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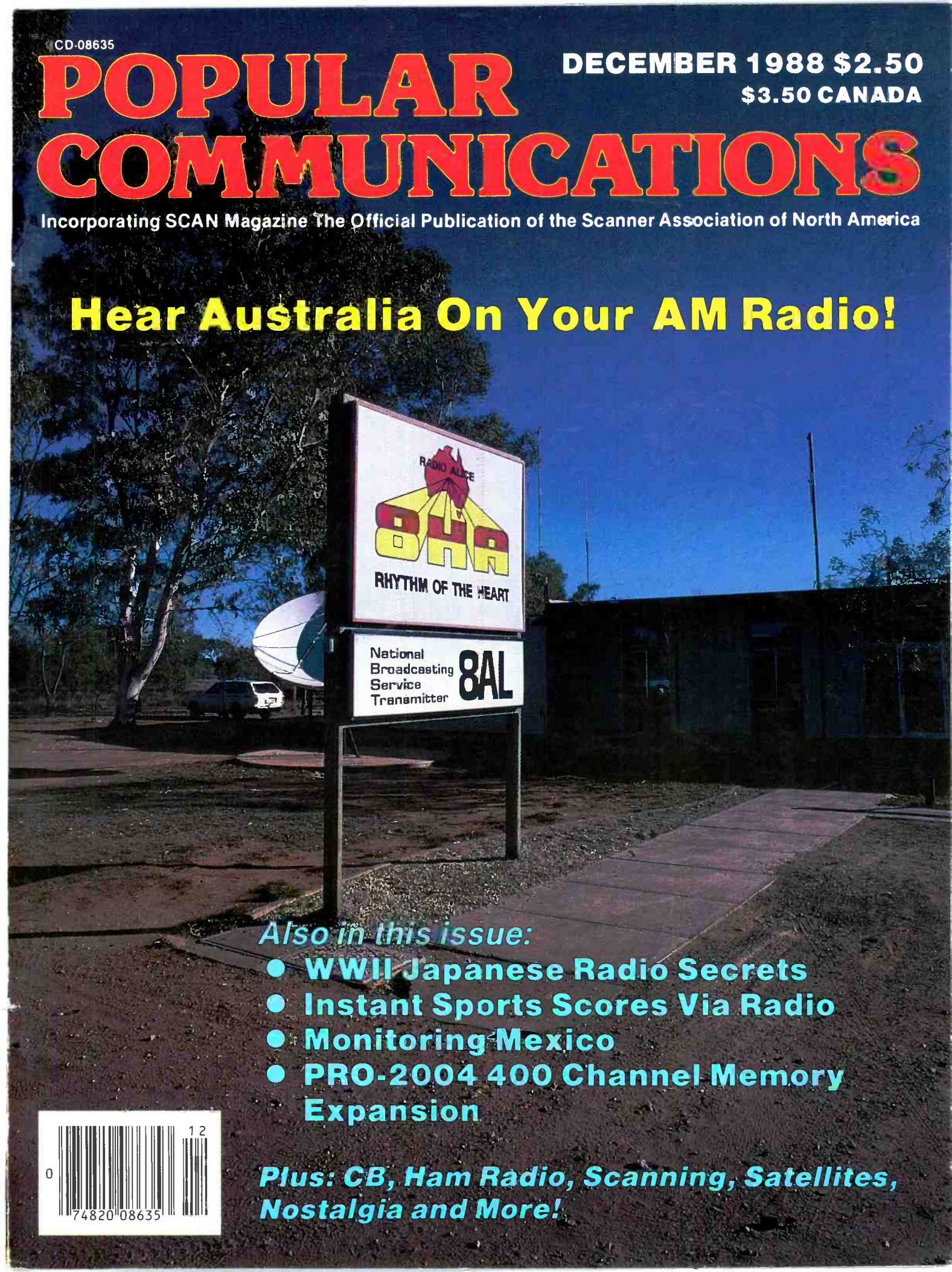

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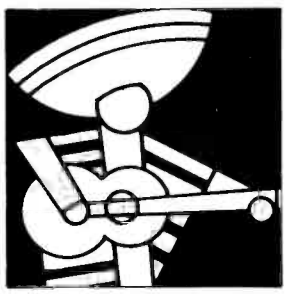

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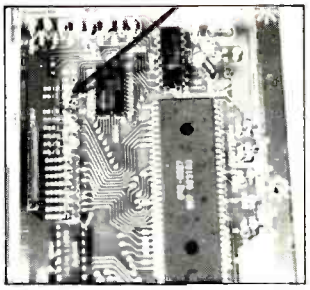

28

FEATURES

This month's cover: *The Australian Broadcasting Corporation's National Broadcasting Service stations 5AN and 5CL serve Adelaide (South Australia) from these formidable facilities in Pimpala. Photo by Larry Mulvehill*

DEPARTMENTS

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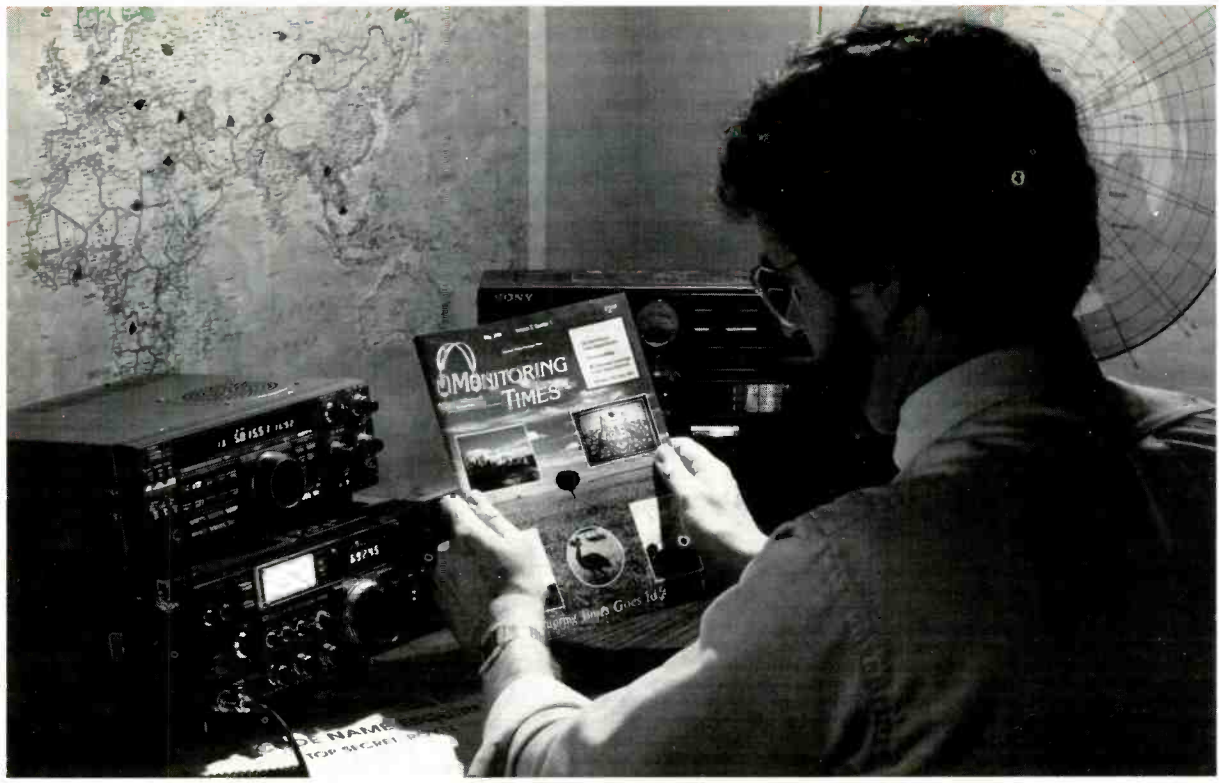

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BEAMING IN AN EDITORIAL

BY TOM KNEITEL, K2AES

The Return Of The Living Dread

They say the pen is mightier than the sword. Some guy actually stood up in public with his bare face hanging out and attempted to prove this old chestnut beyond any shadow of a doubt.

At a recent radio banquet in California, *What's-his-name*, the editor of *Police Call*, was given a plaque. He seized the opportunity of his acceptance speech to trot out for all to see his poor, bruised, and crumpled-in ego—the result of a letter I had sent him that he considered sarcastic. Oh, by the way, would you believe that he was whining about a letter I sent him in December of 1968, *twenty years earlier?* Like the Ghost of Christmas Past, my rude words had come back to haunt me so that I would rue the day I had walked all over this poor soul wearing my verbal cleats. As a matter of fact, my files do indicate that I *did* write that Christmastime 1968 letter in reply to one he had sent me signed with a fictitious name (a minor point overlooked in his impassioned speech).

The speech brought down the house. Some applauded, others laughed. Some were probably too astonished to know whether they should have encouraged the spectacle with laughter, or just felt pity at the sight of a grown man displaying his unhealed wounds that were still bleeding twenty years after receiving a harsh letter from a total stranger.

As if the speech itself weren't a sufficient release for his pent up frustrations, soon after the banquet he felt the need to write me a "*nyah, nyah*, so there" type letter just to insure that I was aware of his speech. The letter was the icing on the cake. Like his earlier one, it was signed with a phony name, although just slightly different than the one he was signing back in '68. The latest letter quoted for my benefit, salient portions of his speech, indicating those spots that were met with applause or laughter.

I was so bowled over at hearing from him in this manner after so long a time, that I instantly entered him in the playoffs for the 1988 *Elmer Fudd Commemorative Award* that I present each year. Had to skip him ahead of Gary Hart, Jim and Tammy, Sean Penn, Joerg Klingenfuss, Oral Roberts, Ed Meese, Jimmy Swaggart, Jessica Hahn, and several other worthy finalists. Truly, we radio folk *are* the people our parents had always warned us about.

Good thing the banquet afforded him a release valve for his twenty years' worth of angst. Just imagine if he had to drag around this heavy burden on his poor psyche for another twenty years. Of course, the speech that resulted from this was so stunning, that

". . . to see his poor, bruised and crumpled-in ego."

it should have earned the chap extensive bookings on the entire radio club, banquet, convention, flea market, swap meet, and CB coffee break circuit.

It's like he has been in formaldehyde for the past twenty years and is now being brought out as part of a cryogenic experiment. He just couldn't keep the secret for even one more year—I send sarcastic responses to meatballs who earn them. So what else is new, Hiram? It's one of my hobbies. I send them to keep in shape. Every month I manage to impale one or two hapless souls with sarcastic letters. I belong to *Sarcastics Anonymous*, and have freely owned up to it in these pages (for instance on page 82 of last March's issue).

Surely he must have been pickling in formaldehyde during the entire period the ECPA was being hashed over. Members of the monitoring hobby, including its clubs and media, were up in arms over the prospect of the ECPA being passed. It was *war!* Yet, my ears detected nary a peep of indignation or protest about the ECPA from *Mr. Police Call*. Maybe, after all, he was simply sulking and brooding over my 1968 letter so much, that it was all he could do to prepare *Police Call* for sale to monitoring enthusiasts. Surprising though, that his voice wasn't very loudly heard in the hobbywide battle to protect the rights of those same monitors. Instead of using his acceptance speech to display his poor, pathetic ego, it would have been far more interesting to see the wounds he had earned in the ECPA war—*if any!*

Hard to believe that a few brash words I had dashed off and promptly forgotten about twenty years ago, would still be alive and kicking. OK, so it doesn't equal the

"Every month I manage to impale one or two hapless souls . . . ."

staying power of Aztec and Mayan writings, but it's still nineteen and three quarters years longer than even I would have figured the words to retain any of the sting they might once have offered.

Nevertheless, it *is* the Holiday Season. Also, it's the twentieth anniversary of the infamous letter. That's the reason my new secretary, Zelda, is waving around the ten-page listing of my New Year's resolutions. "C'mon boss," she pleads, "look what you did to this poor man. You've smashed more egos than Pete Townsend has smashed guitars. Turn over a new leaf and add a resolution about toning down those sarcastic letters."

Sure, why not? That resolution has been on every list I've made since 1967! And you have a Happy Holiday, too!

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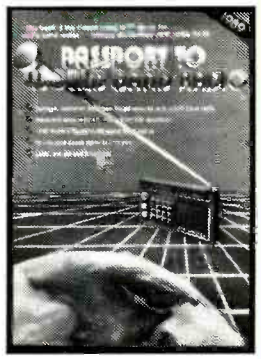

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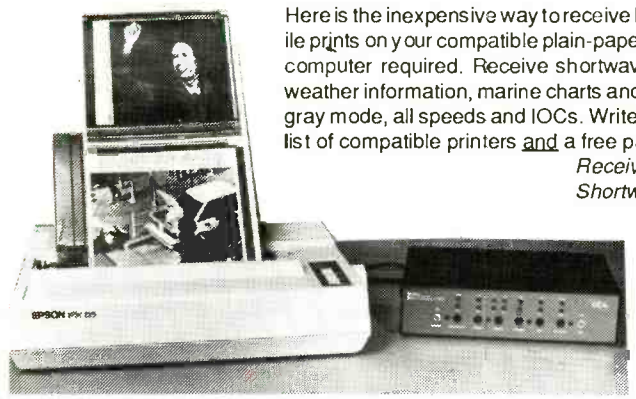

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MAILBAG LETTERS TO THE EDITOR

Each month we select representative reader leters for our Mailbag column. We reserve the right to condense lengthy letters for space reasons. All letters submitted for consideration must be signed and show a return address. Upon request, we will withhold sender's name should the letter be used in Mailbag. Address letters to Tom Kneitel, Editor, Popular Communications Magazine, 76 North Broadway, Hicksville, NY 11801.

Dig That Dignity!

I couldn't believe the response (August Mailbag) you gave the reader who wants to steal cable TV signals. It was irresponsible and just plain wrong. To make it all the worse, I am ashamed to find out that this advice came from a fellow amateur radio operator. I thought we had a bit more dignity than that.

Brent A. Zhorne, WB9FHI,
General Manager,
Northwest Illinois TV Cable,
Galesburg, IL

Dignity, you say? Dignity? Are you unaware that you are addressing one and the same gent who invented folding an entire pizza in half and eating it like a taco? Save the dignity approach for letters to the IEEE. Lighten up, pal. — Editor

I Alice Wanted a GE-4100J

Hooray for Alice Brannigan. When I read her article on GE's 4100J of the old Model J100 "cathedral" radio, I just knew I had to have one of those radios. I did, too, the very next day. the only one the local K-Mart got in. It came in that day. I was lucky! As far as I'm concerned, Alice Brannigan *is* Alice Brannigan. Why should anyone question that? I have every issue of *POP'COMM* and am extending my subscription before it expires.

Milan Tanton, WA4HZR,
Panama City, FL

A Uniform Question

After I read the excellent article in the September issue on monitoring "Coke-Buster" communications, I began monitoring 165.2375 MHz. This seems to be quite active for anti-smuggler aero operations in my area. Sometimes they refer to "switching to Uniform" or "Victor Channel 16." What do they mean by this terminology?

Bill Pritchard,
San Angelo, TX

The terms "Uniform" and "Victor" channels usually mean UHF and VHF. I've heard VHF-FM marine Channel 16 (156.80 MHz) referred to as "Victor Channel 16," but this may not necessarily be the frequency they're talking about over your local "Coke-Buster" channels. Next time you hear them talk about switching there, listen to 156.80 MHz and see if it activates. — Editor

Cellular Expansion Problem

Cellular telephone frequencies are spaced at 30 kHz intervals. Thanks to the instructions you offered on modifying the PRO-2004 to pick up the 870 to 890 MHz band, and search those frequencies in 30 kHz steps, I can tune in on cellular calls. I understand that the FCC has granted additional frequency space for cellular operations at the edges of the 870 to 890 MHz band, but I don't seem to be able to pick up many calls in this newly opened region. Please advise.

Maurice Jarlien,
Niagara Falls, NY

The Realistic PRO-2004 seems to be able to search in 30 kHz increments only in the original cellular bands. Any attempt to program in an expanded cellular band will result in the PRO-2004 retaining the 30 kHz function from 870 to 890 MHz, but the additional frequencies will be searched in 12.5 kHz steps and that isn't going to bring forth much activity in those portions of the band. You could press the "Step" button to search at 5 kHz increments, but then it will sort through the entire band (including 870 to 890 MHz) at this extremely slow and time consuming rate. Best bet (unless someone comes up with a modification) would be to just stick with the 30 kHz spacing on 870 to 890 kHz (which is most of the band) and not worry too much about the additional channels. — Editor

Write It Right

I'd like to write something for *Popular Communications*. Are there any "do" and "don't do" things I should know to increase my chances of manuscript acceptance? Do you have any standard guidelines?

Brad McMillen,
Lawrence, KS

Some of the major reasons stories aren't acceptable include: 1) Topic is too localized or would otherwise have minimal use or appeal to a national readership; 2) Photos or other illustrations are not furnished; and 3) Topic is not within the magazine's scope of coverage. Keeping these things in mind, the features with the best chances of being used are relevant to our coverage, are supplied with photos, are double-spaced typed, and from authors who have a good working knowledge of their respective topics. And, yes, we can supply written guidelines explaining our preferences and requirements in detail. Any person who would like to write for us would find this information useful. Copies are available upon request; ask for our "Authors' Guidelines," and be sure to include a stamped, self-addressed long return envelope for us to send it to you. — Editor

It All Ads Up, Says Bill

This is to let you know that I put a classified ad in *POP'COMM* asking for scanner frequencies for the area of Burlington, VT. I received cards, letters, and even phone calls offering information and advice. I want to thank all those who responded. Readers should take advantage of your classified ad section,the ads really bring results. Also, I recently purchased a Realistic PRO-2004 scanner and decided to restore the missing 800-MHz band frequencies per the instructions in your magazine. The instructions seemed too easy to be true, but they worked just fine.

William K. Zalubski,
South Burlington, VT

A Legend Doesn't Die Easily

There is a mystical aura about the Collins R-390 receiver, from what I've read and heard. Local communications shops don't carry this set and some say they've never heard of the receiver. Is this receiver for real?

P.W. Grady,
Worcester, MA

About 30 years ago, it was one of the first of the really excellent military receivers released to the public on the surplus market. With mechanical tuning and digital frequency readout, it was like a dream come true. But it didn't have a product detector for SSB reception, and its design (with vacuum tubes) made it large and heavy. For all of its mystique, modern solid-state communications receivers in the $500 price range will out perform the R-390 by a mile. Within the military, the R-390 was ditched long ago and replaced by sets like the Harris RF Communications R-2368/URR. This receiver tunes from 14 kHz to 30 MHz in 1 Hz increments, with rapid tune and internal scan. The R-2368 also replaced receivers such as the R-1051, the AN/SSR-19-LF, and the AN/WRR-3-VLF units. Don't look for the R-2368/URR on the surplus market for quite some years to come. However, R-390's are still available, many are still in use within the communications hobby, and have been modified for SSB reception. — Editor

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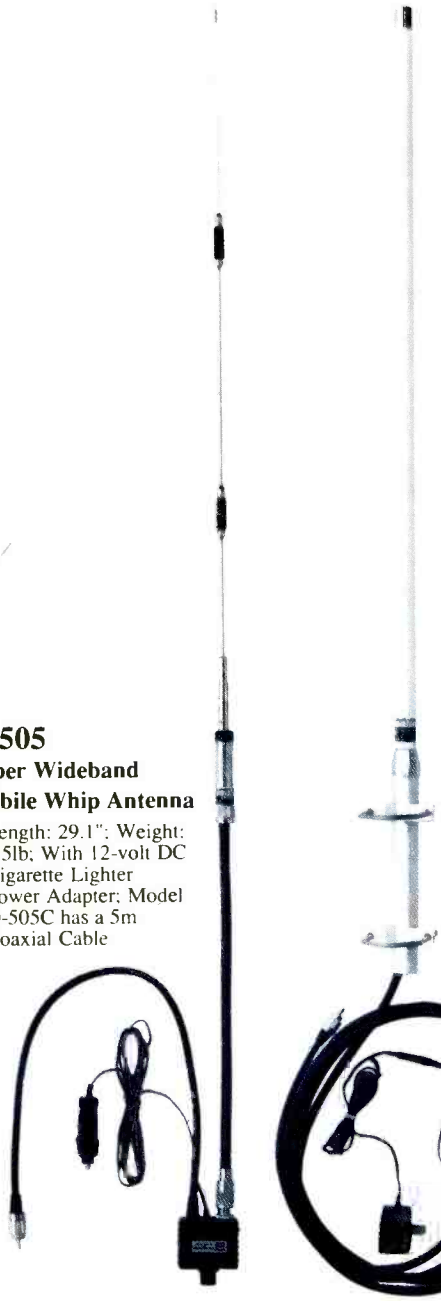

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SCAN Files Reply Comments On FCC Scanner Labeling Proposal

After reviewing comments of others to the FCC proposal to require labeling, we found, as expected, opposition by some major trade associations and carriers in the cellular phone business. As expected, they would rather see a ban on frequency coverage of scanners for the *current* cellular phone bands, ignoring other users who fall under ECPA. They also ignore the FCC comments in the labeling proposal that frequency assignments are apt to change and some non-ECPA protected multiple use of frequencies permitted, making equipment bans impractical. Reproduced below are SCAN's official reply comments.

Reply Comments Of The Scanner Association Of North America

1. The Scanner Association of North America ("SCAN") hereby replies to certain of the comments submitted to the above-captioned proceeding to require advisory labeling of radio receivers in light of the Electronic Communications Privacy Act. SCAN generally supports the thrust of the NPRM, and agrees with the Commission that blocking or filtering of receiver frequencies is not practical. SCAN cautions that no action should be taken that would have the effect of implying to anyone that scanner purchase and/or use is legally suspect.

2. *Comments of Telocator*. Telocator argues that "the end result of requiring a label that must necessarily reduce the prohibitions of the ECPA to a few phrases may be to leave scanner owners with an incomplete understanding of the restrictions imposed by the law." SCAN, however, recommended that receivers be accompanied by "thorough information on exactly what types of reception, under which circumstances, are prohibited by ECPA." Such information would result in a more complete understanding of the ECPA's provisions.

3. Regarding blocking of frequencies, Telocator states that "Such product modification was clearly anticipated by the House Judiciary Committee which, in reporting the ECPA, expressed its expectation that 'future design and manufacture of scanners will take into account the privacy protections accorded cellular telephony in this legislation.'" Telocator's reliance on this passage (from House Report No. 647) is entirely spurious and inapposite. The report accompanied a draft bill which was not signed into law. The law which was enacted does not call for product modification.

4. *Comments of NYNEX*. "As do most users of telephone service," NYNEX says, "[cellular] subscribers have assumed that their confidential business and personal conversations are private and protected from interception." The assumption is incorrect. The physical nature of radio communication does not afford the privacy of telephone service. The analog FM cellular radio signal may be received on consumer products such as televisions and videocassette recorders, as well as scanning receivers. As such, NYNEX's statement is only relevant or valuable to indicate the need for Commission action to correct this erroneous public impression through the adoption of a mandatory advisory label on cellular telephones.

5. NYNEX threatens that "the public's awareness of the availability and use of scanners will undoubtedly have a chilling effect on the use of cellular service and could severely inhibit what, until now, has been the explosive growth of the industry." Scanning receivers have been available for more than twenty years. NYNEX presents no evidence whatsoever that the availability of scanners has had a chilling effect on the use of radio common carrier services.

6. NYNEX would have the Commission believe that "the most effective way to preclude the interception of cellular conversations is to prohibit the marketing of equipment capable of scanning and monitoring protected communications." NYNEX contradicts basic human experience. The most effective way to preclude interception of any conversation is to conduct it in a manner resistant to interception. In oral conversation, whispering is usually more practical than demanding that passersby wear earplugs. In radio, signal encryption reduces the possibility of interception.

7. NYNEX argues that "it is readily possible to manufacture scanning devices that skip over the cellular frequencies." (Comments p. 4.) It offers Tandy Corporation as an example of a manufacturer that has accomplished this. NYNEX ignores the fact that virtually all scanners, including Tandy's, can incidentally receive other, non-cellular transmissions, to which the ECPA attaches more severe penalties for unauthorized interception than it does to cellular interception (a mere misdemeanor). Indeed, with "access to over 200,000 frequencies!", the Tandy PRO-2004 can, it seems, receive almost anything (1988 Radio Shack catalog, p. 94). NYNEX's pre-Copernican universe revolves around analog cellular telephony. It ignores the wider reality of the ECPA and modern radio communications. Blocking of frequencies that may be used by protected communications would quickly become a technical, legal and economic nightmare for both manufacturer and user, particularly in view of the fact that some receivable signals switch from protected to unprotected status and vice versa instantaneously and without notice.

8. Assuming, *arguendo*, that frequency blocking were ever to become practical, it would frustrate the important public interest provision contained in the ECPA which permits interception of any electronic communication, the transmission of which is causing harmful interference to any lawfully operating station or consumer electronic equipment, to the extent necessary to identify the source of such interference. The use of scanning receiving to aid in interference resolution is becoming even more desirable as paging and other RCC facilities proliferate across the country, often causing havoc to radio and television reception.

9. *Comments of other cellular interests*. Other cellular commenters such as Bell Atlantic Mobile Systems, BellSouth, GTE Mobilnet and the Cellular Telecommunications Industry Association seek essentially to shift the burden of protection away from the persons responsible for the exposed emission to the public at large. They believe that labels can relieve receiver manufacturers of legal liability, though the ECPA attaches no liability to manufacture of receivers, even those incidentally capable of intercepting protected communications.* Should advisory labels bestow immunity from prosecution, cellular telephone makers might well be advised to apply them to their own products, the better to shield them from litigation from purchasers who mistakenly believe their conversations to be invulnerable.

* The Act prohibits the manufacture only of devices primarily useful for surreptitious interception. To be prohibited the device would have to possess attributes that give predominance to the surreptitious character of its use, such as a disguised shape.

10. *Comments of ANARC*. SCAN concurs with the Association of North American Radio Clubs in recommending that receiver manufacturers inform purchasers about the radio provisions of the ECPA. SCAN would also favorably consider ANARC's proposed petition to require labels on all radio transmitting devices marketed to the general public which are capable of transmitting communications protected under the ECPA.

We'll keep you posted on this important legislation. Hopefully, the FCC will stay close to its original, well thought out proposal.

Happy Holidays from the Staff of Popular Communications

RADIO TELEGRAPH TERMINAL

AR-501

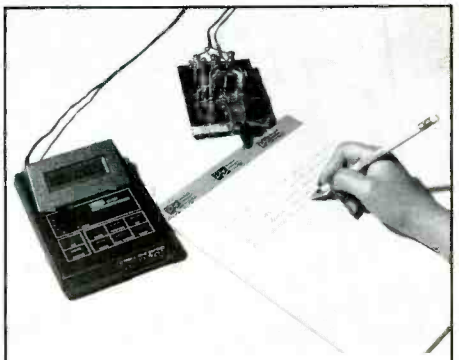
MORSE CODE DECODER ELECTRONIC KEYER

MORSE CODE TRAINER

Only—$229.00

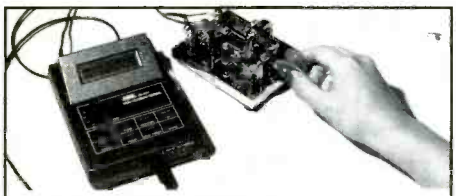
DECODER

Input level	• 10mV to 2V RMS.
Input impedance	• 8 to 1kΩ—600Ω typical
Decoding speed	• 5 WPM to 30 WPM
Audio filter	• 800 Hz ± 80 Hz Active and PLL filters 700 Hz to 900 Hz internally adjustable.



TRAINER

Code generator	• Random code generator 5 characters/code group
Speed	• 5 WPM to 30 WPM 1 WPM increment



ELECTRONIC KEYER

Paddle input	• TTL level —LO/Actuating, HI/Stop Contact input —ON/Actuating, OFF/Stop
Key input	• TTL level —LO/Mark, HI/Space Contact input —ON/Mark, OFF/Space
Keying speed	• 5 WPM to 30 WPM 1 WPM increment
Keyer output	• Transistor switching, Open collector type

SPECIFICATIONS

Model	• AR-501 Radio telegraph terminal
Power source	• DC 12V to 13.8V—165mA
Size	• 4.5"-W x 2.24"-H x 6.25"-D
Weight	• 12.5 oz. (358 g)
Controls	• Power On/Off • Random code generator On/Off • Print-out On/Off • Monitor speaker level • Electronic keyer mode select • Speed Up & Down
Display	• LCD 32 characters—16 per line
Indicators	• Power On—Green LED • Tuning—Red LED
Front connections	• Paddle—Standard/Iambic • Ordinary telegraphic key • Headphone/Earphone
Rear connections	• DC 13.8V input • Audio input • External speaker • Keyer output • Printer output

PRINTER PORT

• Compatible with Centronics 8-bit parallel printer. At least 4K byte data buffer is required in a printer.

BACK TO BASICS — • — • But far more advanced — — • —

The AR-501, triple mode CW terminal in a small package, is a powerful gear to practice and play with. For the Novice, SWL and Amateur radio operators it detects Morse code between 5 to 30WPM. Just plug the AR-501 to your receiver to start translating the Morse code onto full 32 character LCD display. Very simple and easy to operate. You ask; for code practice?, both receive and transmit? Yes, the AR-501 does just that. It will improve your cord reception and keying technique at the speed you want. More?. it operates as an electronic keyer both standard and iambic. More Yet? How about a printer port? You bet, the AR-501 provides parallel printer port for hard copy. You can Log the QSO, and Practice. It will help you immeasureably. We even offer a standalone Nicad operated thermal printer as an option. **ACCESSORIES SUPPLIED:** The AR-501 Radio telegraph terminal comes complete with Receiver cable, DC Power cable, Miniature Phone plug, Miniature stereo phone plug, Spare fuse, Wall receptacle style power adaptor and Instruction manual. **ACCESSORIES AVAILABLE:** CC-501 Parallel printer cable — **$30.00**/DPU-411 Standalone Thermal printer with 8K buffer.—**$235.00**

ORDERING INFORMATION: For fastest service, call **800-523-6366** from 9 A.M. to 4 P.M. P.S.T. Send mail orders to: ACE Communications, Inc. 22511 Aspan Street, Lake Forest, CA 92630. VISA and MasterCard orders and certified or cashier's check or money order shipped within 48 hours of receipt. Rush service by UPS/Overnight, UPS/2nd Day Air and Federal Express is available at extra shipping charges. Purchase orders accepted from Government agencies. CA residents add 6% sales tax. **COD is $3.00 extra. WARRANTY INFORMATION:** The AR-501 covered by One Year Warranty. Extended warranty service available at the following rates: **3 Years—$25.00, 2 Years—$15.00. SATISFACTION GUARANTEE:** If, for any reason, the ORIGINAL PURCHASER, is not satisfied with the unit purchased, a full refund of the purchase price will be issued if the unit and all accessories are returned to us UNDAMAGED WITHIN 25 DAYS of the date of original purchase (Invoice date). This policy excludes any additional freight that may be incurred, and in no event modifies or limits the limited warranty.

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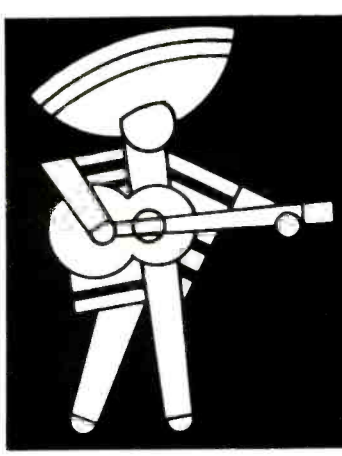
CIRCLE 16 ON READER SERVICE CARD



Mexican Hat Dance

The SWL's Guide To DX'ing Mexico

BY GERRY L. DEXTER

They come and they go. They appear and they disappear do the Mexican shortwave broadcasters. It's sort of a Mexican Hat Dance that's been going on for years. But even if your just a semi-serious shortwave listener who enjoys building a log of stations heard and verified, here's an alert you should heed: Mexican shortwave broadcasting is a dying medium. The process is slow but inexorable. The stations are falling away, one by one.

Once upon a time, shortwave played a much more important role in Mexican broadcasting. Back when there weren't a lot of active stations of any kind—AM or FM—and those mostly in the larger cities, many broadcasters employed shortwave to reach listeners normally beyond range of local coverage, listeners who might not otherwise have had any radio broadcast service.

Things are different today. Mexico is littered with radio stations, several hundred of them in all but the smallest towns. That means more people are getting service from local or nearby stations, and thus do not have to turn to shortwave for reception of Mexican stations. Exacerbating the situation, is the fact that fewer and fewer working radios in Mexico can even receive a shortwave band so the potential audience is declining as a result of that as well.

Another nail in the coffin of Mexican shortwave is the fact that many of the stations which have shortwave transmitters have old creaky units in need of repair and hard-to-locate parts. A number of these transmitters were hand built by the radio enthusiasts which put the associated medium wave stations on the air back in the 1930's and 1940's. The difficult economic situation in the country is another brake on putting any money into a transmitter which "nobody" will bother listening to anyway.

Many of the Mexican shortwavers tend to make sudden shortwave appearances, surprising DX'ers in the process. But often these sounds from Mexico are brief and have left again in a matter of days, weeks or months. In 1985, a number of stations returned, but only because the government's communications ministry was interested in showing some activity for the upcoming World Administrative Radio Conference. Stations apparently were told to "use it or lose it" and after many "used it" things returned to quiet normalcy. Such pop ups on a single station basis occur now and then, but the overall trend still seems headed downward.

The current *World Radio Handbook* lists quite a number of Mexican shortwave outlets, but this seems based more on official government lists than anything, and some have not made shortwave appearances in quite a number of years, some a decade or longer. Even so, we'll take a run through the listing and check on the situation, station by station. It probably doesn't even need saying that all programming is in Spanish, with the possible exception of some english on Radio Mexico International.

2390 MHz—XEJN *Radio Huayacocotla* operates with 500 watts in the small village of the same name in Veracruz state. Established as Escueles Radiodifusora de Huayacoctla in 1965, it changed its emphasis from being just a radio school (a station which aired educational lessons) to more of a cultural outlet with the educational aspects taking on more of a practical living aspect. A staff of about 30 is entirely voluntary, working at, or on behalf of the station, in whatever spare time they have available. The station has become a spokesman and advocate for area farmers. The broadcast contain a lot of music, discussions, and local news in the split schedule which runs from 1200 to 1500, and again at 2100-0100. Beware of the other Central American on this frequency—La Voz de Atitlan in Guatemala. Reception reports go to Apartado 13, Huayacoctla, Veracruz.

5982 *Radio XEUJ* at Linares in Nuevo Leon state, is listed for 5980, but its homebrew transmitter varies a bit, although its 500 watts are more under control than when they came on the air in 1981. The station—not always active—plays a lot of Mexicanmusic and also airs some outside-produced religious programming. The nominal schedule is 1100-0300 with sign on time providing the best shot at reception in North America, since there's less QRM usually present. The station is a pretty good QSL'er. Apartado 62, 67700 Linares, Nuevo Leon.

5985—9705—11770—15430—17765 XERMX *Radio Mexico International* is the national government station. It has long in-

Listening to an educational program on Radio Huayacocotla.

XEXQ

BOLETIN CULTURAL

RADIO UNIVERSIDAD

UNIVERSIDAD AUTONOMA DE SAN LUIS POTOSI

V Epoca | Julio de 1983 | Núm. 35

XEXQ

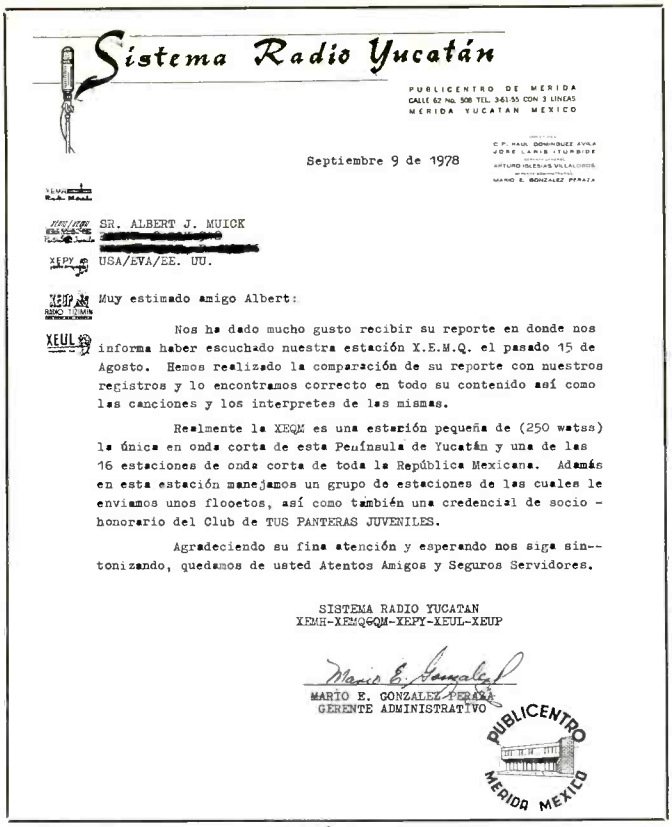
POR LA CVLTVRA Y POR EL ARTE

28 DE JULIO — 45 ANIVERSARIO DE XEXQ

1938

1983

X E X Q



Sistema Radio Yucatán

PUBLICENTRO DE MERIDA
CALLE 62 No. 508 TEL. 24155 CON 3 LINEAS
MERIDA YUCATAN MEXICO

Septiembre 9 de 1978

SR. ALBERT J. MUICK
[redacted]
USA/EVA/EE. UU.

Muy estimado amigo Albert:

Nos ha dado mucho gusto recibir su reporte en donde nos informa haber escuchado nuestra estación X.E.M.Q. el pasado 15 de Agosto. Hemos realizado la comparación de su reporte con nuestros registros y lo encontramos correcto en todo su contenido así como las canciones y los interpretes de las mismas.

Realmente la XEQM es una estación pequeña de (250 watss) la única en onda corta de esta Península de Yucatán y una de las 16 estaciones de onda corta de toda la República Mexicana. Además en esta estación manejamos un grupo de estaciones de las cuales le enviamos unos flogetos, así como también una credencial de socio - honorario del Club de TUS PANTERAS JUVENILES.

Agradeciendo su fina atención y esperando nos siga sin-- tonizando, quedamos de usted Atentos Amigos y Seguros Servidores.

SISTEMA RADIO YUCATAN
XEMH-XEMQ-XQM-XEPY-XEUL-XEUP

MARIO E. GONZALEZ PERAZA
GERENTE ADMINISTRATIVO

PUBLICENTRO MERIDA MEXICO

This QSL letter from Tus Panteras is ten years old. The 6105 shortwave outlet is not often active these days.

XEXQ Radio Universidad de San Luis Potosi produces a monthly program magazine.

tended to have a real international service, but has never quite been able to pull things together. A 100 kW transmitter, delivered in 1979, has never been put into service. Plans for broadcasts in English, Portuguese and French have remained largely a wish, although at one time there was a minimal English language service. Radio Mexico International began in 1970 and, considering it's been a near 20 year run, really has not come very far. Broadcasts are said to be aimed mainly at listeners in Eastern South America, Western North America, the Antilles and Canada. 15430 is said to be a 50 kW transmitter, with the other frequencies carrying 10 kW outlets. The station is active during the day and much of the evening, listed as: 5985 at 1300-0700 (but seems inactive), 9705 at 2000-0500, 11770 from 1300-1700, 15430 at 2000-0500 and 17765 at 0300-0500. Reports go to Apartado 24306, 06700 Mexico, DF.

6010 XEOI *Radio Mil* from Mexico City is an oldtimer which kicked off its career back in 1942. Its medium wave sister is XEOY, on 1,000 kHz, with several other AM's and FM's also owned by the company.

The shortwave transmitter is another rubber band and hairpin thing object which needs to be caressed into more or less consistent operation. Programs on the 250 watter relay are mostly Latin pops, commercials and news on the hour. News on this station comes not only from the wire services, but from international shortwave and satellite TV monitoring. Nominal schedule is 1200 to 0800. Reports should go to: Insurgentes Sur 1870, 01030 Mexico DF.

6020 XEUW *El Eco de Sotavento* in Veracruz uses both this (its original name) and "La U de Veracruz" as well as "Radio Nucleo Oro" at times as well. When active, the shortwave relays XEU-930 on medium wave. XEUW is one of the old timers, having its initial broadcast in 1930. The 250 watt shortwave transmitter comes and goes depending largely upon the availability of spare parts and current interest in shortwave. Programs include live concert broadcasts and radio novels. A main newscast, "Noticiero de la U" is aired four times per day. Reception reports go to Ocampo 119, 91700 Veracruz.

6045 XEXQ *Radio Universidad Potosina* in San Luis Potosi is listed with 250 watts from 1300 to 0500, but has not been reported by DX'ers in a number of years. There is a medium wave outlet using 250 watts on 1460. This is one of several stations owned by state universities in Mexico. If you do log this one, reports should go to Apartado 456, 78000 San Luis Potosi.

6090 XECMT *Musica Romantica* is another from which nothing has been heard of in several years. This station has use several different names in its lifetime, but, to our knowledge, has not appeared on shortwave wearing the "Musica Romantica" tag. Frankly, it does not appear likely this one is going to be back any time soon. If it should show up, reports go to Apartado 79, 89800 Ciudad Mante, Tamaulipas. It was never a good QSL'er.

6105 XWQM *Tus Panteras* in Merida, Yucatan, near the famous Chicken Itza Mayan ruins, aims its programming at the younger crowd. But it, too, is not a shortwave regular. *Sistema Radio* Yucatan, the parent company, owns half a dozen AM and FM stations. The 250 watt shortwave outlet relays sister station XEMQ-1240 with rock and pop. The station began operating in 1940. Reports go to: Apartado 217, 97000 Merida, Yucatan.

6115 XEUDS Radio Universidad de Sonora in Hermosillo is another of the University stations (Sonora State University). The station, located on campus, operates medium wave on 850. The 1 kW shortwave outlet duplicates medium wave programs and is listed for a 1500-0230 schedule though there have been recent reports of it being active. Programs are mainly cultural in nature,

with little in the way of news, politics, or controversial issues. It sometimes airs programming from various international broadcasters. reports should be sent to: Apartado 106, Universidad de Sonora, Hermosillo, Sonora.

6165—9515—15160—XEWW *La Voz de la America Latina* is one of the oldest Latin stations, having come on the air in 1930. The main station of a substantial group owned by Sistema Radiopolis S.A., is XEW on 900 kHz, which is relayed on shortwave (and why DX'ers normally hear ID's for XEW and not XEWW). A 200 person staff runs this 24 hour operation from three floors of a Mexico City building. Programs run to a variety of shows, including novellas and sports. Although shortwave is listed at 10 kW, some reports say actual power may be closer to 500 watts due to difficulty of getting older transmitters up to strength. 15160 sometimes varies in frequency by several kilohertz. reports go to: Ayuntamiento 52, 06070 Mexico DF.

6185 XEPPM *Radio Educacion* in Mexico City relays the programming of its medium wave sister, XEEP, on 1060. It carries programs from a number of other Mexican educational/cultural stations, many of which, in turn, carry Educacion's main news program at 0800, 1430 and 2130. This is a government-backed operation, a service of the Department of Education. The shortwave outlet has had its problems, but lately, it seems fairly regular. The schedule is reportedly 24 hours, though it may not that extensive on shortwave. Address: Angel Urazza, 622, 01300 Mexico DF.

9545 XEFT *La Jarocha* in Veracruz seems to be inactive at present. The last time it was active, it was still using an earlier slogan "La Voz de Veracruz". When the 250 watt shortwave transmitter is on, it relays XETF-1250, scheduled from 1130 to 0600. Address: Apartado 21, 91700 Veracruz.

9555 XEQK *La Hora Observatorio* in Mexico City is more commonly called "La Hora Exacta". You can't call them up to request a song, for they play no records, nor have a library. Programs on XEQK are strictly news, messages, commercials and time checks. Sort of a carbon copy of *Radio Reloj* in Costa Rica and *Radio Relogio Federal* in Brazil. The station, with shortwave and medium wave on 1350, claims an audience of 6 million, and has been on the air since 1940, although shortwave activity is—shall we say it again—inconsistent. A staff of 22 runs the around the clock broadcasts. Power on shortwave is 500 watts and is often well received in North America. Reports go to Instituo Mexicano de la Radio, Margaritas 18 Col. Florida, 01030 Mexico DF.

9600 XEYU *Radio UNAM* of Mexico City is, in the long version, Radio Universidad Nacional Autonoma de Mexico, the station of the National University, even though it does not operate from the campus. It has medium wave (860 kHz) and an FM station. Broadcasting goes back to 1937, but the shortwave operation comes and goes due to a older transmitter and the continual need find replacements. When it is on XEYU, it can be heard quite well in North America. Reports go to: Adolfo Priieto 1330, Col. del Valle, Mexico DF.

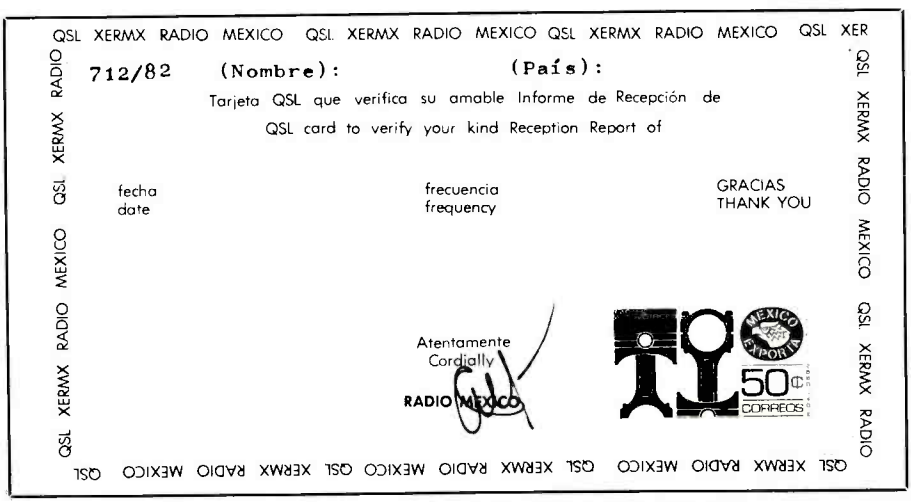
9680 XEQQ *La Q Mexicana* in Mexico City is a 500 watt commercial shortwaver which relays one of Mexico's major stations, XEQ on 940 medium wave. It often identifies simply as "La Q" or just "Q" and is listed for a 1200-0600 schedule. It was active on shortwave as recently as spring of 1988.

11820 XEBR *La Correcaminos* in Hermosillo has the least reason of any to be on this list for there has been no activity from this broadcaster (on shortwave) in quite a number of years. Started in 1935, the ownership was making noises about pumping real life into shortwave during the 1970's but nothing much happened. The current name has never been used on shortwave, but former names such as *El Heraldo de So-*

Mexican Shortwave Broadcasters

Freq. (MHz)	Call	Slogan/Name	City	Status	Notes
2.390	XEJN	Radio Huayacocotla	Huayacocotla	A	
5.982	XEUJ	Radio XEUJ	Linares	B	Nominal 5.980
5.985	XERMX	Radio Mexico International	Mexico City	B	List 1300-0700
6.010	XEOI	Radio Mil	Mexico City	B	relay XEOY
6.020	XEUW	El Eco de Sotavento	Veracruz	B	La U de Veracruz
6.045	XEXQ	Radio Universidad Potosina	San Luis Potosi	C	
6.090	XECMT	Musica Romantica	Ciudad Mante	C	
6.105	XEQM	Tus Panteras	Merida	C	
6.115	XEUDS	Radio Universidad de Sonora	Hermosillo	B	
6.165	XEWW	La Voz de la America Latina	Mexico City	B	relay XEW
6.185	XEPPM	Radio Educacion	Mexico City	A	
9.515	XEWW	La Voz de la America Latina	Mexico City	B	
9.545	XEFT	La Jarocha	Veracruz	C	La Voz de Veracruz
9.555	XEQK	La Hora Observatorio	Mexico City	B	
9.600	XEYU	Radio UNAM	Mexico City	B	national university
9.680	XEQQ	La Q Mexicana	Mexico City	B	relay XEQ
9.705	XERMX	Radio Mexico International	Mexico City	A	list 2000-0500
11.770	XERMX	Radio Mexico International	Mexico City	A	list 1300-1700
11.820	XEBR	La Correcaminos	Hermosillo	C	
15.160	XEWW	La Voz de la America Latina	Mexico City	B	relay XEW
15.430	XERMX	Radio Mexico International	Mexico City	A	List 2000-0500
17.765	XERMX	Radio Mexico International	Mexico City	A	List 0300-0500

Status:
A = currently active B = semi-active C = inactive



Radio Mexico International sent this QSL a few years ago.

High-Tech Electronics from Radio Shack...Gifts That Keep on Giving!

Hear All the Action—Including the New 800 MHz Band—Wherever You Go. Take along Radio Shack's finest hand-held scanner and monitor police, fire departments, railroads, aircraft, highway patrol, ambulances, taxis, amateur radio, military, business and marine communications. PRO-34 provides keyboard access to over 32,000 frequencies—no crystals to buy. Scans up to 200 channels in 10 banks of 20 channels. Has search and priority modes, flexible antenna with BNC connector, belt clip. Covers 30-54 MHz, 108-136 MHz (AM), 138-174 MHz, 380-512 MHz plus 806-823, 851-868 and 896-960 MHz. #20-135

Performance Giant in a Shirt Pocket Size. Radio Shack's best radar detector is a great gift for the serious driver. GaAs diode front-end and dual-superhet circuit deliver extra-long range. Our exclusive *FAST*™ signal processor greatly reduces false alerts without reducing sensitivity. Separate X and K-band warning tones pulse faster to indicate relative distance to radar. Panel lights auto-adjust for day or night. Includes carrying case and mounting hardware. #22-1617

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CIRCLE 29 ON READER SERVICE CARD

Before it became Radio Educacion, the station on 6185 was called La Voz dem Maestro and issued this pennant to listeners.

nora, *Radio BH* and *La Pantera del Aire* are familiar. We list this one simply to complete the coverage of the current WRTH listing, but you need not worry much about trying for this one!

Wildcard. A loose cannon rolling around the deck over the year or two goes by the name of *Radio Consentida*, XEFAJ, a 1560 medium wave station operating 24 hours a day with 10 kilowatts. It has been showing up on such frequencies as 4900, 6753.8 and 11480 (slightly variable for each) and DX'ers are not sure whether this is a utility station using Consentida as a marker or some sort of relay? It's heard at various times during the day and evening hours.

As much. or more, than any other type of SWBC DX'ing, chasing the Mexicans is a real roll of the dice. You can't hear them if they are not there, and often as not—maybe more often than not—they aren't there! We have not seen the extreme negative occur, i.e. no Mexican activity on shortwave at all, but we have not seen the extreme positive, either. Your best bet is to make a copy of the list we put forth here and do a frequency check every couple of months. Also, follow the POP'COMM reports for news of station activity and take action when you hear of one showing up. Nail them post haste, because you never can be sure if they'll come back! PC

Off-duty Firefighters Evacuate Burning Building

Two off-duty firefighters helped evacuate some 45 residents of an apartment building who did not believe there really was a fire.

Paul Carlucci, an off-duty firefighter, and Wayne Otto, a volunteer fireman from Watchung Chemical Engine Co., were driving down Front Street in Plainfield, New Jersey, when they saw thick, black smoke and flames coming from an apartment building on nearby Grove Street at about 10:30 a.m.

SCAN PUBLIC SERVICE AWARD

According to an account of the incident in the Bridgewater, New Jersey *Courier-News*, the two men arrived at the apartment building to find that smoke detectors had been activated and alarms sounded throughout the building. But none of the residents were responding to the alarms, said Borough Fire Lt. Peter Sylvester. Apparently, the smoke alarms had sounded in the past when there was no fire, and residents of the building believed that there was no danger.

Both Carlucci and Otto rushed into the building and started pounding on doors to alert residents about the fire. Carlucci grabbed two men standing in the hallway to help evacuate the apartment building.

Otto, an amateur radio operator, had a portable transceiver with him when he entered the building. As he and Carlucci helped get residents out of the burning building, he called Bill Ferguson, another amateur who lives in Bristol, Pennsylvania. Otto asked Ferguson to notify the North Plainfield police, because he was unable to do so.

"I was just stepping into the shower when I heard Wayne calling me," Ferguson told the *Courier-News*. "I dialed the dispatcher for Wayne, and he talked to the police through me."

"It was pretty hairy," Carlucci said. "It seemed like we waited forever for (the Fire Department) to get here, but they were just around the corner."

Emergency units from Plainfield and North Plainfield arrived at the scene two minutes after receiving the call," Sylvester told the *Courier-News*. The fire was reported to be under control some 25 minutes later.

According to Sylvester, the fire had been caused by a child who was playing with fire. The child had been playing with paper on the stove by igniting it and bringing it into the living room. An adult in the apartment thought the fire was put out before they left the building, but apparently the flames had not been extinguished.

Fire officials said that none of the 45 residents were injured. The fire was confined to the third-floor apartment where it started, causing some $35,000 in damage.

"There were no public phones in the area, and we would have lost valuable time looking for a phone had I not had the radio handy," Otto said. "Bill played an integral part in saving those lives."

Both Otto and Ferguson report traffic accidents to the police through Otto's UHF radio repeater relay system and Ferguson's Bristol Emergency Amateur Repeater System.

For their fast thinking in evacuating the building and contacting the police, Paul Carlucci and Wayne Otto will receive the SCAN Public Service Award, which consists of a special commendation plaque and a cash prize. For making the nomination, Tom Guilfoy of Morrisville, Pennsylvania, will also receive a plaque.

Congratulations to all of you.

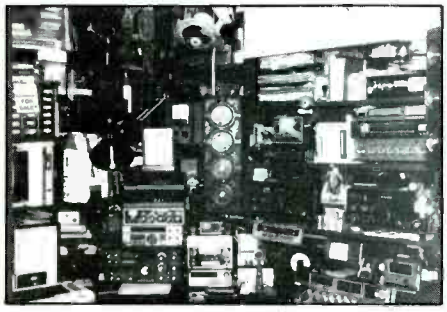
SCAN PHOTO CONTEST WINNERS

Best Equipped

J.D. Harris of Mountain Home, Arkansas, writes that it took 10 years of bargain hunting and a very understanding wife to assemble all of this equipment.

J.D.'s scanner lineup includes a Bearcat 210 scanner, two Bearcat 250s, Bearcat 50XL for portable use, and a Regency Z-60. A Grove Power Ant III, Radio Shack Discone and Channel Master antenna mounted on a 50-foot Rohn tower are all used with the scanners.

Other equipment includes Radio Shack DX-160, DX-300 and DX-302 receivers, Yaesu 101ZD receiver, Kenwood TS-440S transceiver, and President 40-channel citizens band rig.



J.D. is also a bit of a computer buff, using a Commodore 64 with printer, Commodore VIC-20 with Kantronics interface and Radio Shack TRS-80.

To keep track of where the many signal he receives are coming from, J.D. uses a Spot Globe 2000 with pin light for finding longitude and latitude. He also has world and United States maps mounted on window shades!

Best Appearing

Robert L. De Armond, Jr. writes that his main listening interests are satellite communications, military transmissions, and police/fire communications.

The Oceanside, California, monitor has assembled this very attractive listening post that includes a good mix of equipment. Robert uses a Bearcat III scanner, Realistic PRO-2020 scanner, Yaesu FRG-9600 receiver, Polaris marine transceiver, Ray Jefferson marine radio telephone, Panasonic tape recorder and a Grove Power Ant III.

Also, used, but not pictured here, are a Commodore 64 computer for control of the FRG-9600, an American Bosch shortwave receiver from the year 1936, and a Diamond D-130 all-band antenna.

Instant Sports Scores - Via Satellite!

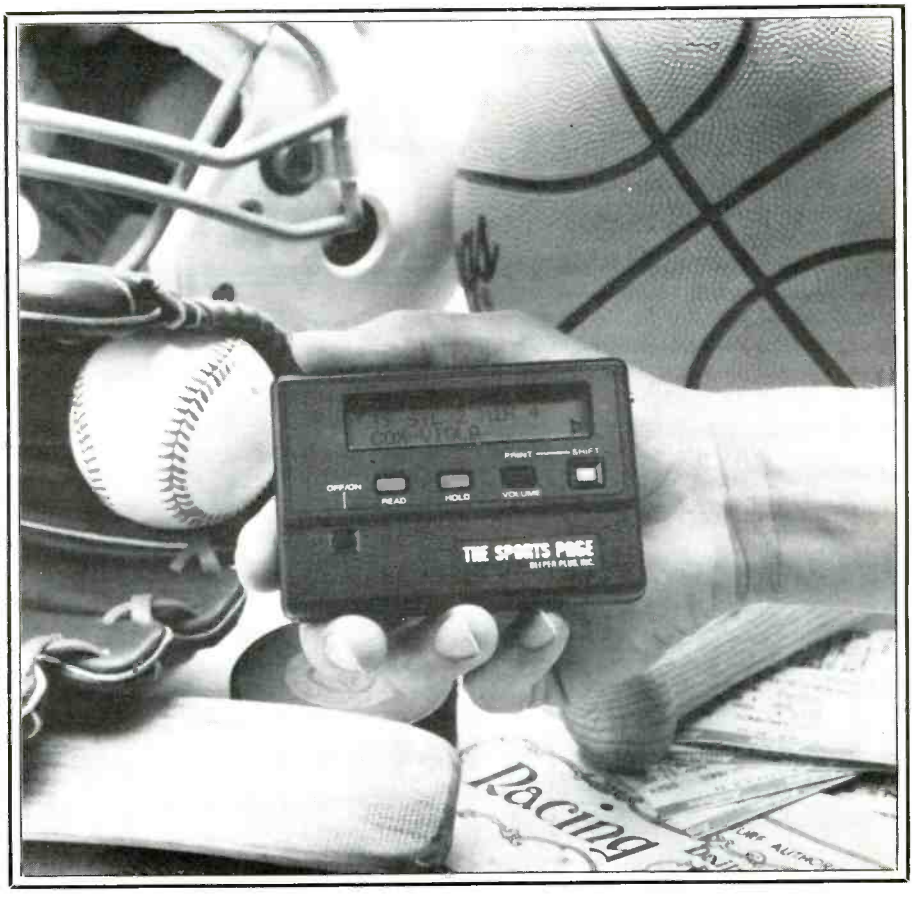
New Invention Puts Pro and College Scores, Racing Results, Right in Your Hand.

BY CHRISTOPHER BLEEKER, KTX5GZ

In Chicago, the Bears are taking on the Denver Broncos. In South Bend, it's Notre Dame vs. USC in their yearly gridiron rivalry. In Philadelphia, the Flyers and Rangers are tangling in one of their bitter NHL struggles. The New Jersey Nets have just acquired a hot new player, and at Aqueduct Race Track, the ponies are heading for the finish line. It's a typical sports Saturday.

The average sports fan tries to keep in touch by repeatedly tuning in to brief sports summaries tagged at the end of the news on his favorite radio station. Maybe he knows of a "900" or "976" toll telephone number that provides similar news with little more depth.

Communications technology has now come up with a boon for all sports fans. It's



KNOWING THE SCORES . . . Fit the sports world in the palm of your hand or pocket with "The Sports Page", a pocket electronic sports scoreboard and personal message receiver. The beeper is every fan's ticket to up-to-the-minute sports information with scores for pro football, basketball, baseball, hockey, college football and basketball, horse racing, boxing and more, available at the touch of a button and updated every five minutes.

called *The Sports Page*, a portable and electronic sports information receiver. Now available in many major metro areas, *The Sports Page* produces up-to-the minute local and national sports information over a gizmo that's small enough to fit in the palm of the hand. It's actually a radio pager that dispenses partial and final scores, skeds, pointspreads, odds, pitching changes, injury reports, weather conditions, horse racing scratches, results, and payouts. The information keeps coming 24-hours a day!

The heart of *The Sports Page* is a Motorola PMR-2000 alpha-numeric pager. Weighing only four ounces, it serves as *The Sports Page's* receiver and can also (optionally) serve as a standard radio pager *(beeper)*. In fact, if you need a *beeper* in your business, you can probably let your business pay for the combined *beeper* and sports information services!

The unit has a memory of almost 2,000 characters that displays information about baseball, pro/college basketball and football, pro ice hockey, horse racing and boxing. The unit can store as many as 80 sports events at a time and display them on a 32-character dot-matrix LCD screen that can be lighted for night viewing.

The Technology

Three different sports ticker services feed into *The Sports Page* via a series of satellite transmissions that originate at various ballparks and arenas. A central computer at *The Sports Page*, in Las Vegas, separates and formats that information and then sends it via uplink to a satellite. The satellite's signals are received on the ground and fed through UHF transmitters that can be picked up by *The Sports Page* personal receivers within a 30 to 150 range of the UHF transmitter.

The UHF transmitters also send out regular tone-paging signals in addition to the sports scores, however, individual receivers will display only that information the subscriber selects. The entire sports scoreboard is updated every five minutes during games taking place.

The time it takes from wire service to personal beeper is a mere 20 seconds. The only human contact with the transmitted information is the person who puts the original information out on the wires from the arena or stadium. It's a fast and efficient process that has the ability to convey an enormous amount of information to waiting subscribers.

The company that came up with the idea for *The Sports Page* is Beeper Plus, Inc., 3900 Paradise Road, Suite 110, Las Vegas, NV 89109. The service is available in the New York metro area, upstate New York, Las Vegas, southern Florida, from Los Angeles to San Diego, San Francisco, Philadelphia, Atlantic City, Chicago, Boston, Birmingham, Dallas, Houston, Michigan, St. Louis, Toronto, Hawaii, Minneapolis/St. Paul, Baltimore/Washington, Phoenix, and Ohio. Other areas will be announced as the service expands.

The cost of *The Sports Page* varies, depending on the area, but ranges between $325 to $395 for the receiver. In addition, the monthly service fees are between $45 and $75. Minimum service period is 3 months, although a one-year contract is available with 2 months free service.

The service is now more than 2 years old. It's been so successful that its developers are exploring additional types of services such as general information, weather, business news, traffic reports, even information on movies, concerts, and other entertainment events.

For further information on *The Sports page*, its availability in specific areas, prices, services offered, etc., readers should contact Beeper Plus, Inc., at the address provided. Let'em know you read about it in *Popular Communications*.

We think this is a fine idea, just the type of development in personal communications that makes it all the more valuable to the individual. Now if we could only convince them to offer info on shortwave station skeds, new scanner frequencies, where the fish are biting, where *Smokey* is hiding, airline flight delays and cancellations, and pro-wrestling results, all would be right in the world! PC

Imperial Japanese Naval Communications (1941-1945)

It's The 47th Anniversary of The Attack on Pearl Harbor. Let's Take a Look at Japan's Naval Comms During WWII.

BY ALICE BRANNIGAN

Although a considerable amount of research has been done and made public on WWII-era communications of the Allied Forces, and of Nazi Germany, virtually no information has ever reached the public on the communication of Nazi Germany's Axis partner, Imperial Japan. Unusual, too, since the naval forces of that nation depended so heavily upon communications. This month, we thought we would present some of this missing information.

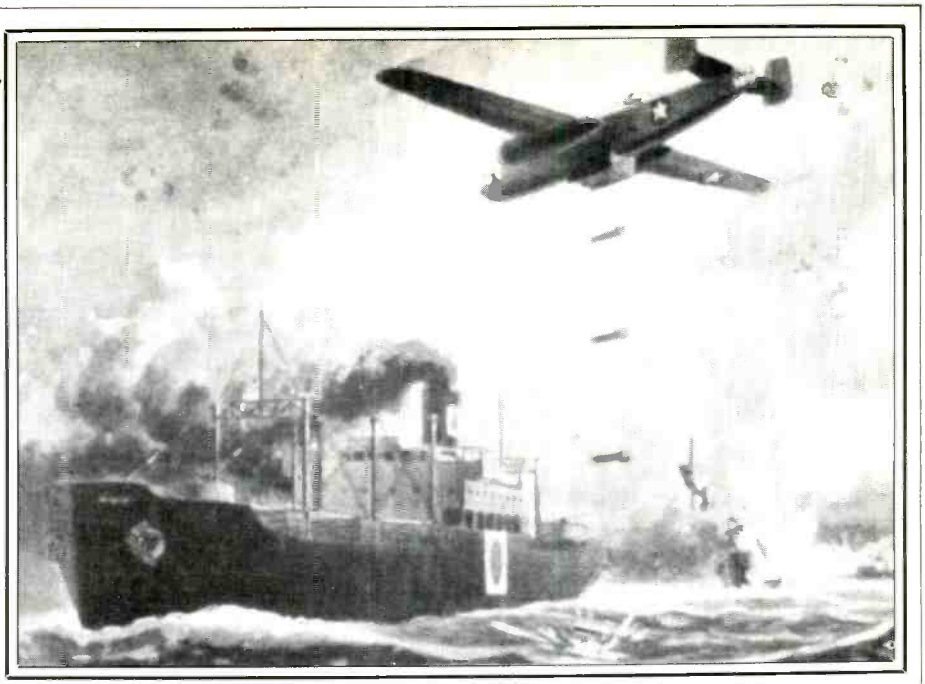
In regard to the December 7th, 1941 attack upon the U.S. naval Base in Pearl Harbor, Hawaii, the Japanese realized that the success or failure of the operation depended heavily upon how well they could use the element of surprise. In order to conceal the plan, it was found necessary to prohibit all radio transmissions after any force left the base. Transmitting equipment was carefully checked and serviced to make certain it was in good working condition. Nevertheless, in the days prior to the attack, vital components were temporarily removed from the transmitters of carrier-based aircraft to avoid any chance of a pilot breaking radio silence by accident.

In the comms between Tokyo and the First Air Fleet (the strike force that went to Pearl Harbor), only absolutely vital comms were exchanged between highest level officers. These sparse comms were disguised by the use of merchant marine callsigns, frequencies and message formats. This traffic appeared to be routine commercial messages, however, it concealed military information relating to ongoing Japanese/American negotiations in Washington, and the decision to begin the attack on the U.S. Navy facilities at Pearl Harbor.

As a matter of fact, the U.S. Navy Security Group (the "On The Roof Gang") took notice of the sudden appearance of two new unlisted Japanese merchant marine shore stations beginning in November of 1941, and operating just before December 7th. Operating on 8200 kHz, the stations were JJU and JQE. It appeared to our monitors that both callsigns were used by the same transmitting station on an alternating basis. The vessel callsigns these stations were noted sending traffic to were JBHP, JLGM, JNFO, JPOM, JQUB, JRXB, JWZL, JYQL, JVOV, JAHA, JAJZ, JBQH, JCNA, JCQA,JDNP, JFHC, JFYC, JGRM, JGXC, JGYC, JHGD, JHGP, JIJD, JIKK, JIQK, JIZK, JKQB, JMAM, JPEQ, JPIN, JQKB, JROJ, JZFM, JZUW, JZWM, and JJQL. These callsigns were assigned to actual Japanese merchant vessels, the question is

Learning CW in a Japanese military tele communications school during WWII.

A rather yellowing page from a Japanese military code book from just prior to the attack on Pearl Harbor.



An artists rendering of a low-flying U.S. medium bomber attacking a Japanese ship during WWII. When dropped from very low altitudes, the bombs would skip across the surface of the water to their target.

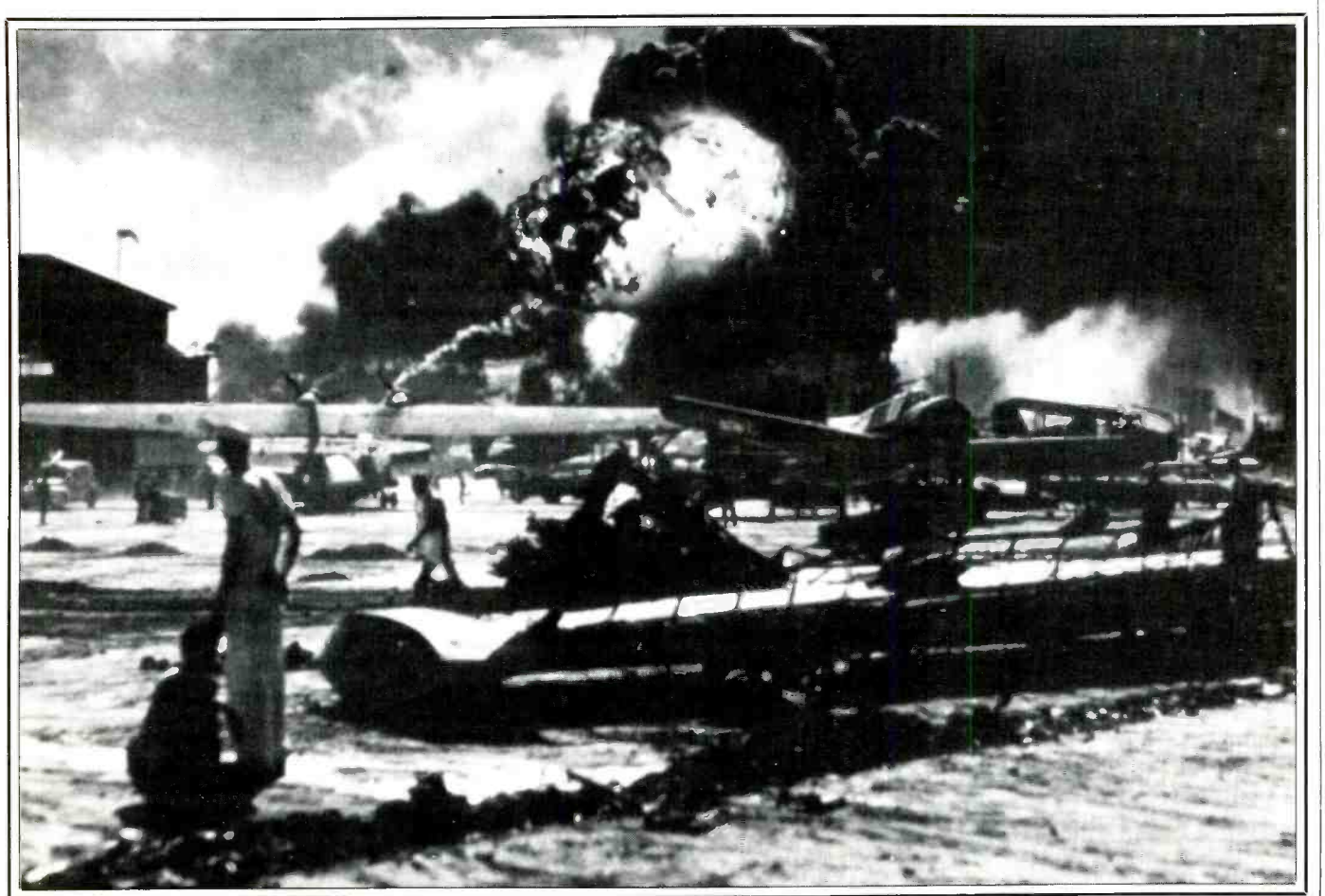
if they were also being used by Japanese warships during that period.

When the First Air Fleet departed from its training area off southern Kyushu in mid-November '41, the forces stationed at the air bases conducted radio deception to feign that the First Air Fleet was still training in that area. By the end of November, the armada had rendezvoused at Hitokappu Bay and all comms from Etorofu Island were placed under strict radio silence to avoid any possibilities of exposing the fleet's movements. During this period, all comms were sent to the Ominato Communications Unit via aircraft and then transmitted by radio from that facility.

The flagship of the 3rd Battleship Division (during the attack) was designated as the comms ship for the entire combined fleet and all comms with other forces were required to go through this ship. Messages to the fleet went out on 3937.5 and 7875 kHz. Messages within the fleet were transmitted on 3752.5, 4045, 7505, 8090, 11257.5 and 15010 kHz.

Communications with fighter planes were conducted by voice, but when these units had advanced 200 miles or more in conducting joint operations with the attack aircraft, CW was used. Fighters flying within 100 miles of their carriers could make use of homing beacons sent from those vessels. Planes beyond 100 miles returned by

Effective use of radio silence kept the element of surprise in the attack on Pearl Harbor. This photo was taken at the Naval Air Station during the attack in which two thirds of our naval aircraft were destroyed. (U.S. Navy photo.)



means of navigation, or were guided back by the carrier bombers.

For comms with the submarines in the operation, transmission was from station JND (17.44 kHz, 850 kW) in Osaka, remote controlled from Tokyo.

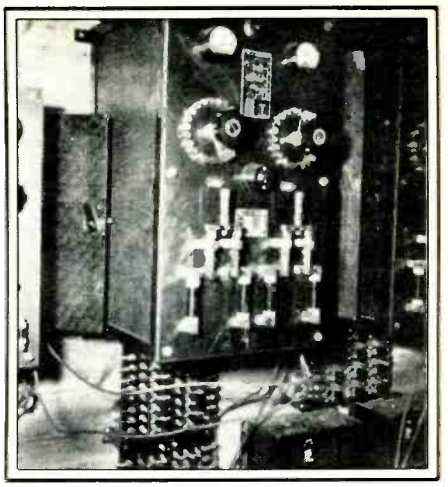
The attack on Pearl Harbor, which resulted in high civilian and military losses and casualties to our nation in terms of lives and property, saw the outbreak of a war that required Japan to utilize more than 200 frequencies for its extensive naval communications. The most important of those frequencies are shown in the accompanying listing, which also contains the secret code name for each frequency as well as other information. We believe this is the first time this data has been presented to the public in this form. Additional frequencies, of course, were utilized by Japan's other military forces.

Hardware

In ground communications, emphasis was placed on landline facilities. Radio was used initially when landline comms were being established. After wire comms were established, radio assumed a secondary role for standby purposes and for contacting distant units.

During WWII, the ground communications equipment was of obsolescent design. Circuits and components were comparable to those used by the Allies between 1935 and 1937. Equipment usually had wide frequency ranges and utilized plug-in coils. In regiments, transmitters ran between 1 and 50 watts. Equipment running more than 500 watts was primarily used for administrative traffic and air/ground liaison. Transmitters used simple Hartley oscillator circuits connected directly to the antenna.

Most equipment was crystal controlled,



Portion of an elaborate Japanese WWII power supply used at the captured Solomon Islands facility. (USMC photo.)

Imperial Japanese Navy Frequencies (1941-1945)

kHz	Code Name	Usage
17.44		HQ to subs (Station JND, Osaka)
267	A-MA 28	Matsuyama Base Comms Net (sec)
271	A-MA 30	Kanoya Warning BC Net
273	A-MA 31	Geijitsu Base Comms Net (sec)
		72nd Air Flotilla Net
283	A-MA 33	Miho Base Comms Net (sec)
284	A-MA 34	Oita Base Comms Net (sec)
359	HI 7	5th Carrier Div Bombers/Fighters
		5th Cruiser Div recon a/c
367	I-MI 27	1, 2, 6, 7, 8 Air Comms Plan
397	I-MI 43	3, 4, 6, 7, 8 Air Comms Plan
423	HI 22	5th Cruiser Div recon a/c
436	I-MI 59	Kanoya Base Comms Net (sec)
441		12th Air Flotilla Net
1405	U-ME 6	Kanoya Info BC Net
1440	U-ME 8	Omura & Matsuyama Info BC's
1560	U-ME 15	Oita Info BC Net
2015	011	9th Comms Net (bases)
2307		Flight Weather BC (CW)
2362.5		Flight Weather BC (CW)
2430		Flight Weather BC (CW)
2437.5		Flight Weather BC (CW)
2540		Fleet HQ Order Comms Net
2610		Flight Weather BC (CW)
2612.5	KE-RI 020	Flagship Comms Net
2670		Flight Weather BC (CW)
2867.5		Flight Weather BC (CW)
2887.5		Flight Weather BC (CW)
2925	KI-E 70	4th Air Comms Plan
2962.5		Flight Weather BC (CW)
3035	KU-YO 06	Geijitsu Base Comms Net (pri)
3052.5	KU-YO 07	Kanoya Base Comms Net (pri)
3112.5	KU-YO 017	3rd Warning Comms Net
3145	KU-YO 024	Kanoya Base Comms Net (pri)
3150	KU-YO 026	General Comms Net
3212.5		Flight Weather BC
3240	KU-YO 037	Miho Base Comms Net (pri)
3341.5	KU-YO 054	2, 6, 7, 8 Air Comms Plan
3345		12 Air Flotilla
3382.5	KU-YO 957	Oita Base Comms Net (pri)
3410		Base Comms Net (reserve freq)
3421	KU-YO 062	3, 8 Air Comms Plan
3430		Flight Weather BC (pri)
3452.5	KU-YO 066	Maysuyama Base Comms Net (pri)
3522.5	KE-RI 04	4th Warning Comms Net
3552.5		72 Air Flotilla Net
3567.5		Flight Weather BC
3647.5		Flight Weather BC (sec)
3672.5	KE-RI 026	2nd Broadcast Net
3752.5	TOKU 102	Yokosuka Opns Cmd Ctr (sec)
		Special Attack Sqdns (sec)
3817.5	KE-RI 038	1, 6, 7 Air Comms Plan
3910		Flight Weather BC
3937.5	KE-RI 051	1st Broadcast Net
4002.5		Flight Weather BC (CW)
4030		Base Comms Net (reserve freq)
4045		Special Attack Sqdns (pri)
4050	TO 7104	Yokosuka Opns Cmd Ctr (pri)
4117.5		12 Air Flotilla Net
4135	KO-RU 012	1 Warning Comms Net
4175	TO 14	Fleet BC's (Tokyo)
4205		Base Comms Net (reserve freq)
4270	TO 119	Emergency Net
4285	TA-HI 744	5th Carrier Div (fighters)
4305	KO-RU 033	Oita Base Comms Net (sec)
4320	MA 11	8th Comms Net (bases)
4395	KO-RU 034	Geijitsu Base Comms Net (sec)
4420	TOKU 106	Tokyo Opns Cmd Ctr (reserve)
4595	SA-RO 013	Kanoya Base Cmd Net (sec)
		Matsuyama Base Comms Net (sec)
4660	TA-HI 743	5th Carrier Div (fighters)
4665		Base Comms Net (reserve freq)
4690	KA-YU 15	Kanoya Base Comms Net (sec)
		12 Air Flotilla
4705	TO 125	Emergency Net
4842.5	TO 7108	Tokyo Opns Cmd Ctr (pri)
4745	TO 17	3rd Comms Net (bases)
4860		4th Comms Unit BC's
4870	SA-RO 83	Miho Base Comms Net (sec)
4925	RE 41	6th Comms Net (bases)
4980	TO 128	Emergency Net
5047.5	TO 129	Emergency Net
5085	TO 130	Base Comms & Emerg Nets (reserve)
5125	TO 131	Emergency Net
5132.5	TOKU 110	CinC Naval General Cmd (sec)
5180	NA 14	4th Comms Net (bases)
5212.5	KE-E 70	2nd Warning Comms Net
5225		Base Comms Net (reserve freq)
5325		Base Comms Nets (reserve freq)
5512.5	SA-TA 7	5th Warning Comms Net
5545	TO 135	Emergency Net
5550	RE 51	1st Comms Net (bases)
5725	RI 14	6th Comms Net (bases)
5850	KI-E 50	4th Air Comms Plan
5895	KI-E 55	72nd Air Flotilla (fighters)
5905	TO 139	Emergency Net
5925	YO 17	7th Comms Net (bases)
6005	KU-YO 1	72nd Air Flotilla Net
6070	KU-YO 6	Geijitsu Base Comms Net (pri)

and all crystal operated Army ground sets could also be employed as master oscillators. All voice equipment used AM-mode. None of the equipment had moisture or fungus proofing.

Japanese airborne equipment was sturdily and compactly constructed and had excellent workmanship and material. More attention was given to the compactness of design than to ease of maintenance resulting in many sets that were difficult or even impossible to service.

To some extent, equipment was designed to fit into a particular type of aircraft, rather than standardized for general use (not that all Japanese military aircraft were equipped with radio equipment). While DF equipment was standard on bombers, the equipment was not normally installed in fighters.

Interestingly, equipment that was made in America (in whole or part) was discovered in several captured Japanese Zero ("Zeke") fighters. Most parts were of Japanese manufacture, but components of German and British manufacture were noted. Exact imitations of American and German designs were also observed.

Especially interesting was the Model 97, a 9 tube CW/phone transmitter that ran 100 watts. Designed for use in bombers, and operating between 5 and 7 MHz, the Model 97's voice output could be scrambled.

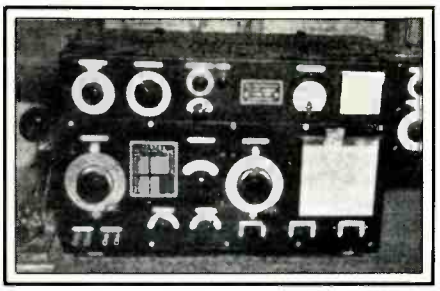
A transceiver used in dive bombers was usually found with crystals installed for operation on 458 and 7635 kHz, or (alternately) 7435 and 16580 kHz. The transceiver, used in Type 97 "Nate" single seat fighters was frequently noted as having crystals installed for operation on 4810 and 4835 kHz.

Usage of frequencies above 20 MHz was limited to only a few pieces of equipment. The Model 94 Type 6 was a short range manpack CW/voice unit that was designed in 1934. It operated in three bands between 24.20 and 49.30 MHz with a superregenerative receiver and one stage of audio. It took two to three infantry personnel to operate the unit.

An airborne VHF set was the Model 98 Type 4, operating between 44.00 and 50.40 MHz. It was a well-built unit that had a 3-tube transmitter coupled with a 7-tube superhet receiver (1500 kHz IF). The transmitter ran 10 watts.

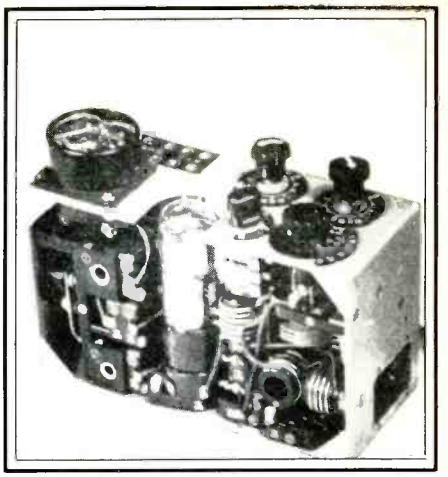
Another VHF rig was designed for short range air/air and air/ground comms in the type 88 2EB ("Lily") twin engine aircraft. The voice transceiver could operate on many preset frequencies between 44.00 and 50.00 MHz. The transmitter was a 3-tube design employing an 807 tube. The receiver was a 4-tube superhet. The

6105	KU-YO 7	Kanoya Base Comms Net (pri)
6112.5	TO 140	Emergency Net
6150		Base Comms Nets (reserve freq)
6195	KU-YO 13	72nd Air Flotilla Net
6235	TO 141	Emergency Net
6260	RE 61	5th Comms Net (bases)
	KU-YO 20	72nd Air Flotilla
6290	KU-YO 24	Kyushu Comms Net (pri)
6300	TA 23	7th Comms Net (bases)
	KU-YO 26	General Comms Net
6480	KU-YO 37	Miho Base Comms Net (pri)
6505	RE 56	1st Comms Net (bases)
6650	KU-YO 52	72nd Air Flotilla (fighters)
6685	KU-YO 54	2, 6th Air Comms Plan
6690		12th Air Flotilla
6695	025	8th Comms Net (bases)
6760	TA 25	2nd Comms Net (bases)
6765	KU-YO 57	Oita Base Comms Net (pri)
6820		Base Comms Nets (reserve freq)
6842	KU-YO 62	3, 7, 8th Air Comms Plan
6905	KU-YO 66	Matsuyama Base Comms Net (pri)
7010	RE 71	5th Comms Net (bases)
7035	TA-HI 740	5th Cruiser Div (recon a/c)
		5th Carrier Div (attack a/c)
7105	KE-RI 10	72nd Air Flotilla Net
7155	TA 27	2nd Comms Net (bases)
7225	KE-RI 20	Flagship Comms Net
7280	NA 31	Fleet BC's (Tokyo)
7282.5	TO 145	Emergency Net
7290		4th Comms Net (Bases)
7305	TO 146	Emergency Net
7315	RE 73	3rd Comms Net (bases)
7335	KE-RI 24	Kanoya Info BC Net
7345	KE-RI 26	2nd BC Net
7505	TO 7202	Special Attack Sqdns (pri)
7635	KE-RI 38	1, 6th Air Comms Plan
7655	NA18	4th Comms Net (bases)
7750	RE 77	2nd Comms Net (bases)
7855	NA35	3rd Comms Net (bases)
7875	KE-RI 51	1st BC Net
8030	012	9th Comms Net (bases)
8060		Base Comms Nets (reserve freq)
8090	TOKU 204	CinC Naval Gen Cmd (sec)
		Special Attack Sqdns (sec)
8235		12th Air Flotilla
8350	TO 15	Fleet BC's (Tokyo)
8380	FU-RU 22	Oita Info BC Net
8610	RE 81	3rd Comms Net (bases)
8640	MA 12	8th Comms Net (bases)
8840	TOKU 206	CinC Naval Gen Cmd (reserve)
8890	FU-RU 50	Fleet HQ Order Comms Net
9330		Base Comms Net (reserve freq)
9435	TAN 24	9th Comms Net (bases)
9485	TOKU 208	Tokyo Opns Cmd Ctr (sec)
9720		4th Comms Unit BC's
9850	RE 42	6th Comms Unit (bases)
9960	TO 228	Emergency Net
10170	TO 230	Emerg & Base Comms Nets
10265	TO 7210	CinC Naval Gen Cmd (pri)
10360	NA 15	4th Comms Net (bases)
10430		Base Comms Nets (reserve freq)
10650		Base Comms Nets (reserve freq)
11100	RE 52	1st Comms Net (bases)
11257.5	TOKU 302	Special Attack Sqdns (sec)
11350	YO 18	7th Comms Net (bases)
11450	RI 15	6th Comms Net (bases)
12360		Base Comms Nets (reserve freq)
12520	RE 62	5th Comms Net (bases)
12600	TAN 23	7th Comms Net (bases)
12810	TO 318	Emergency Net
13010	RE 57	1st Comms Net (bases)
13040		Base Comms Nets (reserve freq)
13260	TOKU 306	Cmdr 3rd Air Fleet (reserve)
13320	TA 26	2nd Comms Net (bases)
13390	026	8th Comms Net (bases)
13520	TO 150	Emergency Net
14020	RE 72	5th Comms Net (bases)
14310	TA 28	2nd Comms Net (bases)
14560	NA 32	Fleet BC's (Tokyo)
14580	NA 32	4th Comms Net (bases)
14630	RE 74	3rd Comms Net (bases)
14830		Fleet BC's (Tokyo)
15010	TOKU 402	Osaka Opns Cmd Ctr (sec)
15310	NA 19	4th Comms Net (bases)
15500	RE 78	2nd Comms Net (bases)
15710	NA 34	3rd Comms Net (bases)
16120		Base Comms Nets (reserve freq)
16440	TO 334	Emergency Net
16635	TO 335	Emergency Net
16700	TO 16	Fleet BC's (Tokyo)
16820		Base Comms Nets (reserve freq)
17220	RE 82	3rd Comms Net (bases)
17235	TO 151	Emergency Net
17590	TO 153	Emergency Net
17630	TO 154	Emergency Net
17680	TOKU 680	Cmdr 10th Air Fleet (reserve)
17925	TO 147	Emergency Net
18367.5	TO 340	Emergency Net
18660		Base Comms Net (reserve freq)
18980	TO 19	3rd Comms Net (bases)
19335	TO 249	Emergency Net
41350	TE-TA 1	Convoys & ASW a/c

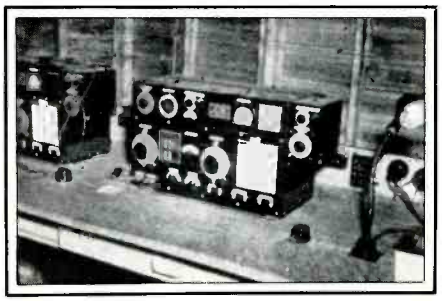


Japanese Model 92 (Revision 3) 7-tube combo TRF and superhet receiver. Designed in 1932, these sets covered 200 kHz to 20 MHz by means of seven sets of plug-in coils. Between this set and its companion Model 94 Type 2B transmitter, a total of 25 plug-in coils were required. (USMC photo.)

This behemoth was intended for use in the "Betty" medium bomber. The 6-tube receiver is at the top. Below is the 20-watt AM/CW/MCW 2-channel transmitter. It operated between 220 kHz and 10 MHz in two bands. Was rated for 200 mile CW range at 10,000 ft.



As described in the test, this is Model 94 Type 6 manpack that operated between 24 and 49 MHz. Looks like a lot of hardware for a measly half-watt power output. The antenna was a 5 ft. whip.



A pair of Model 92 receivers all set to go at the captured Japanese communications facility in the Solomon Islands, 1942. (USMC photo.)

frequency was fixed by a crystal, with IF variable by means of the tuning capacitor.

Yes, there was even a VHF walkie-talkie! It was a Model 97 Type 3, running 2 watts (or less) between 25.50 and 31.00 MHz. This was a rather poor piece of equipment in all respects. The transmitter was a master oscillator (Hartley) and modulator. It drifted considerably. The super-regen receiver with one stage of audio wasn't so hot either. One UX-19 twin triode served all functions and was powered by a hand operated generator delivering 3 volts for the filaments and 135 volts for the plates. The antenna was a dipole, each half 23 inches long and fastened to the case. The idea was to strap the case to the back, the generator to the chest. Was rated for 2 to 3 miles. Lotsa luck! The one other notable VHF transceiver was intended for air/ground use in medium bombers. This was a 25 watt CW and voice unit that operated on several preset frequencies within the range 29.50 to 52.50 MHz. With its MOPA transmitter and 6-tube superhet (2400 kHz IF) inhaler, it had a range of 5 to 60 miles and was highly regarded.

Examples of these and other Japanese radios were captured throughout the entire course of the war in the Pacific. After capture, the better pieces of equipment were actually pressed into service by our own forces. In the absence of operating and maintenance manuals, hams and other tinkerers from the Allied Forces were often relied upon to figure out how to get them going and to fix them. Examples of this were discussed in [QST Magazine] for April (page 17) and September (pages 44 and 45), 1943.

A complete Japanese communications station in the Solomon Islands was abandoned during the early stages of the fierce fighting there. The station was intact and fully operational, so the U.S. Marine Corps put the equipment into use in their own networks.

Another similar Japanese communications facility was captured in complete working condition by the Marine Corps at Guadalcanal in August of 1942. Three HF (3700 to 18200 kHz) transmitters plus a 2kW LF (50 to 600 kHz) transmitter were at this station. This was another installation that was placed in operation by the Allied Forces after its capture.

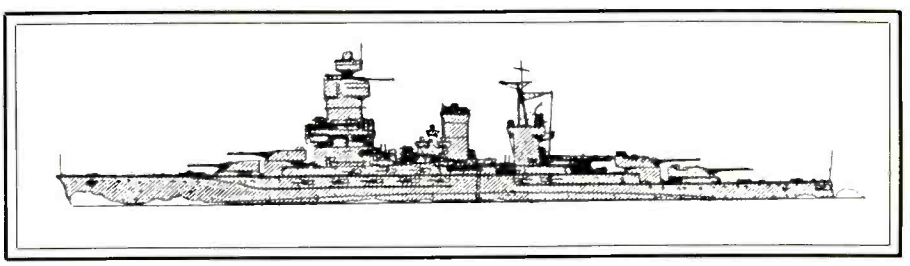
The capture and re-use of the enemy's communications facilities added to our use of his captured weapons, structures, and vehicles. A number of large Japanese naval vessels were also captured and given the ultimate loss of dignity: being assigned U.S. Navy radio callsigns. The Japanese hospital ship *HIJMS Tachibana* was given the callsign NQUT by its captors, while the Heavy Cruiser *HIJMS Sakawa* became known on the airwaves under its new USN callsign, NCKX. Perhaps one of the most impressive prizes was the 32,720 ton, 700 ft., Battleship *HIJMS Nagato*, which was captured and promptly given the USN callsign NCIL. Soon after, our forces sank the ship.

The capture and use of enemy facilities and equipment was a matter of pride to the victors. But, keep in mind that in terms of lives lost by the Allies at Guadalcanal, Bataan, Tulagi, Tarawa, Corregidor, Iwo Jima, Makin Atoll, Pearl Harbor, and the Philippines, and many other places in the Pacific, the price we paid to capture these items was enormous. It was a price paid not only by nations, but by those brave men who fell or were wounded in battle; by their familes and friends.

Before We Say "30" to '88 . . .

Next issue we hope to be back with our regular assortment of historical tidbits from here and there, including a couple of very special treats. Till then, please accept my best wishes for a wonderful holiday season. **PC**

The Japanese Battleship "Nagato" was captured and assigned a U.S. Navy callsign, almost the ultimate indignity. The absolute ultimate indignity came a little later when the defeated ship was sunk by its captors.



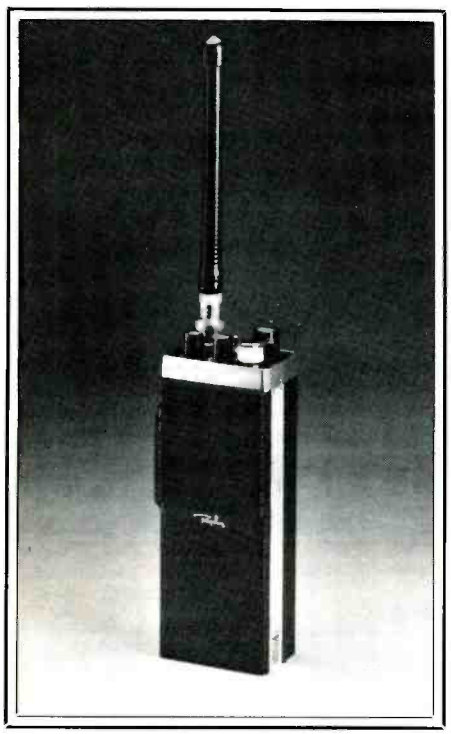
PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS

Diecast Portables

Regency Plus HH Die-Cast Portable radios meet the criteria considered essential for a top flight portable radio . . . durability and dependability.

Utilizing a Die-cat metal mainframe, the HH Series Portables stand up to all the punishment a hard working radio receives when it is on the job. Yet, it weighs in at a mere 16 ounces so it never becomes a burden.



The HH Series is available in three bands. The UHF HH 464 D2/D4 has four watts of power and two or four channel capability. In VHF High Band, the HH 154/156 features 4 or 6 watts of power, switchable to 1 watt and up to six channel capability. The HH 505 rounds out the series with five watts of power and four channels in Low Band.

These crystal controlled radios are adaptable to radio common carrier and systems with all standard E.I.A. subaudible (CTCSS) tones, two-tone sequential and various other signalling formats. The HH Series Portables also carry a two year limited warranty.

For more information, contact Regency Land Mobile, Inc., 7707 Records St., Indianapolis, IN 46226, or circle 10 on our Readers' Service.

A New Kind Of Radio

A new radio that provides a very different set of control options is in the final stages of development at Comer Communications. The purpose of the design is to put a high performance receiver in a small box that may be placed anywhere convenient to the user with control done remotely by either a personal computer or a keypad with a 32 character alpha-numeric display. Because power for the unit is 12 volts D.C., it readily lends itself to base, mobile or portable applications. Housed in a die-cast metal box 7″ ×4″×2″, the radio has connections for: power input, antenna input, remote speaker, RS232 port and a separate 600 ohm output for external data decoders.

Operating modes include AM, FM upper and lower sidebands, CW, FAX and RTTY from 10 kHz to 30 MHz. Used with a computer (IBM compatible) the radio's operating mode, frequency and other control information is displayed on the computer CRT. Actual control of the radio may be through a mouse or the computer keyboard. A program for normal receiver operation is so simple as to require no computer skills. A second program that includes all documentation and a library of special functions enables the computer-skilled to write their own special application programs. Programming is supplied with the radio in floppy disc form.

Sensitivity of the radio varies with mode of operation. On narrow band CW, for instance, sensitivity is .15 microvolts; for CW, SSB and FSK it is .25; for FM it is .5; for AM it is under 1. Frequency stability under normal temperature conditions is ten parts per million but may optionally be improved to 0.5 PPM. Frequency selection steps may be as small as 5 kHz or as large as the operator wants within the range of frequency coverage. Standard RF bandwidths are 3 kHz and 10 kHz. Optional bandwidths from .4 kHz to 30 kHz may be selected using Collins 455 kHz mechanical filters and 8 pole ceramic filters. An IF noise blanker is standard. Dynamic range is around 100 dB.

Special programming for the receiver/computer hook up have been planned but not written. Anyone who cares to suggest unique computer programs to drive the receiver is welcome to send in one or more.

For any information concerning the Comer R232 radio you may contact ICI, 4521 Campus Drive #113, Irvine,CA 92715, or circle 102 on our Readers' Service.

Remote Controlled Scanning System For The ICOM IC-R71A Receiver

Systems and Software Int'l, Ltd., is pleased to announce the continued expansion of their Remote Controlled Scanning System line of software products with the addition of support for the ICOM R71-A receiver. RCSS for the R-7000 is now almost 2 years old and has been sold in seven different countries, multiple government agencies as well as to scanner enthusiasts. All of the features found in the R-7000 software including color have been included in the RCSS 71A. Additional features have been added to the existing options for scanning by frequency ranges and Banks of user defined frequencies in the RCSS 71A software. An example of these additional features is the ability to scan by paired frequencies. Many times the individual monitoring the frequency has been listening to one frequency only to have the other party on a different frequency. Now, the built in data base will allow the user to enter a companion frequency to be checked for activity before moving on to the next main frequency. When activity on the companion frequency is stopped, it will check its primary frequency before moving to the next frequency stored in the user's bank of frequencies. If activity is found, it will be monitored before moving on thru the data base.

The data base has been expanded to now include the ability to print reports, listing all of the primary and companion frequency data in each record and detailing that activity. RCSS R-71A also includes a second data base to add functions that allow you to set up your receiver in a manner similar to setting a VCR for timed program recording. Do you have a particular station you want to monitor at a particular time and date? Now, just enter it into your computer.

Now you can program your receiver to change frequencies and mode (AM, USB, LSB etc.) by time and date. Those of you doing propagation studies can use this function to record stations on different frequencies, at certain times, to listen to later to compare the reception.

The combination of the features taken from RCSS for the IC-R7000 receivers and the new additional features for the IC-R71A gives you the ability to control you monitoring in a manner not available before to the general public. Both programs can be run simultaneously on one computer to allow the control of an R-71A receiver and a R-7000 receiver at the same time. Both will operate independently allowing data collection to take place in each programs data base.

Shipments of RCSS for the R-7000 are available from stock and the new RCSS for the R-71A will start no later than December 1st, 1988. For further information contact: Systems and Software International, 4639 Timber Ridge Drive, Dumfries, Virginia 22026. (703) 680-3559.

PRO-2004 400 Channel Memory Expansion

Adding 100 More Channels to Your Realistic PRO-2004 Turns It Into A 400-Channel Superscanner

BY ALAN SMITHEE, KCA6WX

In August of 1987, I read in POP'COMM how to restore the "missing" 800 MHz frequency coverage to my realistic PRO-2004 scanner. It was a simple modification that has increased my enjoyment of this excellent scanner by a factor of ten. Now it's my turn to help others to even further add to the versatility of the PRO-2004.

I had heard rumors of there being a way of adding 100 more channels to the memory of the PRO-2004, turning the 300-channel scanner into a 400-channel unit. Writing to POP'COMM in the hopes of finding out if this could be done, I was sent some information that was submitted to the magazine by reader Al Traylor, KT4F, of Tennessee. With it was a note suggesting that I might like to try Traylor's suggestions and then write them up in the form of a feature for POP'COMM. Traylor's modification worked, so I'm happy to pass it along.

Note that any modifications to the scanner will probably void the warranty of the unit. Persons having no experience in working on electronic equipment would be best advised to seek the services of a technician for the modification. Three safety precautions should be observed. First, the PRO-2004 must be unplugged from its 117 VAC or 12 VDC power source, also disconnect the antenna system. Second, discharge any static electricity from your body before touching any part(s) inside the case of the PRO-2004. Lastly, use a low wattage soldering tool with a grounded tip.

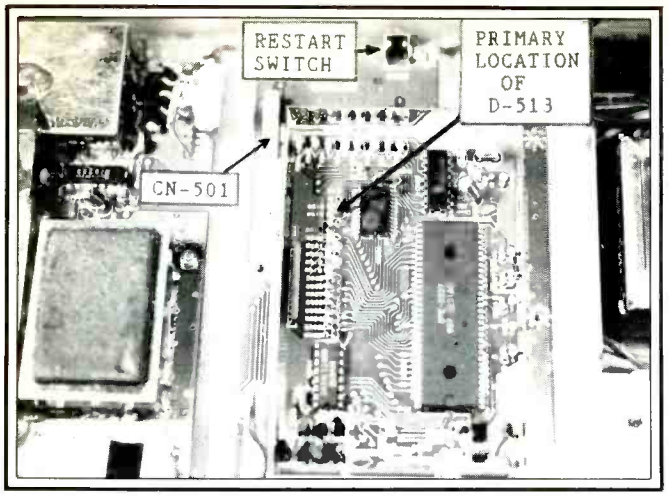
The Realistic PRO-2004 poised for action.

Note that this modified PRO-2004 shows it receiving on Channel #400. Not bad for a scanner that was only supposed to receive 300 channels! You may not even be able to fill up all 400 channels with active frequencies.

The Nitty Gritty

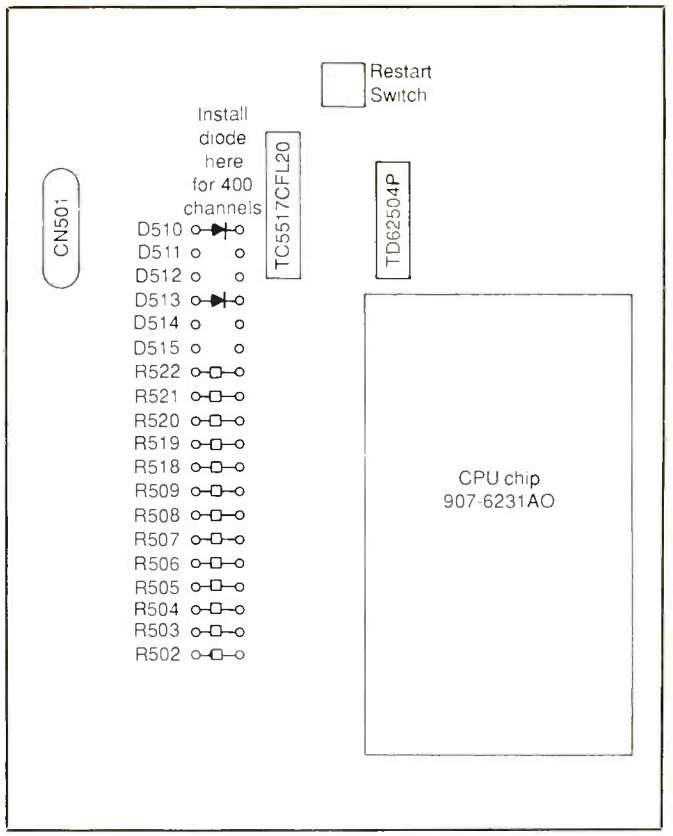
Take out the four screws from the rear of the PRO-2004, then slide the chassis forward and out of the case. Then, turn the PRO-2004 upside down and find the metal box type of sub-chassis. It's the one with the *Restart* switch (SW-101) on the PRO-2004's back panel (don't get this confused with the *Reset* key on the scanner's front panel). The sub-chassis should be marked *PC-3* in the rear of the board.

Carefully pry the cover off the sub-chassis. Inside, there's the CPU chip, the only IC of that size in the scanner. To the left of this chip is a row of resistors and diodes. At one



Here's a photo showing the sub-assembly in question, plus the location of major landmarks you can use as a guide. (Photo by Dr. Rigormortis.)

It takes only a few minutes to make this modification. But use a low-heat soldering gun (the one being used in the photo on the PRO-2004 is a bit bigger than necessary or advisable).



A close-up diagram of the sub-assembly showing where the diode is to be installed at the D-510 position. If there is a factory-installed jumper across D-510 (on either side of the PC board), it should be removed prior to installing the diode. Observe diode polarity.

end of the row is part number *R-502*, followed, in line, by *R-503*, *R-504*, etc.

As you look up this row in the direction of the *Restart* switch, you'll notice that at the end of the row closest to the *Restart* switch there are unused and (often) unmarked holes where components weren't installed. The final factory-installed component in this row is *D-513*, and after that there are three unused mounting positions which may or may not be marked *D-512*, *D-511*, and *D-510*. The final unused pair of holes at the end of the row is *D-510*. That's the one we are seeking for our purposes.

Apparently, on *some* (but not most) PRO-2004's, there's a short wire or solder jumper across the two *D-510* mounting holes. It's possible that this is on the other (bottom) surface of the sub-assembly board. In any event, that jumper (should it exist) will have to be carefully removed with a de-soldering tool. Be sure to handle the sub-assembly board and cable connector CN-501 with tender loving care since even the slightest damage or minor crack in the board will result in a scanner that is good only for use as a boat anchor.

Onward and Upward

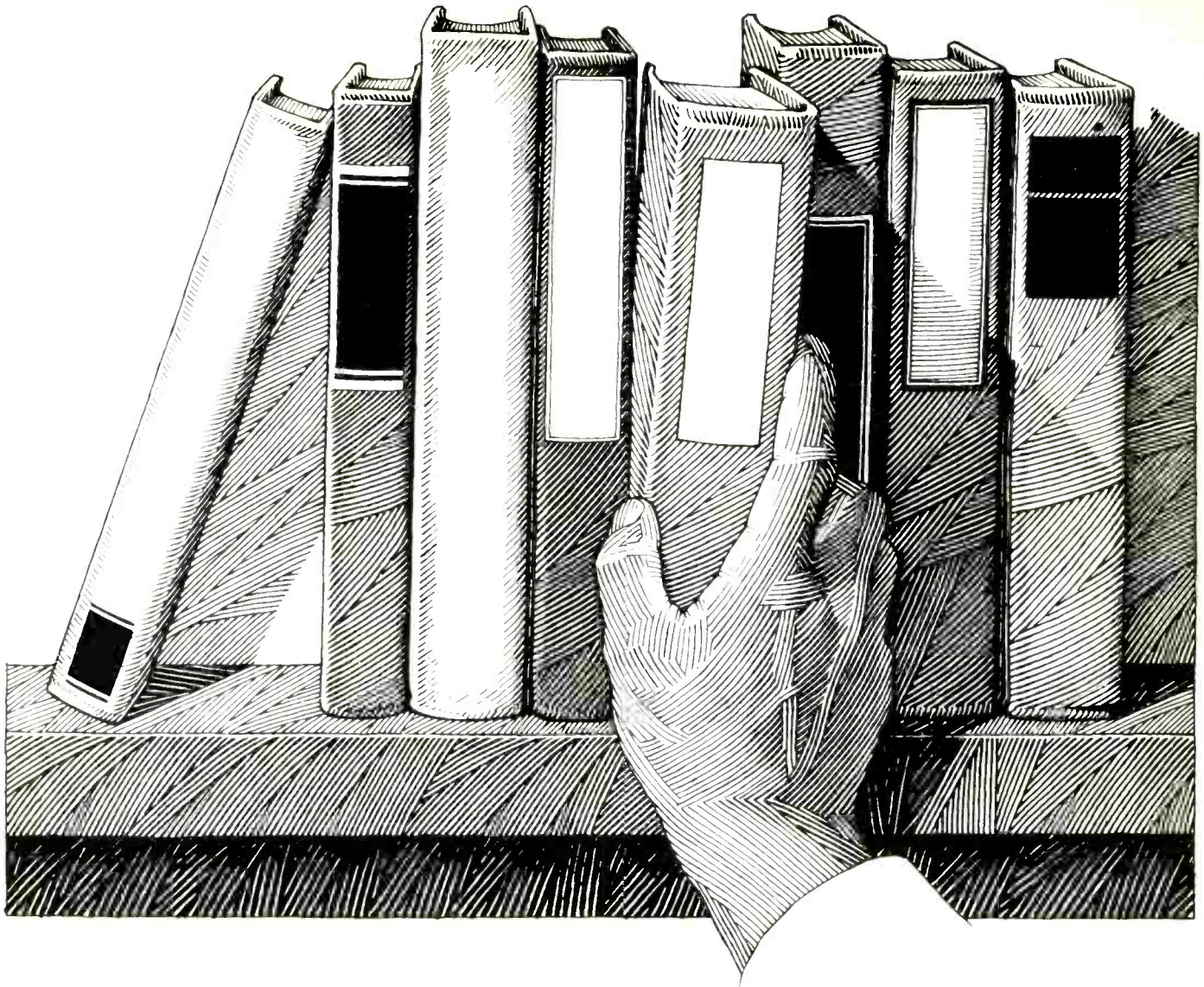
If you still have the old *D-513* diode that you had snipped out out in order to restore the missing 800 MHz frequencies, you're in luck. Otherwise, you'll have to find one in the junk box or else buy one. Should you have to buy one, an inexpensive route to go is to Radio Shack for a bargain pack of fifty 1N914 silicon diodes for about $2. These are #276-1620 on page 120 of the 1989 Radio Shack catalog.

Observing correct polarity, the diode should be gently soldered into place in the *D-510* mounting holes. The 400-channel modification is completed. The PRO-2004 can now be carefully reassembled, connected to power and antenna, and put into service. The main difference is that now, instead of 30 channels in each of the 10 memory banks, you'll have 40 channels!

Should you decide to have a technician perform this work for you, we'd guesstimate that for the time and work involved, you should expect to pay about $20 to $35.

In Al Traylor's notes on the modification, he observed that he had not yet figured out the purpose of the *D-511* position, but that the *D-512* was installed on European and Australian models. We already know that when the *D-513* is installed, it locks out the cellular bands. Traylor comments that *D-514* seems to increase the scan rate above 16 channels per second. He hasn't yet figured out the function of factory-installed *D-515*.

Several of my friends have modified their PRO-2004's for 400-channel memories. This has brought up the question as to why this beautiful piece of equipment was simply put on the market with this diode installed at the factory and a 400-channel capability. We have no answer at this time. PC



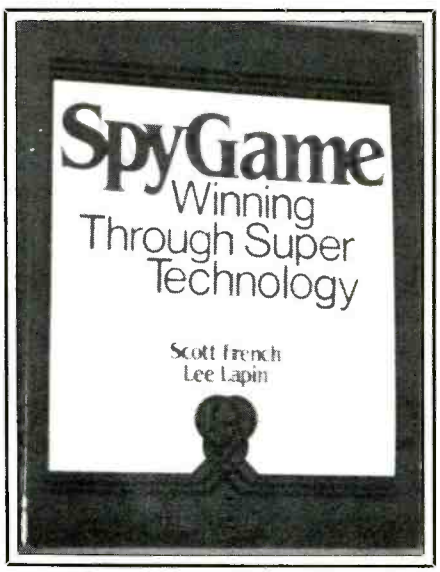
BOOKS YOU'LL LIKE!

BY R. L. SLATTERY

Winning Through Technology

A while back, authors Scott French and Lee Lapin brought out a $45 hardcover bestselling book called *Ninja 1990*. This was a great how-to book on high-tech intelligence gathering and other related topics. The book has just been updated and brought out in a new softcover version called *Spygame, Winning Through Super Technology*. Although the new edition costs considerably less, it is a gigantic and massive 520-page book that's more than an inch thick.

This fully illustrated book weighs in at more than 3 lbs., and in 119 chapters, explores such topics as audio acquisition, electronic surveillance, surreptitious infrared audio eavesdropping, laserbugs, laser communications, using a VHF scanner for surveillance, communication codes, computer security, securing telephones, defeating electronic surveillance, electronic weapons, sources, fake passports and ID, armor, hi-tech super weapons, keeping your information secure, optical surveillance, detection techniques, ballistic armor, and lots more.



It's loaded with photos, diagrams, schematics, how-to information that all comes together to provide you with hard-to-find inside information on all the latest and most effective hardware and techniques for all sorts of every imaginable type of covert operation and for self-preservation in a high-tech environment. Anything is possible with this arsenal of easy-to-understand information.

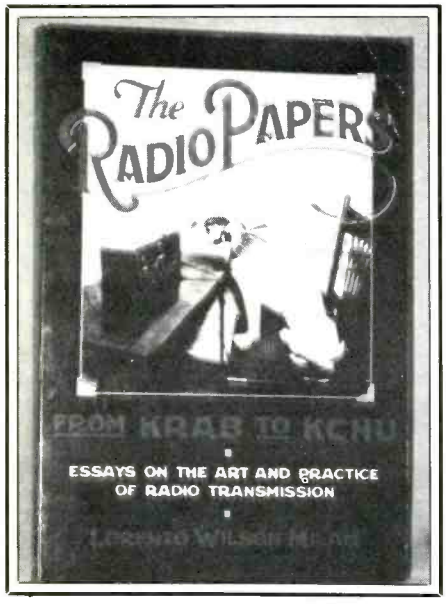
Essentially, it's an authoritative and complete library of do-it-yourself espionage and counter-espionage. The ultimate all-in-one reference guide to snooping and protecting yourself from the same. It's written in layman's language.

The new *Spygame* is $29.95, plus $2 postage/handling to addresses in USA/Canada/FPO. It's available from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. New York residents please include sales tax. Makes an excellent gift for that person who seems to "have everything."

Radio Offbeat

In the October issue, we told you about Lorenzo W. Milam's totally outrageous book, *Sex and Broadcasting*. That brought us so many letters asking for "more Milam" that this month we'll let you know about his other book.

For those who were asleep at the headphones last October and don't recall Lorenzo W. Milam, he is a passionate radiophile, and the acknowledged Johnny Appleseed of low-power, low-budget, non-commercial ("community") FM broadcasting stations. He's put these stations on the air in many cities, explaining, in his *Sex and Broadcasting* book, how *anybody* can put such a station on the air (everything from licensing, raising money, buying cheap equipment, to programming and getting volunteers to do all the work). But, mostly, Milam is an extremely clever author, whose penetrating, witty, and barbed observations



on the stations, the FCC, the programs, the listeners, fund raising, the competition, the problems and general confusion surrounding this form of grass-roots broadcasting are genuinely informative while also managing to be hilarious.

His other book is entitled *The Radio Papers, From KRAB to KCHU: Essays On The Art and Practice of Radio Transmission*. It is a collection of essays written during the period 1962 to 1977 for the program of his low-power community FM stations KRAB (Seattle), KBOO (Portland), KDNA (St. Louis), KTAO (Los Gatos), and KCHU (Dallas).

Sprinkled throughout this 166-page volume are many photos of broadcasting. They're all from the 1920's and don't directly relate to the text, but do add greatly to the overall word picture and mood Milam is painting in *The Radio Papers*. His anecdotes of the stations, and personalities involved with the stations, make for a book that is perceptive and enjoyable reading. Anybody who, like the author, loves radio, will enjoy everything he has to say. The biting wit doesn't get in the way of his many insightful and philosophical observations. To bad Milam is such a renegade, if he were more of an establishment type, they could put him in charge of CBS-TV. *Just kidding, gang!*

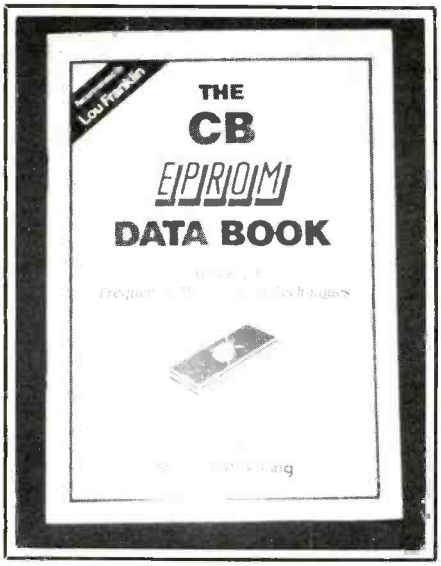
The Radio Papers is a joy on all levels of appreciation. It's a cornucopia of ideas, facts, experiences, and inside information on the pleasures and problems of low-power community broadcasting. Milam brings his topic to life, making the reader feel a part of the chaos.

The Radio Papers may be ordered from Mho and Mho Works, Box 33135, San Diego, CA 33135. In softcover, it's $9.95, plus $2 postage.

It's Done With Frequency

What with holders of Novice and Tech ham tickets now able to use SSB mode in a 200 kHz portion of of the 28 MHz band, some operators have have realized that converting 27 MHz CB equipment for this nearby band might be a way to go.

Enter the scene Martin Pickering, a British engineer who has put together a book called *The CB EPROM Data Book*. His 54-page



book shows how, by using an Erasable Programmable Read-Only Memory (EPROM), or similar PROM chip, this trick can be accomplished. Aside from getting that 40 channel 27 MHz rig to operate on 28 MHz, it will also operate in 5 kHz (instead of 10 kHz) increments, and be able to become programmed for 100 kHz T/R repeater spreads on 28 MHz. This book has exact 28 MHz EPROM program charts for popular SSB chassis, with pinout specs for all the most common EPROM chips. There's even info on buying and programming the chips for their conversions.

EPROMS and their use in PLL programming are explained in an easy step-by-step manner. Still, this is not a book for the beginner or other "all thumbs" type of *klutz*. It assumes that that the reader has a thorough understanding of PLL synthesizer circuits, and basic RF and digital electronics. It teaches the hexadecimal programming and provides the actual conversion circuits, but the rest is up to you. Note that the book contains information for legal CB conversions to the 10 meter ham band, but none for illegal CB conversions to *outbander* frequencies.

[The CB Eprom Data Book] comes from CB City International, P.O. Box 31500, Phoenix, AZ 85046. Price is $17.00, including postage. PC

CORRECTION

In November, we listed the incorrect price for the Official New Hampshire Scanner Guide. The correct price is $14.95 plus $2.05 postage/handling. Send to: Official Scanner Guides, P.O. Box 712, Londonderry, NH 03053.

Mediumwave Aussie Powerhouse Stations

This Is The Season to Try to Log Those 50 kW Australian BCB Stations

BY RANSOM STODDARD, KWA7MZ

Australia has Kangaroos and Koalas, plus more than 150 privately owned AM broadcasting stations. The maximum transmitter power for privately owned AM broadcasters in Australia is 5 kW. All things considered, these stations are virtually impossible for the average North American DX chaser to copy.

All is not lost, for there are an additional group of stations that you just *might* be able to log some dark, cold, winter's night. These are the 50 kW stations operated by Australian Broadcasting Corporation (ABC), a branch of the Australian government. There are about one hundred ABC stations on the AM band. While some run only 50 watts, a few pack a 50 kW wallop and operate on a round-the-clock basis. These are the stations that you stand the best chance of hearing in North America.

And don't forget, Australia's AM broadcasting band is (like some other nations) slightly out of kilter with the band alignment in the USA and Canada. In Australia, the band begins at 531 kHz and ends up on 1602 kHz, with assignable frequencies separated by 9 kHz. This places Australian frequencies slightly offset from North American assignments. That provides the opportunity to tune between North American assignments and try to pick some of these stations out from the sidebands of American and Canadian stations. That doesn't mean it's not going to be a *real* challenge to hear any of these stations.

Still, there are those diligent and proficient DX'ers who do manage to sort through the heterdynes to pin down identifications for these stations. If you've got the eye of the tiger, a sensitive and selective receiver, and a good antenna that's directional towards *Foster's Lager* and friends, you just might become a member of that happy band of honored souls. To give you all the help possible, we'll even provide you with a listing of the most powerful (50 kW) ABC stations to try for. That's as easy as we can make from this end, the rest is up to you!

Australian Broadcasting Corp. 50 kW Mediumwave Stations

549 kHz	2CR	Orange, NSW	24 hrs
558 kHz	6WA	Wagin, WA	2100-1602 UTC
576 kHz	2FC	Sydney, NSW	24 hrs
594 kHz	3WV	Horsham, Victoria	24 hrs
612 kHz	4QR	Brisbane, Qld.	24 hrs
621 kHz	3AR	Melbourne, Victoria	24 hrs
630 kHz	4QN	Townsville, Qld.	24 hrs
702 kHz	2BL	Sydney, NSW	24 hrs
720 kHz	6WF	Perth, WA	24 hrs
729 kHz	5CL	Adelaide, SA	24 hrs
738 kHz	2NR	Grafton, NSW	24 hrs
774 kHz	3LO	Melbourne, NSW	24 hrs
891 kHz	5AN	Adelaide, SA	1930-1430 UTC
1548 kHz	4QD	Emerald, Qld.	24 hrs

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Ameco Novice Code and Theory Package
A complete training package containing the 128-page Novice theory course and a 60-minute code cassette, which teaches how to send and receive code up to 8 words per minute, and a 32-page book.
$9.95. Order #H024.

The Radio Publications Group—The "Bill Orr Series"
These easy reading classics belong in the library of any active ham. Loaded with practical how-to information, with tables, charts, and formulas arranged for handy reference.
Beam Antenna Handbook, 200 pages, paperback, $11.95. Order #H143.
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Antenna Handbook, 192 pp. paperback, $11.95. Order H145.
Cubical Quad Antennas, 112 pages, paperback, $9.95 Order #R146.
Vertical Antennas, 192 pages, paperback, $10.95. Order #H303.
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World Radio TV Handbook 1988
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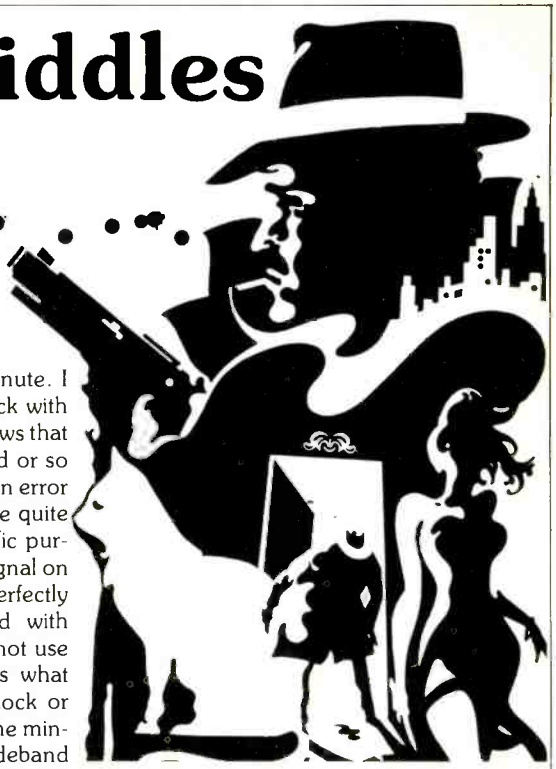


BY HARRY HELMS, AA6FW

Everyone loves a mystery, and SWL's are no exception. Some DX'ers spend time and energy tracking down the real story behind clandestine broadcasters, while others try to find the locations of various numbers station transmitters. Still other DX'ers follow the strange CW nets which use tactical callsigns such as Z5N and K2P. There seems to be no shortage of activities to keep the alert SWL with an interest in "tradecraft" (as espionage/intelligence activities are referred to by CIA personnel) fully occupied.

But there are more unusual things taking place on the shortwave bands than just clandestines, numbers stations, and CW nets. This report is a collection of things in my "random file" that I've been puzzling over for some time. Hopefully, some readers will have the solution or additional information to share with the readers of POP'COMM; if not, then why not try tuning in some of this stuff and see if you can come up with another piece of the puzzle? You might be the one who comes up with the missing, essential piece!

Strange Time Signals

Faithful readers of POP'COMM will recall the report of my visit to, and DX'ing from, the USSR which appeared in the September, 1986 issue. In that article, I reported a time signal station on 7065 kHz which transmitted nothing but a pulse each second, with no longer pulse on the minute, which left the air promptly at 0300 without any identification. I have had no luck whatsoever in trying to identify what I heard, despite a search of ITU microfiche and queries to a couple of sources who might have been in a position to know. Does anyone out there have any hints?

Reporters to "Communications Confidential" have long reported a similar station on 4625 kHz, which transmits a pulse every two seconds. This station was identified as VEB2 in Gilfer's *Confidential Frequency List*, but I've been unable to get a reply out of Canada's Department of Communications concerning whether this station is indeed in Canada or its purpose. Maybe some POP'COMM readers who are Canadian taxpayers could have better luck!

Once I got interested in such weirdo time signal transmissions, I found others by patient tuning. In recent months, I've noted an AM station on 6505.5 kHz around 0530 which transmits a pulse approximately each second with no indication of the minute. I say "approximately" because a check with another receiver tuned to WWV shows that the pulse seems about a half second or so out of step with WWV. While such an error wouldn't bother most of us, it can be quite serious for navigational and scientific purposes. I've heard a more accurate signal on 9061.5 kHz around 0700 which is perfectly (at least to my ear) synchronized with WWV. However, this station does not use pulses or pips; instead, it transmits what sounds like the actual ticks of a clock or watch! There is no identification of the minute, and this station uses single sideband with enough residual carrier to allow tuning in the AM mode (although reception is best in USB).

At this point, I wonder if it is correct to refer to these stations as "time signals" even though that's what they sound like. These could be "markers" or "beacons" for other activity. A case in point is a station I've heard irregularly around 0600 to 0630 near 9231 kHz. This station operates in CW and sends a "dash" every second. It sounds very much like a time signal, but I've caught it on a few occasions interrupting the dashes for a data burst, after which it resumes the dashes. Do the other unknown time signal stations send data bursts or other material? Only additional monitoring can answer that question.

Where are the Russians

It's well known that the Soviet embassy in Washington and the Soviet consulate in San Francisco have transmitting facilities. (If not, the antenna systems must indicate that the Soviets are among the most avid DX'ers anywhere!) But those are apparently not the only Soviet transmitting facilities in the United States. Former Soviet diplomat, Arkady N. Shevchenko, in his book *Breaking With Moscow*, states that additional transmitting facilities are maintained at the Soviet United Nations mission residency in New York and at their compound in Glen Cove, Long Island. What are they used for?

The seemingly obvious answer to that question—"to communicate with their home government"—doesn't hold up well under close examination. The vast bulk of diplomatic traffic today goes via cable and satellite, both methods far more reliable than a medium depending on a quirky ionosphere. Nor is radio a more secure method. Security for diplomatic (and intelligence/espionage) traffic is more a matter of the integrity of the coding system used, than upon concealing the communication itself. It does the opposition little good to have access to a coded message without means to decode it. Given this, why maintain radio communications facilities except for emergency backup?

One possible explanation might be for low-level routine traffic, freeing cable and satellite links for priority use. Indeed, it's been established that some embassy radio stations are used to send visa requests and routine greetings "back home." But is that the only purpose? For example, suppose that the KGB or GRU was seeking to send a message via radio and the one-time pad system to an Air Force officer in their "employ" who was stationed in Colorado. What would be the best method to assure reliable reception in Colorado—transmission from some site in Eastern Europe or Siberia or transmission from a site in Washington or San Francisco?

In my own experience when I lived in Manhattan, I ran across some RTTY and "burst" type signals in the 7400 to 7500 kHz range in the late night hours which were definitely ground wave in origin (a strong, rock steady S-meter reading). I could correlate none of these signals to stations listed in ITU microfiche, or existing frequency guides.

If you live near Washington, San Francisco, or New York, you could probably find out some interesting things with a portable receiver and some patience.

What's With KKN39?

I must admit I've found the whole business with the Department of State (KKN50, etc.) radio network somewhat bogus. Supposedly, it's used to communicate with our embassies worldwide, but doesn't it seem a

little weird that Washington would need radio to communicate with embassies in London (KRH50) and Tokyo (KWL90)? Both are in friendly nations with abundant cable/satellite links, so it seems likely that they are used for something other than communications with Washington.

A few months ago, I came across station KKN39, supposedly a State Department station, transmitting a "QRA" on 4957.2 kHz around 0430. What made this reception notable, was the harsh, raspy CW note of the marker; if this were an amateur radio signal, it would have been "T4" and a sure candidate for an FCC citation! Four days later, I again heard KKN39 around 0645 UTC. This time the frequency was 4965.7 kHz, and if anything, the CW note was even worse—it reminded me of a recording of the old "spark" method of CW transmission. I checked again the next day at 0058 UTC, and this time KKN39 had a clean CW note. Curious, I continued to monitor KKN39 off and on that evening as they sent their "QRA" marker at one minute intervals. They were still going strong when I checked at 0700 UTC.

If KKN39 was really being use for two-way radio work, wouldn't the radio op at an embassy overseas have told them that their signal sounded like hell? Was I the only one listening?

I have heard other stations in the Department of State network handle two-way traffic. For example, around the time of my KKN39 reception, I heard KKN44 at Monrovia, Liberia on 7652.2 kHz break from their QRA marker at 0620 UTC to handle some rapid CW traffic at close to 35 words per minute, which is faster than I can copy CW so I missed the substance of the text. In a sterling example of inter-agency cooperation, KKN44 was nicely atop a Voice of America feeder station relaying their African service!

So what's the real story with these stations? Who are they really supposed to communicate with? How could such a lousy CW signal apparently continue for several days from KKN39? And if these stations are really used for diplomatic communications, wouldn't it make sense for there to be another transmitting site somewhere on the west coast? Propagation is possible from California to Asia much more than it is from Washington to Asia!

Still More About Numbers Stations

One of the most fascinating—and horrifying— books I've read is *The Spy Who Got Away*, David Wise's masterful account of the Edward Lee Howard story. Howard was the first (and still only) CIA officer to defect to the KGB. The book is based upon extensive research by Wise, including a visit to Budapest to interview Howard himself!

The book details incredible incompetence on the part of the CIA and FBI in dealing with Howard. The CIA hired Howard despite his admitted drug (cocaine, etc.) and alcohol problems, and decided to send him to Moscow for his first assignment. He was therefore thoroughly familiar with all aspects of the CIA Moscow center, including methods and Soviets working with the CIA. Just prior to his scheduled posting to Moscow, Howard's alcohol and drug problems got worse and he failed several required polygraphs. Fired, he returned to his native New Mexico and plotted his revenge against the CIA. he would call the Moscow embassy direct when drunk and ask to speak to CIA agents operating there under diplomatic cover. When CIA personnel contacted him about such actions, he told them that he had stood outside the Soviet consulate in Washington and had thought about going inside to sell what he knew about the CIA. The CIA merely offered to pay for psychiatric treatment for Howard.

The FBI fared no better when evidence began to indicate that Howard may have started actually dealing with the Soviets. They placed his house under what they considered to be tight surveillance—until he slipped out in his car at 4:30 p.m. one September afternoon in 1985, drove past the FBI, and vanished. Apparently, the FBI personnel were not observing the house the exact moment he left. He would surface a year later in Moscow. he bought asylum (and a pampered lifestyle by Soviet standards) by giving the KGB enough information to wipe out all U.S. intelligence operations in Moscow in one stroke. Not only were all human assets (U.S. and Soviet) lost, but also all methods and techniques (such as those used to arrange contacts or exchange documents) were compromised. Many Soviets lost their lives because of Howard. it will likely take decades to repair the damage.

In addition to being a depressing tale of CIA and FBI bumbling, *The Spy Who Got Away* has some interesting details on Howard's CIA training. One passage concerns how he was taught to receive messages consisting of number groups by radio and to decode them by using the one-time pad method. The book also mentions that the CIA also transmits many "dummy" messages intended for no one; the purpose is to simply cause more work and confusion for the KGB. It was also mentioned that the CIA sends these messages from transmitters near Washington and West Germany. All of this fits in nicely with existing "number station theory," except for one curious twist: Howard and the rest of his class were trained to decode [five digit] groups, not the four digit type transmitted from Warrenton, VA.

One possibility ia a simple error by the author or his source (a CIA official). Another is that the five digit messages are only used for training purposes (the book is not clear whether the decoding was of actual "off the air" messages or just classroom exercises). And another, more tantalizing possibility is that some of the five digit number messages originate with the CIA!

Listening to Mir

For years now, 19954 kHz has been the frequency to listen to for beacons aboard the Soviet Salyut and Mir space stations. The beacon can best be heard in upper sideband with a wide band width; you'll usually hear a single pulse or beep every two seconds, with a "trill" (some describe it as rapid dialing tones) about every minute. The "trill" is believed to be a multiplexed data signal. The signal is unmistakable and can be quite strong; if you listen long enough on 19954 kHz you will eventually hear it.

Recently, I gave a talk to the San Diego Astronomy Association about listening to Mir and made some tapes of its signals to play at the meeting. During one orbital pass, all I heard were several "trills" repeated one after the other in rapid succession. That same UTC day, one crew of cosmonauts (including a visiting Bulgarian) left Mir in their Soyuz and left some other cosmonauts aboard. The Mir beacon returned to "normal," and I haven't heard the unusual repeated "trills" since. I can't help but think that what I managed to hear and record was in some way linked to the return of the cosmonauts. Anyone have any additional clues?

If you hear any of the activity mentioned in this article, be sure to report it to "Communications Confidential." Try slowly tuning various frequencies and "really" listen to what you hear—odds are you'll find some "shortwave riddles" of your own! **PC**

A USAF "Best Kept" Secret

Too Few Many People Know About USAF MARS

"The Military Affiliate Radio System remains one of thebest-kept secrets in the Air Force; often bypassed or ignoredas an option by commanders for command and controlcommunications," said Harold R. Collins, chief of Air Force MARS, at Air Force Communications Command headquarters, Scott AFB.

"Most people see MARS as strictly a morale function," he said. "This myth needs to be dispelled. Its true value is the use of its resources during emergencies and contingencies in support of the Air Force mission.

"The B-1 bomber crash in the Colorado mountains is one example. On-scene communications failed and the only available communications was the MARS resources at Peterson AFB. A mobile MARS facility was sent from Peterson to the crash site. and it established contact between the on-scene commander and Andrews AFB, Md., MARS station."

For the next four days, a total of 82 phone patches were made by the MARS people at the crash site. These patches were transmitted through the Andrews AFB MARS station and back to the Strategic Air Command headquarters' command post at Offutt AFB, Neb.

"This was a reliable, rapid means of communications and proved once again that MARS is a viable means of command and control communications that can be called on in almost any emergency," said Mr. Collins.

"Air Force MARS is currently supporting Army units in Central America since the Army MARS has no stations in the Central American countries," he said. "Messages are sent via our station in the Republic of Panama back to Fort Bragg, NC. The MARS program is a joint-service effort and everyone cooperates."

Air Force MARS has approximately 3,000 members and 300 stations worldwide. "This means that MARS is virtually everywhere for the use of Air Force commanders," Mr. Collins said.

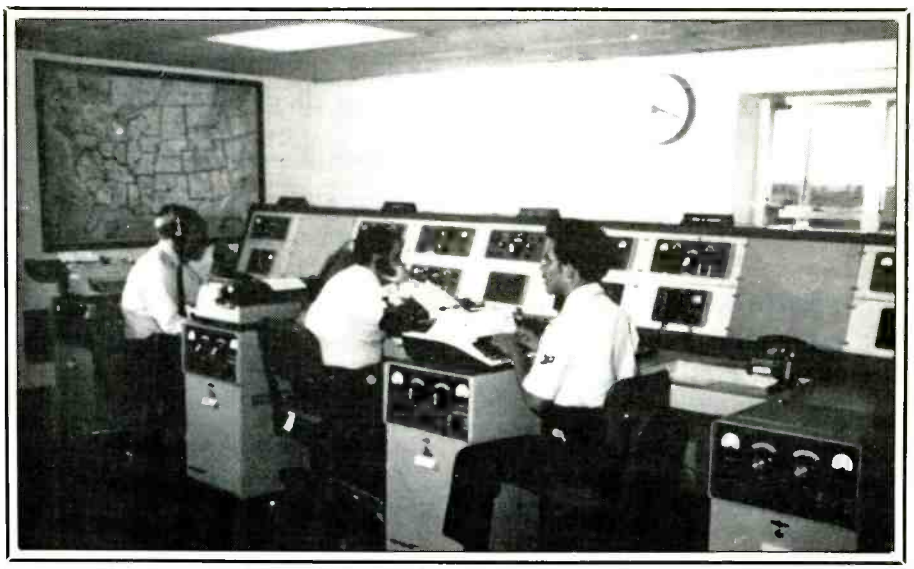
Many MARS units are replacing their old high-frequency radios with the new pacerbounce radios. Eventually, all military MARS stations will be outfitted with these state-of-the-art radios. In addition, many MARS stations are augmenting their operations with packet modems for use with computer interfacing with the high frequency and very high frequency radios. This innovation permits the transmission of messages as high-speed data, with a reliability and accuracy rate near 100 percent.

Army Maj. Gen. Francis L. Ankenbrandt (left) and Air Force Maj. Gen. Spencer B. Akim talk over a MARS station on Dec. 30, 1948. The Military Affiliate Radio System was formed jointly by the Army and Air Force on Nov. 26, 1948. (U.S. Air Force photo)

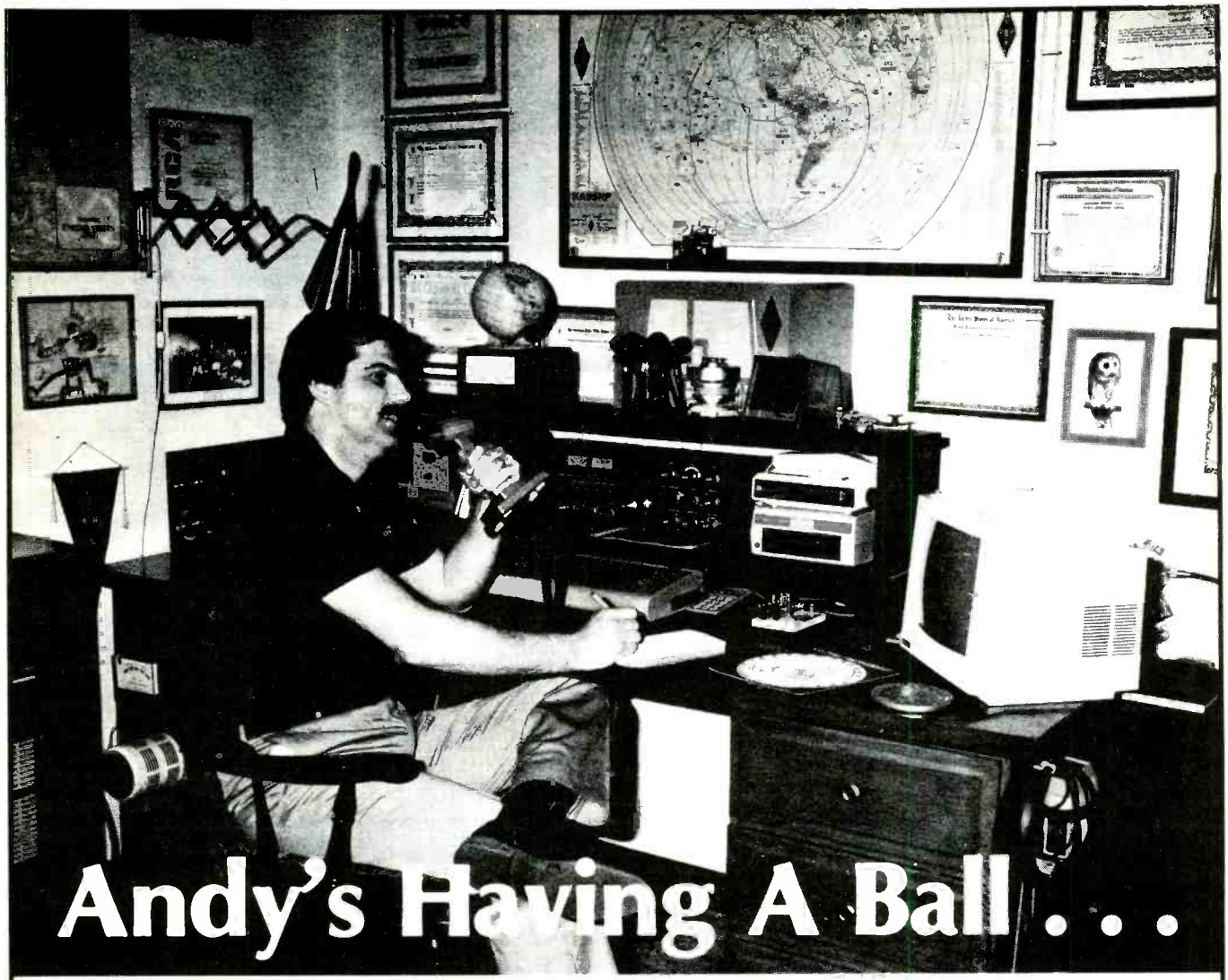
"The future of MARS carries some big challenges for the program and the commanders," Mr. Collins said. "MARS will be used extensively in future exercises, both Air Force and command wide. This means all Air Force commanders and their people will have to become familiar with with their MARS facililities and how they can use them to augment their command and control. Air Staff has already indicated it wants to see more involvement by Air Force MARS in all major exercises.

"MARS will also be the primary system used in support of the Air Force Emergency High Frequency network for Air Force Survival, Recovery and Reconstitution."

"MARS will continue to send free messages to anyone in the Department of Defense, both military and civilian, but the future of MARS will be dictated by more involvement in providing the reins of command to commanders in an emergency," Collins said. **PC**



MARS station radio operators pass voice and data traffic in support of natural disaster relief and wartime or peacetime contingencies, as well as humanitarian, morale and welfare operations. (U.S. Air Force photo)



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RFB20. AM, FM, LW, SW Coverage. Double super heterodyne for image rejection. Ear phone and carrying case included. **RFB20 $119.95** + $4 UPS

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RFB10 $89.95 + $4 UPS

TOSHIBA RPF-11. 11 Bands. AM, FM, 9 SW. One of our leading portables. Easy push buttons for band select. Travel lock. "S" Meter. Optional AC Adapter TAC65 $13.95.

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ATS803A. So much HITECH in one package, a super value. Covers all SW Bands. Tunes .150-30 MHz + FM 88-108. 9 Memories Auto Scan. Keyboard Entry. Stereo w/Headset or Line output. AC Adapter included.

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SG789. Slightly larger than SONY ICF4920 same coverage plus stereo w/headset. Power 3AA.

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D2999. Excellent performer, great sound (2 SPK) and other HITECH features make this a value packed radio. .146-26.1 MHz FM 88-108. Keyboard entry. 16 Memories. Multi-mode AM, CW, SSB, FM, Scan. 12/24 Hour clock. Loads more.

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CIRCLE 23 ON READER SERVICE CARD

POP'COMM Visits Belize

The Search for a Hard-to-Log Shortwave Broadcaster

BY SAMUEL R. ALCORN, KB2BXH

When a work project was about to take me to Belize, the shortwave receiver was hastily tuned to 3.285 MHz. If Radio Belize was there, the signal was buried somewhere beneath a powerful radioteletype signal. Several nights running, 3.285 MHz was checked, and as I left for Belize, I wasn't certain whether Radio Belize still existed.

Of course, I'd been the proud recipient of a Radio Belize QSL back in 1982. The simple black-and-white card, carrying two postage stamps bearing the flag of the newly-independent nation, instantly became one of my favorite QSL's and fueled an initial dream to one day visit the Central American county that is about the size of Massachusetts.

Now that I was traveling to Belize, formerly known as British Honduras, I had to see the shortwave outlet for myself and as I packed, I wasn't sure what I'd find. For good luck, the QSL mailed all those years ago was tucked into the luggage.

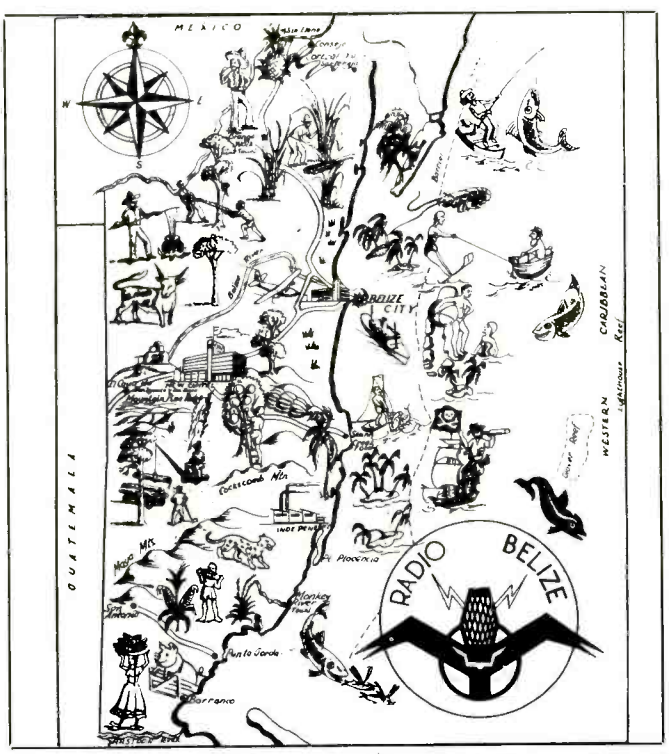
But Radio Belize would have to wait. On arrival at the Belize International Airport, I immediately boarded a four-seat Piper for Ambergris Caye, about 20 miles off the coast for the initial leg of my trip. I was staying in San Pedro, a small town of 1,500, which might be more appropriately called Sand Pedro, since the town's three streets are sand and many of the drinking holes have sand-covered floors. The international airport was being renamed the next day by Prince Phillip, as the Phillip S.W. Goldson International Airport, and, on the Piper flight some 300 feet above reef and islets, I couldn't help but think that the S.W. in the airport's new name somehow stood for shortwave.

Several days later, I was hiking along the Guatemala-Belize border, scribbling notes, trying to stay dry on a dugout boat ride down the Mocal River and touring the ancient Mayan ruins located near the Western Frontier. As amazed as I was at the 1,000-year-old ruins and as watchful as I was on the rain forest trails for deadly snakes, Radio Belize always held my attention.

I'd found on the Walkman, a station called Radio One and Friends FM, actually a series of stations comprising the Belize Broadcasting Network, or BBN as they like to say. However, residents I talked to along the way knew nothing about a shortwave facility.

I made my way out of the rain-soaked

Close-up view of the logo advertising the home of Radio One, Belize City, Belize. The shortwave broadcast is a relay of Radio One's AM programming, but the shortwave transmitter site is located 50 miles west in Belmopan, the new Capital.



Check out this interesting QSL from Radio One Belize.

Regent Street view of Radio One broadcast studios. One block from the station is a small square where vendors spread out brightly colored sheets and sell fresh fruit and vegetables.

Cayo District to Belize City, my jumping off point for home, feeling somewhat certain that Radio Belize had its plug pulled. I fondly recalled listening to the station through a haze of QRM and hearing "Jingle Bells" and thinking it an odd song coming from a tropical nation in Central America.

From the Cayo District, Belize City is a 70-mile drive across the Western Highway, a bumpy ride even today. Until only recently, the highway was a gravel road, rutted and gutted by heavy rain, and virtually impassable at times of the year. It's a mere two-hour drive today.

The car rental agency where I returned my four-wheel drive land rover offered me a ride to my hotel across town on Regent Street, one block off the Caribbean. I asked the driver if he knew where the radio station was located. "On Regent Street,"he said. When we pulled up to the hotel, he pointed to a yellow building scarcely four blocks away on the one-way street. "That is it man," he said.

Although I had not showered with hot water for four days and the jungle stink and mud still clung to my clothes, I checked in, threw my gear in a corner and made straight for the yellow building.

Outside, a sign indicated it was Radio One, but at the front door, I stopped short when I spotted a Radio One bumper sticker and at the bottom of a list of several AM and FM station locations and frequencies was "3.285 MHz" and "the Caribbean Beat in the Heart of Central America." The shortwave outlet was alive and well.

I introduced myself to station staffer Anita Cheong, who conducted a first-rate tour of the facility. What I had imagined as a small, one-room operation, was actually three floors of studios, libraries, news rooms and offices. The news room was abuzz with typewriters and Spanish and English newscasts being prepared. I was shown the Associated Press wire machine and equipment for taping Voice of America transmissions to supplement domestic news gathering facilities.

Radio One is carried in Belize City on 830 kHz and elsewhere in the country on 910, 930, 940 kHz and 91.1 MHz. Power ranges between 1 kW and 10 kW for different sites. Friends FM is carried on four outlets from Ladyville at 88.9, Dangriga at 101.1, Independence at 94.7, and Punta Gorda at 88.3, broadcasting from 1 p.m. to 5 a.m. local time.

Ms. Cheong showed me three studios used for the broadcasts and a fourth that was under construction, as well as the record library housing 45s, LPs and tapes. Compact discs haven't made their way into the library as yet. "Too expensive," says Ms. Cheong.

The facility, surrounded by the Central Bank of Belize, The Bank of Nova Scotia and an appliance store, also houses a television studio. Programs are taped and edited there and then shuttled over to the two private television stations operating in the country for airing. Soon, it is hoped, the TV studio will be used for direct broadcasts on a government channel.

I listen to an on-air announcer alternating between Spanish and English. Along the way, Ms. Cheong introduces me to station newscasters, announcers, librarians and senior technician Luke Stuart. I explained my visit to Mr. Stuart and pulled out the QSL I'd carried across beach and mountain. He smiled and examined the chief broadcasting officer's signature on the card, saying the person now lives in the U.S. "This is some time ago," he says. Indeed, the card verifies an April 1, 1982 reception.

I ask where the Belizean shortwave outlet is heard these days. While I'd been unable to hear the station in northern New Jersey, it was indeed being heard elsewhere in the country, Canada and as far away as Sweden, Austria, Norway and Finland. I casually tell Mr. Stuart that that isn't bad for 1 kW facility and he smiles again, saying, "miracles happen." PC

BY ED NOLL W3FQJ

The Low Square Loop

When you are interested in low-frequency bands, HF ham operation, or tropical bands SWB reception and you don't have room to spread out a long single resonant wire on these frequencies, give some thought to a square loop. You can feed it at the center of one of the legs, or at a corner in diamond-like manner, Fig. 1. Choose the feed point that is most convenient to your location. Dimensions in the table represent a full wavelength on the HF ham and SWB band. The basic equation is given so you can calculate the length needed to obtain resonance on some specific frequency:

$$\text{Loop Wire Length (in feet)} = \frac{984}{\lambda\text{MHz}}$$

Such a loop has good bandwidth and for reception purpose only, the cut is not that critical. For ham use without a tuner, you may wish to cut the wire two percent longer so you can trim it back to some exact resonant frequency for minimum SWR. If you are using a tuner, then the cut becomes less critical.

Note from the table, that a full wavelength cut for 3.8 MHz is 259′ and, for the 75M shortwave broadcast band it is 249′. For reception only, there would be little difference in performance. However, a ham might wish to have minimum SWR centered about 3.8 MHz and the exact cut then becomes more important.

The low loop of Fig. 2 resonated on 3.82 MHz and in my location it was fed at a corner because that point could be located just a short distance from the radioroom. The total length of wire to obtain resonance on 3.82 was 255′. The mast at the feed point was 10′ high and the remaining three were 19′ tall.

The loop did very well for general all-band shortwave broadcast reception and did not occupy much space. If your interest is only in the 41 meter band and SWB bands that are higher in frequency, your total length of wire need only be about 137′ as shown in the table. Such a squared loop could then be erected in a reduced area about 35′ × 35′.

Loops need not be squared to be successful. Hams have been winding them through short and tall trees using insulated wire for some time and operating them successfully on a number of bands with the use of a tuner. Tuner use permits multi-band opertion of loop configurations. Often the loops are fed with open-wire transmission line. Such line contributes little loss despite a high SWR when you tune up on bands off the resonant band of the loop. A good tuner will also peak the incoming signals for you.

In working with loops of various types, I've noticed the performance on some off-frequency bands can be improved by opening the loop at the center of the wire. The final version of the diamond installed here is shown in Fig. 3 and differs from Fig. 2 in that the antenna end wires drop down the far

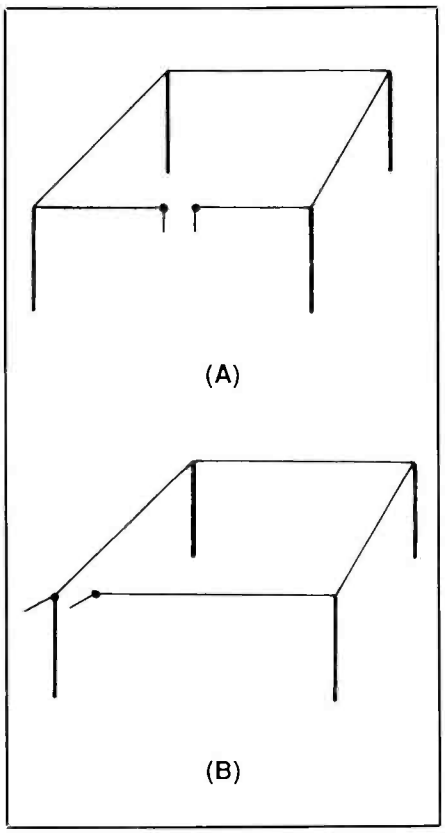


Fig. 1- Horizontal square loops, side-fed (A) and corner-fed.

Table 1

Meters	MHz	Total Wire Length
120	2.4	410′
90	3.3	298′
75	3.95	249′
60	4.9	201′
49	6.0	164′
41	7.2	137′
31	9.7	101′5″
25	11.8	83′4″
21	13.7	71′10″
19	15.3	64′3″
16	17.7	55′7″
13	21.6	45′7″
11	25.8	38′2″
Meters	**MHz**	**Total Wire Length**
160	1.85	532′
80	3.8	259′
40	7.2	137′
30	10.12	97′3″
20	14.24	69′1″
17	18.11	54′4″
15	21.3	46′2″
12	24.95	39′6″
10	28.5	34′6″

Table 1- Full-wave low loop wire lengths for shortwave broadcast and ham bands.

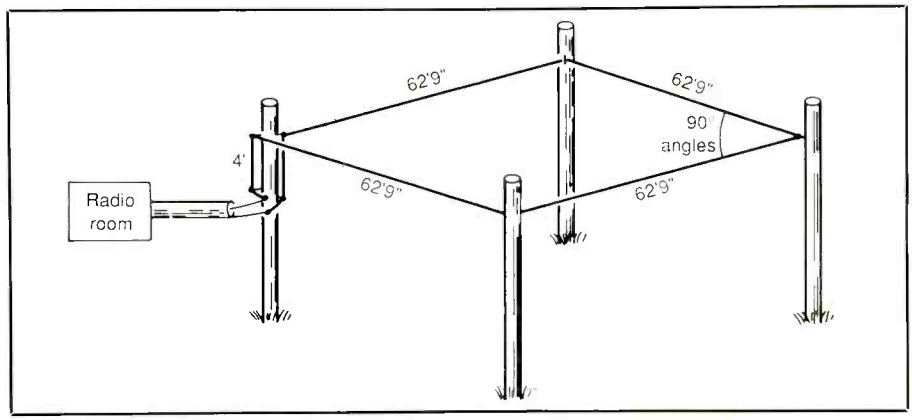


Fig. 2- End-fed diamond loop.

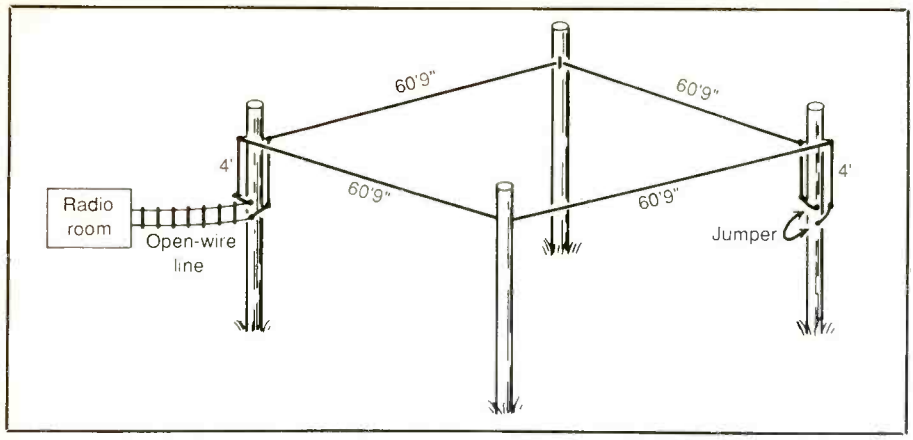


Fig. 3- Modification of diamond loop to improve all-band results.

PVC mast to a level accessible for changing between closed or open loop operation, Fig. 4. Also, open-wire line connects the loop to the tuner. The loop closed always performed better on the resonant band. Open operation provides improvement on most of the other bands.

Performance is influenced by whether the diamond is a right angled one or stretched out as in Fig.5. At any rate, if it is at all possible, it is helpful to be able to find out whether the opened or closed loop provides the better results on each of the various bands.

A stretched out version also becomes more bi-directional on the higher frequency bands taking on some rhombic-like characteristics on 10, 11, 12, 15 and 16 meters as indicated by arrows. Thus, you may wish to try to angle the stretched out loop in some favorite direction. The loop is an interesting multi-band antenna and with a tuner you can cover a wide span of frequencies. The open connection produces a decided improvement on bands lower in frequency than the band for which it is cut. A good tuner will further peak the received signals.

Some of you ham and shortwave listeners have a favorite wire antenna you have evolved to meet your special site or needs. Readers would like to hear about it. Send in a clear drawing with dimensions and a short qeirw-up including results. If suitable, we'll find a spot for it in the column.

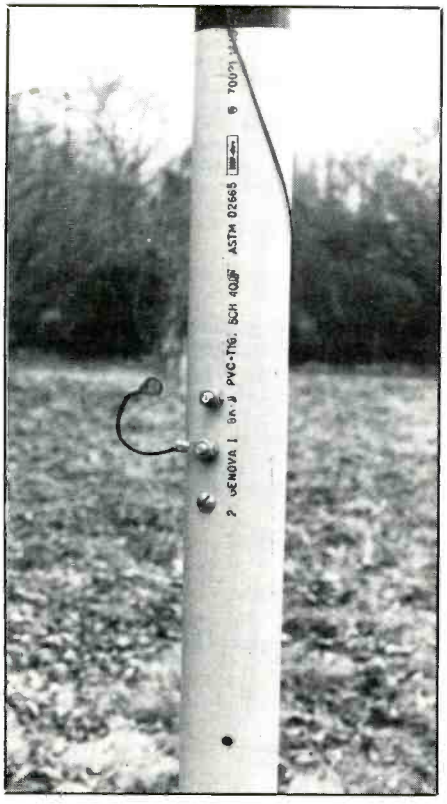


Fig. 4- Terminals attached to far mast of diamond can be used to operate loop open or closed.

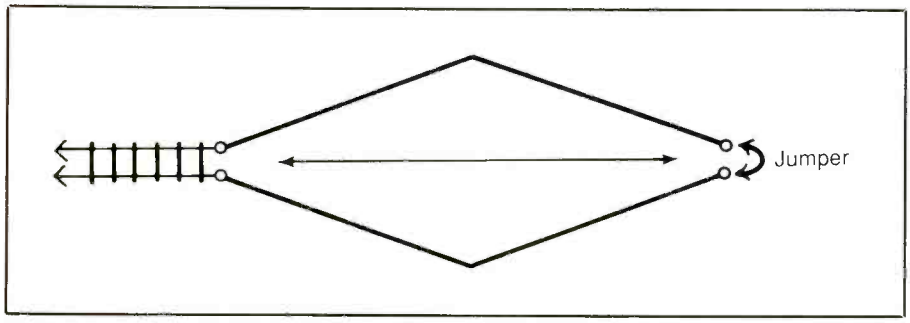


Fig. 5- Elongated diamond loop.

PIRATES DEN

FOCUS ON FREE RADIO BROADCASTING

BY EDWARD TEACH

The operators of **Radio New York International** which was active from the ship "Sarah" off the coast of Long Island for a few days last year got off with virtually no penalty and barely saw the inside of a jail, if that. But now the feds may have the ship in something of a prison.

A news release from the station states that the owners attempted to sail the Sarah out of Boston Harbor in preparation for a return to international waters. The Boston Coast Guard intercepted the ship and ordered it back to port. *RNI* officials aren't happy. "I feel whatever we do they just are not going to let us out" said the station's chief engineer and ship's owner Al Weiner.

According to the Coast Guard, the Sarah lacked proper registration certificates and sailing orders and was in violation of an order to stay in port issued last July by the port captain. Weiner told the *Boston Globe* that the ship had been fitted with $70 thousand worth of new equipment.

The Sarah finally made it out of Boston Harbor and back to its preferred spot off the coast of Long Island, New York. As of this writing, broadcasts have not begun. They hope to operate on 1620 kHz and 6240 kHz, so check these frequencies out. The stations new address is: RNI, Monticello, Maine 04760.

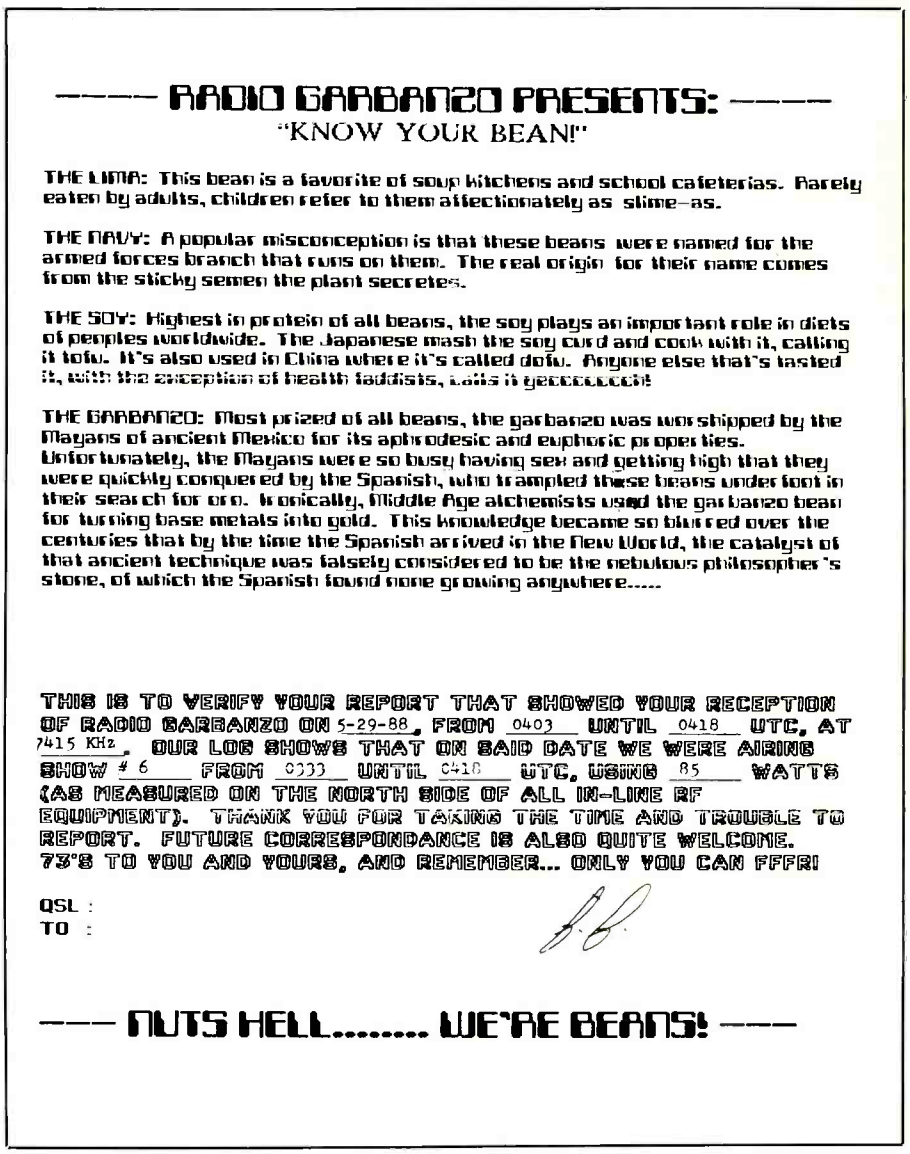
Arnal Cook of Silverdale, Washington sends an item from the *London Daily Telegraph* which reports that criminal gangs are out to seize control of the more than 20 pirate radio stations operating in the London area. The gangs want to skim off the thousands of pounds being paid in payola to plug specific songs, as well as getting in on the profits from advertising. According to the story, five stations in West London were the first targets of the gangs, which were next threatening stations in other parts of the city.

Ironically the pirates, operating illegally, are complaining to police about the gang harassment. Stations are frequently raided and closed but soon reappear, according to the story.

Still in England, reader Simon J. Mason in Hull passes along a QSL he received from **Radio East Coast Commercial** which broadcasts from the east coast English county of Norfolk. The format, says Simon, is 60's and 70's rock with a DX program on the first Sunday of the month. The station is on the air on Saturdays and Sundays from 1000 to 1300 or later on 6310 and 6815. Reception reports go to R.E.C.C., P.O. Box 5, Hunstanton, Norfolk, PE36, 5AU, England.

Four pirate stations have been especially active in the U.S. recently.

Bill Jordan in Germantown, PA heard the **Secret Mountain Labratory** on 7413 at 0340 playing country and guitar music with "very good fidelity". The station didn't mention anything about QSL information. In Michigan, Tim Trompe found them at 0334 with bluegrass and humorous songs, claiming to be broadcasting from Hilo, Hawaii (that's the mail drop). About 5 minutes after the 0406 sign off another station came on the air in upper sideband and called **Secret Mountain Labratory.** S.M.L. replied a couple of minutes later but got no response. Walter R. Talbott II had the station at 0434 on 7410 with comedy routines, country/western music and mentions of the Hawaii address.



----- RADIO GARBANZO PRESENTS: -----

"KNOW YOUR BEAN!"

THE LIMA: This bean is a favorite of soup kitchens and school cafeterias. Rarely eaten by adults, children refer to them affectionately as slime-as.

THE NAVY: A popular misconception is that these beans were named for the armed forces branch that runs on them. The real origin for their name comes from the sticky semen the plant secretes.

THE SOY: Highest in protein of all beans, the soy plays an important role in diets of peoples worldwide. The Japanese mash the soy curd and cook with it, calling it tofu. It's also used in China where it's called dofu. Anyone else that's tasted it, with the exception of health faddists, calls it yeeccccch!

THE GARBANZO: Most prized of all beans, the garbanzo was worshipped by the Mayans of ancient Mexico for its aphrodesic and euphoric properties. Unfortunately, the Mayans were so busy having sex and getting high that they were quickly conquered by the Spanish, who trampled these beans under foot in their search for oro. Ironically, Middle Age alchemists used the garbanzo bean for turning base metals into gold. This knowledge became so blurred over the centuries that by the time the Spanish arrived in the New World, the catalyst of that ancient technique was falsely considered to be the nebulous philosopher's stone, of which the Spanish found none growing anywhere.....

THIS IS TO VERIFY YOUR REPORT THAT SHOWED YOUR RECEPTION OF RADIO GARBANZO ON 5-29-88, FROM 0403 UNTIL 0418 UTC, AT 7415 KHz. OUR LOG SHOWS THAT ON SAID DATE WE WERE AIRING SHOW # 6 FROM 0333 UNTIL 0418 UTC, USING 85 WATTS (AS MEASURED ON THE NORTH SIDE OF ALL IN-LINE RF EQUIPMENT). THANK YOU FOR TAKING THE TIME AND TROUBLE TO REPORT. FUTURE CORRESPONDANCE IS ALSO QUITE WELCOME. 73'S TO YOU AND YOURS, AND REMEMBER... ONLY YOU CAN FFFR!

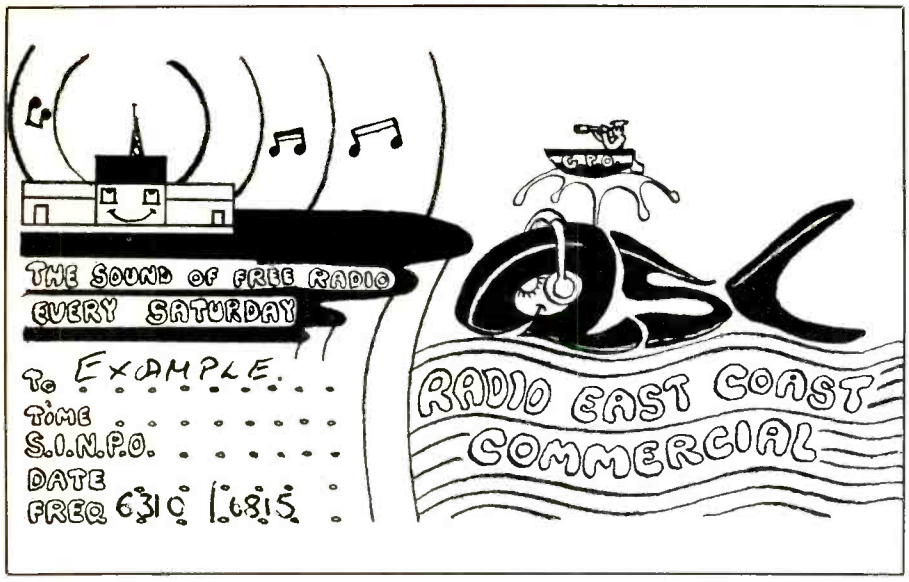
QSL :
TO :

----- NUTS HELL..... WE'RE BEANS! -----

"Beaningful" QSL of Radio Garbanzo, courtesy of Chris Kissel and Steven J. Rogovitch.

The popular **Radio Clandestine** continues to roll along. Someone in Houston, Texas who doesn't supply a name heard the station at 0218 on 7413 at extremely strong level and with the usual program format and fake commercials. J. Michael Graves in Norfolk, Virginia had them on 7416 at 0345. The station "signed off" after a live broadcast and this was followed by a sign on by a station saying it was Radio Clandestine. This ran from 0416 to 0422. It's unknown if two stations were involved here or just one.

KNBS-41 was heard by Tim Trompe from 0254 to 0332 on 7412, with Raunchy Rick from Tangerine Radio playing music about marijuana. Phil Muzic was also on the



Britain's Radio East Coast Commercial sends this yellow and black QSL card. The fellow on top of the whale represents a member of the General Post Office, the folks who hunt pirates in the UK. Courtesy Simon J. Mason.

show. The Battle Creek mail drop was announced. Walter Talbot in Allenton, PA had the station on 7410 at 0402 with songs and talks about marijuana. J. Michael Graves had them broadcasting at 0326 on 7417, promoting the California Collective of Marijuana Growers, edited "comments" by Ronald Reagan and DJ "Sensuous Soft Sarah". P.O. Box 982, Battle Creek, MI 49016 and 3 stamps for QSL's.

Radio Garbanzo was found by Graves at 0343 on 7417 with heavy metal music, fake commercials and mention of "somewhere in northeast America, broadcasting to no one in particular, we're Radio Garbanzo." Editorial by station manager "Mr. Buck McMoney" and spoof of shop at home services. The DJ was "Fearless Fred" and J. Michael says the station was invaded by the Garbanzo Liberation Organization and "liberated". I don't know if that was supposed to have happened on the air or was referred to as having happened in the past sometime. Closed at 0418. Both Christopher Kissel in East Islip, NY and Steve J. Rogovitch of Virginia Beach, VA have recently received QSL's from Garbanzo. The QSL includes information on the lima, navy, soy and garbanzo beans. Perhaps what we have here was inspired by the motion picture *The Milagro Beanfield War?*

Tim Trompe would like to swap tapes of pirate broadcasts. He can be contacted at 1729 Lee Avenue, Muskegan, MI 49444.

That does it for this time. Except to thank all of those who checked in with pirate loggings and other information. It's very welcome indeed! Here's the usual reminder that it's your pirate loggings, QSL data, news clippings, pirate station news and background information, copies of QSL's and all that sort of thing that really makes this column. I need it, so keep sending it! All of us appreciate it!

Thanks, and see you all next month! **PC**

LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

If things went as they were announced, shortwave would now be virtually without the US Armed Forces Radio and TV Service, once carried to the world via the facilities of the Voice of America. The announcement stated that the service would end on September 1st, the result of a cost-cutting move. We expect there are a lot of surprised and upset AFRTS listeners out there who have already complained to their congressmen. Many foreign listeners say they get a better feel for life in the US from listening to AFRTS than they do from the VOA.

Actually, there was to be one remaining outlet for AFRTS on shortwave. A 4 kW military transmitter based in England was to carry the service on single sideband, beamed to the Azores, on 9234 or 9239.

The Fiji Islands "may" be back on shortwave. Radio Australia's "Communicator" DX program carried reports that said the University of the South Pacific, based in Suva, is airing some English language lectures on single sideband. Once done via satellite, shortwave is now being used to send them to students at the University's affiliate schools throughout the pacific. Frequencies are 5350, 9070 (alternate 9100) and 12140. One reception in New Zealand has been reported on 9071, closing at 0702.

The Cameroon has made basic changes in the organization of its radio and TV system. Radiodiffusion National du Cameroon, once a government entity, has become the Cameroon Radio Television Corporation (CRTV) and now accepts commercial advertising. The station also has a new address: P.O. Box 751, Ebolowa, Republic of the Cameroon. Reception reports should be sent to the attention of James Achaney-Fontem, Deputy Chief of Programs.

The flagship station of Colombia's Caracol network, Caracol-Bogota, has resumed activity on 4755 and can be heard in the morning and evening hours. It may, in fact, be a 24 hour per day operation. Newscasts and some other programming is carried parallel on Caracol-Neiva, 4945.

Hungary's home service "Program One", also known as Kossuth Radio, has been carried on 6025 for a couple of years now via a 20 kilowatt transmitter at Jaszbereny. It should be received a bit more clearly now, as it is now being sent a new 100 kW transmitter at the Szekesfehervar site.

Listening Post reports in the last few months have noted a relatively new high power Radio Republik Indonesia transmitter at Jakarta on 11865, well heard in the morning hours in the US. Another high power band transmitter may be on the air soon, if not already. This one, a 250 kW unit at Padang Cermin in northern Sumatra, would beam to the Mideast, North Africa and Europe.

DX'pert Mike Nikolich and Jessica, his "Peruvian wake-up alarm." Mike does his DX'ing from Arlington Heights, IL.

Here's Canadian DX'er Don Moman (VE6JY) in Sherwood Park, Alberta. Don's specialty is logging Australian and European medium wave stations. He's also Executive Secretary of the Canadian International DX Club. Photo: Aruna Ajjikuttira, VE6BPI.

According to RCI's "SWL Digest" program, Canada and China are talking about an exchange of transmitter time that would have Radio beijing played over RCI's Sackville transmitters and radio Canada over Radio Beijing facilities. The two countries are hoping to kick this off in April.

Still more confusion about who and from where that will be added to the shortwave scene when the BBC runs a couple of hours daily over Radiobras transmitters in Brazil. Swiss Radio was planning a test over Radiobras, too.

The Guatemalan government station, La Voz de Guatemal, has recently reappeared on shortwave. if it has not already left again, you can find it late at night on 6180, all Spanish, with the usual Guatemalan radio fare—lots of marimba music.

The Mailman Arrives: Loy W. Lee, assistant manager of WEKU-FM/WEKH at Eastern Kentucky University, Richmond, reports that he and a bunch of other area DX'ers had another DXpedition to the school's environmental laboratory at Maywoods in eastern Kentucky.

If you have a collection of station pennants on your shack wall, Jack E. McMahon, registered monitor KNY2TZ of Buffalo, NY has a suggestion on how to keep them flat, and not bounce, when a window is open and breeze blows through. You'll have to eat a lot of ice cream bars to get a good supply of sticks. Simply glue a stick to either side of the pennant to give them the needed weight and stability. The ice cream will do the same for you.

Frank Duggan in Phoenix says there is a local shortwave club forming there, including fellow *Listening Post* reporter, Paul Johnson. If you would like to join up, contact Frank at P.O. Box 7339, Phoenix, AZ 85011.

The Voice of Nigeria sent this QSL card to John Miller in Georgia for his reception on 4770.

Logging the Cook Islands, Galapagos, Tonga and Vanuatu still plagues Robert McKenny, Jr., of Niceville, FL. Don't think that anyone in North America has heard Tonga yet, Robert. The others are just a matter of making enough attempts. Galapagos on 4810 will have some QRM, but is often caught up to 0200 sign off. Cook Islands is frequently heard on 11760 late into the night, especially during the summer. Ditto Vanuatu, though even later (on 7260). You're unidentified on 7260 may have been Vanuatu, though your editor is unsure about the "Woody Woodpecker" type birdcall you hear.

Brindisi, Italy is the new home of Phil Bekkala, serving in the USAF. He's been a listener for eight years but, as KE8MX, is having trouble obtaining approval to operate his ham rig, so he's back to monitoring. Stay with us, Phil!

Joe Wright in Jamaica Plain, MA mentions the August column remark by Joe Bernstein about shortwave in the movie *The Fourth Protocol*. Wright says he remembers an old *Father Knows Best* episode in which son Bud Anderson gets a shortwave set and the family hears a distress call on it, alerts the Coast Guard and saves the day.

Let's have your contributions, in the form of logging reports, letters, comments and questions, spare QSL's and shack photos, program schedules, news clippings, station info—anything to do with shortwave broadcasting and SWBC DX is welcome. Loggings should be double spaced between items and have your last name and state abbreviation after each one. We'd like to hear from you—often!

Here are the logs, English language (EE) unless otherwise noted.

Abbreviations Used in Listening Post

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

SWBC Loggings
All Times UTC

Alaska: KNLS, 11820 at 0900 to Asia, IS is song **Chariots of Fire**, rx pgm (Garcia, MD).

Antigua: DW relay, PP to Brazil w/ID 1000, nx (Garcia, MD).

BBC relay, 5975 at 0603 w/nx (Kloth, IL).

Argentina: RAE, 15345 at 2230 w/pop mx (Kloth, IL).

Ascension Island: BBC relay, 11860 at 0700 w/nx & **24 Hours** pgm (Kloth, IL); 15400 at 1800 (McKenney, FL).

Australia: R. Australia, 6080 at 0822 in PP (McKenney, FL), 9720 at 1333 (Garcia, MD); 15160 to SE Asia & Africa at 0625 (Kloth, IL); 15420 at 0405 (Maywoods); 15320 at 0421 (McCuiston, KS).

Austria: R. Austria, 9660 at 1130 w/QRM. Weak & no ID (Northrup, CT); 9875 at 0435 (Maywoods); 11780 at 0054 ending EE, IS/ID, also 15410 at 0359 w/classical mx & into EE (Johnson, AZ).

Belgium: BRT, 9925 at 2112 w/**Brussels Calling** (Benoit, MA).

Radio 4 Int'l., 17675 at 1910 in FF w/ID, mx (McKenney, FL).

Bolivia: R. Fides, LaPaz, 4845 in SS w/mx, time check at 0930 given as 6:34 (Garcia, MD).

Brazil: R. Nacional, Macapa, 4915 at 0910 in PP w/mx (Garcia, MD).

R. Excelsior, Sao Paulo, 9585 at 0145 w/live soccer in PP at 0145 (Garcia, MD).

Radiobraz, 11745 at 0200 (Miles, IN).

R. Cultura do Para, 5045 in PP at 0820 (Miles, IN).

R. do Amazonas, 4805 in PP at 0930 (Miles).

Bulgaria: R. Sofia, 11950 at 2148 (Rabinowitz, MI); 2300 w/opening (Johnson, AZ); 15140 at 0400 in FF (Maywoods).

Canada: RCI, 15325 at 1955 s/off (Maywoods).

CHNX Halifax, 6130 at 1200 world/local nx, forecast, ID at 1204 (Wright, MA).

CHU time sta, 3330 at 0520; 7335 at 0555 (Duggan, AZ).

CFRX Toronto, 6070 at 0720 w/CFRB relays (Kloth, IL).

Canary Islands: REE Spain, 15365 in SS at 0115 (Miles, IN)-- Actually, it's thought now that REE no longer relayed via Canary Is. &, in addition, that pgms originating in Canarys is carried via REE from other sites-- Ed.

Chile: R. Nacional, 15140 at 2135 in SS w/soccer (Kloth, IL); 2039 w/ID (Burzynski, IN).

China: R. Beijing, 11715 (via Mali-- Ed.) at 0337 w/talks (Burzynski, IN); 9690 at 0500 (Maywoods). Via Spain-- Ed.; 15110 (via Mali) at 1215 w/ID (Wright, MA).

V. of The Straight, 9455 in CC at 1200 to Taiwan (Garcia, MD).

Colombia: Caracol, Bogota (reactivated-- Ed.), 4755 at 0415-0445 in SS w/Latin mx, ID 0440 (Mierzwinski, PA).

La V. de la Selva, Florencia, 6170 at 0940 in SS w/freq & local time (Garcia, MD).

R. Mararena, 5975 at 0815 in SS w/ID, mx, time checks (Kloth, IL).

La. V. del Cinaruco, Aracua, 4865 at 0325 w/mx, commercials, time checks, in SS (Garcia).

Costa Rica: R. Impacta, 5030//6150 at 0946 w/ID in SS (McKenney, FL); 6150 at 1044 (Burzynski, IN); 10060 (2nd harmonic of 5030) at 0500 (Duggan, AZ).

R. Relaj, 4832 in SS at 1000 (Miles, IN); at 0655 (Kloth, IN).

AWR/R. Lira, Alajuela, 9725 in SS w/rx pgm at 1200 (Garcia, MD).

R. Far Peace & Progress, 13660 at 2358 in EE w/ID, s/pff (McKenney, FL); 7375 in SS to 0353 s/off (Garcia, MD).

Cuba: Soviet all-Union R. relay, 4765 at 0704 in RR (Kloth, IL).

R. Rebelde, 5025 at 0230 in SS (Duggan, AZ); 1010 (Miles, IL).

Cyprus: BBC relay, 7160 w/nx, ID 0522 (Garcia, MD), 11760 at 0700 (McKenney, FL).

Czechoslovakia: R. Prague, 7345 at 0605 (Kloth, IL); 5930//7345//9740 at 0018 (Rabinawitz)

Denmark: R. Denmark, 9740 at 2159 w/IS, ID into Danish (Burzynski, IN); 15165 at 1330 in Danish to NA, off w/anthem 1352 (Garcia, MD).

E. Germany: RBI, 9620 at 0225 (Northrup, CT).

R. Jesus del Gran Poder, 5050 in SS at 1000 (Miles, IN).

HD2IOA time sta, 7600 at 2342 w/time sigs & SS announcements (McKenney, FL).

HCJB, 6230 w/**DX Party Line** at 0630 (Kloth)

Egypt: R. Cairo, 9900 at 2130 w/world nx, QRM'd possibly from Netherlands 5 kHz lower (Wright, MA).

England: BBC, 15070 at 0456 w/commentary, nx (Johnson, AZ); 2000 nx (Maywood).

Ethiopia: V. of Ethiopia, 7110 at 0401 in Amaric w/nx, ID (Garcia, MD); 9560 at 1434 in AA, martial mx, piano IS (Bekkala, Italy).

Finland: R. Finland Int'l., 15185 at 0443 w/**Week In Review**, IS & into possible Finnish (Johnson, AZ).

France: RFI, 11700 at 0423 w/FF & mx (Johnson, AZ).

French Guiana: RFO Cayenne, 5055 at 0923 in FF (Shute, FL).

Ghana: GBC, 4915 at 0550 in vernacular, EE nx at 0600 (Shute, FL).

Guam: KTWR, 11805 at 1030 w/talk, rx mx beamed to Australia (Wright, MA); 0856 ID (Garcia, MD).

KSDA, 11980 at 0955 & 1150 in CC, mx & EE ID 0959 (McKenney, FL); 0900 s/on (Garcia, MD).

Guatemala: TGNA R. Cultural, 3300 at 0144 in SS w/ID, mx (McKenney, FL); 0550 in SS (Duggan, AZ).

R. Tezulutan, 3370 at 0130 in SS w/ID, mx (McKenney, FL).

Guyana: GBC Georgetown, Channel 2 national svc, 5950 nx at 0630 (Garcia, MD). ID on this?-- Ed.

Honduras: La V. de Mosquito, Puerto Lempira, 4910 at 0144 in SS w/ID (McKenney, FL).

Hungary: R. Budapest, 9835 at 2001 w/OM & nx, ID, comment, off at 0206 (Benoit, MA).

Iceland: ISBS, 9985 at 1910 in Icelandic, meny mentions of Reykjavik, nx (Bekkala, Italy).

India: AIR, 11620 at 2135-2200 w/nx, mx (McKenney, FL); 2201 nx (Benoit, MA); 15230 at 2136 (Maywood).

Indonesia: V. of Indonesia, 15150 at 1217 w/nx in CC, no ID (Garcia, MD).

RRI Jakarta at 1210 in Indonesian w/ID (McKenney, FL).

Iran: VOIRI, 9022 in SS at 0136 w/nx (Shute, FL); 1942 (Benoit, MA); 15084 in Farsi at 2120 (Maywoods).

Iraq: R. Baghdad, 15230 at 2106 w/**Palestinian Program** (Kloth, IL); 2000-2030 (Mierzwinski, PA).

Israel: V. of Israel, 9435 at 0512 (Duggan, AZ); 15485 w/IS & s/off. Also pass home svc outlet on 11655 at 0255 w/tone, organ IS, into pass Hebrew 0300 (Johnson, AZ).

Italy: RAI, 15330 at 0455 in II (Johnson, AZ); 15385 at 1904 w/ID, freq, s/off (Garcia, MD).

Ivory Coast: RTV Ivarienne, 4940 at 0559 s/on w/IS, anthem, ID in FF (Shute, FL).

Japan: R. Tanapa/NBS on 6115 in JJ w/YL & freq annct, then into EE at 1100 (Garcia, MD).

Jordan: Jordan R., 11920 in AA at 1425 (tentative logging) w/OM & YL, several mentions of Amman (Garcia, MD); 9530 at 1500 w/YL in AA (Bekkala, Italy).

Kampuchea: V. of Kampuchean People, 11938 at 1250, believed in Thai (Maywoods); 1200 w/EE start to 1214 EE end (Garcia, MD).

Lebanon: V. of Lebanon (tentative), 6550 at 0638 w/AA mx (Shute, FL).

Liberia: ELWA, 11830 at 2035 w/**How To Manage Your Money**, time, mx, verses, ID & pgm from Georgia at 2045 (Benoit, MA).

VOA relay, 7280 at 0646 w/jazz (Kloth, IL).

Luxemburg: R. Luxembourg, 6090 at 0109 w/ID, mx (McKenney, FL); 15350 at 0354 in FF, pops, rock, nx (Johnson, AZ).

Madagascar: R. Netherlands relay, 17575 at 1504 w/**Shortwave Feedback** (McKenney, FL).

Malaysia: V. of Malaysia, 15295 at 1604 in AA, pops, mentions of Malaysia (Bekkala, Italy).

Mali: RTVM, 4835 at 0606 w/local mx, un-ID lang (Shute, FL); 11960 at 0644 in FF w/African mx, ID 0700 & nx (Kloth, IL).

Marshall Islands: WSZO, 6070 in Marshallese at 0842, island mx, talks, ID 0846 (Garcia, MD).

Mexico: R. Educacion, Mexico City, 6185 in SS w/mx & ID 0728 (Garcia, MD); 0710 (Kloth, IL).

Monaco: TWR, 9495 at 0829 w/IS, ID/**Heir ist Monte Carlo, von** TWR. Some pgm on 9610 (Garcia, MD).

Mongolia: R. Ulan Bator, 12015 at 1200 w/mx, ID (McKenney, FL).

Morocco: RTVM, 15330 in AA at 2215, no ID heard (Garcia, MD).

Netherlands Antilles: R. Netherlands relay, 21685 in Dutch at 1755 s/off (Duggan, AZ).

New Caledonia: RFO Noumea, 7170 in FF w/mx at 0902, no ID noted (Garcia, MD); 1030 in FF (Miles, IN).

New Zealand: R. New Zealand, 11780 at 0908 w/mx, talks (Garcia, MD).

Nicaragua: V. of Nicaragua, 6100 at 0620 w/nx, commentary, local & US pops (Kloth, IL).

Nigeria: V. of Nigeria, 7255 at 0503 w/drums, chants (Maywood); 0630 in FF (Kloth, IL).

N. Korea: R. Pyongyang, 6576 at 1102 w/IS, ID, freq list & nx (Burzynski, IN).

Northern Marianas: KYOI Saipan, 1156 on 11900 ending **Letterbax**, nx (Wright, MA).

Norway: R. Norway Int'l., 11850 at 0332 in NN (Johnson, AZ).

Papua New Guinea: NBC Port Moresby, 4890 at 1030 (Miles, IN); 0932-0950 (McKenney, FL).

Pakistan: R. Pakistan, 15606 at 1105 s/on, nx (Garcia, MD).

R. Azad Kashmir (via Pakistan), 4790 at 1711 in Kashmiri & Urdu (Bekkala, Italy).

Paraguay: R. Paraguay, 9735 at 1010 in SS & Guarani (Miles, IN); 0030 w/ID, list of other stas in their network (Burzynski, IN).

Peru: R. Ancash, 4990 at 0943 in SS, ID 0945 (Garcia, MD).

R. La Hora, Cusco, 4977 in SS at 1032, all nx (Garcia, MD).

R. Chinchaycocha, 4860 at 0937 in SS w/ID 0940 (Garcia, MD).

R. Los Andes, 5030 in SS at 1028, ID 1030 (Garcia, MD).

R. Tawantinsuyo, Cusco, 4910 in SS at 0900 (Garcia, MD).

R. Tarma, Tarma, 4776 in SS, pops, local nx, ID (Garcia, MD).

R. Atlantida, Iquitos, 4790 at 0934 w/SS ID/**La Emisoira Libre de Sur America** (Garcia, MD).

Philippines: R. Veritas Asia, 15240 at 1500 s/on, nx (Garcia, MD).

Poland: R. Polonia, 15120 at 0100 w/IS, ID in PP (Johnson, AZ).

Portugal: R. Portugal, 9705 at 0240 (Duggan, AZ); 15285 in PP at 1900 (McKenney, FL).

Romania: R. Bucharest, 11810 at 0200 in Romanian (Duggan, AZ); 11940 at 0326 in SS (Johnson, AZ).

Rwanda: RRR, 3330 at 1910 w/OM in un-ID lang, Afro pops & tribal mx, tentative logging (Bekkala, Italy). Be a good trick to log this one in NA at this hour-- Ed.

Saudi Arabia: BSKSA, 15430 at 0528 in AA ID, flute-like mx (possible IS) at 0530 (Shute, FL).

Senegal: ORTS Dakar, 4890 at 0600 in AA w/ID, nx (Garcia, MD).

Seychelles: FEBA, 17855 at 0630 w/YL, rx pgms to Africa (Bekkala, Italy).

Solomon Islands: SIBC, 5020 at 0830 in EE & pidgin (Miles, IN); 9545 at 0737, nx, talk (Shute, FL); 5020//9545 0720-0800, 5020 0951-1000 (McKenney, FL).

South Africa, Rep. of: Radio RSA, 9580 at 0225, letters (Northrup, CT); 6010//9615 at 0200 (Rabinowitz, MI).

Radio 5, 4880 w/pops, commercials, headlines (Wright, MA); 9665 at 0533 (Johnson, AZ).

Spain: Spanish Foreign R., 9630 at 0506 w/nx, SWL pgm (Kloth, IL); 11880 at 1919 w/ID, ID, anthem, into SS (Johnson, AZ).

S. Korea: R. Korea, 15575 at 1344, letters (Maywood).

Sri Lanka: SLBC on 9720//11820 w/nx, ID's (Bekkala, Italy).

Sweden: R. Sweden, 6135 at 0225 w/classical mx (Duggan, AZ); 11705 at 2300 IS, s/on, nx (Burzynski, IN); 2322 to 2329 close (Johnson, AZ).

Switzerland: Swiss R., 6135 at 0220, 9885//12035 at 0200 (Northrup, CT); 17730 at 0117, 0130 ID into FF (Johnson, AZ).

Syria: R. Damascus, 12085 at 1931 in FF w/AA mx (Johnson, AZ); 2052 to 2105 off (Benoit, MA); 15020 (annod 12085) at 2030 (Kloth, IL).

Tahiti: R. Tahiti, 9750 at 0739 in Tahitian w/drums (Shute, FL); 11825 in FF at 0912 (Garcia, MD); 15170 at 1819 in FF (Johnson, AZ).

Taiwan: VOFC (via WYFR), 5985 at 0711 w/nx, commentary, CC mx (Kloth, IL).

Turkey: V. of Turkey, 9445 at 0313 (Rabinowitz, MI); 9685 at 2215 (Benoit, MA); 15760 at 2300 in Turkish, ID 2359 (Garcia, MD); 17760 at 0256 w/IS, ID, nx, press review, local mx, off 0350 (Johnson, AZ).

Uganda: R. Uganda, 4976 at 2017 w/Afro pops, tribal mx, anthem, off 2100 (Bekkala, Italy).

Unidentifieds: 10060 in SS at 0435 (Johnson, AZ). This is the harmonic of R. Impacto, Costa Rica-- Ed.

15310 (earlier reported on 11870, 15300 & 15305 w/chime-like IS) now here in AA-like lang at 0428 (Johnson, AZ). Probably Norway-- Ed.

9690//11795 w/AA & chanting at 0410 (Johnson, AZ). May be V. of Germany to mideast?

United Arab Emirates: UAE Radio, Dubai, 17890//21700 at 0335 w/nx (Johnson, AZ); 15435 at 0355 (Maywoods).

USA: KUSW, 15225 at 1600 (McCuiston, KS).

WRNO, 6185 at 0418, 15420 at 1946 (McCuiston, KS).

AFRTS, 6029 at 0422 (McCuiston, KS).

R. Marti (via VOA), 6075 at 1130, 9525 at 0230, both in SS (Northrup, CT).

WINB, 15295 at 1632 w/organ mx, ID 1700, more mx. On 15145 at 2258 (Rabinowitz, MI).

WHRI, 7365 at 0755, IS at 0800 s/on (Kloth)

WYFR, 21525 at 2128 (Duggan, AZ).

VOA, 17785 at 1610 to Africa. On 5745 in SS at 0300 (Rabinowitz, MI); 7767 (LSB mode) feeder in possible AA at 0740. Where is this xmtr located? (Kloth, IL).

USSR: R. Moscow world svc, 15475 at 1949 w/mailbag. Africa #1 was underneath (Johnson).

Vatican: Vatican R., 6248 at 0252 in SS w/IS at 0300, mx (Rabinowitz, MI); 9755 at 0413 rx mx, IS at 0415 & gone (Johnson, AZ).

Venezuela: R. Maturin, Managas, 5040 at 0915 in SS, w/mx & commercials, ID (Garcia, MD).

R. Capital, Caracas, 4850 at 0501 in SS w/pops (Maywood).

YVTO time sta, 6100 at 0826 (Garcia, MD).

R. Rumbos, Caracas, 4970 at 0446 to 0503 off. All SS (Mierzwinski, PA).

W. Germany: V. of Germany, 15105 at 2130 to Brazil in PP (Rabinowitz, MI).

Yugoslavia: R. Yugoslavia, 9620 at 2128 w/EE ID & s/off (Burzynski, IN).

Zaire: R. Candip, 5066 at 0645 in FF, ID 0655 (Garcia, MD).

That'll do it, and a hearty thanks to the following reporters: Larry W. Kloth, Elk Grove, IL; Larry Miles, Anderson, IN; Phil Bekkala, Bridisi, Italy; Robert L. Mckenny, Jr., Niceville, FL; F. Duggan, Sr., Phoenix, AZ; Fernando Garcia, Baltimore, MD; Frank Mierzwinski, Mt. Penn, PA; Sander J. Rabinowitz, Farmington Hills, MI; Mark A. Northrup, Danbury, CT; Michelle Shute, Pensacola, FL; Tim McCuiston, Overland Park, KS; Maywoods (Kentucky DXpedition team: Loy W. Lee, Ed Shaw, Dr. Joel Roitman, Wayne Gregory, James McClure, Eric Petty); Joe Wright, Jamaica Plain, MA; John D. Burzynski, So. Bend, IN; Gordon D. Benoit, Harwich, MA and Paul Johnson, Phoenix, AZ.

Until next month, good listening, Happy Holidays! PC

RTTY

BY ROBERT MARGOLIS

THE EXCITING WORLD OF RADIOTELETYPE MONITORING

Because we received so many top-notch intercepts this month, we'll forego our usual text and jump right into them!

Keep up the good work!

RTTY Intercepts
(Times Are UTC)
(Settings= Hz/Baud/Polarity)

3915.5: AE1WDR, US Army MARS unit in FRG testing comms w/AE1DOD, also in FRG at 0940, 300 baud packet mode (Wolfgang Palmberger, FRG). Readers are reminded that although the ham band in the US is 3500-4000 kHz, in FRG it ends at 3800 kHz, hence the MARS ops on this freq-- Ed.

4223: Un-ID, but poss NMF, w/foxes & counting at 0312, 75R (Ed.).

4793.4: Un-ID sta w/RYRY, foxes & "de Fast Inlet testing." Was 850/50N at 0148 (Kenneth Roberts, FL).

5222.5: TYE, ASECNA, Cotonou, Benin w/coded wx at 0420, 96/TDM-A (Ed.).

5240: 4OC2, TANJUG Belgrade, Yugoslavia w/nx in EE at 0000, 425/50R ("Bunky, IL). Welcome home! Happy to have you rejoin us-- Ed.

5523.3: Un-ID w/list of names in SS, ARQ, 0322-0346 (Ed.).

5900.2: 5AF, Tripoli, Libya w/RYRY & SGSG at 0510, 50N (Ed.).

6251.3: 78IJU of the Spanish Navy w/RYRY & SGSG at 0510, 100R (Ed.).

6810.5: A production report, poss from an offshore US oil platform, ARQ at 0000 (Fred Hetherington, FL).

6835: GFL22, Bracknell Meteo, England w/coded wx at 0418, 50R (Ed.).

6842.3: 78IJU, a Spanish Navy base, w/RYRY & foxes to 71HLE at 0403, 75R (Ed.).

6848.3: Un-ID w/tfc in SS at 1100, ARQ. Whozit? (Hetherington, FL).

6889: Un-ID in ARQ at 1020. Weak sigs produced only garbage (Hetherington, FL).

6964: NRPX, USCGC **Buttonwood** on a SAR mission Was wkg NMG at 0424, 75R. (A. Nonymous, MO).

6978.9: CCS, Santiago Navrad, Chile w/5L tfc at 0313, 850/75R (Dr. Gary Zaid, WI).

6983.7: 7XA9, Algiers Meteo, Algeria w/msgs at 0200, 850/50R (Hetherington, FL).

7312.3: KUP Jamba, Angola w/nx in EE at 2308, FF at 2315, 170/50R (Hetherington, FL).

7407: CML5, PTT Havana, Cuba w/RYRY & foxes, 425/50R at 2345 ("Bunky," IL).

7428: TELAM Buenos Aires, Argentina w/nx in SS at 1015, 525/50N (Hetherington, FL).

7438: Possibly GXH, the USN facility at Thurso, England with a very quick brown fox at 2345, 850/75R (Hetherington, FL).

7487: NDVM, USS **Nashville** w/foxes to Charleston Test Control at 1508, 850/75R (J.M., KY). This vessel, designated the LPD-13 is an amphib transport dock used for ferrying Marines into forward areas & unloading them along with their landing craft & vehicles-- Ed.

7537: NJAC, USS **San Jacinto** w/foxes & counting for NAM at 1635, 170/75R & 850/75R (J.M., KY).

7554: WNIM867, SW Bell Telephone, St. Louis, MO testing to other Bell stas in the net, 1848, 425/45R. First time noted in RTTY, usually use voice (J.M., KY). A fine catch! Any thoughts as to why Ma Bell uses radio for TTY & voice instead of her own landlines? Maybe it's cheaper than Sprint, MCI, or AT&T!-- Ed.

7585: 6VY41, ASECNA Dakar, Senegal w/RYRY & coded wx at 0426, 50R (Ed.).

7690: TUH, ASECNA Abidjan, Ivory Coast at 0422, 50R (Ed.).

7807: Bravo Nueve Echo w/"rutina" tfc in SS, 75N, 0417-0423 (Ed.).

7997: SOH299, Warsaw Meteo, Poland w/coded wx at 0025, 425/50R (J.M., KY).

8000: Un-ID w/short msg in EE at 0252, 425/50R (J.M., KY).

8123: TNL, ASECNA Brazzaville, Congo w/wx at 2330, 425/50R ("Bunky," IL).

8165.2: 5YD2, Nairobi Aero, Kenya w/wx at 2330, 425/50R ("Bunky," IL).

8991.5: CCS, Santiago Navrad, Chile w/5L tfc at 0124, TDM/96A&B (Ed.).

9098.2: RPFN, Lisbon Navrad, Portugal w/RYRY, foxes & counting at 0304, 75R (Ed.).

9143.7: TUH49, ASECNA Abidjan, Ivory Coast w/RYRY at 0312, 50N (Ed.).

9187.5: DIPLO Paris, France w/nx in FF at 0652, 50N (Ed.).

9210: CLN251, PTT Havana, Cuba w/RYRY to ITT New York at 0025, 50N (Ed.).

9223.2: TJK51, ASECNA Douala, Cameroon w/RYRY at 0321 (Ed.).

9323.8: RPTI, Portuguese Navrad, Horta, Azores w/RYRY & foxes at 0259, 75R (Ed.).

9347.6: STK70, Khartoum Aero, Sudan w/RYRY at 0255, 50R (Ed.).

9352.3: Un-ID, poss Peruvian Navy w/nx in SS re Peru, 0236-0245, 75N, then w/tfc to another sta on freq (Ed.).

9402.5: OST, Oostende R. Belgium w/ARQ phasing sigs at 0234 + CW ID (Ed.).

9425: Un-ID USN commsta & its very quick brown fox at 0504, 75R (Ed.).

9846: TUH, ASECNA Abidjan, Ivory Coast w/RYRY at 0453, 50R (Ed.).

9885.3: Un-ID USN commsta w/very quick brown foxes at 0449, 75R (Ed.).

10106.3: Same as above, but at 0345 (Ed.).

10215: HZN48, Jeddah Meteo, Saudi Arabia w/coded wx at 0035 & 0300, 100N (Ed.).

10219.9: CML28, PTT Havana, Cuba w/msg to ITT NY at 0037, 50R (Ed.).

10391.2: 5NL, Lagos Aero, Nigeria w/RYRY at 2234, 425/50R (Roberts, FL).

10429.5: Un-ID w/5L tfc at 1342, 45R. S/off w/QRU QRU SK SK (A. Nonymous, MO). My guess is CLP1-- Ed.

10413.6: BCO25, PTT Shanghai, China w/RYRY at 1653, 425/50R (Dallas Williams, CO).

10465.2: Un-ID USN commsta w/its very quick brown fox at 0600, 75R (Ed.).

10551.3: Bracknell Meteo, England w/wx data compiled by De Bilt Meteo, Holland. Was 50R at 1923 (Ed.).

10605: RFQP, French Navrad, Djibouti w/controle de voie at 2352, TDM/96A (Ed.).

10650.3: BJZ23, Wuhan Meteo, China w/coded wx at 1006, 50R (Ed.).

10706: CLP1, MFA Havana, Cuba w/crypto after ZZZZZ + tfc in SS, 45N at 0120-0142 (Ed.).

10754: Vatican City w/RYRY & foxes at 0650, TDM/96B (Ed.).

10763.5: HMY56, PTT Pyongyang, N. Korea w/RYRY to Y2J, 425/50N at 1317 (Palmberger).

10800: Un-ID sta w/crypto at 1044, ARQ-E/48. A number of stas woreldwide use this freq, including KIK60 in Miami, so any ID would be just guesswork (Ed.).

10801.7: DFZG, MFA Belgrade, Yugoslavia w/crypto after HBHB...GBGB...RDRD, etc. Was 75N at 0704 (Ed.).

10805.4: NA Buenos Aires, Argentina w/mercantiles nx in SS at 1017, 75R (Ed.).

10841: Un-ID w/crypto at 0328, TDM/96A (Ed.).

10856.2: GXQ, British Army, London, England w/RYI's & foxes, 50R at 0309 (Ed.).

Abbreviations Used In The RTTY Column

AA	Arabic
ARQ	SITOR mode
BC	Broadcast
EE	English
FEC	Forward Error Correction
FF	French
foxes	"Quick brown fox . . ." test tape
GG	German
ID	Identification/led
MFA	Ministry of Foreign Affairs
nx	news
PP	Portuguese
RYRY	"RYRY. . ." test tape
SS	Spanish
tfc	traffic
w/	with
wx	weather

10935: UN-ID USN commsta w/its very quick brown fox, 850/75R at 0300 (Williams, CO).

11010: GYA, RN London, England w/02A 04B marker at 0310, 850/75R (Williams, CO).

11061.6: STK, Khartoum Aero, Sudan w/aero wx at 0219, 50R (Ed.).

11100.2: CAK, Santiago Aero, Chile w/coded wx at 0922, 50N (Ed.).

11428: VNA86, Hanoi, Vietnam w/VNA nx in FF at 1648, 500/50R (Williams, CO).

11485.4: Un-ID USN commsta w/very quick brn fox marker at 0130, 75R (Ed.).

11494.5: 5AF, Tripoli Aero, Libya w/RYRY at 0357, 350/50R (Williams, CO).

11507.5: STK, Khartoum Aero, Sudan w/coded wx at 0004, 50N (Ed.).

11546: 5YD, Nairobi, Kenya w/RYRY at 0320, 425/50N (Williams, CO).

11597: Un-ID w/coded wx at 0322 & 1433, 250/50R. Probably a spur of 5AF in Tripoli (Williams, CO). My records show it as 7XA98, Algiers Meteo, Algeria operating here at 170/50R--Ed.

11638: DDK8, Hamburg Meteo, FRG w/RYRY at 2313, 50R (Ed.).

11668: Un-ID USN commsta w/quick brown foxes at 1433, 75R (Ed.).

12263.3: TTL, ASECNA N'djamena, Chad w/RYRY at 0425, 170/50N (Zoid, WI).

12693: 78IJU of Spanish Navy w/svc msg to 70YHI at 2033, 100R (Ed.).

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pnbtight two five five khz
ryryryryryryryryryryryryryryryryryryryryryryryryryryryryryryry
qra desatp sixfive stroke onefoursevenelgytfive khz
atb sixeight stroke one eight two five five khz
ryryryryryryryryryryryryryryryryryryryryryryryryryryryryryryry
qra desatp sixfive stroke onefoursevenelgytfive khz
atb sixeight stroke one eight two five five khz
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qra desatp sixfive stroke onefoursevenelgytfive khz
atb sixeight stroke one eight two five five khz
ryryryryryryryryryryryryryryryryryryryryryryryryryryryryryryry
qra desatp sixfive stroke onefoursevenelgytfive khz
atb sixeight stroke one eight two five five khz
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Test tape from the Vatican logged by RTTY column editor on 10754 kHz at 0650, 96/TDM-A.

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ZCZC
TEST FROM VATICAN CITY
THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 1234567890 TIMES
RYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRY
ZCZC
TEST FROM VATICAN CITY
THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 1234567890 TIMES
RYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRY
ZCZC
TEST FROM VATICAN CITY
THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 1234567890 TIMES
RYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRY
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Wolfgang Palmberger of West Germany logged this test tape of ATB68, MEA, Delhi, India on 18255 kHz.

12774.7: Un-ID w/5F tfc 1106-1108, 50R then s/off w/"all QTC 2 QRU SK" (Ed.).
12807.6: GYA, RN London, England w/freq list at 1110, 75R (Ed.).
12886.5: WLO, Mobile R., AL w/plaintext wx, FEC at 1755 (Ed.).
13078.5: WLO, Mobile R., AL w/nx bc to ELMQ, Liberian flag vessel **Fairsea**, ARQ at 2145 (Roberts, FL).
13080: UKA, Vladivostok R., USSR w/tfc in RR to a ship at 1319, 50N (Ed.).
13087.2: UFB, Odessa R., USSR w/telegrams to Soviet merchant ship w/call UZGH, in FEC at 1047 (Ed.).
13200.2: CA17E, Pascua Aero, Easter Island w/RYRY at 1335, 50N (Ed.).
13486: NRCB, USCGC **Eagle**, wkg NMG at 1455, 170/75R, in the clear (Roberts, FL).
13526: DHJ51, Grengel Meteo, FRG w/wx synops for Europe in EE + wx in GG at 0348, 100N (Ed.).
13562.9: 3MA22, CNA Taipei, Taiwan w/nx in EE at 1418, 50R (Ed.).
13602.5: SPW, Warsaw R. Poland w/tfc in ARQ at 2130 (Ed.).
13653: SUA50, MENA Cairo, Egypt w/nx in EE at 2139, 50R (Ed.).
13670: Un-ID USN commsta sending quick brown foxes at 0327, 75R (Ed.).
13676: Un-ID USN commsta w/same as above at 1617, 75R (Ed.).
13732: RFFIA, French Navrad, Paris, France w/tfc to all French naval units at 1512, ARQ-E/72; RFLI French Navrad, Fort de France, Martinique w/tfc in FF to RFLIA & RFLIG at 1854, same mode (Ed.).
13737.5: 5YD, Nairobi Meteo, Kenya w/RYRY at 0211, 50N (Ed.).
13780: HMF35, KCNA Pyongyang, N. Korea w/nx in EE at 1540, 50N (Ed.).
13803: RCR78, Khabarovsk Meteo, USSR w/coded wx at 1556, 50R (Ed.).
13867: A N. Korean MFA sta somewhere w/5F msgs & cables in Korean at 1326, 50N (Ed.).
13895: Y2V47A, ADN Berlin, GDR w/test tape & nx in AA at 1159, 50N; w/nx in PP at 1420 on 10920.5; Y2V47A on 13895. Nx in EE for Africa & Near East starts 1805 (Ed.).
13940: CLP1, MFA Havana, Cuba w/tfc to Embacuba Managua at 2127, 75N (Ed.).
13975.4: CLP1 (as above) w/cables & crypto to Embacuba Harare at 0510, then Prensaminrex nx at 0516, 75N (Ed.).
14360: Un-ID USN commsta w/quick brown foxes at 1713, 850/75R (Williams, CO).
14490: RNK36, TASS Moscow, USSR w/nx in EE at 1350, 50R (Ed.).
14576.5: PTT Lubumbashi, Zaire w/telexes to Kinshasa, 0532-0550, ARQ (Ed.).
14625.2: RFLI, French Navrad, Fort de France, Martinique w/controle de voie marker at 1255, TDM/96A (Ed.).
14690.1: RIC73, APN Moscow, USSR w/nx in AA at 1304, 100R (Ed.).
14698.3: MFA Ankara, Turkey w/nx in Turkish & "role telex" in Turkish from "Disisieri," 75R at 1514 (Ed.).
14719: OST, Oostende R., Belgium w/tfc list in FEC, 1316 (Ed.).
14760: BAT93, XINHUA Beijing, China w/nx in EE at 1721, 50R (Ed.).
14764: A9M70, GNA Manama, Bahrain w/nx in AA at 1726, 75R (Ed.).
14785.3: ATP65, MEA Delhi, India w/RYRY & CQ at 1531, 50N (Ed.).
14825: Y2V25, ADN Berlin, GDR w/nx in EE at 1133, 50N (Ed.).
14880.2: JMG4, Tokyo Meteo, Japan w/coded wx at 1308, 850/50R (Ed.).
14915.3: OBC, Callao Navrad, Peru w/monthly comms rpt to 5KM at 1902, 75R (Ed.).
14925: Un-ID w/crypto at 1732, 48/ARQ-E (Ed.).
14937.5: ASENCA N'djamena, Chad w/RYRY at 0324, 425/50N (Williams, CO).
14940: RIC71, TASS Moscow, USSR w/nx in FF at 1121, 50R (Ed.).
14960: RFFXL, French mil, Beirut, Lebanon w/controle de voie at 2142, 72/ARQ-E.
15550.2: RFLI, French Navrad, Fort de France, Martinique w/controle de voie at 1932, TDM/96A (Ed.).
15670.1: HGM36, MTI Budapest, Hungary w/nx in SS at 1632, 425/50N (Roberts, FL).
15693.5: ISX56, ANSA Rome, Italy w/nx in FF at 1417, in EE at 1515, 50N (Ed.); Nx in FF at 1107, 335/50N (Tom Kneitel, NY).
15701: RWN76, TASS Moscow, USSR w/nx in EE at 1325, 50R (Ed.).
15752: CNM66, MAP Tangier, Morocco w/nx in FF at 1616, 50R (Ed.).
15780.3: Un-ID USN commsta w/very quick brown foxes at 2003, 75R (Ed.).
15790.2: Un-ID USN commsta sending very quick brown foxes at 0105 & 1347, 75R (Ed.).
15845: SUA289, MENA Cairo, Egypt w/nx in AA at 1930, 50R (Ed.).
15860: RFFXI, French mil., Bangui, CAR w/crypto of FF tfc at 1643, 72/ARQ-E. At 1707, nx in FF (Ed.).
15864.6: RBK79, TASS Moscow, USSR w/nx in AA at 1600, 50R (Ed.).
15870: Possibly KAWN, Carswell AFB, TX w/aero wx at 1637 & 2306, 75R (Ed.).
15897.7: OLS4, CTK Prague, Czechalsovakia w/RYRY & nx in EE at 1500, 50N (Ed.).
15925: Un-ID w/foxes, 75R at 0103 & 1340 (Ed.).
15930: RBI78, TASS Moscow, USSR w/nx in FF at 1754, 50R (Ed.).
15938.7: Tfc in AA "From Khargia Cairo to Boustane Niamy," ARQ at 1737 (Ed.).
15942.3: Un-ID w/foxes at 0102 & 2010, 75R (Ed.).
15950: CXR, Montevideo Navrad, Uruguay at 2015 s/off, 75R (Ed.).
15955: 3BT4, Vacoas Meteo, Mauritius w/RYRY at 0328, 850/50R (Williams, CO).
16017.3: DFQ21L1, PIAB Bonn, FRG w/nx in GG, including editorials from FRG newspapers. Was 96/FEC-A at 2240 (Ed.).
16040.3: Un-ID w/coded wx at 0315 that had the typical Soviet earmarks of 1000/50R (Williams, CO).
16043.5: AEM1USA, US Army MARS, Heidelberg, FRG w/MARSgrams at 1124, 75R (Ed.).
16045.3: Maybe MFA Belgrade, Yugoslavia w/crypto & telex in Serbo-Croat re Korea. Was 144/FEC-A at 2253. S/off 2318 w/NW 73 5 5 5 FM E R A OK OM TKS GB 73 GK (Ed.).
16065: YZJ7, TANJUG Belgrade, Yugoslavia w/nx in EE at 1102, 75R (Ed.).
16136.8: Egyptian embassy, Washington, DC w/tfc in AA to Cairo, ARQ at 1418 (Ed.).
16150: 9VF205, Singapore w/JIJI nx in EE at 1430 (Ed.).
16241: Un-ID w/tfc in a weird lang. Words such as **bizyoneul tonghaiseneun bangmuneuiilbu** at 1600, 1000/50N. Then "QRU" & into sloppy CW ("Bunky," IL). Now, now, Bunky, go easy. There's many folks who might consider EE a weird language. Some of them barely read it, write it, or even speak it on an acceptable level even after graduating high school. Anyway, looks like you intercepted tfc from a N. Korean embassy somewhere-- Ed.
16296: Un-ID w/crypto at 1319, TDM/96A (Ed.).
16329.8: CLP1, MFA Havana, Cuba w/5F tfc to Nigeria at 2210, 75R (Ed.).
16397.5: FTQ39, DIPLO Paris, France w/nx in FF at 1309, 50N (Ed.).
16664.5: UJEH calling URB2 & sending RYRY (A. Nonymous, MO). UJEH is the Soviet tanker **Vidnoye**. It refuels the fishing fleets-- Ed.
16667.5: WGWA, **OMI Wilamette** (ex-**Ogden Willamette**) a tanker w a/telex at 2040, ARQ (Ed.).
16668.5: 6ZCQ, Liberian flag vessel **M/V Ebro**

w/Korean crew enroute Baton Rouge w/coal in bulk. Telexes at 1229, ARQ (Kneitel, NY).

16960: RFFXL, French mil., Beirut, Lebanon w/controle de voie at 1736, 72/ARQ-E (Ed.).

17020: UDK, Murmansk R., USSR w/tfc in RR to ships at 1710, 170/50N (Hetherington, FL).

17024: SAB83, Goteborg R., Sweden noted weakly at 1152, ARQ (Ed.).

17030.5: GYA, RN London, England w/test tape at 1730, 850/75R (Hetherington, FL).

17117.5: Goeree Island Navrad, Holland w/RYRY at 1241, 425/75 (Kneitel, NY).

17378.8: Un-ID w/crypto at 1703, 96/ARQ-E. Might be RFTJ, Frency Navrad, Dakar, Senegal since that one's been logged near this freq (Ed.).

17403.2: BAL32, PTT Beijing, China clg HGO24 at 1548, 425/50N (Zaid, WI). HGO24 is PTT at Szekesfehervar, Hungary-- Ed.

17407.3: N. Korean embassy somewhere w/tfc in Korean, 1015/50N (Hetherington, FL).

17421.5: MFA Madrid, Spain w/5L tfc in ARQ at 2024. One msg was labelled **Exteriore Madrid** (Ed.).

174521: Un-ID w/crypto at 1458, TDM/96A (Ed.).

17517.2: HDN Quito Navrad, Ecuador w/RYRY & SGSG at 1345, 75N (Ed.).

17518.5: DMK, MFA Bonn, FRG at 1436 idling in 96/ARQ-E. Gives ID in CW w/VVV DE DMK (Ed.).

17519: Apparently HSW61, Bangkok Meteo, Thailand w/coded wx at 1627, 50N. Sigs weak & xmtr was in poor condx (Ed.).

17525: OLV3, CTK Prague, Czechoslovakia w/RYRY & sked at 1620, 50N (Ed.).

17537: MFA Berlin, GDR w/RYRY & ID as Y7A65/Y7K40/Y7A77, 500/50N at 1704. Is it Y7K40? I heard the GDR gov't might be changing its callsigns (Williams, CO). Probably is Y7K40 since Y7A65 is 16268 kHz, & Y7A77 is on 19443-- Ed.

17548: RFFE, French mil., Bordeaux, France w/tfc to substations & controle de voie at 1748, 48/ARQ-E (Ed.).

17600: RIJ71, TASS Moscow, USSR w/nx at 1745, 50R (Ed.).

17623: 9KT44, KUNA Safat, Kuwait w/nx in EE at 1417, 50R (Ed.).

17627: 9KT44, KUNA again w/nx in AA at 1420, 50N (Ed.).

17654.9: Un-ID USN commsta w/very quick brown foxes at 1545, 850/75R (Hetherington, FL).

18001.7: Tfc in AA from Khargia Cairo, Egypt to Boustan (wherezit?) in FEC at 1245. Very poor copy due to weak sigs (Ed.).

18034.3: Possibly ATR68 w/**Tester for Hanoi from New Delhi** & RYRY, plus the alphabet sent as 5L grps at 0200, 425/50N (Williams, CO). You're right, it was ATR68, New Delhi which also has TTY circuits here to London & Moscow-- Ed.

18035.8: Un-ID idling at 1302, FEC/425. Might be ZRH, Cape Town Navrad, RSA becouse another day it was here with RYRY & foxes to LOL, 850/75R (Ed.).

18037: OBC, Callao Navrad, Peru wtfc for 5KM at 2220, 850/75N (Hetherington, FL).

18040.3: ZRH, Cape Town Navrad, RSA w/tfc to NMN at 1420, 850/75R (Roberts, FL).

18047.7: LOLD of the Argentine Navy w/RYRY & SGSG at 1358, 75R then SS tfc to the "commandante." (Ed.).

18052.3: HDN, Quito Navrad, Ecuador w/RYRY & SGSG at 1525, 75N (Ed.).

18055: MFA Belgrade, Yugoslavia w/nx in Serbo-Croat at 1445, 75N (Ed.).

18056.5: MFA Jakarta, Indonesia w/TTK nx in EE & Indonesian + diplo tfc from UN delegation in NYC to Keppris Teheran et Baghdad. Was 50R at 1405 (Ed.).

18125: RND70, TASS Moscow, USSR w/nx in EE at 1440 (Ed.).

18127: Boustan Madrid, Spain (Egyptian embassy) w/telexes in AA & a 5L msg to Khargia, Cairo, ARQ at 1235 (Ed.).

18144.5: CCM, Magallanes Navrad, Chile w/RYRY at 1347, 50R (Ed.).

18169.4: Un-ID idling in ARQ at 1332 (Ed.).

18206.2: N. Korean embassy (QTH?) w/telegrams in Korean at 1355, 50N (Ed.).

18255: ATB68, MEA Delhi, India w/RYRY, 425/50N (Palmberger, FRG). No time reported but was prob between 0830-1400-- Ed.

18264.6: VOA Rhodes, Greece w/RYRY to VOA, Greenville, NC at 1342, 75N (Ed.).

18267: VOA somewhere at s/off w/Hava a nice day, 75N at 1345 (Ed.).

18279.3: HBD20, MFA Berne, Switzerland w/msgs in FF & GG at 1729, ARQ (Roberts, FL).

18295: SDU9, STA Stockholm, Sweden w/tfc to Vietnam at 1515, TDM/96A&B (Ed.).

18355: 7L1, [illegible] embassy in Havana (a/k/a CME329-- Ed.) w/tfc at 1530, 500/75N (Williams).

18385: RRQ20, TASS Moscow, USSR w/nx in EE at 1356, 50R (Ed.).

18400: OMZ, MFA Prague, Czecholsovakia w/telexes in Czech at 1418, 75N (Ed.).

18502: RFFA, French Ministry of Defense, Paris w/tfc at 1431, TDM/96A&B (Ed.).

18600: RWN72, TASS Moscow, USSR w/nx at 1441, 50N (Ed.).

18602.7: VOA Greenville, NC w/RYRY to VOA Rhodes, Greece at 1342, to VOA Munich at 1439, 75R (Ed.).

18656: CLP1, MFA Havana, Cuba w/Prensminrex nx in SS at 1323, 50N (Ed.).

18668.5: FTS67H1, AFP Paris, France w/nx in FF at 1322, 50N (Ed.).

18670.3: FTS67H3, AFP Paris, France w/nx in EE at 1319, 50R (Ed.).

18694: VOA Greenville, NC w/RYRY to VOA Munich at 1441, 75R (Ed.).

18697.3: DFS70L3, DPA Hamburg, FRG w/nx in EE at 1315 & 1444, 50N (Ed.).

18699.7: Y2V44, ADN Berlin, GDR w/nx in AA at 1306, 50N (Ed.).

18785: FIS78, DIPLO Paris, France w/nx in FF at 1517, 75N (Ed.).

18824.5: Y2V38, ADN Berlin, GDR w/nx in EE at 1516, 425/50N (Williams, CO).

18906.4: GXQ, British Army, London, England w/RY1's & foxes at 1253, 50N (Ed.).

18984.5: OLD2, CTK Prague, Czechoslovakia w/nx in EE, 50N at 1228 (Ed.).

19012: OSI Oostende R., Belgium wkg un-ID sta in ARQ at 1349 (Ed.).

19215.3: RFL1, Fort de France, Martinique w/controle de voie at 1541, TDM/96A (Ed.).

19443.1: Y7A77, MFA Berlin, GDR w/nx in GG at 1333, 50R (Ed.).

19449.5: CLP1, MFA Havana, Cuba w/tfc in SS & 5F msgs to Embacuba Sao Time at 1640, 75N (Ed.).

19505: RCD36, PL Moscow, USSR w/nx in SS at 1331, 50N (Ed.).

19822.5: A/c flight plans for Medit Sea area + other tfc at 0134. Have no listing for an aero sta here but the AFTN slug "LSA" is the same used by 5AF, Tripoli Aero, Libya (Williams, CO).

19860: GYA, RN London, England w/freq list at 1238, 850/75R (Palmberger, FRG).

19865.5: PL Havana, Cuba w/nx in SS at 1456, 50R (Ed.).

19870: Y2007, a real whatzit from Berlin, GDR w/RYRY at 1626, 50R, + Q & Z codes to another sta. At 1653 sent QSA 2 HR NIL TKS 73 88 SK (Ed.).

20020: Y7A80, MFA Berlin, GDR w/nx in GG at 1520, 50N (Ed.).

20084.7: ISX20, ANSA Rome, Italy ending its nx bc in EE at 1525, 50N (Ed.).

20087.6: CLP1, MFA Havana, Cuba w/5F tfc to Embacuba Bissau at 1341, 50N (Ed.).

20117.5: A Yugoslavian embassy, poss Wash DC, w/tfc in Serbo-Croat & crypto after VCVC from 1711-1718, 75N (Ed.).

20131.2: MFA Belgrade, Yugoslavia w/RYRY & crypto after LCLC..., 75R at 1535 (Ed.).

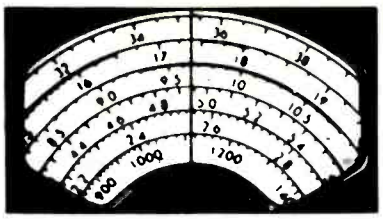
20204: YZJ, TANJUG Belgrade, Yugoslavia ending nx bc in EE at 1354, 50R (Ed.).

20216: US State Dept. w/unclas tfc for posts in mideast & Persian Gulf USN fleet. Was 850/75N at 1348. Similar to tfc once logged on 16202 (Williams)

20430: IRS24, ANSA Rome, Italy w/RYRY & nx in FF at 1402, 50N (Ed.).

20450: CLP1, MFA Havana, Cuba w/bulletin to Embacubas in Africa & S America, 500/75N at 1653 (Williams, CO).

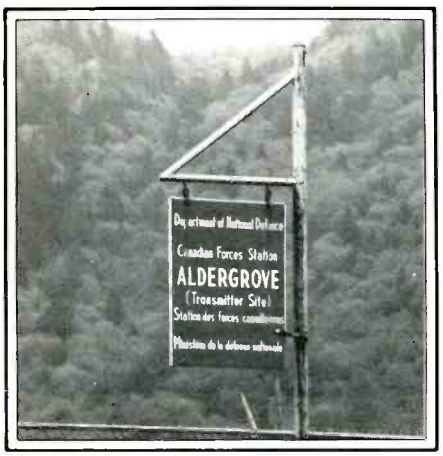
20471.5: CXR, Montevideo Navrad, Uruguay w/msgs to NBA at 1307, 75R (Ed.). PC

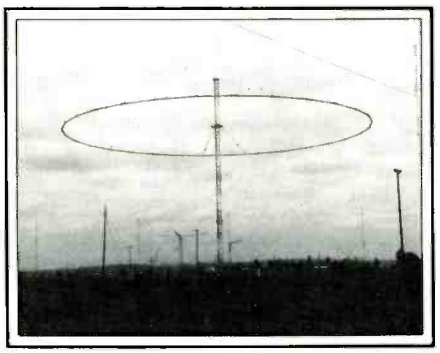


COMMUNICATIONS CONFIDENTIAL

BY DON SCHIMMEL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS





These photos of a Canadian Military station were forwarded by Roy Hafeli, BC, Canada. Note the variety of antennas.

Preparation of the column for this month came about right after having made a move and I am still looking for things in as yet unpacked boxes. My three antenna towers have been installed and if I can locate the box with my antenna wire and insulators I can get my antennas into operation.

The mailbag was loaded with good things and it is always a pleasure to be joined by some more first-time contributors.

Here is a helpful tip from Lee Elia, FL who put up a 60 foot longwire made from #30 magnet wire. He said "Where I live, an outdoor antenna will get you run out of town." Lee found that his longwire works great and it is practically invisible.

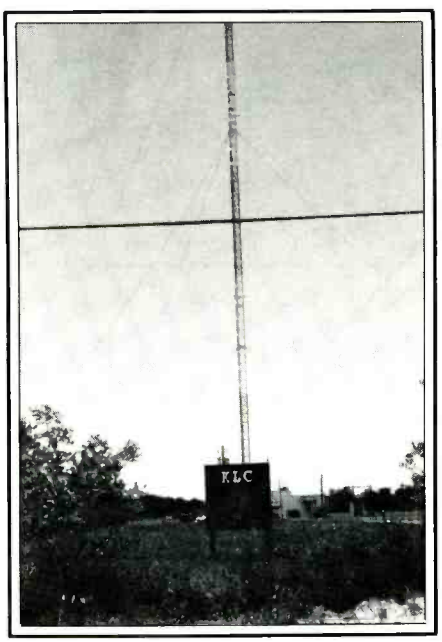
A note from Kurt Mueller, Switzerland mentioned that he recalled hearing "Number Transmission" stations like some described in the recent two-part article as early as 1957/1958.

Frank Mierzwinski, PA says he uses a Kenwood R-1000 with a 100 foot longwire and he also has a MFJ-1020, Yaesu 7700 tuner and a Autek audio filter.

Andy Gordon, CT reports observing several MARS frequencies used by US Navy ships being apparently deliberately jammed by Doppler Radar with intermittent bursts. Among frequencies subjected to this interference were 13826 and 14818 kHz. On one occasion the USS Inchon LPH-12 (NNNØ CUS) and the USS Hayler DD-997 (NNNØ CZV) found it impossible to work shore stations due to the radar interference. These two units were in the Caribbean, leading Andy to believe the radar signals may have been from Cuba.

From Greece we heard from Aristides Giannarelis who said he enjoys the column and asked for a QSL address for Nicosia station 5BA. Here is the address: Cyprus marine Radio, Cyprus Telecommunications Authority, PO Box 4929, Nicosia 142.

James Hunter, IN used a DX-302 with a 75 foot longwire and he also has several scanners. his QSL collection totals over 100. James requested two Coast Guard addresses for QSL'ing. Portsmouth CG COMMSTA (NMN), NAVSECGRUACT Northwest, Chesapeake, VA 23322. Honolulu CG COMMSTA (NMO), USCG Base, Wahiawe, HI 96786.



Coast Station KLC has an array of dipoles, beams and a tower. The latter is shown in this photo provided by R. Wright, TX. The actual location of "KLC" is not in Galveston but is on Tower Road in Arcadia, TX which is in Galveston County about 15 miles west of Galveston.

According to Roberto Benevolo, Brazil, information on Brazilian air navigational aids (beacons) may be obtained from Diretoria de Eletronica a Protecao ao Voo, Ministerio da Aeronautica, Aeroporto Santos Dumont, 20021 Rio de Janeiro, RJ, Brazil. Roberto indicated this is the Department of the Air Force charged to operate such navigational aids.

While we are on the subject of QSL addresses here are a couple from Patrick O'Connor, NH. 1. AQP, Islamabad Naval Radio, Pakistan. Address: Pakistan Naval Headquarters, Directorate of Signals, Naval Staff Branch, Islamabad, Pakistan. 2. 7TF, Boufarik, Algeria. Address: Marine Radio Station Boufarik, Le Chef de Centre, Boufarik, Algeria.

Dave Sabo, CA passes along a correcton to a logging he sent in for 4734 and 6730 kHz which appeared in the July issue. In checking out the intercept he believes the callsign was actually JJF, Japanese Naval Radio, Tokyo. The operator was calling in heavily accented English and the final character of the call was not easily understood. Comms were conducted in a mix of Japanese and English to LIMA ZERO EIGHT on 4734 kHz, and to HOTEL WHISKEY

Marty Foss, AK sent in this picture of his equipment which includes a HQ-140X, Sangean ATS-803A and a Sony ICF-2010. He has two longwire antennas. One of 74 feet and the other about 150 feet.

Here is the DX-room of Michael and Adelheid Schroter, GDR. They have been active BC & SW Listeners since 1978.

NINER on 6730 kHz. Dave also indicated he had logged quite a few Customs Service freqs based on tips in the column. He found 8912 kHz to be probably the most active, but has also logged activity on 11076, 11288 and 14686 kHz.

An anonymous contributor in AL sent in some NASA frequencies used by the barges hauling solid fuel rocket boosters and other types of equipment. Most of the radio gear on these barges for High Seas SSB operation are Motorola Micom sets with 1 kW amplifiers and automatic antenna tuners working into longwire antennas of approximately 70 feet.

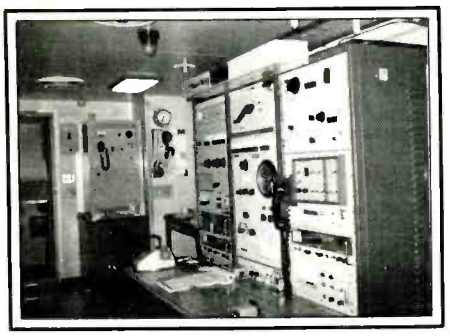
F1 - 3380 kHz USB
F2 - 3385 kHz USB
F3 - 6982.5 kHz USB
F4 - 1455 kHz USB
F5 thru F9 Not Used
F10 - 2182 kHz AM
F11 - 2638 kHz AM
F12 - 4125 kHz AM

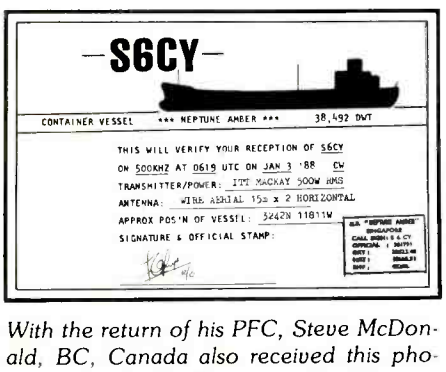
NOTE: F3 used at all times unless maritime units advised otherwise.

A question about a beacon was received from Brian Smith, IN. Brian, the beacon you heard, GNI, is located at Grand Isle, LA and broadcasts continuous wx in addition to serving as a navigational aid. The transmitter is 2000W.

Contributor Micklus, VT monitored some odd signals at night-time in the 1700 kHz region. These signals are most likely from various radio-location equipments including Cubic Argo, Raydist, Decca Hi-Fix and Hydrotract.

And now let's take a look at the great loggings for this month.





With the return of his PFC, Steve McDonald, BC, Canada also received this photo of the Radio Shack on the Neptune Amber, S6CY.

Abbreviations Used For Intercepts

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

"Ute" Station Intercepts
(All Times UTC)

209: Beacon IKB, Wilkesboro, NC at 1919 (Valger, NC).

233: Beacon SRW, Salisbury, NC 1915 (Volger).

249: Beacon LYD, Lakeside Apt., Houston, TX at 0247 (Wright, TX).

254: Beacon GS, Runway 14 of Triad Int'l. Apt, Greensboro, NC at 1910 (Volger, NC).

275: Beacon HPY, Humphrey Apt., Baytown, TX at 0335 (Wright, TX).

278: Beacon HOC, Hillsboro, OH at 1700 (J.M., KY).

329: Beacon IWH, Wabash, IN at 1728 (J.M., KY).

332: Beacon ZZV, Zanesville, OH at 1725 (J.M.).

344: Beacon JA, Jacksonville, FL at 0555; Beacon BFR, Bedford, IN at 1655 (J.M., KY).

368: Beacon IX, Olathe, KS at 0400 (McCuiston, TX).

388: Beacon SGR, Hull Apt., Houston, TX at 0244 (Wright, TX).

413: Beacon CBC, Chambers Co. Apt., Ahahuoc, TX at 0251 (Wright, TX).

526: Beacon OJ, Olathe, KS at 0348 (McCuiston, KS).

760: Time pips w/higher pitched tone a minute mark (Bass, NC). This is the Radio Reloj bc outlet in Guanabacoa, Cuba-- Ed.

2670: NMC, USCG CAMSPAC, San Francisco w/Distr 11 marine info bc at 0213; NMW51, USCG, USCG Astoria, OR at 0541; USCG No. Bend, OR at 0607; NOJ, USCG Kodiak Commsta, AK at 1104; USCG Monterey, CA at 1535, all USB made (Saba, CA).

2716: NMJE, **USS Estocin (FFG-15)** wkg Newport Port Control at 1025. This is a USNR frigate out of Philadelphia Navy Base; **USS Santaquin (YTB-824)**, a large harbor tug wkg NDIK, **USS Miller (FF-1091)** at 1020-- YTB's not often hrd on HF as they usually use only VHF/UHF; NDIC, **USS Valdez (FF-1096)** clg NY Port Control at 0900 & Weapons Station Earle (NJ) at 0930 re permission to enter port; NSBR, **USS Samuel B. Roberts (FFG-58)** wkg Newport Port Control. Was damaged by a mine in Persian Gulf and being transported aboard floating dry dock **Mighty Servant II** (Gordon, CT).

2813: VIR8, Rockhamptan, Australia clg CQ in CW at 0137 (Bass, NC).

3130: Hotel 5/7 Papa & other similar ID's in USB at 0137. Sounced like USN Pac Fleet radar training exercise (Fernandez, MA).

3517: GNI1, Niton, Isle of Wright, England at 0349 w/ID & ARQ phasing sigs (Pat O'Connor, NH).

3993: Missouri Emerg Ops & Wx Net supporting FEMA CIVEX exercise, USB at var times. Also on 7248 kHz (A. Nonymous, MO).

4066.1: NNUL, **USS Constellation (CV-64)** trying a patch thru San Diego CSS-1 from 0119-0123; NMTZ, **USS Nimitz (CVN-68)** w/the same at 0428. QSX San Diego 4360.5 kHz duplex (Saba, CA); NFZT, **USS Henry B. Wilson (DDG-7)** clg San Diego CSS-1 at 0610; NHKG, **USS Ranger (CV-61)** to San Diego w/emerg pp re injured crew member; NHLT, **USS Conyngham (DDG-17)** clg Norfolk ICSB at 0500 on 4065 kHz. ICSB told the sparks to tune up to proper freq (Gordon, CT).

4173: KDL, Hollywood Terminals, Pasadena, TX wkg barges at 2305 (Wright, TX).

4310: RIS70, Tblisi Meteo, Georgia, USSR clg CQ in CW at 0204 (Bass, NC).

5696: Romeo 4 Mike clg Tango 4 Charlie but no reply. Then Xray 4 Hatel, Tango 3 Charlie re T3C asking X4H to stand his radio guard because he had taken 4 POB (helo?). T3C gave pos as about 17 mi E of Boston. X4A sounded like USCG Commsta Boston dispatcher. Hrd 0401 in USB (Fernandez, MA).

5715: UM-119 to Habitat w/req "Relay to Duty Officer that my alligator is good." Was USB at 0251. Apparently USN (Saba, CA).

5751: Few short comms in the clear, some ringing tones then off. This is a DoE nuke materials transport freq. USB at 0532 (Saba, CA).

6226: YL/SS in AMM w/5F grps at 0800. Header "Atencion nueve cero siete, cero, cero" foll by "cero, cero, uno, tres, cero" & into 5F grps. Off at 0814 (Kloth, IL).

6518.8: NMN, Commsta Portsmouth, VA to NNGP, **USCGC Cherokee (WMEC-165)** w/patches 0236-0310 while ship was enroute Curtis May, MD for drydock & repairs (Bagrowski, MD).

6520.8: NAQD, **USCGC Jarvis** to Honolulu Rescue re helo evac of ill/injured crew member, USB (QSX Honolulu 6518.7 kHz) from 0611-0618 (Saba, CA).

6532: Agana Aeradio, GU in USB at 0733 re a/c pos rpts & ATC info. Said their TTY circuit to Nandi, Fiji was down (Thomas, TX).

6575: NY ATC wkg Eastern 929 in USB at 0220 (McCuiston, KS).

6643: HEE30, Berne, Switzerland in comms w/TWA a/c & o/c N21NY, USB 0530 (Elia, FL).

6802: Beacon D in CW at 0215-0245 'neath YL/SS w/AM #'s bc (Mierzwinski, PA).

6965.5: OM/EE clg 768 then 1-0 count at 0400, USB. Different callup every day. At 0410 10 pips, grp count, into 3/2F tfc, rpts tfc, says "end." OM has a southern accent, not a machine. One day found 3 grps rpts in msg. Another day a msg to 172 had many dupes & several triplicates (Elia, FL).

7491: Un-ID net w/ID's incl Minot League, Whitewater 04, Propel 04, Propel 06. Lots of discussion re active circuits. USB at 1416 (J.M., KY)

7526: US Army net here in USB several diff days. Calls inckl R20, R42, J32, Y20, Y04. Refs incl Ft Lewis, WA & RTTY comms. Usually hrd around 0600 (Saba, CA).

7584: YL/SS in AM at 0632 w/5F grps (Fernandez, MA).

7743: Fed Hwy Admin stas WWJ82 in Lincoln, NE & WWJ73, St Paul, MN in comms during quarterly comms net test. USB at 1900. This is FHWA freq #F-28 (J.M., KY).

7885: Open carrier 0714, YL/SS in AM-mode says Atencion dos 1-time at 0715. Header: Atencion 245 117 at 0730; rptd till 0732 then into 5F grps. Off 0741 (Kloth, IL).

8186: YL/SS in AM-mode w/5F grps in progress at 0809. Off 0813 (Kloth, IL).

8275: Foxtrot Whiskey in USB as NCS w/several other stas using single letter phonetics as ID's. Latter sending data to FW re speed, altitudes, courses, sectors, weaponry. At 0400 FW reqs roll call & 5 stas check in. Poss orig Weymouth NAS, MA (Fernandez, MA).

8294.2: WYR8681, tug/barge tanker **Belcher Port Everglades** in USB at 1509 wkg WJK (O'Connor, NH).

8406: UWRO, Soviet vessel **M/V Frederick Engels** in CW at 0621 wkg WNU43 w/wx obs. Believe loc was off Yucutan, Mexico when wx obs made (Halstead, WV).

8496: CLA, Cojimar Havana, Cuba in CW at 0721 wkg **M/V Camila Cienfuegos** w/2 msgs in EE. One msg advised skipper to have necessary documents ready for inspection upon arrival in order to avoid getting fined (Halstead, WV).

8548: CTP, NATO Lisbon, Portugal clg CQ in CW at 0205 (Bass, NC).

8609: CLJ, Caibarien, Cuba in CW at 0723 wkg UZLW, **M/V Leonid Sobinov** w/msg in RR from Odessa. Believe UZLW is a passenger vessel. Usual gud QRQ op at the key (Halstead, WV).

8686: CNP, Casablance, Morocco in CW at 2015 w/CQ marker (O'Connor, NH).

8690: 3DP, Suva, Fiji in CW clg CQ at 0746 (O'Connor, NH); FJY4, St. Paul & Amsterdam Isl.,

French Antarctic w/lang CQ marker at 0320 (McDonald, BC).

8774.7: NYCQ, **USCG Boutwell** w/patch thru NMC to USCG Seattle Support Center, simplex USB 0226-0228 (Sabo, CA).

8800: WFM, New York, NY in USB at 0610 standing by for tfc. ID as Whiskey Fox Mobile (Jerry Rappel, IA).

8808.8: FFL, Saint Lyes, France at 0535 answering 1 of the many ships clg on 8284.9 kHz & handling a patch (Fernandez, MA).

8866: Sounds like oil platform outbanders in USB at 0200. Several stas w/ID's of 1st names (Joe, Jim, etc.), ordering machine parts & similar to go out to the "rig." Some obscenities. QSY'd to 8860 when someone complained of QRM (Thomas, TX).

8882.2: Two shrimp boats in FL Keys in QSO at 0502. This is an aviation freq for Africa, Brazil & Portugal (Fernandez, MA).

8887: Couple of OM/CC's in USB 0540-0543. A friend who can speak CC heard the tape & felt they were Taiwanese smugglers (Sabo, CA).

8912: Grand Prix & others "going to return to one zero" at 0217, un-ID sta asking an a/c where he was planning to RTB; Omaha 79 & Slingshot in comms 0614, then into the green at 0615. All USB. Anti-smuggler ops in Gulf of Mexico & Caribbean (Sabo, CA).

8942: Hong Kong Aerodio in USB at 2340 wkg a/c for pos rpts, etc. (E. M. Anon).

8967: AGA8, Clark AB, Philippines w/alpha-numeric tfc at 0338; CUW, Lajes Fld, Azores w/Volmet bc at 0500. All USB (Sabo, CA).

8982: MKL, RAF Edinburgh, Scotland clh CQ in CW at 0207 (Bass, NC).

8993: USN a/c ODIC w/patch thru Albrook Field to Jax ASWOC (Antisubmarine Warfare Ops Cntr) w/priority tfc to 3VV & Q6F. Involved lats of authentication checks. USB 0619-0623 (Sabo, CA); & Hobby 38 (MocDill AFB) in USB at 0215 w/patch Mother Monitor. Agrah 66 (an ANG a/c) in USB at 2018 w/patch to Minuteman (Symington, OH).

9018: MacDill & Chinaware in USB at 0109 then into crypto RTTY, QSY 8993 kHz (A. Nonymous)

9120: GPA4, pass Reuters in London, clg CQ in CW at 0221 (Rappel, IA).

9169: WWJ74, a FHWA sta somewhere describing comms equt in use to WWJ45 and WWJ75 (locs unknown) at 1745, USB. This is FWHA freq #F-30 (J.M., KY).

9197: WWJ40, FHWA Washington, DC w/sig checks & net roll call at 1502, USB. This is FHWA freq #F-4 (J.M., KY).

9236: Open carrier at 0822. Eerie 11-note electronic tune (X4) at 0824 foll by Atencion by YL/SS. Header was Atencion 759 00, foll by 00 100 said by YL/SS at 0830 & into 5F grps. Off 0839 (Kloth, IL).

10000: At 1518 on top of WWV, YL/EE saying Speaker CH --- 308B. OM/EE foll for about 15 mins w/slow 4-letter words like "walk, horn, ride, toot, etc." Later at 1738 hrd OM/EE annce "This is Cherry Point, radio check, over." No response noted. (McPherson, NC). Cherry Point (NC) USMC?? Have noted similar activity here, myself. May be a mil net off freq-- Ed.

10075: Houston Center w/selcall checks then QSY to 13330 & 17940 at 2230 (Wright, TX).

10010: JJ QSO in USB by 2 OM's at 0925. Fishing boats (Foss, AK).

10225: OM/SS w/5L grps in USB w/phonetics at 0942 (Foss, AK).

10583: YL/EE repeating words like "hand, bone, foix, juice, toe, rat, talk, think" & some #'s, USB at 1600. At 1603 mention made of Speaker JE. At 1604, OM/EE rptng some words & #'s (J.M., KY). Appears to be related to 10000 kHz intercept-- Ed.

10673: YL/SS in AM-mode w/5F grps in progress at 0616. Sequence rptd X3. Few syllables of SS before each sequence + sound like pulsating clarenet between Carib style mx deep in background. Off 0700 (Kloth, IL).

10865.6: Un-ID sta in AM-mode at 1426 sending PMY 3WD XSJ CND OWS 4JL DXR AHC OHK WJ3 5WO A5S B7L then into CW w/WA3 3QM 3VN Q4B (Lennick, ONT).

10891: WWJ82, FHWA Lincoln, NE tailing WWJ41 how to modify TTY terminal from 300 baud to 110 baud, USB at 1903. WWJ40, FHWA at Washington, DC w/test msg to all FHWA stas w/request to review their ops procedures, USB at 2031. FHWA freq #F-5 (J.M., KY).

11055: SAM-86972 enroute Costa Rica w/patch from Sec of State to the Director of the NSC, USB at 1401 (Lomar, FL).

11108.7: YL/GG in AM-mode w/Hotel November rptd many times + flute mx at same time. At 0601 w/5F text began w/each grp X2 (Fernandez, MA).

11118: Drag Race & Fire Light in USB from 0029-0040 establishing comms w/authentication checks on Foxtrot 315 then QSY to 9057 kHz (Papa freq) at 0037, then back to 11118 kHz (Lesnick)

11200: MVU, Upavon, England at 1638 in USB w/wx forecasts (Lesnick, ONT).

11239: McClellan/Oscar 2 (a/c) in USB at 0325 w/comms on several freqs while a/c was passing thru a thunderstorm & experiencing St. Elmo's Fire that caused severe QRN (Fernandez, MA).

11243: Un-ID sta clg Sheebo 33, USB at 1623 (Lesnick, ONT).

11542: YL/GG in USB at 0017 w/5F grps (Bass).

12028: X9N & V1U at 1530 in comms re "tracks"-- someone says at 1547. Then 95X talks re track 2077, XCC track & then at 1556 a reference made to Star wars Machine in comms w/9P. All USB (Elia, FL).

12560: SYBD, **M/V Cherry Flower** wkg KPH for telexes to Copenhagen. Ship under Greek flag prob chartered to Danish firm. CW at 2330 (Hall, WA).

12568: UOYD, **M/V Makhtum Kuli** in CW at 0030 w/wx obs for WNU. Ship off Central Amer coast. Home port thought to be Vladivostok (Halstead, WV).

12592: 6NAX, **M/V Shin An**, Korean factory fishing vessel to KLB in CW at 0126 (McDonald, BC)

12600: EFWP, **M/V Roncesvalles**, a small cargo ship w/telexes to Madrid via EAD in CW at 0020 (Hall, WA).

12606: BKHW, the PRC registered vessel **M/V Ever Valor** in CW at 0623 wkg KPH w/wx obs for an area near the Aleutians (Halstead, WV).

12657.6: HZG, Dammon, Saudi Arabia in CW at 1355 clg CQ (Ross, ONT).

13002: CTU2, Portuguese Navrad, Lisbon clg CQ in CW at 2356 (Bass, NC).

13010: UQA4, Kiev, Ukranian SSR in CW at 2012 wkg Soviet vessel w/callsign ESHV w/meteo tfc from Murmansk (Halstead, WV).

13244: MAC-401 wkg Ascension w/wx report at 0023 (Wright, TX).

13247: Executive 1 Foxtrot wkg Andrews AFB in USB at 2345 (Lamar, FL). This ID is used for a commercial a/c transporting the family of the President of the USA. Tom Kneitel has also noted it on 415.70 MHz UHF-- Ed.

13300: Tokyo Aeradio, Japan in USB at 2300 wkg a/c's in western Pac for pos reports, ATC info, etc. (Thomas, TX).

13385: RKIS, Vostok Station, Antarctica at 0609 & RUZU, the Molodezhnaya Antarctic Base at 0611 w/UMA4 in CW. At 0613 RUZU wkg UAT (McDonald, BC).

13636: Beacon C in CW every 2 sec at 0500 (Fernandez, MA).

13638.8: Beacon Z in CW every 4 sec at 0503 (Fernandez, MA).

13973.9: NNN0LVP & NNN0ICE in USN MARS net. Exchanged telegroms in RTTY the patches. Said it was -85°F at their QTH, w/50 ft visibility. ICE is McMurdo Station, Antarctica (Elia, FL).

14441.5: NNN0CNH, Battleship **USS New Jersey (BB-62)** clg NNN0NUW at 2340. Ship finally reinstalling long inactive MARS sta not used since 1983. NNN0CZV, **USS Hayler (DD-997)** clg any stateside MARS sta. Hayler & several other NATO units were assisting in a North Sea SAR (Gordon)

14445: CIW91, CFARS in USB at 2104 wkg CIW605 w/patches from Lahr, FRG (O'Connor, NH).

15035: VXA, Edmonton, Alta., in USB at 1322 w/wx for Canadian West; CHR, Trenton, Ont. in USB at 1331 w/aviation wx; CJX, St. Johns, Nfld in USB at 1441 w/aviation wx (Lesnick, ONT).

15686.3: Sta in CW at 1907 repeating "319 TTT" (the T represented cut 0's). Rapid QSB (A. Nonymous, MO).

15875: NRT, Yokota Monitor, Japan w/sig checks to NRV6 (Marcus 1. LORAN), NRT3 (Iwo Jima LORAN); & NRV (USCG Barrigada Commsta, GU. Referred to comms on 10523.5 & 13608 kHz. USB from 0510-0517 (Sabo, CA).

16463.1: IZ-7251, yacht **Cypraea** at 1955; ZR-2151, yacht **Mamicasa** at 1959, both USB wkg GKT62 during trans-Atl yacht race (O'Connor, NH).

16780: BOWT, **M/V Kang Hai-29** a PRC flag bulk carrier wkg XSG in CW at 0001 (McDonald, BC).

16911: JNA, Japanese Maritime Safety Agency, Tokyo in CW clg CQ at 0333 (O'Connor, NH). Gud catch, Pat!-- Ed.

18027: AFA3, Andrews AFB, MD wkg SAM 60206 w/patches to Elmendorf AFB. USB at 2356. This is freq Foxtrot 17 in Mystic Star net (Sabo, CA).

18390: Air Force 2 enroute Tampa, USB at 2025 w/patch to Crown (WHCA), then to Sun Coast Aviation via Crown (Lamar, FL).

22328: D3E81, Luanda, Angola clg CQ in CW at 1329 (Bass, NC).

22330.5: 4XZ, Haifa Navrad, Israel in CW at 0502 w/VVV marker (McDonald, BC).

22410.8: SVB7, Athens, Greece in CW at 0507 w/call marker (McDonald, BC).

22527: NRV, USCG Commsta Barogada, GU w/CW marker at 0115 (Thomas, TX).

22539: PCH71, Scheveningen, Netherlands in CW at 2001 w/call marker (J.M., KY).

22543: 7TF Algiers, Algeria clg CQ in CW at 1634 (J.M., KY).

22590: ZSC65, Cape Town, RSA in CW & data bursts announcing sitor svc at 1354 (Bass, NC). **PC**

EMERGENCY
COMMUNICATIONS FOR SURVIVAL

BY GORDON WEST, WB6NOA

Low Power Television Link

The emergency command post could receive live color action television direct from a portable TV system at the disaster site. It takes only the first grade of amateur radio license, the Novice license, to obtain TV broadcasting privileges on the popular amateur radio 1270 MHz band. The most popular amateur television (ATV) channel on 1270 MHz is 1289.25 MHz. This frequency is well within the Novice band limits, and allows the entry-level Novice operator full ATV privileges.

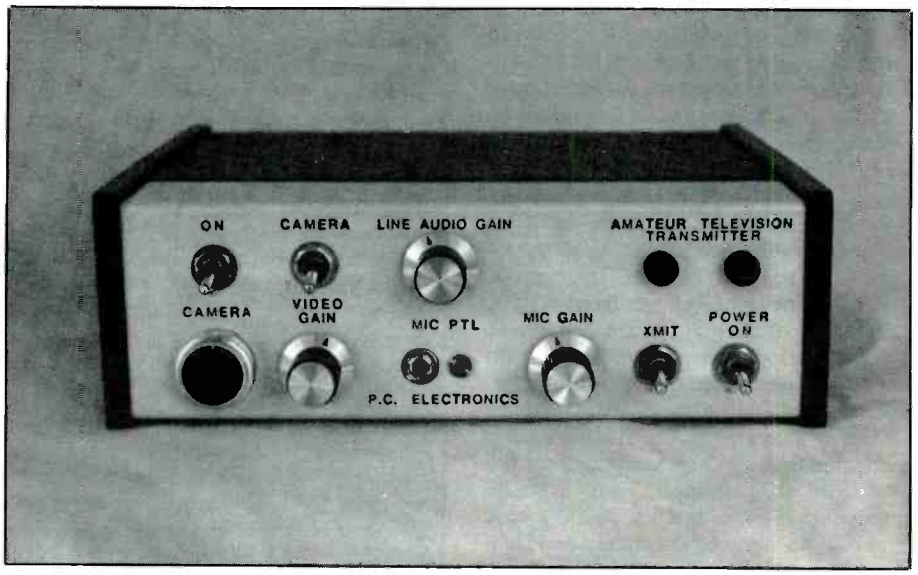
Transmitting television pictures from a home video camera is easy. A standard 10-pin connector, found on most cameras made for VHS recording, outputs composite video and audio into a 1270 MHz transmitter. The transmitter runs 1 watt output and is crystal-controlled on 1289.25 MHz. Transmitters, such as the TX23-1, are available from PC Electronics, 2522 Paxson Lane, Arcadia, California 91006-8537. They are completely assembled, and are ready to go.

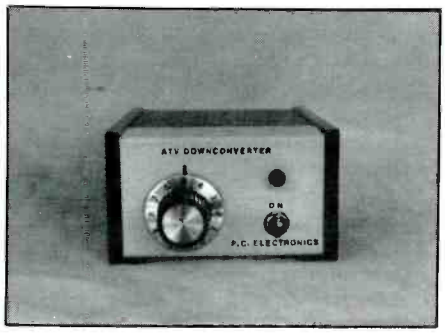
The output of the transmitter is a type "N" connector for use with any 23cm (1270 MHz) antenna. If you are within a few blocks of your command post, a tiny telescopic whip works fine. If you're in a helicopter, an outside 1270 MHz "spike" antenna will work well up to 10 miles away, line of sight. If you are at a distant disaster location, you could run the 1 watt into a highly directional beam antenna, such as the KLM-1270 MHz series, which offers up to 17 dB gain and up to 15 miles coverage around town. If you need even further range, you could also purchase an 18-watt power amplifier from Downeast Microwave, 207/948-3741.

If you run a portable camcorder, you could also rig your transmitter portable too using a battery belt to keep the system running for several hours. This system works well for about 1-mile coverage, especially if you mount your tiny transmitting antenna atop the very tip of a hardhat lined with aluminum foil for a ground!

For the receiving end of this circuit, any number of stations could tune in with the proper equipment. Any television, black-and-white or color, will work.

The TV is hooked up to a downconverter that takes the 1289.25 MHz TV signal and runs it out to Channel 3 or 4 which your television will accept. Your downconverter is hooked up to an omnidirectional 1270 MHz ground plane on the roof of your comshack, or to a directional antenna that may be aimed at the distant ATV transmitting station.





Downconverters run about $100 from PC Electronics. This same organization also has the necessary transmitting and receiving systems, too.

The picture you will receive will look just like a regular television picture. It's not frozen, nor is it in slow-motion—it's just like regular TV. Your regular communications channel with the remote TV operator carrying the transmitter allows you to give him commands about adjusting brightness, or where to aim the camera. The TV operator would communicate back to you over the regular television set-up. You will hear his voice plus all of the sounds of the disaster coming in with the TV picture.

Propagation of 1270 MHz signals is ideal for ATV use. In big cities, these signals bounce around the buildings and always find a way to escape to a distant receiver. This is why the cellular telephone band is located near 1270 MHz (800 MHz).

There are other frequencies, as well, that support ATV activity, but the 1270 MHz (1270-1295 MHz) is specifically allocated for the beginner Novice operator. This means you only need that simple ham radio Novice ticket to legally get on the air. Incidentally, PC Electronics will not sell any ATV equipment on ham frequencies unless they see a copy of your license.

If you already own a video camera, plus any old television—you have most of your station already at hand. All you'll need is the 1-watt wireless transmitter and the downconverter receiver. Some simple antennas, your Novice ham ticket, and you are ready to go on the air, live, and in color with full audio.

And now, here's the clincher:

Almost no police departments—almost no fire departments—and almost no civil defense or major city emergency groups have capabilities to send and receive live television pictures from the disaster to their command posts. If you and your emergency communications group have been trying to get aboard a local major disaster system, a demonstration of ATV wireless video communications will immediately get their attention. Radio is one thing, and everybody has it. Video is something else, and almost nobody has it!

The opportunities are unlimited once you get someone on your team with just a simple Novice has radio ticket for ATV. PC

THE HAM COLUMN

DAVE NEWKIRK, AK7M
AMERICAN RADIO RELAY LEAGUE HQ

GETTING STARTED AS A RADIO AMATEUR

Ham License Exams, No-Code and 220-222 MHz

William Thim, Jr., of Vernon, Connecticut, writes: "How long after I've passed the Novice class test do I have to wait before I can take the Technician test? If I decide to wait a year or so before trying for Technician, will I have to retake the code portion of the test?" In answer to your first question, William, there's *no* waiting necessary between taking tests for the different classes of ham license. In fact, there have been cases in which people have gone into an exam session without a license and qualified for *Extra Class* the first time out! That's pretty rare, but it does highlight two facts: (1) The FCC rules do not require you to wait for any specified period before upgrading and (2) you don't have to start out as a Novice unless you want to. (It *is* necessary to take and pass all of the examination elements up to and including those necessary for your target license class, though. Thus, if you're gunning for General the first time out, you must pass the Novice, Technician *and* General class exams to pull it off.)

As for a time limit on credit for passed examination elements, William, that depends on whether the credit takes the form of a ham radio license or a *certificate of successful completion of an examination*. When you hold a valid ham license, you hold proof that you passed the exam elements necessary to achieve it. Currently, a ham license is good for ten years, plus a two-year grace period. (The grace period is a "window" in which an expired license can be renewed without reexamination but is invalid for radio operating purposes.) The license is good for examination-credit purposes for the length of its term *plus the grace period*. So, a Novice license issued to you in 1988 can be used for examination-credit purposes until the end of its grace period in 2000. (Every time you renew the license, it's good for another ten years—and so's your credit for having passed the examination elements necessary to get it.)

Certificates of successful completion of an examination have a shorter fuse: They're good for *365 days*. Let's say that you hold a valid Novice license. You sit for the General class exam, pass the Technician written test and 13-WPM code test—and fail the General-class written test. (*Arrgh!*) But you needn't walk away empty-handed: You can get a certificate of successful completion of an examination for passing the Technician written test and 13-WPM-code tests. With that certificate in hand, all you need to do to make General is pass the General-class written exam within 365 days. As long as your Novice license is valid, it continues to count as credit for the Novice-class exam elements.

Land Mobile Gets 220-222 MHz

On August 4, 1988, the three FCC Commissioners voted to ignore overwhelming public opposition and reallocate 220 to 222 MHz—part of the Amateur Radio's 220-225 MHz band—to private land mobile radio services. Hams now using this portion of the band will have to move—by a date unspecified as this is written in August 1988—elsewhere in the band, or to other ham bands.

The story is a bitter one. Strangely—or not so strangely, depending on your point of view—the action taken on August 4 appeared to be identical to FCC's proposal of 18 months earlier. Thoughtful protests by thousands of ARRL members, exhaustive filing by ARRL, opposition to the action by dozens of Congressmen and the Department of Defense—all of these were ignored by the FCC Commissioners. It's also strange—or not so strange, depending on your point of view—that the Commissioners *did not* ignore the United Parcel Service's comments in the proceeding—comments filed *six months late!* (It wasn't until UPS filed that a significant potential user of the proposed new land-mobile band went on record as desiring the application.)

It's too soon to tell where discommoded ham users of 220-222 MHz will move their operations, assuming that expected reconsideration requests and court challenges fail in reversing the FCC action. Rest assured on one point, though: *This FCC action does not affect the Novice band at 222.1-223.91 MHz.* You have FCC to thank for this. Novice Enhancement—of which the 222.1- to 223.91-MHz Novice subband is part—was announced by FCC on February 10, 1987. That was two days before FCC's February 12 proposal to yank the 220- to 222-MHz subband away from hams. It's sure a nice coincidence that FCC avoided placing a "220" Novice band at a spot that might be affected by the possible later enactment of a proposal *that hadn't been announced yet*—especially after ARRL had asked the Commission to grant Novices access to the *entire* 220- to 225-MHz band! A nice coincidence—or not so nice, depending on your point of view.

"No Code," Eh?

David S. Bushell, Olympia, Washington, writes: "I read in the July 1988 issue of *73* magazine about a no-code Amateur Radio license scheduled to take effect in the US and Canada next year. Please tell me more about this license." Whoa, David! *A no-code license is not in the works for the United States!* That *73* magazine piece—"Welcome, Newcomers!" by Bryan Hastings, KA1HY—didn't say so, either. The phrase you read said that people in the US have been *talking about* a no-code ham license, and that there's a *Canadian* no-code license in the works.

Both of these statements are true. Although US hams (and nonhams) are talking about a no-code license—as they have been since the early days of ham radio—such a license is *not* now in the works for the US, as far as I know.

What's happening in Canada is a different story. On May 10, 1986, the Canadian Radio Relay League (CRRL) and the Canadian Amateur Radio Federation (CARF) submitted a joint proposal to Canada's Department of Communication (DOC) on restructuring Amateur Radio in Canada. *That proposal included a no-code license,* among other things. In early 1988, the DOC released a ham-radio-restructuring proposal based on the CARF-CRRL recommendations. *The DOC proposal, which also included a no-code license, was to be implemented by the late summer of 1989.* Indications are now that the Department of Communications—now known as Communications Canada—will indeed act soon to restructure Canadian ham radio along the lines of its proposal. When that restructuring goes into effect—probably not until 1990 or so—Canada will have a no-code Amateur Radio license. As proposed, the Canadian no-code, entry-level ham license will grant its holders the privilege of using all modes on all Amateur Radio bands above 30 MHz at a maximum transmitter input power of 250 watts, with no homemade transmitting equipment allowed. The proposed test for this new license would consist of a 100-question technical exam covering (1) basic electronics; (2) Amateur Radio systems; (3) antennas and propagation; (4) interference and interference suppression; and (5) regulations and operating procedures.

What will happen when Canada gets a no-code ham license? Will it mean the end of the world for ham radio in Canada—anarchy in the bands open to no-coders? Well, the Canadians are about to find out, and The Ham Column will let you know how it goes. (As for the pros and cons of a *US* no-code license, the opinions are rolling in as a result of last September's "Why the Morse Code?" Ham Column. More on this in a future POP'COMM.)

I predict that a Canadian no-code license will *not* mean ham-radio anarchy in Canada. Evidence: *Japan has had a form of no-code ham license since the 1950s, and Amateur Radio is flourishing in Japan.* Ready for another shocker? Today's code-free Japanese license allows, among other things, low-power SSB operation *on some HF bands*! Licensees of this class outnumber those of all other Japanese license classes combined.

One result of this, of course, is that the ham bands are more densely populated in Japan than in North America. (This is not necessarily a bad thing. Fully populated ham bands and increasing ham populations are good justification for ham-band *expansion* at international radio conferences. At the same time, increasing band occupancy challenges individual hams, and ham technologists and spectrum managers, to develop better means of fitting more ham stations into finite bands with minimum mutual interference.) Whatever our personal views on no-code may be, the Canadian no-code license will give us some answers.

Keep those comments, questions and suggestions coming, folks! (Your *questions* about Amateur Radio are especially useful, because I can write a Ham Column around 'em—just as I did this month.) And how about photos of you in your ham shack (or in your ham shack to be)? Write me at ARRL, Dept. PCN, 255 Main St., Newington, CT 06111. PC

CIRCLE 111 ON READER SERVICE CARD

CIRCLE 97 ON READER SERVICE CARD

CIRCLE 13 ON READER SERVICE CARD

SATELLITE VIEW

BY DONALD E. DICKERSON

INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

In Search of Peace

The Russian word for peace is mir. It's also the name of the Soviet's permanently manned space complex. The center piece of the complex is an improved version of the Salyut class space station. It has several improvements over the earlier models. Mir has private crew quarters, and improved navigational, computer and solar power systems. It also carries a docking module which will allow four expansion modules to be added. This is in addition to the Kvant laboratory which has already docked with the station. Each expansion module will be used for a specific purpose, such as manufacturing or medical and scientific research. A fourth module will be a EVA chamber. This will allow cosmonauts to leave the space complex more easily and safely. The Mir complex measures 35 meters when a Soyuz spacecraft and a Progress supply ship are docked at opposite ends. When completed the complex will carry a wide variety of equipment. It will carry three cameras, manufacturing and research equipment and a standard package of photo, signal and radar intelligence gathering equipment as well. Twelve Progress supply ships have made trips to the Mir complex. Each is able to deliver over 2 tons of supplies.

The Mir will host a wide range of international space crews in the coming years. Under the InterCosmos program a Syrian and Bulgarian crew has already visited the Mir. A French and Afgan crew are scheduled for early 1989.

The Mir space complex routes its communications to ground stations through two channels. The newest is a 11/15 GHz satellite system known as ESDRN (Eastern Satellite Data Relay Network). These satellites are actually transponders carried by other host spacecraft. Both the Gorizont and Raduga telecommunications satellites have been known to carry ESDRN transponders. Common downlinks are on 10.82, 11.32, 13.52 and 13.70 GHz.

The second communications channel makes use of a single VHF frequency, 143.625 MHz. Low priority traffic is heard here. All transmissions on this frequency are either plain unencrypted voice of TLM. The Mir is easily heard in North America on this frequency. I received two reports this month which confirm that this frequency is still in use. William Townsend (WB1CRB) of Bar Harbor, Maine sent along a translation of an intercept from Mir. It was an orbit #12762 somewhere over the North Atlantic when William heard these Russian transmissions. William uses a Pro 2004 scanner and a D-130 discone antenna for chasing the satellites. He also has a well equipped weather satellite station for APT reception. The following is the translation of Williams intercept of a short transmission from the Mir space complex:

"What was the weather?"

"I thought you were (unreadable) km from Minsk highway."

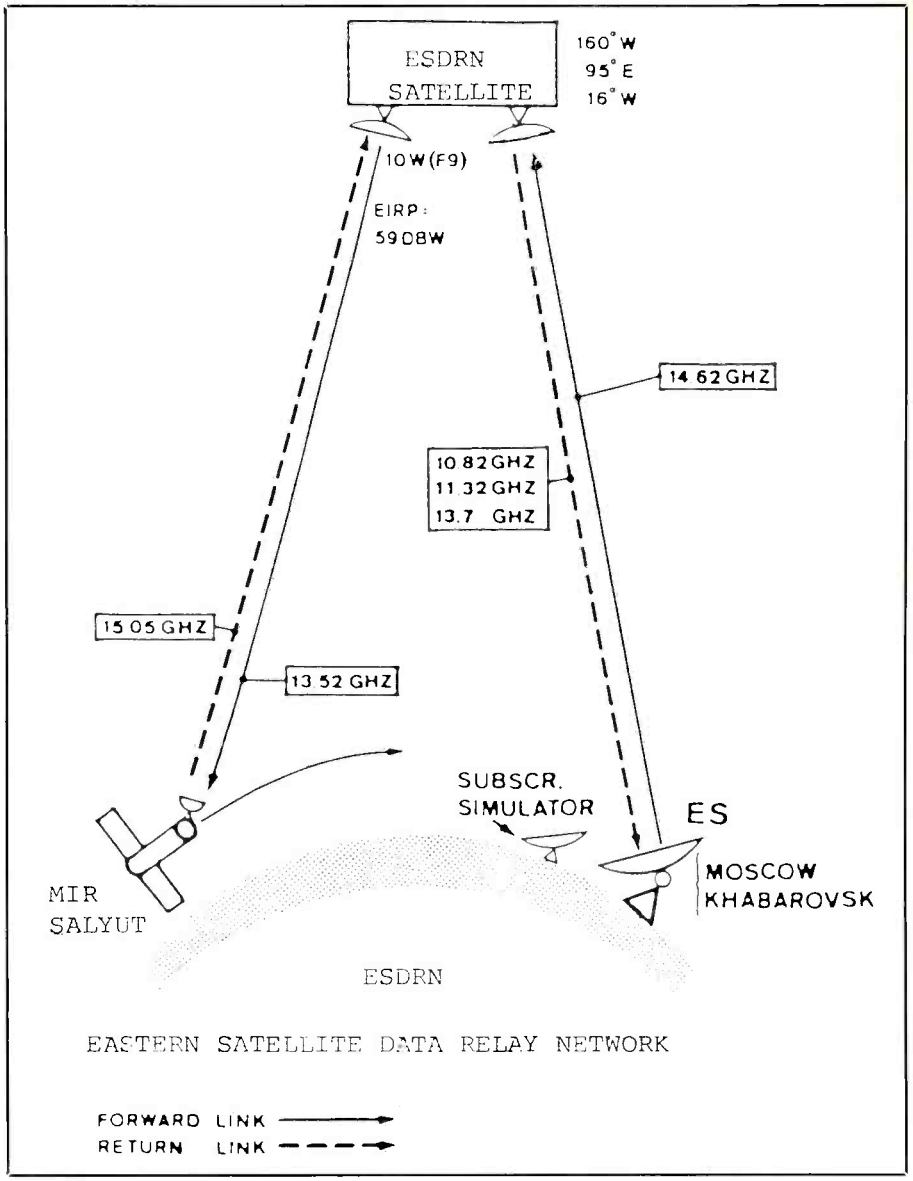
"What was the weather damage?"

"(unreadable) . . . is it standing?

"(unreadable or worse) . . . paper work! Who should get copies of that form, number (unreadable)?

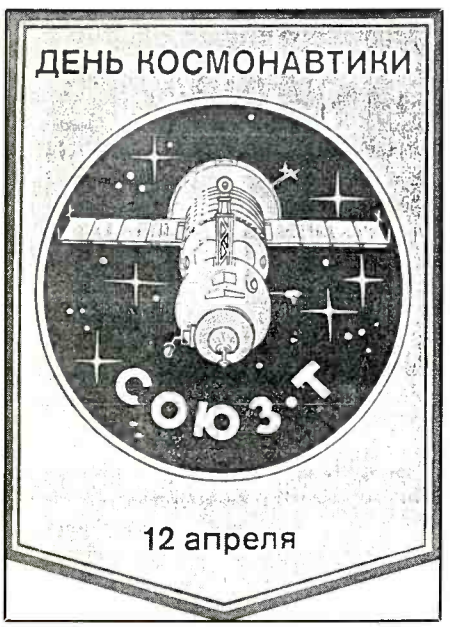
"Everything is alright, every thing is alright."

Williams points out that the accent was distinctly Moscovite and that the Cosmonauts voice was unemotional. While the content of this intercept is routine, any intercept of a manned spacecraft is not. Williams reports that all during the transmissions from Mir other radio traffic could be heard in the background. This may have been the other half (or uplink) of a full duplex operation on 143.625 MHz or separate communication on an altogether different circuit, perhaps ESDRN. Thanks for that excellent report William.



Soviet Space Frequencies

Spacecraft	Frequency	Mode
MIR	143.625 MHz	voice/WBFM
Kvant	247.500 MHz	TLM
Soyuz	121.7 MHz	voice/WBFM
	166.0 MHz	TLM
Salyut 7 (Presently unmanned)	142.417 MHz	voice/WBFM
	192.000 MHz	TLM
Progress (unmanned supply ship)	922/925 MHz	TLM
ESDRN (relay satellites)	10.8/11.32 GHz	Encrypted voice
	13.52/13.70	Data



Stuart Libby of Saco, Maine also reports hearing Russian language and TLM transmissions of this VHF frequency. There are several other frequencies, Stuart, which should be of interest to students of the Soviet space program. The Soyuz manned spacecraft transmits on 121.7 MHz in wideband FM and TLM on 166 MHz. It's twin cargo ship, Progress, sends TLM on 923 MHz. The Kavant Lab has a beacon on 247.5 MHz and the now unmanned Salyut 7 had used 192 MHz for TLM and 142.417 MHz for voice.

The Mir space complex takes approximately 90 minutes to complete an orbit. It's altitude is approximately 350 km with an inclination of 51°. If you want to hear the Soviets you can simply monitor these frequencies at random when you have the time or you can learn to track the spacecraft. This will allow a more efficient use of your time. It is also a superior method in all respects to the hit-and-miss approach.

Learning to track satellites is a simple matter. You can learn to track manually or by computer. Wither way you will know exactly when each spacecraft you are tracking is within range of your station. NASA can provide you with orbital date on virtually any Soviet spacecraft you want to track. You can put the orbital information into a computer program and track automatically. This can be an interesting as well as entertaining aspect of the hobby as we shall see in a moment. If you don't plan to use a computer though, you will have to make or obtain (from ARRL) an Oscar locator tracking device or equivalent. I would suggest Martin Davidoff's book *The Satellite Experimenter's Handbook*. It contains the plans for making your own locator if you can't find one on the local Amateur Radio supply store. It's also a great introduction to space communications.

Several Software packages are available for the IBM and Commodore 64 computers. AMSAT has an excellent program called Fastrack. It can display several satellites at one time and show their position on a world map. Every 9 seconds the blips on your screen change position. A warning signal will tell you when any of the spacecraft have entered your access range. This and some of the other computer programs can even automatically rotate your antenna toward the spacecraft of your choice if you are using a beam.

If you are using or plan to use a MAC computer MacTrac is the program for you. It has several nice features too. The satellite you are tracking can be placed on one of several types of maps. One map or display will allow you to get a view of earth from the spacecraft's perspective. If you are tracking the Mir you can get a view of the earth revolving below the spacecraft much like that which the Cosmonauts see. I have included the addresses of several suppliers of software and tracking data.

One final note the new Oscar 13 can be heard on 145, 435, 1269 and 2400 MHz bands (see the May issue for complete frequency list).

That's it for this go-around. . . see you next month. **PC**

AMSAT Software
P.O. Box 27
Washington, D.C. 20044

MacTrak
P.O. Box 1590
Port Orchard, WA 98366

Project Oscar Inc.
P.O. Box 1136
Los Altos, CA 94023

NASA Goddard Space Flight Center
Code 513
Project Operations Branch
Greenbelt, MD 20771

American Radio Relay League (ARRL)
225 Main St.
Newington, CT 06111

BROADCAST TOPIX

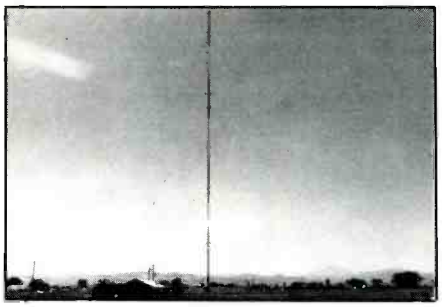
DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

BY MARK MANUCY, W3GMG

Daniel Bailey writes from Texas with two interesting QSL's from stations that have been around since the twenties. WHO mentions in their QSL why their signal is so strong. They use a 745 foot tower. The KDKA tower is in that same league. Both of these stations are 1A's. Other stations, WBAL and KRLD, as examples, are just under 500 feet. All these stations are on 1020 to 1090 kHz. The taller towers do make a difference. Daniel has logged WHO, KRLD, WLS, WBBM, KDA, KWKH, WCKY, WNDE and WWL as some of the better DX.

New things to look for from the FCC include the licensing of groups using satellites to distribute programs to put up translator type stations; low power FM stations which will have no local studios. Groups such as the Moody Bible Institute have gotten approval for this type of operation. Family stations use satellites to distribute programs, and Commodore 64 computers to monitor the stations' transmitting facilities and report malfunctions to the central office in California. During weekends and other extended times, there may not be actual personnel at the studios, so the C-64 maintains the power levels and integrity of the facilities. The computer reports via a modem out of tolerance conditions, or an EBS alert.

The low power (1 to 10 watts) drop-ins will allow Moody and others to expand the coverage of the existing facility, or move in the direction of a new market, to import their signal with only a satellite downlink and a small FM transmitter which does not have to be monitored. As could be expected, the NAB was opposed to this type of operation. What does this mean to the average person or DX'er? It will eliminate many open channels that are now available for DX.



A look at KLMO, AM and FM in Longmont, CO. (Photo courtesy Patrick Griffith)

Another photo from Patrick Griffith. Here's a nice shot of the antenna fee station KOKO.

If you enjoy logging low power stations, which I've found to be difficult, it will be very exciting to find new stations all over the dial. Due to very limited coverage of this type of station, I think most DX'ers will find another channel blocked, if one happens to land near where you live. It means that another frequency will be closed to long distance listening. Experience with low power stations, has shown one has to be relatively close to hear it, and the hours of operation tend to be limited. This means, that if one is close enough to the station to hear it, chances are that it will not be operating at this time. Of course, a low power station set up as a satellite from a large operation, such as, but necessarily Moody, means it would most likely be on the air 24 hours a day.

The AM DX season is under way for another year. Sunset is one of the best times of the day to catch distant stations. I related a story a few months back about a friend of mine who was working with me last April and would take frequent "coffee breaks" at sunset to DX the high power stations on the daytime frequencies. This really works. In June, I drove from Florida to Maryland and back, finding a number of stations using this same trick. For example, on the east coast below Washington, one can usually hear WPGC on 1580 kHz and WTOP on 1500

Call Letter Changes

Location	Old	New	Location	Old	New
AM Stations			**FM Stations**		
Little Rock, AR	KSOH	KWNN	La Belle, FL	WVHG	WKZY
Windsor, CA	KOPL	KEZD	Waycross, GA	WACL-FM	WHFX
Westminster, CO	KFTO	KDZR	Somerset, KY	New	WLLK
Savannah, GA	WSAI	WIZA	Lewiston, ME	WAYU	WGIX-FM
Lewiston, ME	WCOU	WXGL	Rio Rancho, NM	KZIA-FM	KZIB
Fremont, MI	KMIV	WSHN	Gouverneur, NY	WIGS-FM	WGIX-FM
Rochester, NY	WNYR	WEZO	Highland, NY	New	WRWD
Watertown, NY	WOTT	WNCQ	Ithaca, NY	WPTC	WSQG-FM
Cincinnati, OH	WWNK	WSAI	Rochester, NY	WEZO	WRMM
Cleveland, OH	WMJI	WRDZ	Cleveland, OH	WMJI-FM	WMJI
Troy, PA	WJOZ	WHGL	Johnstown, OH	WZZT	WXLE
Powell, TN	WBZW	WQBB	Healdton, OK	KTYH	KICM
Athens, TX	KBUD	KLVQ	Block Island, RI	WITQ	WBLQ
			Aiken, SC	WNEZ	WKXC-FM
			Folly Beach, SC	WCCG	WYBB
FM Stations			Wichita Falls, TX	New	KCRN
Hot Springs, AR	KSPA	KBHS-FM	Woodstock, VT	New	WMXR
Apalachicola, FL	New	WOYS	Dunbar, WV	WBES	WBES-FM

Station Update

Call	Location	Freq	Pwr	Ant
AM STATIONS				
WQKA	Penn Yan, NY	850	1.0/0	NDA
KGRL	Bend, OR	940	10/10	DA-2
New	Templeton, CA	1060	1.0/0	NDA
KWSA	West Klamath, OR	1070	5.0/0	NDA
WJVR	Callahan, FL	1160	.25/.25	NDA
KHEP	Phoenix, AZ	1280	2.5/0	NDA
KKMO	Mountlake Terrace, WA	1360	1.0/1.0	NDA
WEOK	Poughkeepsie, NY	1390	5/4.1	DA-1
KBRZ	Freeport, TX	1460	.265/.25	NDA
KSHY	Cheyenne, WY	1530	10/1	DA-2
WCQC	Morovis, PR	1580	.1/.5	NDA
FM STATIONS				
New	Wilson, NC	90.5	5.0	281′
K214AR	South Spokane, WA	90.7	.01	KPBX
KVNF	Paonia, CO	90.9	3.0	N/C
K216BM	Bishop, CA	91.1	.001	KUNR
New	Cortez, CO	91.5	.144	−417′
New	Bowling Green, KY	91.7	.1	10′
K220CJ	Bieber, CA	91.9	.01	KCHO
New	Nephi, UT	92.7	3.0	−656′
New	South Padre Island, TX	92.7	3.0	297′
WBOS	Brookline, MA	92.9	8.81	1150′
KJOK	Yuma, AZ	93.1	56	1247′
New	Dallas, PA	93.7	.95	575′
KSEY	Seymour, TX	94.3	50	492′
W261CI	Manchester, NH	94.3	.001	WHCF
New	Helena, AR	94.5	3.0	259′
WCVP-FM	Robbinsville, NC	95.9	.06	2008′
WQMG	Greensboro, NC	97.1	100	1233′
New	Big Flats, NY	97.7	1.3	482′
New	Lyndon, VT	98.3	.19	1300′
New	Eureka, IL	98.5	3.0	328′
New	Grass Valley, CA	99.3	3.0	325′
WIMX	Harrisburg, PA	99.3	1.17	528′
KLRC	Siloam Springs, AR	101.1	1.55	459′
New	Mattoon, IL	101.3	3.0	134′
New	Narrows, VA	101.3	1.5	469′
New	Ringgold, GA	101.9	.741	659′
New	Curwensville, PA	102.9	.72	636′
KSWV	San Diego, CA	102.9	10.4	1074′
New	Quincy, CA	103.1	3.0	−499
K285EC	Lewiston, ID	104.9	.01	KGTS
New	Kittery, ME	105.3	3.0	328′
W288BC	Portland, ME	105.5	.001	WHCF
New	North Fort Polk, LA	106.7	3.0	328′
New	Irondequiot, NY	106.7	3.0	328′
New	South Sioux City, NE	107.1	3.0	328′
W296AU	Keezletown, VA	107.1	.001	WYFT

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

kHz just before sundown (15-20 minutes) unless there is a station within 15 miles of your location on these frequencies.

How does one find this type of DX? Using a directory, find the stations operating with 50 kilowatts up to 1500 miles from your location. One can hear WPGC (Washington) from any place on the east coast as far south as central Florida at sunset almost daily. The frequencies to check are numerous, but the best ones will only have a few 50's on them such as 1580, 1550, 540, 640 and so forth. Also, the reception will be best heard in the direction of the main beam if the station operates with a directional antenna, WPGC beams south-west down the east coast of the U.S. This works best on channels where one has daytimers operating nearby, but blocks reception of other stations.

The fifties will run right over them, unless they are local at sunset. A second shot would be stations operating with less than 50 kilowatts and more than five. The distance will also have to be reduced with less power. The pre-sunset skip is amazing, and an awful lot of fun. Be aware that some stations will be operating at less than full power at this hour if they have restrictions. For example, WHOO (990) in Orlando operates directional 50 kilowatts during the day and at 10 kilowatts non-directional prior to sunset, at which time they switch to 5 kilowatts directional nighttime. A lot of new 640 kHz stations are operating non-directional at night with less than 1000 watts, however, they may be higher power directional during the day.

Dennis Gibson wrote recently telling me he converted his wife to AM DX'ing with the use of the Select-A-Tenna loop. He found her up at three and four in the morning listening to the east coast and Hawaii with just a "Walkman" type radio with the loop alongside.

Steve Jones in Texas ended up paying $9.95 for the discontinued Radio Shack AM Stereo tuner, after waiting two days for the store to unsuccessfully find a price! Steve, the noise from your VCR is probably the clock. Unplug the unit to rid yourself of the hash.

Finally, other stations which have recently gone silent are KKIC, 950 in Meridian, ID; KXIX, 99.3 in Dyersville, IA; KQKD, 1380 in Redfield, SD; 990 in Knoxville, TN; and WKCJ, 105.5 in Lewisburg, WV. recently returning to the air are KDZR (KFTO), 1390 in Westminster, CO and WZZZ (WOSC), 1300 in Fulton, NY.

Send in your broadcast DX loggings! **PC**

CLANDESTINE COMMUNIQUÉ

WHAT'S NEW WITH THE CLANDESTINES

BY GERRY L. DEXTER

A new clandestine broadcaster is the *Voice of the Movement of the Mujahadeen and Iranian Baluchistan*, on the air from 0500 to 0600 and 1600 to 1700 on 7180 and 9545, and being jammed. This was monitored by Terry Krueger in Florida at 0500 signon 9545. There aren't any specifics as to its location or backing but it may well be courtesy of Iraqi government transmitters.

This column recently wondered about the future of the contra clandestines, due to the attempts to reach agreements being held in the form of peace talks between contras and Nicaraguan government. But, for the present at least, it looks like a lack of funds may do more damage to these stations than any agreements the two sides might have signed.

For the time being, at least, a money squeeze has meant a lay off of up to 400 people in the contra's political support network. That includes employees at the contra headquarters in Miami and those who work for the contra station, Radio Liberacion.

At this writing, it is too early to be sure about just what changes this may bring to the station's schedule or programming content. None were immediately noticeable here nor have we received reports on any significant changes. *Radio Liberacion* is currently scheduled for half hour broadcasts in Spanish at 1100, 1300, 2000 and 0200 on 5889.1. The 0200 airing is the one most often received by listeners in the U.S.

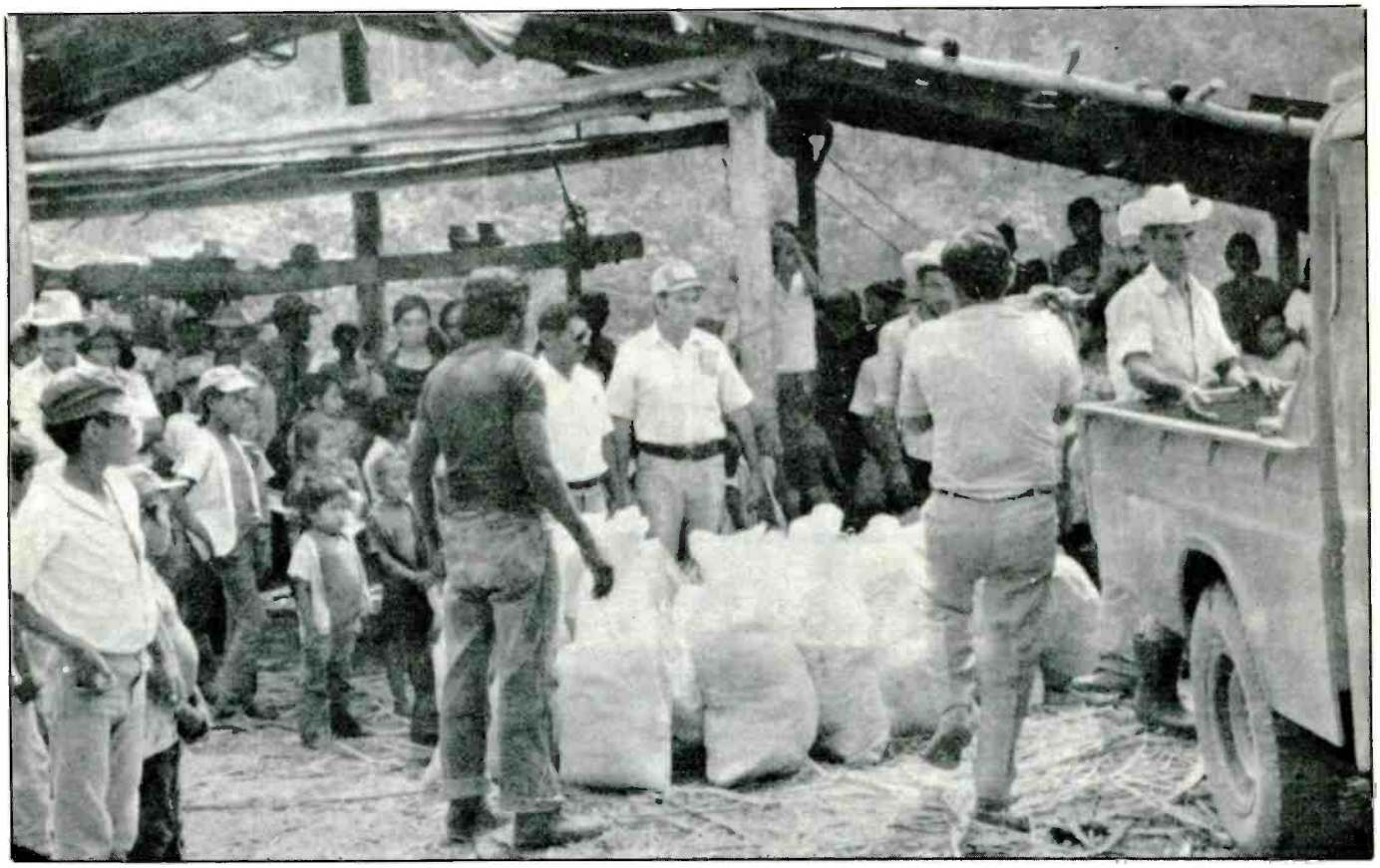
La Voz de Cuba Independiente y Democratica (Voz del CID) has, for some years, had its programming filling the daytime hours of *Radio Clarin* (Dominican Republic) on 11700. At one time the government of Cuba complained about the broadcasts to the government in Santo Domingo and the programs ceased briefly. They returned with a modified, less talk, more music format. But now *CID* seems to be gone completely from *Clarin* and replaced, at least for newscasts, by relays from the medium wave Dominican Radio Mil.

Meantime, *CID* continues to air its Radio Camilo Cienfuegos service daily at 0940 to 0210 on 9940 and 0210 to 0930 on 6305. A second service, Radio Antonio Maceo operates from 1100 to 2259 on 11635, then 2300 to 1055 on 7380.

The Burmese Communist Party operates the *Voice of the People of Burma* on 5110, or slightly below. Broadcasts were somewhat erratic last spring but have now returned more consistently, airing at 0030 to 0200 and 1200-1330 in Burmese. The 1200-1330 broadcast can be heard in North America.

Although, strictly speaking, it is a legit station and not a clandestine, the Costa Rican outlet *Radio Impacto* is quite involved in "anti" broadcasting. So it may be appropriate to note that for a couple of months in late spring/early summer the station's 5030 frequency was playing a subservient role, signal strength-wise, to a very strong harmonic on 10060. By early July, however, Impacto's alert engineers had corrected the problem.

Steven Dreher of New York sends an item from *Insight* magazine noting that Guatemala's Army High Command has deployed thousands of soldiers in a search for the transmitter of La Voz Popular, operated by the rebel Guatemalan National Revolutionary Unity. The government says that, after the station goes on the air each Wed-



The Nicaraguan Contras are growing short of funds and that may force cutbacks in the operations of Radio Liberacion.

nesday and Friday, attacks on towns and army troops follow the broadcasts. The government thinks the station is being used to issue orders to rebels operating out of the Sierra de la Minas mountains. Voz Popular is heard at 0000 on those two days (actually the next day, UTC time) with half hour broadcasts in Spanish on variable 6970. Spanish numbers and apparent messages to troops are aired via the rebel transmitter (in upper sideband mode) from around 0100 to 0120 on variable 9966. Both have been tuned by a number of DX'ers in North America.

The Voice of Malayan Democracy is now using 6700 and 6007 (the latter a change from former 8998). Scheduled from 0400-0515 and 1215-1330 opening with Malay and then into Chinese for the last half hour.

Radio Caiman, the oddball anti-Castro broadcaster, is being heard well by Donna Colter in Houston, Texas. She reports it on the usual 9960 at 0035, 1210 and 1320 in Spanish with anti-Castro comments, references to the Nicaraguan situation and Cuban troops in Africa. There's a lot of American rock and many station identifications, says Donna. But still no address.

Barbara Harris in Nashville notes Iran's *Flag of Freedom Radio* on 15650 at 0245 to 0335. She spotted station IDs aired in Farsi, English and French. Barbara wonders about the backing and location of this station. Until February, 1987 the station was called the *Voice of the Liberation of Iran*, Barbara. It is a pro-monarchist outlet which has QSL'd a number of listener reception reports (best address: P.O. Box 102, DK-2670 Greve Strand, Denmark). The transmitters are believed to be those of the Egyptian government.

Robert Ross in Ontario reports a QSL for *La Voix du Sahara Libre*, the Polisario Front's program aired over Radio Algeria at 2200 on 15215. He got a full data (self-prepared) card plus a ham QSL card from SØRASD from Marabih A. Haiba, Front Polisario, B.P. 10, El Mouraida, Algeria.

Barbara Harris tuned *Radio Venceremos* at 0100-0110 on 6600 and found a male announcer reciting a string of numbers in Spanish just before sign off.

The Danish Shortwave Clubs International has released the third edition of its Clandestine List. It is an up-to-date listing of the world's secret broadcasters with information on backers, times, frequencies and such. Available for 4 International Reply Coupons from DSWCI, Tavleager 31, DK-2670 Greve Strand, Denmark. We recommend it.

Don't forget we need your informational input for this column each month. Loggings, QSL information, press clippings, schedules, background information or illustrative material you might receive. Some of our readers are "well placed" and those, especially, we remind that identities can be kept confidential if you wish. Let's hear from each reader each month!

That's it for this time. Til next month, good hunting! PC

CB SCENE

27 MHz COMMUNICATIONS ACTIVITIES

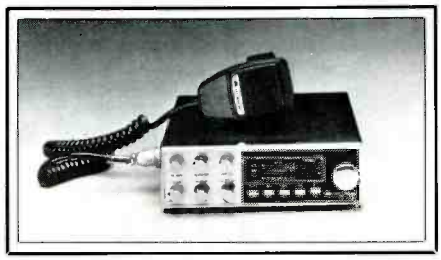
BY BILL SANDERS, SSB-295

Midland International, one of the few transceiver manufacturers that has stuck with CB through the years, has a nifty mobile AM/SSB rig dubbed the Model 79-265. Naturally, it's got 12 watts PEP for SSB operation, but its the little extras that are especially appealing.

This would include the three-way solid-state bar graph metering system that reads out incoming signal strength, outgoing RF power levels, and also your antenna performance (SWR). There are two separate noise squasher circuits, one directed at pulse noise entering through the antenna system, the other for noise entering via the power cord. There's a crystal filter that rejects *splashover* from strong locals on adjacent channels, plus a "J" FET mixer to knock down intermod products for improved signal-to-noise gain. The rig offers variable mic gain and receiver RF gain.

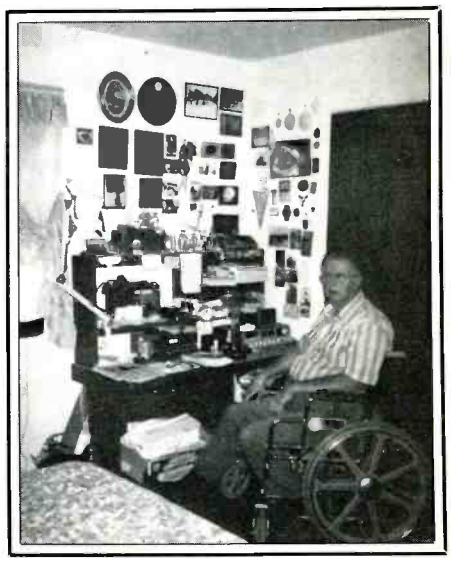
A high intensity digitalized amber channel readout offers great visibility, and there are separate LED's to show the status of various functions, including the Channel 9 memory, operational modes, CB/PA, etc. The Model 79-265 is also equipped with a heavy duty aluminum heat sink that stretches the life of the transistors in the transmitter RF output stage, a feature usually found only on commercial two-way transceivers.

Midland's hung a price tag reading $289.95 on this honey, and for what it is and what it offers, that looks very reasonable to us here at *CB Scene*. This rig comes from Midland International, Consumer Communications Division, 1690 North Topping, Kansas City, MO 64120.



Midland offers this attractive AM/SSB mobile rig known as the Model 79-265.

This is Australian CB'er PCP-25, also known as Mike. Thanks to Chuck Manetta for giving us a look.



John, LDO-321, of Sellersville, PA operates this good looking AM/SSB station. Got a photo of your station? We'd like to run it here.

Maybe Maycom!

Speaking of companies that have been around a long time, this column received a note from the folks at Maycom Communications Products, 1134 W. John Beers Road, Stevensville, MI 49127. Here's a company that's been in CB since 1974 offering a complete line of antennas, including mobile whips in an assortment of colors to match the color of any vehicle. Maycom just purchased the parts and service division of the former Tram Corporation from Satellink Communications; in our July column we had mentioned Satellink as the source of Tram parts. Now the source is Maycom, instead. Maycom has some interesting literature on their unique and attractive antennas they'll be happy to send to CB'ers and their prospective dealers. Tell'em we sent you!

Dave Strom, P.O. Box 4053, Downey, CA 90241, was also mentioned in our July column as a source of schematics and servicing info on older rigs such as *Kris, Teaberry, Penny's* and others. He advises that he's got a new address (shown above) and is looking forward to helping those in need of this hard-to-find data. We'd advise enclosing a stamped, self-addressed (long size) return envelope with requests sent to Dave.

Chuck Manetta, of Coral Gables, FL writes to say that he thought we'd like to run a photo of a pal of his, CB'er PCP-25, also known as Mike of Bayles, Victoria, Australia. The initials PCP stand for the Perfume City Pirates, a local club in Mike's hometown.

Chuck also liked our May issue mention of CB'er Robbie (actually, E.U. Robinson) of Namibia, South West Africa. Robbie is another friend of Chuck's, and Chuck shares with us a peek at Robbie's QSL card. Don't see too many coming through from Namibia, so we are glad to display this card.

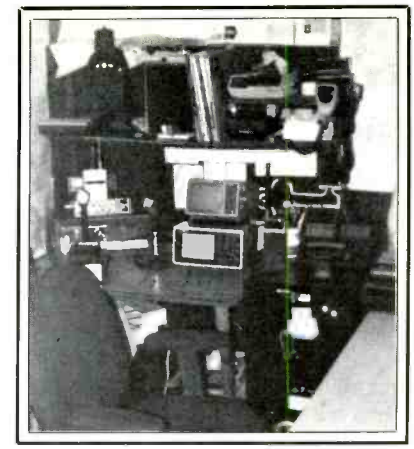
Two questions from Chuck. First, he wants know if we can identify the oriental-language skip he hears between 27.455 and 27.465 kHz (USB) coming through sometimes in the afternoons and evenings. It comes from the southwest of his area (210 to 225 degrees). It's a mystery to us, but we hope any readers who have an answer will come forward.

Second, he recalls a column we wrote years ago in the old 11 meter publication, *S9 Magazine* and asks what became of that publication: it's a question we receive often. Ownership of *S9 Magazine* was transferred to the publisher of another periodical, *CB Magazine*, headquartered in Oklahoma. Apparently the intention was for the two publications to be merged into one, and at least one issue of *CB Magazine* did announce this acquisition and merger, stating that the new owner in Oklahoma would be sending this publication to those who had been receiving *S9*. By this time, all of the former members of the *S9* staff were long out of the picture as the new owner had plans of his own for the magazine.

That was in 1982. For whatever reasons, the publisher (Scotty Robb Publishing Industries, Inc. 112 West Robinson, Norman, OK 73069) never brought out another edition of either of his two 11 meter band publications. Nobody I know of has subsequently heard from Robb, his company, or either magazine. Lots of CB'ers would like to find him, though!

Steven Steffen, KA0TLZ and SSB-7331A, writes from Dubuque, IA to say that he loves *Tomcat's big CB Handbook*. Steve sent in a tape cassette containing loads of CB and trucker type songs by leading artists. Thanks, Steve, we've got this tape jammed into the stereo while we're writing this month's column. Jerry Reed never sounded better, although at the 125 db level we're running these tunes, there are windows shattered within a two mile radius.

Robbie, in Namibia sends out this QSL. You probably haven't seen one yet. Chuck Manetta sent it in.



Dave Hanus, Western Springs, IL sent in a photo of his radio room. He's an active sidebander, also a member of the local fire department.

A Time And A Place For Fun

While we're on the subject of enjoyment, I did want to mention that CB is a great place to have fun—*but!* The idea is that there are limits to fun, and one of those limits has to be when one person's way of getting their jollies is to cause inconvenience or disruption to others.

According to what I hear on the air, and the mail received here at the column, on 27 MHz the problem of "signal chuckers" (malicious jamming by means of an unmodulated carrier), people who jam a channel with music for lengthy periods, as well as other gross abuses of the channels seem to be increasing along with the growing rebirth of CB radio. And, what about those crazies on Channel 19 that fill your loudspeaker with a steady stream of filthy language? How do you and your passengers enjoy that as you drive?

Of course, this is nothing new. The ancestors of these were on the air years ago and they've never really left. Now that CB is again becoming popular, these folks are noted in increasing numbers. Are these people the same type of crazies that make anonymous harassing or obscene telephone calls? Are they the same ones who decorate our streets with graffiti and vandalize public and private property? I've heard suggestions to this effect for many years. I honestly don't know the psychological profile to apply to those who deliberately disrupt and vandalize the airwaves, regardless of the frequency or band. I do know that there's nothing that can be said in the name of logic to these people that will turn them off.

To those who have written to ask how deal with *chuckers* and other related denizens of CB radio's whacko side, my advice is to ignore them and hope that they'll go away soon. This isn't a cop out. Those who respond to these people by lecturing them over the air, or (horrors) giving them a taste of their own medicine, only prolong the annoyance and make everything all the worse by letting them know that their efforts to be disruptive are successful. Don't comment upon, or acknowledge over the air, that the transmissions are taking place, and let it go at that. That's *all* you can do. Its not much, but you have no choice.

There are people like this in all parts of the world and in all levels of society. The *chucker* on your channel could just as easily be a respected member of the community as easily as a wild-eyed, drooling, Neanderthal. Problem is that while a crazy with a spray can is only able to vandalize one wall at a time, one *chucker* can vandalize a channel for many square miles in all directions. CB radio does not have any more crazies than exist elsewhere, such as *wallbangers* on the highways. It's just that, on a CB channel, one single person working out their social hostilities goes a long, long way.

Well, I guess it's time to get down off my soap box for this month. Besides, either the tape cassette of my CB music is over and Cledus Maggard is down to his last chorus, or else my left ear is beginning to conk out from the blast of the sound level. So, we'll tie the ribbon on it for this time and hope that we'll catch ya' a little later down the log. PC

ON THE LINE

NEW AND EXCITING TELEPHONE TECHNOLOGY

BY JULIAN MACASSEY, N6ARE

Calling Home From Abroad

If you are used to making calls in the US with little effort, you are in for some surprises and disappointments if you try calling from abroad. In short, foreign telecommunications are abysmal. They are an expensive privilege used by the few to pass urgent messages—if they can get through. Phoning up a friend or colleague for a chat is an unknown extravagance.

It is not all bad news. Over the last decade things have got better. Some countries have Touch-Tone. Denmark has Touch-Tone and it has been well received. Britain has Touch-Tone available on all lines with six digit numbers. The best news for overseas callers is a new service from AT&T called USADIRECT. By dialing a toll free number, you can talk directly to an AT&T operator in the U.S.A. You can use your AT&T credit card or make a collect call and be billed at US rates.

Most operators in Europe and many Asian countries can speak English, or can help get you one that can, so getting help is not a problem—as long as the service is available. In most countries, dial 100 for an operator. One helpful service that is offered in many European countries that is not available in the US is Alarm Calls. The phone company will call you at a predetermined time. You can be called in time to get up and catch the plane home. Sometimes you get a live operator, but more and more these days, you will get a friendly computer.

The biggest source of frustration has always been trying to call back to the US. Doing it from a hotel room can mean dealing with two operators—the hotel operator and the phone company operator. Besides the confusion this can cause, the hotel can tack on service charges that approach hundreds of dollars. There is now the USADIRECT solution. In countries where this service is available it can be made from either special phones or any phone, see Table 1. Many US military bases overseas are now offering USADIRECT service. Gone are the old days when in many bases the only way to call home was to rely on a Ham Radio phone patch. A phone patch could be good or terrible, but never as good as a real phone call.

The first thing you will notice about foreign phones lines is that they are noisier than you expect. Also be prepared for busied Long Distance trunk lines and failed calls. You may also hear more crosstalk than you would expect. Some countries such as Italy will have extension phones, but only one instrument can be used at a time. This is a legal requirement to prevent eavesdropping. They do not consider that any-

Table 1
USA DIRECT Countries

Country	Number	Notes
Australia	0014-881-011	
Belgium	11-0010	Coin phones require a deposit for dial tone.
British Virgin Is.	1 (800) 872-2881	
Denmark	0430-0010	Coin phones require a deposit for dial tone.
France	19* 0011	Coin phones require a deposit for dial tone.
Germany (West)	0130-0010	Trial Basis only
Hong Kong	008-1111	Coin phones require a deposit for dial tone.
Japan	0039-111	Limited availability
Netherlands (Holland)	06* 022-9111	Coin phones require a deposit for dial tone.
Sweden	020-795-6111	
United Kingdom (Britain)	0 (800) 89-0011	

*Await second dial tone

Table 2
Countries where you can call USA DIRECT from specially marked phones.

Country	Location	Notes
Antigua	Sea port	
Bahamas	Airports/Seaports	
Bahrain	Airport/Hotels	
	Phone Center/Military Base	
Barbados	Airports/Seaports	
Bermuda	Airports/Seaports	
	Military Base	
Cayman Islands	Airports/Seaports	
	Phone Center	
Colombia	Airport	
Dominican Republic	Airport/Hotels	
Ecuador	Airport/Phone Center	
El Salvador	Airport/Hotels	
Guatemala	Airport	
Hong Kong	Airports/Seaports	Besides special direct phones—USADIRECT can be dialed from any phone. See above.
Jamaica	Airports/Seaports	
Japan	Airports/Seaports	Besides special direct phones—USADIRECT can be dialed from any phone. See above.
	Phone Center/Hotels	
	Military Bases	
Korea	Airports/Seaports	
	Phone Center/Hotels	
	Miltary Bases	
Netherlands Antilles	Airports/Seaports	
	Phone Center	
Panama	Airports/Phone Center	
	Miltary Bases	
Philippines	Phone Center/Miltary Bases	
Spain	Airports/Phone Center	
	Military Bases	
St. Kitts	Airports/Phone Center	
	Military Bases	
St. Lucia	Airports/Seaports	
	Phone Center/Hotels	
Trinidad/Tobago	Airports/Seaports	
	Phone Center	
Turks/Caicos	Airports/Seaports	

NOTE: For help or information about USADIRECT you can call (800) 874-4000 EXT. 333 when in the US or any USADIRECT number or from any special phone when abroad.

one would want to have a phone conversation with several parties present. Most foreign phones will suffer from something called Bell Tap. This is the bell tinkling as extensions dial or are hung up.

If you need to make a long distance call, you may find the best place to do it is the Post Office. In most countries, the Post Office, Western Union, TV network, Radio Stations, Telephone Company, TELEX, Packet Switching Network and the FCC are the same thing as well as being a branch of the government. One monopoly run by civil servants to handle all your communications needs. This is changing, but even if the phone department becomes a privatized company with British Telecom, it is still staffed by employees who have had a lifetime as civil servants.

These days with laptop computers and more and more computer use, an incredible number of phone calls are now "data calls". There are two world wide standards for modems—the devices that couple a computer to a phone line. In the US and Japan, the standards are Bell System standards. In the rest of the world they tend to be CCITT standards. CCITT is the international telephone standards organization based in Geneva, Switzerland. You can call back to the US and talk to US systems with your Bell Standard modem. You can call from the US to the rest of the world with your CCITT modem, but a CCITT modem can not talk to a Bell modem.

If you make a voice call that is noisy or delayed by satellite path problems, you can muddle through, as for repeats or promise to write. Should you do the same on a data call, the screen will either fill with garbage or the modem will drop the line. If you are calling from Britain, there is a solution. You can add a couple of digits to the dialed number that will specify that the call be routed via trans-Atlantic cable. Here is what you do: To call ITT TELEX in New York from Britain the number dialed would normally be: 0101 (212) 344-8320. To ensure a trans-Atlantic call via cable insert an 83 or 84 between the international code and area code: 0101 83 (212) 344-8320. Back in the old days when companies with "Radio", "Communication", "Telephone" or "Telegraph" in their name means they were in that business, RCA owned the cable accessed by the "83" code and ITT owned the "84" code. Heaven knows who owns these cables today, but the cables are still there and still working. There are not many of these cable routes so please do not use them unless you have a real need. If you are calling back to the US using USADIRECT, the quality will normally be good anyhow, and if it is not what you would normally expect, tell the AT&T operator at the end of the line and you will be credited. PC

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CIRCLE 13 ON READER SERVICE CARD

SCANNER SCENE

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

BY CHUCK GYSI, N2DUP

While it's the time of year to check our list twice, we've dumped the mailbag on the table so we can make an attempt to sort out the holiday mail. Let's see who is checking in with us:

Larry DeFalco of Mamaroneck, New York, checked in a few times. He wants to update the recent list of Veterans Administration frequencies that was put together by Tom Kneitel. Larry says he's been a VA employee for 15 years, the past eight years as an electronics mechanic at the VA Medical Center in Montrose, New York. Larry says that while 164.175 is used for paging, 168.525 is used by the telephone operator, the VA police department and the VA fire department. The engineering service Larry works for switched off 168.525 earlier this year (having 80 maintenance and repair workers sharing one frequency with police and fire units was quite hectic, he says) to its new frequency of 171.2625.

In accordance with our request in the July issue, Larry passes along some amusement park frequencies, namely those for Walt Disney World in Orlando, Florida. Larry said he heard the following on his Uniden Bearcat 100XLT:

462.625—	Magic Kingdom "control"
462.575—	EPCOT "central"
462.650—	Maintenance and trams
462.750—	Paging
464.400—	Security "headquarters"

From Bill Harger of Middletown, Ohio, comes some more verified amusement park frequencies: 154.515, Americana, Hamilton, Ohio; 463.675, Kings Island, Cincinnati, Ohio; 464.925 (security) and 464.375 (operations), Opryland, USA, Nashville, Tenn.

Ed Bunch, N8FTM, of Edwards, California, sends along a list of frequencies and channel designators used at Disneyland in Anaheim, California:

464.6375—	RED—Common
464.4625—	BLUE—Security
464.325—	BLACK—Security
154.570—	SP1—Security
462.575—	PURPLE—Countywide
464.5375—	BROWN—Maintenance
464.4125—	ORANGE—Maintenance and custodial
464.5125—	YELLOW—Special events and fireworks
464.4875—	GREEN—Entertainment
464.0375—	SILVER—Ride control
464.7625—	WHITE—Trains and monorail
154.600—	SP2—Submarines
154.625—	Paging
146.940—	Ham repeater (CTCSS tone 100.0 Hz)

The new Midland 77-162 CB radio includes a VHF monitor for tuning in the three weather channels on 162.4, 162.475 and 162.550 MHz. Anybody remember the old Handic CB radio that included a tunable VHF receiver on it? Maybe a combo CB radio-scanner is in the works somewhere.

Nifty snapshot of Registered Monitoring Station KMØCY, operated by Ray Newman of Jefferson City, MO. Howzabout a photo of your scanner installation?

Greg Putrich of Richfield, Minnesota, wrote in a long letter with some frequencies, comments and questions. First of all, Greg wants to know why he can hear Minneapolis police's 460.025 also on 481.425. He notes that several frequencies can be heard 21.4 MHz higher than their actual frequency. This is because the scanner's intermediate frequency in the process of creating the signal you are hearing is 10.7 MHz. If you double the IF, you come up with 21.4 MHz. It is this reason that on some scanners you will hear 152-MHz mobile telephone channels on the 173-MHz band or hams on the 144-148 MHz band around 167 MHz. Generally, most scanners have an IF of 10.7 MHz.

Uniden Bearcat scanners have an IF of 10.8 Mhz, while some scanners may have IFs as high as 750 MHz. It is for that reason you won't have as much IF interference on radios such as the Radio Shack Realistic Pro-2004. Knowing your scanner's IF also may enhance your listening. For instance, if your scanner does not cover the 406-420 federal government-military band, adding your scanner's IF to frequencies known in that band can allow you to scan such channels. For instance, if a military police detachment is using 419.550 MHz, and your scanner's IF is 10.7 Mhz, double the IF (21.4 MHz) and add it to the actual frequency, which gives you a result of 440.950. Unless there are hams using that frequency, you can pretty much listen to the IF signal there.

Another question from Greg is to the user of 163.935 in the Minneapolis area. He said it sounds like police and they occasionally run car checks on the frequency. What you've stumbled across, Greg, is the FBI. The frequency actually is 163.9375 and is a repeater output frequency. If you want to check around for some more FBI channels, repeater outputs can be found in the follow-

ing bands: 162.6375 to 162.7875 and 163.8 to 164.550. The 162-MHz range and the 164 to 164.550 are relatively new bands for the FBI, mainly to accommodate the new radio system that has been installed in field offices over the past few years. In addition, simplex communications and repeater inputs can be found between 167.2375 and 167.8. Listen to the code words used, and try to figure out their meaning through context. For instance, if you hear an agent told to pick up a "package" at a hotel, he or she actually is picking up a person. Let us know what you hear!

Greg also passes along some frequencies of interest that he's heard in the Minneapolis area:

35.02	McDonald's drive-thrus
154.570	McDonald's drive-thru (North Dakota)
450.3875	Metro Traffic Control
457.575	Burger King drive-thru
30.82	Kentucky Fried Chicken drive-thrus

Greg uses a Radio Shack Realistic Pro-32 for his listening and it sounds like he gets around. It also sounds like he sits in line for a lot of hamburgers!

Ray Downes of West Webster, New York, says he attended the Miller High Life Thunderboat Classic, an unlimited hydroplane boat race, in Syracuse, New York, over the summer. With his Regency HX-1000 handheld scanner, he was able to snag the following frequencies:

151.625	Race medical crews
154.570	Race course control and media information
154.600	Unknown use
464.550	Unlimited Racing Commission primary channel

Ray says he suspects that the boat crews were using UHF frequencies, however, he was unable to discover any in use. If anyone knows of any, please pass them along to us here at Scanner Scene.

A reader who would rather be known as Ray D.O. writes in from Alabama with a list of some rather interesting frequencies. Here are some:

REDSTONE ARSENAL

165.1875	Commander net (phone patches)
165.1375	Military police
165.0875	Civilian police
165.0125	Fire department
163.5625	Ambulance
163.5125	CID
173.5375	Hospital paging
163.5375	Base taxi service
165.0375	Facilities engineering
173.4375	AMMCS
173.4875	Research and development F-1
173.4625	Research and development F-2
173.175	Research and development F-3
172.875	Research and development F-4
155.010	North Alabama network
126.200	Airfield (AM)
139.200	EOC

MARSHALL SPACE FLIGHT CENTER

164.975	Security
167.675	Phone patches
163.4875	Railway
122.850	Airfield (AM)
165.0125	Fire department (same as Redstone)

FBI, Huntsville

167.3125	F-1 simplex
167.450	F-2 simplex
167.6125	F-3 simplex
167.5625	F-4 nationwide simplex
163.9125	F-5 repeater (F-1 is input)

SECRET SERVICE, Huntsville

165.7875	Repeater

MEDIA

464.025	WHNT-TV Channel 19
461.275	WAFF-TV Channel 48
450.650	WZYP-FM
463.300	WBHP-AM and FM

Ray notes that some Redstone Arsenal units use Digital Voice Protection. Thanks for the good list, Ray.

WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS

New Experimental License Grants

The Commission, by its Office of Science and Technology, Frequency Liaison Branch, took the following actions:

KA2XVC, MCVEAN TRADING CO., Memphis, Tenn., experimental station to operate on various discrete frequencies in the 902.0-928.0 MHz band for research into communication system being developed for indoor horse racing.

KA2XVE, UNITED TECHNOLOGIES CORP., Stratford, Conn., experimental station to operate on 163.0, 163.75, 166.75, 17200 MHz for research in accordance with US Government contract and export.

KA2XVG, SUITE 12 GROUP., Within State of New York, experimental station to operate on 27,500-29,500 MHz band to conduct market studies.

Granted CP and License for various experimental stations to CITY OF COLORADO SPRINGS to operate on 401.7505 and 401.8765 MHz to communicate via GOES Satellite collection of data regarding weather research, watershed management, flood warning and prediction, and dam safety.

KE2XDS, Ordway, Colorado
KE2XDT, Ordway, Colorado
KE2XDU, Cascade, Colorado
KE2XDV, Cascade, Colorado

KE2XDW, Ordway, Colorado
KE2XDX, Cascade, Colorado
KE2XDY, Ordway, Colorado
KE2XDZ, Ordway, Colorado

KA2XVJ, MOTOROLA, INC., Fixed & Mobile: Arlington Heights, Illinois and 10 mile radius to operate on 18,865 & 19,205 MHz to perform propagation testing.

KA2XVK, BRIAN D. JUSTIN, JR., Mobile: States of Mass, Maine, Conn, NH, NJ, NY, PA, RI, VT for experimental station to operate on 464.5 &469.5 MHz to be used as link into KE2XDA which works with ATS-3 station. The experiment will allow communications to take place from portable hand-held radios to the ATS station which will uplink to the satellite for use in search and rescue missions.

KA2XVL, C O SYSTEMS, INC., Folsom, Calif. & mobile: Continental US, experimental station to operate on 18920-19160 MHz for test measurements and quality tests of equipment under development prior to type acceptance or approval.

KA2XVM, CHEESEBROUGH PONDS, INC., Mobile: Vicinity of Atlanta, GA and Essex and Clinton, Conn, to operate on 169.445 MHz testing remote microphone to a reconnection system.

KA2XVR, GE COMPANY, AESD, Utica, NY, experimental station to operate on 6-18 GHz for development of a phased array antenna and related testing.

KA2XVS, HARRIS CORP., Palmyra, Missouri, experimental station to operate on 54-72, 76-88, 88-108, 174-216, 470-608, 614-806 MHz for testing of antennas for use by broadcast stations.

KA2XVT, INTERNATIONAL MOBILE MACHINES, Mobile: Within Continental United States, experimental station to operate on every 25 kHz between 454.025 and 454.650 and between 459.025 and 459.650 MHz to conduct propagation and path loss tests to determine the viability of providing BETRS (Basic Exchange Telecommunications Radio Service) with IMM Ultraphone in various geographic locations. These are all RCC channels.

KA2XVU, MOTOROLA, INC., Ft. Worth, Texas and mobile within 50 mile radius, experimental station to operation on various discrete frequencies between 406.35 ending 418.35 MHz for developmental testing of 406-420 MHz trunked system for the US Govt. market.

KA2XVV, MOTOROLA, INC., Ft. Lauderdale, Fla and 100 mile radius, experimental station to operate on 406-420 MHz for development of trunked system.

KA2XVW, MINNESOTA MINING & MANUFACTURING CO., Mobile: within 1 mile radius of Ulm, Minn, experimental station to operate on various discrete frequencies between 457.525 and 467.8375 MHz for testing of low-power radio systems for use by fast food restaurants.

KA2XVX, PEGASUS DATA SYSTEMS, Middlesex, NJ and 40 mile radius, experimental station to operate on 893 and 938 MHz to develop equipment use under Part 22.

KA2XVZ, PEGASUS DATA SYSTEMS, Middlesex, NJ, experimental station to operate on 893 & 938 MHz for development of equipment for use under Part 94.

KA2XWA, TEXAS TRANSPORTATION INSTITUTE, Mobile: Within Continental U.S., experimental station to operate on 24500 MHz as required by US Govt. contract.

KA2XWB, UFI, Estero Bay, Calif and Indianhead, Maryland, experimental station to operate on 452.150, 457.150, 462.650 and 467.650 MHz as required by US Govt. contract.

KE2XEA, STATE OF CALIFORNIA, Potrero, Calif., experimental station to operate on 401.7895 MHz to communicate via GOES Satellite collection of data regarding weather research, watershed management, flood warning and prediction.

Granted license to INCORPORATED RESEARCH INSTITUTE, for research into transmitting seismic data via GOES Satellite.

KE2XEB, on 401.7220 MHz, at Harvard, Mass.

KE2XEC, on 401.7025 MHz, at Pasadena, Calif.

KE2XED, on 401.7025 MHz, at College, Alaska

KE2XEE, on 401.7355 MHz, at Honolulu, Hawaii

KE2XEF, on 401.7355 MHz, at Pinon Flat Geophysical Observatory, Calif.

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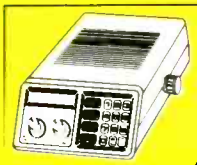

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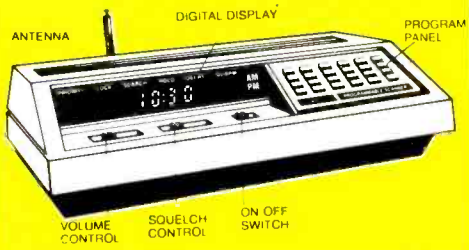

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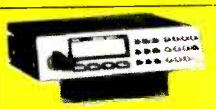

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BC-600 XLT

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Digital Programmable 100 Channel Scanner

BC-600 XLT covers the following frequencies: 29-54 MHz, 118-174 MHz, 406-512 MHz. Features compact size of 6-5/16 Wx1-5/8 Hx7-3/8 D, scan delay, priority, memory backup, channel lockout, bank scanning, key lock, AC DC power cords, telescopic antenna, mounting bracket supplied, one year factory warranty, search direct channel access, track tuning, service search including pre-programmed frequencies by pushing a single button for police, fire, emergency, aircraft, weather, and marine services. Plus exclusive optional features never available on any scanner before. First is an RF receive amplifier for boosting weak signals for only $24.99 plus a CTCSS tone board is available for only $59.99 to make this the number one scanner available in the USA. Optional cigarette lighter plug #600MPC $4.99

BEARCAT BC-950XLT

Same features as BC-600XLT but also receives 800-954mhz.

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BEARCAT 70XLT

20 CHANNEL HAND-HELD SCANNER

Small size 6"Hx1"Dx2¾"W, full digital readout, priority, search, channel lockout, scan delay, key lock. Covers following frequencies: 29-54mhz, 136-174mhz, 406-512mhz. Package includes rubber antenna, rechargeable Ni-Cad battery pack, AC adapter/charger, and carry case.

SPECIAL PACKAGE DEAL **$169.99** ($6.00 shipping each)

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Digital programmable 200 Channel hand-held portable scanner with raised button keyboard for easy programming of the following frequency ranges: 29-54MHz, 118-175MHz, 406-512MHz, 806-956MHz. Features include: Scan delay, memory backup, key pad lock, sidelit liquid crystal display, channel lockout, 10 twenty channel banks, direct channel access, automatic search, full one year factory warranty, 10 priority channels, Ni-Cad battery pack, AC adapter/charger, flexible rubber antenna, carry case are all included. Size is 2-11/16Wx1-3/8"Dx7-1/2" high. (Optional extended 2 yr warranty $59.99, 3 yr extended warranty $79.99)

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(plus $7.00 shipping each)

Digital programmable, 16 channel, AC/DC mobile/base, with raised button keyboard for easy programming of the following frequency ranges: 29-54mhz, 118-174mhz, 406-512mhz. Covering aircraft, marine, police, fire, weather, trains, public service, plus much more. Features include: digital display, priority, scan delay, weather button, channel lockout, search, scan speed, automatic squelch, memory backup, one year factory warranty, external speaker jack. (Extended warranty 2 years extra $29.99, 3 years extra $39.99.)

Regency HX-1500 Hand-Held Scanner Package

Deal includes MA-549 Drop in Charger

$199.99 *(plus 8.00 shipping)*

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- **Extremely stable, dual digital VFOs.** Accurate to ±10 ppm over a wide temperature range.
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Specifications and prices are subject to change without notice or obligation.

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