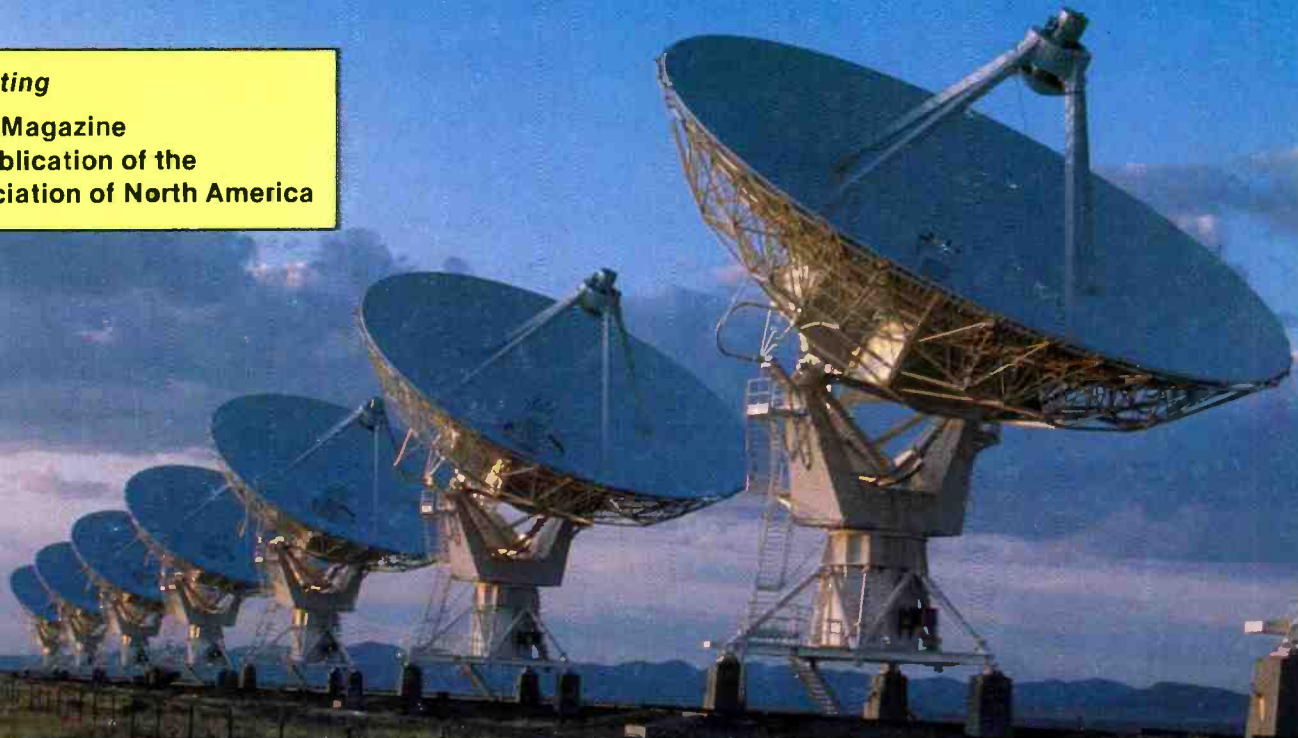


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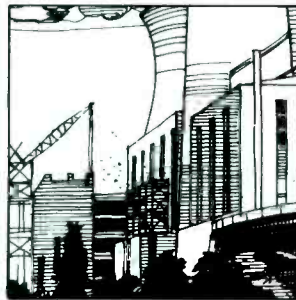
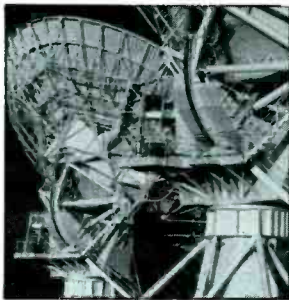
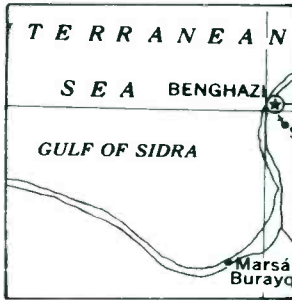
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This month's cover: The 82-foot diameter reflectors of the most powerful radio telescope on earth, the Very Large Array, captures radio waves and sends them through a feed to any of several receivers. Photo by Ken McCormack.

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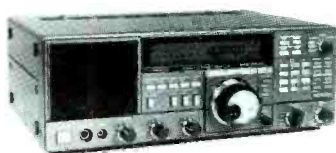


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AN EDITORIAL

Bingo! We've Run Out Of Numbers

It's a good thing that there's no ultimate number because I'm certain that we'd be barking at its heels within a few decades. This struck me the other day while punching what seemed to be an endless string of digits into the telephone while trying to place a long distance call. We have to keep modifying and lengthening our various designation numbers in order to hold our civilization together.

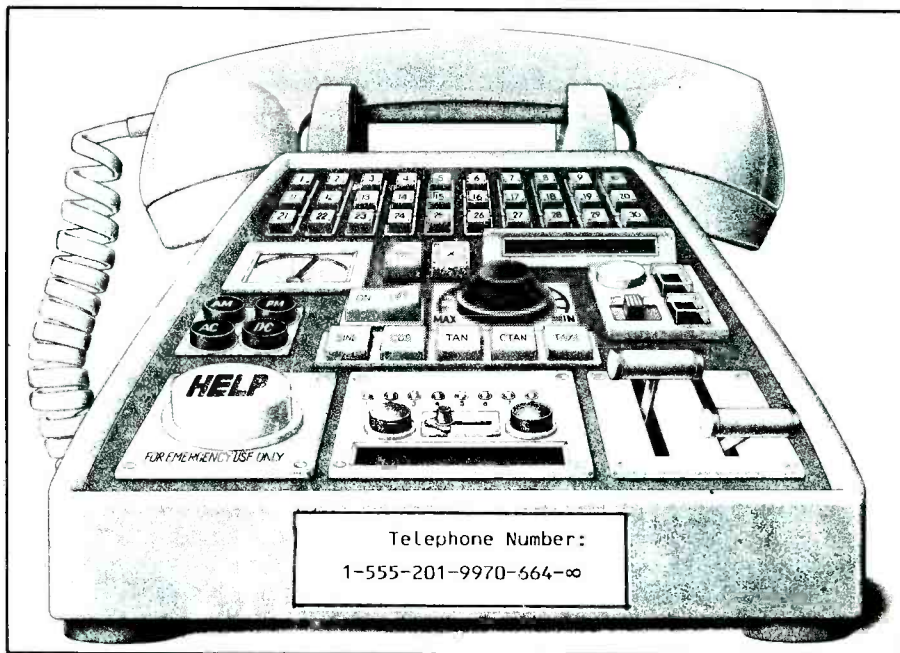
Couple of years ago, long distance calls could be made with seven alphanumeric and the help of an operator. Then someone invented "area codes," later devising the whacky prefix "1" to sprinkle on top of the whole mess. For users of a few long distance services, placing a call could invoke 30 or more digits for each call placed. The money saved on toll charges has to be spent on courses in higher mathematics in order to handle such numbers.

At Teotihuacan, in ancient Mexico, the Toltecs spent centuries adding new levels to their Great Pyramid To The Sun. When it got to be 216 feet high they realized that they couldn't add any more levels. Poof! That was the end of the Toltecs! Someday the 'phone company is going to issue the infinity symbol to some hapless telephone subscriber and that will mark the end of Mr. Bell's invention!

Glenn Miller's song, *Pennsylvania 6-5000* was composed fifty years ago. Just imagine if they had to write it today—it would take the first 32 bars just to squeeze in all of the access numbers, area codes, and the rest of the extra baggage that's been tacked on over the years.

The sinister computer at the Social Security Administration can't give out more than 999,999,999 account numbers. Forget about Nostradamus' predictions for determining the end of the world. T.S. Eliot was wrong too, the world isn't going to end with a whimper. It's going to end with a bang the instant they attempt to get that infernal computer to issue its one-billionth account number. I used to think that it would happen when the Postal Service tried to issue the one-hundred-thousandth ZIP code. Humanity was lucky that they copped out recently by adding an additional four ZIP numbers. The Canadian Post Office was smart in developing a postal code system that defies comprehension to the point where nobody, including its own computer, will realize when it saturates.

This hairy problem with running out of descriptive alphanumeric has hit hardest in the world of electronics and communications. We're facing a crisis of titanic proportions. I don't want to be accused of running



"Someday the 'phone company is going to issue the infinity symbol to some hapless telephone subscriber and that will mark the end of Mr. Bell's invention."

around yelling, "The sky is falling!" but let's say that it's starting to sag in the middle to an alarming degree. You may have already been affected by this state of events.

Early vacuum tubes had designations that reflected the basic pioneering simplicity that pervaded our way of life in the days when cars were called "Model T" and "Model A" instead of things like "320-CSI" and "280-ZX 2 + 2." What could be easier than vacuum tubes called the O1A or the 37? Even the 80 and 813 were within reason.

As more and more tubes came out, new and expanded designations were required to keep track of them. Communications people had to learn to cope with the 6V6, 12K7, 6E5 and the like. When that format got used up and tubes eventually slid into the realm of fancy grids, Loctal bases, then Compactrons, CRT's, and Nuvistors, the numbering systems were being expanded at a rapid pace so that the public could have tubes like the 6SK7, 6CL6, 17JZ8, 6CW4, 30PL12, and countless other marvels containing filaments, grids, plates and who knows what else.

To complicate matters, European tube manufacturers decided to call tubes *valves* and added insult to injury by totally disregarding the carefully structured designation system we had devised. They commenced to flood the market with tubes bearing renegade designations such as ECC82, YF183, DK91, HV235 and others too preposterous

to repeat here. Books and directories had to be written in order to offer advice on sane equivalents that might be substituted for the European tubes bearing capricious designations that had been assigned for the primary purpose of confounding the honest, law-abiding people of North America.

Between this cavalier European attitude, and the fact that we, ourselves, had begun to produce tubes carrying clumsy designations the likes of 4CX3500J and 3CW10000H3, it was obviously time for a change, time for someone to sit down and seriously consider inventing transistors as a replacement for vacuum tubes, thus allowing the start of a numbering cycle that could begin from scratch. How do you spell relief?

Ah, how easy it was to summon to the forefront of the mind the designations of those first diodes and transistors such as the 1N34, 2N35 and CK722. Sure, everybody knew that history would repeat itself and eventually semiconductors, too, would run out of suitable designation numbers—but nobody dreamed that it would happen in less than 30 years! But, there we were again. Only wimps with neckties, slide rules, pocket calculators, or physics degrees could have dealt with the complexities of modern life and still coped with solid state gizmos tagged with handles the likes of the MPS2222A, 43A168064P1, PL-151-030-

(Continued on page 72)

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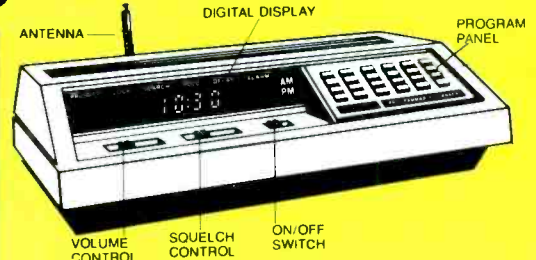
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MAILBAG LETTERS TO THE EDITOR

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.

Pick A Packet

From time to time my scanner stops at 145.01 MHz and I hear a pulsating "blip-blip" type of signal. Is this a radiobeacon, or what?

Claudine Levesque,
Rochester, NY

Your description of the sound isn't quite vivid enough to permit identification, but the frequency is a giveaway. This channel, which lies within the limits of the 2-meter Ham band (144 to 148 MHz), is generally used for something called Packet Radio. Packet is similar to RTTY but centered around home computers. Other popular Packet Radio frequencies are 145.03, 145.05, 145.07 and 147.55 MHz. In order to copy Packet Radio traffic you'd need a personal computer hooked to your scanner through a TNC (Terminal Node Controller) device. Packet Radio has been growing in popularity and computer communications, in general, is beginning to show up on numerous frequencies in and out of the Ham bands. —Editor

The Mounties To The Rescue!

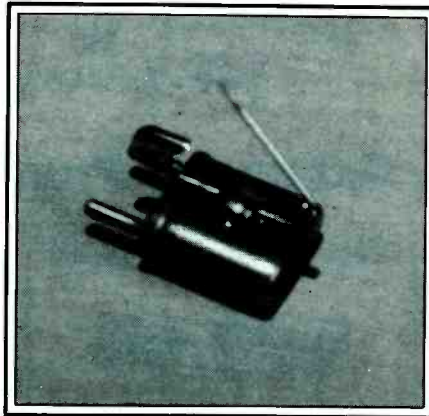
The Royal Canadian Mounted Police (RCMP) detectives are part of the agency's General Investigation Section (GIS). How can I listen to the communications of the GIS here in British Columbia?

Kyle Birns,
Mission, B.C.

The information we have here is that Burnaby is on 139.26 MHz; Surrey, North Vancouver, and Victoria are on 139.29 MHz; Port Moody and Coquitlam operate on 139.32 MHz; with Richmond on 139.38 MHz. If any readers have better information, let's hear from you! —Editor

Crystal Bawl

After spending 15 years accumulating assorted plug-in crystals for various CB rigs and scanners, I suddenly find myself with a shoebox filled with the things. What's worse, since none of my present equipment uses crystals, these gizmos no longer serve any practical purpose. I estimate that they represent almost \$1000 worth of investment, so I decided to come up with a way to make something useful out of them. What I've done is solder safety pins to them and turn them into radio jewelry that I hope to sell at flea markets. I've also made up some to give as gifts to my friends and I'm there-



New "wave" radio jewelry.

fore enclosing one for you, Tom. What do you think of the commercial possibilities of this item?

Martin Renik,
Rawlins, WY

I've received some wonderful items from readers, but I'd have to say that your gift was certainly unique. Aside from the fact that it's for a frequency I can't use, and the pin gets in the way of the crystal socket, you've got a pretty hot item there. If you replaced the pins with solder lugs, you could even branch out into charm bracelets. Although I doubt that Gucci has anything to worry about, these could well be the next fad to replace pet rocks and mood rings. Go for it! —Editor

On The Side

Not long ago I purchased several CB radios for business purposes. Normally, our communications take place on CB Channel 3, however while tuning around to find a less-crowded channel, I made a strange discovery. On Channel 16 there were stations operating that I couldn't understand because they seemed to be badly distorted. How could they understand one another if I was unable to copy them?

Paul Beauchamp,
Cadillac, MI

Looks like you tuned to stations using Single Sideband (SSB) mode. While any CB station is entitled to use SSB communications, special equipment that can operate in that mode must be used for such operations. SSB transceivers (which are usually capable of operating in standard AM mode, too) cost more than AM-only transceivers. The advantages include a far greater communications range than AM, a more serious approach to communications use than is to be found on AM, and less crowded channels. Inasmuch as AM and SSB operations don't mix well on the same channels, there have long been unofficial agreements between operators whereby Channel 16, plus the channels between 34 and 40, are used

exclusively for SSB communications. Of course, some operators don't go along with those arrangements (there's no FCC regulation requiring separation of AM and SSB operations), but it would be great to think that someday everybody would. —Editor

Slipping Plates?

Some people claim to be able to predict earthquakes by fluctuations in radio waves. What are these fluctuations?

William O'Connell,
Fort Bragg, CA

Several years ago I received several letters from a reader in the Netherlands Antilles who was conducting extensive research in this. As I recall, it was his theory that by comparing anomalies in the signals of certain specific distant stations, he could get a day or two's advance warning of earthquake. I'm sorry but I don't remember anything else about the how or why of his theory, but he claimed a high degree of accuracy. More recently, the *Journal of Geophysical Research* (Edition 90:6245, 1985) carried a report called "Electromagnetic Radiations from Rocks" (by T. Ogawa and others) in which it was claimed, "It has been demonstrated by the sample rock experiments that the ordinary crustal rocks produced electricity when they were shocked or fractured and radiated EM waves in the frequency range of 10 Hz to 100 kHz." Readers having more specific information on using radio for earthquake predicting are invited to step forward. —Editor

Bringing Home The Beacon

Thanks to coverage in POP'COMM of longwave monitoring, I have been doing some tuning on frequencies below 540 kHz. Radiobeacons and maritime CW stations especially interest me. Although I've logged and identified almost 100 different radiobeacons (with the help of Ken Stryker's book, *The Aero/Marine Beacon Guide*, which I found out about through a POP'COMM review), I know there are hundreds more I have yet to log. One station mystifies me, however. This station appears on 526 kHz with the radiobeacon identification "CYV." Doesn't seem to be listed anywhere. Can you help?

B.J. Kolb
Warner-Robins, GA

That one has us stumped, too, B.J. In fact, it's got everybody trying to figure out its location. Ken Stryker says that, although it's location hasn't been pinned down, it has been reported by listeners in Alabama, Florida, Illinois, Maryland, Michigan, New Jersey, Ohio, and South Carolina. Other widely reported mystery radiobeacons in the LF band include PV on 387 kHz, UCA on 390 kHz, and IF on 393 kHz (varies). —Editor

ARRL BOOKSHELF



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OFFICIAL NEWS COLUMN OF THE SCANNER ASSOCIATION OF NORTH AMERICA

The "Typical" Scanner Owner

Many of us enjoy scanning almost secretly because we simply don't know of anyone who shares our interest in this unique activity. That naturally leads to curiosity about the hundreds of thousands of other scanner users out there . . . just who are they, anyway? We asked that question, "Who Are We?", in one of our very first editorials after the founding of SCAN back in 1978. Later, we followed it up with several surveys of the membership. We found that there were some identifiable categories, such as police officers, fireman, amateur radio operators, and news media personnel. But large numbers of other members couldn't be neatly categorized. About all that could be concluded was that they tended to be interested and concerned about their communities; they were Scout leaders, Little League coaches, members of the town council, or in some other way active in the area where they lived.

Today, I would venture to say, it would be nearly impossible to categorize who we are. The latest research shows that nearly 8% of all U.S. households has a scanner. In some areas surveyed it ranged up to 15%. Balancing that, of course, are some areas of the country where scanning has not yet caught on. But 8% of the population with access to a scanner is a staggering number! Why do we know so little about others who are scanner fans? I recall catching a TV newscast of the lady mayor of a very large city with a scanner radio behind her desk. When SCAN inquired about how she used it, her press secretary denied she even knew what a scanner was! The next time the TV news crews covered a statement by the mayor, the scanner was gone. But I am convinced to this day that she simply had it tucked away in a desk to be brought out when the window shades could be drawn and the door locked. For whatever reason, there are many famous people who are intense scanner enthusiasts but don't want to advertise the fact. Perhaps they feel that the average citizen would view their hobby as somewhat bizarre. Fortunately, as scanner use and the benefits of an informed society become more widely accepted, others are becoming more open about their enthusiasm for scanning.

Recently *Business Week*, (July 14 issue), the influential magazine aimed at the country's top corporate executives, ran a feature story about the joys of scanning. Editor Donald H. Dunn explained the fun of having a scanner at football games and other sporting events, as well as at the weekend summer home. Could it be that scanning will become the latest craze of the business executive set and a hot topic on the country club golf courses? I hope so. Maybe the next time you see your mayor on TV, he or she will be proudly displaying a scanner as evidence of his/her concern for knowing what's really happening in the community. In the meantime, don't be surprised if you find out that your favorite entertainment or sports personality is secretly a scanner fan, too. There are many of them out there!

Digital Communications Revisited

Our column on the new digital communications and the ease with which a standard scanner and adapter could be used to read these messages has caused a flurry of letters. Sounds like you're interested! To recap just a bit for those who missed it, much public safety, amateur radio and other communications is going from voice to digital to provide "hard copy" (written messages) at the intended receiver. On a scanner these new transmissions sound like two-tone chirps or pulsing buzz like sounds. That's the bad news. The good news is that if you have a scanner with an audio output jack, you can simply plug in a decoder and working with an inexpensive computer, like a Commodore 64, have those messages displayed on a TV screen or printed.

The most frequent request in those letters was "where do I buy one?" Also, "how about a step-by-step guide to installing a system" was a frequent request. We'll try to have a detailed story on this in

the future, but in case you can't wait, here are a few suggestions: There are a number of companies who advertise in *POP/COMM* or its sister publication, *CQ*. Among these are HAL Communications Corp., Microlog, A.E.A., and MFJ Enterprises. Check out the ads and write for literature. Or, if you have a store specializing in amateur radio nearby, you might want to drop in and get some expert advice. The same equipment that hams use to decode digital communications will work on most other digital communications you'll hear on your scanner. Happy listening, or should we say reading?

Missed Opportunities

One of the most frustrating things is to go to an event, such as one I just attended, and not have a working scanner. It was just one of those things, I forgot to charge up the portable the night before. Oh, I could have replaced the Ni-Cds with penlight cells, but I decided to just forget about it. The event was the annual Glenview Naval Air Station open house in Glenview, Illinois. All types of aircraft were on display and operating. The problem was I never knew when I'd be inside when a transport or a helicopter took off. Of course, the French precision flying team had a scheduled time to take off, for the annual lake front air show, so I was able to catch that. But how nice it would have been to listen in! Surely there were other scanner fans out there, but in the crush of the crowd I never ran into one. Well, there's always next year. Except sometimes there isn't a next year. It could be something special at a planned event, or something you just happen upon. Having a portable scanner with you all the time is the key. I remember the first time I ran into a member who had two identical portable scanners. I couldn't understand why, until he explained that he was able to keep at least one unit operating at all times, while the other unit was on charge.

By the way, don't be discouraged if you don't know the frequencies in use. I have found an amazing number of frequencies at the event, be it air show, auto race, or football game, by using the search function on the radio, if you can get close to the transmitter source. Always start with a casual conversation with the radio technician . . . you might get lucky and he'll tell you, or spot a printed label with the frequency on it! Failing that, try de-sensitizing the scanner all the way with the squelch control and go into the search mode. The very strong, nearby signal will break the squelch and reveal the frequency. Presto . . . you're tuned in. I've even had success in the normal search mode by just being aware of the type of sound that pops up. Most special events have a special sound about them, usually background noises you don't get in a permanent dispatcher-vehicle system. So, at the first hint of this type of sound, I stop searching and listen for a few minutes. Often it's just what I've been looking for. Try it, and please write to us with your hints and suggestions.

Let's Give Those Scanner Manufacturers a Piece of Our Minds!

I think that it is time to let scanner manufacturers know what we really would like to have in the next generation scanners. Not just with sporadic letters that tend to get lost, but in an organized way that has a chance of getting results. An example: So many of us are volunteer firemen that I just can't understand why we don't have a portable scanner that also has an alerting function. Why should we have to carry a scanner and a paging receiver? We've had priority functions in scanners for a long time now, but nothing that truly combines the function of an alerting pager and scanner. They are both receivers covering the same frequencies and transmissions, so it's a simple thing to do. If you like the idea, send me postcard. If we end up with an avalanche of cards, we may see some results. I

(Continued on page 74)

NEW! Lower Price Scanners

Communications Electronics™, the world's largest distributor of radio scanners, introduces new lower prices to celebrate our 15th anniversary.

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List price \$699.95/CE price \$469.95
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Regency® Z60-GP

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

Regency® Z45-GP

List price \$259.95/CE price \$159.95/SPECIAL
7-Band, 45 Channel • No-crystal scanner
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Regency® RH250B-GP

List price \$659.00/CE price \$329.95/SPECIAL
10 Channel • 25 Watt Transceiver • Priority
The Regency RH250B is a ten-channel VHF land mobile transceiver designed to cover any frequency between 150 to 162 MHz. Since this radio is synthesized, no expensive crystals are needed to store up to ten frequencies without battery backup. All radios come with CTCSS tone and scanning capabilities. A monitor and night/day switch is also standard. This transceiver even has a priority function. The RH250 makes an ideal radio for any police or fire department volunteer because of its low cost and high performance. A 60 Watt VHF 150-162 MHz. version called the RH500B is available for \$454.95. A UHF 15 watt version of this radio called the RU150B is also available and covers 450-482 MHz. but the cost is \$449.95.

NEW! Bearcat® 50XL-GP

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

NEW! Scanner Frequency Listings

The new Fox scanner frequency directories will help you find all the action your scanner can listen to. These new listings include police, fire, ambulances & rescue squads, local government, private police agencies, hospitals, emergency medical channels, news media, forestry radio service, railroads, weather stations, radio common carriers, AT&T mobile telephone, utility companies, general mobile radio service, marine radio service, taxi cab companies, tow truck companies, trucking companies, business repeaters, business radio (simplex) federal government, funeral directors, veterinarians, buses, aircraft, space satellites, amateur radio, broadcasters and more. Fox frequency listings feature call letter cross reference as well as alphabetical listing by license name, police codes and signals. All Fox directories are \$14.95 each plus \$3.00 shipping. State of Alaska-RL019-1; State of Arizona-RL025-1; Baltimore, MD/Washington, DC-RL024-1; Buffalo, NY/Erie, PA-RL009-2; Chicago, IL-RL014-1; Cincinnati/Dayton, OH-RL006-2; Cleveland, OH-RL017-1; Columbus, OH-RL003-2; Dallas/Ft. Worth, TX-RL013-1; Denver/Colorado Springs, CO-RL027-1; Detroit, MI/Windsor, ON-RL008-3; Fort Wayne, IN/Lima, OH-RL001-1; Hawaii/Guam-RL015-1; Houston, TX-RL023-1; Indianapolis, IN-RL022-1; Kansas City, MO/KS-RL011-2; Long Island, NY-RL026-1; Los Angeles, CA-RL016-1; Louisville/Lexington, KY-RL007-1; Milwaukee, WI/Waukegan, IL-RL021-1; Minneapolis/St. Paul, MN-RL010-2; Nevada/E. Central CA-RL028-1; Oklahoma City/Lawton, OK-RL005-2; Orlando/Daytona Beach, FL-RL012-1; Pittsburgh, PA/Wheeling, WV-RL029-1; Rochester/Syracuse, NY-RL020-1; San Diego, CA-RL018-1; Tampa/St. Petersburg, FL-RL004-2; Toledo, OH-RL002-3. New editions are being added monthly. For an area not shown above call Fox at 800-543-7892. In Ohio call 800-621-2513.

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Bands: 29-54, 118-136, 144-174, 406-420, 440-512 MHz. The new handheld Regency HX1500 scanner is fully keyboard programmable for the ultimate in versatility. You can scan up to 55 channels at the same time including the AM aircraft band. The LCD display is even sidelit for night use. Includes belt clip, flexible antenna and earphone. Operates on 8 1.2 Volt rechargeable Ni-cad batteries (not included). Be sure to order batteries and battery charger from accessory list in this ad.

Bearcat® 100XL-GP

List price \$349.95/CE price \$203.95/SPECIAL
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Search • Limit • Hold • Lockout • AC/DC
Frequency range: 30-50, 118-174, 406-512 MHz. The world's first no-crystal handheld scanner now has a LCD channel display with backlight for low light use and aircraft band coverage at the same low price. Size is 1 3/8" x 7 7/8" x 2 3/8". The Bearcat 100XL has wide frequency coverage that includes all public service bands (Low, High, UHF and "T" bands), the AM aircraft band, the 2-meter and 70 cm. amateur bands, plus military and federal government frequencies. Wow... what a scanner! Included in our low CE price is a sturdy carrying case, earphone, battery charger/AC adapter, six AA Ni-cad batteries and flexible antenna. Order your scanner now.

Bearcat® 210XW-GP

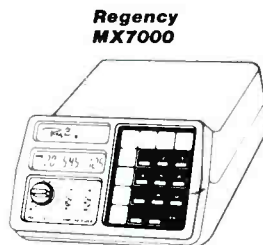
List price \$339.95/CE price \$209.95/SPECIAL
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TEST ANY SCANNER

Test any scanner purchased from Communications Electronics™ for 31 days before you decide to keep it. If for any reason you are not completely satisfied, return it in original condition with all parts in 31 days, for a prompt refund (less shipping/handling charges and rebate credits).



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List price \$499.95/CE price \$317.95
12-Band, 40 Channel • No-crystal scanner
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Bands: 29-54, 118-174, 406-512, 806-912 MHz. The Uniden 800XLT receives 40 channels in two banks. Scans 15 channels per second. Size 9 3/4" x 4 1/2" x 1 1/2".

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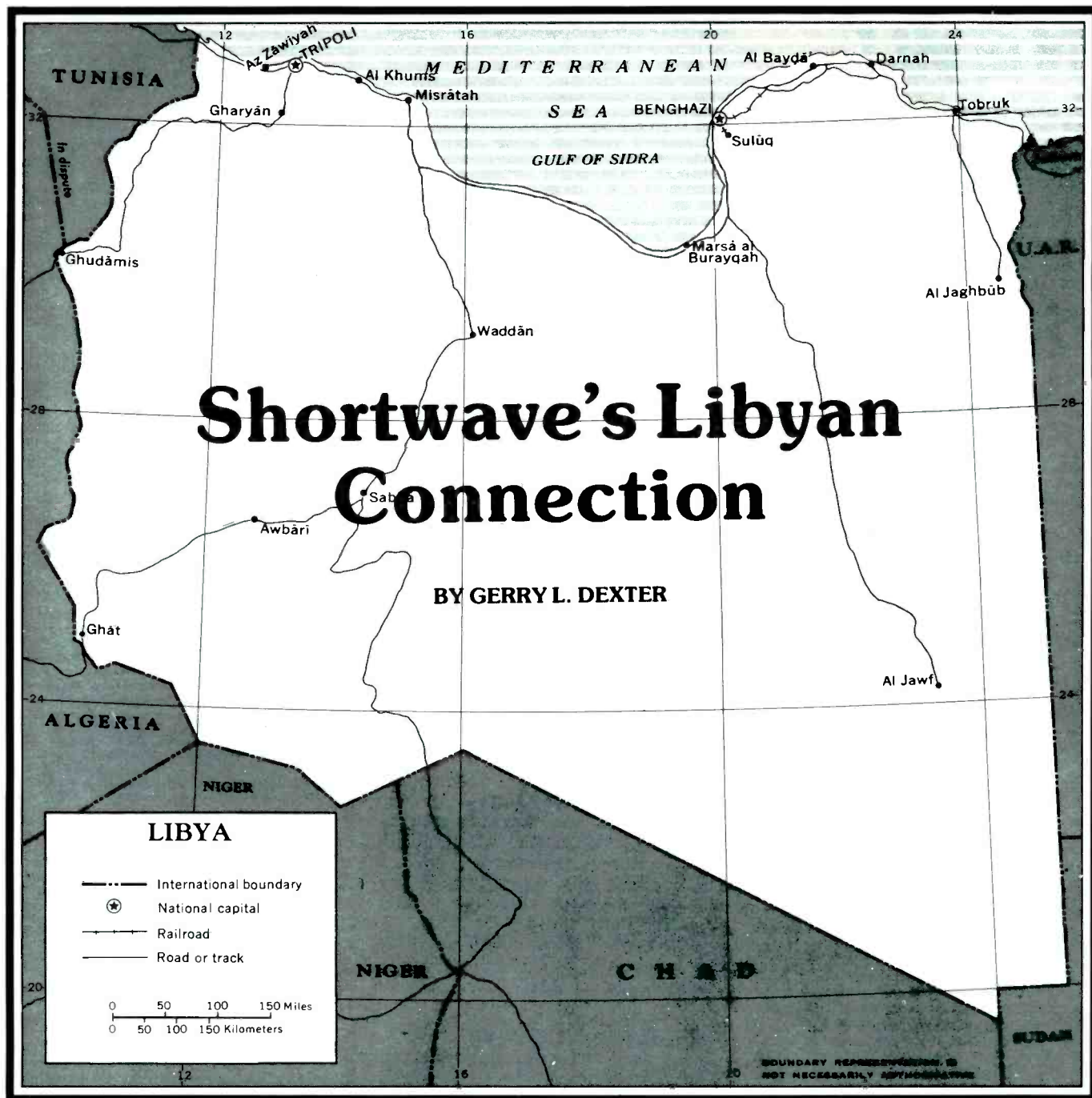
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Shortwave's Libyan Connection

BY GERRY L. DEXTER

Political struggle that results in the victory of a candidate with 51 percent of the votes leads to a dictatorial governing body disguised as a false democracy, since 49 percent of the electorate is ruled by an instrument of governing they did not vote for, but had imposed upon them. This is dictatorship." Col. Muammar Khadaffi, *The Green Book*.

Surprises on shortwave in the form of new stations or services coming on without any advance publicity are not uncommon. Still, early in 1982 when DXers first ran across the English language broadcasts from Radio Jamahiriya, eyebrows were raised across the land. What was more sur-

prising was that the new service appeared to be directed at the United States, while broadcasters in North Africa have, historically, paid little time or attention to broadcasting outside their immediate area or to programming in much of anything besides Arabic.

The Reagan administration had been in Washington for little more than a year and the temperature of tension was inching upward as Khadaffi, more and more, seemed to be running a "plot-of-the-month club" and Washington began taking steps to make sure the world was aware of what kind of leadership was running the show in Tripoli.

So what was Khadaffi up to with the sudden implementation of English language

broadcasts? The answer was plain enough: he was simply using broadcasting as a tool to help him achieve his political aims. Not an unusual step for any government, although the Colonel sometimes approaches broadcasting in, shall we say, creative ways?

"Representation is a denial of participation."—*The Green Book*.

RADIO: WHAT HATH KHADAFFI WROUGHT? Pull a 20-year-old edition of the *World Radio TV Handbook* off the DX library shelf, look up Libya, and you'll discover a much simpler era. Just four medium-wave stations in operation in the entire country, the largest running 50 kilowatts. Nothing but a home service relay running

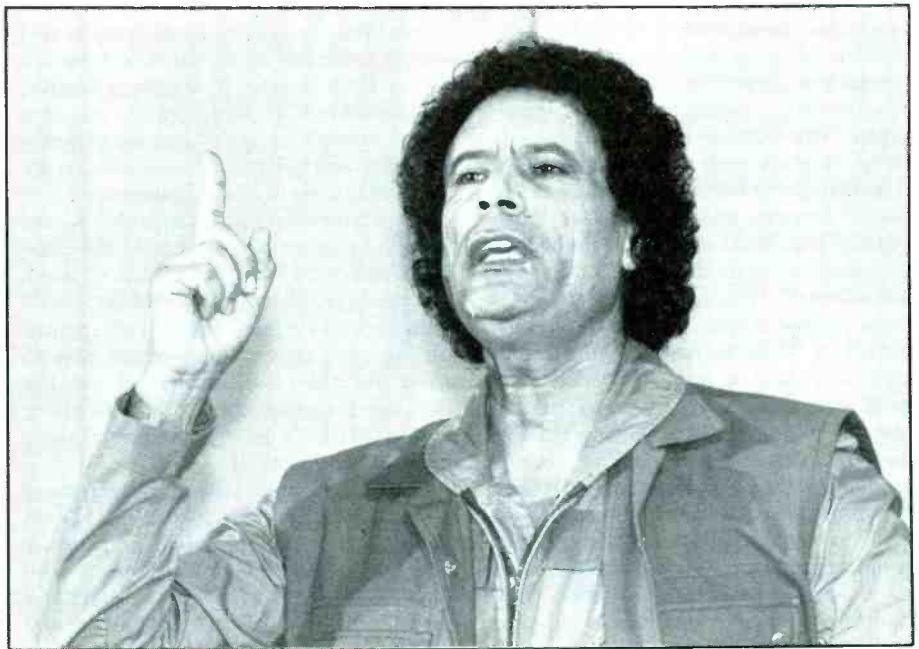
Muammar Al
Qathafi

The
**Green
Book**

Part One

The Solution of the
Problem of
Democracy

'The Authority of
the People'



(Photo courtesy Reuters/Bettmann newsphotos.)

NEWS
MUSIC

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YOUR QSL CARD FROM

THE AFRICAN SERVICE

OF

RADIO JAMAHIRIYA

BROADCASTING DAILY IN ENGLISH ON 15450 KHZ/19m.
SHORT WAVE FROM 18.00-19.00 HRS. G.M.T.

COMMENTS AND SUGGESTIONS ON HOW TO IMPROVE THIS
BROADCAST ARE WELCOME. WRITE TO:

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TRIPOLI - S.P.L.A.J.

THE AFRICAN SERVICE
RADIO JAMAHIRIYA
P.O. BOX 17
HAMRUN - MALTA

INFORMATION
CULTURE

THE AFRICAN SERVICE
OF
RADIO JAMAHIRIYA

— Voice of the Socialist People's Libyan Arab Jamahiriya

Dear Listener,

Thank you for your reception report of
our transmission 22nd September 1985
at 18.27 hrs. on frequency 15.450 kHz
and which we have carefully noted.

We are glad to verify your report and wish
you many happy hours of DX'ing on Radio
Jamahiriya.



APR 03 1986

on shortwave using 100 kw on a frequency, the *Handbook* says, "between 5995 and 6030 kc."

Today there are medium-wave outlets in fourteen cities using everything from a puny 1 kw to 500 kw. There are low power FMs in Tripoli, El Beida and Tobruk. On shortwave, a high power complex at Sabrata (Tripoli) beams programs out over 100 and 500 kilowatt transmitters.

Libyan radio, officially, is the Socialist People's Libyan Arab Jamahiriya Broadcasting Corporation or, more succinctly, Libyan Arab Jamahiriya Broadcasting. Jamahiriya is a Khadaffi-created word which has its roots in several Arabic words and means "that which is ruled by the masses" or "republic of the masses."

The Libyan home service, all in Arabic, of course, is beamed on shortwave as well as to the domestic audience on medium-wave. The schedule runs 1100 to 1745 UTC on 15235 and 1500 to 1745 on 17895.

A foreign language service operates with 1 kw from Misurata in English, French and Urdu for foreign residents on 1484 kHz. The Holy Koran program is beamed from a 20 kw transmitter at Tripoli on 1402 kHz.

The Voice of the Arab World is scheduled

from 1745 to 0430 on 3200, 7425, 9890 and 17895 and 2000 to 0430 on 6155 and 11815. This service has also been flagged as the Voice of the Arab Homeland and dates back to pre-Khadaffi times. It came on the air in 1967 as a result of the Arab-Israeli war and claimed to be the only voice expressing the true feelings of Arabs, wherever they were living.

"Representation is a falsification of democracy." — *The Green Book*.

HOW TIME FLIES DEPARTMENT: Colonel Muammar Khadaffi has run the Libyan show since 1969. He took power in a military coup which ousted former King Idris who had earlier led the Libyan resistance against Italian occupation.

In the 17 years worth of sand which has passed through the glass since then, Khadaffi has had more adventures than a character out of J. R. R. Tolkien. He has berated, argued or fought skirmishes with every one of his neighbors and as many or more at greater distance. He has sponsored, backed or encouraged innumerable acts of terrorism and initiated several star-crossed unifications with other states.

He has used Libyan radio for all manner

of overt and not-so-overt propaganda. Author Julian Hale, in his book *Radio Power* (Temple University, 1975) noted that Libya's "propaganda line makes the other Arab radios seem pro-Zionist in comparison."

The English service, Radio Jamahiriya, was once widely heard in the US (recent frequency changes have made it less so). The program appears to be a division of the Voice of the Arab World—or at least it is plugged into the middle of that service. Radio Jamahiriya has two English language programs, one beamed to Africa which was originally called the "Voice of Africa," although that title seemed to come into disfavor after Khadaffi apparently discovered it was also used by one of the Egyptian services. (Some DXers report still hearing the term in use.)

The current Radio Jamahiriya schedule is a little uncertain. As recently as late last year it was making regular appearances between 2230 and 0000 on about 11.815. Then it seemed to disappear for a time and may indeed have gone silent which, if true, would be hard to explain since tensions between the US and Libya were heating up further at the time. At any rate, the US beam has recently been rediscovered on 6155, a poor

choice for summertime reception here. 11815 is still being announced.

From the outset, Radio Jamahiriya provided some fascinating listening. Using the slogan "The Voice of Friendship and Solidarity" it offers such program features as "The Life-giving Force Behind the Jamahiriya", "America and the Nuclear Mushroom", "The Jamahiriya At the Front of the Struggle to Liberate the World", "The Call of the Desert", "French Neo-colonialism, A Threat to the African People's Freedom" and others. There are readings from the Holy Koran as well as from Khadaffi's *Green Book*. There are letters from listeners and interviews with Americans living in Libya some of whom, in the past at least, strongly condemned the US position toward Khadaffi. A more recent feature is "A Chat Worldwide" in which the station—taking a page from Radio Moscow's book—invites listeners to send in cassette tapes telling about themselves, sending greetings to friends or dedicating songs.

There is revolutionary music (and also US popular hits). The revolutionary songs praise Libya and Khadaffi and one listener recently commented in the DX press that the singers appeared to be American.

Put together a reception report on Radio Jamahiriya, mail it to the European Office (no replies seem to come out of Libya itself) at P.O. Box 17, Hamran, Malta, and in return you'll receive one of the classiest QSL cards currently available from any station!

"Democracy means popular rule, not popular expression."—*The Green Book*.

NOT-SO-OFFICIAL BROADCASTING. At one time the Libyan Arabic service carried a program entitled "Liberation Magazine" which was directed at what was

termed the "feudal" state of Morocco and was an undisguised attempt to subvert the rule of King Hassan. Morocco, incidently, responded with its own programs aimed at Libya, calling Khadaffi's rule "one of terror, stupidity, and ignorance," according to author Julian Hale in *Radio Power*.

Libya beamed a quasi-clandestine service towards Lebanon in the spring of 1984 called the "Voice of the People's Revolution" which was aired on 1251 and 15450 kHz.

Such moves in the Colonel's radio games are the equivalent of a spare ace slipped under the table. But, as often as not, the table has a see-through top and it's pretty easy to tell what's going on and who's playing what hand.

Libya has wanted a friendly government in next door Chad for a long while. Hissen Habre, the current president and former rebel leader has no love for Khadaffi. The Colonel supports the former president and current rebel leader Goukouni Queddi and his Government d'Union National de Transition du Tchad (GUNT). Khadaffi, who has invaded Chad on occasion, brings radio into the picture with a station called "Radio Chad"—formerly known as "Radio Bardai" after the town from which it claims to operate. With some careful tuning, especially in mid-winter in the eastern and midwestern parts of the US, this station can occasionally be logged on 6009 up to around 2030 sign off. Although an address exists for GUNT (P.O. Box 2915, Tripoli) letters sent there invariably boomerang back to the sender.

During 1981-82 the Sudan first harbored Hissen Habre and then helped him gain control of the government of Chad, in the process ousting Khadaffi's friend Queddi. That, alone, would have been reason enough for Khadaffi to put the evil eye on

Sudan's President Numeiry. Khadaffi had other reasons as well and used his support of the Sudanese southern rebels which are seeking independence for that part of the country as an additional tool.

Enter the Voice of the Sudanese Popular Revolution. Beginning in 1982 the station beamed a three-hour daily broadcast (1430-1730) at Sudan on the Libyan frequency of 17930, sometimes 17940. On at least one occasion someone pushed the wrong button and brought up the regular Libyan broadcast on the frequency instead of the Voice of the Sudanese Popular Revolution. So it wasn't hard to spot this as another smash hit from Khadaffi Broadcasting Incorporated.

The Voice of the Sudanese Popular Revolution lasted until around April 1985, shortly after a military coup had ousted Numeiry, after which the station stuttered through several stops and starts before it finally disappeared.

During the time it was on the air there was a period during which its programs were interrupted on a regular schedule by yet another Khadaffi offering—Radio SPLA which promoted the cause of the Sudan People's Liberation Organization and Sudan People's Liberation Army—the southern faction of Christian and animist groups which want independence for the southern Sudan. Once the coup was accomplished the plug was summarily pulled on Radio SPLA which was off the air until new hosts were found in Ethiopia.

Perhaps the most outrageous of the Colonel's radio adventures was The Voice of Vengeance—The Voice of Holy Hatred—which had a lifespan of just a few weeks during March and April of 1985. The station used 711 kHz on the medium-wave band (three separate 50 kilowatt outlets use this frequency in Libya). The Voice of Vengeance called upon Arabs living in the Maghreb (Algeria, Morocco and Tunisia) to seek out and kill any Jews living near them and confiscate their property, claiming at one point that such actions were justified by the Koran. Tunisia complained to Libya about the broadcasts. Khadaffi claimed he'd never heard the station, much less heard of it. Then Morocco's King Hassan met with Khadaffi and apparently made progress. The Voice of Vengeance went off the air shortly after that meeting and has not been heard since. One of Colonel Khadaffi's visions is that of a greater Maghreb to include, of course, Libya.

"To make a (political) party you split society."—*The Green Book*.

What's next? Will there be a new, not-so-secret clandestine voice out of Libya the next time the *ghibli*—that dusty, hot, dry desert wind—blows in from the south? Did the US raid on Libya's terrorist infrastructure make a difference from a radio standpoint? We can't guess. And perhaps not even the Colonel himself knows whether or when the next hand in the radio game will be played.

BUGGED???

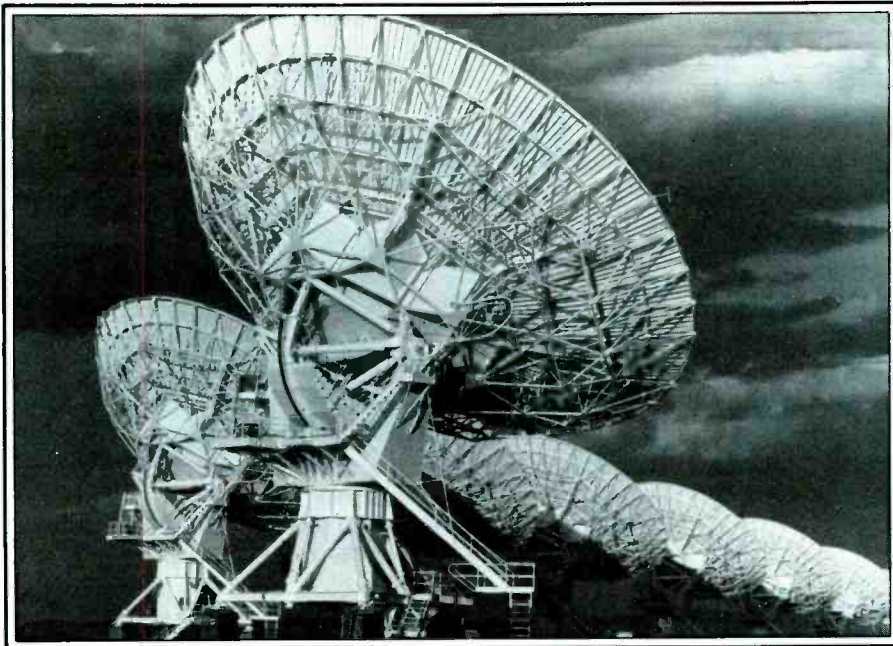
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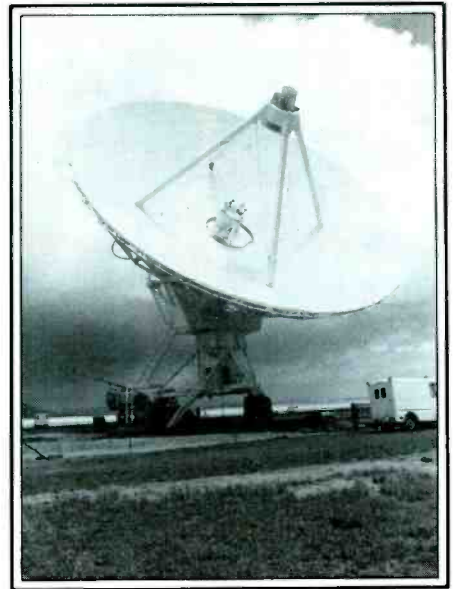
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The 82-foot diameter reflectors of the most powerful radio telescope on earth, the Very Large Array, captures radio waves and sends them through a feed to any of several receivers. Frequencies covered extend from 73 MHz to 23 GHz.



The antennas are moved apart on railroad tracks shaped as a Y, with arms of 21 km and a base of 19 km, to create a synthetic antenna with a resolution equal to a telescope with a lens 21 miles across.

The Very Large Array

The Ears Of The Earth Listen To The Stars

BY KEN McCORMACK

Since 1975, in a remote part of New Mexico, the earth's most sophisticated radio has been listening to the stars. Alone and isolated, its antennas lilt in the rising heat and turn in unison like a mechanical chorus line. At first, before dish-shaped reflectors became common, old-timers took these objects for something weird, like flying saucers. They are, in fact, part of the Very Large Array (VLA), the most powerful telescope in the world.

The VLA is a radio. Fundamentally no different from the device the scientist listens to in his car on the way to work, it consists of an antenna, receiver and amplifier. Instead of loudspeakers to project sound for listening, magnetic tapes record the noise. From the tapes, a computer can create a picture of the radio source observed.

Radio astronomy began in 1932 when Karl Jansky, a radio engineer working for the Bell Telephone Laboratories, discovered steady radio noise emanating from the center of the Milky Way. Around 1940 a radio amateur in Illinois, Grote Reber, built the first dish-type radio telescope, now so familiar, and began mapping radiation systematically at several wavelengths. Reber not only verified that the Milky Way emits radio waves; he also discovered that, after the sun, the constellation Sagittarius, near

the center of the Galaxy, is the most intense source of radiation.

Since then many amateurs have listened to space and contributed to the budding science of radio astronomy. Noise from the sun can hardly be avoided, and the planets of our solar system are accessible to a receiver of from 5 mV to 0.5 mV sensitivity and an antenna with a gain of 10 dB to 20 dB. Jupiter, in particular, astronomers say, makes good listening at 18 to 30 MHz. Rather than enjoying stellar broadcasts, however, which are usually monotonous, astronomers correlate changes in frequencies with changes in heavenly bodies and draw conclusions—making sure they do not contradict optical astronomers.

Though some of the early radio telescopes were built with ordinary telephone poles and chicken wire from Sears, modern telescopes outstrip in sophistication and expense anything an amateur could construct. In fact, the VLA is part of a system of telescopes known as the National Radio Astronomy Observatory (NRAO) which has units not only in New Mexico, but in Arizona and West Virginia as well.

At the VLA, an 82-foot parabolic reflector captures radio waves and focuses them on the six-foot subreflector above the dish which in turn sends them through the feed

into the receiver. Several receivers, each with a fairly definite frequency range, are mounted on each of the 27 antennas. To change frequencies, you alter the subreflector in order to use other receivers.

The frequencies covered by the VLA extend from 73 MHz to 23 GHz. A popular one takes in 1340 to 1430 MHz in order to study neutral hydrogen, a commonplace, universal element, and also 1600 to 1730 MHz to study the four main frequencies of the OH molecule. Other NRAO telescopes are suited to handle additional parts of the radio spectrum.

External noise, of course, as with any radio, presents a major problem. Hence, the remote location of the VLA and the fact that some areas, as around the observatory at Green Bank, West Virginia, have been declared a "radio-quiet zone." However, interferences, such as automobile sparks and power line insulators, which crank and emit radio signals, continue to plague astronomers. Such problems have been dealt with as best as possible.

"We had a truck back then," recalls Richard Huguenin, a pioneer in the field, "with a little antenna, and we could find out which power pole the interference was coming from. We would very gently drive the truck into the pole and bang it. The shock knock-



At Control Center of the VLA, scientists examine readouts at a computer terminal.



Instead of loudspeakers for listening, tape recorders in the Control Center record the noise of radio sources received from antennas through an underground waveguide.

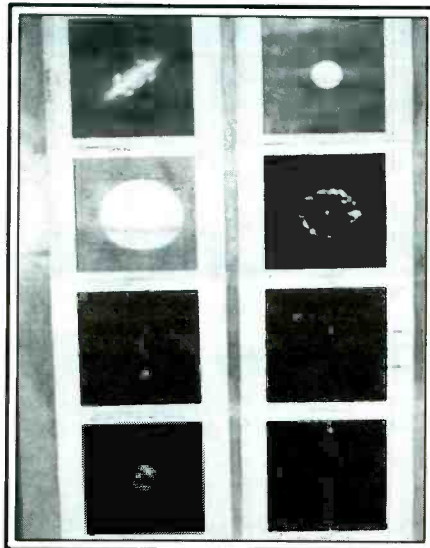
ed the crust of dirt off the insulator and then we were okay. We used to go around doing this at the NRAO at Green Bank, and people thought we were plain crazy."

Since radio stations emit interference, observing frequencies, such as the all-important 21 cm wavelength of hydrogen, are protected by law, but the laws, according to Huguenin, often do not work well. Radio telescopes sometimes end up observing in the military aircraft range simply because, except when the military does use it, it is very quiet. Few people, apparently, want trouble with the Strategic Air Command.

As I talked last spring to Bill Brundage, a staff engineer who did his graduate work at Ohio State University, he explained to me some of the research going on at the VLA. As with many NRAO scientists, Bill's graduate work combined two disciplines, astronomy and engineering. His graduate work, in fact, was with John Kraus, well-known to Hams for a book on radio antennas. Kraus's *Radio Astronomy*, originally published in 1968, is still the standard text on the subject.

Ordinarily at the VLA, teams from all over the world work around the clock on several projects at the same time. The VLA and NRAO are operated by Associated Universities, Inc., which includes universities such as Harvard, Columbia, and MIT, and are funded by the National Science Foundation. Access to facilities is determined solely on the merit of the research.

The day Bill and I were talking in the Control Center, three projects were going on. A team from the Naval Research Laboratory, NASA Goddard and the Imperial College, in England, using three different bands, 1400 MHz, 5 GHz, and 23 GHz, were making high resolution observations of merging galaxies. A second team of five astronomers, including one from the Netherlands, at 5 GHz was "looking" at the center region of M51, a radio galaxy, whose extremely active center could be emitting from black holes. Yet a third team, using the familiar 1400 MHz band, was observing several radio sources, called wide angle tail sources—energetic galaxies whose emissions spurt off



Computer pictures of radio sources.

to the side and look like the tail of a dog. Whenever the telescope changes objects of study, the antennas hum melodiously and turn, slowly and gracefully, all 27 of them in unison, to point at a different part of the sky.

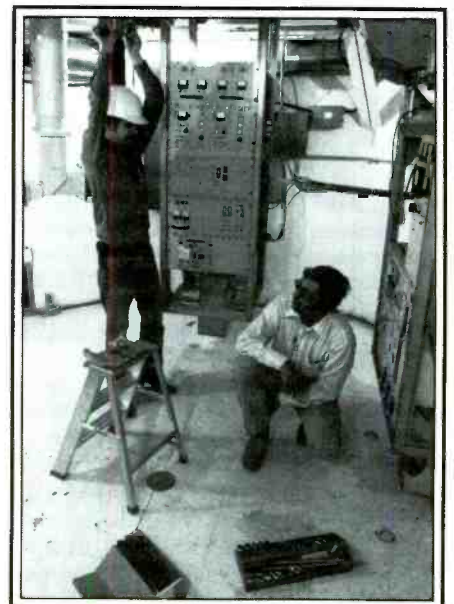
The major problem with radio astronomy, Bill explains, is resolution (distinguishing one distant radio source from another). Originally, radio telescopes could barely distinguish between two constellations. In addition, the signal received, especially when from outside the Galaxy, is usually extremely faint. To solve these problems you need a ridiculously large antenna.

"The larger the antenna the greater the spatial resolution," Bill explains, "and the greater the collectivity, the more that is delivered to the receiver and the more sensitive it is."

Yet reflectors at the VLA are by no means the largest in existence. One at the NRAO in Green Bank, West Virginia, is 300 feet in diameter, and another in Puerto Rico is 1000 feet. But the VLA 230-ton antennas work in pairs (interferometers) and move about on railroad tracks in the shape of a "Y", with

arms of 21 km and a base of 19 km. Communication between the antennas and the Control Center is via a waveguide buried underground. The overall maintenance operation is coordinated by personnel communicating on phone or by standard commercial VHF radio at 160 MHz.

The array can create 351 pairs ($27 \times 26/2$) of interferometers and spread out to cover almost 500 square miles. It is called a synthetic antenna, because it mimics the performance of a single antenna as big as the total extent of the array. In a matter of a few hours the VLA can synthesize an antenna with a gain equal to a 430-foot diameter telescope and the resolution of one 21 miles across. According to Bill, the VLA can achieve resolutions down to less than a tenth of an arc second. Thus, it is better than any ground-based optical telescope and so sensitive it could pick up a one-watt CB transmission from Pluto.



Repairmen diagnose problem with equipment housed underneath the 82-foot, 230-ton antenna.

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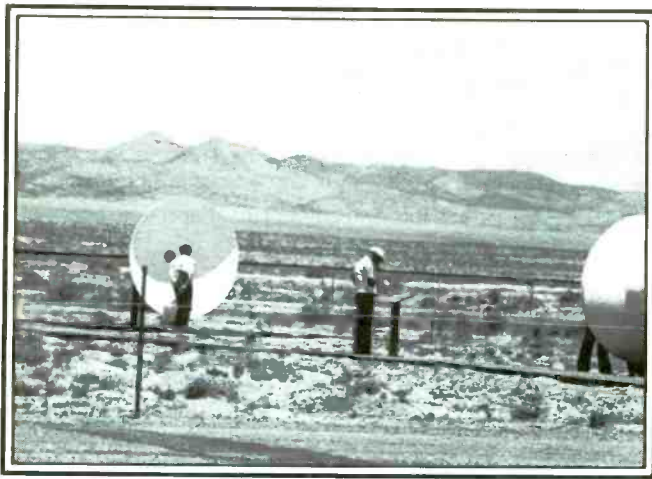


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Visitors examine an exhibit outside the Visitor Center at VLA. With two such radios, built to a larger scale, earthlings could communicate with aliens over the vast distances of space.



Control Center, VLA, just south of Magdalena, New Mexico. All radio noise via underground waveguide is sent here for analysis.



Visitor checks out new Visitor's Center at the VLA.

The amplifiers, Bill explains further, are designed for very low internal noise and often cooled to the level of liquid helium (4° Kelvin absolute temperature) and in special cases down to 1° or 2° Kelvin. "The lowest noise receiver amplifiers in existence are those used for radio astronomy," Bill says.

A radio telescope requires high gain, wide bandwidth and high antenna directivity. The fact that these requirements are nearly contradictory has led over the years to a number of engineering challenges. The history of radio astronomy is largely the history of radio engineers coming up with new designs to study something astronomers need to know about. Astronomers then discover something new that requires yet another advance in technology.

The Hewish telescope built in England to observe quasars, for example, led to the discovery of pulsars—neutron stars rotating at very high speeds. At a cost of 15,000 pounds, it covered four and a half acres and was built by five scientists with the help of students. For the antenna, they put in a thousand posts connected by 120 miles of cable. When first detected, the neutron star emissions were so rapid and steady that astronomers thought they must be man-made or of some extraterrestrial civilization.

In response to the pulsar mystery, for further study, Richard Huguenin made adaptations to the 300-foot telescope at Green Bank. Now pulsars, quasars, black holes and the like are under regular study by the NRAO. The next big technological step will be the construction of the Very Long Baseline Array (VLBA), the completion of which is planned for 1990.

The VLBA will consist of ten precision antennas spread across the United States from Hawaii to the Virgin Islands. The interferometers will not be connected in real time, but by precise time measurements, using a hydrogen maser frequency standard. Very sophisticated 1-inch tape recorders, which can record at a speed of 270 inches per second, will generate 7 miles of data tape each day at an observation post to be sent to the Operations Center in New Mexico and correlated with the other tapes.



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The VLBA will then be like a telescope with a lens almost the size of the earth. But that's not all. Plans are afoot to place a 15m telescope known as QUASAT in orbit. QUASAT will increase the baseline of the VLBA by a factor of three. More importantly, it will be the first step towards even more distant antennas in space which will permit even better resolution.

Such increased resolution will allow detailed studies of smaller energetic cores of galaxies—including mysterious-faster-than-light emissions from explosive ejections of quasars. It will also lead to a better understanding of the size and distances of the universe, the bending of radio signals as they pass the sun, the continental drift of the earth and the rate of the earth's rotation.

Since each element radiates electromagnetic energy at a wavelength and intensity peculiar to it, radio telescopes can map the universe in ways superior to optical ones. Though an element such as hydrogen can be seen when it is heated by a nearby star, when cold, it is invisible and can only be detected through a radio. Moreover, radio waves are not as easily absorbed by interstellar dust as are visible rays, and with a radio one can "see" through a galaxy.

Spectral lines, when observed from earth, change with regard to their relative motion. Thus, a *Doppler shift* in frequencies can reveal the speed and direction of objects moving through space. In addition, the emissions of an atom over a range of wavelengths can give scientists information about the temperatures of heavenly bodies.

Most radio frequencies have been used to study many elements, some of which do not even exist on earth. Common molecules monitored are formaldehyde, ammonia, water, and methyl alcohol—some lines of the latter which radiate at 110 GHz.

Before I left the VLA, I met with Don Swann, the Personnel Manager, also in charge of Public Education, emerging from a spiffy new Visitor's Center. Don is particularly excited by the VLA's newest mission—to monitor Voyager 2. "We have the large gathering area," notes Don. "When the Voyager goes by Neptune in 1989 (August 24) we'll be able to get those very faint signals in better quality, and then we'll do a 'satellite skip' down to JPL in California," he adds.

Last January 24 and 25, as astronomy buffs know, Voyager 2 passed by Uranus transmitting back some of the most remarkable images and information ever gathered. When it reaches Neptune, its signal will be much weaker, but adding the VLA onto Goldstone, one of NASA's three deep space receiving stations, will significantly improve the data flow. Voyager communicates at both S-Band frequency, around 2300 MHz, and X-band, around 8400 MHz. The VLA will listen to X-band, the primary frequency. (S-band is for sending commands.)

In the midst of all this, one wonders what ever happened to the search for extraterres-

trial intelligence (SETI). The answer is nothing. It is still going on.


Project Ozma, the first of its kind, was organized by Frank Drake of NRAO in 1960. Conferences on SETI have been held as recently as last year at Green Bank. Today several radio telescopes, though none at the NRAO or VLA, but including one at Harvard, are dedicated solely to searching for extraterrestrial intelligence. Hundred of millions of stars, scientists estimate, may have to be studied before significant results can be obtained.

Many astronomers think the odds against contacting another intelligent species are improbably high and turn the telescopes to more practical matters. Yet Carl Sagan speaks of extraterrestrial life as "an idea whose time has come," and the cheapest way, for sure, to communicate with earth would be by radio (much more likely than by coming here in spaceships). Two such radios as those in New Mexico could surmount the incredibly huge distances of space and allow earthlings to communicate with aliens.

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CIRCLE 28 ON READER SERVICE CARD

When Radio Was Young

Through The Doors of History Into A Bygone Era

BY ALICE BRANNIGAN

No doubt about it, the letter carrier is going to get a sprained sacroiliac from carrying all of the mail arriving for this section of the magazine. The items he brings are read, appreciated, and everything appropriate will find its way into print here.

For instance, a letter from Albert H. Ellis of Brantford, Ontario arrived containing an early QSL card from Amateur Broadcasting Station 10BQ in his home town. The QSL lists this station on 1200 kHz but gives few additional details; further checking in *Radio Station Treasury*, however, reveals that in 1931, 10BQ was running 5 watts and being operated by the Telephone City Radio Association, 12 Terrace Hill, in Brantford. The QSL does note that the antenna at 10BQ consisted of a two-wire "inverted L," 50 feet in length and 75 feet high.

Mr. Ellis comments this station came on the air in 1926 when Commander C.P. Edwards, Deputy Minister of Fisheries and Marine, issued authorizations for such stations in areas that had no nearby commercial broadcasting stations. At that time, while it was sometimes possible to hear KDKA (Pittsburgh), WHAS (Louisville) and WOAI (San Antonio), for the most part the radio dial was rather quiet in Brantford. When 10BQ went into operation, it was an immediate success and received reception reports from Newfoundland to New Zealand.

Other similar "amateur" broadcasters began operating—such as 10NX (now CKNX) of Wingham and another in Chatham, in order to bring local news to area listeners. By 1932, radio broadcasting had become very popular and there was no longer a shortage of commercial broadcasters in Canada. This resulted in the Radio Commission being flooded with requests from the commercial broadcasters that the "amateur" broadcasters be put off the air since they were "stealing" listeners! In 1934, the Canadian government told the "amateur" stations to qualify and apply for a high-power commercial license or else shut down. During those Depression years only a few had the money to do anything but pull the master switch and fade into history. By the way, Mr. Ellis (who sent us the QSL) was one of the operators at 10BQ!

Another Try At Amateur Broadcasting

While we're on the subject of early do-it-yourself broadcasters, a letter showed up from Don "Hoisy" Hosington, W4CJL, of Florence, Alabama. He tells of how, in

HAVE RECEIVED REPORTS FROM NEWFOUNDLAND TO NEW ZEALAND

Amateur Broadcasting Station 10-BQ

BRANTFORD, ONTARIO, CANADA
(TELEPHONE CITY) 1200 KILOCYCLES

TRANSMITTER
Osc. 2—210's 15 Watts.
Mod. 2—205's B.
Ant. Current 1 Amp.

Speech Amplifier
3—Stage Res. Coupled.

Antenna—2 Wires inverted L, 50 ft long, 75 ft high.

Condenser and Carbon Microphones used are made by Chief Operator, Harold Brown.



Three remote control phone lines to studio.
Points of Interest, St. Paul's, His Majesty's Chapel of the Mohawks, oldest Protestant place of worship in Ontario. Erected 1785.
Bell Homestead where Alexander Graham Bell invented the telephone 1874.
"Chiefswood" home of E. Pauline Johnson, Indian Poetess.

Picture—Left to Right—Front Row: Tom Brown, Manager; Beatrice Brown, Stenographer; Wilbert and Edgar Brown, Asst. Operators; Back Row: Danny Hamer, Pianist; Albert Ellis, Asst. Operator; Harold Brown, Chief Operator.

Regular D-X Programs
Second Saturday Morning
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WE APPRECIATE YOUR REPORT.
This will verify reception.

Manager.

Amateur broadcasting stations were an authorized Canadian reality until the government pulled the rug out in 1934 after commercial broadcasters complained. One of our readers worked at station 10BQ in Brantford, Ontario.

March of 1932, he moved his little 10-watt self-excited oscillator (Heising modulated) phone transmitter out of the 160-meter Ham band to 1540 kHz (just past the high frequency edge of the broadcasting band in those days). Selecting the experimental callsign W9XBR for his Salina (Kansas) station, Hoisy began rebroadcasting the signals of WMAQ in Chicago. Listeners (if any) were invited to send in reports and it was quite surprising to find that 35 DX reports came in during the first week!

Reception was being reported from New York, Texas, Illinois, Colorado, Wisconsin and elsewhere, despite the poorly-modulated low-powered transmitter. In ten days Hoisy even heard from Grand Island, Nebraska. It wasn't a reception report. The letter was from the FCC and contained a number of violation notices!

Hoisy lost his Ham license (W9DWH) for a year, a high price to pay for his brief career in home-broadcasting. He did eventually get into commercial broadcasting and recently retired after 46 years as Manager and Chief Engineer of AM and FM broadcasting stations. In 1967, Hoisy formed the Society for the Promotion of AM (SPAM) to save that mode of operation; the group publishes an excellent and interesting newsletter about AM operation in all radio services.

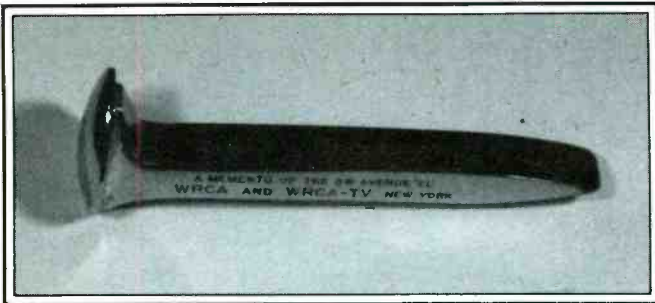
Write to them at SPAM, c/o F. Dunlap, WA5TWF, 114113 Stoneshire, Houston, TX 77060. Don't forget your SASE!

Spiked Radio

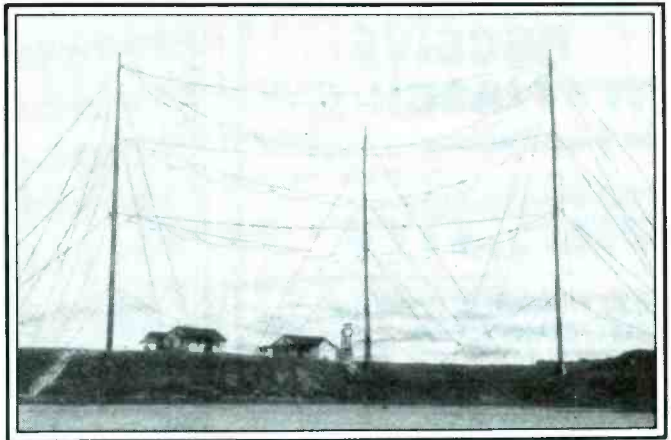
Walter S. Andariese, of Atco, New Jersey, sent along a photo of a chromed railroad spike that he says has a connection to broadcasting. The spike is engraved, "A momento of the 3rd Ave 'El.' WRCA and WRCA-TV, New York." The question is exactly how the spike connects with either broadcaster.

The 3rd Avenue "El" was, of course, an elevated urban railroad line that existed for many years in New York City. It was torn down more than 25 years ago. WRCA is one of the several callsigns that have been used by the NBC station in New York on 660 kHz (ex-WAAF) now known as WNBC. The WRCA callsign was used for a short time in the 1950's. The callsign WRCA-TV was NBC's station on TV Channel 4, a station that has also been known as W2XBS and WNBT; it's now known as WNBC-TV (Channel 4).

Apparently NBC's New York stations gave away souvenirs of the rail line at the time it was razed, but we don't have any specific details of how or why the spikes were distributed. For a flea-market find, Walter



Found at a flea market: this chrome-plated railroad spike inscribed with the call signs WRCA and WRCA-TV. We're looking for more details.



The U.S. Navy's Cuban transmitter, NAW, as it looked in 1911.

came up with a real puzzler. Perhaps some of our readers can offer some answers.

We wonder if the people at WRCA realized that many years earlier the Third Avenue Railway Company (operators of the Third Avenue "El") had their own broadcasting station! The station went on the air in 1925 and was silent in 1928. *Radio Station Treasury* shows this station, WEBJ, as running 500 watts on 1100 kHz. Its spot on the dial was taken over by religious broadcaster WLWL that had moved to 1100 from 1040 when WEBJ left.

Havana Good Time In Cuba?

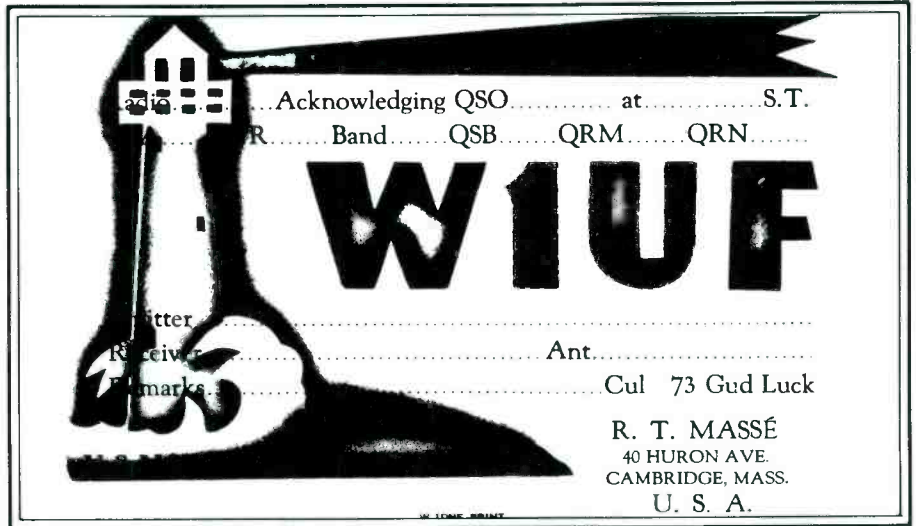
R. N. Garcia, who hails from Opa Locka, Florida, gives us a look at the U.S. Navy's wireless telegraph station "way back when" in Guantanamo Bay, Cuba. The picture postcard he sent is dated 1911, so it's one of those really early stations.

We checked it out and found that this station was known as NAW and it operated on 66.7, 76, 125, 215 and 315 kHz. The USN still maintains a base at Guantanamo Bay, even though relations between the U.S. and Cuba haven't been especially warm (to say the very least) for decades. The base at Guantanamo Bay exists under agreements made in 1903 and 1934, long before Castro took power there.

Some Light DX

Joel O'Brien of Vernon, Vermont, writes to say that many years ago his uncle was a Ham operator and was also a wireless operator on several lightships off the coast of New England. He enclosed one of his uncle's W1UF Ham QSL cards, made especially interesting by the line "U.S. Light-house Service, WPW" written along the card's lower left border.

That sent yours truly scurrying into the archives to see what I could find about station WPW. Turns out that, in the very early days, WPW was the call sign of the American ship S.S. James S. Whitney; but from there it gets a bit tricky. The next time the call shows up is 1930, when it belonged to Relief Lightship No. 90 of the Bureau of Light-houses (U.S. Dept. of Commerce). It operated on 375, 410 and 500 kHz. This lightship, which was stationed in Boston, had



An unusual Ham card from W1UF also carried the call sign WPW at the lower left. That call sign belonged to a lightship!

previously been using the call sign NITS but (along with all other Lightships) switched to civilian-type call signs because of the transfer of the vessels from Navy control.

Records of 1931, however, indicate that WPW was then assigned to newly built Relief Lightship No. 106, as ship No. 90 had been retired from service. By 1939, the lighthouses and lightships had been incorporated into the U.S. Coast Guard and Lightship No. 106 was given the call sign NNGY (monitors reported hearing this station on 2670 and 3410 kHz). At times when the vessel was on station as Hens and Chickens Lightship or the Nantucket Shoals Lightship, it would have identified as NNBP and NNBN, respectively.

So ends the odyssey of changing call signs and ships. Looks like the W1UF QSL dates from the 1930's.

Deep In The Heart Of Texas

Public safety communications listeners should be interested in a photo we came across showing the communications station at the Victoria County (Texas) Courthouse and Jail (the jail is the newer-looking structure to the left in the photo).

This photo isn't dated; my guess it was

probably taken in the 1960's. I tracked the sheriff's communications system back to the mid-1940's when, under the call sign of KEPL, it operated on 1714 kHz with 500 watts. The mobile units in the system transmitted on 37.18 MHz. By 1950 the FCC had done away with the KEPL call letters and replaced them with KKC355, an identification that was in keeping with their call sign format revisions.

Since those early years, this system has been modified to a considerable extent. Long gone are the old 1714 kHz and VHF low band rigs, also the KKC355 call sign. Presently the Victoria County Sheriff operates as KXF580 on 154.755 and 155.73 MHz, as WXQ944 on 155.19 MHz, and as KTV657 on 155.37 and 155.685 MHz. The call sign KKC355 is currently unassigned. Can't imagine why it became unsuitable. Can you?

While on the subject of police radio, I wanted to share with you a great photo of the California Highway Patrol's 1938 mobile command post, KAPA. This rig looks something like an Airstream and has the station call sign displayed in large letters on the side. Running 50 watts on 1692 kHz, it normally communicated with CHP HQ in Sac-

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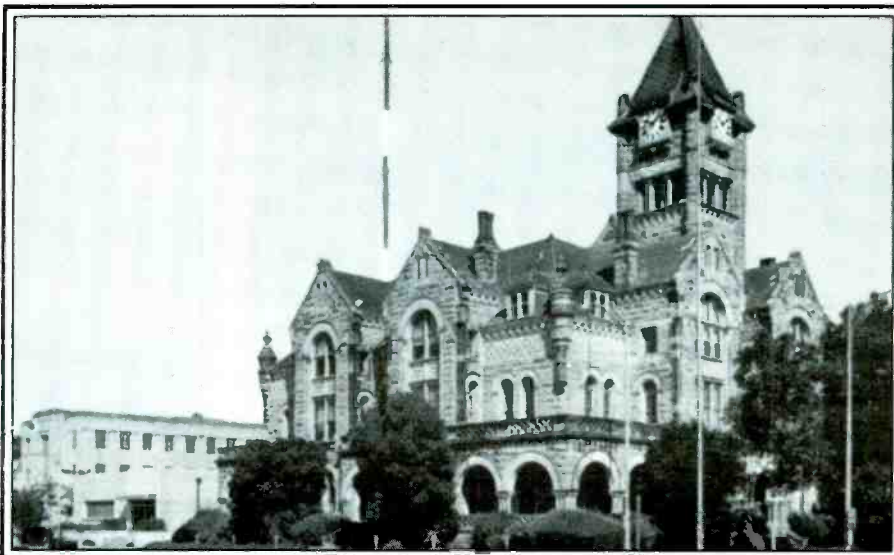
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The ornate courthouse in Victoria, Texas. The communications tower in the center of the photo doesn't seem to belong in this turn-of-the-century scene.

ramento, (KADJ, 5 kW — 1 kW at night), also KAPI (Grass Valley, 250 watts), KDQO (San Luis Obispo, 1 kW), KSCY (Yreka, 50 watts), and KSPR (Redding, 300 watts). Believe it or not, that's the complete CHP roster for 1938!

Mysteries In Transit

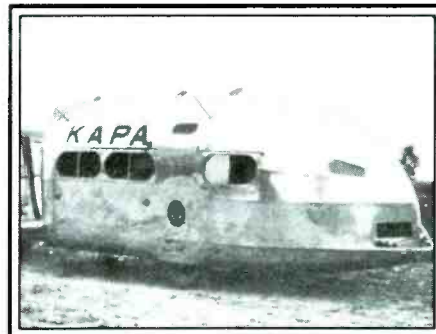
Thusfar, our attempts to find out about the wireless towers on the roof of the old DuPont Hotel in Wilmington, Delaware, are producing results. Jack Caldwell, of Couperville, Washington, has been in contact with some friends in Delaware who are pursuing the matter. At this point we know that the mystery towers appear in 1915 photos and could possibly have been there as early as 1912 (but not before that). Photos taken in 1928 show the towers gone. That's a start, and we'll be looking for additional data.

In the May issue I mentioned that I bumped into one of our readers at a conference I had attended. Bill asked why I never discussed old-time ship stations. That's why the May issue showed a photo of the radio shack aboard a ship called the "Elizabeth and Blanche" taken during its "1925-1928 Empire Cruise." Sorry to say, that I had no information at all on the vessel itself or its station, so I asked readers for help.

No readers wrote in, but when I went to Vienna, Virginia, in June for the Principles of Communications for Military Systems conference, I saw Bill again, and he had some answers regarding the mystery photo we had run at his request! How's them apples?

The vessel was a 40-foot motor lifeboat that was sent on a globe spanning cruise in order to test her seaworthiness, radio equipment, and general usefulness. There were only four persons aboard during the cruise, including Capt. G. E. Hitchins and "Sparks" Gilbert Moss.

Leaving London in November of 1925,



The call sign KAPA on the side of the trailer makes this look like a broadcast station's remote unit. Actually, this was the California Highway Patrol's mobile command center during the late 1930's.



Little did we realize when we ran this photo in the May issue that the reader who inspired its publication would later tell us what it was!

the vessel embarked on a planned 38,000-mile adventure. Radio equipment consisted of standard Marconi lifeboat gear operated from a 1/4-horsepower air-cooled gasoline engine. Directly coupled to the engine was a 500 Hz AC generator capable of producing 200 volts. This was able to operate the 250 watt quenched spark transmitter used. The antenna was a 4-wire flattop.

"THE CALL OF THE ORIENT"

Non-commercial Missionary Station
MANILA, PHILIPPINES



DZF2

11.92 MC.
25 Meters



FAR EAST BROADCASTING CO., INC.

"Having the Everlasting Gospel to Preach to them
that Dwell on the Earth" -- Rev. 14:6

Shortwave broadcaster DZF2 was known as KZRM before WWII.

Receiving equipment included a 6-tube direction-finder set and also a 2-tube receiver for general use. All equipment was designed for operation on frequencies in the general vicinity of 500 kHz, even though the 2-tube receiver was used on lower frequencies for reception of news and weather information from various coastal stations. Emergency battery power was available for use in the event of generator failure. The vessel achieved 2-way communications over a 200-mile range during daylight hours when contacting shore stations equipped with tube-type receivers. They were able to contact crystal detection equipped ships at a 175-mile range. British regulations required only that ships be equipped with crystal sets and be able to transmit/receive for 50-miles.

The good ship "Elizabeth and Blanche" completed its voyage safely in the allotted time.

Call Of The Orient

Thanks to Howard Siegel (KB2FI) of Scarsdale, New York, we have a chance to see the 1960 QSL of DZF2, The Call of The Orient missionary station in Manila, Philippines.

This station verified his reception on 11920 kHz in December of '60 with an attractive red/green/white QSL. Under the callsign KZRM and the slogan Radio Manila, this historic station operated until WWII forced it off the air for several years. In the 1930's it operated on 11830 kHz.

DZF2 no longer exists, so it was a welcome treat to be able to view its QSL card.

An Unusual Reception Report

We've seen some rather strange reception reports sent to radio stations but one recently provided us is the best yet. In 1933, radio WGY in Schenectady received the let-

ter that is reproduced here and if you can't quite make it out, the text is:

"WGY Schenectady—General Store—New York—States—sir i am gide for hunter man wot come at dis place lac-des ilse for hunting deer dese hunter man bring it wit him machine for heer you spik from far place i lissen wit him sunday nite also tuesday nite i heer song bout my ole modder an i ting dats dame fine song also i heer oder song i dont no de name tuesday nite

WGY Schenectady
General Store
New York
States
sir
i am gide for hunter man wot
come at dis place lac-des ilse for
hunting deer dese hunter man bring
it wit him machine for heer you
spik from far place i lissen wit
him sunday nite also tuesday nite
i heer song bout my ole modder
an i ting dats dame fine song
also i heer oder song i dont no
de name tuesday nite
de small boy and girl bout mak
de star shine for dem if dey is good
boy and girl hunter man laff lak
hell an tole me ax you how we
make some moon shine
i heer you spik jus de same lak
your at me place i ting you heer
good machine i lissen more
nex wick
tank you and much abdlg
Gide Camille Porier
Chemin P.O. Quebec Canada

We wonder if this great 1933 reception report earned a QSL.

storie for de small boy and girl bout mak de star shine for dem if they is good boy and girl hunter man laff lak hell and tole me ax you how we mak some moon shine

"i heer you spik just de same lak your at me place i ting you have good machine i lissen more nex wick tank you and much oblige Gide Camille Porier, Chemir(?) P.O. Quebec Canada"

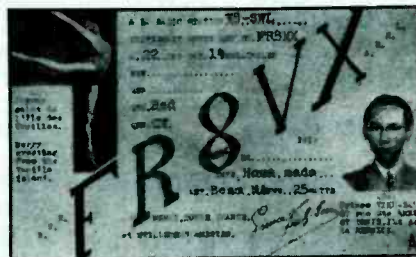
We wonder if that report earned him a QSL! See you soon. **PC**

Historic Ham QSLs

Reunion is an Indian Ocean volcanic island roughly 420 miles east of Madagascar. Within its 969 square-mile area dwells more than a half-million people, many of whom are engaged in the island's vanilla and sugar industry. Reunion has belonged to France since the 17th Century; about one third of its population is of French extraction.

Today, Reunion has two AM broadcast stations (666 kHz with 20 kW and 603 kHz with 4 kW), about 60 low power FM stations, plus 6 TV stations and a bunch of TV repeaters. There isn't any shortwave broadcaster on Reunion and relatively little Ham and "ute" station activity. Getting a QSL from Reunion if you're a DX monitor isn't altogether impossible, but it's a pretty good trick. In the 1930's, it was an even more difficult task.

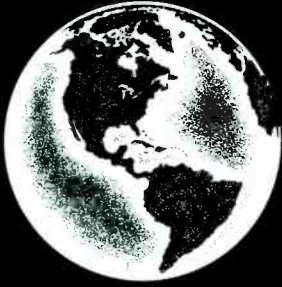
For the above reasons, when it was revealed that a Ham station on Reunion was going to transmit special scheduled DX broadcasts for SWL's, there was quite a clamor. The 1938 broadcasts, it was announced, would contain music and spoken material, and would be 30 minutes in length on each of three consecutive days in March. It wasn't going to



be easy to snag this rare DX catch, the station was to be running only 25 watts on 14340 kHz. His beam would be directed towards North America to give the feeble signals all of the help possible.

The grantor of this DX bounty was Prince Vinh-San, licensed as FR8VX. He promised to send out special handmade QSL cards to all who could hear these one-in-a-lifetime broadcasts. A few DX listeners in North America were able to dig FR8VX out from the QRM and were rewarded with a card for hearing one of the only shortwave broadcasts ever to come from Reunion.

POP'COMM is pleased to give you a look at FR8VX's special QSL for those transmissions almost 50 years ago. Wouldn't you like to have heard those broadcasts?



Selected English Language Broadcasts

Fall 1986

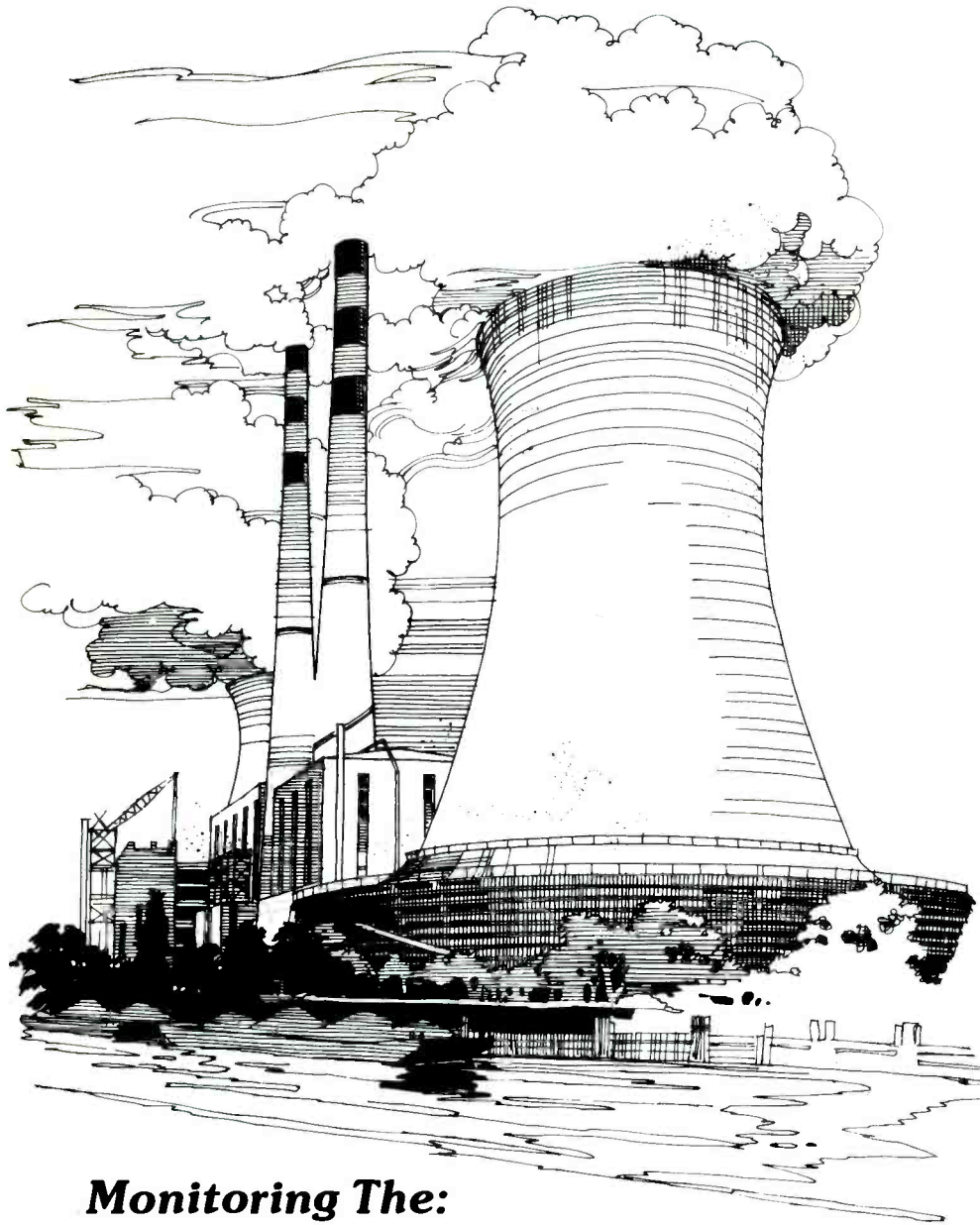
BY GERRY L. DEXTER

Note: This list of English language broadcasts was accurate at the time of compilation, but stations often make changes in the hours and frequencies of their broadcasts, often with little advance notice. Hundreds of broadcasts are aired daily on the shortwave radio bands, many of them directed to an audience in North America. This is a representative sampling and not intended as a complete reference. Some broadcasters air only a part of their program in English during a given hour or may run the English segment into the next hour. Many stations, such as the BBC, Voice of America and Radio Moscow operate in English around the clock and only representative times and frequencies are included for these. All times are in UTC. () indicates a starting time at the number of minutes past the hour indicated. Frequencies are in MHz.

Time	Country/Station	Frequencies
0000	R. Beijing	11685, 15445
	BRT, Belgium (30)	9790, 9830
	REE, Spain	6055, 9630
	R. Tirana, Albania	7065
	R. New Zealand	15150
	R. Portugal (30)	9680
	Vatican Radio (50)	6010, 9610, 11815
	RHC, Cuba	6100, 6140, 9740
	V. of Israel	7410, 9435
	Voice of America	5995, 9455, 9650
BBC	5975, 6120, 6175, 7325, 9590	
RCI, Canada	5960, 9755	
0100	R. Prague, Czechoslovakia	5930, 7345, 9630, 9740, 11990
	RBI, E. Germany (15)	6080, 9730
	V. of Germany, W. Germany	6040, 6065, 6145, 9545, 11785
	RAI, Italy	9575, 11800
	RAE, Argentina	9690, 11710
	RAI, Austria (30)	6155
	R. Netherlands (30)	6020, 9895
	V. of Greece (30)	7430, 9420
	V. of Israel	7410, 9435
	V. of Nicaragua	6015
0200	R. Beijing	6015, 9645
	RBI, E. Germany	9560, 9620
	VOFC, Taiwan	5985, 6065, 11720, 11740, 15215
	R. Tirana, Albania (30)	7065
	Radiobras, Brazil	11745
	R. RSA, South Africa	5980, 6010, 9615
	R. Korea, South Korea	11810, 15575
	R. Netherlands (30)	6165, 9590
	R. Kiev, Ukraine SSR	6020, 7165, 7205, 11790, 11860, 15180
	R. Cairo, Egypt	9475, 9675

Time	Country/Station	Frequencies	
0300	R. Bucharest, Romania	5990, 9510, 11940, 15250	
	SRI, Switzerland	6135, 9725, 9885	
	R. Polonia	6095, 6135, 7145, 7270, 9525, 11815, 15120	
	HCJB, Ecuador	6230, 9870, 11910	
	R. Beijing	11970, 11980, 15280, 15445	
	R. Prague, Czechoslovakia	5930, 7345, 9630, 9740, 11990	
	RBI, E. Germany (30)	9560, 9620	
	V. of Germany, W. Germany	6010, 9545, 9565, 9640, 9735	
	VOFC, Taiwan	5985, 6065, 11740	
	R. Baghdad, Iraq	6050, 11750	
R. New Zealand	11780, 15150		
R. Portugal	9565		
R. Sofia, Bulgaria	7115, 9700		
RFI, France (15, 45)	6175, 7135, 9535, 9550, 9790, 11700		
V. of Greece (30)	7430, 9420		
R. Budapest, Hungary	6025, 9520, 9835		
TWR, Bonaire	9535		
Radio Earth, USA	7355		
HRVC, Honduras	4820		
0400	R. Beijing	9565	
	V. of Turkey	9560, 9730	
	V. of Israel	7410, 9435	
	V. of Nicaragua	6015	
	R. Botswana	4820, 7255	
	RSI, Sweden	9696	
	SRI, Switzerland	6135, 9725, 9885	
	R. Bucharest, Romania	5990, 6155, 9510, 9570, 11810, 11940	
	RHC, Cuba	6090, 6100, 6120, 6140, 9550, 9740, 11725	
	RFI, France (15, 45)	7135, 9535, 9550, 9790, 11700, 11955	
0500	V. of Germany, W. Germany	5960, 6120, 6130, 9700	
	REE, Spain	6055, 9630	
	R. Japan	9735	
	R. Netherlands (30)	6165, 9715	
	V. of Nigeria	7255	
	R. Lesotho	4800	
	0600	RAI, Austria (30)	9735
		R. Cook Islands	11760
		GBC, Ghana	4915
		ELWA, Liberia	4760

Time	Country/Station	Frequencies	Time	Country/Station	Frequencies
	RHC, Cuba	9525		C. of Greece (40)	11645, 15630, 17565
	BBC	5975, 6175, 9510		FEBC, Seychelles	11865
	TWR, Monaco (25)	7105		VORE, Ethiopia	9560
				V. of Indonesia	11790, 15150
0700	R. Japan	9735			
	HCJB, Ecuador	6130, 9745, 9845, 11925	1600	BSKSA, Saudi Arabia	9705, 9720
	VOFC, Taiwan	5985		R. Norway (Sundays)	9570, 11925, 17840
	KTWR, Guam (45)	11735		RFI, France	17620, 17795
	AFRTS	6030, 11790, 15265		UAE Radio, UAE	11955, 15300, 15320, 17775
	R. Australia	5995, 9580, 11720		R. Nacional, Angola	9535, 11955
				R. Cairo, Egypt	15255
0800	SIBC, Solomon Islands	5020, 9545			
	R. Australia	9580	1700	Voice of America	15580, 15600
	KNLS, Alaska	11850		R. Norway (Sundays)	9655, 11925, 15310
	HCJB, Ecuador	6130, 9745, 11925		V. of Israel	9920, 11585, 13745
	BBC	5965, 6195, 9510		AFRTS, USA	15330, 15345, 15430
				R. Moscow	11755, 11770, 11840, 12050, 15245, 15425
1000	AIR, India	11705, 11810, 15320, 15335, 17875			
	R. New Zealand	6100, 9620			
	V. of Vietnam	9840, 12035	1800	RAE, Argentina	15345
	SLBC, Sri Lanka (30)	11835, 15170, 17850		RCI, Canada	15260, 17820
	R. Nepal (45)	5005, 9590		R. Kuwait	11675
1100	R. Beijing	9535		R. Abidjan, Ivory Coast	11920
	VOIRI, Iran (15)	7215, 11790, 15084	1900	R. Afghanistan	9665, 11805, 11880
	R. Australia	6060, 9580, 11770		R. Japan	11705
	R. Korea, S. Korea	15575		RCI, Canada	11945, 15325
	R. Pakistan	15595, 17640, 21765		HCJB, Ecuador	15220, 15270, 17790
	R. Finland International	11945, 15400		VOIRI, Iran (30)	9022, 11930
	V. of Vietnam	9840, 12035		R. Yugoslavia	9620
	R. Pyongyang, N. Korea	9555, 9750			
1200	R. Tashkent, Uzbek SSR	7235, 7325, 9600, 11785	2000	R. Baghdad, Iraq	7170, 9610
	R. Beijing	9535, 9640		R. Algeria	9510, 9640, 15160, 17745
	R. Bangladesh (30)	15525, 17653		RCI, Canada	9555, 11945, 15325, 17820, 17875
	VOPK, Kampuchea	9695, 11938		R. Moscow	9615, 9730, 11850, 11950, 12015, 15104, 15405, 15490
	R. Australia	6060, 9580		RBI, E. Germany (45)	6125
	V. of America	9760		RHC, Cuba	15300, 17750
	R. Moscow	11705, 11840, 13705, 15150, 15475		R. Damascus, Syria	7455, 9950, 12085
	R. Finland International	11945, 1540			
	R. Ulan Bator, Mongolia	9615, 12015	2100	R. Jamahiriya, Libya (30)	6155 (or 11815)
	R. Pyongyang, N. Korea	9750		RAE, Argentina	15345
	TWR, Bonaire	11815		R. Yugoslavia (15)	9620
				HCJB, Ecuador	15270, 17790
1300	R. Beijing	9550, 9730		R. Sofia, Bulgaria (30)	11720, 15330
	AIR, India (30)	9545, 11810, 15335		V. of Nigeria	15120
	BRT, Belgium	15590			
	R. Norway (Sundays)	6040, 9590, 15245, 15310, 17770	2200	RBI, E. Germany	6070, 6125, 6165
	R. Pakistan (30)	9465, 11925, 15595, 17660		R. Australia	15320, 15395, 17795
	R. Finland International	11945, 15400		RHC, Cuba	11705
	R. Pyongyang, N. Korea	9550, 9750		RCI, Canada	5960, 9755
	FEBC, Philippines	9670, 11850		V. of America	9700, 9760, 11760, 15205
	RCI, Canada	11955, 15440	2300	RBI, E. Germany	6080, 9730
	V. of Vietnam	10040, 15010		VOFC, Taiwan	11855, 15130
1400	R. Japan	5990		R. Japan	9645, 15235
	R. Korea, S. Korea	9750, 15575		R. New Zealand (05)	17705
	R. Norway (Sundays)	15245, 15300, 15310		V. of Turkey	9560, 9730
	R. Finland Int.	11945, 15400		R. Vilnius, Lithuania SSR	9800, 11720
	RSI, Sweden	11705, 15345		R. Kiev, Ukraine SSR	7165, 7205, 7400, 11790, 15180
	R. Yugoslavia	15240, 15415		R. Sofia, Bulgaria	7115, 9700, 11720, 15330
1500	HKBS, Jordan	9560		RSEI, Sweden	9695, 11705
	R. Japan	5990		V. of Greece (35)	11645
	V. of Kenya	9665			



Monitoring The:

Nuclear Regulatory Commission

It's Been In The News, But Have You Tuned It In Yet?

BY TOM KNEITEL, K2AES, EDITOR

The Nuclear Regulatory Commission (NRC), with its 3,200+ employees, has been operating since early in 1975 yet this important federal agency's communications are seldom reported as having been heard by monitors. So, let's take a look at the agency and what it does, where it does it, and how it's all tied together with communi-

cations. So far as I'm aware, the NRC's communications network hasn't previously been spotlighted—this could well be a first!

What It Is

The NRC licenses and regulates the users of nuclear energy to protect the public health and the environment. It does this by

licensing persons and companies to build and operate nuclear reactors and those who own and use nuclear materials. The NRC also checks on the activities of the persons and companies licensed to ensure that they do not violate the safety rules of the NRC.

NRC responsibilities go far beyond licensing and regulating the construction/operation of nuclear reactors (and other nuclear facilities). The agency also administers the possession, processing, transport, handling and disposal of nuclear materials. It inspects licensed nuclear activities and facilities (and reported accidents at same), enforces its own regulations, and conducts many other related activities.

The NRC is structured with its executive headquarters at 1717 H Street, N.W., in Washington, and operations HQ at Bethesda, MD. The NRC operations are divided into five regions, with an NRC Regional Headquarters office located in each.

Communications

While regular landline communications are in use between the various NRC Regional Offices, VHF communications are used for local on-site operations at offices in the National Capital area. For long-range communications, especially as a backup and for such times as an emergency situation might arise, and for drills and tests, an HF short-wave network also exists.

In actuality, the HF stations appear to be participants within selected Federal Emergency Management Agency (FEMA) networks as opposed to constituting networks that belong exclusively to the NRC itself, although the NRC operates its own stations within those FEMA networks. The implication is that any national emergency relating to either agency would most likely require extensive coordination of the activities of both agencies. Hence, the need for direct high frequency single sideband communications over a large number of frequencies that can be selected for best coverage, day or night.

During daylight hours, stations monitor the calling and emergency frequency of 10494.5 kHz (USB); this is known as frequency #28 ("Foxtrot 28"). At night, stations monitor 5212.5 kHz ("Foxtrot 15") for the same purposes. "Foxtrot 44" (17650 kHz) is the secondary or backup emergency channel. "Foxtrot 48" (20028.5 kHz) appears to be the only channel upon shared by all five NRC Regional Offices.

The NRC is authorized for hand-held units on 27.575, 27.585, and 169.10 MHz. These units are available for use during field inspections and investigations. Of course, during an actual emergency situation there would be additional frequencies required. This was adequately proven several years ago during the nuclear accident at the Three Mile Island nuclear reactor in Pennsylvania. At that time, the NRC used federal frequencies allocated to the Interagency National Emergency Fire Cache. In the event of any future nuclear "incident," it's reasonable to assume that the NRC would again press this

Nuclear Regulatory Commission Stations

California, Walnut Creek (HQ NRC Region 5)
 Foxtrot 12 22 31 32 34 36 37 38 39 40
 44 48

District of Columbia, Washington
 KYE280 167.875 MHz

Georgia, Atlanta (HQ NRC Region 2)
 KCL22 Foxtrot 08 11 15 18 22 25 28 30
 48

Illinois, Glen Ellyn (HQ NRC Region 3)
 Foxtrot 09 11 12 13 15 19 22 23 25 28
 32 34 36 37 38 39 40 44 48

Maryland, Bethesda (HQ National/NRC Region 1)
 Foxtrot 09 10 15 19 20 22 28 31 48
 KYE280 167.875 MHz
 KYE281 164.275 MHz

Pennsylvania, King of Prussia (NRC Region 1)
 Foxtrot 09 10 15 19 20 22 28 31 48

Texas, Arlington (HQ NRC Region 4)
 Foxtrot 11 12 13 15 20 25 28 30 31 34
 36 37 38 39 40 48

Virginia, Arlington
 KYE281 168.45 416.40 MHz

Hand-Held Units (All NRC Regions)
 KK7785 17.275 27.285 169.10 MHz

NRC HF Frequencies; Regional Usage

Channel ID	Frequency kHz	Reg. 1	Reg. 2	Reg. 3	Reg. 4	Reg. 5
Foxtrot 08	2378.5		X			
Foxtrot 09	2446.5	X		X		
Foxtrot 10	2659.5	X				
Foxtrot 11	3342.5		X	X	X	
Foxtrot 12	3380.5			X	X	X
Foxtrot 13	3389.5			X	X	
Foxtrot 15	5212.5	X	X	X	X	
Foxtrot 18	5962.5		X			
Foxtrot 19	6050.0	X		X		
Foxtrot 20	6107.5	X	X		X	
Foxtrot 22	6152.5	X	X	X		X
Foxtrot 23	6177.5			X		
Foxtrot 25	7349.5		X	X	X	
Foxtrot 28	10494.5	X	X	X	X	
Foxtrot 30	11722.5		X		X	
Foxtrot 31	11802.5	X			X	X
Foxtrot 32	11958.5			X		X
Foxtrot 34	12217.5			X	X	X
Foxtrot 36	14477.5			X	X	X
Foxtrot 37	14837.5			X	X	X
Foxtrot 38	14886.0			X	X	X
Foxtrot 39	14900.5			X	X	X
Foxtrot 40	14909.5			X	X	X
Foxtrot 44	17650.5			X		X
Foxtrot 48	20028.5	X	X	X	X	X

group of on-site frequencies into service without delay. The frequencies are:

Air Tactical #1 166.675 MHz
 Air Tactical #2 169.15 MHz
 Air Tactical #3 169.20 MHz
 Command #1 168.70 MHz
 (Input: 170.975 MHz)
 Command #2 168.10 MHz
 (Input: 170.45 MHz)
 Command #3 168.075 MHz
 (Input: 170.425 MHz)
 Logistics #1 414.65 MHz
 Logistics #2 415.40 MHz
 Tactical #1 168.05 MHz
 Tactical #2 168.20 MHz
 Tactical #3 168.60 MHz

During any significant nuclear problem, in addition to NRC frequencies, you'd also find lots of activity on frequencies used by other federal agencies such as the USDA, FEMA, the Environmental Protection Agency, the Department of Energy, as well as the Army and Army National Guard. Naturally, a host of local, county, and state agency frequencies would also be buzzing away with increased activity.

This is the information on NRC communications that has thusfar been assembled by monitors from their own listening efforts and from various other sources. If this is all news to you, then you can thank POP'COMM for bringing you up to date on an agency whose communications have (until now) been far less discussed than the agency itself. What with civilian uses of nuclear energy approaching a crossroads, and embroiled in many levels of controversy, these are frequencies for an agency that you'll undoubtedly be hearing more and more about as time goes on.

In the mean time, if you have information to add to that which we have presented here, pass it along and we'll share it with our readers in a future issue of POP'COMM. **PC**

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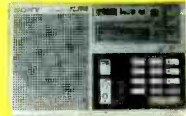


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BY TOM HARRINGTON, W80MV

The SWL has been deprived of one of the most interesting and fascinating modes in the shortwave bands—FACSIMILE. This has been largely due to the lack of proper, affordable FAX equipment that would receive the various speeds and indices of this illusive mode.

My first encounter with FAX was in the early 1950's when I traded a shortwave receiver for a surplus facsimile machine. My newfound piece of gear required the use of a truck and three SWL friends to move it to my basement shack. After several months of preparation and with the help of two professional FAX technicians, I was successful in getting the unit running. From that time on, I was hooked on facsimile. My first acquisition of a surplus facsimile was followed by two additional units in order to receive some of the many speeds (drum speed) and index of cooperation of FAX that I found on the shortwave bands. Each FAX machine only covered part of what I wanted to receive and each was limited to a special use. I was in seventh heaven! Now, I had three working facsimile machines that filled a large wall of my expanding shack.

At this point the economies of my new SWL activities hit home. My various facsimile machines had expensive appetites. The average weekly expenditure of electrostatic and special papers for these machines was costing me between \$35 and \$45. In the early 1950's, this was more than my budget could stand for my newfound hobby. My justification for this weekly expenditure was the amazing amount of weather information, press photos, government FAX and other interesting facsimile pictures I was receiving in my shack. It was very impressive, but expensive! During this time, there was a constant flow of SWL's and Hams traveling to see all of my FAX equipment in action.

At this point, I will touch on several negative sides of the old FAX units that I was operating. The machines were filling the house with smoke and fumes to the extent that the walls of my shack required repainting after being coated with a heavy brown film of dust from the chemicals in the FAX print paper. The daily breakdown of these electromechanical devices was a headache. I found that I was spending almost all of my free time trying to repair these hungry beasts. This love affair lasted for four years until I moved



Two large drum Muirhead Industries facsimile machines in newsroom use.

and had to give up two of the three machines. From this point on, I have always had a machine or two in my possession. They ranged from a monster Westrex machine to many small converted Deskfax units for use on set drum speeds.

Actually during these many years, none of these machines filled my requirements as they were each built to a dedicated standard or a set speed or IOC. Each of these brutes were built for weather service only, press service only, or some special government use; no single machine fulfilled my need.

I have always dreamed of a FAX machine that would be easy to use, inexpensive to print, would give me all of the drum speeds and indices, and print all of the facsimile that was transmitted on the shortwave bands and now from the many satellites.

Several years ago, I was working on some new solid state RTTY decoders with two friends, Dave Kelce and John Fellin (Infotech/Digital Electronics Systems). Somehow during one of my visits, the conversation again came around to facsimile and the lack of affordable and suitable FAX equipment for the SWL. Several days later, I re-

turned to the DES plant armed with the specifications for my dream facsimile set-up.

A. No special papers required—chemical, treated or special size. Print-out would be accomplished on inexpensive standard size paper.

B. Unit must receive all speeds 60-90-120-240 RPM drum speeds, and both index of cooperation, 288 and 576.

C. Unit must have start and stop function, manual, and auto.

D. The unit must receive AM and shortwave facsimile and FM for satellite work. The FM section is now mandatory for all satellite work.

E. The power source must be 120 volts AC, 60 Hz, with no special DC power supplies needed. Units with foreign current were not acceptable because of the problems of synchronization of the various drum speeds.

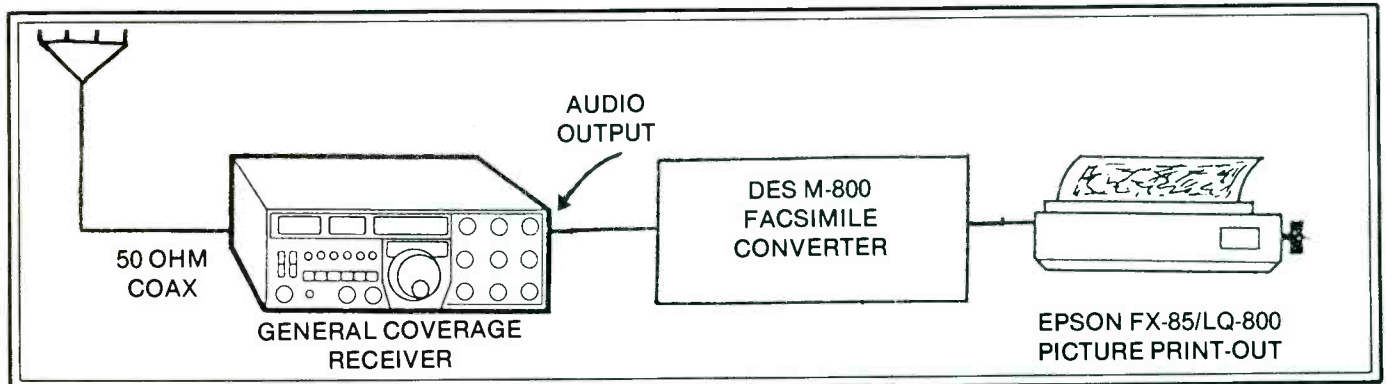
F. There must be a print polarity choice of negative or positive. Press photos are traditionally transmitted with negative phasing. Also, some of the new satellite imagery is transmitted in the negative phase.

G. For greater versatility and future fac-



The new DES M-800 facsimile converter is solid-state microprocessor controlled, and produces quality hard copy from weather service.

Facsimile hook-up with the DES M-800 FAX converter on the shortwave bands.



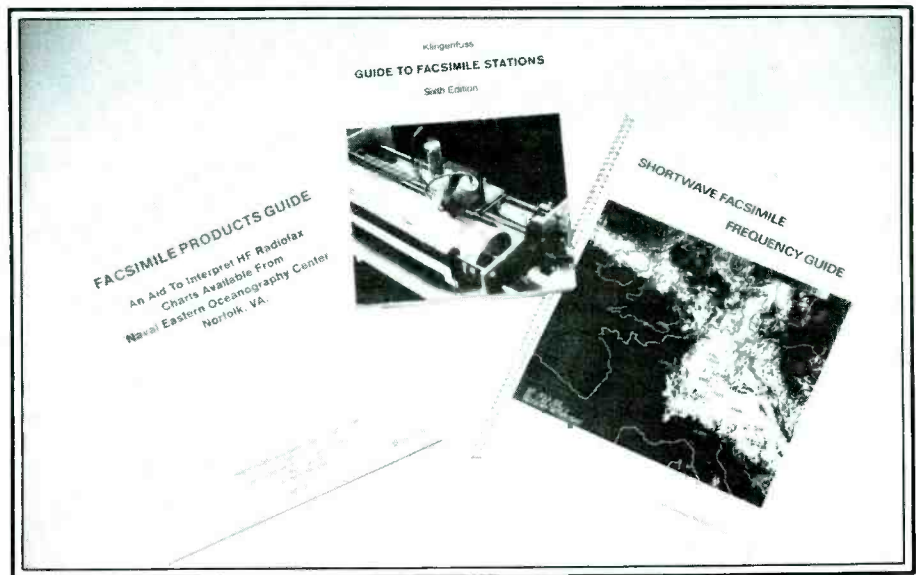
simile developments, the unit must be able to print from right to left or left to right. Both directions of print are being transmitted from various sources. Weather photos are sent left to right while news-wire photos are sent right to left.

H. The unit would drive an inexpensive personal computer dot matrix printer, which would be Centronics parallel, 8 bit graphic addressable with proper 180 to 220 line pitch. This printer would be an inexpensive Epson FX-85 or the Epson LQ-800 or a compatible unit.

I. The facsimile print must have 16 levels of gray scale for wire photos and other pictures, plus a setting for black and white scale used on weather maps and marine meteorological work. These have to be two separate functions to produce a quality image in both modes.

J. The last specification would be that the unit had to be simple to use, reasonable in cost, yet be able to reproduce high-quality photo reproduction and line drawings.

Our first approach was the use of some of the common home computers on the market. None of the six PCs produced the quality of print that was required. After researching this for the better part of a year, we found only what others had told us many times before—it was virtually impossible to produce a quality hard copy photo using any of the personal computers. At this point, we also found that video or screen renditions of the facsimile pictures were also lacking quality due to the low picture resolution of the monitors. This applied also to the many so-called high density monitors that are available. Our requirements for quality was high dot



Most shortwave dealers carry these new facsimile frequency guides in their book sections.

resolution per inch. During this period, we evaluated several foreign facsimile units which claimed to have good video resolution and print resolution. Both of these units were definitely not to our quality standards. They were expensive, had many failures and neither had a video or print picture that was in any way acceptable.

As our facsimile project progressed, we were informed by several printer manufacturers that they were ready to introduce several inexpensive, high speed, high resolution printers that would sell at very low retail

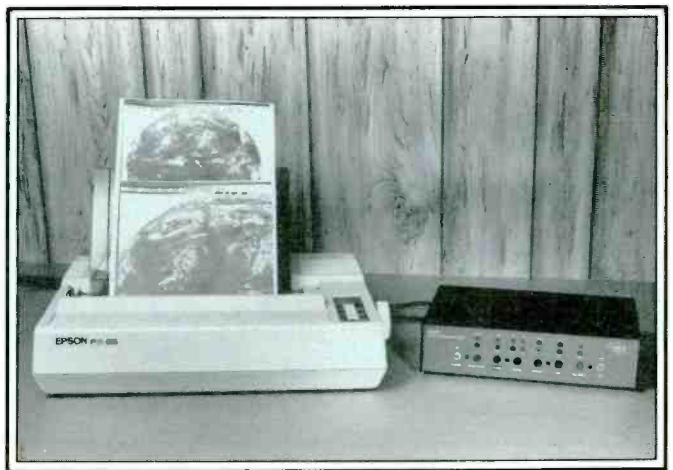
prices. Upon evaluation of these pre-release printers, we knew a simple, cost effective facsimile system could be built. The balance of the project was time, money and software development. The DES M-800 is the product of this work.

The DES M-800 Facsimile Unit

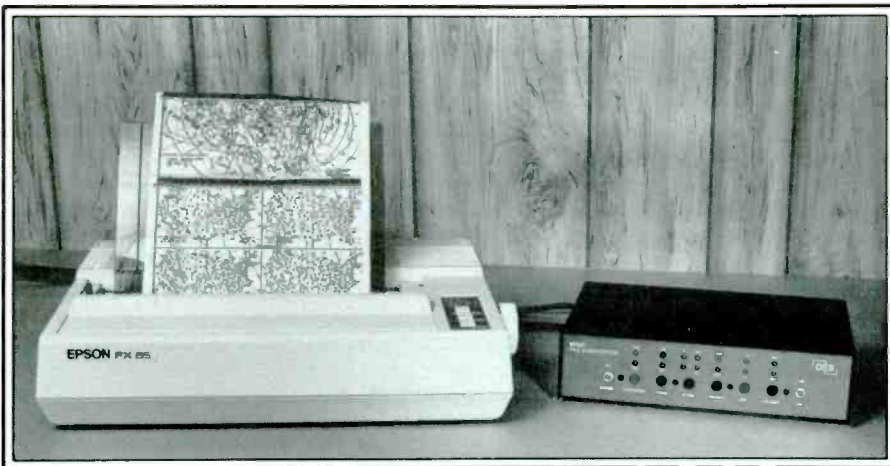
This new unit fulfills all of the needed requirements for a simple-to-use, inexpensive facsimile print system using an Epson type



M-800 FAX converter driving Epson FX-85 dot matrix printer. Unit is printing out press wire photo on shortwave bands.



The DES M-800 printing earth photos in 16 shades of gray from the National Weather Service and satellite services.



Quality weather maps and other weather information being printed on the Epson FX-85, DES M-800 combination.

FX-85 or LQ-800 dot matrix printer. The cost of the facsimile printer paper is practically non-existent as many prints can be made for pennies. The M-800 converter unit fulfills all of the aforementioned specifications and produces the required quality black and white levels, plus the sixteen shades of gray levels for news wire photo reproduction and satellite earth pictures, plus quality black and white line drawings for weather information and maps.

Diagram of Facsimile Hook-up. The basic hook-up is extremely simple, the audio output from the general coverage receiver goes to the input of the MX-800 FAX unit. From the FAX input, a standard IBM cable plugs into the rear of the unit and then to the Epson type printer. The FAX signal is peaked on the tune LED. Proper IOC is selected with drum speed. The unit then will start facsimile print on the receiver of the start and stop tones of the facsimile signal.

Where Do We Find All Of The Facsimile Stations? The many hundreds of facsimile signals are listed in several facsimile publications which have recently been published. Plus, many utilities frequency lists are published by the government, Navy

and National Weather Service. The government publications can be secured from the Government Printing Office at very low prices. The other facsimile guides are available at most shortwave dealers and contain all of the needed receiving information, such as speed, IOC and phasing. There are also presently several facsimile user groups in existence. A complete list appears at the end of this article.

Choice Of Printer. The M-800 facsimile converter uses the standard Epson type printer and does not require any printer modification. This allows the printer to double as a quality printer for your personal computer. The FAX hook-up is standard and the print can be directed to either the PC or the M-800 FAX unit with a simple, inexpensive A-B switch. We have found that these printers are absolutely clean of any RFI and do not cause any problems with high sensitivity, general coverage receivers. We did find, however, in the attempt to use low resolution video, that we were experiencing heavy interference and RFI problems with the video drivers and the low resolution monitors. This was another reason that we opted to pass on the video side.

In conclusion, the DES M-800 facsimile unit will produce unequaled high resolution hard copy print-out of all the press and wire service photos, weather maps from around the world, all marine meteorological facsimile products, full facsimile products transmitted by Navy and government agencies, plus superb quality print-outs from the many satellite services in existence. All that is needed is a high quality input signal to the facsimile system and away you go to a new world of shortwave listening, I know you will love it as I have for many years. Try it. **PC**

Sources Of Facsimile Items

DES M-800 Facsimile Converter

Universal Shortwave Radio
1280 Aida Drive
Reynoldsburg, OH 43068
Plus other leading SW dealers.

Facsimile Products Guide

U.S. Naval Eastern Oceanography Center Norfolk, VA.

Facsimile Guides

Universal Shortwave Radio (address above).

E.E.B., 516 Mill St. N.E., Vienna, VA 22180

EGE, Inc., 13646 Jefferson Davis Hwy, Woodbridge, VA 22191.

CRB Research, P.O. Box 56, Com-mack, NY 11725.

Other Weather Information (Worldwide Marine Weather Broadcast)

National Weather Service Office
Ocean Service Center
1120 Old Spanish Trail
Slidell, LA 70458
504-522-7330

National Weather Service Office
Room 302
World Weather Building
Washington, D.C. 20233

BOOKS YOU'LL LIKE!

BY R.L. SLATTERY

crease in the success rate of your reports to stations in Spanish Language nations. In the works (and should be ready soon) are similar *Language Lab* books for French and Portuguese.

The *Language Lab* (Spanish Edition) is available from Tiare Publications, P.O. Box 493, Lake Geneva WI 53147. The price is \$12.95 plus \$1 shipping (\$2 overseas). Add \$1 in each category for First Class/Airmail. Prices are in U.S. funds.

quite impressive; it's got more pages and listings than some publications we've seen that purport to cover the entire nation!

The *Fox Southeastern States Regional Scanner Directory* is available at \$12.95 per copy (plus \$2 shipping/handling to addresses in USA/Canada/APO/FPO). It can be ordered by mail from CRB Research, P.O. Box 56, Commack, NY 11725.

World Broadcasting Systems

Can broadcasting systems retain independence from politics? What is the effect of new technologies on broadcasting worldwide? What are the problems facing broadcasters located near international borders? What effects have pirate stations had upon world broadcasters? These are just a few of the fascinating topics addressed by Sydney Head in his comprehensive new book, *World Broadcasting Systems, A Comparative Analysis*.

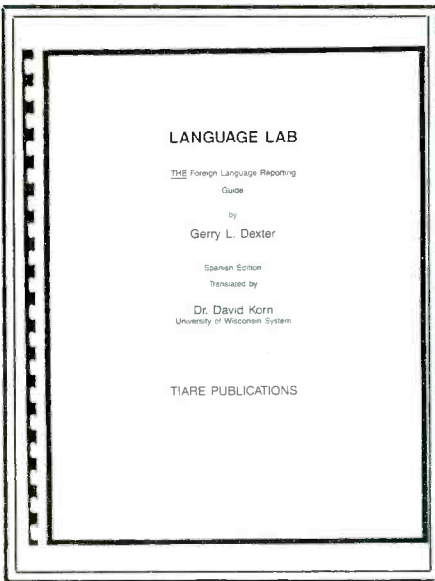
This is a 457-page hardcover book that provides a contemporary, comparative analysis of radio/TV/cable broadcasting systems in developed, undeveloped, and developing nations throughout the world. It is the only book to present the subject in a unified, global point of view.

Illustrated with charts and maps, this very well researched and informative book offers an enormous amount of information on broadcasting history, station ownership (private, governmental, religious groups), broadcast laws, programming, economics, facilities, audience research, access, and the highly volatile topic of broadcast freedom (free flow of information).

This is a book that I found so totally engrossing that I could hardly put it down once I started reading. The author is an expert on world broadcasting who has been professionally associated with all aspects of the industry for many years and who is presently a visiting professor at the University of Miami's School of Radio/TV/Film. (Prof. Head was formerly chair of the University's Radio/TV/Film Sequence; Tom Kneitel advises that Prof. Head was one of his professors when he attended that institution and that there was always a waiting list to enroll in his courses).

If you're interested in any aspect of broadcasting, you'll come away from *World Broadcasting Systems* with far more insight into what it's all about. Definitely an impressive work that undoubtedly contains the most provocative and stimulating approach we've seen in a very long time.

This book is priced at \$29.75 from the Order Department, Wadsworth Publishing Co., 10 Davis Drive, Belmont, CA 94002.



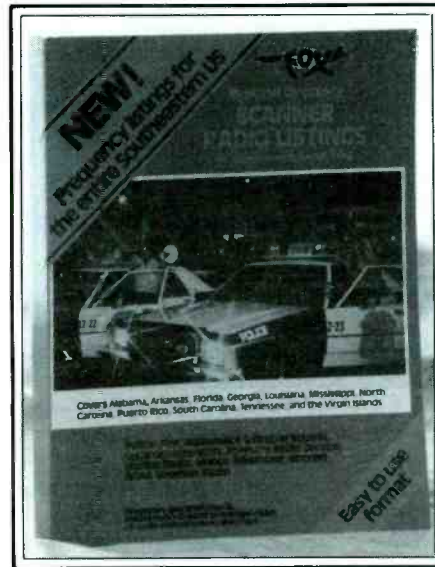
Spanish Language Lab

If you're like me, you suffered through a couple of years of school-brand Spanish and ended up with a virtually useless smattering of assorted words. I spent 4 years trying to sort out whether the word *dentro* means "teeth" or "inside," and I still can't recall which it is!

Writing a reception report to a Spanish-language station has usually meant dragging out the English/Spanish dictionary and taking it word-by-word with sentences that translate into classics like, "The signal that comes from your station was such as strong as it might have been." I suspect that I'm not alone in this pickle; Gerry Dexter also came to the same conclusion. The main difference is that while I sat here confused, Dexter began putting together the Spanish Language Edition of his *Language Lab*.

Not a humble 4-page guide nor a multilingual report-form, the *Language Lab* is a 54-page 8½" x 11" book aimed squarely at the SWL who wants to send a Spanish Language reception report that is correct, complete, concise, courteous, and most importantly, coherent. It includes 15 ways to open your letter, 36 ways to describe receiving conditions, hundreds of programming descriptions, 17 clever ways to ask for the QSL, 23 letter closings, and many pages of miscellaneous useful words, phrases, and sentences to use include in follow-ups and reports.

The Spanish wording was prepared by Dr. David Korn of the University of Wisconsin, assuring the user of accuracy and proper grammar. In looking through this well-organized book, you can easily realize how you can probably obtain a substantial in-



Southeastern States Scanner Frequencies

For listeners throughout the Land of Dixie, there's a brand new directory of scanner frequencies to increase your scanner use and enjoyment. It's the *Fox Southeastern States Regional Scanner Directory*, a 526-page (large 8½" x 11" size) directory covering listings in Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands.

This fat book, weighing in at 2½ lbs., provides information on all state/county/local agencies (police, fire, local government), rescue squads, ambulances, forestry conservation, maritime, mobile telephone, weather, and more. In addition, it includes frequency spectrum and band usage information.

Looks to be quite thorough and well thought-out, done in a most professional manner, easy-to-use and read, and continues in the same tradition of the excellent directories in the series of Fox's local area directories. If you're into scanning in the Southeastern U.S. (or Puerto Rico and the U.S. Virgin Islands), this publication should come in very handy. Its huge size makes it

PRODUCT SPOTLIGHT

First Person Report On . . .

The Butternut SC-3000 Scanner Antenna

For months I've been looking at the advertisement in *POP'COMM* for the Butternut SC-3000 base station scanner antenna. While offering unity gain on the VHF low band, the manufacturer claims it produces up to 3 dB gain on the VHF high band, up to 7 dB on UHF.

Having treated myself to a birthday gift of a sparkling new scanner, I figured that it was definitely time to make my move towards that antenna. I especially liked that it covered 30 to 512 MHz, since my scanning interest matched up with those specs, and I had been getting by with an antenna really intended only for the VHF high band.

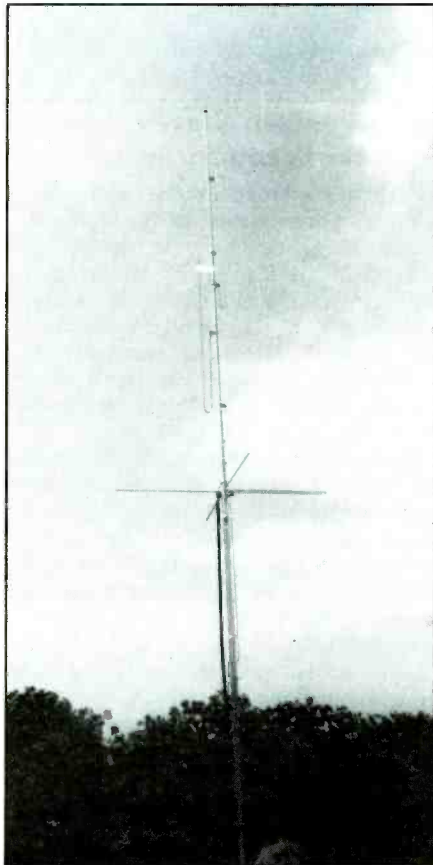
I can't say that I wasn't impressed with the way this antenna looked with its assorted ground radials and "trombone" sections. In the looks department, it's about as interesting as a scanner antenna can get. These are the reasons that I was anxiously awaiting the arrival of the SC-3000, and that's why the parcel delivery hadn't even pulled out of my driveway when I began to dig the components out of the shipping carton.

At the end of the stream of aluminum tubes and clamps that came cascading out of the carton there was one final item—a folded piece of legal-size paper. What a pleasant surprise to learn that this was the instruction sheet for the SC-3000's assembly and installation. If a 20-page manual had come toppling out, I'd have been less fully enthusiastic about tackling the job! Only seven steps were required to get the SC-3000 into shape and ready for action.

The SC-3000 turned out to consist of three major sections made of aluminum alloy. Along with these parts are several attached and unattached "trombone" sections, radial rods, clamps, and some stainless steel hardware. All of this went together to form an 11-ft. high antenna in approximately 45 minutes. Assembly was rather straightforward with no unpleasant surprises; everything fit, all of the parts were there, and I wasn't left with any extra parts or hardware that didn't seem to be a part of the proceedings. I did note two discrepancies in the instructions. Step #1 refers to "section B" when it means "section C" while step #3 mentions the "upper (unslotted) end of section B" although that piece is slotted. These were, however, only minor discrepancies since it's quite obvious what is meant, and the pictorial diagram shows everything correctly.



Hey! This looks like it's going to be fairly easy to assemble!



The Butternut SC-3000 hard at work.

Butternut's Model SC-3000 Scanner Antenna

Features:

- Heavy wall seamless aluminum tubing and all stainless steel hardware.
- Uses Butternut's patented "trombone"[®] phasing sections thus providing gain without breaking the vertical element with insulators.
- Covers 30-512 MHz scanner ranges.
- Receive gain:
 - UHF Up to 7 dB
 - VHF Up to 3 dB
 - Low Band Unity gain
- Omnidirectional coverage area.
- Uses an SO-2329 feedline termination.
- Wind survival 100+ winds.
- Height 11 feet.
- Designed for multi-band scanners.

The SC-3000 mounts atop standard TV masting sections of standard sizes available at many electronics shops. I mounted it atop several sections that totalled 20 feet in height, attaching it to a 1-story building at the base and at a point about 8-ft. up from the base. For the base I used two cinder blocks, filling in the holes (around the masting) with cement. This held things quite sturdily and I haven't found the need to add any guying further up the mast. The antenna is rated to survive in better than 100 MPH winds, but I'm certain that it would require better guying than I've thusfar provided.

The SC-3000 has a place for attaching a regular PL-259 coaxial connector, thus making it all very simple. The manufacturer cautions that the feedline shouldn't be attached without first disconnecting the other end from the scanner; this to avoid any possibilities of electrical shock from improperly grounded (or ungrounded) scanners.

What I did was leave my previous antenna up and connected to other scanner. Since both scanners were the same make/model, I decided to run them side-by-side on the identical high-band frequency to see how the two antennas stacked up against one another. Both antennas were mounted at the same height, a 50-ft. distance separated the two masts.

The older antenna was a 2-meter Ham

band omnidirectional type that had been peaked at 155 MHz. It had performed well for the 3 years I'd had it in operation. Still, the SC-3000 was able to pull in high-band signals from distant mobile stations that couldn't break through the squelch on the scanner with my original antenna. Same with base stations around 155 MHz coming from a large city located 55 miles away from my station. I hadn't been able to copy them at all in the past, with the exception of the

NOAA station on 162 MHz. With the SC-3000, several previously quiet frequencies suddenly sprang to life. I even tried switching the antennas on the scanners and noted the same results. Of course, on the low and UHF bands there was a world of difference. My older antenna wasn't designed for efficiency on those bands, although it had functioned on both of those bands to at least some extent. The SC-3000 was bringing in plenty of stations I'd never before

heard on either of these bands.

In all, I'd have to say that I was exceptionally pleased with the results this antenna has produced. Should have gotten one when I first learned about the thing! It's made by Butternut Electronics Co., 405 East Market Street, Lockhart, TX 78644. Many dealers seem to stock the Butternut SC-3000, so I guess I'm not the first scanner owner to discover the unit.

Reviewed by Skip Bradford, KNY2XL

The Micro Eye Express L.R. Radar Detector

Radar detectors for vehicles have been around for more than 25 years. I remember some of the very early, almost-experimental, units that had first started to trickle onto the market from what was then regarded by many as outlaw companies. Most of the pioneers in the field have long since gone by the boards. If only today's IC technology had been around fifteen years ago!

These days the radar detector industry has grown into a rather sedate \$200-million giant; a far cry from the days of early units such as the *Radar Zone*, *Radar Sentry*, and other units from the early 1960's. And yet, the challenge remains unchanged. A mobile radar detector must be able to accurately detect two types of speed measuring radar and discriminate between a police radar gun and other radar signals from navigational and security devices, some garage door openers, traffic counters, etc. The key to the whole thing is the right combination of sensitivity and selectivity. Sensitivity picks up the weakest signals from distant points. Selectivity discriminates between police radar and other forms. Units made a couple of decades ago had problems dealing with all of these things. But that's in the past.

Recently I obtained what its manufacturer calls "the world's most sensitive radar detector." I couldn't resist a claim like that! The unit in question is the new B.E.L.-Tronics Micro Eye Express L.R. (Model 844s). This rather small and lightweight detector contains all of its receiving hardware and also its antennas within itself.

Reception takes place simultaneously on the X band (10,525 MHz) and the K band (24,150 MHz). Higher sensitivity in this new model has been achieved by the use of a two-stage amplifier rather than the single-stage circuit utilized in the manufacturer's other long range detector (the Model XLR Long Range). Sensitivity is further increased by eliminating the need for the detector to analyze both sidebands of the received signal. In the Model 844s, only a single sideband is examined and the result is noise reduction and increased sensitivity.

In operation, the unit is mounted where it can "see" an unrestricted view of the road ahead. The sun visor or dashboard should

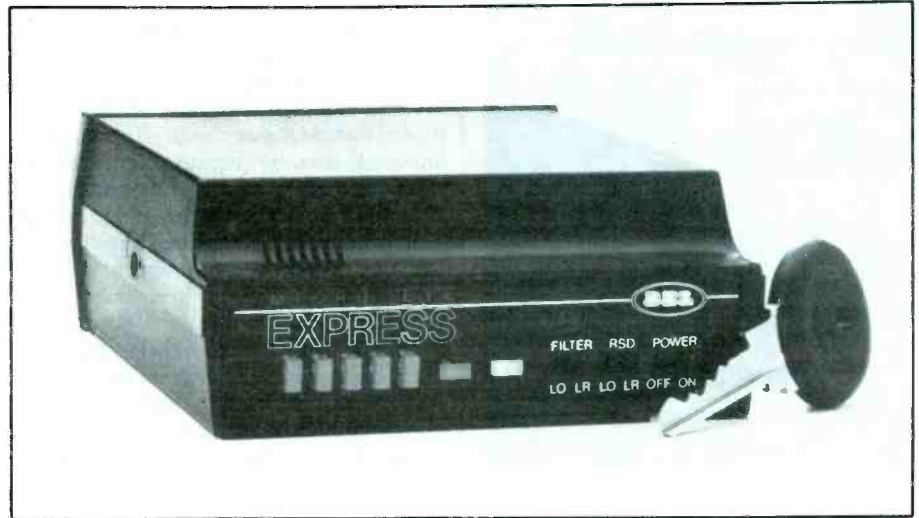
do just fine. The power connection is made to the vehicle's cigarette lighter socket.

The front of the unit contains a pilot light, a set of six relative signal-strength lights, a small loudspeaker, and three miniature slide switches. One switch is for power on/off, the other switches permit selection of internal filters and discrimination modes to maximize operation of the unit to your environment and driving conditions.

When the unit is turned on, it goes through a self-testing sequence that causes the LEDs to illuminate and several beep sounds to generate. At that point, the unit goes into a quiet stand-by mode as it awaits reception of any incoming signals. A single

pulsating yellow LED keeps you reassured that the device is, in fact, in operational stand-by status.

Of the two bands (X and K) used for radar speed-clocking purposes, the K-band is used solely by police and presents little problem for designers of detection devices, although these shorter wavelengths have only about half the effective detection distance as signals on the lower-frequency X-band. K-band signals tend to be absorbed by water molecules, allowing police only line-of-sight detection range; this is why the police sometimes place their radar clocking device on the seat of the patrol car until the target vehicle is well within detection range.



B.E.L-Tronics Micro Eye Express Specifications

SPECIFICATION

1st LO (Local Oscillator)
2nd LO
IF
Sweep

DIE CAST MICROWAVE HORN, DOUBLE RIDGE WAVEGUIDE


Operating Frequencies
Power
Operating Temperature

MICRO EYE EXPRESS

11.588 GHz resonant cavity
1.033 GHz ± 100 MHz
1.033 GHz dual stage amplifier
25msec

X-Band 10.525 GHz
K-Band 24.150 GHz
10-14 volts DC, 360ma
-4° to + 176°

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CIRCLE 37 ON READER SERVICE CARD

A Review Of The D-130 Super Discone Antenna

BY LANCE MCGRAW

Antennas are about as subjective as the weather.

Nevertheless, from time to time something comes down the pike that is really interesting. In this case it is the Super Discone D-130. The antenna is unity gain, make no bones about it, but it does something that is terrific. It covers from 25 MHz to a little over 1300 MHz and remains flat while doing it. It is the mate to the new ICOM R-7000 receiver. It also has something else going for it. It will handle 50 watts of RF at 50, 144, 430, 450, and 1296 MHz. It comes complete with clamps and all the hardware is stainless steel. At no time does the SWR exceed 1.5:1. How can this indeed exist?

A discone antenna has been around for a long time and finds a wide range of use with the military and oversea's embassies. It is inherently a wide range antenna and finds much application in time division frequency hopping. Most discones will handle a frequency disparity of eight octaves while providing a matched impedance of 50 ohms.

The D-130 has an added twist to the standard discone. In addition to the standard antenna it has a trapped vertical radiator to

extend low frequency operation to 25 MHz. The nominal portion of this antenna becomes a true discone starting at 50 MHz.

I have used this antenna at my house for transmitting on two meters as well as the 27 MHz portion of the spectrum and it worked just fine. It also hears extremely well across the entire UHF band.

In closing, this antenna will make a scanner sparkle. It's hard to believe what a resonant antenna can do to pick up the ability to receive weak signals. Receivers tolerate high SWR because there is no heat loss in transmission or damage to other RF finals. Even with the addition of a preamp on your scanner, it must first have the signal to begin with. This antenna has allowed me to hear signals that I previously could not.

The antenna has an assembled height of 5 feet or so and is a little strange looking but do not let that deter you. Assembly takes about a half hour to put together and you would really have to go way out of your way to assemble this antenna wrong. At a cost of under \$70 it is a bargain in the field. Presently, the antenna is available from ENCOMM, 1506 Capital Avenue, Plano, TX 75074.

Receiving distance is better on the lower-frequency X-band, but design problems are increased. Many variables (temperature, humidity, terrain, velocity of police car, number of vehicles in area, nearby buildings, etc.) affect the transmission and reception of X-band signals. Also, the band is used, in addition to speed-measuring devices, for other high-tech electronic equipment including some types of automatic door openers, traffic flow sensors, security devices, etc., all of which have the potential for false activation of many vehicular radar detectors.

In the Micro Eye Express, incoming signals are fed through the unit's internal microprocessor which quickly examines the characteristics of the received signals and then generates its warning signal (via audible *beep* and lit red LEDs) based upon the proximity of the signal and the amount of (or lack) of probable urgency involved. The type of audible signal produced also lets you know whether the incoming signals are arriving via the K-band or the X-band.

In any event, after only minimal on-the-road experience with the Micro Eye Express LR, you rapidly become familiar with the several types of sounds it produces upon sensing microwave signals. You find that some messages it offers indicate that there are X-band signals present that aren't from a speed-measuring device, and which other signals in the band are from just such units located in your general area. Of course, the distinctive K-band *brasp* sound is a clear in-

dications that your vehicle has entered a police speed-check zone.

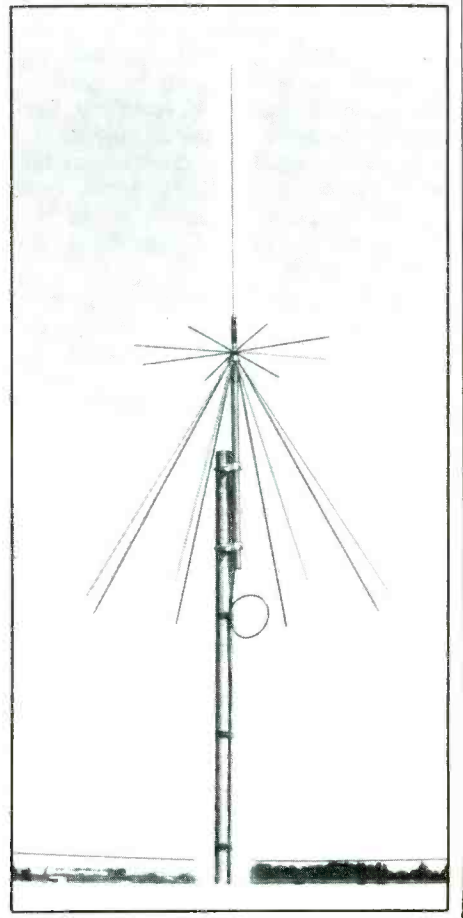
The ethics and moral aspects of the uses of radar for vehicular speed measurement, as well as the detection of those signals by motorists, has been written about and examined in print to the point of exhaustion so it won't be gone into here, but one point should be mentioned. Radar detectors aren't intended as, nor suitable for being, a license for operating a vehicle in an unsafe manner at speeds substantially above a posted speed limit. Such drivers will not find a radar detector to be of significant value; they can't slow down quickly enough!

A radar detector is, however, a very effective defense against unnecessary speeding tickets caused by revenue-located speed traps or occasional lapses of concentration on the part of the driver.

In that respect, the B.E.L.-Tronics Micro Eye Express L.R., radar detector is a well-designed, precision-made, piece of equipment. While small in physical size, it incorporates very sophisticated technology that offers many refinements not available on other units we have seen and tried.

This unit is made by B.E.L.-Tronics Limited, 2422 Dunwin Drive, Mississauga, Ontario, Canada L5L 1J9. The company's offices in the USA are at 2205 West Harry St., Wichita, KS 67213; and 20 Centre Drive, Orchard Park, NY 14127. Many local dealers carry B.E.L.-Tronics products.

Reviewed by F.X.F., North Dakota



Policeman's Fast Action Saves Fall Victim

Police Sgt. Dennis Cox heard the call for help on his police radio: A boy had fallen off a motor bike and suffered head injuries. The boy's father had decided to call paramedics.

When Cox arrived at the home of 13-year-old Benny Cimino in Pecatonica, a small town in northwestern Illinois, he found the young bike rider sitting in a chair. The boy had fallen when a "three wheeler" motor bike had tipped over outside of town. Benny had hit the ground, scraping his head.

SCAN PUBLIC SERVICE AWARD

Benny's father, Frank, decided to call the ambulance service to have his son treated. Cox arrived before the paramedics. Only a few seconds after Cox entered the Cimino home, Benny suffered from what appeared to be convulsions, and then he stopped breathing, according to an account of the incident in the *Pecatonica News*.

"I checked his pulse and noticed no heart-beat, which is standard procedure in a situation like that," Cox told the *News*. "So I gave him mouth-to-mouth (resuscitation) until he came to."

The police officer said that he continued



the mouth-to-mouth even after Benny started breathing to make sure that the young accident victim would keep breathing on his own. Cox estimated that Benny was unconscious for a minute and a half.

A few minutes later, Pecatonica ambulance member Linda Buss, off-duty at the time, arrived at the Cimino home after hearing the call for help on her scanner. "He was convulsing and very delirious when I got there," Buss told the *News*. "I really got there at the end." The regular ambulance crew arrived a few minutes later.

Benny had suffered a concussion and received scrapes on his back and side, but was reported to be back in school shortly after the incident.

Several years earlier, Cox was successful in administering cardio-pulmonary resuscitation (CPR) to a man that had suffered a heart attack. He also revived a second victim using the CPR method, sustaining the life of a baby who later died in a hospital.

Cox attended Emergency Medical Technician (EMT) courses at Highland Community College in nearby Freeport, Illinois, and completed two EMT refresher courses at the time of the accident. He was also one of the original crew members of the Pecatonica Ambulance Association. He is no longer a registered EMT, but maintains his Red Cross certification through refresher courses.

Cox received the Certificate of Merit Award from the National Red Cross, and also received awards from Illinois Governor Jim Thompson, Congressman John Anderson and the Pecatonica Village Board.

The police officer explained that there was no time to analyze what was happening. "When something like that happens, you just don't think about it," he said. "It's just instinct. It's something everyone should know because you never know when you're going to need it."

For his quick action, Police Sgt. Dennis Cox will receive the SCAN Public Service Award, which consists of a special commendation plaque and a \$100 cash prize. For making the nomination, Jon Schwarz, Editor of the *Pecatonica News*, will also receive a special commendation plaque. **SCAN**

Best Equipped

Our winner in the "Most Equipped," or "You've Got To Be Kidding" category this month is Gene Santoski of Wisconsin Rapids, Wisconsin. Gene isn't kidding, he just has a lot of equipment with which to pursue his monitoring and amateur radio interests in this expansive shack.



Gene's primary monitoring gear includes a Bearcat 300 scanner, ICOM IC-R71 shortwave receiver and SX-100 general coverage receiver. A computer is used with the R-71A for RTTY monitoring with an AEA CP-1 interface.

The amateur equipment includes Collins S/Line gear, Heath SB-220 amplifier, and ICOM IC-745 transceiver with general coverage receive capability.

Gene also uses a Sony ICF-2002 portable and a 30-year-old Hammarlund HQ-180 and a 1940-vintage Halcrafters SX-28A receiver. These units are not shown here.

SCAN PHOTO CONTEST WINNERS

The antenna system consists of a Rohm 45-70 foot tower with a Hy-Gain TH6DXX six-element yagi, a 260-foot wire center-fed with open-wire line and various other dipoles and VHF/UHF antennas.

Gene says that he is proud of his station and its great flexibility, and that he really enjoys Popular Communications.

Best Appearing

You don't need all kinds of equipment to enjoy the radio communications hobby or to win this category of the SCAN Photo Contest!



Peter Dandreaano of Mahopac, New York uses this set-up to keep track of what's happening in the area north of New York City.

His shack consists of a Uniden Bearcat 50 XL, J.I.L. SX-100, Commodore VIC 20 computer, Uniden Washington CB with a D-104 power microphone, Panasonic RF-888, Realistic tape deck and a Sears cassette recorder with an AM/FM radio.

We hope you enjoy your new BMI Nite-logger, Peter!



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. **SCAN**

LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

The new Costa Rica station affiliated with Adventist World Radio ran test broadcasts for about a week during the second half of May. One of our reporters caught the station, as you'll see in the loggings. At this writing, however, the tests seem to have been suspended. Keep an ear on 15460 from around 1900 UTC, until as late as 0100. The station is using the name Radio Lira and is also supposed to employ a frequency in the 49 meter band but we've seen no references as to anything more specific in this range.

South Africa is making some changes in its domestic services carried on shortwave. 3250 which formerly carried the Radio South Africa internal service has been switched to 3215 and during our evenings (to 0400 UTC) the frequency carries the Radio Orion light music service. After 0400, 3215 airs the Radio Oranya regional service in Afrikaans which is also carried on 7205 beginning at 0610.

Capital Radio in the South African homeland of Transkei now carries a religious outlet under the name Southern Sound during our evenings, again up to 0400, on 3930. Reception reports on Southern Sound may be sent to P.O. Box 96400, Briston 2019, South Africa.

The third of the new regional stations in Australia is now on the air. VL8T at Tennant Creek is scheduled from 2230 to 0730 on 4910 and 0730 to 1430, 1930-2230 (Fridays 1430 to 1930) on 2325 kHz. Most listeners in North America will have a better chance to hear this one on its 120 meter band frequency. Yes, it's a bit tougher than logging Radio Australia!

DX Party Line host John Beck is on leave from the program for a few months. Long-time host Clayton Howard who had hoped to return to HCJB and fill in for John has been unable to do so due to a health problem. In John's absence the show will be hosted by station staffers Roger Stubbe and Gary Volkhardt. The midweek program has been dropped in John's absence.

If you hear something announcing as "La Voz de Sur America" on 6090 in the evenings, don't get excited. It's simply a new "international" service from the old Argentine standby Radio Belgrano in Buenos Aires. But, exciting or no, we haven't been able to find it here and place the blame at Radio Luxembourg's doorstep.

Radio Discovery, the new station in the Dominican Republic operated by former Radio Clarin star Rudy Espinal and former Radio Earth star Jeff White, continues its tests broadcasts. The station is scheduled daily at 1800-2000 on 15045 and 0100 to 0300 on 6245 using just 50 watts of power



Here's a lesson in promoting shortwave radio. Ontario DX Association members Dean Shrewing and Andy Reid with an exhibit at a Peterborough shopping mall.

to an inverted V-halfwave dipole antenna for each frequency. By the time you read this the station should have increased power to 1 kw. An increase in broadcasting hours is also planned. Currently Radio Discovery is operating under provisional authorization from the Dominican Telecommunications Ministry. Call letters HIVC (Voice of the Caribbean) have been requested.

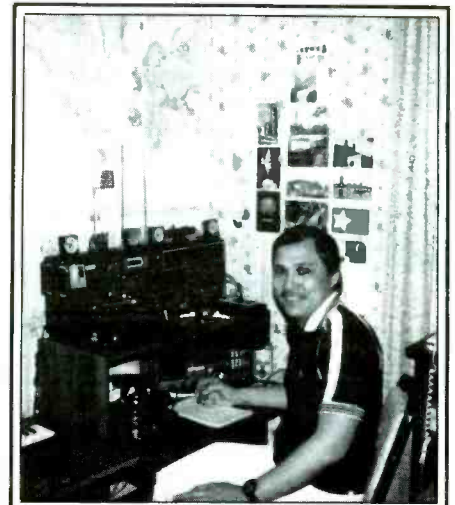
The station's name was chosen to reflect "the historical significance of the Dominican Republic" since this was where Christopher Columbus' discovery of the New World took place in 1492. Studios and transmitters are on the second floor of Plaza Naco, the largest shopping mall in the Dominican Republic. Radio Discovery's programs will be in English and Spanish, with some Portuguese perhaps added later on.

If you log this one a correct reception report will get you a nice QSL card and a copy of the station's quarterly newsletter. The mailing address is P.O. Box 25454, Tampa, FL 33622. Radio Discovery's offices are at 332 Corey Avenue, St. Petersburg Beach, FL 33706.

The Cascade Mountain DX Club has a new mailing address. You can reach them at CMDXC, 3721 27th Place West #301, Seattle, WA 98199. The club publishes *Shortwave Monitor* twice per month for listeners in the Pacific Northwest, including British Columbia. If you'd like more info or a sample newsletter send an SASE to Gary Atkins at the above address.

WE'VE HEARD FROM: John Stefanick of Bradley, IL whose SWling dates back to the 1930's. John sent a copy of a listener's certificate issued by the National Radio Company a number of years ago. Unfortunately the quality isn't quite up to reproduction but we appreciate these historical bits just the same, John. Thanks very much!

Chuck Locsin of Bessemer, Alabama has DXed from the Philippines and the US west coast prior to getting situated in the southeast. He says most of the QSLs pictured in his photo (which we're featuring this month)



Chuck Locsin in Bessemer, Alabama logs a goodie on his FRG-8800.

were the result of his Far East listening efforts. His main receiver is a Yaesu FRG-8800 with a Panasonic RF2900 and an Electroband multiband radio serving as backups.

Can't make out the signature of the person who sends in a question about the Spanish-speaking female voice on approximately 6900, reading off numbers. This is a "numbers" station and not really our department in Listening Post. *POP'COMM* has carried a number of excellent articles on the numbers stations mystery and Tom Kneitel's book *Guide to Embassy and Espionage Communications* has lots of excellent info on these stations and what's behind their existence. It's available from CRB Research, P.O. Box 56, Commack, NY 11725 at \$10.95, plus \$1 postage to addresses in USA/Canada/APO/FPO. (Also available from other dealers.) Be sure to check listings of these stations in the "Communications Confidential" column each month.

Tim Magrann who lives at 17109 Cortner Avenue, Cerritos, CA 90701, would like to hear from others who use the Radio Shack DX-400 receiver.

Earl W. May, whose WSM Publishing company produces the excellent "World Status Map" each month (Box 466, Merrifield, VA 22116) notes he heard Radio Moscow with a discussion of the effects on the environment of industrialization. One engineer said "they had made environmental mistakes which they were trying to correct in future construction projects." Earl has also been struck by the rock music request program he's heard on Radio Moscow and advises the Voice of America to be careful that it doesn't end up sounding like Radio Tirana by comparison!

Deanna M. Kratzer wants to know what



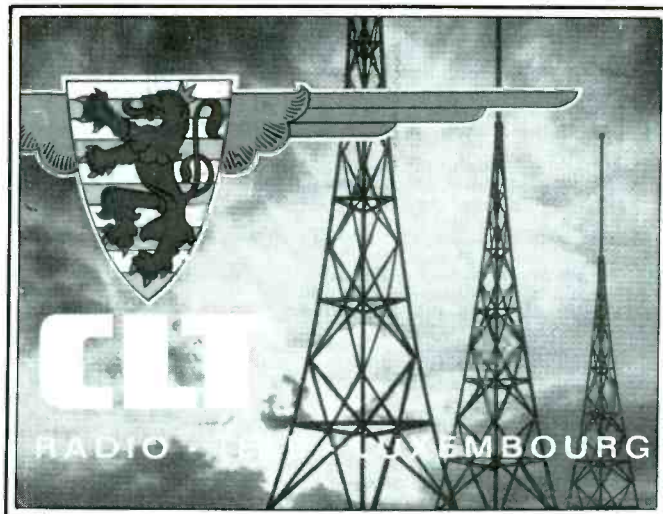
RADIO DISCOVERY

The Voice of the Caribbean

World Radio Network, S.A. • 332 Corey Avenue • St. Petersburg Beach, FL 33708 USA

Here's a QSL card from the new Dominican Republic station Radio Discovery.

Radio Luxembourg QSLs reports with this card. Thanks to Jerry Cook.



happened with the Radio Botswana QSL contest which we ran to introduce our book *Secrets of Successful QSL'ing*. Nelson George of Fayetteville, NC was the winner of the contest, Deanna. Unfortunately, he hasn't won a Botswana QSL yet but we're working on it and, if successful, will certainly mention it here.

Michael C. Toth of Granada Hills, CA also raises the Botswana question and wants to know just why they don't QSL. As we understand the story, the engineer just got fed up with being flooded by poor and impolite reports. We believe things are changing at Radio Botswana, at least somewhat, so don't give up hope.

Michael holds ham call KB6GHI, although he says he derives most of his radio enjoyment from the SWBC bands. He is a jazz musician and provides us with a superb example of what you can do with an SWL card design if you give it some thought and creative spark. He includes these cards in his reception report and believes they have added to his success in obtaining verifications. Hope it will work with Botswana someday!

Jerry Cook in Portage, Indiana, recommends that every DXer and SWL own a world globe. Jerry says it's the best accessory a shortwave listener can own and that he uses his at least five times in every listening session. Good idea, Jerry.

Pamela Doty in Oklahoma City says her logging of Radio Caiman was the first clandestine she's heard and she'd like the address. So would we all! But the station isn't announcing one and, indeed, attempts to learn much of anything about this station have gone unrewarded. Meantime we wait, and hope. As for your question about whether it's common to receive a souvenir from a station instead of a QSL—no, not common, although it does happen. Are you making a specific request for a QSL in your reports?

Armond Groner of Kamloops, British Columbia has an unidentified Spanish speaker on 6260.4 around 0530. It's very likely Radio Melodia, Arequipa, Peru, Ar-

mond. Your 15090 unidentified at 1601 when you thought you heard a mention of "Radio Kiribati" could have been almost anything and we wouldn't even hazard a guess. To our knowledge, however, Radio Kiribati doesn't use anything close to this frequency.

RULES AND REGS—Again this month some reports had to be junked simply because the reporter did not add his or her last name and state abbreviation after each logging. And, if you use both sides of the paper for loggings those on one side or the other won't be used. Your cooperation on these two points, as well as listing stations by country and leaving space between items so they can be cut up, will make our job much easier. Thank you!

Your loggings, shack photos, QSL copies—originals if you have spares—questions, news, clippings, comments and so on are what makes the column go. Let's hear from you regularly!

This Month's Loggings (All times are UTC.)

ALASKA- KNLS on 9750 at 1625 w/jazz music, announcer, in RR & s/off at 1630 (Groner, BC).

ALGERIA- R. Algiers on 17745 at 2000 in EE w/nx & pop mx (Durant, NY).

ASCENSION ISLAND- BBC relay, 7105 at 0500 w/relay of World Service (Griffith, CO).

AUSTRALIA- 9580 at 0900, 15395 at 0200, 17795 at 0200 (Coyle, NY); 17795 strong at 0200 (Witsman, IL); 15160 at 0445 w/International Report (Cook, IN).

AUSTRIA- R. Austria International, 6155 w/mailbag program at 0147 (Eaton, VA).

BELGIUM- BRT on 9925 at 0120 in English w/Celtic-type folk mx. Weak (Doty, OK).

BOTSWANA- R. Botswana, 4820 at 0353 w/barnyard IS & ID "You are tuned to Radio Botswana from Gabarone" & into current pops (Eaton, VA).

BRAZIL- R. Araguaia, Araguaia, 4905 at 0234 in PP w/rock, ID's, live vocals, ads, jingle & choir to 0301 s/off (Paszkiwicz, WI).

R. Globo, Rio, 11805 at 0137 in PP (Shute, FL).

R. Gaucho, 6020, Porto Alegre, at 0835-0900 w/soft ballads, ID's, ads (Hickerson, AR).

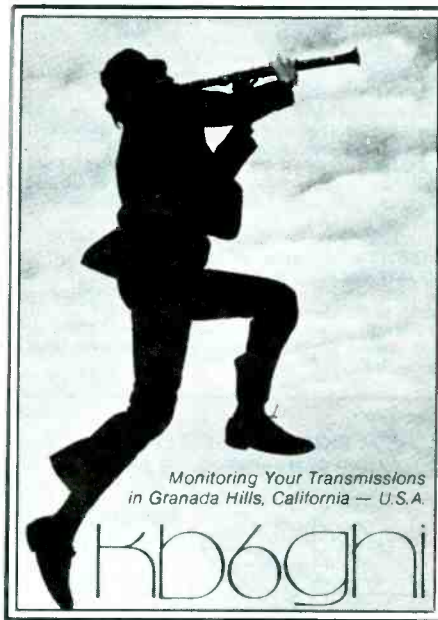
Radiobras, 11745 at 0220 on Brazil's stock market (Groner, BC); 0155 w/IS & EE sked (Eaton, VA); 0200 in EE (Cook, IN).

R. Nacional Amazona, 11780 in PP 0154-0214, ID at 0157 (Doty, OK).

BULGARIA- R. Sofia, 9700 at 2220 in EE (Cook, IN); 7115 at 0415 in EE w/Daily Review of Events & Developments (Griffith, CO).

CANADA- R. Canada International, 11945//17820 at 1830-2000. DX info at 1935 (Witsman, IL).

CFRX, Toronto, Ont., 6070 at 1500 w/nx, mx at 1505 (Forest, OH).



Michael Toth's classy SWL card.

CHILE- R. Sistema Nacional, 15140 very good at 0300 w/1950's mx (Coyle, NY); at 0001 in EE (Groner, BC).

CHINA- R. Beijing, 9550//9730 in EE at 1215; EE on 9565 at 0526 (Lyster, BC); Some of these are via French Guiana-- Ed. At 0351 on 15180 w/mailbag (Shute, FL).

CLANDESTINE- La Voz del CID, 7380 at 0216 in SS w/ID's & "La Voz de Cuba Independiente y Democratico presente Impacto" (?); some use QRM (Paszkiwicz, WI).

R. Venceremos, 6556 at 0220 w/military-type mx & many ID's (Eaton, VA); 6557 at 0110 w/mx, including the Venceremos song & mentioned FM xmsn for San Salvador (Shute, FL).

R. Caiman, 7470.4 at 0017-0038 in SS w/jazz & announcements spoken slowly, ID's at 0032 & 0038 (Doty, OK); 0245 w/SS ID that translates as "You have been listening to the Hit Parade from Radio Caiman w/Christina Camayo."

Also at 0259 (translated), "You have been listening to Radio Caiman transmitting on 7470 kHz in the 31 (?-- Ed.) meter band." Then modified "Dancing in The Dark" mx for an IS. Would love an address for this one! (Griffith, CO). Ditto-- Ed.

COSTA RICA- Radio Lira, Trans World Radio, Alajuelo, heard at 2155 w/tests in EE on 15460 (Neff, OH).

CUBA- R. Rebelde, 5025 at 0255 w/mixture of Latin & big band mx (Eaton, VA).

R. Havana at 0000 in EE on 6100 with s/on. Also 0110 on 9740 (Cook, IN); 9730 at 2130 in FF, ID 2141, anthem, off at 2143 (Doty, OK).

CZECHOSLOVAKIA- R. Prague, 5930 at

0335 w/Youth Magazine, Folk Music Fashion program in EE (Griffith, CO); 0310 on 5930, ID 0314 (Groner, BC); 0303-0306 (Lyster, BC); 0100 to NA (Cook, IN); 0300 on 7345 w/EE to NA (Cook, IN); at 0303 (Lyster, BC).

DENMARK- R. Denmark, 11965 at 2100 s/on w/EE ID, into Danish for NA & Greenland (Hickerson, AR).

DOMINICAN REPUBLIC- R. Discovery, 15045 at 1840 w/test BC from Jeff White; also was on 6215, now changed to 6245 (Hickerson, AR).

DJIBOUTI- RTV de Djibouti, 0507-0530 on 4780 in vernaculars, African mx (Batman, LA).

EAST GERMANY- R. Berlin International, 9560 at 0330 w/IS, EE nx (Magrann, CA); 0404 to 0413 s/off in EE (Lyster, BC); 0330 w/Weekend Magazine (Griffith, CO).

Y3S, time station with one of those callsign prefix formats that Tom Kneitel complains about in his *Beaming In* editorial this month! Noted at 0415 on 4525 w/pips (Eaton, VA).

ECUADOR- R. Luz y Vida, Loja, at 0408 w/old pop mx (Eaton, VA).

ENGLAND- BBC World Service on 6175//9590 at 2245 w/Sports Roundup in EE (Doty, OK).

FRANCE- R. France International, 15435 at 1510 w/mx & OM announcer; better signals on 15365 (Forest, OH); 1720 very good in FF w/pop mx at 1440 (Coyle, NY).

FRENCH GUIANA- RFI Relay, 9800 at 0314-0919 w/EE nx & freq announcement (Lyster, BC).

RFO Cayenne, 5055 w/nx in FF at 0930, current affairs to 0945 then mx (Batman, LA).

FINLAND- R. Finland International, 11945 at 1209 w/talk (Eaton, VA).

GABON- Africa #1, 15475 at 2047 in FF; also 9675 at 1720 in FF at 1529 mx & announcer, no ID but mention of Gabon (Griffith, CO).

GHANA- Ghana BC Corp., 4915 at 0646 w/highlife mx to 0600 EE nx; into vernaculars at 0615 (Batman, LA); 3366 at 0606 ee nx, ads (Griffith, CO).

GREECE- V. of Greece in EE on 9420 at 0133-0143 w/nx (Lyster, BC).

GUATEMALA- TGNA, R. Cultural, 3300 at 0420 w/rx in EE. Went dead at 0420 after switch to SS (Griffith, CO).

HAWAII- WWVH time station on 10000 at 1134 w/time announcements; very good over WWV (Eaton, VA).

HUNGARY- R. Budapest at 0130 on 6025 w/historical biography (Eaton, VA); 9520//9835 in EE 0200-0230 (Batman, LA).

INDIA- AIR, 11620 at 2200 in EE w/nx, sitar mx (Durant, NY); 2100 in EE w/nx, commentary, subcontinental mx (Batman, LA).

IRAQ- R. Baghdad, 0300-0317 in EE on 11750; several ID's, Iraqi mx between nx items, political commentary (Paszkiwicz, WI); 0330 in EE, "Sounds of Today" at 0401, good signal strength but poor modulation (Griffith, CO).

IRAN- VOIRI at 1712 in un-ID language on 15084, tentative but no identifiable ID (Groner, BC).

ISRAEL- V. of Israel, 7410 at 0124 in EE (Cook, IN); 9435 at 0223 in EE with s/off 0225 (Lyster, BC); 13748 at 1825-2215 s/off of Home Service in Hebrew (Hickerson, AR).

JAPAN- FEN on 11750 at 1905 w/rock mx, AP Network nx, country show (Bruce, HI).

R. Japan, 9645 w/EE nx at 2349 (Lyster, BC); 2300 w/nx & sked in EE (Griffith, CO); 9735 at 0733 in EE (Shute, FL); tentative on 11705 at 1830 s/off (Doty, OK); 0200-0300 to NA on 11825//15195//15420-- 15195 was best (Batman, LA). Some of these are via Africa #1-- Ed.

KAMPUCHEA- V. of the People of Kampuchea, 11938 sandwiched between R. Japan (11935) and R. Moscow (11940); 1230-1315 w/EE with "Radio Phnom-Penh" ID; into Vietnamese at 1300 (Batman, LA).

LEBANON- V. of Hope, 6215 at 0300 s/on in EE, then rx pgm (Hickerson, AR).

LIBYA- V. of the Arab World, 7245 at 0200 in AA, military mx, many mentions of Ronald Reagan (Eaton, VA); 15415 at 1935 w/AA mx, mention of "al arabiye al Libya," off at 2100 (Groner, BC).

LUXEMBOURG- R. Luxembourg, 6090 fair at 0001 w/interference (Coyle, NY); 0039 w/Top 40 (Eaton, VA).

MEXICO- XEUJ, Linares, 5982 at 1125 w/rx mx (Batman, LA).

R. Mexico International at 0121 on 15430 w/flute mx, SS (Shute, FL).

MOROCCO- RTM, 11920 at 2342 w/AA-type mx, tentative, no ID (Eaton, VA).

NEPAL- R. Nepal, s/on at 0612 w/IS & continuous commentary by YL to 0630 when "Yo Radio Nepal" by OM, into mx, very poor (Batman, LA) Where, on 7165?-- Ed.

NETHERLANDS- R. Netherlands, 9895 at 0503-0525 in EE, IS at 0524 (Lyster, BC).

NETHERLANDS ANTILLES- R. Netherlands Bonaire Relay, 6165 from 0610-0630 w/The Friday Report, announced 6165//9715 (Witsman, IL); 0532 w/ID, nx, discussion in EE (Groner, BC).

NEW ZEALAND- R. New Zealand at 0703 on 11770 w/rx service (Eaton, VA).

NICARAGUA- V. of Nicaragua, 0445-0515 on 6014.8 w/USB-mode (Lyster, BC); 6014 at 0445 in EE w/nx (Eaton, VA).

NIGERIA- FRCN, Kaduna, 4770 at 0513 w/discussion (Eaton, VA).

V. of Nigeria, 7255 at 0530, EE to E. Africa (Griffith, CO).

NORTH KOREA- R. Pyongyang, 13650 at 2220 in Korean w/talks, opera, also 13700 at 0015 in EE, stronger on 13700 (Paszkiwicz, WI); s/on in EE at 1100 on 9555//9977, the latter the better (Batman, LA); 1545 on 11665 w/freq announcement & s/off (Groner, BC).

NORTHERN MARIANAS- KYOI, Saipan 9665 at 1600 w/rock, ID's (Griffith, CO); 11990 s/on at 1000 w/EE & JJ ID's, continuous rock (Batman, LA); 1226 w/pops & ID's (Eaton, VA).

NORWAY- R. Norway International, 9590 at 2255 w/IS & ID in Norwegian (Shute, FL); 15220 at 1735 w/church service in Norwegian, ID & off 1746; also on 9730 in Norwegian followed by few minutes in SS before EE & Norwegian s/off announcement at 0446 (Groner, BC).

PERU- R. Melodia Arequipa, 6260 at 0300-0405 w/mix of ballads & big band mx, ID in SS (Hickerson, AR).

POLAND- R. Polonia, 7145 at 0208 w/Polish. Top 20 & Learning Polish pgm (Durant, NY).

PORTUGAL- R. Portugal at 0130 w/IS & anthem (Shute, FL).

RFE's Gloria transmitter in Hungarian on 9695 w/continuous commentary by OM from 0533 to past 0550 (Batman, LA).

RUMANIA- R. Bucharest, 0200-0300 in EE on 5990; splashed from VOFC/5985 & VOA/5995 (Batman, LA).

SAUDI ARABIA- BSKSA, 7225 from 0030-0100 s/off in AA, anthem at 0100 (Batman, LA).

SEYCHELLES- FEBA in AA w/IS & ID at 0344 on 11755 (Shute, FL).

SINGAPORE- R. Singapore at 0926 on 11940 w/rock, ID 0930, nx & then apparent live concert (Batman, LA).

SOUTH AFRICA, REP. OF- R. RSA, 9615 at 0210 w/nx, EE ID (Groner, BC).

SOUTH KOREA- R. Korea, 9750 at 1439 in EE w/freq announcement (Lyster, BC); 15575 good in EE at 1434 (Coyle, NY); 1445 w/"Shortwave Feedback" & EE to s/off at 1457 (Forest, OH).

SPAIN- Spanish Foreign R., 9630 at 2359 & 0521 in EE, nx at 0000 (Lyster, BC); 11880 at 2130 "Tranmite Radio Exterior de Espana," also 9530 at 2320 in SS (Groner, BC).

SWEDEN- R. Sweden International, 9695 at 0200 w/ID in several languages, nx, sports, wx in Swedish; also 11785 at 1628 w/ID & s/off in EE & Swedish (Groner, BC); 15345 at 1415 in EE (Doty, OK); 1422 w/good signal (Coyle, NY).

SWITZERLAND- Swiss R. International, 9735 (weak) & 9885 at 0408-0430 in EE w/SRI Dateline then Shortwave Merry-go-Round, into GG at 0430; at 0528 on 9535 (Lyster, BC); 12035 at 2350 in GG, 9725 at 0218 in EE (Groner, BC).

TAHITI- R. Tahiti on 11826 at 0729 w/island mx & announcements in Tahitian (Eaton, VA).

TAIWAN- VOFC, 11855 in 2320 in SS, Chinese mx (Groner, BC).

TURKEY- V. of Turkey, 9560 at 2230 in EE w/"Turkish Panorama" (Cook, IN); good in Turkish at 1415 on 15220 (Coyle, NY); In Turkish w/ID 2030 (Groner, BC).

UKRAINIAN SSR- R. Kiev, 0200 on 7165 s/on in EE w/nx (Griffith, CO); 7400 at 2330 to 2358 s/off in EE to NA (Cook, IN).

UNITED ARAB EMIRATES- UAE R., Dubai, at 1600 on 17865 w/nx, DX Mailbag pgm in EE (Durant, NY).

UNITED STATES- KCBI, Dallas at 2030 on 11735 w/"Texas Me & You" show (Cook, IN).

WHRI, Noblesville, IN, 7355 at 0330-0400 w/R. Earth pgm; move to 7400 at 0400 (Witsman, IL); 0259 on 7400 w/R. Earth (Eaton, VA); 0300-0400 on 7400 (Murray, AR); 7355 at 0330 (Cook, IN).

AFRTS on 9700 at 1408 w/UPI nx (Coyle, NY).

KGFI at 0012 w/rx pgm on 15280 (Eaton, VA).

R. Marti, 5527 (?-- Ed.) at 0140, SS ID 0143, mx, numerous ID's (Forest, OH); 11930 from 1600-1630 w/jazz & pgm about New York (Witsman, IL).

USSR- R. Moscow, 13605 from 2030-2130 in RR; classical & Soviet style easy listening mx, time signal 2100, then nx & commentary (Doty, OK); 13705 w/filler mx bridge at 1554 (Forest, OH).

VATICAN- Vatican R. on 9645 at 0513-0520 in EE w/"Talking Point," "Newsweek" & IS, into un-ID language at 0519 (Lyster, BC); 11740 fair/fair 1354-1400 s/off (Coyle, NY); 17730 at 1545 in EE w/freq announcements, African beam (Shute, FL).

VENEZUELA- R. Capital, Caracas, 4850 at 0601 w/pops (Eaton, VA).

Ecos del Tarbes, San Cristobal, 4980 at 0029 w/announcements in SS by YL (Eaton, VA).

VIETNAM- V. of Vietnam, 10040 at 1346 w/nx in EE, into JJ at 1400 (Magrann, CA); 12020//15010 at 1800 w/nx & current affairs in EE, ID as "Radio Vietnam" (Batman, LA); 15010 weak w/talk pgm (Coyle, NY).

WEST GERMANY- V. of Germany, 11730 at 0521 in GG w/mx & announcements (Doty, OK).

Sudwestfunk, Baden-Baden, 7265 at 0315 w/GG pops (Eaton, VA).

Bayerischer Rundfunk, Munich audible on 6085 between DW s/off 0547 & s/on at 0600; interview in GG & "Hier ist Munchen" at 0600 just before DW covers it again (Batman, LA).

And thanks to this month's reporters: Armond Groner, Kamloops, BC; Jim Coyle, Johnson City, NY; Patrick W. Griffith, Denver, CO; S. Lyster, Keremeos, BC; Pamela Doty, Oklahoma City, OK; Don Eaton, Herndon, VA; Michelle Shute, Pensacola FL; George Neff, Niles, OH; Gary Hickerson, Ft. Smith, AR; Alex Batman, Baton Rouge, LA; Karl R. Witsman, Oakwood, IL; Jerry Cook, Portage, IN; Alexander Durant, Albany, NY; Randy Murray, Ft. Smith, AR; Steve Forest, Cincinnati, OH; John Bruce, Maui, HI and Sheryl Paszkiwicz, Manitowoc, WI.

'Til next month, good listening!

PC

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NEW AND EXCITING TELEPHONE TECHNOLOGY

Field Telephones : How to be your own telephone utility

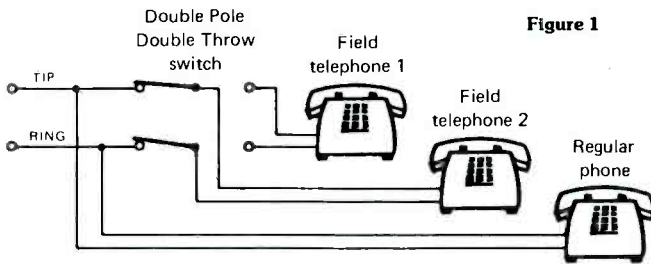


Figure 1

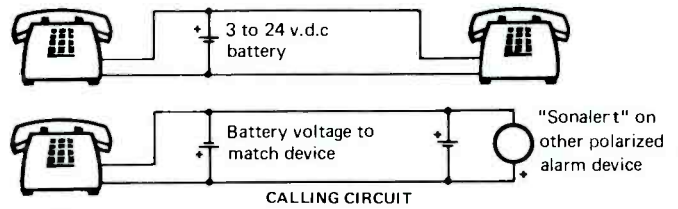


Figure 2

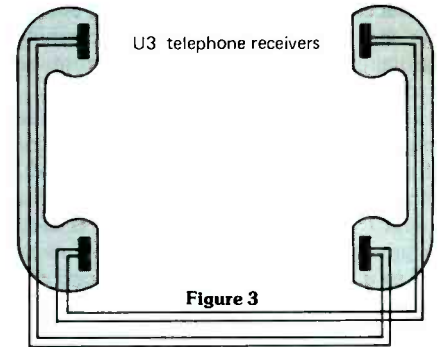


Figure 3

All of us at one time or another have had a need for a phone to talk between two fixed or semi-permanent locations. It may have been between the treehouse and the kitchen. It could be from a shack in the backyard to the den, or even from the order desk to the rear warehouse. The military, of course, has always had the need to pop up with an instant telephone back to a command post. The generic term for these systems with two instruments and a single pair of wires is a "Field Telephone".

These systems are simple to make, they can also be purchased on the surplus market. What is usually available surplus is a phone in a box with a set of batteries and a crank generator to ring the remote set. Very rugged, very ugly and available in only one color—Olive Drab.

There are a couple of reasons why the armed services use telephones, despite the millions they spend on radios. The first one is security. It is much harder to tap the enemy's phones than it is to listen in to or jam their radios. The other main reason is simplicity. No frequency selection problems, fewer parts to break down. And most important, everyone knows how to use a phone. It is, of course, also a full duplex device, no need for "calling", "overs" and acknowledgements.

Field telephones are not very high tech but are certainly rugged. By the way, a standard phone is resistant to "EMP" which is the massive pulse caused by the detonation of a nuclear device. This is guaranteed to eat radios, but will leave simple field telephones intact. Even if there is no one left at the other end to answer the phone.

One of the best places to find Field Telephones is Fair Radio Sales, 1016 East Eureka Street, Lima, Ohio 45802. Phone: (419) 223-2196. They have real military Field Telephones, complete with carrying strap. Each unit weighs in at a respectable 19 lbs. Must be the army's idea of a "portable" unit. To get the system working, two units are required and a pair of wires between them. It uses two D cells which fit in the battery compartment. If the run of wire is long or you want them to sound louder, increase the

battery voltage. These units are sold as the EE-8 and cost \$50 each.

If you want something that can be used as a Field Telephone, and want it to look like a telephone as well, Fair Radio Sales have some units that fit the bill. They have desk and wall phones with a ringing magneto built in. You could use one of these at one end and the military EE-8 at the other. Put the fancy phone on the boss's desk and give the ugly one to the peons. These phones will work off three volts, but you may find they perform better at six to twenty-four volts. The desk phone is number D-NE-MPH and costs \$44.50. The wall phone is number W-NE-MPH and costs \$45.

These Field Telephones have not been FCC registered, which means you may not legally connect them to the public phone network. The worst that can happen if you are caught is your phone service will be cut off until you promise to be good. If you do connect a field telephone across the public phone network, it will work as a dumb extension. You can't dial on it, but certainly can talk and listen. Under no circumstances connect a field telephone to a regular phone line and crank the magneto handle. It may give someone at the Central Office a shock, it may also activate protection devices and disconnect your line. With a simple switch you could use a field telephone to call another party tell him he has a call and flip a switch to connect him to the outside (Figure 1). It's your own one extension PBX (Private Branch Exchange).

A pair of regular phones can be used as a Field Telephone. It will not have a ringing generator and the dial will be useless, but it will sound excellent (Figure 2). Putting together an alerting system can be done. There are several approaches to this problem. Some require another pair of wires and some require the use of diodes.

When super reliable communications are needed, such as on ships and down mines, the most reliable device is a "Sound Powered Phone." No batteries to go flat, almost nothing to go wrong. These devices do not give the best audio quality. When the ship is sinking, you have lost power and want to

talk to the engine room, a sound powered phone will do the job. In the old days they used "Speaking Tubes" which were simply a pipe you talked through. Speaking Tubes had a limited range and the tube could not have any sharp bends. A sound powered phone uses a pair of wires which may be run anywhere.

A sound powered phone works on the principle that the microphone is a dynamic microphone so when struck by speech, a small current is generated which makes its way across the connecting wire to the other phone's ear-piece. Simple, very rugged.

You can make a simple four-wire sound-powered phone using four telephone earpieces and two pairs of wire. The earpiece to use is called an "U 3" and is the standard "receiver" used in old style handsets. With a bit of chopping and hacking, one of the U 3 receivers will fit where the transmitter or microphone used to be (Figure 3). To get this to work, the "transmitter" of one handset is connected to the "receiver" of the other. This provides a very weak signal, but it does work.

If you want to buy a Sound Powered phone, Fair Radio Sales has them. Their model TA-1/PT, which costs \$25, also has a magneto generator for calling.

The ultimate low tech Field Telephone is the old tin can and string phone. It only works in straight lines. The level can be improved if a cardboard canister is used rather than a tin can. If the string is waxed, the level is further increased. Maximum range is about 100 feet depending on how capable the callers are at keeping the string taut. **PC**

INSIDE THE WORLD OF TVRO EARTH STATIONS

New Era In Soviet Space Program

Eavesdropping On Cosmonauts, Satellites And The Mir Space Complex

On February 19, 1986 the Soviet Union launched its new Mir space station. "Mir" is the English translation of the Russian word for peace. With the launch of Mir, the Soviets have embarked on the next phase of their manned space program. This is not a spectacular new venture into space, but rather the next logical step in successfully maintaining a permanent Soviet presence in space.

The Mir is much like its predecessor, the Solyut 7 space station, but with two major differences. The Mir is a larger spacecraft, with almost one third more room than the Solyut 7. This extra room in the Mir is used for private quarters for the cosmonauts as well as a larger work area. The second difference is the number of docking ports. The Solyut 7 has two docking ports, one at each end of the spacecraft. One is used by the manned Soyuz-T spacecraft and the other is used by the "Progress" class supply ships, which regularly deliver supplies to the space station. The Progress supply ships look much like the Soyuz-T but they are unmanned and completely automated.

The Mir has six docking ports, four at one end of the spacecraft and two at the other. The end of the Mir with the four docking ports, has one port centered in the end so that two spacecraft can be docked end to end. The three remaining ports are spaced evenly around the perimeter of the space station. These three ports will be used to expand the space station by adding large "Kosmos" modules.

Space Complex

In March of 1986, the Soviets moved both the Mir space station and the Solyut 7 space station to within three miles of each other and in the same orbit. The Solyut 7 has a standard orbit of roughly 51° inclination at 350 miles altitude. Though the orbits have no doubt changed somewhat with the repositioning of the space stations, it should still take the space stations approximately 92 minutes to complete one orbit of the Earth.

A third spacecraft, possibly a supply ship or a Kosmos module, has been placed in close proximity to the space stations. This is a prelude to the docking of both spacecraft to the Mir station. The Soviets two most experienced cosmonauts, Lenoid Kizim and Maldimir Sollev, were chosen to begin work on this most important Soviet space project. Their Soyuz-T spacecraft was launched

on March 14, 1986 and after docking with the Mir station the cosmonauts prepared the Mir to receive two Progress supply ships. These two ships delivered almost two tons of equipment and supplies. It took the two cosmonauts almost three weeks to complete the installation of the equipment. Placing the Mir station on automatic, the two crewmen entered the Soyuz-T 15 and prepared it for flight. Leaving the Mir station they did not head for home as might be expected, but rather flew to the nearby Solyut 7 space station which will be prepared for docking.

When completed, the Mir Space Complex will be the largest structure ever constructed in space and the first permanently-manned space complex of its kind. With the Mir's six docking ports the only limitations on the size of the complex will be budgetary considerations.

While the precise configuration of the space complex is still unknown we do know that the Solyut 7 space station was successfully docked with a Kosmos module several months ago, nearly doubling its size. This expanded station will be docked with the Mir, which Radio Moscow is now calling the Mir Laboratory, perhaps an indication of its main function in the complex. Any additional modules would also have a specialized purpose and function such as manufacturing or biology or pharmaceuticals. The Solyut will likely be docked at the end of the Mir with the four docking ports. This will align the Mir and Solyut end to end. The Kosmos expansion modules will be docked at this end of the space complex, leaving the other two docking ports open for use by the Soyuz and Progress supply ship. The Soyuz and Progress are of traditional Soviet design with a spherical end and a cylindrical body.

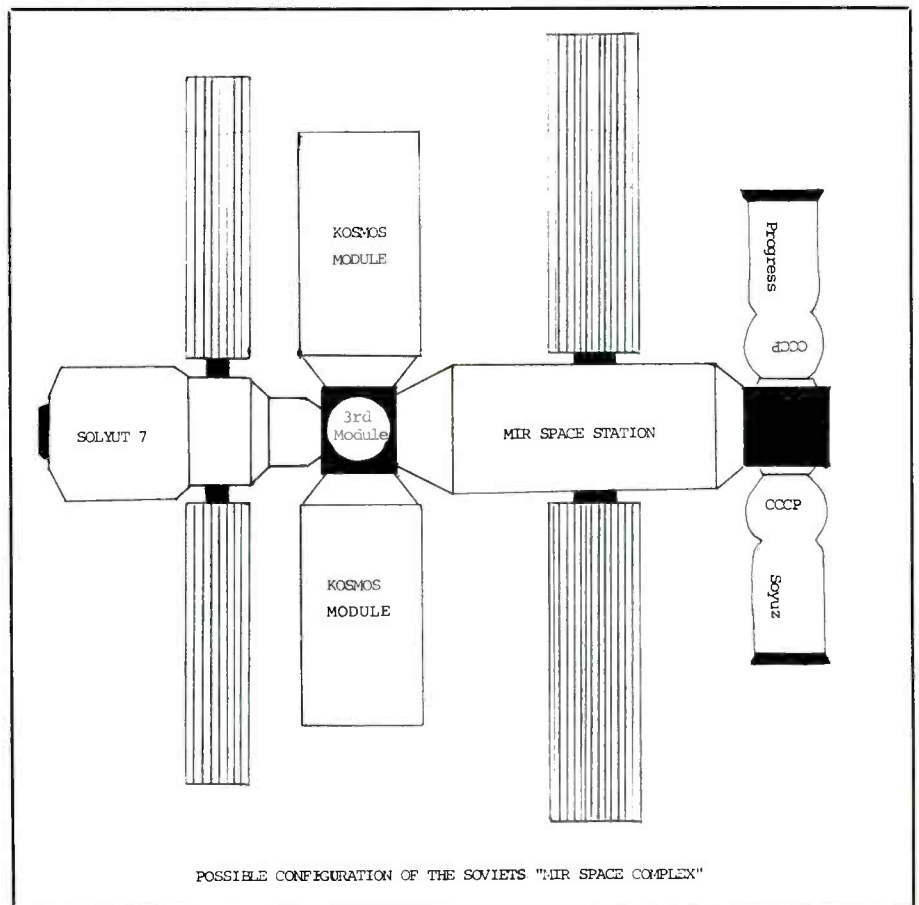
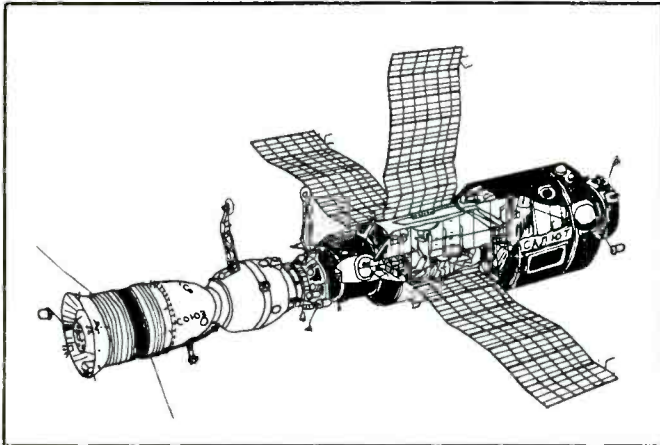


Figure 1: Possible configuration of the Soviets Mir Space Complex.

Frequency List

Spacecraft	Voice	TLM Frequencies
Soyuz	121.625 MHz	15.008 MHz
Solyut 7	121.700	18.008
MIR	143.625	18.060
Progress	165.000	20.008

Note: Altitude = 350 KM, Inclination = 51 degrees, Period = 91 minutes.



A possible configuration for the Mir Space Complex is shown in Figure 1.

Interkosmos

The Soviet program for International Space Cooperation is known as Interkosmos. Since the beginning of the program in 1978, both men and women cosmonauts from no less than 10 countries, including France and India, have flown joint missions to the Solyut space stations. Most of the visiting crew members are, of course, from Eastern Bloc countries and in the early days of the program visiting crewpeople were largely used for their public relations value. But today's visiting crew members are highly qualified specialists in a particular scientific discipline, being the rough equivalent of our Shuttle Payload Specialists.

When the Mir complex is fully operational the Interkosmos program will no doubt be accelerated as more people will be needed to keep up with the increased work load of manufacturing and scientific experiments which will be taking place on this permanently-manned space station.

Communications

The Soviets will no doubt equip the Mir complex with the latest voice and data communications gear. This will mean that the Russians will be heard on higher frequency bands. In an attempt to help secure their communications from the casual listener, the Soviets have in recent years, continued to move to higher and higher frequency bands as their technology has improved.

The Solyut 7 and the Soyuz-T spacecraft have used voice frequencies just off either end of the two meter Amateur band, which



International flight of Soyuz 30. It carried the first cosmonaut from Poland, Miroslaw Hermaszewski, August 1978.

runs from 144.000 to 148.000 MHz. Some wideband FM and data transmissions from Soviet spacecraft can still be heard in the HF spectrum as well. Channels are usually clustered near 15,000, 18,000, 19,000 and 20,000 kHz. These frequencies are commonly used by the Progress supply ships for data communications. This is, no doubt, a cost cutting measure on the part of the Soviets, as the Progress ships, after being unloaded at the space station are undocked from it, are not reused and are destroyed upon re-entry. Dozens of these Progress spacecraft are launched each year to re-supply the Solyut 7. HF equipment has performed well on the Progress ships and is less expensive than VHF or UHF gear.

Iskra Satellites

One project for the crew of the next space

Frequency List

Spacecraft	Beacon/Robot	Downlink Freq.
RS-10	21.140 MHz	29.460—29.500 MHz
	29.457	145.960—146.000
	145.957	
	146.003	

Note: Altitude = 1,000 KM, Inclination = 83 degrees, Period = 105 minutes.

RS-9 29.453 29.410—29.450

RS-7 29.503 29.460—29.500

Note: Altitude = 1,600 KM, Inclination = 82 degrees, Period = 119 minutes.

RS-5 29.452 29.410—29.400

Note: Altitude = 1,600 KM, Inclination = 81.6 degrees, Period = 119 minutes.

← Soyuz-T docked to the Solyut 7 space station.



Yuri Gagarin, 1961. The first man in space.



International flight of Soyuz 33. It carried the first Bulgarian cosmonaut, Georgi Ivanov, April 1979.

complex will be the reactivation of the Iskra Amateur Radio satellite program. The first satellite in this program was launched from the Solyut 7 space station in April of 1981. A cosmonaut suited up and literally pushed the satellite out the docking port. The first three satellites of the Iskra program were

launched by hand from the Solyut and all three failed to reach a usable orbit. And in keeping with their name, Iskra is the Russian word for Spark, each spacecraft was destroyed on re-entry after being in orbit only a few weeks. The Iskra satellites carry one radio transponder with an uplink of 145 MHz and a downlink of 432 MHz. Iskra 4 was to be launched from the Solyut 7 several months ago, but this and all other activity at the space station was interrupted when, according to official Soviet sources, the two Cosmonauts suddenly became ill and were evacuated from the space station. Western analysts believe that the cosmonauts became embroiled in a personality conflict so deep that the mission had to be cut short. The Soviets almost never cut a mission short except under the most extreme circumstances. This may be a common problem encountered by cosmonauts who spend many months in close quarters with co-workers. Private quarters were presumably added to the Mir station for this very reason.

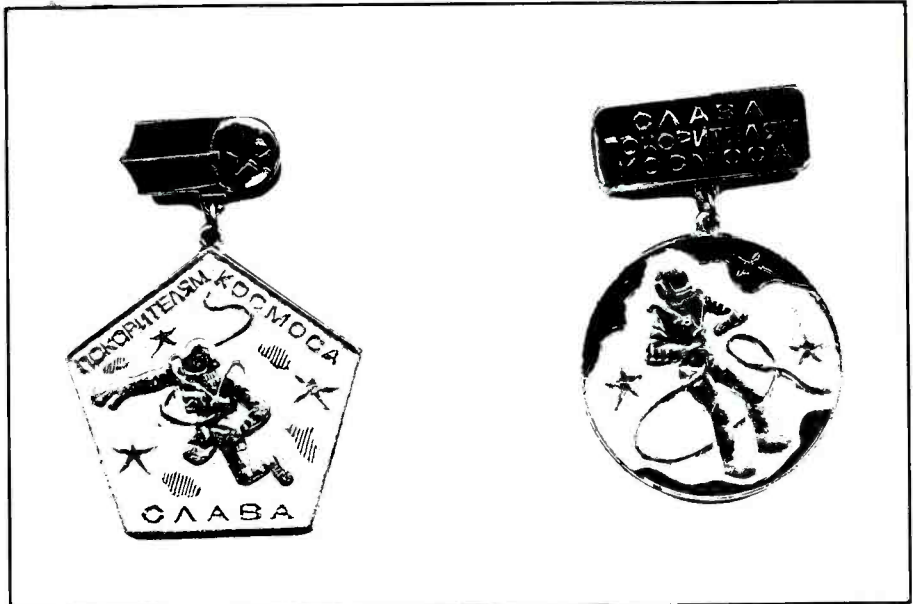
Radio Sputnik

The USSR's "Sputnik" Amateur Radio satellite program is also entering a new phase. Though the Sputnik satellites will not be launched from the Mir Space Complex, this program is still of interest as the RS satellites are easily heard in the HF bands and without the use of special equipment. The RS program was started in 1979 with the launch of RS-1 and 2. Then, in 1981, six new satellites, RS-3 through RS-8, were successfully launched from the same A-2 launch vehicle, which is no small task by the way. The A-2 rocket is also used to launch the Soyuz spacecraft. For larger payloads, the Soviets use their larger "Proton" launch vehicle.

Of the six RS satellites launched in 1918 only RS-5 and 7 are operational. Their downlinks and beacons can be heard in the 29.450 to 29.500 MHz range. RS-9, scheduled for launch in late summer of 1986, will carry an A mode transponder which operates with a 145 MHz uplink and a 29 MHz downlink. RS-9 will be a direct replacement for RS-7 which is nearing the end of its normal life span.

The Soviets plan to launch their all-new third generation Sputnik Amateur Radio satellite, RS-10, in May of 1986, before the launch of RS-9. The RS-10 spacecraft will be considerably more complicated than the earlier RS satellites. This third generation satellite will carry three transponders, a mode A transponder similar to the transponder on RS-5, 7 and 9, and two new frequency combinations will be used. A new Mode K with an uplink in the 21 MHz band and a downlink in the 145 MHz band. The third transponder, a Mode T, will operate with a 21 MHz uplink and a 29 MHz downlink.

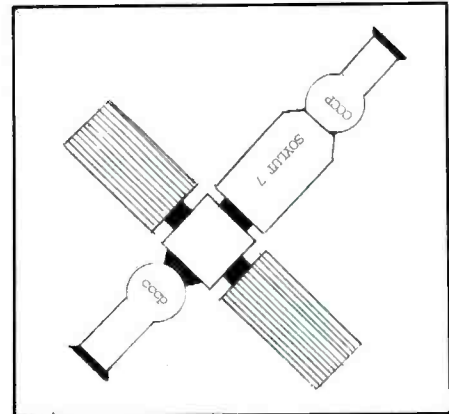
RS-10 should have stronger downlink signals than the earlier RS satellites due to an increase in the RF output of the trans-



Medals commemorating the first Soviet space walks.



A Radio Moscow emblem.



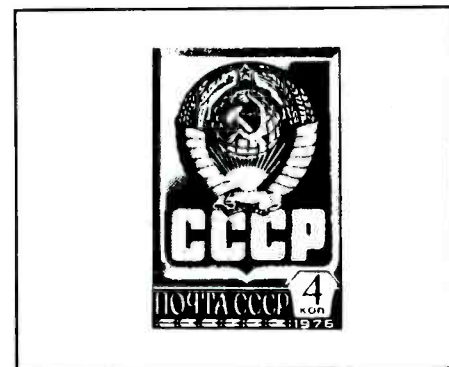
Solyut 7 space station with a Progress supply ship at one dock and a Soyuz spacecraft at the other.

ponders. The 29 MHz downlink power has been increased from one watt to three watts. While the two meter transponders output has been increased from three watts to five.

Robots

All the Radio Sputnik satellites, including RS-10, carry robots. These are automated computer systems which enable an Amateur Radio operator to communicate directly with the spacecraft. This feature is limited to CW operation and a pre-set protocol. Both sides of these communications can be heard on the same frequencies. RS-10's robot frequencies are: 21, 140, 29, 457, 145, 957 and 146.003 KHz. These channels also double as telemetry channels on RS-10. Unlike the earlier RS satellites, RS-10 will send telemetry in both RTTY and CW. The data rates and decoding information is not known at this time. As of this writing the projected orbit for the RS-10 satellite are: Polar Orbit, Inclination-83°, Altitude--1,000 Km, Period-105 minutes.

The Soviets have made long term commitments to their Amateur Space program



Soviet International shield.

and they will continue to provide unique opportunities for the SWL to monitor space communication in its many forms. Radio communications will increase during the construction of the Mir Complex and should stay at higher levels with the increased manpower on board the complex and the possibility of extra vehicular activity. It has even been rumored that the Mir will be equipped with Amateur Radio gear, only time will tell.

PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS

Personal Size And Industrial Halon Fire Protection

American Safety Products recently introduced a complete line of 1 lb. thru 20 lb. Halon 1211/1301 blend fire extinguishers, that are tested to ANSI/UL 711 and ANSI/UL 1093 N.F.P.A. Code 10 standards. The line is completely approved by Factory Mutual and models 10J and 15J are U.L. listed. Models 22G and 30G will be listed in approximately 60 days.

Halon is an odorless gas that has fire extinguishing properties unmatched by other fire fighting agents. As a halon blend, these cylinders are self propelling and require no nitrogen as a propellant, so they can be used over and over in case of flashback. The blend is up to 50% more effective than either 1211 or 1301 used separately, and models 10G through 30G are backed by a 10 year shelf life warranty. The personal size units are easy to store right where they might be needed . . . in a desk drawer, mounted by the computer, in a car, boat, workshop or almost anywhere.

Unlike dry chemicals that leave a damaging residue powder behind after use, halon evaporates completely and leaves no residue. Since it does not conduct electricity, it will not damage the sensitive electrical components of a computer, copier, office equipment, television or other solid state appliances, including sophisticated electronic switches.

After years of research to develop the only U.L. listed and Factory Mutual ap-

proved halon blend extinguishers, American Safety Products is the world leader in the manufacturing and distribution of Halon blend products. American Safety Products line is protected by a U.S. Patent.

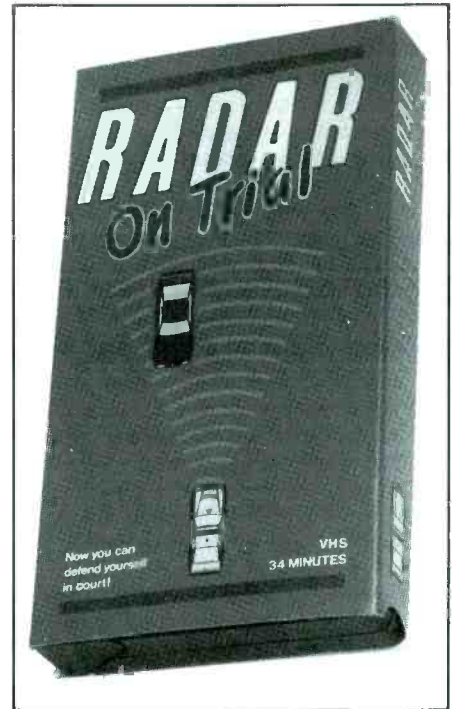
American Safety Products is represented nationally by Gunning Associates, Inc., 1720 Peachtree St. N.W., Suite 1029, N. Tower, Atlanta, GA 30309. 404-874-4390.

Radar Video Announced

Motorists plagued with speeding tickets can now turn to their VCR's for professional advice about defending themselves. Recognizing that numerous tickets are caused by faulty traffic radar equipment or improper officer training, the Radio Association Defending Airwave Rights, Inc. has created *Radar on Trial*.

Radar on Trial documents the history of radar and the problems that cause spurious radar readings. It also depicts a typical radar speeding trial in traffic court while explaining why and how to establish a specific defense. Drivers who have never been in a courtroom will find that this is excellent preparation for their own defense of radar-based speeding tickets.

Radar on Trial features a nationally recognized radar expert, Lee L. Nichols, Jr., Director of Engineering at the Virginia Military Institute. Dr. Nichols discusses various types of traffic radar units and describes how they work. He also illustrates traffic radar's many shortcomings caused by mechanical and operator errors. These errors have all been documented by tests conducted for



the National Highway Traffic Safety Administration and the International Association of Chiefs of Police. Dr. Nichols concludes by suggesting ways to improve traffic radar's accuracy and dependability.

The second part of the video presents a court case with Judge Alfred Nesbitt presiding. Nesbitt was the first judge to actually put traffic radar on trial. He did this after seeing a news program featuring a traffic radar unit that clocked a tree traveling 86 mph and a house sauntering along at 26 mph. In a landmark 1979 decision, Nesbitt ruled that radar evidence was not admissible because of traffic radar's fallibility. As a result, approximately 80 cases were dismissed in Dade County Traffic Court. In addition, Nesbitt's decision forced Florida to establish guidelines for the use of radar, for operator training, and specifications for radar equipment purchased by the state.

Radar on Trial was written and directed by John Tomerlin, a professional automotive writer. A former race car driver, Tomerlin has been writing about automotive safety for many years. Not long ago the editor of *Road and Track* wrote: "We believe John Tomerlin's articles on highway legislation and traffic safety are the most significant pieces of automotive journalism ever published."

Radar on Trial may be ordered by sending \$34.95 plus \$2 for handling and postage to: RADAR, Radio Association Defending Airwave Rights, Inc., 4949 S. 25A, Tipp City, OH 45371.

PC



THE EXCITING WORLD OF RADIOTELETYPE MONITORING

The National Security Agency is the largest and most secret intelligence organization in the U.S. It has monitoring installations throughout the world and the most sophisticated electronic equipment anywhere.

One of the modes the agency listens to in the radio spectrum is RTTY. This was disclosed last May during the espionage trial of Ronald W. Pelton Jr. He was convicted in Baltimore of telling the Soviet Union about an NSA installation off that country's coast. The installation was used to intercept Soviet military communications.

During the trial, William Perry Crowell Jr., chief of the NSA group that collects and analyzes Soviet communications, told a federal court jury of the possible damage caused to NSA's ability to intercept and decode Soviet communications signals because of a booklet Pelton wrote in 1978. The booklet, *Signal Parameters File*, was a "compendium" about many of the signals from the Soviet Union that are intercepted by the U.S., Crowell testified.

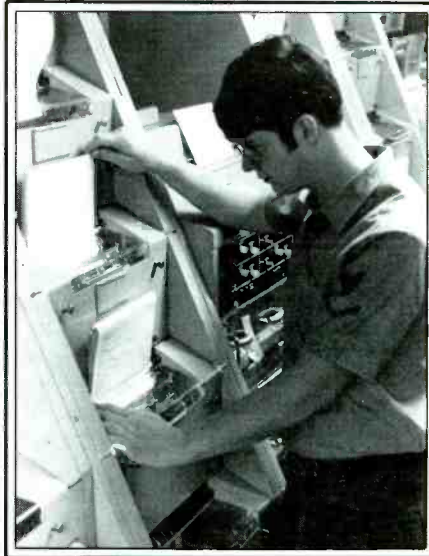
The booklet, as Crowell described it, gave the code name NSA assigned to an intercepted signal, whether it was of a high or low frequency, whether the signal carried voice, teletype or pictures, and the type of Soviet user who sent the signal. It also outlined how one signal differed from another and how it was encrypted.

Kaz Sakai, JA6YB, from Japan, wonders why he has not been able to monitor AFP and UPI RTTY news broadcasts from Hong Kong since late 1984. At that time, AFP could be noted on 7542.5, 9072, 10730.7, 13615, and 19327.6 kHz, and UPI on 7485 and 19520 kHz.

I can offer two guesses about UPI: Either it has deserted HF radio for one of the Westar birds in the sky or it ceased all HF radio transmissions because it was facing bankruptcy and could ill afford to hang onto its RTTY service. If you haven't been able to monitor AFP, Hong Kong, then it, too, is either beaming down from a satellite or was terminated forever. Does any reader know for sure what has happened? Please let us know.

Meanwhile, Kaz sends along an English transmission schedule for XINHUA, the Chinese news agency, which he can easily monitor. BAP44 is on 14923 kHz from 2330 to 0200; BAP40 on 10982 from 0530 to 0830; and BAP46 on 6915 from 0930 to 1230, 1330 to 1600, and 1730 to 1900.

Guy Atkins of Washington state asks for the name of a book that lists the frequency pairings used by ships and coastal stations for SITOR traffic. An excellent one, in my opinion, is *Guide to Utility Stations, 4th Edition*, by Joerg Klingenfuss. His listings for



No, this sailor is not reading RTTY printouts of AP, DPA, and AFP news dispatches. He's checking the message processing unit in the Naval Communications Center, San Miguel, Philippines. (Courtesy U.S. Navy)

the coastal stations is nearly complete. He missed only a few stations while he compiled the book. CRB Research and Universal Electronics both carry this book.

In the meantime, while you are waiting to purchase the book, I would like to offer you my shortcut method of monitoring both stations; a method in which you won't have to flip pages of a book back and forth to see what's what.

As most of you already know, two frequencies are paired together for use by a ship in contact with a coastal station. Most of these pairings occur within the 4, 6, 8, 12, 16 and 22 MHz bands.

In the 4 MHz band, ships transmit RTTY from 4170.5 to 4177 kHz, and coastal stations transmit from 4350 to 4356.5 kHz. If you're monitoring a ship sending RTTY and want to find out the frequency of the receiving coastal station, just add 179.5 kHz to the ship's frequency. If you're monitoring a coastal station's frequency, subtract 179.5 kHz to find a ship's frequency.

In the 6 MHz band, the ship frequencies are from 6256.5 to 6267.5 kHz, and those for the coastal stations are from 6494.5 to 6505.5 kHz. Add 238 kHz to the ship frequency to find the coastal station frequency, or subtract 238 kHz from the coastal station frequency to get the ship frequency.

For the 8 MHz band you'll find the ships from 8344 to 8357 kHz and coastal stations from 8705 to 8718 kHz. Add 361 kHz to the ship frequency or subtract 361 kHz from the

coastal station frequency to find the other station.

Now, on the 12 MHz band, ships transmit from 12491.5 to 12519.5 kHz and the coastal stations transmit from 13071.5 to 13099.5 kHz (considered to be a continuation of the 12 MHz band). The magic number to add or subtract is 580 kHz.

Moving to the 16 MHz band, tune from 16660.5 to 16694.5 kHz to monitor ship RTTY and from 17197.5 to 17231.5 kHz for the coastal stations. Add or subtract 537 kHz to find the second frequency in use.

Lastly, we come to the 22 MHz band, where ships transmit from 22192.5 to 22225.5 kHz, and coastal stations from 22561.5 to 22594.5 kHz. Add 369 to the lower frequency or subtract 369 kHz from the higher one to monitor the second station. Bon voyage!

Joining our growing contributors' list this month is Peter from Great Britain. He asks that his full name not be used because, "As you probably know, ute listening is almost a hanging offense (in Great Britain)." Here in the States, Peter, a hanging offense is when your next door neighbor puts laundry out to dry in the backyard!

A catalog of POCOM RTTY decoders made by Poly-Electronic in Switzerland is available along with a price list for the price of two IRC's, according to Ulrich Krebsler of the firm. Send your requests to Poly-Electronic, Spranglenstrasse 30, CH-8303 Basersdorf, Switzerland.

Ed Viadock of Avoca, PA: Frankie Gittens, a contributor to the column, wants to correspond with you after having seen photos of your shack in this column last May. Please write to him at Apt. 8, "El Dorado," Black Rock, St. Michael, Barbados, West Indies.

Gittens also asks for the addresses of the major RTTY news agencies. Such a listing can be found in *Radioteletype Press Broadcasts* by Michiel Schaay, published by Universal Electronics, Inc., 1280 Aida Dr., Reynoldsburg, Ohio 43068. Write the company for the latest pricing on this publication and the cost for postage/handling.

Now let's settle back in our easy chairs and see what's been spewing from our RTTY machines lately.

RTTY Loggings

170.1: Foxes & counting for 24+ hrs w/o ID, 170/60 mode (Bill LeVeque, WD8PAF/KM18FG). My own thoughts lean towards US Army because of the 60 WPM speed, but Fred Hetherington of FL thinks it might be CIF, Borden, Ont. Anyway, Bill, good to have you contributing loggings to the RTTY column-- Ed.

185.1: Same as 170.1 xmsn (LeVeque, MI).
2424: SAB, Goteborg R., Sweden w/Telex to WILPILAB G., ARQ at 2349 (Peter, Great Britain).

2690: DHJ51, Gregelg Meteo, FRG, wID test tape 425/66N at 0045 (Peter, Great Britain).

3171: ONY27, NATO, Rouveroy, Belgium, foxes 850/66 at 0448 (Jim Hartung, MD).

4172: WB4520, the US Steel Corp. freighter CALCITE II in ARQ to WLC at 2137; WYP8657, the ore freighter JAMES R. BARKER (at one time the longest vessel on the Gt. Lakes) in FEC w/wx obs & position report to WLC at 2240 (Ed.).

4172.5: 3FEF, Panamanian-flag cargo vessel JAVA CARRER to WLO in ARQ at 0205 (Jim Navary, VA).

4550: IRB25, UPI in Rome, Italy w/nx BC 0330-0336, 425/100N (Michael Walker, TX). It's not UPI. Outside of AFRTS nx BC's, UPI no longer can be found on the HF bands. What you logged was Saudi Press Agency-- Ed.

4863.5: KRH51, US Embassy, London, England w/foxes at 0447, 850/100R (Hartung, MD).

5035.4: GYU, Royal Navy, Gibraltar asking MUL (British Army in Belize) to QSY (change frequency) to F8 & F6. Was 850/66R at 0345 (Tom Brailey, MI).

5098.8: RFTJ, Dakar, Senegal, wkg. RFFVA, French Air Force in Paris in TDM mode at 2339 (Hartung, MD).

5104: Tfc in FF from the director of civil security, Paris, France about trucking some Uranium-238 across France. Was in ARQ at 1104 from FSS, CRS Securitie Civile (Wolfgang Palmberger, FRG). This may be the un-ID Tom Kneitel logged here in the March '86 issue-- Ed.

5160: CLN21, PTT Havana, Cuba, in TDM w/Telexes to the USA at 2335 (Hartung, MD).

5170.7: Un-ID station w/5VX callsign sending RYRY/QJHI at 0425, 425/66N (Brailey, MI). My guess is ASECNA, Lome, Togo but willing to entertain anybody else's thoughts-- Ed.

5210: FIT76, Rouen Prefecture, w/FF tfc in ARQ at 0043 (Ed.).

5287.4: FBSK, un-ID station w/RYRY at 0445, 425/66R (Brailey, MI).

5456: Un-ID station w/RYRY at 2030 (Peter, Great Britain). Shift/speed omitted-- Ed.

5457: Same as 5456 kHz but at 0408, 425/66R (Hartung, MD; Ditta at 1217 (M/Sgt David Freed, U.S. Army, W. Germany).

5731: Un-ID station w/callsign MIB ahead of each 5L group around 1938. Was .../66N. Suspect diplo tfc between Warsaw and Beijing (Freed, FRG). You may be right-- Ed.

6262: UZZV, Soviet civilian space research vessel KOSMONAUT GEORGIY DOBROVOLSKY w/telegrams at 0338 to Leningrad, 170/66N (Ed.).

6264.5: ONCB, un-ID ship w/tfc to Oostende Radio, Belgium, ARQ at 0315 (Navary, VA). The Belgian tanker JAHRE LION-- Ed.

6267.3: DJMN, un-ID ship w/Telexes in ARQ at 0530 (Navary, VA). A FRG container ship, the GITTA, working DCF in Norddeich, FRG-- Ed.

6330: WX in EE from CFH, Canadian Forces, Halifax NS at 0255-0330, 850/100N (Jerry Brumm, IL).

6363: FUE, French Navy, Brest, France, w/RYRY & "le brick" tape to FAAA at 0000, .../50N (Peter, Great Britain). FAAA is a general call to all French Navy ships, like NERK or NUKO in the USN-- Ed.

6459: SAB33, Gateborg R., Sweden, w/Telex to the oil rig SAFE FELICIA, in ARQ at 1910 (Peter, Great Britain).

6995: AIR, USAF MARS station at Andrews AFB, Washington DC w/Armed Forces Day message from Secretary of Defense at 0351, 170/60R (Daryl Symington, OH).

7407: CML5, PTT Havana, Cuba, w/test tape at 2322 in 425/66R (Hartung, MD).

7511.5: Aero WX plaintext/coded from ZROZ, Pretoria meteo, RSA, at 0439, 425/100N (Ed.).

7819: RYRY tape ran for 2 days here. Thought it was ASECNA in Brazzaville, Congo but on 3rd day the call SNK appeared making it Kano Aero in Nigeria. Was 425/66N at about 0500 all 3 days (Ed.).

7832.6: AFB3KN to AFF5TR of USAF MARS, 850/60R at 0013 (Hartung, MD).

7922: GOLF SEIS YANKEE of the Peruvian Navy w/maritime navigation notices in SS to F6V, then tfc to A9N. Was 850/66N at 0611 (Ed.).

7953.3: Dyn nx in SS from Buenos Aires, Argentina, at 0157, 850/100R (Ed.).

7961: Nx about Iran in EE from IRNA, Teheran, Iran at 2007 (Peter, Great Britain). Shift/speed?-- Ed.

7997.1: SOH299, Warsaw meteo, Poland w/wx synoptic, 66 wpm at 1601 (Freed, FRG).

8070.3: ZRH, Capetown Navrad, RSA, to NMN w/RGRG (not SGSG) & RYRY that ended with foxes stating "the lazy dog's tail backwards." Was 850/100R at 2358 (Ed.).

8094.7: Police bulletins in GG from INTERPOL at Vienna, Austria at 2310 in ARQ. Listed as OEQ43 in Kneitel's Guide to Embassy & Espionage Communications-- Ed.

8123: TNL, ASECNA, Brazzaville, Congo, w/RYRY at 2257, 600/66N (Ed.).

8349: Un-ID ship, SZLX to Athena in ARQ at 0207 (Navary, VA). Greek passenger liner STELLA OCEANIS-- Ed.

8350.5: Un-ID Soviet ship w/URUS callsign to Novorissk in ARQ at 0446 (Hartung, MD). An ore/bulk/oil carrier named the BORIS BUTOMA-- Ed.

8351.5: ZELM, Hong Kong flag tanker the HAMPSHIRE w/wx obs to WCC in ARQ at 1227 (Ed.).

8946: CLP1, MFA Havana, Cuba w/Prensaminrex nx in SS to Cuban embassies in C/S America & Africa at 425/66N (Ed.).

9047: Y2J, Deutsche Post, Berlin, GDR w/telegrams at 0435, 425/66N (Peter, Great Britain). The shift/speed omitted. Must be that Peter has one of those units that automatically select proper shift/speed thereby eliminating the need for all of the RTTY mode nifty grifty that we're used to working with on units here-- Ed.

9070: "ISB" w/ID & coded msgs at 1715, .../50R (Peter, Great Britain). This is 6VU, ASECNA, Dakar, Senegal w/RYRY, 425/66R at 0413 says Hartung, MD.

9285.1: TNL52, ASECNA, Brazzaville, Congo, w/coded wx in TDM (Hetherington, FL). Time not stated-- Ed.

10076.6: BIT30, un-ID station at 2037 w/RYRY, 100 wpm (David Alpert, NY). That's a real Chinese puzzle!-- Ed.

10309: SPK10, un-ID station w/RYRY tape, 425/66N at 0840 (Albin Magliano, Tahiti).

10523: ATCC, Pyongyang, N. Korea w/nx in FF, 1215-1311, 425/66N. ATCC was the FF abbreviation used as the logo in the nx copy. It stands for Agence Telegraphique Centrale de Corée; it's FF for KCNA (Ed.).

10540: 70C, Aden Aeradio, S. Yemen, w/RYRY at 2020, 66 wpm (Alpert, NY).

10662: CUW, USAF in Lajes, Azores, w/RYRY at 1308, 85/100R (Palmberger, FRG).

10720: LRB72, Buenos Aires Meteo, Argentina, w/wx data at 0445, 850/66R (Dallas Williams, CO).

10949.7: Wx on 1 TDM channel & FF tfc on the 2nd channel to Djibouti from FDZ, French AF in Paris at 0130 (Hetherington, FL).

11419.7: Nx in Vietnamese at 1315 followed by nx in FF at 1330 from VNA, Hanoi, Vietnam 525/66R (Ed.).

11430: Nx in Russian at 1246 from KCNA, Pyongyang, N. Korea, 160/66N (Ed.).

11434.5: VNV130, the AAP at Sydney, Australia w/nx in EE at 1058, 325/66N (Ed.).

11435.4: CXK, Carrasco Aero, Uruguay w/RYRY at 1115, 850/66N (Ed.).

11453: IMB33, Rome Meteo, Italy, w/wx at 0028, 850/66 (Hartung, MD). Polarity?-- Ed.

11464: 5F messages & Korean text from a N. Korean embassy at 1257, 425/66N (Ed.).

11502 BTA nx in EE from Sofia, Bulgaria at 1342, 425/66N (Ed.).

11520.5: Khabarovsk Meteo, USSR w/coded wx at 1252, 300/66R (Ed.).

11536.2: NX BC in FF from HMF56, KCNA, Pyongyang, N. Korea at 1145, 525/66N (Ed.).

12186.2: JANA, Tripoli, Libya w/nx in EE, 1815-1845, 425/66R (Guy Atkins, WA).

12236: "KUL" w/RYRY & 5L groups at 1411, 425/66R. Could be the GDR embassy in Havana (Ed.).

12251.1: ADN nx in SS from Berlin, GDR, 375/66N at 2341 (Ed.).

12276: Nx in EE from JAL82, Kyodo, Tokyo, Japan, 425/66N at 0433 (Magliano, Tahiti).

12503.5: BOPH, w/Telex to Shanghai via WLO in ARQ at 1608 (Navary, VA). This is a PRC freighter named the XING HE-- Ed.

12517: Un-ID Soviet ship w/call UYJC w/RYRY, 170/66N at 0006 (Carol Kirk, CT) This is a freighter called the VOLSK sailing out of Vladivostok-- Ed.

12693: 58JDQ testing w/RYRY & SGSG to 56UAZ, .../100R at 0040. Who/what/where is 58JDQ and 56UAZ? (Frankie Gittens, Registered Monitor 8P-BAR1, Secretary, Caribbean SWL Club, Barbados). They're some funky tactical callsigns cooked up by the think tank at ZRQ5, Capetown Navrad, RSA, or else Tom Kneitel's very worst nightmares-- as noted in this month's Beaming In-- have begun to come true!-- Ed.

13417.8: CCF, an un-ID Chilean naval station w/SS tfc at 1918, 425/100N. Also heard at the same time was CCS, the Chilean Navy at Santiago on 1352.7 kHz, 850/100R (Ed.).

13447: 4XM4, Bet Dogan Meteo, Israel, w/RYRY & coded wx, 425/66R at 2116 (Palmberger, FRG).

13524: Instead of RYRY, INA in Baghdad sends RRRRRRRR at 1610, then messages at 1620 then followed by EE nx before abruptly leaving the air (Freed, FRG).

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13779: BCA95, PTT Shanghai, PRC, w/RURY at 2220, 425/66R (Williams, CO).
 13785: SON278, PAP Warsaw, Poland, w/EE nx at 1455, .../66R (Gittens, Barbados).
 13963: Wx data from Tokyo Meteo, Japan, at 0054, 850/66R (Walker, TX).
 13975.6: NNOICE, USN MARS at McMurdo Sound, Antarctica w/MARSgrams to NNN0GKF at 0035, 170/100R (Symington, OH).
 14362.1: Nx in Polish from SOO236, PAP Warsaw, Poland, 425/66R at 1203 (Ed.).
 14535.4: GYU, Royal Navy, Gibraltar, w/RURY RYR & foxes at 0223, 850/100R (Ed.).
 14568.2: HML61, KCNA, Pyongyang, N. Korea w/nx in EE pooled from several African nx agencies, 1540-1556, 500/66N (Ed.).

14630.6: ANSA nx in EE at 1515, 425/66N from Rome, Italy (Ed.).
 14684: CYS22, the Polish embassy at Ottawa w/5F groups at 1328, 170/66N (Ed.).
 14789: Reports on merchant ship movements from LOL, Buenos Aires Navrad, Argentina to Rio de Janeiro Navrad, Brazil at 2137, 425/100N (Ed.).
 14901: CLN451, TASS Havana, Cuba w/nx in EE at 1530, 425/66N (Walker, TX).
 14912.2: Diplo t/c either encrypted or in 3F or in Sebo-Croat at 1434 from Yugoslav Consulate General, Toronto, to Zagreb, Yugoslavia. (Ed.).
 14932: Nx in Arabic from APS, Algiers, Algeria at 0942, 850/66N (Ed.).

14970.9: Un-ID station w/NLX callsign sending foxes 1650-1710, 425/100N (Atkins, WA). I dug through many books trying to get an ID on this. The only NLX I could locate was in the 6/86 issue of SPEEDX where an RTTY monitor logged it on 14962 kHz and felt it was the USN in Puerto Rico. I disagree since NAU & NRR are the USN's callsigns in PR & the only USN station I found listed on 14962 kHz was NPM in Pearl Harbor. Fred Hetherington also logged this tape here but w/o a callsign at 1300, also 425/100N. Here's a nice new mystery to keep you awake at night!-- Ed.

15864.5: Nx in FF at 0815; nx in Arabic at 0830 from TASS Moscow, 425/66N (Ed.).
 15950: CXR, Montevideo, Uruguay (Navrad), w/RURY, SSG & foxes at 1540 & a message in SS at 1544 to HDN, 850/100R (Ed.).

16147.6: RFFVF, French Air Force, Paris, ARQ mode. Only the day's date in FF & the routing indicators were plaintext (Ed.).

16210: SOQ221, PAP Warsaw, Poland, w/EE nx at 1455, .../66R (Gittens, Barbados).

16300: Nx in SS from Navosti News Agency, Moscow at 1121, 425/133R (Palmerberg, FRG).

16348: CLN530, PL Havana, Cuba w/EE nx at 1720, 425/66R (Brumm, IL).

16360: KKN50, Dept. of State, Washington DC w/5L t/c at 2045, 425/133N (Tom Adams, WI). Are you sure it was KKN50? Nobody lists this freq for KKN50 and that station has always been reported using CW exclusively. My guess is that you logged a GDR embassy, maybe the one in Havana because of the hour and because I've noted 133 wpm t/c used occasionally from GDR stations-- Ed.

16668: Un-ID Soviet ship, UNIL callsign to CLJ (Kirk, CT). This is a bulk carrier, the KAPITAN SVIRIDOV-- Ed.

16676: UYLR, yet another un-ID Soviet ship, to UNM2 (Kirk, CT). That would be the good ship YOUSIAS PALETSKIS, don't know the type of vessel, though-- Ed.

16689: Sardines, tuna & mackerel seen in a list sent by UUNB, an un-ID Soviet ship (Kirk, CT). It's a fish carrier called the ALMAZNI BEREGET out of Kaliningrad-- Ed.

17181: UDH, Riga R., Latvian SSR, at 1418, 170/66N w/telegrams in RR to ships (Ed.).

17205.5: 9VG83, Singapore R., Singapore w/msg in GG to DDFY, an FRG container ship, the PLANETA. In ARQ at 1351 (Ed.).

17208.5: Nx in Greek from SVT6, Athens R., Greece at 1305 in FEC (Ed.).

17223: NX briefs in Norwegian from LGX3, Rogaland R., Norway at 1726 in FEC (Ed.).

17396.5: MFA, Pyongyang, N. Korea w/5F msg & Korean text at 1245, 425/66R (Ed.).

17404: BAL32, PTT Beijing, PRC, w/RURY at 0547, 425/66N (Magliano, Tahiti).

17598: JAQ57, Kyodo, Tokyo, Japan, at 0552 in 425/66N w/stock market report (Magliano, Tahiti).

18697.5: DPA Hamburg, FRG w/EE nx about a terrorist incident in Pakistan, 1647 in 425/66N (Ed.).

19063.7: FDZ, French Air Force, Etampes, France, routing t/c through FDZ2 to various AF units, ARQ at 1527. Encrypted & plaintext t/c. One msg for the French defense minister (Ed.).

19225.2: FDY, French AF in Orleans, France, w/RURY & "le brick" at 1423, 425/66R (Ed.).

19405: Msgs in ARQ directed to INTERPOL, Washington DC & Madrid, Spain at 1738. There is no INTERPOL office, per se, in Washington DC; since 1961 its affairs in the USA have been attended to by the US Treasury Dept. The 6/85 issue of PopComm had the whole fascinating INTERPOL story-- Ed.

19616.8: NBA, USN Balboa, Panama w/request for aid for the catamaran TUMBLEWOOD that lost its mast on the way to French Polynesia. Tjose aboard the 40-foot craft used voice comms on the Hom freq of 14250 kHz, NBA noted. The msg was to AIG4557 at 1825, 850/100R (Ed.).

19673: MSU, an un-ID British station w/RURY1 & foxes, 425/66N at 1423 (Palmerberg, FRG). This is the Royal Navy base at Belize-- Ed.

20020: Nx in GG from Y7A81, MFA Berlin, GDR, 425/66R at 1410 (Palmerberg, FRG).

20078.4: DIPLO Le Vernet, France, FF nx at 1847, 425/66N (Ed.).

20415.3: SS diplo t/c, 500/66N at 1919 from CLP1, MFA Havana, Cuba to CLP8 (Ed.).

20471.8: CXR, Montevideo Navrad, Uruguay, in SS w/t/c to various S. American naval forces, 1257 in 725/100R (Ed.).

20855.3: Un-ID from Dakar, Senegal, w/routing indicator RFTJCS w/FF t/c in TDM mode (Hetherington, FL). Time not given. Callsign here is 6WI. Could be French Navy-- Ed.

22844.8: EE nx BC at 1428 from D2J36, ANGOP Luanda, Angola, 230/66N (Hetherington, FL).

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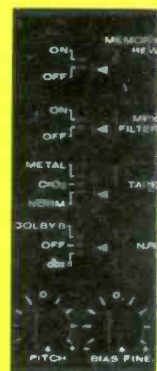
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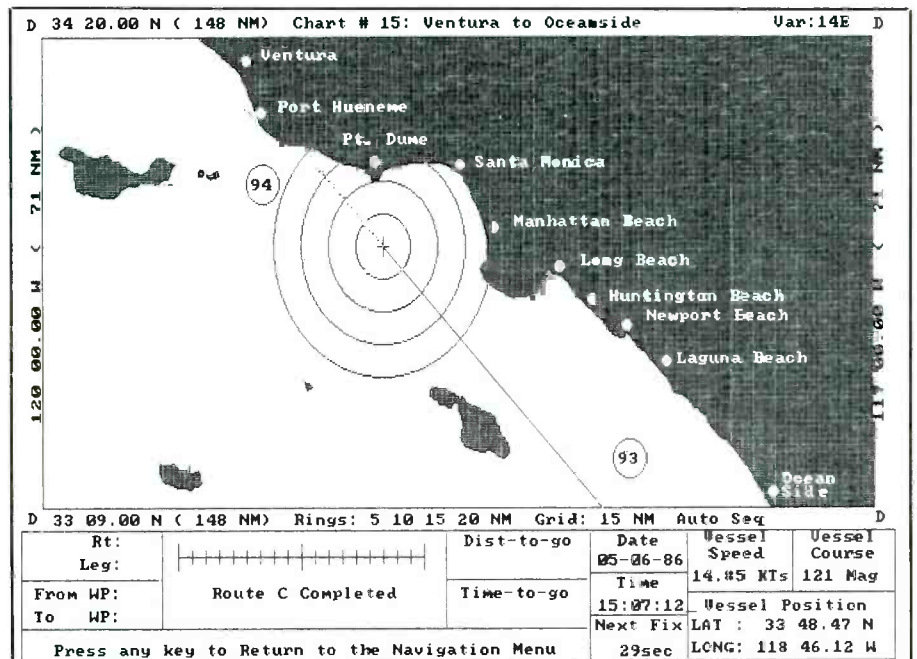
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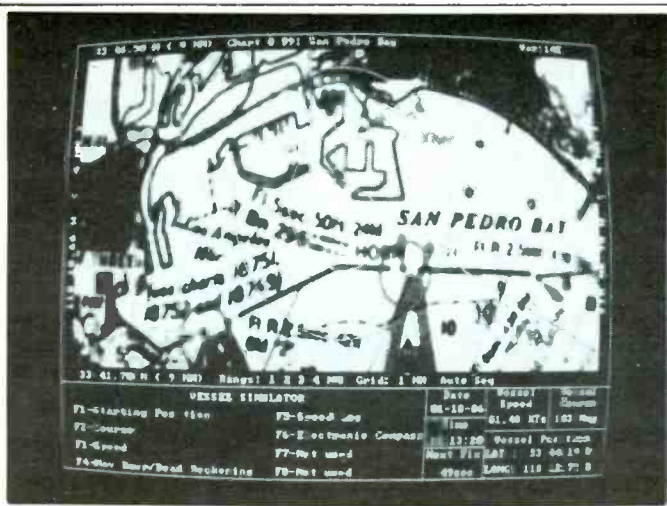
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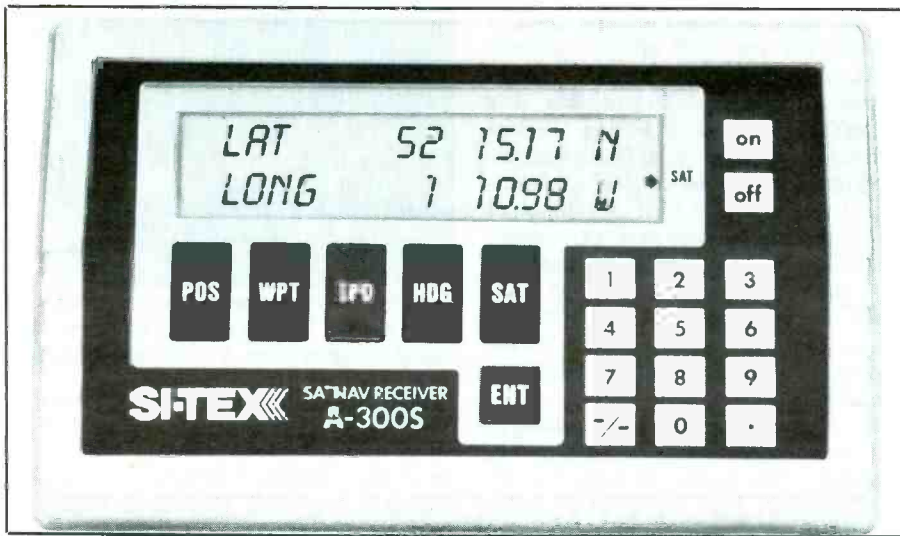
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SATNAV equipment is reasonably priced, reliable, and offers position fixes with much greater accuracy than conventional Loran.



For accurate, instant position determination, use a Loran receiver. Note the very small size of this Autofix 900.

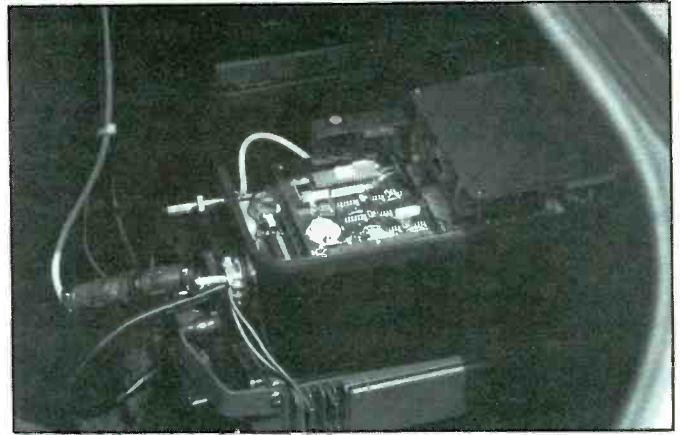
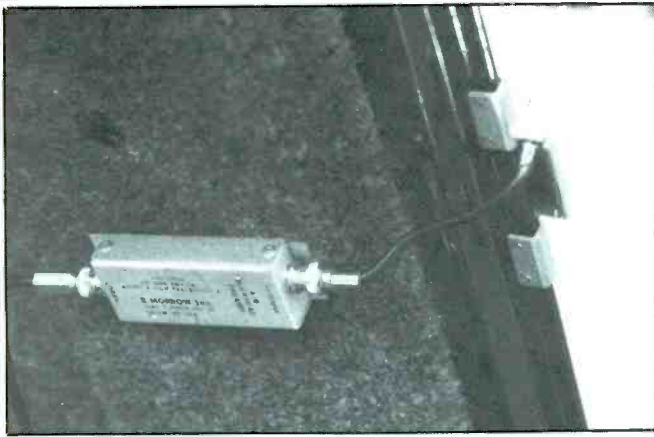
slips, buoys, and other areas of marine importance.

Manufacturers of tracking devices to spot local delivery trucks might modify their local city maps to include designated parking areas for individual trucks to assist the dispatcher in determining at which warehouse door they are located. These local charts can also be electronically modified to indicate one-way streets, temporary street repairs, and any other notations that could assist the dispatcher.

For information about digitized computer maps for your local area, write: Defense Mapping Agency Charts, c/o NOAA U.S. Geographic Survey Maps, Reston, VA 22092.

Location Finders. Position information may be received instantly through the use of a Loran (Long Range Aid to Navigation) receiver within the vehicle being tracked (see the August 1986 issue of this column in POPCOMM Magazine describing Loran). The Loran signals cover every major boating area of the United States plus two-thirds of the country for accurate, instant position determination. Loran receivers have been miniaturized to easily fit into the size of an attaché case. The Loran antenna looks almost like a base-loaded CB antenna—a yard long whip mounted on a small loading coil that also contains a built-in Loran 100 kHz pre-amplifier.

Another type of position receiver could be the transit satellite system. This is affectionately called "SATNAV" among mariners, and SATNAV equipment is reasonably priced, reliable, and offers position fixes with much greater accuracy than conventional Loran. The only problem with the transit satellite system is that the polar-orbiting satellites only come around about every 90 minutes for position data. The small satellite antenna (which also looks like a whip) must also be able to see the overhead satellite, so position fixes in a city with skyscrapers could be a bit tricky, if not impossible. The transit satellite position-finding system would lend itself well to marine applications as well as trucking companies who wish to



Trunk-mounted tracker receiver and position transmitter.

position-find their fleet every now and then as they crisscross the country.

Another system for pinpointing the location of a navigational receiver is the new global positioning system. The GPS system still has many years before it is completely finished, but altitude and position fixes *within feet* are available up to 12 hours per day throughout the United States. These position fixes are updated several times per second and are the most accurate of any type of hyperbolic radio navigation system yet developed. Unfortunately, GPS receivers are extremely expensive (around \$10,000 and up), so we won't see widespread use of GPS as position locaters for several years.

Another way of keeping track of a moving vehicle's or moving boat's location is through dead-reckoning. Dead-reckoning requires sensors that are placed on the vehicle or boat to measure speed, magnetic direction, forward or reverse motion, and turns. This type of system may work well in areas where radio navigation aids are not reliable or are not available. The DR position could also be confirmed and calibrated by sensors placed on certain street corners, or through the manual updating by a dispatcher when he asks the location of a mobile unit.

Dead-reckoning is used extensively by mariners with transit satellite receivers. The DR position calculates your location in between satellite passes. However, there are some serious drawbacks to a DR positioning device—consider the tugboat chugging up the Mississippi River. The DR sensors measure the speed through the water at 10 knots, and keep track of the heading and course steered to compute the approximate position of the tug. The only problem here is that the tug is bucking 7 knots of river current, so is only making 3 knots of real headway over land. It's this type of problem of current, drift, and set that can foul up positions when no other radio nav-aid is used for position verification.

Most companies are tying their tracking system into radio navigation receivers such as Loran and SATNAV.

Radio Reporting. Now let's take a look at the final link on how dispatchers receive

the information as to the location of their fleet, boats, or "bugged" vehicles. Two-way and one-way radio does the trick nicely.

In local city use, VHF and UHF security and business frequencies may be used to transmit the radio location receiver data back to the base station to be processed for position finding on a screen. The security industry has many frequencies at their disposal for direct VHF and UHF digital signals that contain the navigational information. The tracking system may be an automatic one—sending out bursts of location information every 5 seconds, or every 30 seconds, or every minute. The more often the transmissions, the more up to date the actual position fix.

The cellular telephone service can also be used quite nicely for acquiring position-fix information. The mobile unit might transmit its information back to a base station through the cellular telephone system automatically every five minutes, or every hour, or every five hours if traveling across the country. It's also possible for agencies tracking these vehicles to dial up a specific mobile telephone number and poll the vehicle's receiver system and find out exactly where that vehicle is. As the cellular telephone system expands throughout the United States for uninterrupted coverage, we will see the same capabilities of retrieving information by mobile units "roaming" into other cellular telephone areas.

Another way of transmitting the information back to a central tracking station is through the use of mountain-top or building-high repeaters. Many frequencies in the special mobile radio (SMR) service and UHF business radio repeater service allow for digital transmission of information. The exchange may take place every few seconds, providing the repeater is not in use by another vehicle. The actual exchange of navigational data can take place in less than 500 milliseconds (one-half second), and this data can also be piggybacked onto the beginning or ending transmission of an operator using a voice two-way radio in that mobile unit. This data will also contain vehicle I.D. information so you know exactly which vehicle or ship you are tracking.



Initially targeted at the marine security business, the METS system may also be used by the trucking industry, the delivery parcel industry and the like.

For marine high seas tracking, the Inmarsat marine satellite communication system is usually employed. This system is owned by many countries, and geostationary satellites provide voice and data communication almost anywhere large vessels may cruise throughout the world.

When the business radio service finally gets its own radio relay satellite for business voice and data communications, chances are it too will have several channels set aside specifically for vehicle and ship locaters.

The bottom line is that any type of radio network can be used, providing the transmissions are clear and providing the transmissions are legal for the type of frequency being used, and providing the frequency being used propagates well to the receiving station. The area of operation of the stations to be tracked pretty well dictates what type of frequencies will be used for relaying back the digital position information.

Tracking Stations. One of the country's largest and expanding tracking services is called METS, Mobile Emergency Tracking System, 2301 W. Sample Road, Pompano Beach, Florida 33067; (305) 979-5404. This company has initially targeted the marine security business as one of their first introductions of their METS system. They are also going after the trucking industry, delivery parcel industry, and all of the other industries where mobile tracking is important. They can track police cars, fire

SCANNER SCENE

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

New rules regarding the licensing of land mobile radio users that go into effect later this month are aimed at making radio channels clearer for all users.

Effective Oct. 22, any applicant for a land mobile radio license will be required to first submit an application to an FCC-approved frequency coordinator, which will determine whether the applicant has selected an appropriate frequency. Each radio service has had frequency coordination bodies certified by the FCC to handle this task. The FCC will no longer approve any land mobile radio application without this frequency coordination.

Up until now, applicants for radio licenses

had a choice in applying for their permits. The most-used option by two-way radio users was to seek approval from a frequency coordinator before submitting a license application to the FCC. These frequency coordinators were varied by area and radio service. For instance, applications in the local government radio service in New Jersey could seek coordination through several recognized coordinators throughout the Northeast, including a branch of the New Jersey State Police. Applicants for business band licenses on any frequency above 450 MHz could seek coordination from the National Association of Business and Educational Radio. Some services, such as the

special emergency radio service, which is used by ambulances and veterinarians, did not require coordination through recognized coordinators.

Applicants who wanted to bypass the coordination process for any number of reasons, could submit a field study with their application instead. One of the primary reasons field studies were elected over coordination was the time factor. Some coordinators would take months to approve a single application for the use of a frequency. The field study essentially could be a statement that the selected frequency was the best available for the applicant, considering the crowding on the band in a given area, that

FCC-certified Coordinators For Each Radio Service

automobile emergency

American Automobile Association

business

National Association of Business and Educational Radio

fire

International Municipal Signal Association
International Association of Fire Chiefs

forest products

Forest Industries Telecommunications

forestry conservation

Forestry Conservation Commission Association

highway maintenance

American Association of State Highway and Transportation
Officials

local government

Associated Public Safety Communications Officers

manufacturers

Manufacturers' Radio Frequency Advisory Committee

motion pictures

Alliance of Motion Picture and Television Producers

motor carrier

American Trucking Association

offshore zone frequencies

Central Committee on Telecommunications of the American
Petroleum Institute

petroleum

Central Committee on Telecommunications of the American
Petroleum Institute

police

Associated Public Safety Communications Officers

power

Utilities Telecommunications Council

railroad

Association of American Railroads

relay press

American Newspaper Publishers Association

special industrial

Special Industrial Radio Service Association

special emergency

International Municipal Signal Association
International Association of Fire Chiefs
National Association of Business and Educational Radio

taxicabs

International Taxicab Association

telephone maintenance

Telephone Maintenance Frequency Advisory Committee

460-MHz airport business frequencies

National Association of Business and Educational Radio

460-MHz alarm company frequencies

Central Station Electrical Protection Association

800-MHz business

National Association of Business and Educational Radio

800-MHz conventional business

National Association of Business and Educational Radio

800-MHz conventional industrial

Special Industrial Radio Service Association

800-MHz conventional public safety

Associated Public Safety Communications Officers

800-MHz industrial

Special Industrial Radio Service Association

800-MHz public safety

Associated Public Safety Communications Officers

800-MHz specialized mobile radio service (trunked)

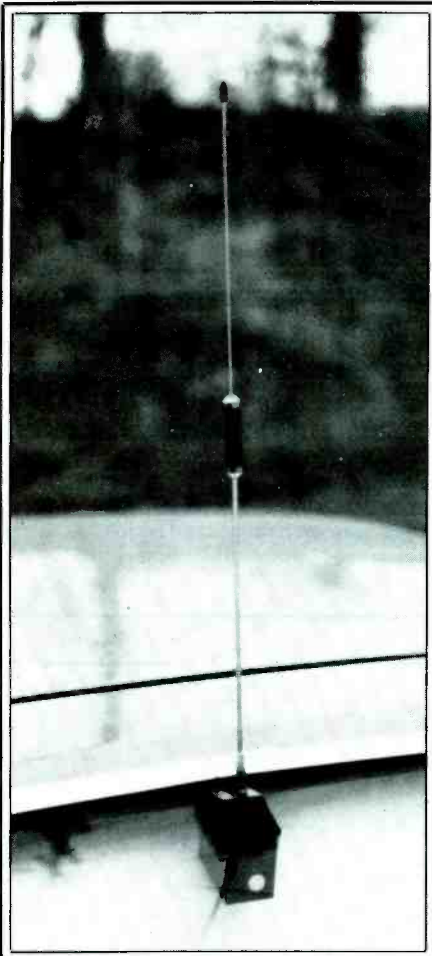
none

800-MHz trunked

none

900-MHz paging

National Association of Business and Educational Radio

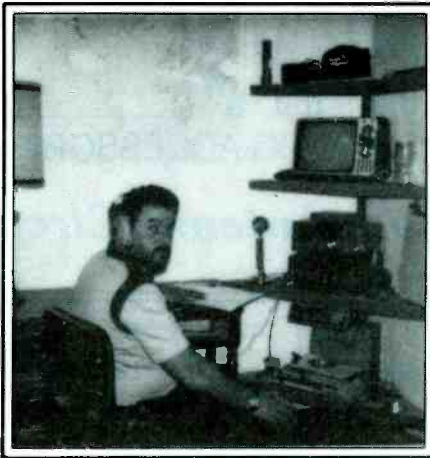


On-glass antennas are becoming popular in the land-mobile radio services, particularly by cellular and 800-MHz users.

minimal interference would be caused to co-channel users and that those other co-channel users were far enough away as not to interfere. In some radio services, it also was necessary to notify all co-channel users—and in some cases those within a certain distance on frequencies 15 kHz removed—of the applicant's intent to file with the FCC.

Frequency coordinators had their good points and their bad points. The primary good point is that, because they keep track of the users on given frequencies, they can prevent a particular frequency from becoming overcrowded in a given area. With coordinators who had served in a more volunteer basis, it often took long periods of time to receive coordination. Some of the groups also charged fees for coordination, while giving breaks to members of their organizations. Hopefully, the new coordinators will push through the applications in a time frame that is beneficial not only to the two-way radio user, but also to the entire spectrum of users.

The frequency coordinators will review each FCC license application for completeness and file the applications with the FCC once they approve the coordination request. The coordinators will also handle post-licensing conflicts regarding frequency



Bob Jackson of Klamath Falls, Oregon.

selection, recommend the most appropriate frequency on request and handle interservice frequency sharing requests. The new program also facilitates the establishment of a single contact point nationally for each group of radio users.

Illegal Hot Air

You might wonder what frequencies hot-air balloonists use during balloon races and other activities. Most hot-air balloon crews use business band (151.625 MHz is a popular frequency), aero band, or even CB to advise their chase crews as to their whereabouts.

However, a couple of businesses recently were caught by the FCC's field office in Douglas, Arizona using the 220-MHz amateur band for relaying communications between the balloons in flight and the chase crews. One group was found using 221.0 MHz and the other was found using 221.15 MHz. Each group was fined \$750 for violating Section 301 of the Communications Act of 1934 for unlicensed operation on the ham bands.

Feedback

Many of you have written in response to the column I wrote on how to make certain

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scanners tune out of band. The only known tricks for certain scanners appeared in that article. We know of no other tricks for other scanners not mentioned in that article, however, we welcome your input if you know of tricks for other radios. Most letters I received went along the lines that you had a Gizmo XT500B scanner and wanted it to cover bands it did not cover. For instance, if it covered the 30-512 MHz bands, you may have written in asking how it might cover the 800 MHz band.

I don't mean to sound flippant, but if you wanted to listen to the 800 MHz band, you should have bought a scanner that can tune in the 108-136 MHz band in AM. When you buy a scanner, make sure you are getting a unit that will tune in activity that you want to hear. Deal with a reputable dealer who can advise you on the best unit for your listening interests. That way you don't get stuck with a Gizmo XT500B that tunes in 66-88 MHz instead of the 30-50 MHz band.

And, in the meantime, if you develop a trick to make a scanner tune out of band, please share it with us here at *POP/COMM* so we can tell other users of the same radio. That's what the hobby is all about—sharing information and knowledge.

We eagerly seek your input to this column and welcome all letters, questions, and photographs. You can write to us at: Chuck Gysi, N2DUP, Scanner Scene, Popular Communications, 76 North Broadway, Hicksville, NY 11801-2909. **PC**

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CIRCLE 73 ON READER SERVICE CARD

ANTENNAS AND SIGNAL IMPROVING ACCESSORIES

Indoor Antenna Circus

Variables and inconsistencies are the rule in the installation and test of a suitable indoor antenna for shortwave listening. Move the antenna a bit and results can be quite different, especially on the higher-frequency shortwave bands. Antenna results seem to homogenize and even resonant points for specific lengths of antenna wire become vague. Sometimes an antenna wire taped to the ceiling does no better than the same length of wire beneath the carpet. All of this is related to the nearness of so many metallic surfaces, some attached to power system ground and others not. It is a hodgepodge of interaction.

Despite these limitations, all is not chaos. Improvements can often be made and sometimes results rise surprisingly near to the performance of a modest outdoor antenna.

Shielding of the signal, too, can be a severe problem and is usually prevalent in high rises because of their extensive steel girder support system. In a large city, the very nearness of like buildings add to the problem. Usually an antenna system performs better if it can be positioned near a window to perk up signal pick-up from at least one or two key directions. Even aluminum siding in city, suburb or country sites can do a good job of shielding the signal from the indoor antenna. Sometimes a long antenna in the attic or crawl space does a fine job. Even a long antenna in the basement can help because it is below the siding and signals can sneak beneath, especially on the lower-frequency SWB bands.

Height is more important on 19 meters and the shortwave bands higher in frequency. A 19 meter dipole is only about 30' in length and you can stretch it out in the attic or crawl space of a dwelling even though the ends may drape vertically. You can obtain fine results on this favorite DX band along with good results on 16 and 25 meters. Remember that a good DX antenna on the higher-frequency bands need not be too long, see Figure 1.

Use #16 to #20 hook-up wire for your indoor antennas. The smaller diameter insulated wires are more flexible and can be hidden away. The coaxial transmission line can be run along the baseboards where you bring it down from above or up from below. Space available, you may wish to go for a dipole on 25 or 31 meters. In an apartment try a thin wire dipole along the hall at baseboard level, or in and out of two rooms or, for a large room, the ends can be folded back along the side walls at right angles. Usually it

BAND	19	25	31	41	49	60	90
LENGTH	15'3"	19'10"	24'1"	32'6"	39'0"	48'0"	71'0"

One such length for single-wire feed Two such lengths for a dipole

Figure 1: Lengths for quarter-wave single wire on a number of bands.

is easier to disguise the antenna than the coaxial line that must be linked back to your receiver. However, television has made us more accustomed to the coaxial lines that are snaked about our dwellings.

Single-wire antennas (Figure 2) often produce surprising results although they are more erratic and more hit-or-miss tries are necessary. In the case of a single-wire antenna the total quarterwave length measurement must be made from the antenna terminal of the receiver to the far end of the antenna wire. Again use insulated hook-up wire for the antenna and you will avoid the problem of trying to avoid other metallic surfaces in the house that may come in contact with the wire.

A good ground is advisable from the standpoint of protection and especially for less noise and interference pick-up. A good ground exists here in the form of a stout line that runs to the nearest cold water pipe. However, in terms of signal pick-up it has to be a rare occasion when there was any significant difference in S-meter readings when the ground is removed quickly from the receiver. Many of you will find this quite unexpected especially when dealing with indoor antennas.

Some Antennas And Comparisons

There are three comparable indoor antennas in operation here. One that was mentioned previously is the 250' crawl space antenna that zig-zags back and forth along the rafters for about 30'. It does SW/MW/LW reception. A second single-wire antenna for SWB reception only is 48' long (a quarter wavelength on 60 meter). It drops down under the carpet from the radio table, passing across the hall and into the living room where it stretches out into a large L shape. It performs very well despite the fact that it is near ground level of the bungalow. More later. A third antenna is a rather elaborate, tunable, but very short antenna in the radio room, Figure 3. This is our reference antenna for checking indoor antennas. Its

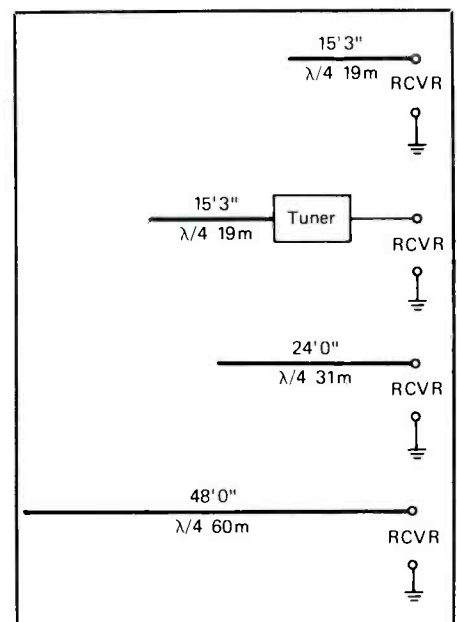


Figure 2: Some basic indoor antenna lengths for single-wire antenna.

construction and operation will be detailed in next month's column.

Quite often an indoor antenna consists of 15-20' length of wire. Actually, a length of 15'3" corresponds to a quarter wavelength on 19M. Reasonable results should be obtained. It should do well on 25M, too. However, you can do better because short wires of limited length are very much affected by surroundings; namely, the level of signal present and inability for the short piece of wire to intercept much signal at its physical location. Also, the performance of such a short wire is poor on the lower-frequencies bands. Pretty much the same problem exists in more situations than not, up to a length of 25'. A quarter wavelength on 31 meters is 24' and operating conditions remain shaky. You must position the wire at just the right spot to obtain acceptable results. It's a matter of cut and try. In the right

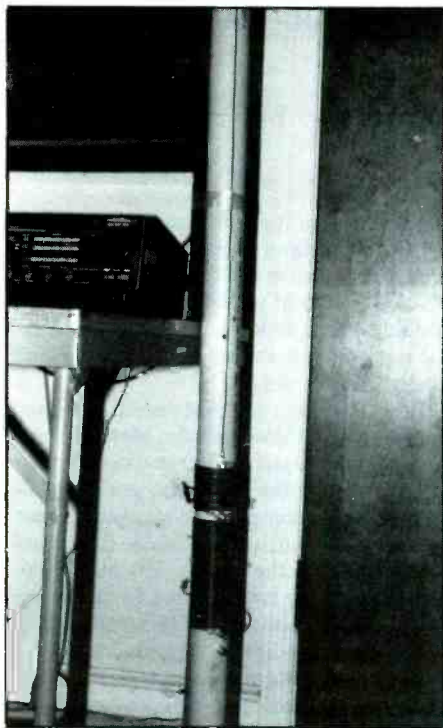


Figure 3: Indoor antenna and loading coils near receiver—a top-performance reference antenna.

spot a 24' length also does well on 41 and 49 meters.

It has been our experience over the years that a tuner is of no or only limited help in building up signal level from a short antenna on the higher frequency SWB bands. However, such a tuner does help in transferring more signal to the receiver input from the antenna on the lower-frequency bands despite the shortness of the antenna wire.

Our own experience has indicated that a length of about 48' (quarterwave on 60M) does very well and is a good compromise between excessive wire length for indoor use and poor performance. The long wire length is of help in deriving good low-frequency band signals and, at the same time, a third harmonic ($\frac{3}{4}$ wavelength) relationship boosts the performance on the high-frequency bands. The longer antenna takes away some of the placement problems encountered with the very short antennas.

Stretch it out in as straight a line as possible. However, an L shape does well and even a U if you keep the two legs of the U separated as far as possible. Certainly this long indoor gives the outdoor 50-footer at 18' a good chase. Also a tuner can be of definite help in boosting signal levels on the 75/90/ and 120 meter bands and on up to the MW band.

Application Of "Flexo" Switch

A "Flexo" switch provides additional versatility for an antenna installation because it is able to compensate for placement variables. As detailed in the column for the September issue of POP'COMM, the Flexo

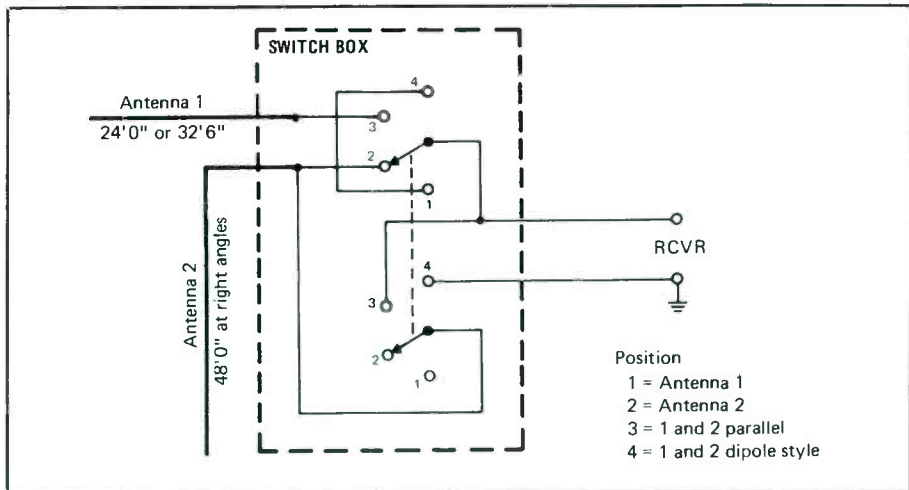


Figure 4: Flexo switch for indoor antenna application. Antenna wire positioning is not too critical. Fit it into your dwelling as best you can.

switch has four positions that permit a choice of two antennas, connects both in dipole fashion or parallels both of them. The wiring arrangement of Figure 4 shows the connections for an indoor installation using a 20' and a 48' antenna wire. However, you can choose any pair of indoor antennas you like. A two-pole four-position switch is required. Sometimes it is easier to purchase a two-pole switch that has more positions. This is fine and you only need wire four of them into the circuit. Mount the switch close to the receiver and you can always make a quick changeover of the switch position setting when you change bands. Inasmuch as most antennas display some directivity you will find that the direction of arrival of the signal on occasion influences the switch position that delivers the best signal to the receiver. Often the switch is useful in selecting a position that delivers the cleanest signal when there is on-channel or adjacent-channel interference present.

If your indoor situation is such that you can stretch out the two wires in opposite directions check out the results over a period of time. Then do the same for a right angle pair. Here the space limitations limited us to the latter. Results did vary from band to band with the 48' length doing better than the shorter one on most of the bands. In the presence of interference there was often one position of the four that provided the best clarity.

Next we increased the length of the shorter wire to 33' (a quarter wavelength on 41 meters) and found an especially good combination for our situation. To overcome physical limitations we had to zig-zag and go around a bit to accommodate the added length. The shorter length then dominated on a couple of additional bands. Also on some bands the directivity became apparent and the best position switched about according to angle of signal arrival and I suppose the relative placement of the two wires.

Maybe some experiments along these

lines will improve your indoor results. Remember after you have tried them out and come to a decision on a right combination you can usually do a job on keeping the wires hidden and in permanent position. In doing the initial checks don't forget to set up some simple reference antenna so you won't be working blindly against propagation variables. A Flexo switch can help you out with this condition. If you turn up something unusual don't forget to send the information to this column.

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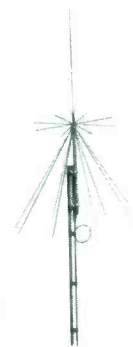
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BROADCAST TOPIX

BY MARK MANUCY, W3GMG

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

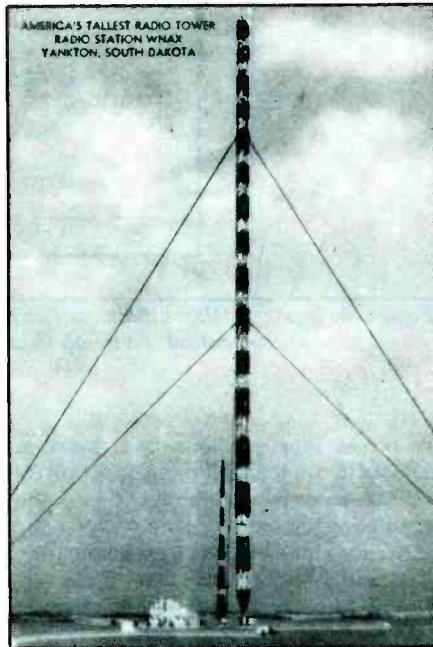
This is one time of the year the FM band picks up with some long distance reception due to the rapid temperature changes of the cool nights and warm days. Review some earlier Broadcast Topix columns for details on this phenomenon if you are not familiar with it. Rather than repeat the same info here, let me tell a few DX stories related to me this past spring.

Bob Frediani using a GE Superadio II was trying to receive a local FM on 89.1 and he heard something that didn't sound familiar. The station turned out to be WMCU on 89.7 in Miami, FL. That's quite a haul from New Jersey! All he was using was the antenna on the radio tilted at about 60 degrees. Bob found this to be the best angle. Jim Casper was driving in Southern California last April, headed toward Las Vegas, when he heard XHIS in Tijuana. He's done better than that . . . while parked one day in Huntington Beach he heard XHQF from Tijuana. The difference: XHIS runs 200 kw while XHQF runs only 3 kw! Jim also recommends the GE Superadio II for portable DXing.

Alan DesJardins has a Pioneer KE-A433 auto radio with which he does his DXing. This radio, he says, has AM stereo as well as an FM stereo section. Here's a neat trick he had developed for making his FM radio directional. He is currently stationed in Massachusetts and finds by parking his car on one side or the other of the dormitory he receives stations only in the direction away from the dorm. He loves this particular radio and found the FM section has not been sacrificed with the installation of the AM stereo. He also notes that of the Boston stations, WMEX is doing more with their stereo than WBZ which still pretty much has that "AM" sound. He also says the AM section is a good DX radio.

One other letter this month about spring-time FM reception is from Hank Rogers. From Pennsylvania he heard Pensacola, FL and Buffalo, NY using his home stereo with an "S" antenna on the roof. So sharpen those FM dials up for some of the fall DX reception!

Shall we leave AM DXing behind? Not by a long shot. Lots of DX will be coming up this fall and as the winter approaches the DX will continue to improve especially as the static levels continue to drop. The other day, while leaving my work station, I heard Larry King mention a new station just on the network and, being familiar with the station, had a good laugh since I knew the frequency of the station and the daytime power (minimum). For the station to be operating at night on a U.S. clear channel I figured they must be running only a few watts and the coverage must be a few miles at best. However, after the laughter subsided it dawned



In 1946 WNAX had the tallest tower in the USA. Today the tallest tower is about twice the 927 feet of this tower.

on me that this might be a new way to pick up on stations which may have recently started operating at night. By listening each night at the beginning of the King show when he announces the new stations on the network it would then be an easy matter to check the station guides to see if the station had previously been a daytime only station. If it's new at night there could be a possible logging! What's more exciting than catching a new station?

The National Association of Broadcasters (NAB) is proceeding with their "DX" stations. Well, they're not DX stations to them but they are to us . . . I told you many months ago that they were going to build an experimental station in Virginia about 30 miles west of Washington to study the possibility of improving AM broadcast antennas. The improvement the NAB wants is to keep more signal closer to the ground so that the local signal is stronger and there will be less sky wave to cause interference with other stations on the same channel. The project consisted of two different antenna designs with which the NAB was going to experiment. The plan was to build one, run tests, tear it down and build the other. Well, now, the NAB has been able to get another location for the second antenna so the tests may be run simultaneously. The second site is near Greenbelt, Maryland, which is also near Washington. I will do my best to keep you up-to-date on these tests since it will be exciting to try to tune in and log these "test"

stations. They will be operating in the 1600-1700 kHz range for a limited period of time. Since this is pretty much a clear frequency, many of us living across the U.S. should be able to keep the signal more localized rather than being heard long distances. Stay tuned.

Boy, I tell you the AM stereo wars are really going full blast between Motorola and Kahn. It's really sad for you and I and the listeners. We are the ones who are suffering because these companies continue to argue rather than trying to get a variable AM stereo system going in the U.S.A. The number of stations that are being added to the stereo list is becoming less all the time rather than increasing as would be the normal situation. With all the claims and counter claims going on it's no wonder the broadcaster, much less the listener, doesn't know what to do.

In a recent article in *The Weekend Australian* the story of AM radio in Australia parallels that of U.S. AM radio. . . down the tubes! They have seven metro FM stations versus 37 AM stations and the FMs have surged ahead in the polls and are making money. No mention, however, of whether or not AM stereo in Australia was helping to equalize the competition. Australia has selected C-Quam as the national standard for AM stereo.

Let me bring you up to date with what our readers are finding in the consumer world of AM stereo. Dick Soban sent a clipping from the J. C. Whitney catalog, the auto parts supplier out of Chicago, showing an AM stereo converter. This converter receives all four systems and converts them to the FM band, producing an FM stereo signal for the FM stereo radio in the car to receive. Neat! And only \$79.95! I also received a letter which stated this converter overloaded the FM section of the auto radio and degraded the reception of other FM stations. Any other experiences with this converter?

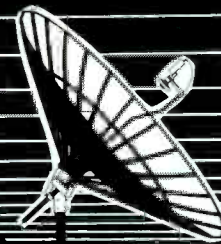
Alan Ammann tells me that there are several other AM stereo multi-mode receivers on the market. He mentions the Sansui CX-990. Alan is another happy SRF-A100 owner. I understand from a recent report that the SRF-A100, although no longer available, might not be the best radio for checking on AM stereo platform motion. According to the report, this particular radio aggravates the effect of platform motion making it appear worse than it is in comparison to reception on other radios. I would tend to agree with this as I have noticed that the platform motion phenomenon does not seem as great a problem when listening on my auto radio. My auto radio is specifically designed for reception of C-Quam and Kahn whereas the Sony uses a compromise detector between the different systems. By

Station Updates

Call	Location	Freq	Pwr	Ant
AM				
WAFC	Clewiston, FL	590	1/.47	DA-N
WMMX	Xenia, OH	1110	1.1/0	DA-D
WWCC	Concord, MA	1120	5/0	DA-D
KERI	Wasco, CA	1180	50/1	DA-2
KUBR	San Juan, TX	1210	50/0	DA-D
KUIK	Hillsboro, OR	1360	5/0	O
KCAL	Redlands, CA	1410	5/4	DA-2
WPWC	Dumfries, VA	1480	1/0	O
KTLU	Rusk, TX	1580	.84/0	O
FM				
KRSD	Sioux Falls, SD	88.1	2	160'
KNTU	Denton, TX	88.1	100	402'
WRPS	Rockland, MA	88.3	.105	140'
WEPS	Elgin, IL	88.9	.74	34'
KLYT	Albuquerque, NM	88.9	1.8	4172'
KEWC-FM	Cheney, WA	89.5	10	1407'
KMSU	Mankato, MN	89.7	20	418'
WERS	Boston, MA	89.9	3	730'
KLSA	Alexandria, LA	90.7	100	N/C
KUSC-FM	Los Angeles, CA	91.5	25	666'
WWEV	Cumming, GA	91.5	8.9	961'
KEMC	Billings, MT	91.7	72	663'
WBGD	Brick, NJ	91.9	.195	57'
WKLZ	Port Henry, NY	92.1	1.27	-77'
WPAC	Ogdensburg, NY	92.7	3	310'
WMGS	Wilkes-Barre, PA	92.9	5.25	1383'
WLSD-FM	Big Stone Gap, VA	93.5	.15	1419'
WTPA	Mechanicsburg, PA	93.5	1.18	525'
WSGM	Staunton, VA	93.5	2.8	333'
KXIQ	Bend, OR	94.1	86.3	993'
WIXV	Savannah, GA	95.5	100	981'
KEFM	Omaha, NE	96.1	100	1440'
WXIK	Shelby, NC	96.1	100	1745'
KXTR	Kansas City, MO	96.5	100	984'
WCOW-FM	Sparta, WI	97.1	100	587'
WKCX	Rome, GA	97.7	.472	780'
KHFO	Osceola, AR	98.1	52	350'
WSIP-FM	Paintsville, KY	98.9	59	700'
WHMP-FM	Northampton, MA	99.3	3	321'
WFXX-FM	S. Williamsport, PA	99.3	21	1230'
KSUR-FM	Greenfield, CA	99.5	N/C	492'
KKRZ	Portland, OR	100.3	100	1434'
WCNB-FM	Connersville, IN	100.3	28	270'
WWKI	Kokomo, IN	100.5	28	500'
WFMA	Rocky Mount, NC	100.7	100	1968'
WNBR	Wildwood, NJ	100.7	26	350'
WFVA-FM	Fredericksburg, VA	101.5	30	400'
WDOK	Cleveland, OH	102.1	12	1000'
WPTM	Roanoke Rapids, NC	102.3	2.53	352'
KZFR	S. Lake Tahoe, CA	102.9	.589	2952'
WIQB	Ann Arbor, MI	102.9	49	500'
WVEE	Atlanta, GA	103.3	100	1020'
KWOZ	Mountain View, AR	103.3	100	987'
WRKY	Steubenville, OH	103.5	16	880'
ER	Hattiesburg, MS	103.7	100	266'
WCKQ	Campbellsville, KY	103.9	1.85	411'
KZLT-FM	E. Grand Forks, MN	104.3	100	444'
WBSB	Baltimore, MD	104.3	23	720'
KRGK	Carthage, MO	104.9	N/C	462'
KMXU	Manti, UT	105.1	63	2358'
KLSS-FM	Mason City, IA	106.1	100	1000'
KFXZ	Maurice, LA	106.3	1.3	494'
WSLT	Ocean City, NJ	106.3	3	328'
KMAX	Arcadia, CA	107.1	3	-44'
KGRS	Burlington, IA	107.3	100	429'

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

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Drake ESR 524	\$1298	Tracker II/III	\$1278
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DX 700S	\$1458	Uniden 7000	\$1398
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Call Letter Changes

Location	Old	New	Location	Old	New
AM Stations			Los Osos, CA	New	KEDZ
Atmore, AL	WSKR	WIGL	Santa Margarita, CA	New	KWSP
Dardanella, AR	New	KZAO	Waterbury, CN	WTIJ	WGLY-FM
San Diego, CA	KSDG	KIRS	Tampa, FL	WIQI	WUSA-FM
Salinas, CA	KLCZ	KDON	Apalachicola, FL	New	WBFJ
Granby, CO	KRDZ	KTLD	Springfield, FL	New	WVBM
Monument, CO	KKRE	KRTS	Ellijay, GA	WLJA	WLJA-FM
Royal Palm Bch, FL	New	WOOO	Twin Falls, ID	KMTW	KLIX-FM
Boynton Beach, FL	WKAO	WYFX	Chubbuck, ID	KOSX	KRCD
Scottsmoor, FL	WNUY	WPGS	Kankakee, IL	WMHG	WLRT
Conyers, GA	WCGA	WTPO	Lincoln, IL	WLRX	WESZ
Ellijay, GA	WLEJ	WLJA	Onawa, IA	New	KBAO
Valdosta, GA	WGAF	WFVR	Detroit, MI	WCXI-FM	WNTM
Warner Robins, GA	WVIJ	WRBN	Flint, MI	WWCK	WWCK-FM
Augusta, GA	WIGL	WFAM	Montgomery City, MO	KVCM	KOMC
Gooding, ID	KIDI	KR XR	Helena, MT	New	KMBB
Ball, LA	KBLA	KWDF	Pahrump, NV	New	KLVV
La Plata, MD	WXTR	WCMD	Gorham, NH	New	WMIH
Flint, MI	WGMZ	WWCK	Hempstead, NY	WKJY	WMGG
Minneapolis, MN	WWTC	KSNE	Watertown, NY	New	WTNY-FM
E. Grand Forks, MN	KRRK	KCNN	Morehead City, NC	WMBJ	WRHT
Blue Springs, MO	KBSM	KKJC	Lisbon, ND	New	KQLX-FM
Kinsey, MT	New	KCCA	Valley City, ND	KKVC	KFRM
Gardnerville, NV	New	KUIP	Oklahoma City, OK	KOFM	KOMJ
Laconia, NH	WMRS	WKLR	Eugene, OR	New	KPAO
Syracuse, NY	WURS	WXRA	New Kensington, PA	WWCL	WXXP
Camp LeJeune, NC	WBQZ	WJIK	Bellefonte, PA	New	WWZW
Oklahoma City, OK	KATR	KPRW	Greensburg, PA	WOKU-FM	WPNT
Beaumont, TX	KIEZ	KWIC	Lewistown, PA	New	WCHX
Universal City, TX	New	KS AH	Philadelphia, PA	WZGO	WTRK
Beaumont, TX	KGIC	KYND	Honea Path, SC	WRIX	WRIX-FM
Heber City, UT	KLVR	KTMP	Selmer, TN	New	WXOQ
Provo, UT	KLZX	KFMY	Memphis, TN	WZXR	WEGR
Murray, UT	KOLC	KMGR	Wheeler, TX	New	KPDR
FM Stations			Beaumont, TX	KWIC	LWIC-FM
Brewton, AL	New	WJDT	Kermit, TX	KERB	KERB-FM
Florence, AL	New	WWOL	Provo, UT	KFMY	KFMY-FM
Lake Havasu City, AZ	KNDD	KZUL-FM	Orem, UT	KMGR	KMGR-FM
Los Angeles, CA	KKHR	KNX-FM	Kennewick, WA	New	KSVD
Salinas, CA	KDON	KDON-FM	Tacoma, WA	KTOY	KTPS-FM
			Agana, GU	KBZE	KRTS

the way, Alan, thanks for the nice comments. Other new products are the Sanyo multi-mode boom box, model number MW-250. Their new chip for multimode reception is the LA 1919 IC.

Walt Barcus of Kent County High School sent me an informative letter about their high school station. Now folks, here is a full-fledged radio station which is operated by a high school and does a real snappy job. I know, because I have listened to WKHS (FM), 90.5 MHz, Worton, MD. This station is 17,500 watts; no 10 watter here, friends! Anyway, Walt is the guy that makes these kids toe the mark and as I said, he does a good job. I know there are a lot of young readers and maybe you'd like to see about getting your high school involved in something like this. There are not very many stations like this in the U.S.; most high school stations are of the 10 watt (FM) or carrier current (AM) type. I know it takes a lot of work on Walt's part, but maybe he might be able to find a few minutes to help you if you'd like to get your school involved. Write him in care of Kent County High School,

Worton, MD 21678. Also, if there are other high school stations on the air and operating both Walt and I would like to hear from you. Tell us about your operation.

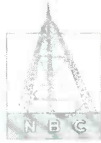
If you live in a small town, it is probable that the local station is interested in high schoolers that show interest in broadcasting. That's how I got my start in radio. Of course, back in the stone age of radio the pay was pitiful for a lad in high school. I received the grand wage of the fun of doing the Sunday top 40 countdown if I would be there every week to do it. Today's wage laws are little more than the fast-food places, but if you are interested in broadcasting it shouldn't really matter. I can't guarantee that you can have an air show, but there are many things to learn around a radio station before one can go "on the air."

Raymond Taylor sent a letter explaining some of the solutions to Mr. W. Burke's problems I covered a few months back. He mentions from personal experience that strong SW signals may also mix inside the radio itself creating spurious signals and other unwanted garbage. Ray also has a

problem with his BFO not zeroing. Many times the BFO knob is an extension of a slug-tuned core, Ray, therefore if you remove the knob there may be a collar around the shaft of the knob which restricts the turning of the shaft more than about 300 degrees. Try loosening the set screw on the collar and carefully tune a station to its exact frequency (might be easier with a BC band station) then turn the BFO on and adjust the shaft to zero beat. Then set the detent on the collar to the center of the shaft's rotation, retighten the collar and the knob. You should be back in business.

Also, speaking of attenuators as Raymond did in his letter, I forgot to include the drawing for the attenuators in last month's column, so par-don . . . they are with this month's sidebars. For eliminating noise and interference a good ground is always helpful. Make sure the connection is tight. If a recent problem has been occurring and you already have a ground, then check it and make sure it is clean. RF will not travel through paint, rust or other corrosion. One other note Ray made was to mention a pro-

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WKY

RADIOPHONE COMPANY

BROADCASTING SERVICE OF THE OKLAHOMA PUBLISHING COMPANY

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October 1, 1947



Mr. Robert Grubbs,
Kearney, Missouri.

Dear Mr. Grubbs:

Please accept this letter as verification of reception from Radio Station WKY, Oklahoma City, Oklahoma, transmitting on 930 kilocycles.

We are always pleased to receive such reports and appreciate your writing us.

Very truly yours,

WKY RADIOPHONE COMPANY

P. A. Sugg
P. A. Sugg,
Station Manager

PAS-o

Note the verification stamp and the date. The stamps were from an earlier era and were not used much past the 1940's.

gram he heard last year on the BBC telling how to build a BC loop antenna. He said the program was good but not complete enough to start the project . . . any suggestions? Yes . . . the Broadcast Topix loops are just the answer. These are do-it-yourself projects, but are made from available materials. I continue to get requests every week for these loops and they solve such problems as overloading signals, interference, noise and limited space. There are two different types of loops available. The box loop (set 1) is made from RG-59 coax, one is about four feet in diameter and the smaller is 18 inches across. Set 2 is a ferrite loop, very small, more expensive to build. It comes with a drawing for a preamp. Costs are as follows: Set one—two box loop plans, \$5.50 postpaid. Set two—ferrite loop and preamp, \$7.50. Preamp plans only, are \$2.50, to be used with a loop antenna. If you have a ICOM R-70/71, I have modification instructions for increasing the gain of the set on the BC band and filter mods for the R-70 which are \$2.50 postpaid. A listing of Commodore 64/128 computer programs will be sent for an SASE.

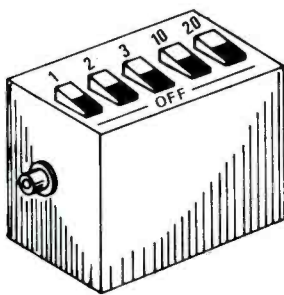
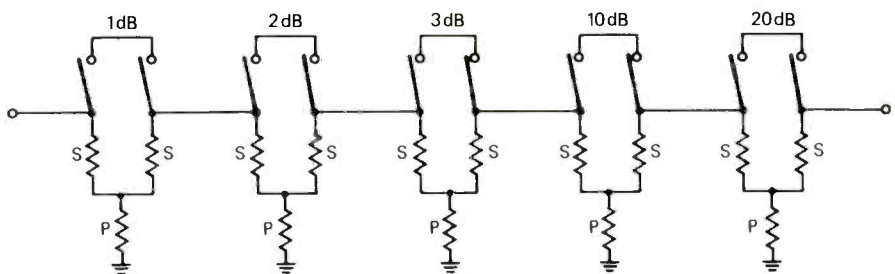
A letter from Phil Stevens speaks of electrical interference also, which could be helped by a loop antenna. Loop antennas are not a cure-all by any means, however they are one of the best solutions I have found over the years for solving many problems encountered in BC band DXing, especially the shielded loops of which the above are. A receiver with a noise blanker, not a noise limiter, is also a tremendous help.

That's about 30 for this month so until next we meet send some mail!! The address is P. O. Box 5624, Baltimore, MD 21210.

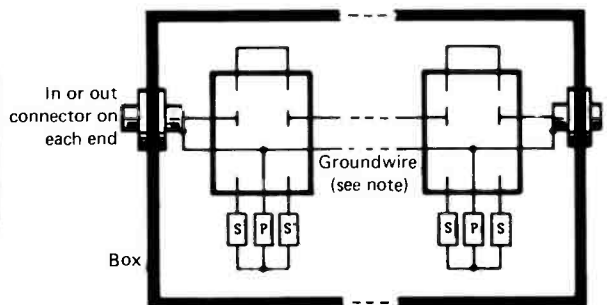
Attenuating Pads

Resistive pads: Shown is the schematic diagram for a resistive pad. It is constructed using DPDT (Double Pole, Double Throw) switches such as Radio Shack part numbers: 275-666, 275-663, 275-607, 275-636 and 275-691 or 275-403. The last two would give better isolation due to the wider spacing of the contacts but would not be as easy to mount as the single hole toggle switch. Mount the switches in a row in a metal box (RS part # 270-239 or 270-238) with a jack at each end for the in and out cables. If you want to get fancy use a fancy box (RS # 270-252 or 270-272), just be sure the box is all metal and not plastic. The connectors may be phone jacks, RS # 274-346, or expensive BNC jacks, RS # 278-105. Use RG type 58 or RG-174 for the connecting cables, not phono type shielded wire.

To be effective we should have at least four switches with a maximum of seven. Use pad values of 1dB, 2dB, 3dB, 10dB and 20dB. Two or three more 10 or 20 dB sections may be added for additional attenuation if desired. Get the resistor values from last month's Broadcast Topix column.



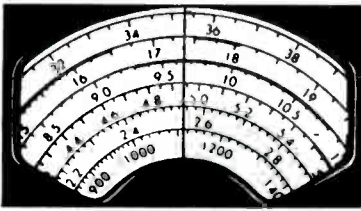
OUTSIDE VIEW



INSIDE VIEW

NOTE:

Groundwire runs to each connector on either end of box and provides ground for resistor "P".



COMMUNICATIONS CONFIDENTIAL

BY DON SCHIMMEL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

Two readers have responded to the February 1986 column regarding RAAF and RNZAF operations. Les Ottaway, New Zealand advises that RNZAF can best be heard on 5709 (officially 5707) USB. He added, "Although activity is likely at any time, the most active period is usually between 2000 and 0500 UTC. Try on the hour and half past as aircraft in the air usually report in to Airforce Auckland or Airforce Wigram at these times. RNZAF Iroquois helicopters and Hercules aircraft are likely to be in the air at any time of the day or night for many purposes including civil emergency assistance to the Pacific Islands, flood and other disaster assistance within New Zealand, assistance to shipping in distress, and so on. During the tour of New Zealand by Queen Elizabeth and Prince Philip, I was thrilled to hear the Royal aircraft using call sign Royal One and support aircraft on 5707 and 8907 flying within New Zealand and across to Australia."

Damien Vale, Australia offered the following information on RAAF activity:

Domestic HF Network Organization (Frequencies in kHz)

- South Eastern-2869, 4678, 5526, 8876
- Central Eastern-3452, 6610, 8831
- North Eastern-3452, 6616, 8891
- North Central-3452, 6541, 8843
- North Western-3461, 6604, 8900
- South Western-3461, 4684, 6565, 8822
- South Central-3461, 4693, 6580, 8858

Military aircraft usually operate on RAAF frequencies only when on task in restricted areas. Normally they can be found on domestic civil frequencies. Mirage and Macchi aircraft are not equipped with HF.

Clarke Durham, KY reports hearing a strange signal on 790 kHz on his car radio and on a R-392 receiver during later evening hours after station WAKY had reduced power. The signals consist of ticking sounds with one per second and a tone on each minute. Two "R's" in CW follow within 2 to 8 seconds. This sounds like it might be a harmonic of a beacon but I can't make a positive identification. There is an "RR" beacon on 205 kHz but it is located at Kandahar, Afghanistan with 50 watts of power. The "RR" beacon was reported also by Gary Vendetti, NJ but he heard it on 570 kHz.

DXers interested in monitoring aviation frequencies will find this information from Mark Coady, Ontario to be helpful. Mark

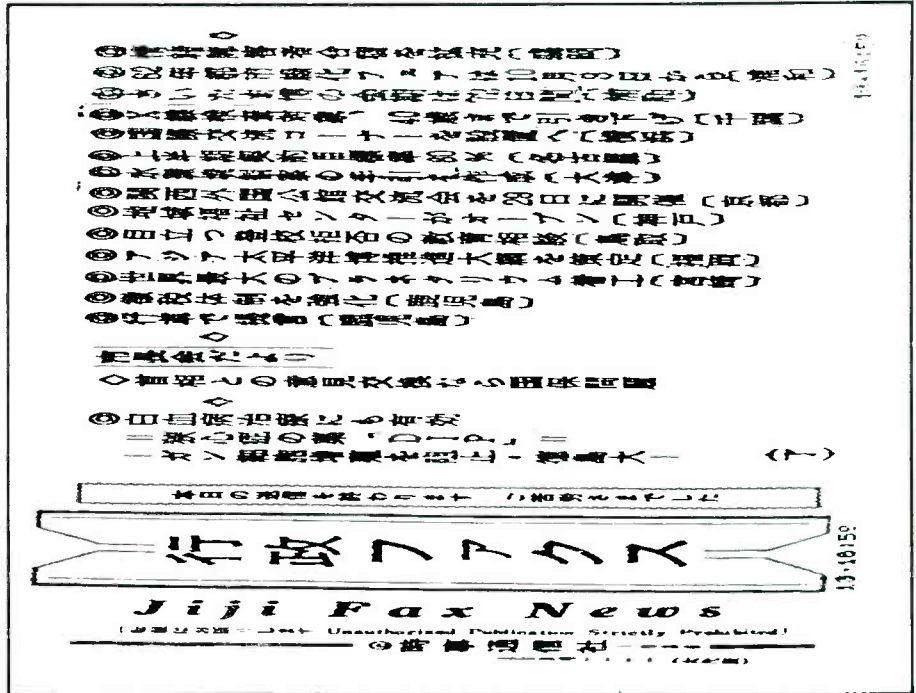
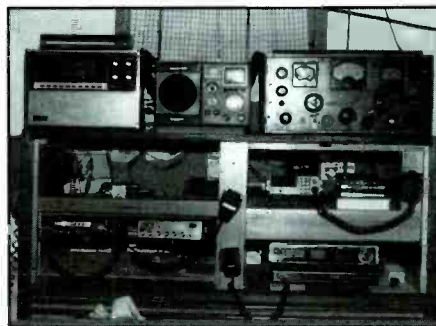
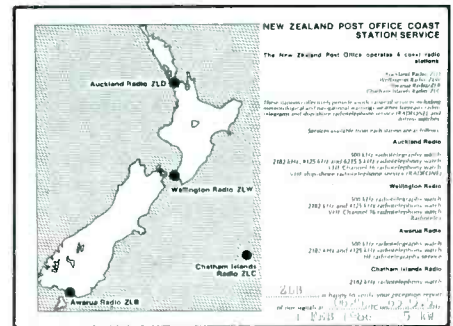


Figure 1: A FAX from JIJI, sent in by Raymond Pfaff, Seoul, South Korea.



Reader Anthony Steffen of Dubuque, Iowa sent this photo of his well-equipped set-up.



Jerry Brumm, IL sent in a copy of the QSL card he received from the New Zealand Post Office Coastal Station.

says, "All major airlines, as well as private aircraft, use 8891 USB during the daylight hours while flying the great circle route that takes them over Canada's north. Some of the stations that can be heard are: VAP Churchill, Manitoba; UFC Cambridge Bay, NWT; UFF Frobisher Bay, NWT; VFG Gander, Nfld; VFR Resolute, NWT; TAP Reykjavik, Iceland. All stations identify by the name of the town only."

Some neat photocopies of FAX transmissions were received from Raymond Pfaff located in Seoul, South Korea. His intercepts included: NOJ, Kodiak Alaska on 8459;

RX070 Khabarovsk, USSR on 9230 at 0821; BAF4 Beijing, PRC on 10115 at 0400; JMJ3 Tokyo, Japan on 9438 at 1000; Tokyo Meteo on 7305 at 0900; JIJI Press Tokyo on 7370 at 0630. JIJI, Kyoto and CNA (Taipei) Press Services use FAX to transmit Japanese and Chinese characters rather than using RTTY. A sample transmission is shown in Figure 1.

We heard from George Osier, NY who says he is back in operation now that he has his NRD-515. George sent in a copy of a bulletin indicating the German Hydrographic Institute (DHI) has discontinued

Identifier	Aircraft Type	Identifier	Aircraft Type
AUSY	All RAAF acft when flying international	ROLLER	CT-4 Airtrainer
AUSY 624,25,27,29	Boeing 707 No. 34 Squadron	SHEPHERD	Lockheed P-3 Orion series C
ALADDIN	Macchi	STALLION	Lockheed Hercules
BUCKSHOT	F-111C	STINGRAY	Lockheed P-3 Orion series B, Mirage
BUCKSHOT COLT	Flight of F-111C acft (leader maintains comms)	STRIKER	Lockheed P-3 Orion series A
BUFFALO	Chinook helicopter	TESTER	Test flight, or acft from Aircraft Research and Development Unit
CONSORT	HS-748	TORCH	Macchi
DESPOT	Mirage	TROJAN	Lockheed Hercules
EAGLE	Iroquois UH-1 helicopter	WALLABY	Caribou
ENFIELD	Caribou	WINDSOR	Boeing 707 acft (eg AUSY 624) flying within Australia
ENVOY	BAC-111, HS-748	WISDOM	HS-748
FALCON	F-111C	WOMBAT	Caribou
MACH	F-18 Hornet		
MAPLE	Mirage		
MARINER	Lockheed P-3 Orion		
RAMROD	Mirage		
REGENT	Mystere Falcon, BAC-111		

Figure 2: This list contains tactical callsign prefixes used currently by the RAAF aircraft, the suffix usually being the last 3 numbers of the tail registration, e.g., Iroquois UH-1 helicopter reg. no. A2-487 would be EAGLE 487.

transmission of time signals via stations at Elmshorn, Osterloog, Kiel (Callsigns: DAM, DAN, DAO) as of 1 November 1985. Holders of Time Signal references will want to make this correction to their publications.

Supplementing the data of SAC Communications that was previously carried in this column, Chris Storey, CA advised hearing an Emergency Action Message (EAM) on a SAC frequency and then about 15-20 minutes later he heard it re-broadcast (by a different operator) on a US Navy frequency of 4416 kHz.

Larry Vogt, VA reports picking up some rather strange beacon type transmissions. On 1644 kHz he heard CW station KA83952. My FCC listing shows that callsign assigned to a Health Service in Henry Co., Iowa on 465 MHz. The other station was KA84055 in CW on 1642 kHz. My info shows the callsign assigned to a construction firm in Tennessee on 451 MHz!

Peter, in Great Britain, told of two addresses he used for QSLs as follows: For Haifa Radio he used just Haifa Radio, Haifa, Israel as the address.

For French Navy station FUG, La Regine he used: Marine National, IIIe Region Maritime, Chef du Service TVL, F-83800 Toulon-Naval, France.

Intercepts

- 235: Beacon OW, Ottawa Int. Apt, Ontario at 0328 (George Osier, NY).
- 236: Beacon XQA, Greenville, ME at 0500 (Patrick O'Connor, NH).
- 239: Beacon VO, Val d'or Apt., Quebec at 0330 (Osier, NY).
- 242: Beacon AH, Toronto Int. Apt., Ontario at 0333 (Osier, NY). Beacon LE, Lexington, KY at 0505 (O'Connor, NH).
- 248: Beacon UL, Dorval Int. Apt., Montreal, Quebec at 0344 (Osier, NY).
- 254: Beacon YSU, Summerside Apt., Prince Edward Island (military) at 0348 (Osier, NY).
- 257: Beacon GTB, Wheeler-Sack AAF, Ft. Drum, NY at 0352 (Osier, NY).
- 263: Beacon YGK, Kingston Muni. Apt., Ontario at 0043 (Osier, NY).
- 266: Beacon J, Mirabel Int. Apt., Montreal, Que. at 0048 (Osier, NY).
- 270: Beacon URX, Mars (military), Quebec at 0052 (Osier, NY).
- 272: Beacon MAN, location unknown, at 2043 (Venedetti, NJ).
- 278: Beacon MS, Richards Field, Massena NY at 0100 (Osier, NY).

- 283: Beacon URA, Roxton (Bramont), Quebec at 0100 (Osier, NY).
- 286: USCG beacons logged in sequence- MI at Manana Is. Fog Warning Sta., Maine at 1735; HI at Highland Pt. Light, Mass. at 1736; NS at Nantucket Shoals Lightship, Mass. at 1737; MP at Mantaug Pt., New York at 1738; T at Ambrose Light Station, New York at 1739 (Pat O'Connor, NH).
- 290: Beacon AOP, Rock Springs Apt., WY at 0525, occasional QRM from beacon YYF at Tenticton, BC (Homuth, AZ).
- 300: Beacon 3B, Brookville, Ont. at 0135 (Osier, NY).
- 308: Beacon YYY, Cape D'Or Light, NS at 0144; Beacon YJH, Dorval Int. Apt., Hudson Hts., Montreal, Quebec at 0151 (Osier, NY).
- 317: Beacon IBM, Kimball, NE (Homuth, AZ).
- 322: Beacon B, So. Buffalo, So. Side Light, Buffalo NY at 0201 (Osier, NY).
- 323: USCG 50/10 beacon UT, Calcasieu Pass LA loud at 0435 (Homuth, AZ).
- 325: Beacon CM, Cape May NJ at 0300 (Schmoyer, NJ).
- 326: Beacon MCY, Mercury NV test range at loud level when PQO in Phoenix shuts down for maintenance; 0230 fade in, 0400 loud. 1330 fade out (Homuth, AZ). Beacon IA, Houston Int. Apt. at 0300 (Homuth, AZ).
- 332: IGD, L.A. Int. Apt., Inglewood CA at 1245 (Magrann, CA).
- 336: Beacon P4, Algar, Canada at 1816 (Venedetti, NJ). My references show this one assigned to 322 kHz-- Ed.
- 340: Beacon YY, Rimouski (military), Quebec at 0221 (Osier, NY).
- 344: Beacon O, Ottawa Int. Apt., Ontario at 0223 (Osier, NY).
- 352: Beacon UUP, Ottawa Int. Apt., Upland, Ontario at 0228 (Osier, NY).
- 356: Beacon SA, Sacramento CA, 50 watts output but 10 watts ERP into their 5-sided inverted coat hanger antenna really gets out! Uses a 16 element buried counterpoise. Antenna is 25' high; 1 amp out of antenna tuner; 15 mile range groundwave at 1/2-power contour. This station heard mornings around sunrise during low geomagnetic activity (Homuth, AZ). QSL address for SA (356 kHz), SM (230 kHz) & HU (400 kHz) is Dept. of Transportation, Federal Aviation Agency, Manager, Sacramento Sector Field Office, Executive Airport, 6151 Freeport Blvd., Sacramento CA 95822-3594 (Homuth, AZ).
- 358: Beacon OG, Ogdensburg Int. Apt., NY at 0232 (Osier, NY).
- 359: Beacon EMT, El Monte CA at 1307, heavy QRM (Magrann, CA).
- 362: Beacon SB, Sudbury Muni. Apt., Ontario at 0235 (Osier, NY).
- 374: Beacon SA, Sable Is. West End Light, NS at 0243 (Osier, NY).
- 379: Beacon GKQ, Linden NJ at 1629 (O'Connor, NH).
- 389: Beacon TW, Twin Falls ID at 0500, weak & w/some QRM from DDP, Dorado PR. TW has a 30' mast w/6-spoke capacity top-hat, 25 watts out. QSL address: Federal Aviation Administration, AFS Field Office, Twin Falls-Sun Valley Airport, RR 2, Box 5320, Twin Falls ID 83301 (Homuth, AZ).

- 400: Beacon FO, Suffolk County Apt., Westhampton Beach NY at 2336 (Venedetti, NJ). This is an ex-military field built for WWII use and it still looks like it did in 1943-- except a bit decayed around the edges-- Ed. Beacon AB, Allentown, NJ at 2019 (Venedetti, NJ).
- 417: Beacon HQT, Hartnett NC at 0038 (O'Connor, NH).
- 420: WWVB harmonic loud at 1200 (Homuth, AZ). Harmonics reception reports can be addressed to: National Bureau of Standards, Time & Frequency Services Section, Boulder CO 80302, Attn: Chief Engineer WWV/WWVB; send prepared form card & SASE; harmonics also noted 240, 300, 360, 480 kHz; try 120, 180 & 540 kHz (Homuth, AZ).
- 4710: Beacon DS, location unknown, at 2310 (Osier, NY). This ID listed for Diamond Shoals LS in NC on 321 kHz; also Des Moines IA on 344 kHz-- Ed.
- 2514: WBL, Buffalo NY in USB w/wx BC by OM at 0150 (Osier, NY).
- 2585: L7J, un-ID in CW at 0535 w/5L groups. Hand keyed w/preamble format: P-NR 89 060530Z GR 20 BT (Borowski, PA). That preamble roughly means Message #89, 6th of the month of 0530 UTC, 20 number groups to follow, break... -- Ed.
- 2670: USCG Commsta, Portsmouth VA in USB w/phone patch at 0404 to USCGC TAMPA. (Edmunds, LA). Not a frequency normally used for phone patches-- Ed.
- 2697: GLD3, Lands End, England at 2050; CW, RTTY & tones (Peter, Great Britain).
- 3166: MPH1 in USB contact w/CAMP 1. YL op asked calling station for ID & he replied "This is Coast Guard station MPH1." He added "copy rough, too much noise in shack tonight from the computers & generator." At that time, another OM entered the shack & could be heard silencing the op from further reference to the equipment." Noted 0250-0310 (Fernandez, MA).
- 4000: USS RANGER & USS CALLIHAN w/phone patches in SSB at 1325 (Kratzer, WA).
- 4043: OM sending 5F groups in voice (language not stated) at 0600. Off with "End of message" sent twice (Blair, KS).
- 4066: USS CONSTELLATION in USB to CSS1 in San Diego at 0442 (Edmunds, LA).
- 4087.8: WJG, Memphis, TN in USB working barges on inland waterway at 0220 (Ross, Ontario).
- 4221.2: GYU, Gibraltar Navsta in CW w/call tape at 0513; strong! (Carter, NC).
- 4292: XFP, Chetumal, Mexico, in CW w/SS t/c at 19 wpm, hard 0333 (Brumm, IL).
- 4308: CTU4, Monsanto Navrad, Portugal in CW w/Portuguese t/c & 5L groups 0234-0359 (Brumm, IL).
- 4373: USN (presumed) activity. Comms about "Alligator Exercise," landing of aircraft on deck, "Players in the black box," "NUCO" (new codes?), many tactical ID's (Edmunds, LA; Schulz, RI).
- 4416: KILO 1 HOTEL, GOLF 6 YANKEE, WHISKY 1 SIERRA, & other similar military sounding stations (Schulz, RI). Time not given-- Ed.
- 4422: OSCAR 4 GOLF to HENRY 1 HENRY & DELTA 9 YANKEE in SSB at 1400 w/instructions about clearance to launch & request for location (Kratzer, WA).
- 4585: BEAVER FOX 68 in USB at 0300.

This is a CAP net with BEAVER FOX (Oregon Wing) & NORTHWIND (Nevada Wing) stations (Hall, WA).

4612: RELEGATE in USB at 1620 contacting AWARENESS, GEOMETRIC, ROADSIDE & others (Peter, Great Britain).

8291.1: WPE, Tug Communications Inc., Jacksonville FL to WYP6150, tug PIONEER in USB at 0808; WGW, the Caribe Tugboat (company) in San Juan PR to tug APACHE in USB at 0819 (Margolis, IL).

8294.2: WRD691, Scott, LA to US freighter ALEUTIAN COMMAND in USB at 1643; WXF618, Lancaster Towing Co., Greenville MS to WYT8463, tugboat LYNDA ANNA in USB at 1731 (Margolis, IL).

8464: SBA, Nicosia, Cyprus in CW at 2114 w/CQ marker (Lingenfield, PA).

8478: VHP, Commsta, Canberra, Australia in CW at 0956 w/VVV (Lingenfield, PA).

8482: SPH41, Gdynia, Poland w/Polish tfc in CW at 2232 (Osier, NY).

8502: NIK, USCG Commsta, Boston at 0117 w/CW calltape followed by International Ice Patrol bulletin. Heavy QRM from PPL, Belem, Brazil (Brumm, IL).

8516: SAT, Tripoli, Libya in CW at 1750 w/calltape (Peter, Great Britain).

8542.7: PKI, Jakarta, Indonesia in CW at 1746 w/CQ marker (Gary Bledsoe, AK).

8578.3: SUH, Alexandria, Egypt in CW at 1751 w/VVV marker (Bledsoe, AK).

8610: WMH, Baltimore MD in CW at 2002 working PPF8 & DVMV (Jackson, OK).

8690: 3DP3, Suva, Fiji in CW at 0936 w/VVV (Lingenfield, PA).

8698: FJP8, Noumea, New Caledonia, in CW at 0931 w/CQ marker (Lingenfield, PA).

8722.1: QUEEN ELIZABETH II in USB w/patches via WOM, Miami at 0350 (Edmunds, LA).

8738: Cyprus in USB w/calltape in EE & repeat in un-ID language at 0227-- "This is Cyprus Radio, Radiotelephone Maritime Service" (Maxwell, KS).

8862: Dakar (Senegal) Long Distance Operational Control (LDOC) working RSA & FRG aircraft ("Springbok" & "Lufthansa"). Contact made on 8862 kHz then shifted to 3452 kHz, USB. On 8862 in EE; 3452 in FF (O'Neil, NH).

9965: Jammers UD, WL & NW, presumed USSR, at 1637 covering R. Beijing (Hall, WA).

10000: MSG, Rugby, England, w/time signals under WWV, ID twice in CW just before 2020 (Alpert, NY).

10141: 5BC46, Cyprus w/test xmsn in USB at 0028. The QSL address given in a recent POP*COMM worked fine! (Peter, Great Britain).

10500: Flute-like mx tones at 2035, then YL/GG w/5F groups in USB. Sounded "live." Off at 2047 (Alpert, NY).

11176: AFE, USAF Croughton, England, at 1936 to MAC-58 (O'Connor, NH).

11182: SENTRY 66 (a USAF E3 AWACS aircraft) at 2257 to Scott AFB w/patch. This was my best QSL-of-the-month. Aircraft flying out of Tinker AFB in Oklahoma City. QSL address (may be good for any SENTRY station): SENTRY #/#, 552nd Airborne Warning & Control Wing, Tinker AFB, OK 73145 (O'Connor, NH). Nice going, Pat!-- Ed.

11475: HMS79, KCNA, Pyongyang, N. Korea at 2325 w/VVV & CQ marker then random dots followed by FAX (O'Connor, NH).

11495: Weird turkey-style "gobbling" xmsn, faint but building up then suddenly off the air. Heard at 1548 (Hall, WA). What with Thanksgiving next month, maybe they're sending a "Mayday" call!-- Ed.

11549: OXZ38, Lyngby, Denmark, in CW w/calltape (Knight, NH). Time not stated-- Ed.

12435: WHG611, Pacific Marine Supply in USB at 2300 to vessel REDWING; WYK2196, vessel REDWING to vessel JAKANA. All out of San Diego. Simplex ops (Hall, WA).

12678: OCK2, Consorcio Naviera Peruano, Lima, Peru in CW at 1427 w/calltape. At 1442 FFL6 St. Lys (France) came on and covered OCK2 (Brumm, IL).

12687: OFJ32, Helsinki, Finland, w/CW calltape at 1750. Heavy RTTY QRM from LFC on 12682.5 kHz (Brumm, IL).

12709: 8PO, Bridgetown, Barbados in CW at 2115 w/calltape (Jackson, OK).

13023.7: HEB, Berne, Switzerland in CW at 1338 followed by EE message & sked changes (Brumm, IL).

4675: YL/SS w/#'s transmission in AM mode at 0330 (Mr. J., NY).

4722: MVU, W. Drayton, England in USB w/aviation wx at 0309 (Osier, NY).

4725.1: YL/EE w/callsign UNITED STATES sending mixed letters/#'s. After about 5 minutes OM/EE w/ID of LANDSCAPE sent similar traffic. Intercepted 0713-18 (Fernandez, MA).

5413: YL/EE with 3/2F at 1933 ("Savoy 24"

somewhere in the Middle East).

5696: SWORDFISH 16 calling SHARK 16 at 0033 in USB. USCG looking for smugglers (O'Connor, NH).

5715: San Diego to Coast Guard 97 in SSB at 1149 with tfc about female in need of emergency medical treatment & CPR aboard the vessel SPIRIT OF ADVENTURE, location garbled (Kratzer, WA).

5812: YL/SS w/4F groups from 0408-0420. Voice sounded mechanical (Gustafson, IN).

5870/5920: CW military traffic dualing 5L groups at 0522. Preamble format: R-030200Z APR 86 - GR 100 BT UNCLAS. Each element of preamble repeated twice (Borowski, PA).

6100: YVTO, Caracas, Venezuela, time signals in AM at 0605 (Taylor, CA).

6215.5: FJP, Noumea, New Caledonia in USB at 0715 calling 3DQU, a Fijian registered ship called the PACIFIC ROVER. After contact, shifted to Channel 601 (6506 kHz) & passed tfc. Ship in vicinity of Vanuatu, near Tona Island (Hall, WA).

6218.6: WPE, Tug Communications Inc., Jacksonville FL to tug GAUNTLET; WRI in Jackson MS to WD9936, tug GILDA SHIRDEN. All USB from 1353-1422 (Bob Margolis, IL).

6221.6: WYT8215 towboat JOHN C. BYRD to WHM, St Louis at 2100; WB4121, 101-year old towboat VANGUARD to WBJ, the Rose Barge Line in Clayton, MO at 2118; WIU of International Barge Inc. of Madeira OH to WA4587, towboat ELISHA WOODS at 2120, all USB (Margolis, IL).

6395: TBA, Izmir, Turkey in CW w/rall tape at 1820. This is a Turkish Navsta (Peter, Great Britain).

6519.4: WAH, St. Thomas, VI in USB w/wx for Caribbean + tfc list, 0700-0720 (Fernandez, MA).

6635: Illegal outbanders in USB at 0245. Wildly obscene bootleg fishing or smuggling network w/much talk about "runs", "straight dope" & violent retribution towards another member of the net. Another similar net on 6640 kHz. Positions mentioned sounded like off the coast of southern California (Hall, WA).

6676: Aero wx for Singapore, Sydney, Melbourne in USB about 1300, USB (Taylor, CA).

6697: YL/GG w/5F groups in AM (Burns, PA). Time not stated-- Ed.

6708: YL/GG with 3/2F groups, USB (Burns, PA). Time not stated-- Ed.

6720: USNAS Coronado, North Island, Calif. to DRAGONFIRE 701 in USB at 0030 w/QRM from scrambler on adjacent higher freq & from RTTY on 6715 (Hall, WA). The actual freq of the NAS was 6723 kHz-- Ed.

6730: SAM-86970 in LSB w/phone patch to BRANDYWINE via Andrews AFB. This aircraft later changed its ID to Air Force 2 (Burns, PA). No time given-- Ed.

6738: ARCHITECT, RAF Strike Command, in USB at 2330 to unknown aircraft (Peter, Great Britain).

6756: SAM-1683 heard 1630-1800 to Andrews AFB w/patches to STATE OPS. The US Secretary of State was aboard the plane (Didier, OH).

6761: SAC Giant Talk heard at 0456 ("Savoy 24," Middle East).

6876: YL/SS w/5F gps in AM mode, 0710-15. Sounded like a mechanical tape-spliced BC w/clicks between digits & very artificial electronic voice (Fernandez, MA).

6886: YL/SS w/5F grps. Weak. Numbers spoken very rapidly, 1 grp every 2 sec. Xmsn became 2-way w/both stations verifying or relaying messages (Harmon, FL).

7532: YL/GG w/5F grps, USB, off at 2347 (Alpert, NY).

8285: Possible outbanders? Several OM's in SS via USB mode, whistling, then singing the Mexican Hat Dance song. Some had noisy background like boat motors. Heard at 0630 (Fernandez, MA). Our guess is fisherman or smugglers-- Ed.

13294: 2-way aero tfc in USB. This freq is Honolulu's primary channel; 10048 kHz is the secondary (Taylor, CA).

14606: CUW20, USAF Lajes, Azores to MARS station AGA4KE, Kelly AFB, TX (O'Connor, NH).

14955: OHU20, Helsinki, Finland in CW possibly calling CME393, Havana, Cuba (Jackson, OK). According to Kneitel's Guide to Embassy & Espionage Communications, OHU20 is the MFA on 14955.5 kHz (amongst other frequencies); CME393 is the Finnish Embassy in Havana on 17545 kHz-- Ed.

16956: CBV, DGMM Valparaiso, Chile in CW w/calltape (Jackson, OK).

16978.4: WKM, New Orleans, LA in CW w/call tape at 2208 (Jackson, OK).

17007.7: KLB, Seattle WA in CW at 2225 w/calltape then into tfc list at 2230 (Jackson, OK).

17215.2: GKP6, Patishead, England in CW at 1955 w/calltape (Ross, Ontario).

19063: CLP55, Cuban Embassy, Georgetown, Guyana from CLP1, Havana in CW w/SS tfc at 2053 (Borowski, PA).

28178: WLO, Mobile AL in CW w/calltape at various times/dates (Nagy, MD). Probably a harmonic or image as WLO isn't licensed here-- Ed.

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CIRCLE 57 ON READER SERVICE CARD

PIRATES DEN

FOCUS ON FREE RADIO BROADCASTING

One of the facts of life in radio-related writing is that anyone who writes about pirate radio will, sooner or later, be accused of supporting and encouraging pirate broadcasting. It is something you can just count on; it's as certain as jammers following Radio Liberty or a fade just at ID time. In my case, the accusation came sooner rather than later. So, let me try and set our course here, even though it may be a case of soap-box preaching in the middle of an otherwise empty forest. Pirate radio operations are illegal but that fact does not make such transmissions any less interesting. In fact, it probably adds to the fascination for some. I am assuming that the readers of this column have an interest in pirate radio and wish to log as many stations as it is possible for them to do. This column attempts to help those readers do that. If I occasionally bemoan the real or apparent lack of targets for the pirate chaser, that should not be read as encouragement for radio hobbyists not now operating a pirate station to start doing so nor as encouragement for those who have a pirate broadcasting set up to use it more frequently. I neither support nor condemn free radio, alternative radio, pirate radio, or whatever you choose to call it, but I do like to monitor those stations.

If you, as an individual, do support pirate radio then there are things you can do quite on your own to keep it going. If you are against pirate radio then there are things you can do as an individual to weaken the movement. I am quite prepared to report on both. This column will continue to try to provide news about pirate activity and, yes, occasional comments which the reader may interpret as he or she wishes.

ARE THEY OR AREN'T THEY? "Rock 'it Radio **WQNR**" says they are a legitimate, but unlicensed, station. The FCC says they're not, at least partly not.

The Selden, New York station began about two years ago operating a low power carrier-current station on 640 kHz. The station says it operates with an all-volunteer staff on a nonprofit basis, using mostly area high school students who are aiming at a broadcasting career. WQNR maintains a heavy schedule of public service announcements, community events information and has promoted its own concerts.

Earlier this year, after seeking advice from what station officials thought was a qualified engineer, they began operating on a frequency just below the bottom of the standard FM broadcasting band (87.9 MHz), a move which brought a large and immediate audience increase. On April 25 and 26 the FCC observed WQNR's FM signal and sub-



sequently issued a "Notice of Apparent Liability to Monetary Forfeiture" to owner and president Kristian V. Holtegaard of Selden. The citation stated that the operation "was conducted in the absence of a license issued by the Commission permitting such operation and produced a signal strength in excess of the limits specified in Part 15 of the Rules and Regulations for low power operation."

Now loyal listeners are up in arms because only a few can hear the 640 kHz outlet. WQNR has accepted full responsibility for the mistake and is appealing to both its listeners and to the FCC for help and understanding.

Another FM'er which recently had a run-in with the FCC is **KSOS**, an unlicensed station on 107.9 which operated from Seaside, California. KSOS was slapped with a \$2,000 fine. The station aired soul, jazz, and rhythm n' blues from studios at 1966 Fremont Boulevard and was programmed for a black audience. Thanks to Keith R. Beard of Monterey, CA for this information.

A rather new and apparently quite widely heard pirate is **CFTN** also ID'ing as TNFM. The station was heard by David Lowrey, KB6APL in Concoro, CA on 7.415 from 0200 to 0800 on 25 and 26 May giving a phone number of (604) 537-4445 and a mailing address of Box 1345, Ganges, British Columbia, V0S 1E0. Dave says they broadcast locally on 100.3 and feature

mostly rock music with an occasional comedy record. Garth Carman of Edmonton, Alberta logged them on 17 May on 7440 starting at 0445 (they later moved to 7415) playing older top 40 music. When Garth called the station he learned they were also being relayed by another, unspecified station.

Terry O'Laughlin in Madison, Wisconsin found the station on 8 May on 7420 at 0440. Terry heard CSTN as the call but also identifications for TNFM. Terry called the station and disc jockey Allan said the station was "in the boonies" on Galiano Island in the channel between Victoria and Vancouver. Marshall Moss in Houston, Texas found them on 10 May on 7440, although with a poor signal. It may be that the short-wave broadcasts are not controlled by the station being broadcast (or relayed).

KFBS was the tentative call heard on May 5 at 0355-0535 on 7420 by Paul Johnson of Phoenix, Arizona. Paul notes that the disc jockey sounded like the one on KQRO. The station was playing classic rock and gave out a phone number to call collect for music requests. An address was also announced but Paul couldn't copy it as the signal was subject to long and deep fades.

OTHER PIRATE ACTIVITY RECENTLY includes: KFAT with country and western music on 7435; KROK with oldies on both 7435 and 7445; Radio Clandestine with songs, comedy and satire using 7360;

Radio Deadman on 7436 with fake commercials; Secret Mountain Laboratory on 7425 with humorous fake commercials and features as well as alternative music; Tangerine Radio on 7414; The Voice of Laryngitis on 7425 running novelty songs and satire; WYMN using 7435 with women announcers and female vocalists; and WPBR on 7438 lower sideband with fake ads and the Messenger and the Soldier.

You Own More Than Your TV Set is the title of a booklet sent in by Mark Pierce of Sun Valley, CA. The book blurbs that, "This book challenges the Federal Communications Commission to justify its posture as guardian of the public interest in broadcasting." The content, written by Frank Orme, is described as a "condensed and updated version of ten white papers on broadcasting and the consumer which were published and distributed as a public service between 1979 and 1982" by the National Association for Better Broadcasting, Religious Media Ministry, National Organization for Women, and other groups. The book is \$4 from the National Association for Better Broadcasting, 7918 Naylor Avenue, Los Angeles, CA 90045.

REMEMBER to send in your pirate loggings, news, press clippings about pirate stations, copies of pirate QSLs and such. If you operate a pirate station please send in some information about your station and photos if possible.

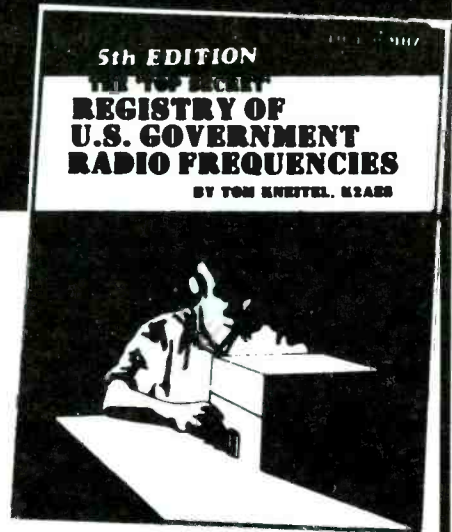
Good hunting!

PC

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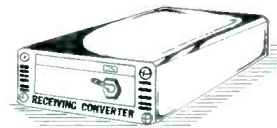
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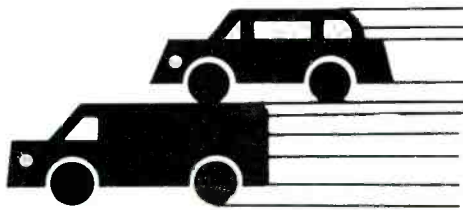
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October 1986 / POPULAR COMMUNICATIONS / 69

RADAR REFLECTIONS

RADAR DETECTORS AND THEIR USE



California City Cops To Upgrade Radar Training Program

Following a Sacramento Municipal Court judge's charge that city police were inadequately trained in the use of radar, Police Chief John P. Kearns announced recently that training would be reviewed "to make it more acceptable to the court."

In a prepared statement, Kearns said his department would review the program, even though he felt officers already were "well trained in comparison to other cities in California."

"Ours is as good or better than any agency in the state," Kearns said, adding the department would continue to use its thirty radar units for traffic enforcement during the program review.

"City police officers meet all guidelines set by the National Highway Traffic Safety Administration," Kearns added.

The department's radar training program was criticized in the Municipal courtroom of Judge Michael S. Ullman.

In a twenty-four page ruling, Ullman warned that admission of future radar evidence from Sacramento police might be "the exception instead of the rule," unless the particular officer in the case could show he had received sufficient training or experience.

The ruling stemmed from a motion to exclude evidence of radar readings in sixteen upcoming speeding trials.

Three defendants represented the entire group in pre-trial hearings, explained James Dirks, an attorney with the Drivers' Defense Clinic of Sacramento.

Officials from the clinic argued that speed-measuring radar units were unreliable for many reasons, including inaccurate readings derived by inadequately trained officers.

All of the sixteen defendants were cited by either Sacramento Police Officer Lloyd Davis or California Highway Patrol Officer Dave Lynch.

During the pre-trial hearing, one city officer testified his training consisted of three hours of instruction (including a test), verification, visual estimates and the reading of an obsolete pamphlet. Meanwhile, CHP officers received about twice that much of instruction.

In conflict with the officer's testimony, Kearns said that the department had a 16-hour training program, including four to eight hours in class, a written test, in-field instruction and a lesson in testing the radar.

Ullman's ruling on the radar program may be among the first of its kind in California, both Ullman and Dirks acknowledged.

Ted Costa, manager of the drivers' clinic, said although he was pleased to hear the judge's criticism, he still planned to appeal the ruling to allow the radar evidence in the accused speeders' trials.

He said he hoped the case would encourage other drivers to fight back when they felt they had been issued unfair speeding tickets.

"The traffic court has atrophied into a revenue reimbursement system. People just pay their tickets without question, and it's a \$40 million business in Sacramento County every year," Costa said. "Only 15 percent of those who get tickets, fight them. And it's time to fight back."

Charlotte Officer Suspended for Illegal Use Of Radar Gun

A Charlotte, NC, police officer has been suspended for allegedly issuing invalid speeding tickets using a radar gun for which he was not certified.

Charlotte Police Chief Sam Killman said officer Doug Martin was suspended without pay pending a hearing before the civil service board. Killman said he has recommended that Martin's employment be terminated.

Canada's Solicitor General Supports Use Of Radar Detectors

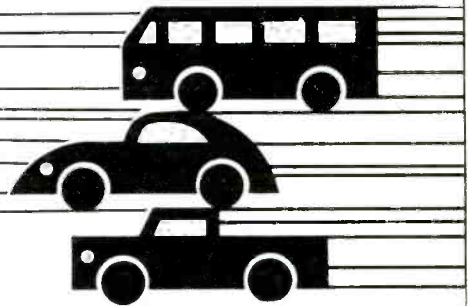
Allowing the use of radar detectors in Alberta should reduce speeding and have a beneficial effect on highway safety, says Solicitor General Ian Reid.

Reid confirmed recently that he has instructed police in Alberta to stop enforcing the radar detector law.

It will be repealed by the provincial Transportation Department when the legislature resumes. The law disallows the use of radar detectors.

The provincial Motor Vehicle Administration Act is administered by Reid, but the Highway Traffic Act falls under Transportation Minister Marvin Moore.

In a recent interview, Reid said he views the move to allow motorists to use detectors



as positive because it will improve driver awareness.

"We're not interested in writing more tickets but to get people to drive more safely," said Reid.

Reid said he feels the law is especially unfair to out-of-province motorists who live in areas where the detectors are legal, but are not aware they are illegal in Alberta.

Motorists operating the devices are aware of the fact that police cars are around and are therefore more likely to drive safely and abide by the speed limit Reid contends.

Reid also said that most police officials support legalizing the devices. He said few charges have been laid by police under the act's radar detector section.

New Book Provides Defense Against Police Radar

Sooner or later nearly everyone gets a speeding ticket. All too often, it's not deserved. Most speeding tickets today are based on readings from police radar devices—even though there's overwhelming evidence that they are inaccurate and inconsistent.

Beating the Radar Rap, just published by Bonus Books, documents the problems with radar and helps motorists prepare to fight their speeding tickets in court *without* a lawyer. It tells what to do and what not to do, while describing a clear, easy-to-follow format for preparing and presenting a case. Motorists should know about: the arsenal of radar devices in use today; sources of radar interference and inaccuracies; beam width, panning error, shadowing error, and batching error; sources of operator error; radar case law; the courts, judges, prosecutors, and witnesses; evidence, testimony, and cross-examination; the chances of winning.

Beating the Radar Rap was written by two experts on police radar—Dale T. Smith, inventor of the original Fuzzbuster® radar detector, and John Tomerlin, highway affairs analyst for *Road and Track* magazine. The authors have combined their technical and analytical skills to write the most damning critique of the use of police radar—and the motorist's best defense.

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Seventeen Counties In California Currently Using Radar

Drivers in seventeen California counties, watch out! The Highway Patrol is watching you on radar.

Although the legislature has always refused to let the CHP use radar statewide with the state funds, the Highway Patrol, since 1981, has been using radar purchased by individual counties on troublesome county roads and one accident-prone highway.

But the legislature's most persistent radar critic says he's worried that radar might be used to raise revenues through speeding tickets and says he'd rather have more officers visible on the roads to deter speeders.

Traffic officers have used radar for decades to clock the speed of motorists and back up their own visual estimates. Traffic officers, that is, except for the California Highway Patrol. Most California city and county traffic officers use radar, but California was always the only state whose state traffic officers could not. During the 1970s, the CHP periodically asked the legislature for permission to use radar to catch speeders on state highways. The patrol did not need permission technically, since state law does not prohibit it, but CHP officials realized they would run into trouble with law-

makers if they went ahead without the legislature's blessing. But lawmakers always turned the CHP down. The chief group opposing radar was the Teamsters Union, which represents truckers.

The most outspoken legislative opponent has always been Assemblyman Lou Papan.

"No one is going to convince me the Highway Patrol is going to do a better job (with radar) when the state's leading the nation in the issuance of tickets," Papan said at a 1980 hearing on an unsuccessful bill that would have allowed the CHP to seek federal funds to buy radar equipment.

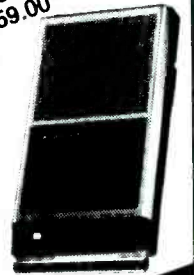
The program has been expanded to twenty-four sites in seventeen counties, according to CHP spokesman Steve Kohler.

The areas are Lake Valley and Placerville in El Dorado County; Bridgeport in Mono County; Truckee in Nevada and Placer counties; Grass Valley in Nevada County; North Sacramento and South Sacramento in Sacramento County; Hayward in Alameda County; Martinez in Contra Costa County; Corte Madera in Marin County; Fresno in Fresno County; Hanford in Kings County; Santa Ana and San Juan Capistrano in Orange County; El Cajon and Oceanside in San Diego County; Santa Barbara and Santa Maria in Santa Barbara County; Santa Cruz in Santa Cruz County; Ventura in Ventura County and Malibu and Woodland Hills in Los Angeles County. The latest one, added this winter, is the San Jose area of Santa Clara County. **PC**

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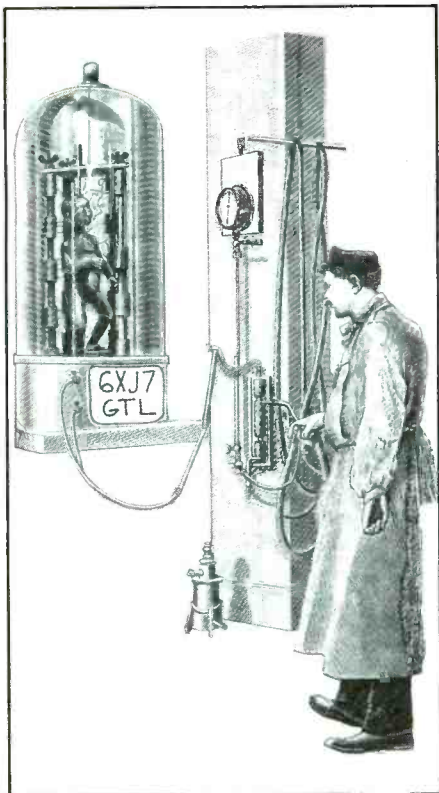
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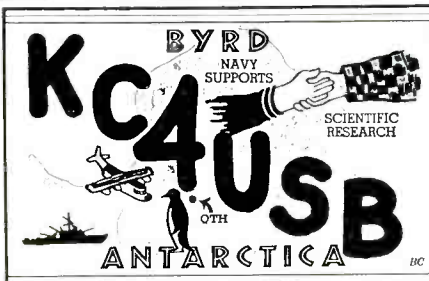


"... tubes ... containing filaments, grids, plates and who knows what else."

9-005, and the ubiquitous 11-4-2020-06200(MP). The numbers had gotten so far out of hand that they became larger than the devices they described. Manufacturers took to printing the designations on cards to which the tiny semiconductors were attached as if they were an afterthought.

It was a real shame to have to do away with transistors, diodes, thermistors, FETs, Varicaps, and the like simply because there weren't any more numbers left to call them. It was back to the drawing boards for a quick-fix bail-out and yet another chance to start the numbering all over again. This time it was decided to discover IC's. Unfortunately, the dopes began the numbering system badly and even early IC's were staggering under the weight of monickers like SP0256-AL2, the LM383/TDA2002, and worse. The whole system now seems doomed to an untimely and premature demise. I knew nothing good would come of the damned things and have always said that chips are things best left on gambling tables and in pastures.

One possible way off the hook would be to give serious thought to dubbing newly invented chips with reissued designations that had formerly been used by much beloved and fondly remembered vacuum tubes out of the past. Why not? Ship names are recycled, so are movie titles, callsigns, even people's names. The next new chip could be the 6L6 (or 6L6, Jr.), or the 6SK7, or the 807. A worthy tribute, don't you think?

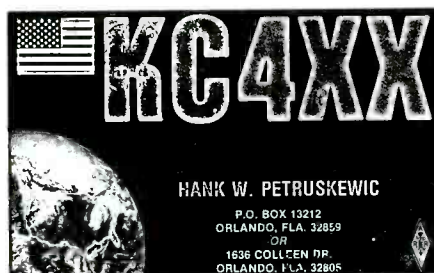


Time was when a KC4-prefix meant that you'd zeroed in on rare DX in Antarctica or on Navassa Island. This KC4USB card is from 1964; back when you could get an easy handle on DX by hearing the prefix.

Maybe we could petition the courts for legal name changes. It turns out to be impossible to counsel a reasonable approach to the maniac who has been issuing all of these numbers for the past 70 years, his identity (wisely) is a closely guarded secret. We ought to retire him, like the number Joe DiMaggio used to wear on his New York Yankees jersey!

Let's also keep in mind that we've long passed the acceptable limits for reasonable callsigns and international prefixes. Once upon a time, stations fit neatly into a sensible master plan with prefixes between AA and ZZ. If you heard a station starting with a W or a VE, you knew generally where it was located. You automatically knew that any station running a weird callsign past you (like ones starting with an B, M, LY, ES, ZA, or YL) was definitely world logging. Unless you happened to bump into something especially unusual, like a YI or YA prefix, you never had to look it up anywhere. There was such a glut of callsigns that nobody even cared that the letter Q was singled out and thrown away for prefix purposes.

Right after WWII, the free ride ended. Callsigns and prefixes dried up. The first omen that we were in trouble was when the FCC began recalling the 4-letter format callsigns that had been assigned to police and fire stations. These were replaced by tongue-twisters made up from 3 letters and



Navassa Island? Antarctica? No way! KC4XX is in Florida! When I heard Hank on 50 MHz, at first I thought that the ghosts of Hiram Percy Maxim and Marconi were at last rewarding me for my life of clean living and good deeds. Still, I was running only 10 watts into a whip so it wasn't a bad catch. But, it wasn't Antarctica or Navassa.

3 digits, and presently 4 letters plus digits.

That frightening trend began at about the same time many people decided to start creating new nations, an activity that continues even as we speak. Gone are Tannu Tuva, Ceylon, Rhodesia, Gold Coast and other favorites. Here comes Burkina Faso, Sri Lanka, Zaire, Lesotho and many others that demanded newly-created prefixes. They didn't want used hand-me-downs. Anyway, none of the established nations were willing to gracefully chip away at their traditional prefix allocations to help out the new nations. Money? Maybe. Prefixes? Forget it!

The International Telecommunications Union (ITU) shifted into panic mode. New prefixes needed to be generated, but nobody could figure out from where. Someone suggested that new callsign prefixes be created using the classical alphabet of ancient Greece (as in Epsilon, Theta, Omicron, etc.), but college fraternities and sororities complained. The ITU pondered and one by one rejected creating additional prefixes from alphabets in Gaelic, Cyrillic, Hebrew, Sanskrit, Arabic, Norse Runes, the Ogham tree alphabet, Old English and even lower case letters. They also discussed Chinese, Japanese, and Egyptian hieroglyphics until someone mentioned that Western Union wouldn't deliver ideograms.

A scuffle amongst the delegates broke out at the suggestion that they consider using punctuation marks such as the semicolon, comma and exclamation point as prefixes. Ultimately, the delegate from the tiny nation of Danzig stood up and suggested that they think about using prefixes like asterisk (*) and cross-hatch (#) symbols. His motion was seconded by feisty little Trieste. This idea was thought to be so immensely silly that those few delegates who had remained voted forthwith to abolish both Danzig and Trieste as nations. Years later, the crafty old ITU quietly peddled the "*" and the "#" idea to AT&T for use as meaningless buttons on all TouchTone telephone instruments. These two buttons exist to this very day while telecommunications engineers around the world work feverishly to be the first to discover a use for either or both.

Months after the conference ended, the ITU's concierge conceived the idea of creating new prefixes from digits followed by letters, and when those ran out, from single letters followed by a digit (although his idea for using fractional numbers for especially small nations was discarded). To many observers this plan seemed the high point of the devil-may-care atmosphere that pervaded the whimsical ITU during the hectic post-WWII era. It wasn't until a decade later, when ITU headquarters were inadvertently moved from Berne (Switzerland) to Geneva, when anybody realized that the thin Alpine air mixed with too much edelweiss was undoubtedly the main factor in the ITU's erratic behavior and their selection of the pucky digital prefixes.

The new prefixes were so bizarre and cat-

chy that even sedate older nations wanted to get in on the fun and were demanding allocations from these blocs. Chile was given 3G, Colombia wanted two and they were assigned 5J and 5K, Mexico grabbed everything from 6D to 6J even though it would take care of their needs well into the 25th century, Sweden hooked 8S; they were queuing up for these allocations like shoppers at a Columbus Day department store sale!

Wasn't long before the airwaves were brimming over with C6, J2, Y7, V2, A6, 9K, 8J, 8R, 6Y, 5A and other similarly strange new creations that were designed to both amuse and confuse. There were even stations in Tonga on the air running an A35 prefix! But there was a catch.

The ITU either didn't know or didn't care that their new prefixes had previously been reserved and used for other purposes. What about 3D, 3M, 4F, 4H? When I hear 3D, I think about the 1953 Vincent Price movie, *House of Wax*; and isn't 4H a club for youngsters who grow alfalfa? As long ago as the 16th Century, Shakespeare was asking, "2B or not 2B?" I'm confused!

The ITU itself is confused, not being quite certain if 3D belongs to Swaziland or Fiji. Maybe they ought to give 3D back to the *The Creature From The Black Lagoon*. I still can't figure out if 5W4GT is a Ham station in Western Samoa or a glass vacuum tube!

The entire mixup also threw the FCC into a tailspin. In the 1950's, the FCC said that CB stations wouldn't have traditional callsigns. Instead, the agency decided, the stations would be issued what they felt were essentially serial numbers such as 2A0305, 6Q5029, 4W2101, etc. It never even occurred to the FCC that at least some of those serial numbers contained callsign prefixes that had been allocated to other nations. The ITU and several nations squawked and the FCC hastily withdrew the wrongly-issued identifications, replacing them with proper K-prefixed callsigns. One can only wonder if that boo-boo went into the FCC's more recent decision to abandon altogether the use of formal CB callsigns. Or perhaps it was that CB operators had stopped using them seven years earlier, or that the FCC's computer was not really up to the task anyway. More than once, the FCC computer freaked out and had assigned duplicate callsigns to hundreds of thousands of CB stations!

We also can't help but wonder if, at some point, the FCC decided that if the ITU wanted new prefixes, they'd teach 'em a couple of lessons. The agency's flair for satire was manifested in the Amateur Radio Service. Time was when an AC4 station was in exotic Tibet, NY4 stations were American sailors stationed in Cuba, KC4 meant Navassa Island or Antarctica, KR6 denoted Okinawa; forget that now!

Stations with these prefixes, ones like AE6, NF7, AA8, KD7 and hundreds of other exotic callsigns may sound like DX but the FCC has unleashed them right here at

home! Drives the world's Hams and SWL's right up a wall. And you thought the FCC had no sense of humor!

Where and when will the number crunch end? Nobody really knows, what with new nations still emerging and the single-digit prefixes already pretty well used up. Surely, electronic component designations will pass the Dow-Jones average while callsign prefixes will zoom past double-digits. "451G7HC, here is 12X3LRH; how's the copy, OM? Running a new rig here with an RZ8Y-66BE78-9987-ZW8-26A chip. Give me a landline call at 2-555-999-046-666-9970-02556."

I don't even want to think about what happens when they run out of numbers to describe new frequencies. For now, I'm willing to let the FCC cop out by expressing the ultimate radio frequency as being "above 300 GHz." Easy for them to say!

You can tell how bad it's getting when there are so many new countries that they've even started running out of original names to call them. There are already duplicate countries named China, Yemen, Ger-

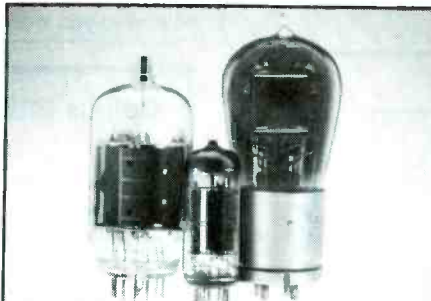
many, Korea, the Virgin Islands, Samoa, and Guinea—with no less than three places called Kiribati! This is a very serious situation.

Can't anybody out there in charge of things remember when nations didn't go around ripping off the names of other nations? What do you think Coca Cola would do if somebody else started using that name for a soda? How dare some country use 4X4 as a Ham prefix when that best describes a small truck? Doesn't anybody out there remember when 3M was a brand of recording tape and not a radio prefix in China? When 4F was what the Draft Board classified guys who were nearsighted or had flat feet?

Guess I'm lucky for having been assigned a good, old fashioned no-frills callsigns like K2AES and ZF2JO. They reflect solid and homey values, although some may find them a tad on the fuddy-duddy side. Still, I wonder where its all heading. If 7UP is still a drink (and not an Algerian radio station), I'm going to get some and cogitate on these latest portents of the coming apocalypse.

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Comments and Suggestions: Always welcome at either *Popular Communications* or SCAN (or both!)

(from page 8)

know that there are plenty of other good ideas out there, so please send them along, too. We'll run a column on some of the best ideas we receive in the future. It should make mighty interesting reading!

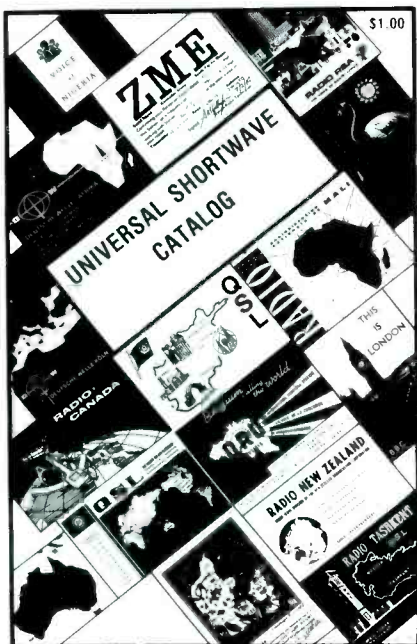
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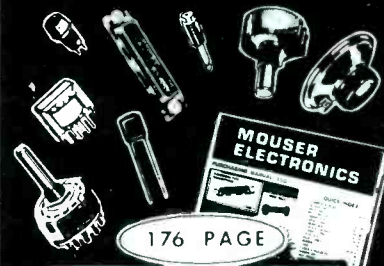
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