't send PL nx-- when it sends nx it is ID'd as Prensminrex-- Ed.
 19390: Y7A76, MFA Berlin, GDR w/RORY at 1616, 425/50N (Williams, CO).
 19438.5: LOR, Puerto Belgrano Navrad, Argentina w/notices to mariners at 1820, 170/75N (Sullivan, CA).
 19865: YZJ4, TANJUG Belgrade, Yugoslavia w/nx in SS at 1444, 425/50R (Schimmel, VA).
 20132: Un-ID w/crypto after XBxBXB at 1337, 425/75N. The header & setting seems to indicate MFA Belgrade, Yugoslavia-- Ed.
 20204: YZJ, TANJUG Belgrade, Yugoslavia w/nx in EE at 1312, 425/50N (J.M., KY); Same at 1334 (Kneitel, NY).
 20416.9: Possibly CLP1 wkg Angola at 1725, 425/75N (Schimmel, VA). My guess is it's CLP45, Embacuba Luanda, Angola wkg CLP1-- Ed.
 20350: NBA, USN Balboa, Panama w/RORY at 1720, 850/75R (Schimmel, VA).
 20834: CLP7, Embacuba Brazzaville, Congo w/telegram in SS to CLP1 at 1656, 425/50 (Schimmel, VA).
 22052.6: CLP23, Embacuba Lagos, Nigeria w/5L tfc at 1507, 510/75R (Hetherington, FL).
 22565: PCH75, Scheveningen R., Netherlands on standby in ARQ at 1608 w/CW ID (Manthey, NY).
 22574.5: NMO, USCG Honolulu, HI w/unclcs tfc at 1943 in FEC (Sullivan, CA).
 22578: GKP7, Patishead R., England w/ARQ phasing sigs & CW ID at 1612 (Manthey, NY).
 22771: NBA, USN Balboa, Panama w/RORY & SGSG - counting at 1818, 850/75R (J.M., KY).
 25012: FDY, French Air Force, Orleans, France w/RORY & le bricks at 1600, 425/50N (Hetherington, FL).

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CIRCLE 116 ON READER SERVICE CARD

Choosing a Scanner Antenna

For monitoring nearby stations, especially strong repeaters, nearly any scanner antenna will do, even the plug-in whip. But for reception of distant stations, especially on today's new generation of wide-frequency coverage receivers, you need a quality outdoor antenna.

Tip: The Grove ANT1B Scanner Beam is the highest gain, wide-frequency-coverage antenna available for scanners. You can rotate it to pick up distant stations and still receive local signals all around. Always use good, low-loss coaxial cable like RG-6/U, not RG-58/U.

By Bob Grove
WA4PYQ

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CIRCLE 117 ON READER SERVICE CARD

Paramedic Rescues Child From Submerged Car

Paramedic Richard Strange of Rowlett, Texas, knew there was a child in the submerged car, but his arms and legs were numb after twenty minutes in the icy waters of Lake Ray Hubbard. The car was laying upside down with only its wheels above the water surface, and Strange hoped that the child was still breathing in an air pocket.

SCAN PUBLIC SERVICE AWARD

The child, 4-year-old Morgan Murphy, had been travelling to the babysitter with her mother, Karen, 7-year-old sister, Leslie, and 2-year-old brother, Stewart.

Karen Murphy was driving her Toyota Corona along a snowy road when she came upon a patch of ice at a 90-degree turn in the road.

"I put on my brakes but I just kept going straight and went into the lake," Murphy told the *Dallas Times-Herald*. "It turned over when I hit the water. It happened so slow it was like I was standing there watching it."

(Morgan) was still in the car. She said she heard

Strange, a firefighter for nine years but a paramedic for only four months, was among the first to arrive on the scene. He was summoned by a nearby resident who saw Murphy rescue Leslie and Stewart.

"When I got there, the mother called to me immediately," Strange said. "Running down the hill, she told me the child (Morgan) baby cry. I passed her and rang straight into the water."

Karen Murphy said that as her car slowly sank, she thought about other people who had gone into the lake, including a mother and two children who had died a month earlier in a similar accident.

She said that as the water came into the car, she had time to think about how to get out. She crawled out of the window, waded around to the passenger side, and was able to open the door and pull out her daughter, Leslie. After putting Leslie on top of the car, she was able to get Stewart out, but couldn't find Morgan.

She screamed for her daughter, and heard her reply "Momma! Momma!"

"I was yelling, trying to get her to reach for me and tell me where she was," Murphy told the *Times-Herald*. "I had pinpointed where I thought she was, but she wasn't there."

Then there were no more cries of "Mom-

ma!" That's when Murphy began to get scared.

As motorists stopped to help, Strange and other paramedics arrived. Strange jumped into the lake and frantically groped and kicked through the open door as he tried to find Morgan.

I wasn't coming out until I found that kiddo," Strange said. And he did find Morgan, stuck between the back and front seats with her head in a pocket of air.

But Strange was almost immobilized by the minus-17-degree wind chill and the cold water, so he was unable to reach in and rescue the child. Paramedics Earl Gregory and Bill Bonny, two other Rowlett firefighters, broke a window and reached in and plucked the four-year-old to safety. Morgan was not injured.

"I only did what anybody would have done," Strange said. "It was a team effort. I didn't have time to worry about me. There was too much to do."

For his large role in the rescue of Morgan Murphy, Firefighter Richard Strange will receive the SCAN Public Service Award, which consists of a special commendation plaque and a cash prize. For making the nomination, John L. Crist of Dallas, Texas, will also receive a plaque. Congratulations to both of you.

Best Equipped

The marine ship-to-shore bands and RTTY are among the favorite targets of R. Kelly of Oakland, California.

His well-equipped shack includes a Realistic Pro-2004 scanner, Regency HX-1200 handheld scanner, Cobra 2000, Icom R-7000 and Kenwood TS-440S-AT. Specialized equipment in the shack consists of an Info-Tech M-6000 multi code unit, M-605 FDM unit and an M-800 fax unit.

The antenna lineup comprises a Delta DX sloper, D-130 discone, Sigma-4 11-meter vertical, homemade 11-meter four-element beam, CLP-5130-1 log periodic 50-1300 MHz beam, and a good old 100-foot longwire.

The computer? It's an Atari 800 terminal



SCAN PHOTO CONTEST WINNERS

used with an Advanced PK-232 terminal unit and the M-6000. An Atari 520 is also used but the 800 emits less RFI.

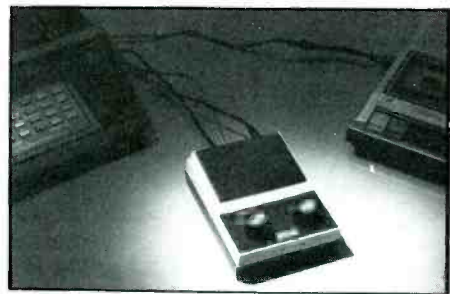
Best Appearing

Thomas Henderson of Newark, Ohio, says that he never leaves home without a pocket scanner. Judging from this photo, he never stays at home without one either.

Thomas uses a Bearcat 180, Bearcat 145XL and Sears 10-channel hi/low VHF-

UHF scanners. He also has a Cobra 28 CB radio and 12-volt converter, and Bearcat Weather Alert radio. As far as the pocket scanners are concerned, Thomas has Realistic and Sears models, along with a Bearcat 50XL programmable that isn't shown here.

He also mentions that the scanners operate 24 hours a day, seven days a week, but doesn't say whether he sleeps with any of these scanners!



Winners in the Photo Contest this month receive the BMI "NiteLogger" tape recorder activator. Plugged into a cassette recorder and a scanner, it gives a complete record of all communications with no "dead time" on the tape. If you would like to enter the contest, just send a sharp black/white print to SCAN Photo Contest, P.O. Box 414, Western Springs, IL 60558.

SCANNER SCENE

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

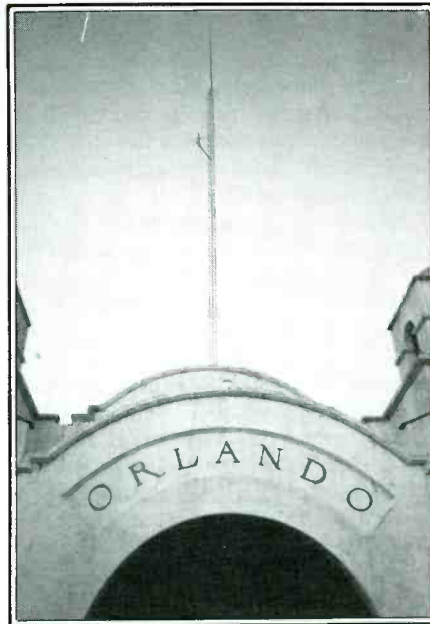
While you are away on vacation this summer, did you wish there was a way to monitor your scanner at home so you could keep abreast on what is going on around town? Do you wish there was a way to hear ambulance calls for your town while you are at work? Is there a way to keep an easy log of all fire calls, even if you're watching TV or mowing the lawn?

Sure, there's a way. And it's the laziest way, too. It's called tape recording. And while you can't exactly plug your cassette recorder into your scanner and expect it to work, there are techniques to refine scanner recording.

First of all, if you were to hook up your scanner directly to your tape recorder, and set it to record, there would be a lot of dead air on that tape about a half-hour later. In addition, when you listened to the tape, you'd have to listen to all that dead air as well. In order for you to eliminate all that dead air, you need to set up the recorder so that it will switch on the record only when it heard a transmission on your scanner. By recording only when there is a transmission, you cut out all the dead space in between transmissions. While a police officer in your town may get dispatched to a call by radio at 10:30 a.m., he or she may not call in their arrival on the scene until 10 minutes later. If you were recording in true time, you'd have to listen to 10 minutes of dead air. But by recording voice-actuated (also known as VOX), you crunch out the dead time and hear only the transmissions that were made over the radio. In other words, you'd hear the officer being dispatched and immediately after, his or her arrival on the scene.

If your scanner listening time is limited, and you don't listen while working around the house or if your employer doesn't like you listening while at work, recording your favorite channels can inhibit your listening time to just minutes a day. For instance, if you were to record your local fire dispatch channel, at the end of each day you could sit down for a few minutes and listen to all the fire calls that were called in throughout the day. If your time is very limited, this is an excellent time-saver.

There are a couple of basic ways in which to get scanner calls onto your tape recorder. On some scanners, there is a TAPE OUT, or RECORD jack, on the front, or back, of the radio. These jacks provide high-level audio, and its level is unaffected by where you set the volume control on the radio. Even if you turn down the audio all the way on the scanner, there is a set level that is being piped through the TAPE OUT or RECORD jack. This level is enough to drive a VOX recorder or VOX unit hooked up to a tape recorder.



This radio tower is located at the Orlando, Florida, Amtrak station. The tower apparently is used for communicating with trains. Photo courtesy of Paul J. Horak of Niles, Ill.

If you already have a cassette recorder, you have half the equipment you need. If you aren't into building your own circuits or relays, the easiest way to get audio from your scanner to your recorder is use of the BMI Nitellogger device. The Nitellogger comes fully equipped with all wiring and


plugs. You simply take the single plug and plug it into the EXTERNAL SPEAKER or HEADPHONES jack on your scanner (not the TAPE OUT or RECORD jack, the device's instructions warn), and plug the other two dual jacks into the REMOTE and MIC jacks on the cassette recorder. Turn up the volume on the scanner to a good level and you're all set to record.

There are two controls on the Nitellogger: monitor volume and delay time. The monitor volume simply allows you to listen to what you are recording through the external speaker on the device. In fact, for unattended recording, you can turn the volume all the way down. The delay time control allows you to adjust the time from which the recorder will stop recording after it hears a transmission on the scanner. The time varies from a second to several seconds. By setting it for a couple of seconds, it allows the recorder to catch reply transmissions without missing the first syllable or word. A VOX light on the unit also lets you know the unit is hearing audio from the scanner. It's quite easy to adjust the audio by tightening the squelch so you get static and watching for the light to flash or by tuning in an active channel such as the weather frequency on your area.

If you don't already own a cassette recorder, you may want to consider purchasing a VOX tape recorder. They're made by various manufacturers, however, the easiest to obtain is probably from Radio Shack. You can run a jumper cable (easily made by purchasing a couple of plugs and some

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wire) from the scanner to the recorder. If you plug the cable into the TAPE OUT jack on the scanner, you will have a stable level of audio feeding into the scanner. However, if you use a headphone, or external speaker jack on the radio, be sure you adjust the volume on the radio to a point that is high enough to kick on the tape recorder when it hears a signal.

For you ICOM R7000 owners, if you have the EX-310 voice synthesizer installed in your radio, a switch on the back of the radio puts a voice "tag" of the frequency on the recorder each time it kicks on. For instance, if the R7000 stops on 151.385 MHz, the voice synthesizer will read out "one-five-one-point-three-eight-five-zero-MegaHertz" over top the transmission so you can identify what frequency your scanner stopped on when you listen to the tape later.

For more information on the Nitelogger, write to: Benjamin Michael Industries Inc., 65 East Palatine, Prospect Heights, IL 60070.

So sit back and watch the ball game, take a ride, or go to sleep. But don't forget to switch on your scanner and tape recorder.

We'd like to hear from you here at POP- COMM. Send in any listening tips, frequencies, questions and photos. Write to: Chuck Gysi, N2DUP, Scanner Scene, Popular Communications, 76 North Broadway, Hicksville, NY 11801.

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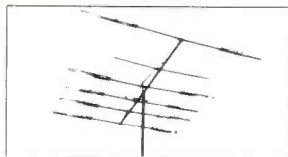
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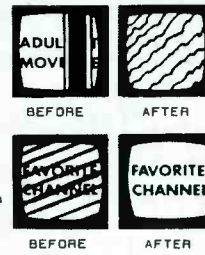
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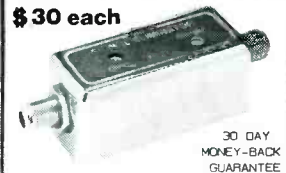
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CIRCLE 28 ON READER SERVICE CARD

INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

Space Shuttle Crew Comms

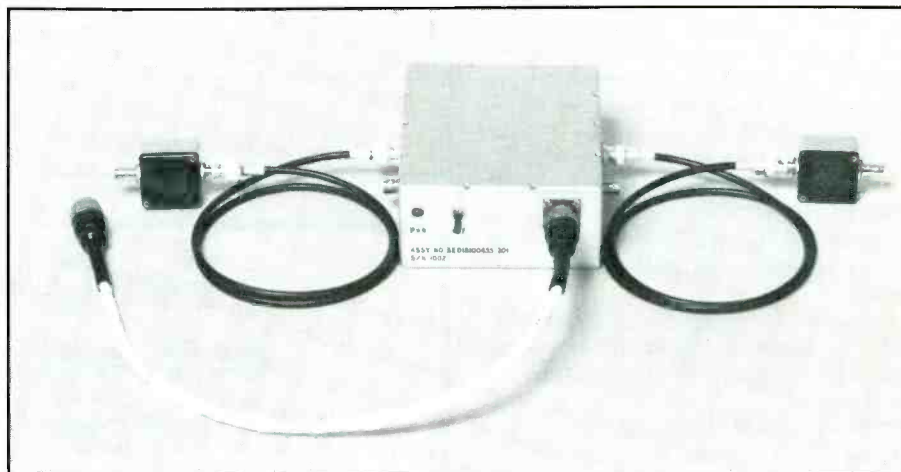
Imagine yourself aboard the space shuttle, 200 miles above the surface of the Earth and traveling at 17,000 mph. You rapidly pass from sunlight into total darkness and back again. Your synthetic environment keeps both decks of the shuttle livable. The lower deck contains crew lockers, the upper and aft deck contain both the cockpit and the mission operation controls. Both decks are crowded with equipment. Up to eight astronauts working in shifts occupy the shuttle.

With the noise of equipment, experiments and the occasional sound of retro-rockets, the crew requires a dependable means of communicating with each other and ground control. The first crew comm system consisted of a light weight headset and boom mike which was connected to a switchbox carried on the crew belts. This unit had volume and channel controls. The drawback was that they connected into the Shuttle's audio distribution system by a long cord. While this system was dependable, it also limited movement.

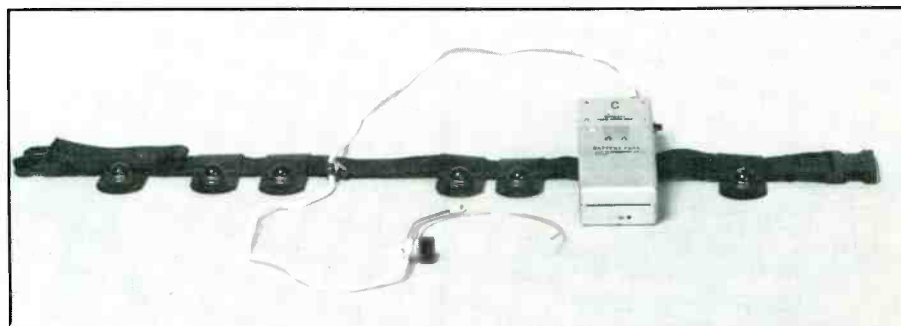
To overcome this restriction, NASA designed a wireless RF crew comm system which is presently used on all shuttle's. It has the same boom mike headset, but the switch box on the hip has been replaced by what Johnson Space Center Engineer, Nancy Olsen, calls a high power RF transceiver. In this case though, the high power is only a few watts. This cordless system was a welcome improvement for the astronauts, but it too, has it's limitations. The biggest for the crew, is a problem common to VHF/UHF communications, dead spots. Places where the RF signal is simply blocked.

The Defense Department has a much greater concern than the dead spots. In fact, it's the exact opposite, leakage. Though the RF can be easily stopped by some of the shuttles onboard equipment, it can also escape the crew compartment. This leaves crew communications open for intercept by hobbieist, like us, and waiting Soviet spy satellites and ground stations. Both trouble DOD officials.

Though I talked to eleven NASA employees, 2 project directors, 3 engineers and 6 secretaries, no one would specify the power or frequencies used by this system. I did find one employee who would tell me that the crew comms are conducted on frequencies between 340 and 389 MHz. Now, at least, we know where to look. The frequencies used during EVA have been known for some time. Each space suit has one transmitter and two receivers built-in. For example, the shuttle transmits on 279.0 MHz and



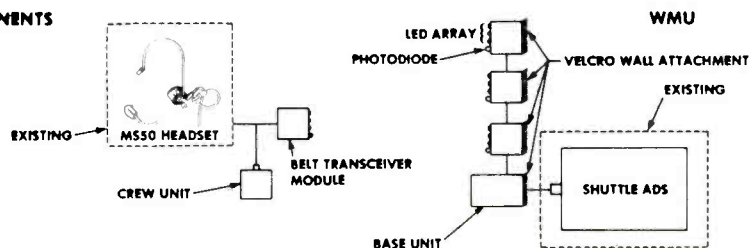
A relay transceiver (repeater)



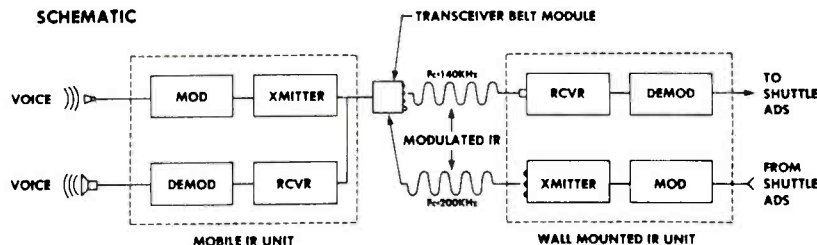
Infrared transceiver worn by Astronauts

INFRARED COMMUNICATIONS

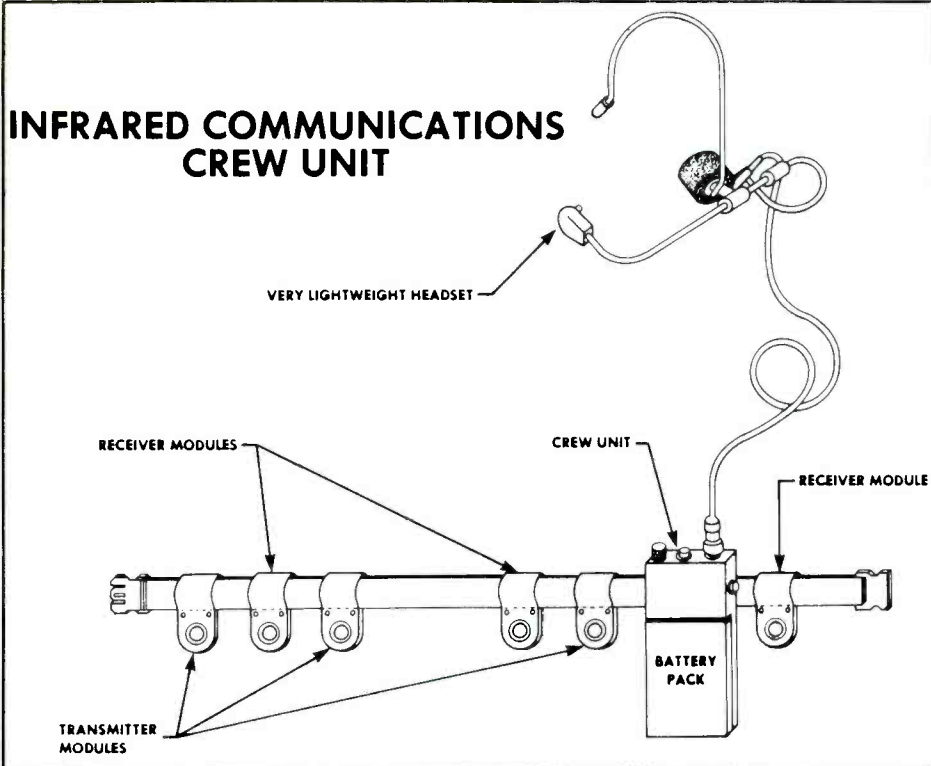
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INFRARED COMMUNICATIONS CREW UNIT



Infrared Crew Communications Unit.

receives on 259.7 and 296.8 MHz, the frequencies used to transmit from the space suits. Each EVA pack is tuned to receive the other and the shuttle at the same time. Ground control monitors both 259.7 and 296.8 MHz for direct signals from the EVA pack in case shuttle communications are lost. Each pack can also transmit on 243 MHz if an emergency should arise. With this information, you now know how to program your scanner during shuttle missions.

In order to get the crew comm system to meet DOD's TEMPEST security requirements, a digital encryption system was added. It places its digital information on a FSK signal. This insures security at the expense of intelligible communications. A small price to pay to keep the Soviet's from monitoring crew comms when a 'HOT' payload is about to be released from the cargo bay. But it seems that astronauts are not unlike Secret Service and DEA agents. Both are

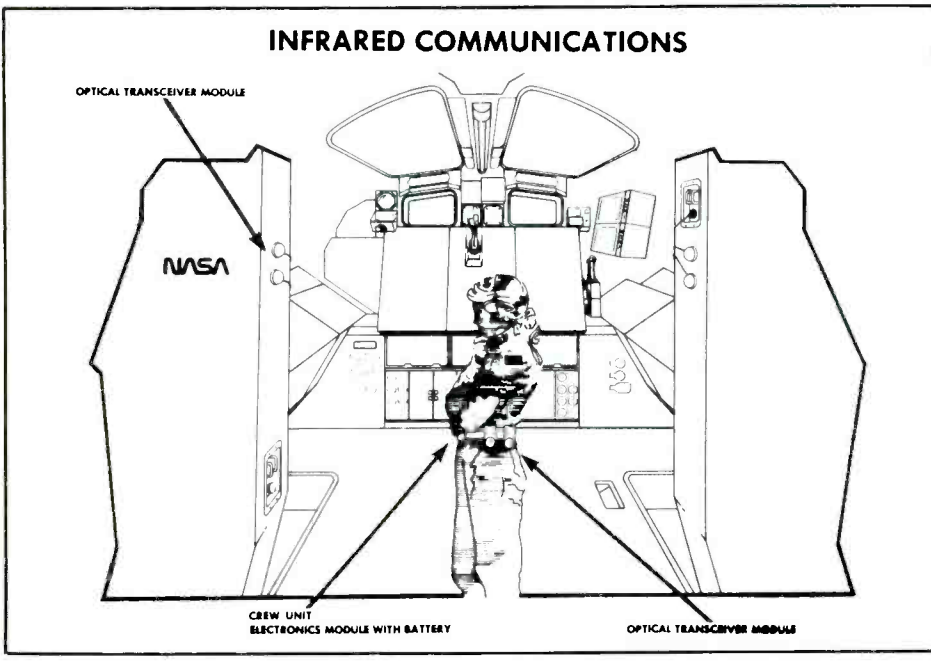


Crew Patch

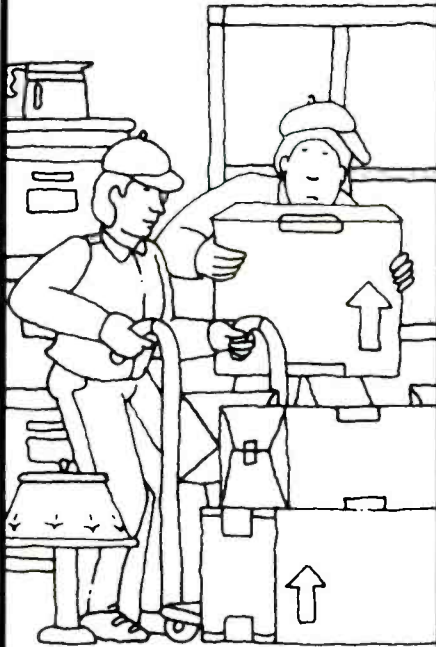
known for not using encryption equipment during portable and temporary operation because of the poor audio quality. This caused NASA to go back to the drawing board. JSC's sub-system manager, Paul Shack, and Richard Armstrong, among others, are working on a new infrared crew comms system. It will use low power IR frequencies. This will provide the crew with cordless, reliable and secure communications during DOD missions.

The only real difference in the crew equipment will be the IR sensors in their belts. These will work as separate transmitting and receiving antenna. This system will require that several transceivers of the IR variety be mounted along the walls of each shuttle compartment. These wall units (as shown in the diagram) connect all these transceivers to the Shuttle's audio distribution system which connects, in turn, to the Shuttle's S and Ku-band radio equipment. The crew units transmit on a frequency of 140 kHz. The wall mounted transceivers transmit on 200 kHz. Even if the IR experiments (tested on STS26) prove successful, it will be sometime before the fleet switched to the IR units. In fact, IR may only be used on DOD missions, leaving other crew comms open for intercept.

When the American and European astronauts move into the US space station, sometime in the late 1990's, the problem of intercepts will no longer concern DOD. According to Nancy Olsen, of Johnson Space Center, a new space suit and communication system is being built for the space station. She says the suit will incorporate the latest technology. This means that the voice communications will use Quadra Phase Shift Keying for encryption. Simply put, the signals from the EVA packs will be broken into two digital elements and transmitted 90 degrees apart using phase shift modulation. This format includes both time and frequency inversion. This will keep the people in the Pentagon happy, but it does little for our enjoyment of the hobby. But until then, we still have some listening to do. So, program those scanners and turn on those pre-amps, America is back in space.



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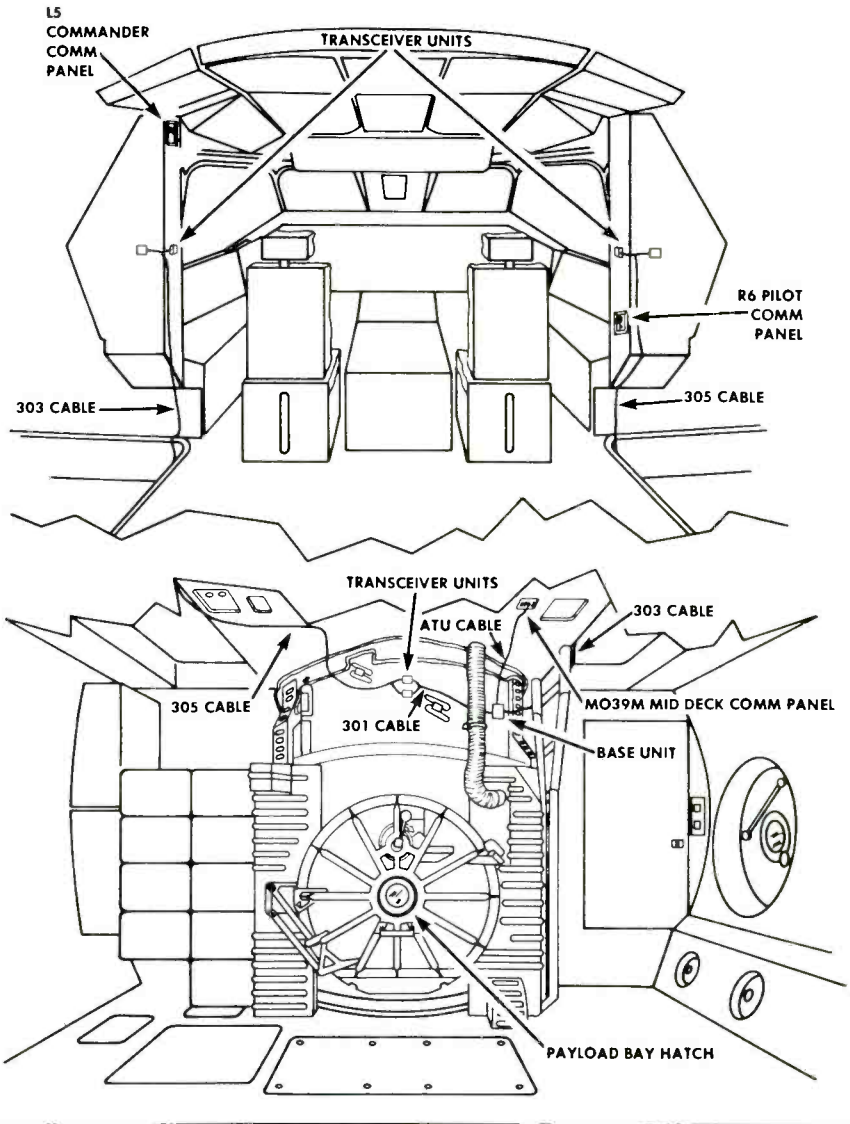
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WALL MOUNTED UNIT CABLING CONFIGURATION



Locations of repeaters and sensors

NASA News

GAMBIA—is the site of NASA's latest emergency landing strip for the Shuttle. An agreement was recently signed which allows NASA to use Gambia's international airport. Look for ground comms facilities here.

JPL—The Jet Propulsion Laboratory has announced plans to engineer mini-satellites for space exploration. This cost cutting move would use the latest micro electronics inside a spacecraft the size of a coffee can. One of the new micro systems, the optical recorder, can handle data at a rate of many gigabits per second. This single chip uses a 20 GHz transmitter which is a micro monolithic integrated circuit built on a single crystal of Gallium Arsenide. It measures 1/8 by 1/4 inch and develops 200 miliwatts of RF. The SDI office will develop an Earth orbiting railgun from which to launch these spacecraft into deep space. The Army is now

working on a ground based railgun for the system.

Ten years ago—The International Ultra Violet Explorer (IUE) was launched. It is still sending data back to Goddard Space Flight Center on 136.860 MHz. It is in a polar orbit at 31 degrees inclination.

TDRS—The next TDRS launch has been moved up. Now STS-29 will be launched following STS-27. STS-27 is a possible KH-12 launch which would greatly benefit from a second TDRS support satellite. STS-28, also a classified mission may carry the Navy's new spy sat, Teal Ruby.

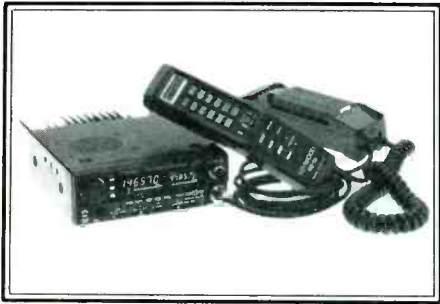
US/SOVIET cooperation—The USSR sent up a Mars probe in July. It carried a plaque honoring an American Astronomer, Asaph Hall. He was the first to discover the twin moons of Mars, one of which, Phobos, this mission is named after.

Well, that's all for this go-round. See you next month.

PC

PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS



The All-New TM-721A FM Dual Bander

The wide range of innovative features on Kenwood's new FM Dual Bander include a dual channel watch function, selectable full duplex operation, 30 memory channels, extended frequency coverage, large multi-color dual digital LCD displays, programmable scanning, and more with 45 watts of output on VHF and 35 watts on UHF. Other features:

- **Extended receiver range** (138.000-173.995 MHz) on 2 meters; 70 cm coverage is 438.000-449.995 MHz. (Specification guaranteed on Amateur bands only. Two meter transmit range is 144-148 MHz. Modifiable for MARS/CAP. Permits required.)
- **30 multi-function memory channels.** 14 memory channels and one call channel for each band store frequency, repeater offset, CTCSS, and reverse. Channels "A" and "b" establish upper and lower limits for programmable band scan. Channels "C" and "d" store transmit and receive frequencies independently for "odd splits."
- **Dual frequency display** for "main" and "sub-band."
- **Automatic Band Change (A.B.C.)** automatically changes between main and sub-band when a signal is present.
- **45 Watts on 2 meters, 35 watts on 70 cm.** Approx. 5 watts low power.
- **Call channel function.** A special memory channel for each band stores frequency, offset, and sub-tone of your favorite channel. Simply press the CALL key, and your favorite channel is selected!
- **Balance control and separate squelch controls** for each band. Very useful feature that provides a way to "emphasize" either the VHF or UHF band.
- **Dual watch function** allows VHF and UHF receive simultaneously.
- **Full duplex operation.**
- **CTCSS encode/decode** selectable from front panel main knob or UP/DWN keys on microphone. (Encode built-in, optional TSU-6 needed for decode.)

- **Each function key** has a unique tone for positive feedback.
- **Illuminated front panel controls** and keys.
- **Handset/remote control option (RC-10).**
- **Dual antenna ports.**
- **Programmable memory and band scanning** with memory channel lock-out and priority watch function.
- **Dimmer control.**
- **16 key DTMF mic** included.
- **Frequency (dial) lock.**
- **Supplied accessories:** 16-key DTMF hand mic., mic. hook, mounting bracket, DC cable.

Suggested retail price \$649.95. Contact your nearest Authorized Kenwood Dealer for more details, or circle 104 on our Readers Service card.



Compact Multi-Band Radio

Panasonic's RF-B40 compact multi-band radio offers outstanding sensitivity, stability, and selection by combining a microcomputer-controlled PLL quartz synthesized receiver and a double superheterodyne system.

The microcomputer-controlled integrated circuitry of the receiver synthesizes the exact frequencies required for clear reception of FM/LW/MW/SW stations. The quartz crystal reference frequency helps to assure dependable performance.

The RF-B40 uses an up-conversion double superheterodyne receiver, providing two intermediate frequencies to help lessen the first and second interference characteristics, while image rejection is lessened by raising the initial IF to 55.845 MHz.

The RF-B40 also features a five-way tuning system to offer a full range of tuning options and to make keying in exact frequencies quick, accurate, and easy.

Included in the system is 27-station preset tuning, allowing the user to easily program up to 27 stations for instant recall using the corresponding memory recall keys.

With frequency direct access tuning, the user employs the numeric keyboard located

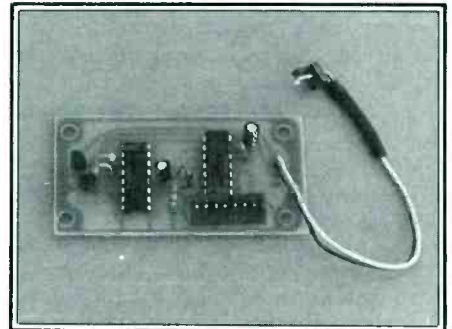
on the front of the unit to simply tap in the frequency of the desired station.

If the user knows the meter band of a desired station but not the exact frequency, they can use meter band direct access tuning to call up the lowest frequency of that particular band. Once they have reached that point, they can use either of two tuning systems, up/down manual or auto-scan to fine tune.

For programming accuracy, an LCD multi-information readout displays all functions selected. Additional features include an operation hold switch and 1 kHz-step fine tuning for LW/MW/SW. The unit operates on 4 "AA" batteries (not included).

Suggested Retail Price: \$199.95.

For more info, circle 105 on our Readers' Service card.



New For TS-940 Owners – Ref# 493 IRI Bank Controller I

International Radio is proud to announce the addition of a new product to their line of useful Kenwood Accessories . . . IRI Bank Controller I.

IRI Bank Controller I allows front panel memory bank control on your TS-940S, thus eliminating the need to go to the top of your TS-940 and slide open the hatch every time you want to change the memory bank. IRI Bank Controller I is a direct, plug-in substitution for the Voice Synthesizer, and will allow you to use the front panel "Voice" button to step through all four memory banks.

It is a fully assembled plug-in device, eliminating the need for soldering or modification. Using CMOS circuitry, it presents virtually no power drain to the radio, and absolutely no power drain to the memory backup cells. It comes wired and tested with detailed instructions and a six (6) month warranty.

Available exclusively through International Radio, Inc., 751 South Macedo Blvd., Port St. Lucie, FL 34983, for only \$24.95 plus \$5.00 for shipping and handling. For further information, circle number 103 on our Readers Service card.

NEW AND EXCITING TELEPHONE TECHNOLOGY

The Light In Your Future Fiber Optics For Your Grandchildren And You

If you take a close look at any suburban house today, you will notice that it is "Plugged into the city". This means it depends on outside suppliers of electricity, water, gas, TV signals, telephone and sometimes central heat and alarm cables. Today, all of these utilities have absolutely nothing in common. Some of them, such as water and electricity, may be supplied by the same utility company, but that's where the similarity ends.

Each utility has advanced, or stagnated, on its own. In the future, the differences will blur. Fiber optic cables will tie all these things together and automate the running of a modern house beyond recognition. One skinny fiber optic cable, thinner than a pencil, will deliver telephone service, cable TV, computer data, fire alarms, burglar alarms, and remote meter reading. But wait, there's more! Utility bills, real estate tax bills and house payments will also be delivered along the same cable. Payment via your bank will be made along the same cable. Science fiction you say. Sorry, but all of these things have been done, although not at once. As costs come down and technology goes up, all of this will come to your home. Not all at once, but expect parts of it to arrive soon.

Consider the home of the future, no need to mess with a VCR, or schlep down to the local mall to rent a tape, dial up the local library on your TV remote control and look through the movie catalogue. Pick a movie and push the button. Sent to your home is the movie you want. If there is a charge, you will be billed directly to your TV account.

So with TV programs selected by the viewer, you in fact have a two way system. If it is a two way system, the local alarm company can also install cameras on your premises and turn them on when the alarm goes off. Live, from your kitchen, they get to see who set the alarm off. If it is just Fido coming through the doggie door, no need to roll the battle cruiser.

Every meter, for every possible utility, would be "plugged in". The utility companies could then call up their meter in your house and read it at the dead of night. One less tradesman for Fido to chase. One less cause of billing disputes.

The "home computer" will no longer mean a cheap and nasty little plastic box with a crummy keyboard. It may, in fact, no longer have a keyboard. This is a monster control system. It watches the house and

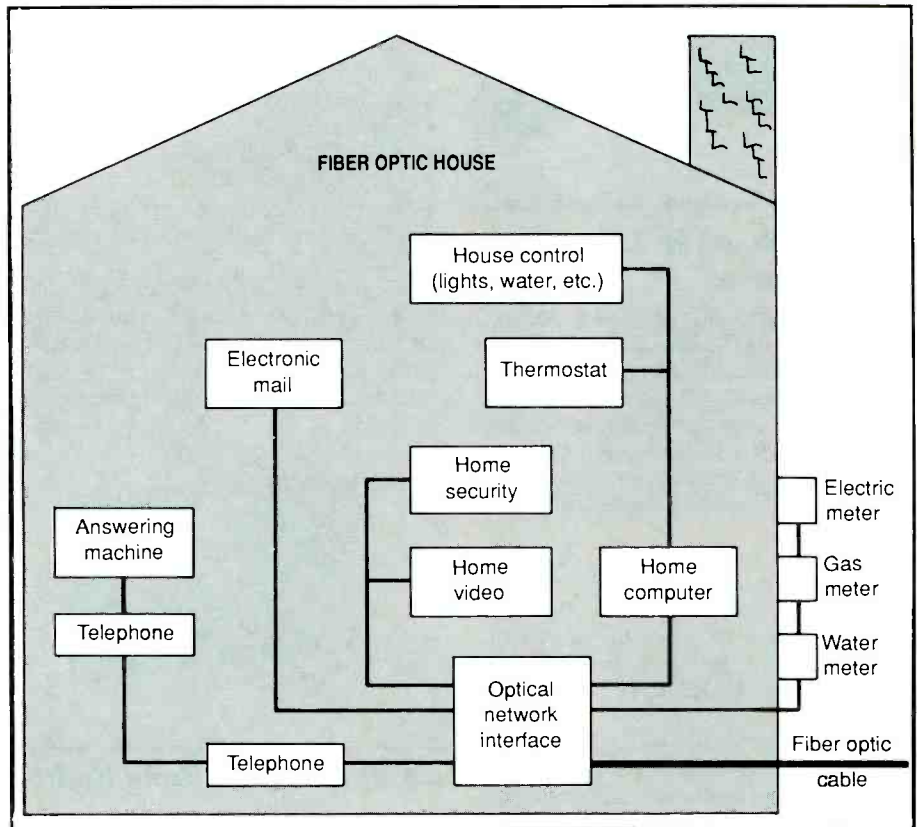


Figure 1: Fiber Future

controls everything, from the thermostat to the dishwasher. It will be in charge of the house and do a better job than a combined housewife and handyman. You will be able to call it up by remote, so if you are out late, or away, the house will get on fine without you. Yes, the home computer will ensure that Fido is fed on time. Besides that, the home accounts and records will also be on the home computer. Bank accounts, school report cards, phone directories, time cards, payroll records and airline timetables will either reside in the home system, or will be accessible via the fiber optic cable coming into the house.

All this talk of computers, cable TV, utility bills and security, where does the phone come in? Well yes, there will be telephones attached to the fiber optic cable and you will be able to have as many lines as there are people living in the house plus some. In the future, every citizen will have a telephone number that will be theirs for life, but that is

another story. The phone company, of course, owns and maintains the fiber optic cable and handles the routing of the myriad of signals coursing along it. You need not be an accountant to see that one day in the future, telephone calls, as we now know them, will become a small part of the phone company's revenue. The phone company will earn money from every signal that runs down their fiber optic highway. (See Fig. 1.)

Poor Fido won't be able to chase the postman anymore as he tries to stuff your magazine into the mail box. Because there is one other thing that would be coming down the cable to your home: Your copy of Popular Communications. It would arrive overnight and store itself in the home computer. The magazine will not be an "electronic edition" as it would be today. It won't even look like a Fax machine copy, which looks like a fuzzy photocopy. It will be a full magazine, in color with pictures and ads. Speaking of advertisements, if you see something in your

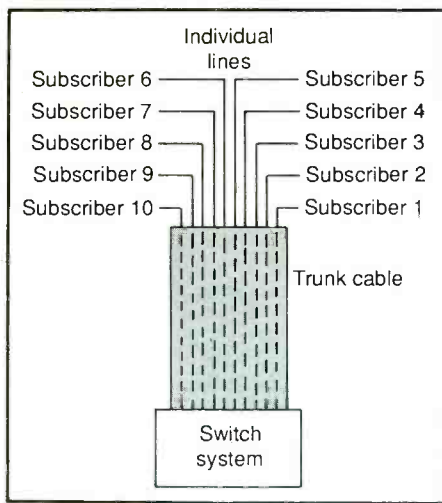


Figure 2: Tree Distribution System

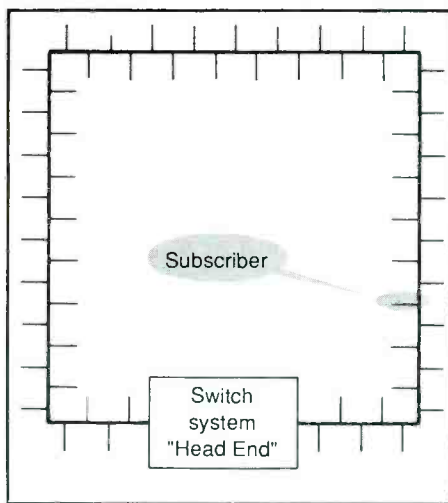


Figure 3: Fiberoptic Distribution Ring System

"Home delivered" issue of Popular Communications that you would like to know more about, no problem. Just push a button and the advertiser will be informed that you want more info. No postcards to fill out. No waiting with Fido for the postman to stroll along with your catalogue. The catalogue will arrive the same way as the magazine.

The single biggest expense with providing service for telephone subscribers today, is that each "phone number" requires a pair of copper wires running all the way from the exchange to the subscribers premises. Im-

agine this as a big tree with subscribers at the ends of the twigs. Everyone is connected to everyone else and they are switched down at the roots. The tree analogy is apt, because this type of distribution is often referred to as the "tree system", it is also sometimes called a "star network". (See Fig. 2.) With this type of distribution, each new number means a new pair of wires. The investment that AT&T used to have in copper must have been staggering, possibly worth more than the proverbial gold in Fort Knox.

With fiber optics, rather than have a pair of wires to each number, you can have a single cable to each neighborhood block. The cable will be run around the houses just as cable TV is today. It will pass each house and a spur, or tap, will go into each subscriber. This type of distribution is called either the "daisy chain" or "ring main" (See Fig. 3). The fiber optic cable obviously has the bandwidth to handle that many signals, but how does it know the difference, between your call to your girlfriend, and the next door neighbor's pizza order? This is done by putting an "address" on each signal, just as you put an address on the envelope of a letter. If it isn't addressed to you, you won't receive it. All this will work, various parts of this system work now. It will keep working unless Fido decides to dig in the backyard. Fido can put the whole neighborhood out of commission. But one broken cable is better than the situation today. If the back hoe putting in the pool hits the phone cable, the neighborhood goes out and it takes days to reconnect thousands of pairs of wires.

It may seem complex now, but have no fear, the implementation of such systems will be painless. Subscribers had to learn to live with automatic dialing and made the transition well. Moving to the plugged in and switched on house will be just as easy. The big loser in future will be Fido, no strange people will need to come on his territory anymore. Curing dog boredom may be a whole new growth industry. **PC**

It's Back!

THE AMATEUR RADIO VERTICAL ANTENNA HANDBOOK

CAPT. PAUL H. LEE, USN(RET), N6PL

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CLANDESTINE COMMUNIQUE

WHAT'S NEW WITH THE CLANDESTINES

BY GERRY L. DEXTER

South America is not a continent which could be said to be abuzz with clandestine broadcasting activity. Broadcasts by guerrilla groups often take the form of brief, armed takeovers of radio stations (usually medium wave) so the group can get its message on the air. Occasionally, though, there is actual clandestine activity over a shortwave transmitter.

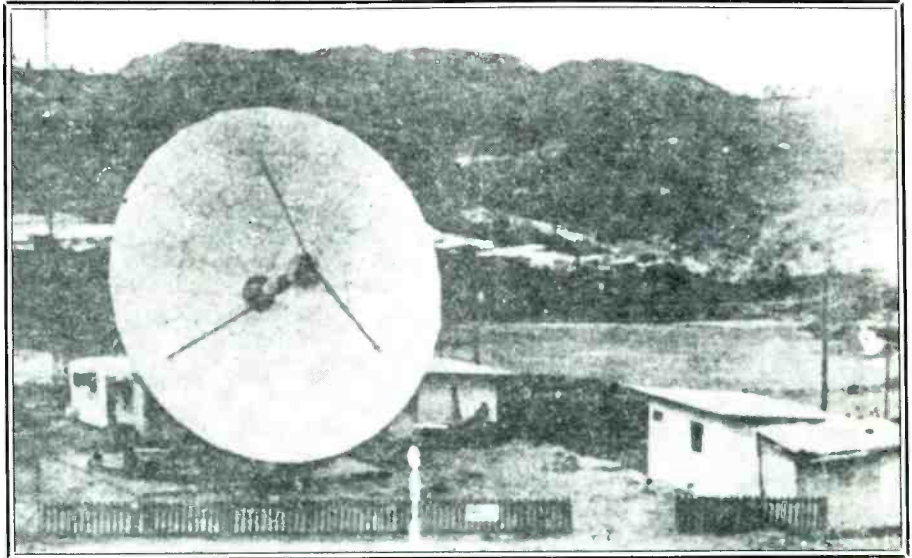
In mid-March, the Colombian guerrilla group, *FARC (the Revolutionary Armed Forces of Colombia)* began Sunday only broadcasts at 1330 on 6835, 1600 on 10257, 2130 on 7422, 2300 on 14285 and also at 1630 but on an undetermined frequency. So far, the only confirmed usage is at 1330 on 6835, with a broadcast of approximately 15 minutes length and consisting of a news bulletin prepared by the "National Secretariat of the Revolutionary Armed Forces of Colombia, the People's Army Guerrilla Coordinators."

If this station holds to the pattern of earlier clandestine broadcasting tries out of Colombia, it may, in fact, have already discontinued broadcasts. The last clandestine activity from this country was about two years ago and lasted only for a few broadcasts.

Another new station is something called *Arabic Freedom*, reported from about 1530 to 1600 sign off on 17540, all in Arabic. The transmitter in question seems quite likely part of the team which airs broadcasts of the anti-Afghan *Voice of Unity*. 17540 is normally used to carry the "Unity" broadcast, in parallel with 12230 and 15685 at this hour. But on two dates in late January and early February Mathias Kroph, the clandestine column editor of the bulletin of the Danish Shortwave Clubs International, noted *Arabic Freedom Radio* on 17540 while "Unity" was running on the other two frequencies. A check at our monitoring post found identical programming on 12230 and 15685 and an Arabic speaker on 17540, although the latter outlet was not identified.

Another new outlet is also being noted by Kroph, this for the *Voice of the Palestine People's Revolution*, which he hears on 18000 from 1330 to 1400 (but perhaps beginning at 1300). Kroph says that a couple of different station ID's seem to be aired and theorizes that it may be the same station or program as the *Voice of the Popular Revolution in Palestine*. This latter one is, we believe, normally only on MW and/or FM locally. The odd 18000 frequency has recently been reported carrying Libyan broadcasts in single sideband mode.

Radio Bardai, the station (ostensibly) of the Chadian Transitional National Unity



This installation, somewhere in Central America, may be an indication of what the *Radio Liberacion* installation looks like.

Government (GUNT—the folks supported by Libya) has returned to the air after several months of silence. *Radio Bardai* uses 6009 for broadcasts in French and local Chadian languages from 1100 to 1300 and 1800 to 2000 (usually closer to 2030). During our winter months, the tail end of this latter schedule can sometimes be heard in the east and midwest. Despite years of effort, we've failed to turn up a workable mailing address for this one.

Clandestine enthusiast and friend, George Zeller of Ohio, reports in A * C * E on some interesting aspects of the contra's *Radio Liberacion*. George has what he terms a "very reliable anonymous source" who says that the audio feed for *Radio Liberacion's* shortwave service is carried by the "Satcom F4 transponder #4 vertical audio subcarrier at about 5.8 MHz." This satellite feed originates from the Lynchburg, Virginia uplink of Jerry Falwell's Liberty Baptist Network television service. It comes into the Lynchburg satellite uplink facilities though an unmarked phone pair.

George's report goes on to say that another source who is with the Bell system, and familiar with telephone line links to satellite transmitters, notes that not marking a phone pair is an unusual practice. Such pairs are normally marked with the station name for identification purposes.

David Sabo in California monitors the Korean clandestine *Voice of the People* (in Korean: In-min-ae So-ni) on 6605 from 0906 to 1000 in Korean with political commentary and seeming North Korean propaganda, along with some traditional Korean music. The station gives this schedule on the air: 3912 at 0500-0600 and 2000 to 2100, 6600 at 0300-0400 and 0900-1000.

David was recently in Korea, and notes that the schedules we recently gave for the other Korean clandestines *Voice of National Salvation* and *Echo of Hope* pretty much agree with what I logged in Korea." He notes that, locally in Korea, 4450 and 4457 are usually hit by jammers (presumably from the South) shortly after sign on. Thanks for the great data, David!

Guy Atkins in Washington state hears Iran's *Flag of Freedom Radio* on 9035 at 1629 sign on to tune out at 1645, in Farsi but also with an English ID at sign on.

Atkins also notes the *Voice of Democratic Kampuchea* on 9440 from 0005 tune to 0026 sign off in presumed Khmer with ID by woman as "thini samleng dipthit Kampuchea Pracheathipatei" just before sign off. Good level in California.

Tom Vega-Byrnes in Illinois catches *Radio Venceremos* on 6611 from 0217 to 0217, then on 6628 from 0221-0227, then to 6647 from 0227 to 0303. The station suf-

ferred from jamming by a continuous tone and also by an unknown Spanish speaking station on 6648. Sign off at 0303 with ID "Radio Venceremos, transmitiende de Morazan" with frequencies and an address in Mexico City announced.

Robert Ross in Ontario received a QSL card from *Radio Halgan*, the Somali opposition station, written on a postcard showing St. Stephens Church in Addis Ababa, Ethiopia. It was signed by Abdirashid A. Sed (P.O. Box 1686 Addis Ababa) who gave the schedule as 1700 to 1753 on 9590 and said the station broadcasts from a mobile transmitter, to which Robert notes that he thought the program was via the *Voice of Ethiopia*. *Radio Halgan* would probably like us to believe the "mobile broadcaster" fiction.

Robert also reports his reception of the anti-Chilean government, *Radio Magallanes*, broadcast via Radio Moscow on 9640 from 0329 to 0343, in Spanish with interval signal and ID as "Aqui Radio Magallanes" by man and woman announcers.

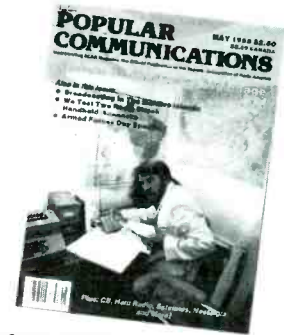
Thanks to all who had a hand in providing some excellent information this time. Keep it coming, please! We need your clandestine station background information, loggings, schedules, QSL copies, literature from groups operating stations and any other information you might run across or have access to. If you wish, we can keep you identity confidential.

Join us again next month. Until then, good hunting!

PC

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Here's what you've been looking for — an all new hard-hitting monthly magazine which gives a unique insider's view of what's really going on in the world of communications. POP' COMM is your primary source of information — bigger and better than any communications magazine, with exciting coverage of scanners, shortwave broadcast & utility stations, spy stations, pirate and clandestine broadcasters, RTTY monitoring, survivalist communications systems, FCC news, wiretapping and bugging, voice scrambling/unscrambling, surveillance/undercover communications, satellite & cable TV, sophisticated telephones, & more. What you've been looking for all along! Take advantage of substantial savings over the newsstand price by subscribing now. Don't miss out on even one single issue of POPULAR COMMUNICATIONS — order your subscription now.



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CIRCLE 26 ON READER SERVICE CARD

THE MONITORING MAGAZINE

27 MHz COMMUNICATIONS ACTIVITIES

No more winding up the mike cord in the steering wheel! That's the promise of the new Cobra 33-PLUS CB mobile transceiver. They can make that guarantee because the rig in question doesn't have a mike cord, even though it has a hand-held push-to-talk mike. Surprised? So were we!

The Cobra 33-PLUS is an idea that evolved from the manufacturer's involvement with cordless telephone development. The mike of the Cobra 33-PLUS utilizes innovative infrared (IR) technology. With a standard PTT button, the compact cordless CB mike transmits the user's voice to an IR window in the CB unit's front panel. The system has a wide-angle, line-of-sight range of about six feet. The mike has batteries that are maintained at full charge by a low-profile cradle connected directly to the vehicle's power supply.

With this arrangement, the CB rig can be mounted in virtually any convenient location, while the small cordless mike can be placed anywhere within arm's reach. The rig itself is a full-powered 40-channel AM unit. It features a bar-graph signal-strength meter in three colors, up/down electronic tuning, a large LED channel display (with dimmer), and an Instant Channel 9 button. A universal multi-position mounting bracket with a theft-preventing quick-release feature is included.

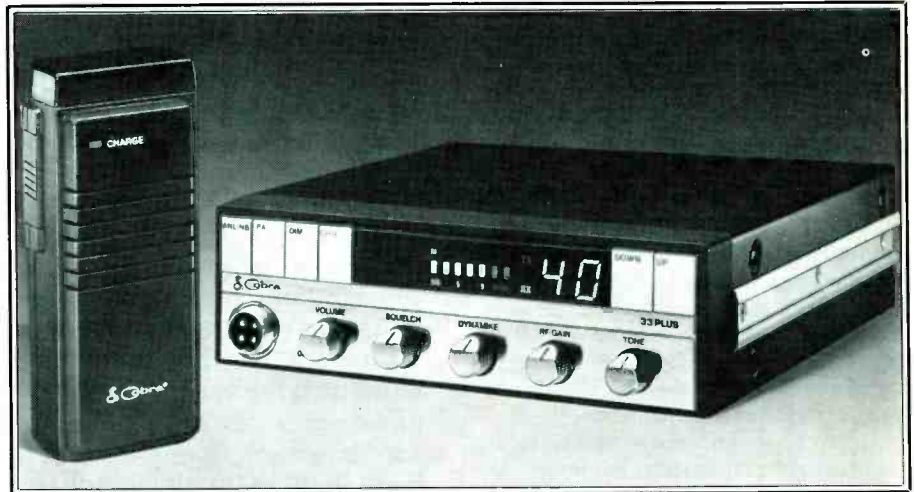
For clearest possible reception, there's a tone control plus a combo noise blanker/limiter. By the way, a standard mike (with cord) can also be used in place of the cordless mike for those occasions when that form of operation is preferred. The suggested retail of this rig is \$239.95.

The Cobra 33-PLUS comes from Cobra Consumer Electronics Group, Dynascan Corp., 6500 West Cortland St., Chicago, IL 60635. You can get info on this set, or find out where your nearest Cobra dealer is, by calling the following toll-free number: 1-800-COBRA-22. Or, you can circle 101 on our Readers Service.

The Enforcer

Inasmuch as questions about FCC enforcement on 27 MHz are always plentiful, this is probably a good opportunity to offer some words on the topic. The words, of course, are merely my own personal views, observations, and opinions.

Until the early 1980's, the FCC seemed to be attempting to regulate and CB, and enforce its rules with an iron fist. Their efforts were never very successful for numerous reasons. When CB'ers realized that they placed themselves in harm's way each time they announced their FCC-assigned call let-



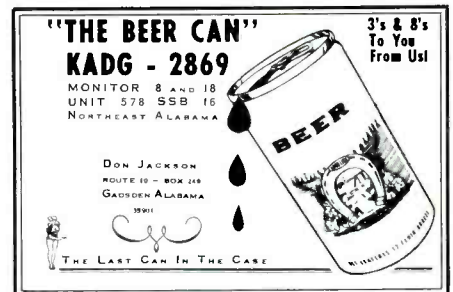
This Cobra 33-PLUS rig needs no mike cord!

ters, that ended the use of the callsigns—thus giving the FCC yet one more rule violation to be unhappy with CB'ers about.

The FCC mindset in those years was to expect that all licensees in all radio services would respect the agency's regulations with uniform vigor. That concept may have worked in virtually all other services, but CB'ers were too unique to comfortably fit into the FCC's mold. These were, after all, average citizens, who jumped at the opportunity to have fun talking on the radio over low-powered transceivers. To these people, there seemed as little sense in all of the complex FCC rules on the use of the radios, as there would be in regulations for talking on the telephone, or over the back fence. Eventually, many entering CB didn't even bother with taking out the necessary FCC license.

For whatever reason, and with tens of millions of unlicensed stations on the air, the FCC took a more realistic look at dealing with the CB service. The need for licenses was dropped, the rules and regulations were simplified and liberalized into something that vaguely resembled what everybody was doing anyway. This isn't to say that (given the FCC's budget, manpower limitations, and priorities) the agency abandoned 27 MHz enforcement altogether.

The FCC still monitors and pursues stations operating on unauthorized frequencies above and below the edges of the forty-channel CB band. The agency is responsive to the public's complaints of interference coming from CB stations. Most interference complaints probably come as a result of operators running far more transmitter power than the FCC allows on 27 MHz.



How 'bout this nifty QSL from Don "The Beer Can," in Alabama.

Operators who get snagged on any of these violations will probably also be charged with ignoring many additional regulations. Sometimes, the FCC will show up in a community where serious CB violations are especially rampant. The FCC will track down a couple of offenders as an example to other area operators. They'll also attempt to find the local source of illegal equipment (linear amplifiers, export transceivers, etc.) and put it out of commission.

Those who don't fit into any of these high-profile categories will probably have little occasion to hear from the FCC, based upon the agency's recent track record of 27 MHz enforcement. Still, the agency's hope is that 27 MHz operators will, in general, observe the present version of the CB regulations.

Mailbag

Craig Fair, Benton Harbor, MI writes to say that he's been on 27 MHz for more than twenty years. He got started with a Heath

WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS

Man Sentenced For Smuggling Illegal CB Radios

A Brooklyn, NY man was sentenced to five years probation, a \$10,000 fine, and 300 hours of community service for importing illegal citizens band radios and linear amplifiers, the Federal Communications Commission said. Nachman Brach, president of Granada Electronics Inc., Brooklyn, NY was convicted of one felony count in U.S. Eastern District Court on November 5, 1987. Brach was in violation of Title 18, United States Code, Sections 2 and 545 which prohibit the smuggling of goods into the United States.

The smuggled CB transmitters and linear amplifiers were not authorized for sale in the United States. The radios operated on frequencies outside the CB Service with unauthorized emissions and excessive transmitter power. This illegal equipment was capable of causing harmful interference to essential public safety and emergency radio services as well as to home electronic entertainment equipment, according to the FCC.

Electronic engineers from the FCC's New York Office and U.S. Customs agents cooperated in the investigation which led to the conviction of Brach. Brach's conviction is part of an ongoing investigation into illegal marketing of radios that earlier led to the October 1986 conviction of Lawrence Wallach, Lynbrook NY and Gerard Purnhagen, East Rockaway, NY.

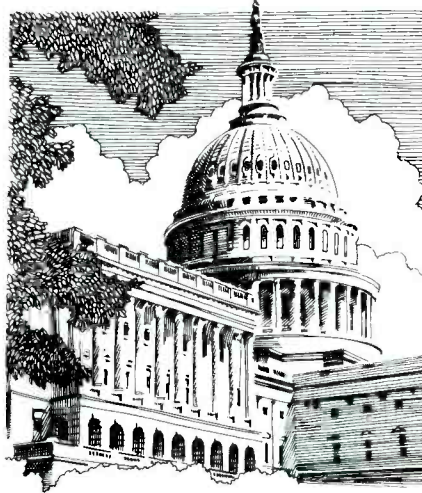
New Experimental Licenses

The Commission took the following actions:

KA2XTF, INTERNATIONAL MOBILE MACHIENS, Mobile within 15 mile radius of and Philadelphia, Penna., station to operate on 454.275, 454.375, 454.525, 454.625, 459.275, 459.375, 459.525 & 459.625 MHz for development of ultraphone system. The alternative to conventional wireline.

KA2XTN, SPORTSBAND NETWORK, INC., Fixed and Mobile within Continental United States, station to operate on 62.0-64.0 68.0-70.0 & 450-456 MHz to demonstrate the technical feasibility of broadcasting a focused FM quality signal to attendees at live sporting events without causing interference to any authorized radio transmissions and without contributing to frequency congestion.

KA2XTO, SPORTSBAND NETWORK, INC., Fixed and mobile within Continental United States, station to operate on 176-186 MHz to determine the technical and economic feasibility of conducting an on-site, subscription-type, FM quality broadcast to attendees at live sporting events.



KA2XTP, AMERICAN ELECTRONIC LABS, INC., Lansdale, Penna., station to operate on 225, 300, 350 and 400 MHz to test antenna under U.S. Government contract.

KA2XTR, TOSHIBA AMERICA, INC., Fixed transportable, New York, NY, station to operate on 14,000-14,500 MHz for development and demonstration of Ku-band fly-away earth station for video and audio transmissions.

KA2XTS TOSHIBA AMERICA, INC., Transportable, New York, NY, station to operate on 14,000-14,500 MHz for development and demonstration of Ku-band fly-away earth station for video and audio transmissions.

KA2XTU, HUGHES AIRCRAFT COMPANY, El Segundo, Calif., station to operate on 1535-1660 and 65000-86000 MHz for use as an antenna test range.

KA2XTW, MOUNTAIN SIGNAL MEMORIAL, Mount Hood, Oregon, station to operate on various 168 MHz frequencies to aid in search and rescue, locating individuals trapped in and under snow.

KA2XTX, GENERAL ELECTRIC RADIO SERVICES, INC., mobile within 50 mile radius of Syracuse, NY, station to operate in 1215-1400 MHz band as required by U. S. Government contract.

KA2XTY, HOWARD A SINE, North Star County, Alaska, station to operate on 26.9 and 219.9 MHz to detect animals in area currently under development to determine potential changes in number and movement of animals.

KA2XTZ, DYNETICS, INC., Huntsville, Alabama, station to operate on 9500 MHz for performance testing as required by U.S. Government contract.

KA2XUA, ALASKA, UNIVERSITY OF., Mobile State of Alaska area of Fairbanks, station to operate on 3192.5, 5736.5, 9941.5 & 12256.5 kHz to provide a communication link between field parties and university for safety purposes.

Propose Reorganizing Amateur Radio Service Rules

Because technological advances and operational changes have made the current Amateur Radio Service rules difficult to apply to modern amateur radio communications, the Commission has proposed creating a regulatory environment that will encourage modern techniques, technology and uses of amateur radio.

The Amateur Radio Services consists of the Amateur, Amateur-Satellite and Radio Amateur Civil Emergency services.

Part 97 of the rules governing the Amateur Radio Service has not undergone a major restructuring since 1951 when most communications systems in the service were using high-frequency, hand-keyed telegraphy and amplitude-modulated telephony. Since then, a host of emerging technologies, such as single-sideband and frequency modulated telephony, VHF and UHF repeaters, radioteleprinting, satellite transponders, digital communications, television, etc., have become popular with amateur operators. While rules have been modified or added to accommodate these technologies, the result has been a patchwork quilt of rules surrounding an antiquated structure that is often confusing, particularly to a prospective licensee.

The Commission pointed out that amateur operators have continued to find new ways to use their stations in communications systems, particularly for serving the public during communication emergency situations. Moreover, legislation has made it possible for the FCC to accept the voluntary services of amateur operators in functions formerly done by FCC staff. Amateur operators serving as volunteer examiners prepare, administer and coordinate operator license examinations and assist the Field Operations Bureau in monitoring. Since these trends are likely to continue, it is necessary to reorganize and clarify the rules in recognition of these advancements and to shape the framework upon which future advancements can be incorporated, the FCC said.

FCC Upholds \$250 Forfeiture

The Commission has upheld a \$250 forfeiture levied against the party boat "FIRST STRING," owned by Paleface, Inc., for not

maintaining a listening watch on VHF distress frequency 156.8 MHz.

"FIRST STRING is an ocean-going, charter fishing boat. Because it carries more than six charter passengers, the boat must be equipped with a VHF marine radio. Under FCC rules, such vessels must maintain a listening watch on 156.8 MHz when the radio is not being used for authorized traffic. On August 3, 1986, FCC personnel in the Los Angeles/Long Beach harbor area determined that the "FIRST STRING" was not maintaining its radio listening watch.

Paleface's president, Russ Izor protested the \$250 forfeiture, contending that the Commission had done nothing about the other boats that also were violating the rules. In response, the FCC said: "While our limited resources may result in some violators going unpunished, that does not mean that we cannot impose sanctions against those violators we do find."

Authorize Additional Modulation For EPIRBs And ELTS

The Commission authorized additional types of modulation for Emergency Position Indicating Radiobeacons (EPIRBs) and Emergency Locator Transmitters (ELTs) in the maritime and aviation services.

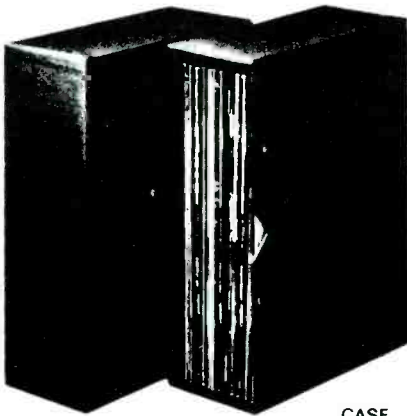
Last May 27, the FCC proposed amending the maritime and aviation services rules (Parts 80 and 87) to add continuous wave (CW) telegraphy and voice (telephony) modulation to the emission classes authorized for use by EPIRBs and ELTs. (EPIRBs and ELTs are small battery-powered transmitters carried aboard ships and aircraft to permit search and rescue units to home-in on a vessel or plane in distress. They operate on 121.500 MHz and 243.000 MHz.)

ARNAV Systems, Inc. has developed an ELT which transmits a digitally synthesized voice signal, as well as the compulsory swept-audio signal. ARNAV's ELT automatically interrupts the swept-audio signal every three minutes with the digitally synthesized voice, which provides the aircraft identification number, the time the ELT was activated and, in some cases, the aircraft coordinates. ARNAV has applied for type acceptance of its device and requested authorization for ELTs that meet FAA technical standards.

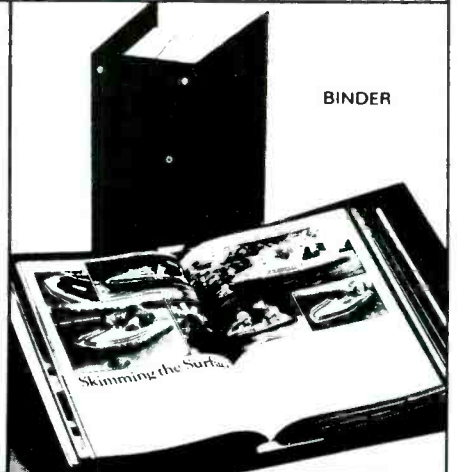
Additionally, at the request of the parties participating in this proceeding, the power distribution and frequency shift of the transmitter carrier have been changed to facilitate the reception of EPIRB and ELT signals by the COSPAS/SARSAT satellites. For newly manufactured EPIRBs, the frequency shift and carrier power distribution requirements become effective April 1, 1988; July 2, 1988, for newly installed Class A EPIRBs; and August 2, 1991, for those Class A EPIRBs used to satisfy U.S. Coast Guard requirements. Also, the FCC required newly manufactured ELTs to meet the frequency shift and carrier distribution standards after April 1, 1988.

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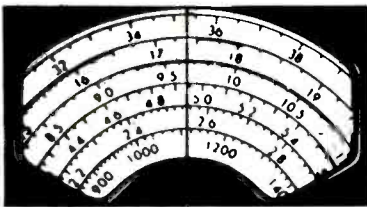
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BY DON SCHIMMEL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

Andy Gordon, CT has furnished another MARS callsign—NNNOCYU which is assigned to the USCG Cutter Vigilant WMEC-617. Andy also sent along the callsign NJAC which has been assigned to the USS San Jacinto CG-56. This is a newly commissioned (1988) Guided Missile Cruiser of the "Ticonderoga" class.

Trevor Stanley, AZ tells us he is a first time reporter to the column and he uses a NRD-515 and a Sony 2010. His antennas are a Dressler ARA-30 active antenna and a 60' long-wire.

"Finally got my act together and typed up my loggings." So writes Terry O'Laughlin, WI who added he only sends beacon loggings if the station is 25 watts or less and over 500 miles distant. His shack consists of an ICOM R-71A, Motorola built R-390A and R-390, Hammarlund SP-600 and SP-400VLF with a dipole on the roof of his apartment building. He also has a homebrew LW active antenna and homebrew LW/MW loop with internal preamp.

Clem Arnold, MO wrote "I recently started listening to long waves and am amazed at what I am finding." Clem pointed out that those interested in weather from other parts of the country can find it for the East on 194 kHz, the South on 206 kHz, the Midwest on 338 kHz and central Canada on 248 kHz. Clem commented that his new antenna "gets me hundreds of signals, where before, I could hear just a handful."

GD of NY recently made a trip to Rio de Janeiro, Brazil and while there had the experience of being in the eye of a hurricane.

During his stay in Rio, he did some monitoring with his Sony ICF-4910.

From Patrick O'Connor, NH we received some more QSL addresses:

VIS—Sydney Radio, Box 7000 GPO, Sydney, NSW 2001, Australia

FDY—Radiostation de Forces Aeriennes, Le Chef des Transmissions, Escadron Electronique 1/800, F-45000 Orleans, Bricy, France.

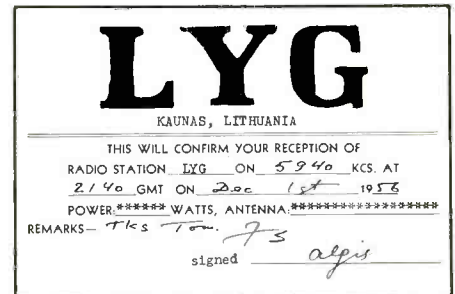
HO-9919—"Bigorange XII", Swire Pacific Offshore, 7th Floor, Swire House, 9 Connaught Rd., GPO Box 1, Hong Kong.

GQXC—H.M. Yacht "Britannia", BFPO Ships, London, England.

Patrick also provided a correction for an item in the March column for the 12432 kHz entry. "The ship WGWC is named 'OMI Wabash'; a few years back 'Ogden Marine' changed hands and name to 'OMI Marine'; most of the ships named 'Ogden . . .' were renamed 'OMNI . . .' Only 'Ogden Exporter' retained the original prefix; the rest were renamed.

A newcomer to the hobby is Marty Blaise, TX who uses a Realistic DX-400 with a 120-foot indoor longwire antenna. Ed. Note: If that antenna is inside, it must look like a pretzel!

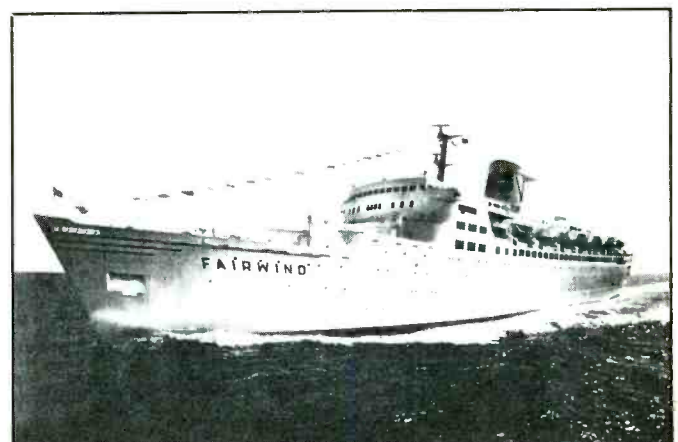
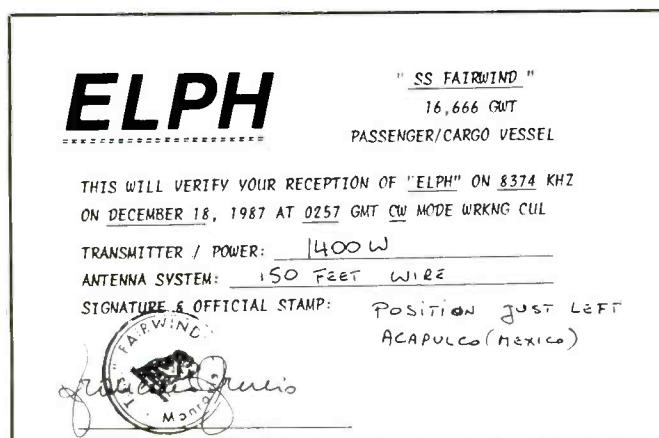
Comparing a few unidentified loggings from readers, with some I had copied, revealed they were the same activity—namely a link which reportedly serves the Cuban Military Forces in Angola. To give you some background, we have to go back a number of years when an anonymous reader informed me that the Cuban Ministry of



One of the few ute QSL's ever known to emerge from the USSR. Tom Kneitel earned this prepared reply veri in 1956 from CW station LYG (5940 kHz). LYG was in Kaunas, Lithuanian SSR. The station was monitored on 1 December and the QSL was promptly mailed back to Tom on 23 December!



Flip side of Tom Kneitel's QSL from station LYG showing the official Soviet postal cancellations dated only 3 weeks after Tom's reception.



When Steve McDonald, BC, Canada had his PFC returned he also received a photograph of the ship.



Mr. Patrick O'Connor,

U.S.A.

Capt. H.G. Carter,
 "Bigorange X11"
 Swire Pacific Offshore,
 7th Floor,
 Swire House,
 9, Connaught Road,
 GPO Box 1,
 Hong Kong.

17 January 1988

Dear Sir,

many thanks for your letter of the 19th December 1987, concerning the reception of my radio transmission to Portishead Radio (U.K.).

The vessel was at that time at the southern end of the Red Sea being on passage from Jebel Ali in the United Arab Emirates (Persian Gulf) to Augusta, Sicily.

The radio being used was a Sailor (Danish) 800 watt T 1127 SSB transceiver with a whip antenna, and I would also like to mention that at that same time I was receiving a lot of radio interference from Honolulu Coastguard which although was many thousands of miles away was being received as "clear as a bell" - there must have been grmlins in the ionosphere that night.

The vessel "Bigorange X11" is an oil well stimulation ship on charter to Dowell Schlumberger concerned with increasing the production of oil wells at sea and is now based in Sicily, operating in the Mediterranean area, the gross tonnage of the vessel is 855 tons and, to the untrained eye resembles an ocean going tug, however she is fitted with many kinds of specialist machinery including chemical tanks.

Yours sincerely

H.G. Carter.
 "Bigorange X11"

Patrick O'Connor, NH received this interesting letter in reply to his reception report.

Foreign Affairs (MINREX) RTTY traffic often had message headings enciphered in a simple monoalphabetic system. He sent along the recovered plaintext values and also furnished some details regarding a Cuban Military link between Cuba and Angola including several frequencies.

In checking out these frequencies it was noted that some message headings were enciphered by the identical system used for some RTTY MINREX message headings. This RTTY traffic was readily identifiable due to the appearance of multi-Z's as heading/text separators. When sent via CW, the heading was in the clear, i.e., "151 URG DEL COBRA AL JAGUAR GR91 BT." Sometimes the headings for the RTTY messages were sent in the clear, plus being enciphered. Why this was done is difficult to fathom.

To date, three modes of transmission have been seen. RTTY, CW and Voice. The usual RTTY parameters are 425/45 although some 425/50 operation has also been observed. Tuning transmissions con-

sist of lengthy sequences of RY's with no call signs or other identification features.

Frequencies noted to date are: Cuba—6614.9, 6624, 10221, 14810, 19640 kHz; Angola—10587, 19903, 20550, 20723 kHz. Frequencies 18690 and 20106 kHz have not as yet been confirmed as to user. Contacts have taken place throughout the day and evening.

Coded addressee designators are employed and they indicate JAGUAR is in Angola and COBRA in Cuba. Also in Cuba, but less frequently seen in traffic, is the designator COYOTE.

The cipher system reported in use is as follows:

CIPHER ABCDEFGHIJKLMNOP
 QRSTUVWXYZ
 PLAIN ZIAMYDOQKVR SJ BGP
 UTCFHLWXNE

You will note in the following example that because Cipher Z equals Plain E and Z is also used as the separator, E's are omitted

Abbreviations Used For Intercepts

AM	Amplitude Modulation mode
BC	Broadcast
CW	Morse Code mode
EE	English
GG	German
ID	Identifier/led/lication
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)

from the plaintext heading:

CIPHER ZZZZ YKZSBYRGZYGJYRCZ
 PRGZVZVMCOQCKZCVZSGN
 KCZPRGZKCPBJFZPRGZZZ
 PLAIN NR CINTO NOVNTA PTO DL
 JAGUAR AL COBRA PTO
 RAPIDO PTO

An encrypted text follows the Z separators and prints out as garbage. Needless to say, the text is not encrypted by the same system utilized for the message headings!

After inserting the omitted E's in their appropriate positions and translating, the heading becomes "NR 190. FROM JAGUAR TO COBRA. RAPID."

In addition to the RTTY encrypted (garbage) transmissions, some 5F traffic has also been passed via that mode. 5F and 5L groups have both been heard on CW but only 5F groups noted on voice.

Terms and abbreviations in use on the link include:

CLA(se)	- PRECEDENCE
ENTREGA IMMEDIATE	- IMMEDIATE
URG(ente)	- URGENT
RAP(ido)	- RAPID
AVION	- ROUTINE
CTA(?)	- MESSAGE
PTO(punto)	- PERIOD
QEC(?)	- Not the Q Signal.
	Applies to uniden type of message.
	- Shifting to RTTY.

VOYF1

In operator chatter, locations appear to be represented by numerical designators such as 185, 547, etc.

Many of the foregoing procedures, terms and abbreviations are also in use on Cuban MINREX frequencies.

**Utility Station Intercepts
 (All Times Are UTC)**

- 159: Noise bursts at 2116; 6 sec on then 17 sec off, then 13 sec on w/cycle rptd. Pulses were 1 long & 2 short. Sounded the same with rcvr set to any mode (Vendetti, NJ).
- 204: Beacon JAU, Jacksboro, TN at 1640 (J.M., KY); Beacon EQY, Monroe Apt., Wesley, NC (Williams, SC). EQY's ID changing to TWL-- Ed.
- 206: Beacon GLS, Galveston, TX w/wx at 0401 (Blaine, TX).
- 207: Beacon APR (possible AJR on 206 kHz from Cornelia, GA (Williams, SC).
- 212: Beacon DCY, Washington, IN at 0323 (Miller, WI).
- 219: Beacon GEO, Georgetown, OH at 1645 (J.M. KY).
- 224: Beacon GVA, Henderson, KY at 0331 (Miller, WI).
- 233: Beacon HEM, Sparta, TN at 0711 (J.M., KY)

This is to confirm reception of
 Station: KKN39
 on Frequency: 13387 KHZ CW
 at DTG: 29 NOV 1987 1620UTC



DIPLOMATIC TELECOMMUNICATIONS SERVICE
 United States Department of State
 Washington, D.C. 20502

And here is a Department of State acknowledgement received by Patrick O'Connor.

236: Beacon GNI, Grand Isle, LA at 0403 (Blaise, TX).
 239: Beacon FE, Forestville, QUE, at 0619 (J.M., KY).
 257: Beacon TBY, Oxford, CT at 0312 (Van Waarde, CT).
 286: Beacon T, Ambrose Light Tower, NY at 0603; Beacon MP, Montauk Point, NY at 0602 (Van Waarde, CT).
 289: Beacon YLK, Lатуque, QUE at 0550 (J.M.).
 303: Beacon T, Chincoteague, VA at 0630 (Van Waarde, CT).
 306: Beacon CL, Clinton Harbour, CT at 0700; Beacon HP, Horton Point, NY at 0702 (Van Waarde).
 316: Beacon SP, Stratford Point Light, CT at 0505; Beacon OP, Old Field Point Light, NY at 0501 (Van Waarde, CT).
 362: Beacon OX, Waterbury-Oxford Apt., CT at 0400 (Van Waarde, CT).
 371: Beacon FND, BWI Apt., MD at 0455 (Pat O'Connor, NH).
 376: Beacon ZIN, Great Inagua, Bahamas at 0434 (Vendetti, NJ).
 386: Beacon 4X, Lac du Bonnet, MAN at 0917 (O'Laughlin, WI).
 386.5: Beacon SEA at 1710 (Vendetti, NJ).
 392: Beacon AGZ, Wagner, SD at 0455 (Miller).
 400: Beacon FO, Suffolk Co. Apt., Westhampton Beach, NY at 0325 (Van Waarde, CT). This is a former AAF base from WWII; still looks like it did 45 years ago. Beacon FO's transmitting site is near Flanders, NY.
 404: Beacon IUB, Baltimore, MD at 0114 (Vendetti, NJ).
 408: Beacon LQK, Pickens, SC (Williams, SC).
 411: Beacon VFU, Van Wert, OH at 0403 (O'Connor, NH).
 415: Beacon SLS, Salinas, Ecuador at 0412 (O'Connor, NH).
 417: Beacon HQT, Coats, NC at 0901 (O'Laughlin, WI).
 426: Beacon FTP, Ft. Payne, AL at 0855 (O'Laughlin, WI).
 436: Beacon NNY (Williams, SC). Could this one be ILY on 435 kHz, Washington, GA?-- Ed.
 454: 3EGP3, Panamanian flag tanker Fujikaze wkg VAI in CW at 0252 (McDonald, BC).
 480: D7CU, Korean bulk carrier Korean Jade in CW at 0524 wkg KLB (McDonald, BC).
 500: NMP, un-ID sending VVV in CW at 0108 (Vendetti, NJ). Although I don't have a listing for NMP, my records show NMP2, -7, -9, & others in this series to be USCG in Lake Michigan area-- Ed.
 524: Beacon AJG, Mt. Carmel, IL at 0425 (O'Connor, NH).
 2054: VAE, Coast Guard, Tofino, BC at 0648; VAG, CG at Bull Harbour, BC at 0651; VAK, CG at Victoria, BC at 0720, all USB w/maritime wx (Sabo, CA).
 2182: EJM, Malinhead, Ireland in USB at 2355 clg un-ID ship (O'Connor, NH).
 2638: USCG Commsta, Corpus Christi, TX wkg LKWB, a Norwegian ship at 0610. LKWB w/comms re a vessel in distress, "...on scene...can see rafts." Carmin, AZ).
 2675: Two USCG cutters in comms at 0732, shifting from scrambled to clear USB (Fernandez, MA).
 2705: YL/GG repeating Papa Lima (should be Papa November). Switched to Papa November at 1805 & into 5F grps. Papa Lima then came up on 3260 kHz w/5F. Both in AM-mode (Mason, England).
 2713: USN vessels w/tactical ID's Sandbar & Heavy Metal wkg Little Creek (VA) re live firing exercises at 0200 (Gordon, CT).
 2714: NZWD, USS Talbot (FFG-4) clg Canaveral Control in USB at 0245 re entry into harbor; NHAR, USNS Sealift China Seas (T-AOT-170) wkg NJVJ,

USS Coniteo (AO-99), at 1115 re fueling while under way (Gordon, CT).
 2716: CGJF, HMCS Glenevis (YTB-642) & HMCS Glendale (YTB-641), 2 harbour/coastal tugs, wkg QHM Halifax at 1000; NJRE, USS Edson (DD-946) clg Ertle (NJ) Harbor Control (Naval Weapons Station); "US Navy Unit" wkg San Francisco Harbor Control at 0300. The un-ID vessel was possibly a submarine; NHYX, USS Germantown (LSD-42) clg San Diego Control in USB at 1105 re permission to enter harbor at 1105; CYWJ, HMCS Port Saint Jean (YNG-180), a gate vessel, wkg Maritime Coastal Defense Office (MCDO) Halifax at 0315. A gate vessel can sweep mines or lay anti-sub nets (Gordon, CT).
 3016: San Jose Tower (FAA), PR in USB at 0210 wkg various a/c (Vendetti, NJ).
 3089: 5D3M, un-ID sta running a CW marker at 0112 (Kneitel, NY).
 3090: YL/SS w/5F grps at 0507 (Blaise, TX).
 3113: Toehold w/rptd calls to Log Road on "Bravo Uniform" in USB at 0809-0819. Wanted Log Road to QSL tfc sent to him. This is SAC's BU/ABNCP channel (Sabo, CA).
 3130: Many tactical ID's such as 7AQ, 6ZG, etc. NCS suggested trying Papa Alfa & Papa Yankee freqs (Carmin, AZ). Believe these are USN PacComsta freqs-- Ed.
 3460: OM/SS w/5F grps in USB at 0622, each grp rptd X2 (Carmin, AZ).
 3588: A number of fishing boat skippers in a friendly & informal ragchewing session, USB at 0328 (Kneitel, NY).
 3607.8: GHD2, Gallan Head, England at 0137 w/CW marker + ARQ phasing signal (Kneitel, NY).
 3992: Arizona tfc emerg net, USB at 0220. NCS was KA7VVC. Calls from all over US being patched to various states (Kammeler, CA).
 4066.1: NDFQ, USS John King (DDG-3) clg NAV-CAMSPLANT & Norfolk ICSB, then 'phone patch w/COMDESRON2 at 0000 (Gordon, CT).
 4125: KXV, Stuart Transportation, Piney Pt., MD re towboats at 0630; WIX, Lakin, WV; WBK, Freedom, PA, & others (Watts, KY).
 4131.2: 3FFW2, Panamanian reg container ship Maris Otter in USB at 0430 w/patch thru WOM (O'Connor, NH).
 4373: Tactical ID's G5G, 8VW, 0UW, N6N & others in USB from 0828-0903 re contacting 1st Fighter Wing (Oceana NAS, VA) & "disregard last track" (Sabo, CA).
 4413.2: High Seas Op in USB at 0352 wkg cruise ship Nordic Prince (Stanley, AZ).
 4461.3: M9A w/alphanumeric msg foll by anoti YL w/diff ID & msg. Then Kilo Juliet Victor Papa Yankee, standby. USB at 0619. Possible comms training exercise for SAC ground stas (Fernandez).
 4475: CW sta at 0300 w/marker: 645 645 645 0000 (White, ME).
 4480: YL/EE in AM-mode at 0414 w/5F grps (Osier, NY).
 4594: YL/GG in AM-mode at 0622 w/5F grps (Fernandez, MA).
 4599.5: Colorado Wing net CAP in USB at 1438, YL running the NCS (Wolverton, AZ).
 4603.7: Extensive and continuing radio checks by a net at 1007 in USB. Included Check Point 0, -1, -7, -10, -20, & vehicles Y90, Y70, 9M, & 83 (Kneitel, NY).
 4615.2: IDR2, Rome Navitad, Italy w/CW marker at 0411 (Osier, NY).
 4627.1: CAP sta KKQ266, Dallas, TX; Thunderbird (AZ) is alternate NCS. Others logged: Dogwood 4 (AR), Thunderbird 309 (AZ), Magnolia (LA), Eagle Nest (TX), in USB 0320-0328 (Kammeler).
 4670: YL op w/Victor Lima Bravo 2 in AM-mode at 0248 (Osier, NY). Believed to be Israeli Intel Svc (Mossad)-- Ed.

VERIFICATION CARD

QSL ZKAK QSL
 Station: ZLDR VOLMET Location: AUCKLAND
 Frequency: 8820 kHz Wavelength: SW 458
 Power: 1.6 kW Date: 22-5-87
 Time: 0920
 Your reception report has been examined and found correct.

INTERNATIONAL AIR GROUND AUCKLAND
 28 MAY 1987

CIVIL AVIATION DIV STATION
 MINISTER OF TRANSPORT
 RUBBER STAMP

Station Manager's Signature: *H.S. Williams*

OTC Australia has pleasure in confirming your reception of the following transmission:--

DATE AND TIME: 25/2/87 1340
 SERVICE: OTC MARITIME RADIO
 FREQUENCY: 8521
 CALL SIGN: VIS SYDNEY RADIO
 EMISSION: VARIOUS
 TRANSMITTER POWER: 10 KW
 ANTENNA TYPE: VARIOUS
 ANTENNA BEARING: OMNIDIRECTIONAL
MONOPOLE

Signed for OTC Australia: *H. Williams*

87/06/87

COMPTON TELECOMMUNICATIONS INTERNATIONAL

COAST STATION LISBOARDIO

DEAR SIR,
 I ACKNOWLEDGE RECEIPT OF YOUR CARD DATED OF 87/05/20.
 I AM GREATFUL TO CONFIRM ALL YOUR DETAILS AND GIVE THE DUE QSL.
 THANKING YOUR ATTENTION I PRESENT YOU MY BEST REGARDS.

JOSE S. PICADO
 Date de 01EMW

COMPTON TELECOMMUNICATIONS INTERNATIONAL
 Avenida 2228 - 1318 Lisboa, Portugal

Some QSL cards from the collection of Dr. Adrian Peterson, IN.

4750: A7A call up in CW foll by 847 A7A BT then 5F grps (White, ME).

4840: Large net w/Sunflower 33, -100, -235, -137, -150, etc. Believe 1 sta said Army Sunflower. Could be ref to Sunflower Army Ammo plant at Desota, KS. USB at 1700 (Shelton, KS). My refs indicate 4840 kHz is Army National Guard-- Ed.

4886: KKN44, US Embassy, Monrovia, Liberia in CW at 0406 w/QRA marker (Osier, NY).

4890: YL/GG repeating Charlie Tango w/musical tones in background at 2005. Announced 884 884 106 Gruppen & into 5F grps, all of which has a 1 or 0 as 1st digit. AM-made (Mason, England).

4996: RWM, Moscow, USSR in CW at 2309 w/CW foll by time pips (Ross, ONT).

5016: YL/GG in AM-made at 0600 repeating "a Paz, La Simba" accompanied by what sounded like an Andean flute, then 3/2F grps in GG (Watts, KY).

5305.6: Beacon D in CW at 0225 (Osier, NY).

5415: YL/EE counting 1-0 then 499 499 499. At 2010 10 beeps then group count 164 & into 3/2F grps, AM-made (Mason, England).

5440: YL/GG in AM-made w/1-0 count then 581 581 581. At 2010 10 tones & gruppen 159, then into 3/2F groups (Mason, England).

5547: Continental 41 in USB at 0430 w/kg San Francisco ground cntrl (Stanley, AZ).

5574: San Francisco grnd cntrl in USB w/kg American 56 Stanley, AZ; Navy EK529 (a P-3 Orion anti-sub a/c) in USB at 0432 w/kg Honolulu Aeradio (O'Connor, NH).

5616: MAC-60196 a/c in USB at 0343 w/kg New York Aeradio (Stanley, AZ); Havana 440 in USB at 0630 w/kg Bermuda Aeradio (Fernandez, MA).

5649: El Al Israeli Airlines flight w/kg Gander at 1871. USB (O'Connor, NH).

5696: NOJ, USCG Commsta, Kodiak, AK in USB at 0118 w/kg USCG a/c #1709, w/a/c requesting freq assignment (Kammiller, CA); USCG Group North Bend w/kg a copter; later Group Woods Hole (MA) in contact w/copter re lowering pumps to a fishing vessel taking on water. Another day, USCG New Orleans having difficulty maintaining contact w/an a/c so Group Corpus Christi came on for an assist (Watts, KY).

6351.5: 3BM3, Bigara, Mauritius in CW. A QSL (PFC & form letter) rcvd in 6 weeks (Ross, ONT).

6381: USCG Galveston, TX simplex w/kg in USB at 0755 w/camms to an un-ID vessel having some sort of emergency. CG told skipper to contact them 2 hrs out from jetty via VHF, in the meantime they'd be monitoring 2182 kHz (Sabo, CA).

6506.4: USCG Kodiak, AK in USB at 0400 w/kg NHKW, USCGC Confidence (WMEC-619) (Stanley)

6705: Trenton Military (Canadian Forces) in USB at 0442 w/kg many a/c w/patches, flight data, etc (Fernandez, MA).

6745: YL in USB at 0250 repeating Charlie India Oscar 2 (Kirk, CT). It's Mossad again-- Ed.

6755.1: CW sta at 1530 w/5L grps + dato burst at 1545 (A. Nonymous, MO).

6761: SAC Skybird w/kg Coho-99 in USB at 0405 (Stanley, AZ).

6766: AAJ, US Army, Ft. Leavenworth, KS clg AAE80 (un-ID) at 1911, USB (J.M., KY).

6817: SAM-31682 clg Andrews AFB, USB at 2118 (A. Nonymous, MO).

6820: OM/RR rptng 159-1 in AM-made at 2000. At 2005 announced 415 45 then into 5F grps (Mason, England).

6823: Gulf-3 to PCG-6MAB in USB 0039-0048 re camms problems & "the raid of Stane Bay is a surface raid using LVT's" (LVT = Landing Vehicle Tracked). Pass USMC maneuvers (Sabo, CA).

6875: YL/EE in AM at 0208 sending 3/2F grps (Osier, NY).

6955: YL/EE in AM at 0329 sending 3/2 grps. Text completed at 0332 w/"End" (Fernandez, MA).

7526: Un-ID CW at 1236 w/5L grps (cut #'s) Numbers 1-0 were ANDUWRIGMT (O'Laughlin, WI).

7862: YL/SS rptg "Atencion 689-09" 1030-1032, then several rptg of 09-70 before text of 5F grps. Was concurrent with (but not simulcast) YL/SS w/4F grps on 7722, both AM-made (Sabo, CA).

8188: GPBA, HMS Heckler in USB at 2044 w/patches via Portishead (O'Connor, NH).

8241.5: GQXC, HM Royal Yacht Britannia, in USB at 2007 w/patch thru Portishead; GBBB, HMS York (Destroyer D-98) in USB at 1752 w/patch thru Portishead (O'Connor, NH).

8291.1: WFJ, Tropigas International, Coral Gables, FL at 1955 clg ship Fred H. Billups (O'Connor, NH).

8649.5: ICB, Genoa Radio, Italy in CW at 0113 w/marker (Osier, NY).

8685: IRM, Medico Rome, Italy in CW evety night 0001-0200 (Turney, NJ).

8823.9: Un-ID CW sta at 0037 w/5L grps. Suspected Vietnamese diplo link (Ed.).

8903: Un-ID a/c in USB at 0250 w/kg Kinshosa Aeradio, Zaire (Stanley, AZ).

8964: Raccoon in USB at 2005 w/unsuccessful attempt to pass t/c to Raccoon Bravo (A. Nonymous, MO).

8989: NCVV ("Gald Eagle"), USS Carl Vinson (CVN-70) w/patch thru McClellan AFB to Beaver

Control re 2 F-14's (Stallion 201 & 204) enroute NAS Miramar. Other a/c in Gold Eagle control are Century, Viceroy, War Ace, Inferno (Carmin, AZ). This is a nuclear propelled Aircraft Carrier commissioned in 1982-- Ed.; Navy PF-605, an a/c apparently with high-level USMC VIP's aboard, w/Autovan patches via McClellan AFB to Hawaii. USB at 1858. At 1917 switched to "discrete channel" 8050 kHz (Sabo, CA).

8993: Rook-10 w/patch to Langley AFB (VA) w/ETA msg via Hickam AFB (HI). HQ Tactical Air Command Inspector General Team was aboard, USB at 2338 (Sabo, CA).

9020: TAC-1 in USB at 2008 w/patch thru MacDill AFB to Langley AFB Ops. Asked to notify Protocol & Raymond 16 of ETA (Vendetti, NJ).

9023: Charlie & Dallas in USB at 1719 w/radio check, then into encrypted mode. NORAD?? A. Nonymous, MO).

10188: Call up of 444 (sent X6) 011 (sent X2) repeated for several mins, then 91 BT & into 5F grps. CW at 1940 (White, ME).

10217: Beacon U, CW at 2122 (Kneitel, NY).

10386: Un-ID CW sta at 0204 w/auto-sent 1-0 repeated foll by long string of E's then off 0207 (Ed.).

10452: Armory w/alphanumeric t/c, USB at 0108,

foll by calls to Tranquil an Oscar at 0111. This is PACAF (Pacific Air Force) Oscar channel (Sabo, CA) 10570: Beacon K, CW at 1221 (Kneitel, NY).

10588: WGY908, FEMA Denver, CO to KGE34 (un-ID) in USB at 1626. WGY908 seemed surprised to find KGE34 on this FEMA freq. KGE34 said he was at "National" & that they didn't have any assigned HF channels (J.M., KY).

11282: United 182 in USB at 0407 w/flight report to Honolulu Aeradio (Stanley, AZ).

11306: A/C Boeing 7405 & 5131 testing radio eqpt in USB at 2038. At 2202, Boeing 5131 switched to 8822 kHz (J.M., KY).

11454: LBA2/LBA6/LBA10, Stavanger Navrad, Norway, OM/EE voice mirror, LSB at 0246. Said was listening on November Oscar 120, -125, -126, -127 (Kneitel, NY).

12150.2: YL/SS w/4F grps in USB at 0305 (Kneitel, NY).

12160: Un-ID CW sta w/5L cut # grps. Same cut #'s as on 7526 kHz logging (White, ME).

12168: AAJ, US Army, Ft. Leavenworth, KS to AAE80 (un-ID) in USB at 1813. Also w/kg AAC25, Ft. Detrick, MD, & AAW010 (un-ID) at 1815 (J.M.)

12175: YL/SS in AM at 1601 rptng 259 1-0 foll by 10 tones, group count 108 (GR108) & into 4F grps (White, ME).

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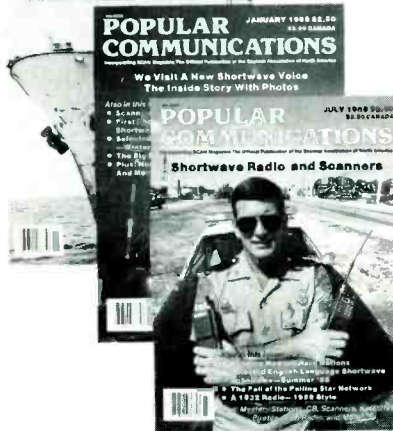
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CIRCLE 33 ON READER SERVICE CARD

12180: Hand sent 5L cut # grps in CW at 1407. Cut #'s same as 7526 & 12160 kHz (White, ME).

12576: 5BOW (un-ID but Cyprus allocation) in CW at 1359 w/marker (Kirk, CT).

12604: ICWW, ship Monte Oliveto in CW at 1926 w/kg NMN (O'Connor, NH).

12643: ZENA, ship Landou Peak in CW at 2027 w/kg PPJ (O'Connor, NH).

12677.9: 9MG2, Panang, Malaysia in CW at 2330 w/CQ marker (Ross, ONT).

12709.3: 9HD, Malta in CW at 1258 w/VVV marker (Ross, ONT).

12775: XFU, Veracruz, Mexico in CW at 1405 w/marker (Kirk, CT).

12827.7: DZF, Manila, Philippines in CW at 2343 clg CQ (Ross, ONT).

13211: Merry Maid to Nutshell w/sig check & alphanumeric msg on SAC "BW"/ABNCP freq, USB at 1751 (Sabo, CA).

13219.5: Y7V, FAX, V7Y, Y6T, Y7V, G4X (pass USN) in USB at 1636 w/comms re missile firing (A. Nanyamas, MO).

13312: K0X3, Boeing Aerospace, Seattle, WA to Boeing 5131 in USB at 1821. A/c talked about having trouble w/HF switch (Sabo, CA). Note 11306 kHz intercept-- Ed.

13463: Coil up in cut #'s: IUG NNTUW DTUNR continuously in CW at 1847. At 1850 changed to MIT GUINW RAWUD (J.M., KY).

13630: CQ DE C25 QTC in 25 wpm CW at 1807. Into t/c of 2L, 3L, & 4L grps (White, ME). Believed to be Vietnamese diplo link. Ptev noted on 4193, 4204, 13240, 13248, 13251, 13279, 13281, 13870, 13909, 13965.5, 16447, 16457, 18947, 18950 kHz. Lt O in place of O. QRX sent as 21ROO. Have also seen Vietnamese PT msgs in addition to cipher t/c-- Ed.

13637: Beacon F in CW at 1528 (Kneitel, NY). 13655.2: NMO, USCG Commsta Honolulu, HI w/msg in CW at 0130 to EBCB, Spanish Navy vessel Elcano. Msg re course routing for voyage from Tahiti to Callao, Peru. Based upon msg, this is a sailing vessel (Ed.).

13996.7: AAV6KG, NCS of ARMY MARS net in USB at 2310. NCS tells Mountaineer 1 Alfa he has Tinker AFB (OK) on the line & is trying to arrange a patch (Kammer, CA).

14408: AGA0QU, USAF MARS Quito, Ecuador w/patch thru AFA3BZ, USB at 1605 (J.M., KY).

1441.5: NJUL, USS Bainbridge (CGN-25) in USB at 1340 clg "any stateside MARS station" (Gordon)

15031: MAC-60201, a C-141 transport in USB from 1921-1933 w/patches thru McClallan AFB to Discard (22nf AF Ops, Travis AFB, CA), then to Andrews AFB, MD (MAC CP & Andrews Metro) (Sabo, CA).

15050: A46R & E46R w/t/c from Commander 3rd Bde to 52nd Inf at 1806 (O'Laughlin, WI).

16442.3: CW sta at 1200 repeating sequence 4D4 1 VVV. Then NR 709 GR 65 BT & info 5F grps (Ed.).

16450: CW marker at 1305: 454 (sent X6) BT T11 (sent X2). Letter T is a cut 0 (Kneitel, NY).

16450.6: WHD576, Medical Advisory Systems, MD being called by a ship w/callsign WXHS, USB at 1452 (Ed.).

16462.9: P3F22, un-ID ship in USB at 1431 clg un-ID shore sta re placing patch. Comms sounded like Greek language. Loc was Gulf of Mexico (Ed.).

16725.6: VRNJ, ship Crusader Venture in CW at 1828 clg NMN (O'Connor, NH).

16470: D5KY, ship Co-Op Grain in CW at 1842 clg KPH (O'Connor, NH).

16768: JRZL, ship Suzukosan Maru w/part ETA sin CW at 1843 (J.M., KY).

16797: D9IS, ROK vessel Hai Soo w/kg HLO in CW at 2227 (Hall, WA).

16824: BOPE in CW at 2238 clg BOZC, both PRC vessels (Kirk, CT).

16861.7: PKX, Jakarta R., Indonesia clg CQ in CQ at 1311 (Kneitel, NY).

17081: JFA, Chuo Gyogyo (Matsuda), Japan in CW at 2312 w/marker (Kirk, CT).

17093: WMH, Baltimore Radio, MD w/wx in CW at 2311 (Kirk, CT).

17975: Corboard at 2330 w/alphanumeric t/c, fall by Mama Bear w/similar msg at 2235. Was USB on SAC's Tango channel (Sabo, CA).

18027: SAM-26000 w/patch thru Andrews AFB, MD to SAM CP in USB from 2016-2026. This is Foxtrat 17 freq in Mystic Star Net (Sabo, CA).

18290: 02 clg 01 & 03 relaying net t/c in USB at 19591959. Chameleon clg Category for sig check at 2047, also USB (J.M., KY).

18666: Atlas in USB at 2027 receiving msg from "10450" that "the party is on." Anti-smuggling ops (Kammer, CA).

18737: CW at 1737 w/auto-sent call up in cut # system. At 1740 "DEAT BU66" sent & down (Ed.).

20562.1: CLP55, Embacubo Georgetown, Guyana w/kg CLP1: w/msg re reception interference on all bands (Ed.).

20885: Fax 4 w/kg Echo 21 in USB at 2155. Echo 21 stated he was in Lima (Peru?); needs next C130 a/c to pick up mail left on last mission (Carmin).

22282.5: 3EUJ2, Panamanian reg bulk carrier M/V Seion w/JCS in CW at 0021 (McDonald, BC). **PC**

PIRATES DEN

BY EDWARD TEACH

FOCUS ON FREE RADIO BROADCASTING

The good news we announced last month about the coming to shortwave of **Radio Caroline** has since been offset a bit by the bad news regarding the station's QSL policy. Apparently verifications for reception of **Radio Caroline** are pretty hard to come by. The address in Lynbrook, NY mentioned last month (which was taken from the 1988 WRTH) is no longer correct. Caroline's US representative, RSI Communications, has moved and is now supposedly located at 54 Plainfield Avenue, East Rockaway, NY 11518-1230. But so far there have been no replies from this address either. The station announces an address of "Radio Caroline, New York, NY 11518" which, based on the zip code used, is surely the East Rockaway address.

Alexander Durant of Albany, NY hears the station with its rock format and an ID of "**Caroline 558**" on 6210 from 0130 tune in. "558" is, of course, the medium wave channel which has been duplicated on shortwave much of the time, although more recently there has been some separate programming on the shortwave frequency, I'm told. L. Klereskog in Goteborg, Sweden says that the new transmitters of Radio Finland are blocking reception there of the 963 frequency.

The Voice of Free Long Island was heard by Steven L. Sachs in Highland Park, IL with a test broadcast at 0101 on 7475. The broadcast lasted only a couple of minutes before the station left the air. Steve's QSL for that reception indicates the station was back on that night from 0400 to 0500. In Michigan, Tim Trompe heard the station from 0430 to 0520 on 7415. The program was all Led Zeppelin and Billy Joel music and included a commentary about Reagan, phone calls and a DX tips feature with "DX Darren." Tim says he called in and was put on the air. He also heard a call from fellow Pirate's Den reporter, Steve Sachs and, in all, four or five calls were aired that evening. Bradley G. Lucken of Cincinnati was tuned in at about the same time and notes most of the announcing was by "The General." According to the QSL, the station uses 100 watts to a dipole 65 feet high.

Dave Borenstein in Centereach, NY spotted all Y-L station **WYMN** on 7411.7 from 0138 to 0220. The station played country music and announced "Hello, this is **WYMN**. Get in touch with us frequently, we usually respond." See the QSL illustration this month.

W. Nelson Chisholm is an engineer in Miami who spotted a station calling itself "**The Big 1620**" on 1620 kHz operating from sunset that evening to sunrise the next day



This Vietnam-era American military patch seems to take on a new meaning when viewed from fifteen years later!

and repeating that schedule for the next couple of days. Program was music via satellite VH-1 and the Music Channel, with a comedy sketch also aired. Mr. Chisholm estimates at least 100 watts of power and says his radio direction finding equipment indicates a location may be Hibiscus Island on the Intercoastal Waterway system between Miami and Miami Beach. He wonders if anyone else has noted this station.

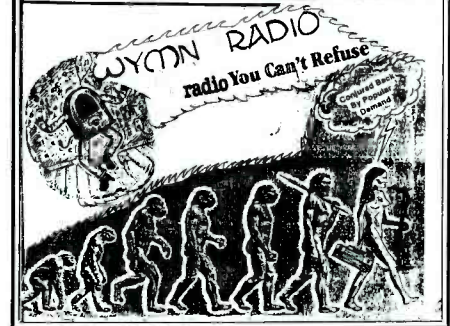
Michael Zahn, Entertainment Reporter for the Milwaukee (WI) Journal sends one of his columns in which he covers a pirate station being run by "Commander Todd". The station operates on 107.1 FM and announces as "The nation's music source—modern rock 107 for the best in new music." It even airs a local mailing address—P.O. Box 92871, Milwaukee, 53202. Zahn checked this out and learned the box is rented by a person apparently representing something called WTPS, Cable FM 107, located in a duplex on the city's east side. A visit to that address by Zahn brought a denial of any knowledge by the fellow who answered the door. Zahn suspects that Commander Todd may, in fact, be Todd Ciske, who formerly worked at WMSE-FM (the station of the Milwaukee School of Engineering) who put pirate **WTPS** on the air at 104.5 back in 1983 and was eventually closed down by the FCC. WTPS was later established as an over-cable FM station but that arrangement ceased in 1984.

An unidentified pirate was found by Wes Munro of Seattle. He heard the station while at a cabin on Lake Quinault in Washington's Olympic Mountains. The station operated around 92 MHz on the FM band and simply aired the same album all day long! On Monday, it was Mark Isham's "Vapor Drawings" for the full day. Another new age type album was played all day Tuesday, though Wes doesn't know which it was, but would like to. No announcements were heard on this station.

**WYMN
RADIO
QSL**

Radio sans Pantyhose

This will confirm reception on Nov 75 1987



Paul Johnson in Arizona and Tim Trompe (KM18FS) in Michigan both scored with QSL's from WYMN, the all-female pirate station.

Tom Paul of Atlanta, Georgia was in a London bookstore recently and ran across a "do it yourself" book on pirate radio which he says is very interesting. It's titled *Radio Is My Bomb* (which Tom says is a quote from a French pirate radio anarchist). The book is priced at around \$5 to \$6 US plus postage. If you're interested in this book, it might be best to query the store directly as to the full price and availability before you send off any money.

That covers things for this go-round. Thanks to those who contributed items for the column this month. Your pirate station loggings, news clippings, QSL copies and other information about pirate broadcasting are always most welcome and much appreciated at this end. And that very much includes you pirate broadcasters. Readers really enjoy getting the scoop on your facilities, history, technical aspects and future plans so please keep me advised about what you're up to. Whether you chase pirate broadcasts or, as a broadcaster, are the target of the chase, it's important to keep that information coming into the Pirate's Den on a regular basis. Again, thanks for your help.

See you next month with more from the world of pirate radio!

PC

Working With The United States Coast Guard

If you live next to the water, and if you are looking for some excitement with the United States Coast Guard, you may wish to join the U.S. Coast Guard Auxiliary.

The United States Coast Guard Auxiliary is the civilian component of the U.S. Coast Guard. You don't need a boat to join, and there is plenty that you can do with a local U.S. Coast Guard Auxiliary flotilla from your home base.

The purpose of the Auxiliary is to assist the United States Coast Guard in the following areas:

1. To promote safety and to effect rescues on and over the high seas and on navigable waters;
2. To promote efficiency in the operation of motor boats and yachts;
3. To foster a wider knowledge of, and better compliance with, the laws, rules, and regulations governing the operation of motor boats and yachts; and,
4. To facilitate other operations of the Coast Guard.

With large cutbacks in the United States Coast Guard's operating budget, Coast Guard Auxiliary members may have plenty to do both on the water as well as on shore. One of those shoreside positions might be a radio operator. Or possibly a local emergency communications coordinator, with a sophisticated VHF automatic direction finder on shore to assist the Coast Guard locating vessels in distress.

Joining the Coast Guard Auxiliary is not a military assignment. You have no military responsibilities by joining your local Coast Guard Auxiliary flotilla, nor are you permitted to take direct action in chasing down drug smugglers, or enforcing local speed violations.

Here are some of the primary programs of the United States Coast Guard Auxiliary (known as the four cornerstones):

- Courtesy marine examinations
- Public education
- Operations
- Fellowship

As a radio communicator, it's the "operations" that should be of keen interest to you. This could include actual patrols in a boat, aircraft, or vehicle along the water's edge; search and rescue missions; and communications to a local Coast Guard unit regarding discrepancies in local aids to navigation.

In Newport Beach, California, one popular radio post is the VHF automatic direction finder station high atop a big bank building



overlooking the Pacific Ocean. This radio facility and the automatic direction finder equipment has provided a valuable source of vessel location information that is then relayed to a local Coast Guard unit.

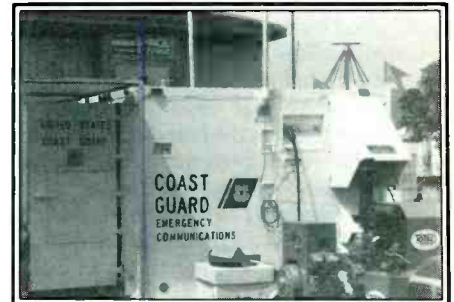
The following channels in the VHF spectrum are found in most Coast Guard and Coast Guard Auxiliary radio stations:

- | | |
|---|-------------|
| Channel 16 | 156.800 MHz |
| International distress and calling channel | |
| Channel 22A | 157.100 MHz |
| Coast Guard liaison channel between commercial and recreational boaters and local Coast Guard and Coast Guard Auxiliary units | |
| Channel 83A | 157.175 MHz |
| U.S. Coast Guard Auxiliary channel | |
| Channel 81A | 157.075 MHz |
| U.S. Coast Guard (only) working channel | |
| Channel 82 | 157.125 MHz |
| U.S. Coast Guard (only) working channel | |
| Channel 23 | 157.150 MHz |
| U.S. Coast Guard (only) working channel | |

Coast Guard Auxiliary members that may also possess an amateur radio operator's permit may be allowed on the following government repeater frequencies, just outside of their local 2-meter repeater band limits:

- | | |
|-----------------|----------------|
| 148.305 input | 143.875 output |
| 143.280 simplex | |

One of the most popular VHF handheld transceivers among Coast Guard Auxiliaries, who also hold an Amateur Radio license, is the ICOM H-16. This 16-channel, programmable, handheld transceiver has unlimited transceiver capabilities between 140 MHz to 173 MHz. This allows the Coast Guard Auxiliarist to key-enter marine channels, Coast Guard channels, and Amateur Radio channels all in one neat, compact unit. A priority feature allows the unit to sample VHF Channel 16, the international



distress and calling channel, approximately once every second while the unit is receiving on an alternate channel. The ICOM H-16 may also scan selected channels and bypass locked out channels, such as local weather frequencies.

Coast Guard units also operate on numerous government frequencies in the 30 MHz, 41 MHz, 164 MHz, 171 MHz, and 417 MHz region. A good quality programmable scanner should have little trouble in receiving these frequencies and searching for activity. Coast Guard Auxiliary members may receive special permission to operate on certain VHF frequencies authorized by local Coast Guard units.

If you're not located next to a large body of water, you may still tune into a hotbed of Coast Guard and Coast Guard Auxiliary activity on high frequency single sideband. The following frequencies are utilized by Coast Guard units throughout the country, upper sideband, with range depending on the frequency:

- 2.182 MHz—International distress and calling frequency
- 2.670 MHz—U.S. Coast Guard working channel

4.428.7 MHz—500-mile Coast Guard working channel
 6.506.4 MHz—Gulf Coast Coast Guard working channel
 8.765.4 MHz—Medium-range Coast Guard working channel
 13.113.2 MHz—Long-range Coast Guard working channel
 17.307.3 MHz—Day/evening long-range Coast Guard working channel

On these channels, you may hear the distress calls from thousands of miles out at sea. It's not uncommon to hear sinking vessels giving the Coast Guard their abandonment messages, or Coast Guard helicopters communicating down to stranded mariners in a life raft. If you have an SSB receiver with general coverage, try and tune in these channels for some real Coast Guard activity.

If you would like the excitement of working with the United States Coast Guard, do consider the U.S. Coast Guard Auxiliary and the radio unit within your local U.S. Coast Guard Auxiliary flotilla. Contact your local U.S. Coast Guard office for a list of local Coast Guard Auxiliary flotilla near you. Attend one of their monthly meetings and see how you might fit in.

Even if you've never been on the water, the U.S. Coast Guard Auxiliary could use you with your radio expertise. If you're looking for excitement, and don't mind getting your feet wet, the U.S. Coast Guard Auxiliary may be just the thing for you!

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 A comprehensive manual covering the field of radioteletype news monitoring—antennas, receivers, terminal units, monitors, and more. Contains 3 master lists of times of transmission, frequencies, plus ITU list of over 50 news services worldwide. 72 pages, paperback, \$8.95. Order #H173.

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by Radio Database International
 A graphically-oriented guide to shortwave stations, listening, radios, and accessories. Now you can tune-in the over 1100 radio stations around the world broadcasting everything from news to authentic Peking opera. 400 pages, paperback, \$14.95. Order #R400.

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GETTING STARTED AS A RADIO AMATEUR

A Ten-Meter Mystery

If your limited-space shortwave antenna isn't cutting the mustard, is higher transmitter power the only alternative? The FCC Amateur Radio rules state, in part, that "amateur stations must use no more than the minimum power necessary to carry out the desired communications" (Section 97.67[a]). In English, that means "use only as much power as you need." Joe Patten, KA8JXM, of Westland, Michigan, wonders if more power would solve his 10-meter mystery:

"I live in a condominium, four units to a building. No outside antennas are allowed. I use a wire quad loop attached to the ceiling of my two-car garage. I have had very good luck with it on 15 meters: To date, I've confirmed 94 countries on 15. Hoping to get going on 10-meter SSB and CW, I put a 10-meter quad loop inside the 15-meter antenna, but the results have been very poor so far. The antenna is eight feet above the floor (I realize that it is a serious drawback, but I can't change it). The problem seems to be that my Kenwood TS-180S transceiver puts out 90 watts on 15-meter CW and 85 watts on 10-meter CW. Is there an amplifier available to increase the output to 200 W? If so, I would appreciate your sending me the name of the supplier."

To a homeowner on "an average city lot" (whatever *that* is!), Joe's situation may seem pretty tough. But Joe is not alone. Many Hams—including me—live in apartments, condominiums and planned communities in which antenna space is limited for one reason or another. Despite this, they work plenty of shortwave DX, qualify for operating awards and generally have a fine time on the air.

Joe is one such Ham. He has confirmed 94 countries on 15-meter CW—just six countries short of qualifying for the DX Century Club! All it took was a very modest indoor antenna and less than half of the 200 W maximum transmitter power allowed to Novices and Technicians using the 15-meter band. Overall, Joe's station is doing a great job on 15.

But what's wrong on 10 meters? Someone who can work 94 countries with 90 W and an indoor antenna on 15 has the operating skill necessary to do as well on 10 with the same transmitter power, propagation and band activity permitting. Joe's problem can't be "cockpit error"—and his setup doesn't differ much between 10 and 15 meters. His 10-meter antenna is mounted inside the 15-meter loop, so both antennas are at the same height above the floor. (In terms of wavelength, the 10-meter loop is a



Mike Majka, KA3MMG, Baltimore, Maryland, netted all those QSL's with a Kenwood TS-530S transceiver. Mike likes meeting new friends over the air and recommends CW to all retirees!

bit higher than the 15-meter antenna, but that should help, if anything.) What gives? Should Joe increase transmitter power on 10 meters after all?

In my opinion, Joe doesn't need more transmitter power—yet. Here's why:

(1) Joe's rig puts out 85 watts on 10 meters—just 5 W less than it does on 15. That's "as close as makes no difference," as a Scotch co-worker used to say. *When the band opens and stations are there to work*, 85 W on 10 meters will do as well as 90 W on 15, assuming the same antenna gain. Because Joe uses the same antenna configuration on both bands, both antennas probably exhibit similar gain—if they're working properly.

(2) Amazing as it may seem, an amplifier capable of boosting 85 W to 200 W would almost certainly *not* be worth the money and effort spent acquiring it—unless, the amp is free! Power increases and decreases are usually enumerated in terms of *decibels* (dB), and most radio folk agree that an amplifier isn't worth installing unless it increases power by a factor of at least 4 (6 dB). To stay legal, though, Joe must limit his output power to 200 W or less. Increasing 85 W to 200 is a gain of only 3.7 dB—just over *half* an "S unit" on many receiver and transceiver S meters. Such a small power increase should be considered only as a last resort. (The question may be academic, anyway. I don't know of anyone who markets a 3.7-dB-gain amplifier for the 28-MHz Ham band!)

(3) An indoor antenna is usually much closer to stereo, TV, telephone and similar

consumer electronic gear than an outdoor antenna. Keeping power *down* is the best way to keep from interfering with such equipment when you use an indoor antenna.

It looks like a power increase isn't such a hot idea—yet. I suggest modifying the antenna system instead. Clue: Joe's 10-meter loop is mounted inside of his 15-meter antenna. Hunch: The 15-meter loop is messing up the performance of the 10-meter antenna somehow. This can be proven by temporarily removing the 15-meter loop and giving the 10-meter antenna a try "all on its lonesome."

If the 10-meter loop works well by itself, the permanent solution seems to be *one* antenna that can be *switched* between 10 and 15 meters. My apartment antenna system is similar: Each side of my half-wave, 30-meter dipole has clips that can be opened to break the wire at strategic points. I open the outer pair of clips to make a 20-meter half-wave dipole; opening the inner pair of clips further shortens the dipole legs for 15 meters. I haven't the room to install *separate* dipoles far enough apart so that they won't interact. For my money, one good multiband indoor antenna is better than several mediocre, destructively interacting indoor antennas any day!

If the lone 10-meter antenna doesn't work, something in the garage ceiling—wiring or metal framework—may be *resonant* on 10 meters and absorbing 10-meter energy. Changing the antenna location or configuration may help. If antenna fiddling—including trying other antenna types, such as a dipole—doesn't improve the situation, in-

LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

You can look for still another addition to the ranks of shortwave broadcasters in the United States, WWCR (World Wide Christian Radio) in Nashville, Tennessee, with a 100 kilowatt transmitter. A time/frequency schedule issued a few months ago showed intended broadcasts at 1300 and 0000 on 15690 beamed to Europe and also at 0200 and 0600 on 7520, beamed to Canada.

The station is affiliated with local outlets WMQM in Memphis, WNQM in Nashville and WITA in Knoxville, Tennessee which are all religious broadcasters. WWCR will make its mark by selling block airtime to religious groups and political organizations. The station's mailing address is 3314 West End Avenue, Nashville, TN 37203.

The Voice of Germany seems set on continuing to expand its horizons so as to make its signal received well around the world—despite (perhaps in part because of) the disastrous decision placing the Sri Lanka relay right in the middle of what was to become the center of Tamil unrest. Test usage of the transmitters of Radiobras in Brazil and Radio Veritas Asia in the Philippines have now become regular. More transmitters may be added to the Sines, Portugal and Rwanda relay sites. And more relay facilities are under consideration for an as yet unspecified site somewhere in the Americas.

Many DX years ago, Central America was an area very active with shortwave broadcasters. Honduras, Nicaragua, Panama, Costa Rica and Guatemala all had many active stations. After several years when activity was way down things have been improving (except for Nicaragua, down to only two stations, and Panama which has been without any for several years). The most recent Central American addition is in Guatemala with the arrival of Radio Kekchi. This is a religious/cultural station operated by the Evangelical Kekchi Church in San Cristobal Verapaz. The station is using a reported 5 kilowatts on 4845, broadcasting mostly in the Kekchi indian language. The initial schedule had a 1200 sign on, which means that now, in mid summer, it's difficult if not impossible to hear at that time. It is likely that an evening schedule may have gone into operation by now so check around 0100, but beware of the strong Brazilian station—Radio Nacional Manaus—also on this frequency.

HCJB has made some changes in its popular "DX Party Line" program. Host John Beck has left to take another position with HCJB, so Brent Allred (who did the show awhile back) has resumed host duties. Beck, among his other jobs, is hosting a new show for ham operators which is aired in



Here's the shack of Frank F. Orcutt in Alameda, CA. He's an aficionado of old radios, though his shack seems to have been invaded by at least one digital job!

place of the Wednesday time slot of DXPL which has been dropped on that day of the week, reducing the number of individual shows to two per week.

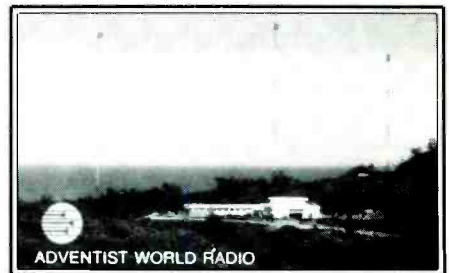
It's not often that a rare DX station returns to the air after having been silent for ten to fifteen years. But this is what has happened with Istanbul Police Radio in Turkey. Despite its name, this is a regular broadcasting station, quite similar to Turkey Police Radio, based in Ankara, which is heard by DX'ers in North America from time to time. Istanbul Police Radio, has been heard here rarely, if ever. The power isn't known, but is very likely well under 1,000 watts. The station is reported active on 6325, but so far we don't know if it is on the air around 0500, or 0600—the time Turkey Police radio on 6340 is usually received. But it's certainly worth checking!

Rumors are that Radio Norway International may, at some point in the future, make time available on its transmitters to Radio Sweden, and perhaps Radio Denmark!

The mail: Jack Linonis in West Middlesex, PA says he's gotten a friend interested in SWL'ing. They both use DX-440's. Jack wants to know if there's anyone interested in starting a regional club. Contact him at 1890 S. Hermitage Road, West Middlesex, PA 16159.



The shack of Walt Schivo in Novato, CA is so extensive, it would take up to four photos to capture it all. This sample includes a number of receivers, video monitors, amateur rigs, RTTY capabilities and scanners!



Franco Probi of Spoltore, Italy sent this photo of AWR's station on Guam.

Matt Messinger found that a move into the middle of Manhattan a couple of years ago was a disaster for shortwave listening. But now he's moved to Rochester, NY and finds things much improved from the reception standpoint.

Joe Bernstein in Rhode Island is part of a father/son listening duo. Jack uses a Sony 2010, son Tom a DX-360. Joe mentions a scene in the movie "The Fourth Protocol" in which a spy, listening on a Grundig Satellit 650 receives a message over the North American service of Radio Moscow! We'll have to watch for that flick! Joe has problems with interference from a nearby broadcast station. You are probably too close to com-

pletely eliminate the problem but it might be beneficial to talk to the station engineer about it.

Martin G. Blaise of Houston has problems with reception in his apartment. Talk to one of the experts at one of the dealers specializing in shortwave listening, Martin. They can advise you on the use of an indoor active antenna.

Does RTBF in Belgium QSL? That's the question John Miller in Georgia has. Last we heard they did; reports should go to Room 3M57, P.O. Box 202, 1040 Brussels, Belgium. As for the article on German regional SW broadcasters, check the July, 1984 issue of POP'COMM.

Joe Wright is getting back into listening after a hiatus, and welcomes correspondence at 21 Boynton St., Apt. 3, Jamaica Plain, MA 02130.

OK. Now let's hear from you. We always welcome log reports (you should know the drill about double spacing and tagging each with name and state abbreviation) as well as your comments, QSL duplicates you don't need back, clippings, schedules, station info, shack photos and so on. Even though we can rarely respond directly to your letters they are nonetheless very much appreciated!

Here are this month's loggings. Language is EE unless otherwise noted.

SWBC Loggings (All Times Are UTC)

Afghanistan: R. Afghanistan (via USSR-- Ed.), 4740 at 0225 in poss. Ushota. Tone & ID at 0230 (Goodlet, St. Maarten).

Alaska: KNLS, 6150 at 0935 w/rx talk (Kammler, CA); 7355 at 1730 w/IS, ID big band mx (Zirkelbach, CA).

Albania: R. Tirana, 7065 ending nx w/ID (Loran, CA); 0445 ab 9480 to off at 0457, foll by 0500 open on 9500 & into FF (Johnson, AZ).

R. Gjirakaster, 5057 home svc in Albanian at 0520 (Mierzwinski, PA).

Argentina: RAE at 0400 on 9690 w/ID, into EE but QRM from jammer "BF" (Johnson, AZ). Surely jamming wasn't directed at RAE-- Ed.

Armenian SSR: R. Yerevan (via R. Moscow) at 1154 in FF on 15485 (Kammler, CA).

Australia: R. Australia, 7205 at 1226 w/pop mx, 7215 at 1235, 9770 at 1200 (Durant, NY); 9580 at 1230, 15195 at 1230 (Northrup, CT).

ABC Brisbane, 4920 at 0846 w/nx (Durant, NY); 9660 at 0839 w/big band mx (Johnson, AZ).

Austria: R. Austria Int'l., 6000 to NA at 0430 (Linonis, PA); 11780 at 1530 to Europe & SE Asia (Loran, CA); 15320 at 1230 (Northrup, CT).

Belgium: BRT w/ opening at 0028 on 5910//9925 (Loran, CA); 1623 w/IS on 15510 into un-ID lang at 1630 (Johnson, AZ); 15590 at 1330 (Durant, NY).

RTBF on 17675 at 1630 in FF, IS at 1650 & off (Miller, GA).

Botswana: R. Botswana, 4820//7255 at 0350 w/IS, into EE & Setswana, nx M-F at 0510 (Zirkelbach, CA).

Brazil: R. Inconfidencia, 0100 in PP on 15190 w/talks, mx, possible commercials (Johnson, AZ).

R. Bandeirantes, 11925 at 0119 in PP (Johnson, AZ).

R. Globo, 0113 in PP at 11805 (Johnson, AZ).

R. Cultura, 17815 at 0005 w/sambas & Brazilian pop mx, ID & poss-s/off 0055 (Johnson, AZ).

R. Nacional, 9705//11870 at 2228, rapid PP (Johnson, AZ).

Radiobras, 11745 at 0140 & 0200 (Messenger, NY, & Stephens, CA).

R. Universo, 11905 OM in PP w/ID at 0301 (Kammler, CA).

Bulgaria: R. Sofia, 7115 at 0430 (Messenger, NY); 11720 at 0000 (Stephens, CA).

Burkina Faso: R. Burkina, 4815 at 0700 in FF (Wright, MA).

Cameroun: R. National, Yaounde, 4850 at 2209 in FF (Garcia, MD).

Canada: RCI on 5960 to Carib at 0930 (Minard, NE); 15150 to Africa at 2155 (Blaise, TX).

CFRX Toronto, 6070 at 0107 w/nx & sports (Gilson, MD).

CBC N. Quebec Svc., 6105 at 0400 (Loran, CA).

CKZU Vancouver relaying CBU on 6160 at 0932 (Loran, CA).

Canary Islands: REE (Spain) relay in SS at 2332 on 15365 (Garcia, MD).

Chad: RNT N'djamena, 4904 in FF at 0502 w/drums, mx, vernacular lang, chants, more FF (Mierzwinski, PA).

Chile: R. Nacional, 15140 in SS at 2325 w/anncr on 'phone, many ID's (Kammler, CA).

China: R. Beijing (various sites), 9640 at 0520 to NA (Linonis, PA); 9690 at 0540, & 9770 or 0020 (Loran, CA). 11715 at 0340 (Petarra, FL); 11755 at 0829, 17533 at 0137 in CC, 17650 in SS at 0135 (Johnson, AZ).

Guangxi PBS at Nanning, CC/EE lessons on 4915 at 1420 (Loran, CA).

Colombia: La V. del Llano, 6116 at 1058 in SS, ID 1100 & continue nx (Goodlet, St. Maarten).

E. Nuevo Grenado, 6160 in SS at 0338 w/talks, ID (Garcia, MD).

Cook Islands: R. Cook Is., on 11760 at 0620 in EE & Maori w/nx & island mx (Zirkelbach, CA); 0735 w/pop mx, time checks (Johnson, AZ).

Costa Rica: R. For Peace, 7375 at 0116-0130 w/talk, ID mentions Univ. for Peace in Costa Rica (Loran, CA).

TIFC Faro del Caribe, 5055 at 0530-0600 in SS w/ID at 0543 (Mierzwinski, PA); at 0330 (Linonis) R. Reloj, 4832 at 0415 in SS, pop mx, ID (Blaise, TX).

Cuba: R. Havana Cuba at 0154 on 6090//6140; at 0130 on 11735 in SS (Gilson, MD); 9525 at 0715 (Zirkelbach, CA).

Cyprus: BBC Limassol relay, 17740 at 1949 w/top 10 (Garcia, MD).

Czechoslovakia: R. Prague, at 2245 in poss Czech on 5930//7345, also at 0037 on 6055 w/IS at 0057 & multi-lingual ID (Gilson, MD); 21505 at 1440 (Durant, NY).

East Germany: RBI on 9560 at 0432 & w/GG s/on at 1100 on 15420 (Durant, NY); 15145 at 1815 (Zirkelbach, CA); 0120 on 9730; 0243 in SS on 11875; 15145 at 1855; 21465 in un-ID lang at 1444; 21540 at 1412 in GG (Johnson, AZ).

Ecuador: HCJB on 3220 at 0340 in SS (Mierzwinski, PA); 0100 w/ID, time pips (Petarra, CA); 9720 at 0100 (Messenger, NY); 17790 at 1930 (Johnson, AZ); 11775//15155 at 0121 (Gilson, MD).

R. Zatacay, Santo Domingo, 3395 in SS at 0318 w/mx, ID at 0320 (Mierzwinski, PA).

R. Nacional Espejo presumed (reactivated - Ed.), 4640 at 0330 in SS (Loran, CA).

Egypt: R. Cairo, pass home svc in AA on 9455 at 0400; 17690 at 1434 in AA (Johnson, AZ); 9475//9675 at 0200 (Minard, NE); 9900 in AA at 0323 (Durant, NY); 12050 in AA at 2000 (Minard, NY).

England: BBC on 3955 at 0645, 12095 at 1345, & 15070 at 1450 (Durant, NY); 9410 at 0407; 17885 at 1711, & 21710 at 1511 (Johnson, AZ).

Finland: RFI, to Middle East at 1501 on 11850 (Loran, CA); 11755 at 0544; 0159 into un-ID lang on 11945; at 1504 on 15185 (Johnson, AZ).

France: R. France Int'l., 9550 at 0445 w/nx (Messenger, NY); 11705 at 1600 (Zirkelbach, CA); 11995 at 0335 w/nx (Johnson, AZ); 17720 at 1246 w/nx to NA (Durant, NY).

French Guiana: R. France Int'l. relay at 1409 in FF on 21645 (Johnson, AZ); 6055 at 0330 w/nx, into FF 0345 (Durant, NY).

Gabon: Africa #1, 4890 at 0440 relaying R. France Int'l. (Mierzwinski, PA); 11940 at 1705 w/mx, FF ID (Johnson, AZ); 15475 at 1930 in FF (Stephens, CA).

Ghana: CBC at 0500 w/nx to 0615 on 4915 (Stephens, CA); 0709 w/nx, ID 0715 (Johnson, AZ).

Greece: V. of Greece, 9395 w/nx 0340 (Linonis, PA); 0511 in Greek on 9425 (Johnson, AZ); 1540 nx on 15630 (Loran, CA).

Guam: KTWR, 9820 at 1610 w/rx pgm, singing, asking for letters (Zirkelbach, CA); 11805 at 0808 w/ID (Johnson, AZ).

KSDA, 11980 at 0700 w/ID & into CC (Johnson, AZ); 1515 w/rx pgm, ID & address as P.O. Box 310, Hong Kong (Miller, GA); 17865 at 0259 full ID, fading out (Loran, CA).

Guatemala: TGNA R. Cultural, on 3300 at 0530 in SS, easy listening mx (Blaise, TX).

R. Maya de Barillas, on 2360 at 0401 in SS (Mierzwinski, PA).

R. Nahuatl, 3360 at 0119 in SS w/mx, ID (Garcia, MD).

Honduras: R. Luz y Vida, 3250 in SS at 0330, talks, vocals (Mierzwinski, PA).

HRVC La V. Evangelica, 4820 at 4055 w/rx pgm, ID, time checks, freqs., s/off 0500 (Kammler, CA).

Hungary: R. Budapest, 9835 at 0200 w/nx, folk mx (Stephens, CA); 15220 at 1428 w/IS, possible II lang (Loran, CA).

India: AIR, 9910 at 0108 w/nx (Loran, CA); 11620 at 2000 w/nx, commentary, lang. course, commentary, nx (Miller, GA).

Indonesia: V. of Indonesia, 11790 at 1500-1600, ID 1557, sked & island mx. Was //15150 (Loran).

International Waters: R. Caroline, 6210 at 0132 w/tack mx (Durant, NY).

Iran: VOIRI on 9022 at 0053 in Farsi; 15084 at 0341 in presumed Farsi (Johnson, AZ).

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

Iraq: R. Baghdad, 6110 at 0100 to NA (Linonis, PA); 11810 at 0057 w/anthem, freqs., ID, nx headlines, war claims (Johnson, AZ).

Israel: V. of Israel, 9435 at 0000 (Minard, ME); 11585 in Hebrew at 0415; 11655 at 0503 & into FF 0515 (Johnson, AZ).

Italy: RAI, 11800 nx w/tired-sounding anncr, mx (Durant, NY); ends 1400 (Stephens, CA); 0420 in Amharic to E Africa (Linonis, PA); 9710 w/ID at 0330; 11905 at 0347 w/IS & s/on anncts; 15335 at 1400 w/IS, into II; 17775 at 1906 IS & possibly off 1907 (Johnson, AZ).

Ivory Coast: RTV Ivorienne, 6015 at 0600 in FF w/chimes/drums, IS, ID of Ici Abidjan, nx, mx, commercials (Linonis, PA).

Japan: R. Japan (various relays), 5960 (via Canada) at 0300 (Durant, NY); 11800 at 2315 (Messenger, NY); 21700 (via Gabon) at 1500 (Petarra, FL).

FEN, 11750 at 0800 (Johnson, AZ); 3910 at 0935 (Kammler, CA).

Nihon SWBC: 3925 in JJ at 0808 (Kammler, CA).

Kenya: V. of Kenya (tentative) in local lang, poor sigs at 0540 to 0600 fade (Messenger, NY).

Kuwait: R. Kuwait, 15495 at 1230 in AA; 15505 at 1225 in AA (Northrup, CT).

Lebanon: King of Hope, 6215 at 2150 w/rx talks, ID (Garcia, MD).

Lesotho: R. Lesotho, 4800 at 0320 in Sesotho/Zulu talks (Mierzwinski, PA); 0421 un-ID lang (Johnson, AZ).

Liberia: ELWA, 4760 at 2212 w/BBC nx (Durant, NY).

Libya: R. Jamahiriya, 15415//15450 at 0118 in AA, mentions of Libya (Johnson, AZ); tentative at 1848 on 15430 in AA (Loran, CA).

Lithuanian SSR: R. Vilnius, 7400 (via R. Moscow) at 2300 w/nx, Viewpoint (Durant, NY); 13645 at 2320 (Kammler, CA).

Luxembourg: R. Luxembourg, 1925 on 15350 in FF w/tack mx, commercials, sports, telephone chats, jingles (Johnson, AZ).

Madagascar: R. Netherlands relay, 15570 at 1653 w/Happy Station pgm (Durant, NY).

Malaysia: R. Malaysia, Sarawak, 4950 at 1455 w/business nx, rubber/tin prices (Loran, CA).

Mali: R. Beijing relay, 9770 at 0304 (Durant, NY).

Mauritania: RTM (tentative), 4875 at 0640 in FF, AA prayers (Messenger, NY).

Mexico: R. Mexico Int'l., 9705 in SS at 0322 (Garcia, MD).

R. Universidad, Hermosillo, 6115 at 2255 in SS, soft mx, ID (Kammler, CA).

Monaco: TWR Monte Carlo, 7105 at 0744 w/rx talks (Kammler, CA).

Morocco: RTVM, 15335 in AA at 2100 w/nx, mx (Messenger, NY).

Netherlands: R. Netherlands, 15315 at 2227 w/IS, EE/PP ID, into PP (Gilson, MD); 9895 at 0658 ID & IS for Dutch svc, 15560 at 1530 in AA (Johnson)

Neth. Antilles: R. Neth. relay, Bonaire, 17605 at 1829 w/IS & ID, bc to Africa (Johnson, AZ); 6020 at 0310 (Durant, NY).

TWR, 6180 in SS at 0110 w/ID, into rx pgm (Linonis, PA); 9535 at 0330 w/rx pgm (Stephens, CA)

New Caledonia: RFO Noumea, 7170 at 0821 in FF w/talks (Kammler, CA).

New Zealand: R. New Zealand, 17705 at 0033 w/wx forecast & mx (Johnson, AZ).

Nicaragua: V. of Nicaragua, 6100 at 0600 to NA (Linonis, PA); anti-US pgm at 0644 (Kammler, CA).

Nigeria: V. of Nigeria, 7255 at 0551-0600 w/ID (Loran, CA); 0455 w/drums, nx at 0500 (Blaise, TX).

No. Korea: R. Pyongyang, at 0615 on 13650/-

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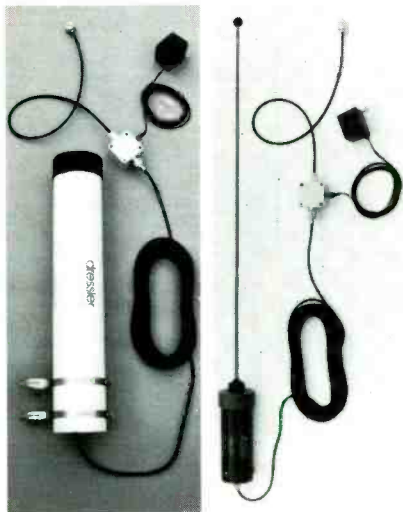
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15160//15180 (Zirkelbach, CA); 11735 at 1120 (Durant, NY); 9530 at 0848 ending to SE Asia; 0400 on 15115 s/on to SE Asia (Johnson, AZ); 1405 in Korean on 2850//3350 (Loran, CA).

Northern Marianas: KYOI Saipon, 11900 at 1405-1415 pop mx from 60's & 70's (Loran, CA).

Norway: RNI, 11870//15310 at 1700 (Loran, CA); 9605 at 2356 w/ID, IS, into NN; 0105 on 9615 in NN w/EE ID 0145 & off; 9650 at 0357 w/IS, ID; 15310 at 1917 in NN (Johnson, AZ).

Oman: BBC relay on Masirah Isl., 6060 at 0230 in Pashto/Dari. OM anncr, Big Ben's chimes, freq. info, gone 0300 (Mierzwinski, PA).

Pakistan: R. Pakistan, 11790 at 0215 in un-ID lang, animal sounds, talks (possibly a drama), ID partly in EE at 0232 w/address & s/off 0233 (Johnson, AZ).

Peru: R. Atlantida, 4790 at 0300 in SS w/talk, mx, ID at 0310 (Mierzwinski, PA).

Lo V. de la Selva, 4825 at 1023 in SS, freq. & sked anncr at 1030 (Goodlet, St. Maarten).

Philippines: R. Veritas Asia, 9770 at 0715 w/talks (Zirkelbach, CA); 1525 w/ID at 1528 but QRM from the Woodpecker (Loran, CA).

FEBC, 1524 on 9670 w/ix pgm & nx, 1530 (Loran, CA).

VOA relay at 2210 on 15290//17740 (Zirkelbach, CA); 9760 at 1130 (Durant, NY).

Portugal: R. Portugal, 0100 on 11840, gong IS, pops in PP, then un-ID lang at 0130, in EE at 0241 (Johnson, AZ).

Romania: R. Bucharest, 9510 at 0200 to NA (Minard, NE); 0412 w/People & Places (Durant, NY).

Senegal: ORTS Dakar (tentative), 4980 at 0630 in FF, local mx (Messinger, NY).

Seychelles: FEBA on 11865 at 1600 ending nx bc & into tx pgm (Loran, CA).

Singapore: Singapore BC Corp./Radio 1, 5052 & 11940 at 1349 w/pops, quiz (Loran, CA); 11940 at 1545 w/easy listening mx, pgm lineup (Zirkelbach).

Solomon Islands: SIBC, 5020//9545 at 0749-0801 w/wx, maritime tidal dot, ID 0800 (Loran, CA).

So. Africa (Rep. of): R. RSA, 17755 at 1517 w/country mx, letters from SWL's, freqs., nx feature (Gilson, MD); 0200 to NA on 9580//9615//11730; Petrarca, FL; 2151 on 11870, ID/ID in PP to Brazil; 2118 on 11900 w/letters; 15225 at 2010 to 2056 close; 15390 at 1859 s/on in un-ID lang; 17880 at 1812 w/mailbox pgm; 1403 on 21590 (Johnson)

Radio 5, 9665 at 0513 w/rock & pop mx, commercials in both EE & Afrikaans (Johnson, AZ).

R. Orion Svc., 7285 at 0500 w/mx, temps, pops, time checks (Miller, GA).

So. Korea: R. Korea, 9570 at 0638 w/local mx, **Let's Sing Together** (Johnson, AZ); 15575 at 2330 w/nx (Durant, NY).

Spain: Spanish Foreign R., 6125 at 0115 to NA (Linonis, PA); at 0005 & 0514 (Loran, CA); 11945 at 2253 w/IS, anthem, into SS (Johnson, AZ).

Sweden: R. Sweden, 9695 at 0244 w/interview, commentary (Loran, CA); 11705 at 0131 in SS; 0400 on 11845 w/IS, into un-ID lang; 11950 w/IS, ID at 0259; 15390 at 1700 w/ID, IS & into possible Swedish (Johnson, AZ); 15345 at 1400 w/stamp collecting pgm (Durant, NY).

Switzerland: Swiss R. Int'l., 9885 at 0400 to NA (Linonis, PA); 13685 at 1530 w/Dateline (Petrarca, FL); 17830 at 1525 w/polka, current affairs (Zirkelbach, CA); 9560 at 0900 w/EE ID, into GG; 0214 on 12035 w/current affairs talks; 21630 at 1511 w/IS, ID, freqs., & into Esperanto to Middle East & E Africa (Johnson, AZ).

Syria: R. Damascus, 11625 at 2005 w/nx, **Syria In A Week** (Miller, GA); 12085 to NA at 2100 (Linonis, PA).

Tahiti: R. Tahiti, 15170 at 0300 in FF w/commentary, mx bridges (Mierzwinski, PA); 9750 at 0535, 'phone calls in Tahitian, mx; 11825 at 1506 in FF (Johnson, AZ).

Taiwan: VOFC, 7355 at 2219 w/talks (Durant, NY). Via WYFR--Ed.

Thailand: R. Thailand, 9655 at 0230, YL w/ID, local mx. 1st time heard (Kammler, CA).

Tunisia: RTT on 7475 at 0433 in AA (Johnson, AZ); 1930 in AA (Wright, MA).

Turkey: V. of Turk., 9445//9640 at 2300 (Minard, ME); 9445 w/ID at 0410 (Loran, CA); 11860//15200 w/IS & ID 0454 w/ontherm, into Turkish (Johnson, AZ).

Ukrainian SSR: R. Kiev (via R. Moscow), 13645 at 0300 (Stephens, CA).

Unidentifieds: 15117 at 0209 in un-ID lang, theme from **Bonanza**, into AA mx; 11870 at 2325, IS once, into SS; 9705 at 0724 w/drums, flute, chants; 11880 at 0405 in AA; 17840 at 0444 in poss AA (Johnson, AZ). The way stations shift around on these higher freqs, these could be 'most anything-Ed.

On 3300 at 0425 w/nx in EE, into SS (Messinger, NY). Probably R. Cultural, Guatemala--Ed.

On 4760 w/BBC nx at 0700 (Messinger, NY). It's ELWA, Liberia--Ed.

On 5030 in SS to 0600, ID as "Radio Impacta" or similar (Messinger, NY). R. Impacta on 6150 from Costa Rica--Ed.

On 4766 at 0555 in SS & un-ID lang (Blaise, TX). Soviet Cuban relay on 4765--Ed.

On 12005 at 2000 in AA behind Tunisia (Minard, ME).

United Arab Emirates: UAE R-TV, Dubai, 0330 s/on on 9640//11940 to NA. At 1330 s/on 15435//17865//21605 (Petrarca, FL); 11940 at 0318 in AA; 15435 at 0310 in AA; 17865 at 1602 (Johnson, AZ).

USA: KUSW, 15580 at 2230 (Durant, NY); 9850 at 0400 (Linonis, PA); 11680 at 0030 (Minard, ME). WCSN, 9495 at 2238 (Durant, NY); 21515 at 1559 (Johnson, AZ).

WHRI, 13760 at 2030 (Petrarca, FL); 9770 at 2200 (Blaise, TX).

R. Maati, 11930 at 2130 in SS (Blaise, TX).

VOA, 21540 at 0107 (Johnson, AZ); 15580 at 1700 (Petrarca, FL).

WYFR, 17615 at 1458 in SS into EE; 6065 at 0100 (Gilson, MD); relaying VOFC on 7355 at 2200; 17613 at 2330 (Petrarca, FL).

WRNO, 15420 at 1815 (Durant, NY).

La V. de OEA (via VOA), 15160 at 2347 in SS (Garcia, MD).

Uruguay: R. Oriental, 11735 in SS at 0034 (Garcia, MD).

USSR: R. Moscow to NA at 0223 on 5940//6000//7115//7150//7185//7310 (Gilson, MD).

R. Moscow World Svc, 17665 at 1430 w/headlines, jazz pgm (Petrarca, FL); 9780 at 0911; 15540 at 1436; 17825 (subsequently shifted to 17880) at 0100; 17655 at 1538 (Johnson, AZ).

Radiostansiya Rodina, 11770 at 1400 in RR. S/on right after Radiostansiya Atlantika s/off (Durant).

R. Station Peace & Progress, 9790 at 1405 w/nx, Johnson, AZ).

Kamchatka R., Petropavlsk-Kamchatka, ID in RR on 4485 at 0815 (Kammler, CA).

Khabarovsk R., 4610 in RR at 0816 (Kammler).

Vatican: Vatican R., 6150 at 0102 w/talk, ID & off 0109 (Gilson, MD); 9605//11780 at 0055-0100 w/nx of Pope's travels (Loran, CA); 9755 at 0533 in FF to s/off 11740 at 1600 in un-ID lang; 9645 at 0431 into II or Latin; 11715//11740 at 0650 in Latin; 11810 at 1548 w/interview, into Hausa at 1556 w/closing & back to EE 1559, off 1600 (Johnson)

Venezuela: R. Mundial Boiviar, 4770 in SS at 2348 w/mx, ID (Goodlet, St. Maarten).

Ecos del Tarbes, 4980 in SS w/S. American pops at 0140 (Wright, MA).

La V. de Carabobo, 4780 at 1030 in SS w/Latin Amer. mx, commercials (Durant, NY).

R. Capital, 4850 at 0424 in SS w/US pops, off w/anthem at 0454 (Durant, NY).

R. Tachira, 4830 in SS at 0242 w/mx (Durant).

R. Nacional, 11695 at 0042 in SS w/novel, ID (Garcia, MD).

Vietnam: V. of Vietnam, 1618-1630 w/ID (Loran, CA); 1350 w/**Vietnam Today** & ID (Miller, GA); 10059 at 0938 in Vietnamese (Johnson, AZ); 15010 at 1820 w/talks (Zirkelbach, CA).

W. Germany: DW (various sites) at 0114 on 6085//6145 (Gilson, MD); 3995 at 0037 in GG (Durant, NY); 9700 at 0345 (Blaise, TX); 9635 at 0500 to NA (Linonis, PA).

RFE, 21745 at 1636 in un-ID lang, rock, possible nx at 1700 (Johnson, AZ).

VOA Munich, 3980 at 0637 w/election results (Durant, NY).

Yemen Arab Rep.: R. Sana'a, 9779 at 0342 in AA, OM & YL in discussion w/AA mx (Johnson, AZ).

Yugoslavia: R. Yugoslavia, 5980 at 2215 w/freqs, nx (Miller, GA).

And a tip 'o the hat to:

Bruce R. Gilson, Silver Spring, MD; Paul Johnson, Phoenix, AZ; Bob Zirkelbach, Pleasant Hill, CA; Michael Loran, Azusa, CA; David Kammler, Ridgecrest, CA; Mark A. Northrup, Danbury, CT; Alexander Durant, Albany, NY; Joe Wright, Jamaica Plain, MA; Martin G. Blaise, Houston, TX; Daryl Stephens, San Jose, CA; Mary K. Minard, Portland, ME; Terry Petrarca, Ft. Lauderdale, FL; John Miller, Thomasville, GA; Matt Messinger, Rochester, NY; Cliff Goodlet, Saint Maarten Island; Jack Linonis, West Middlesex, PA; Fernando Garcia, Baltimore, MD and Frank Mierzwinski, Reading, PA.

Thanks to all and until next month, good listening!

To all our faithful readers out there in POP'COMM land, as you can well see, the response this month was excellent! Keep up the good work. See you next month. **PC**

Beaming In (from page 4)

have "definite inside information" that Alice is one of several better known authors who have written extensively on radio history, including Donald deNeuf, Ed Marriner, Don Jensen, or Dr. Adrian Peterson, but nobody yet has speculated why any of these people would have decided not to use their own names for this material.

Although we have, on several occasions, run some of these letters here in the magazine, we eventually stopped. This wasn't because of any shortage of such letters, but because most of those who write in are simply rehashing information previously announced by others. The mail remains heavy, but no new revelations have been forthcoming of late. Looks as though everybody will have to wait for further bulletins to be issued from the inner sanctums of those who are doing intensive and serious original research.

In all, it has evolved into something with a genuine aura of mystery and intrigue, with a thriving cult of Alice investigators pursuing what they view as a great quest. It's even contributed to the language of radio, as evidenced in a recent bulletin sent to the membership of the *Great Circle Shortwave Society* by its president, Dr. Harold Cones. In the bulletin, Cones confided that he writes many of the articles in the club newsletter "using an Alice Brannigan type name." Little does Dr. Cones realize what he's prob-

ably setting himself up for with provocative admissions like that.

Of course, all who write in regarding Alice's "true identity" aren't quite as serious as others, there's no shortage of lighthearted mail. One reader suggested Alice is the co-incarnation of Shirley MacLaine. Others have sent in "guesses" ranging from Richard Nixon to Fr. Guido Sarducci. The cleverest one from this group came from Jack Maskeylyne in Florida. Jack said that he had "finally cleared up the situation once and for all," and submitted a 1910 vaudeville poster touting one "Miss Alice Marconi, The Electric Mysterious Wonder." That's a difficult one to beat.

We here at the magazine have never extended any special efforts to heighten, perpetuate, or exploit the fervor and enigma surrounding this Alice business. If anything, in proportion to the obvious amount of reader interest, it's pretty much been running on its own inertia. Still, I've never really been able to understand what all of the fuss has been about since it doesn't have any of the classic ingredients for being especially mysterious. When we began running Alice's writings a couple of years ago, there wasn't any indication that such a flap about her identity would ensue.

Now that a ruckus has been kicked up, I'd be less than candid if I said that I'm in any way displeased at the interest this has created in one of our regular authors, and in the magazine itself. I'm thoroughly enjoying the entire matter, I think it's just great!

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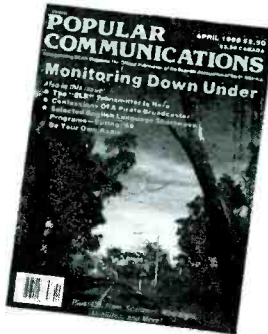
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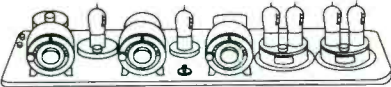
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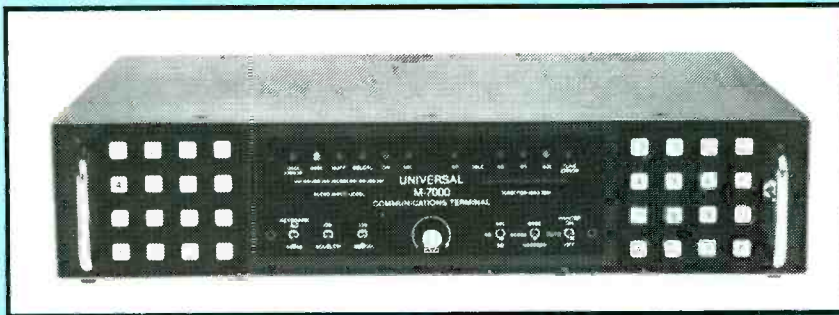
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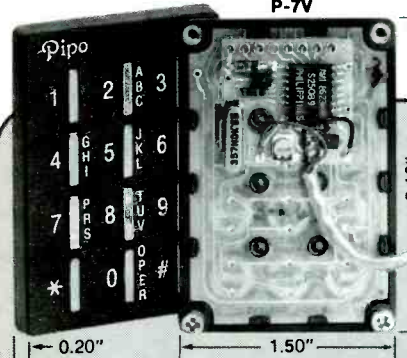
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SCANNING TODAY

(from page 9)

simply to SCAN, or worse yet sending it to POP'COMM, will cause long delays.)

6. Be patient! Remember, your inquiry will be forwarded to a volunteer who will have other mail to answer and may have family obligations that will cause a delay in the reply.

We should also note that you shouldn't be surprised if the Technical Advisor must write to you for some additional details. There will be times, too, when the answer to your problem simply cannot be determined by "remote control" . . . however, the Technical Advisor may be able to suggest where to get help locally. Of course, all advice is given without charge and neither SCAN, nor the Technical Advisor, can guarantee the accuracy, or in any way be held liable for the advice given.

A few final words on what the Technical Advisor Service is not. It is not a consumer affairs bureau. We cannot help with problems you may be having with a dealer, obtaining warranty repair service, etc. (Yes, believe it or not, we sometimes receive scanners here at SCAN for warranty repair or even for a refund!) These inquiries need to go to the dealer or manufacturer and, if necessary, to the Better Business Bureau—but definitely not to SCAN. Also, we do not recommend equipment types or brands because we feel that this is a decision each person must make individually depending on their own circumstances.

As we mentioned in a previous column, the SCAN Technical Advisor Service grew out of member comments. There may be some other things that you think we should be doing—if so please write to us. Member suggestions are the key ingredients in making SCAN the growing and interesting association it is.



Where Oh Where Do I Send . . .

There still is understandable confusion about what to send to SCAN and what to send to *Popular Communications*. Even we were confused at first, so don't feel alone! Here's a brief rundown you may want to save for reference.

Change of Address: If you're a SCAN member, your old mailing label and new address should be sent directly to: SCAN Address Change, P.O. Box 414, Western Springs, IL 60558. Sending it to *Popular Communications* will cause delays if you're a SCAN member. On the other hand, if you're not a SCAN member, address changes should go to *Popular Communications*.

Communications Shop Ads: These should go directly to: PC Communications Shop, 76 N. Broadway, Hicksville, NY 11801. Please, please type your ad or print very clearly.

Membership Renewal: Please send your SCAN membership renewal (which includes subscription to *Popular Communications*) only to SCAN, P.O. Box 414, Western Springs, IL 60558. *Popular Communications* subscribers who are not SCAN members should continue to send renewals to *Popular Communications*.

Photo Contest Entries: Send to SCAN Photo Contest, P.O. Box 414, Western Springs, IL 60558.

Public Service Award Nominations: Send to SCAN Public Service Award, P.O. Box 414, Western Springs, IL 60558.

Co-Op Service Orders: Send to SCAN Co-Op Service, P.O. Box 414, Western Springs, IL 60558.

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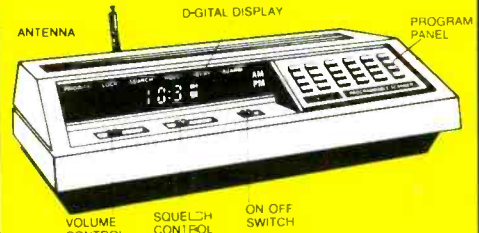
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The Regency Z-60 is a compact, programmable 60 channel, multi band, FM monitor receiver for use at home or on the road. It is double conversion, super heterodyne used to receive the narrow band FM communications in the amateur, public safety and business bands: 30-50, 118-136, 144-174, and 440-512 MHz. *Size 10 1/4" Wx2 7/8" Hx8 3/8" D.

Sophisticated microprocess-controlled circuitry eliminates the need for crystals. Instead, the frequency for each channel is programmed through the numbered keyboard similar to the one used on a telephone. A "beep" acknowledges contact each time a key is touched. The Z60 scans approximately 15 channels per second.

Any combination of channels can be scanned automatically, or the unit can be set on manual for continuous monitoring of any one channel. In addition, the search function locates unknown frequencies within a band.

Other features include scan delay, priority and a bright/dim switch to control the brightness of the 9-digit Vacuum-Fluorescent display. The Z60 can be operated on either 120VAC or 12 VDC. Includes one year warranty from Regency Electronics (optional 3 yr extended warranty only \$39.99, gives you a total of 4 yrs complete warranty or 2 yr extended warranty only \$29.99, gives you a total of 3 yrs complete warranty.)



Bearcat

BC-600 XLT

\$224.99 (\$7.00 shipping)

Digital Programmable 100 Channel Scanner

BC 600 XLT covers the following frequencies: 29.54 MHz, 118-174 MHz, 406-512 MHz. Features compact size of 6.5" Hx1.5" Wx7.3" D. Scan delay, priority, memory backup, channel lockout, bank scanning, key lock, AC/DC power cords, telescopic antenna, mounting bracket, supplied one year factory warranty, search, direct channel access, track tuning, service search, including pre-programmed frequencies by pushing a single button for police, fire, emergency, aircraft, weather, and marine services. Plus exclusive optional features never available on any scanner before. First is an RF receive amplifier for boosting weak signals for only \$24.99 plus a CTSS tone board is available for only \$59.99 to make this the number one scanner available in the USA. Optional cigarette lighter plug #6DDMPC \$4.99.

BEARCAT BC-950XLT

Same features as BC-600XLT but also receives 800-954 mhz.

\$289.99 (\$7.00 shipping)

BEARCAT 70XLT

20 CHANNEL HAND-HELD SCANNER

Small size 6" Hx1" Dx2 1/4" W, full digital readout, priority, search, channel lockout, scan delay, key lock. Covers following frequencies: 29.54mhz, 136-174mhz, 406-512mhz. Package includes rubber antenna, rechargeable Ni-Cad battery pack, AC adapter/charger, and carry case.

SPECIAL PACKAGE DEAL \$169.99 (\$6.00 shipping each)

SCANNER WORLD EXCLUSIVE UNIDEN BEARCAT BC205XLT

\$289.99

(Plus \$7.00 Shipping each)

Digital programmable 200 Channel hand held portable scanner with raised button keyboard for easy programming of the following frequency ranges: 29-54 MHz, 118-175 MHz, 406-512 MHz, 806-956 MHz. Features include Scan delay, memory backup, key pad lock, side liquid crystal display, channel lockout, 10 twenty channel banks, direct channel access, automatic search, full one year factory warranty, 10 priority channels, Ni-Cad battery pack, AC adapter/charger, flexible rubber antenna carry case are all included. Size is 2 1/2" Hx1 3/8" Dx7 1/2" High. (Optional extended 2 year warranty \$59.99, 3 year extended warranty \$79.99)



SCANNER WORLD SPECIAL

COBRA SR-925

\$109.99

(plus \$7.00 shipping each)

Digital programmable, 16 channel, AC/DC mobile/base, with raised button keyboard for easy programming of the following frequency ranges: 29.54mhz, 118-174mhz, 406-512mhz. Covering aircraft, marine, police, fire, weather, trans, public service, plus much more. Features include digital display, priority, scan delay, weather button, channel lockout, search, scan speed, automatic squelch, memory backup, one year factory warranty, external speaker jack. (Extended warranty 2 years extra \$29.99, 3 years extra \$39.99.)



ORDERING INFORMATION

Call (518) 436-9606 to place orders by phone or mail orders to Scanner World, 10 New Scotland Ave., Albany, NY 12208. Orders will be shipped same day received by United Parcel Service. Scanner World accepts VISA, MasterCard (COD shipments by United Parcel will be for cash or certified checks only). Mail orders will be for cash or business checks will be held 4 weeks for bank clearance. Orders with cashiers checks or money orders shipped same day received. Prices, specifications and terms subject to change without prior notice. If items are out of stock we will backorder and notify you of delivery date. All shipments are F.O.B. Scanner World warehouse in Albany, NY. We are not responsible for typographical errors. All merchandise carries full manufacturer's warranty. Bid Proposals and Purchase orders accepted from Government agencies. Free full line catalogue available upon request. No minimum order. New York State Residents add 7% sales tax. Any claims must be made within 7 days of merchandise receipt.

SHIPPING CHARGES

(* Add \$5 per scanner, and \$3.00* for all accessories ordered at same time. C.O.D. shipments will be charged an additional \$3.50 per package. Full insurance is included in shipping charges. All orders are shipped by United Parcel Service. Shipping charges are for continental USA only. Outside of continental USA, ask for shipping charge per scanner.

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"They said I couldn't work DX with just 100 watts. Especially with a radio that has less than 1000 switches on the front panel.

But the truth is, I'm working lots of DX, more than some of these blockbuster types, thanks to my Yaesu FT-747GX.

You see, my no-nonsense FT-747GX was designed with me in mind, so I can hop around the band fast to nail those DX stations. While the other guys are warming up their amplifiers, I'm working the new country!

My FT-747GX has a super receiver, with a directly-driven mixer for great overload protection. And, Yaesu included the CW filter in the purchase price

(I used the money I saved on postage for the QSL cards!).

And my FT-747GX is loaded with other features. The receiver works from 100 kHz straight through to 30 MHz, and it's a fantastic shortwave broadcast receiver. I can use all twenty memories for that alone! Plus it's got dual VFOs. A noise blanker. Split frequency operation for the pile-ups. And scanning up the band helps me check out openings as they happen.

I just put in the optional crystal oven, and next month I'm going to pick up the FM board. I can't wait to tell my buddies I worked England on a repeater!

And with the money I saved when I bought my FT-747GX, I got

a second ten-meter antenna for satellite work on the high end of the band. I use my personal computer to tell me what satellites are going by, and the computer even sets the frequencies on the radio for me.

Now my friends are getting FT-747GX rigs, too. I knew they'd figure out my secret weapon sooner or later. But now I'm setting the pace!

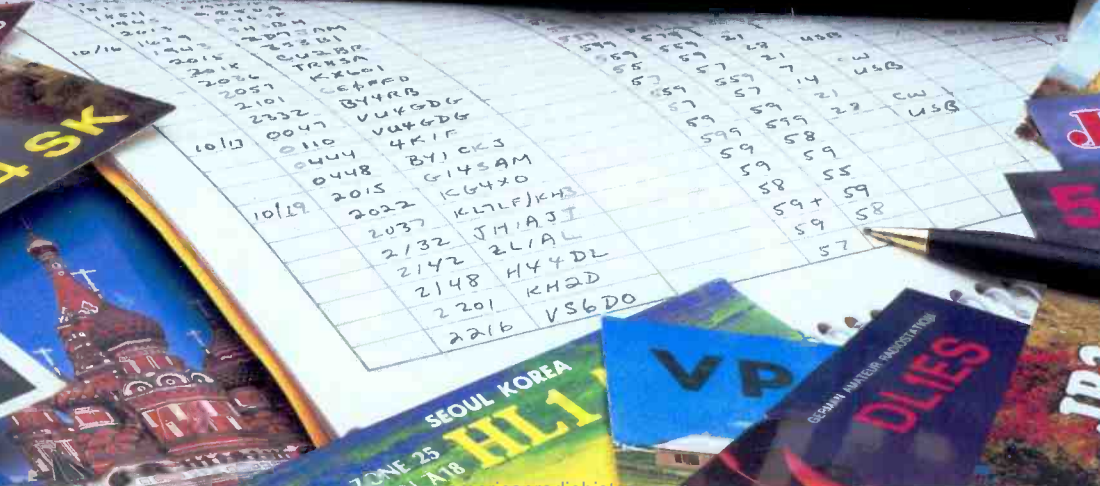
Thanks, Yaesu. You've made a rig that makes sense."

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Parts: (213) 404-4847. Prices and specifications subject to change without notice.

YAESU

CIRCLE 145 ON READER SERVICE CARD

**"They laughed when they saw my radio.
Then they saw my logbook."**



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NEW

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)



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CIRCLE 64 ON READER SERVICE CARD

Specifications and prices are subject to change without notice or obligation.