ICD 08635

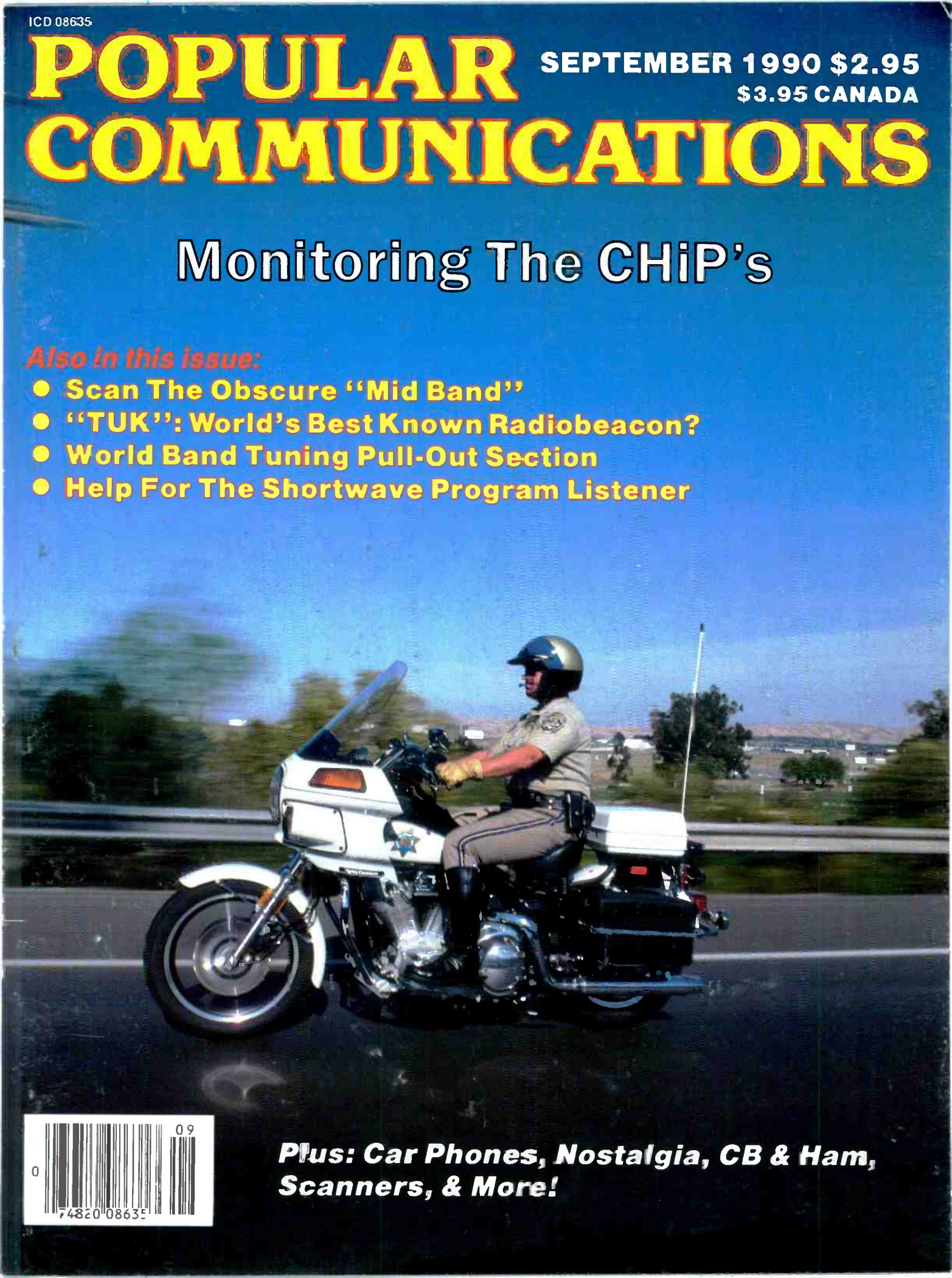
POPULAR COMMUNICATIONS

SEPTEMBER 1990 $2.95
$3.95 CANADA

Monitoring The CHiP's

Also in this issue:

- Scan The Obscure "Mid Band"
- "TUK": World's Best Known Radiobeacon?
- World Band Tuning Pull-Out Section
- Help For The Shortwave Program Listener



0 74820 08635 09

Plus: Car Phones, Nostalgia, CB & Ham, Scanners, & More!

YOU EXPECT THE WORLD FROM ICOM RECEIVERS

ICOM's IC-R71A and IC-R7000 are the professional's choice for receiving international broadcasts, aircraft, marine, business, emergency services, television, and government bands. These people demand the finest in communications and so do you. ICOM puts the world at your fingertips with the IC-R7000 25-2000MHz* and IC-R71A 0.1-30MHz commercial quality scanning receivers.

Incomparable Frequency Control. Both the IC-R71A and IC-R7000 feature **direct frequency access** via their front keypad, main tuning dial, optional infrared remote control and/or computer interface adapter. **Incredible Flexibility!**

Full Coverage, Maximum Performance. The superb IC-R71A is your key to worldwide SSB, CW, RTTY, AM and FM (optional) communications plus foreign broadcasts in the 100kHz to 30MHz range. It features IF Notch, low noise mixer circuits and a 100db dynamic range. The pacesetting **IC-R7000** receives today's hot areas of interest, including aircraft, marine, public services, amateur, and satellite transmissions in the 25MHz to 2000MHz* range. It includes **all mode operation** low noise circuits plus outstanding sensitivity and selectivity. The IC-R71A/R7000 combination is your window to the world!

The IC-R71A is a shortwave listener's delight. Its **32 tunable memories** store frequency and mode information, and they are single-button reprogrammable **independent of VFO A or VFO B's operations!** Dual width, an adjustable noise blanker, panel selectable RF preamp, and selectable AGC combined with **four scan modes** and all-mode squelch further enhance the IC-R71A's HF reception!

The IC-R7000 features 99 tunable memories and **six scanning modes.** It even scans a band and loads memories 80 to 99 with active frequencies without operator assistance! Additional features include selectable scan speed pause delays, wide/narrow FM reception and high frequency stability.

Options. IC-R7000: RC-12 remote control, EX-310 voice synthesizer, CK-70 DC adapter, MB-12 mobile bracket. IC-R71A: RC-11 remote control, EX-310 voice synthesizer, CK-70 DC adapter, MB-12 mobile bracket, FL-32A 500Hz, FL-63A 250Hz and FL-44A filters.

See these quality ICOM receivers at your local authorized ICOM dealer today.

*Specifications of the IC-R7000 guaranteed from 25-1000MHz and 1260-1300MHz. No coverage from 1000-1025MHz.

ICOM America, Inc., 2380-116th Ave. N.E., Bellevue, WA 98004
Customer Service Hotline (206) 454-7619
3150 Premier Drive, Suite 126, Irving, TX 75063 /
1777 Phoenix Parkway, Suite 201, Atlanta, GA 30349
ICOM CANADA, A Division of ICOM America, Inc.,
3071 - #5 Road, Unit 9, Richmond, B.C. V6X 2T4 Canada

ICOM
First in Communications

The ICOM EXPERTS

Minutes From Washington, D.C.

CLASSIC

R71A .1-30 MHz

- World Class HF Receiver
- All Mode AM, CW, SSB, RTTY, FM (Opt)
- Keyboard And Memory Frequency Entry
- 32 Programmable Memory Channels
- Optional Filters, Voice, 12VDC, Computer Input
- Many EEB Options Listed In Our 1990 Catalog
- 117/220/234 VAC 13.8 VDC (Opt)
- 11.25W × 4.44 × 10.9D (Inch) 16.5 Lbs

List $999
EEB Discount Price $849.95 + UPS

Get The Details From Our FREE 1990 Catalog.

CLASSIC

R7000 25-2000 MHz

- VHF/UHF Classic Nothing Like It Under $4000
- Triple Conversion Eliminates Images
- Tuning Steps .1,1,5,10,12.5,25 MHz Increments
- 99 Programmable Memory Channels
- Sensitivity Better Than .5μV (12dB SINAD) FMN
- Multimode AM, FM, FMN, FMW, CW/SSB
- Many EEB Options Listed In Our 1990 Catalog
- 117/220/234VAC 13.8VDC (Opt)
- 11.25W × 4.4H × 10.9D (Inch) 17.5 Lbs

List $1199.00
EEB Discount Price 1019.00 + UPS

CLASSIC

R9000 .1-2000 MHz

- Never Has So Much Been Offered In One Receiver
- Covers Everything VLF (100 kHz) To Super UHF 2 GHz
- Multimode AM, FM, FMN, FMW, CW, SSB, RTTY
- 1000 Programmable Memory Channels
- DDS (Direct Digital Synthesizer) Tuning
- CRT, Spectrum Analyzer, Multi Screen Readout
- Power 100-120VAC 220-240 12VDC(Opt)
- EEB Optional Power Supply And Filters
- 16.7W × 5.9H × 14.4D (Inch) 44.1 Lbs

List $5495.00 **Call**
EEB Discount Price ~~$4795.00~~ + UPS

FREE DETAIL LITERATURE ON ALL ICOM PRODUCTS
CALL 1-800-999-9877

NEW

Magnavox 3805 Digital

- SW 3.2-7.3/9.5-21.75 MHz
- FM/FM Stereo/AM
- PLL Synthesized
- 20 Memories 5 AM 5 FM 10SW
- Clock 12/24 Hour Alarm
- Push Button Memory Recall
- 4AA Or Optional AC Adapter

Unbelievable $129.95 + UPS

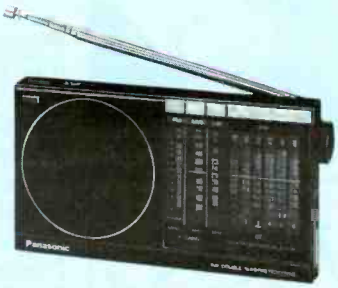
NEW

SONY ICF SW 7600

- SW All Bands .1-30 MHz
- FM Stereo With Headphones (Incl)
- 10 Memories & Clock Timer Alarm
- CW SSB (USB, LSB)
- Keyboard Frequency Entry
- Complete System Including Ext Ant, Headset, Book, AC Adapter
- New Replacement For ICF-2003

List $259.95 **EEB $219.95**

CLOSEOUT



Panasonic RFB20

- LW/MW/FM/6SW Bands
- Easy Analog Tuning
- Excellent Audio For Size
- 2 Year Panasonic Warranty
- Carry Case & Earphone (Incl)
- 3AA DC Optional AC Adapter

List $149.95 **46% OFF**

EEB $79.95 While They Last

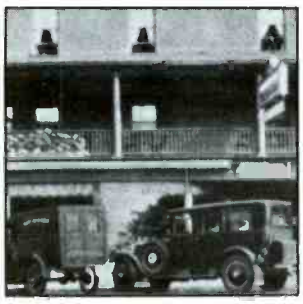
ELECTRONIC EQUIPMENT BANK
323 MILL STREET, N.E.
VIENNA, VA 22180

ORDERS: 800-368-3270
LOCAL TECH: 703-938-3350
FAX: 703-938-6911

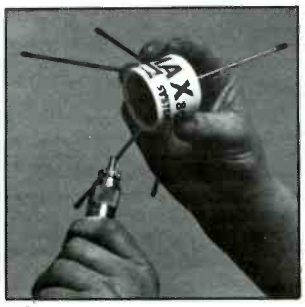
- PRICES SUBJECT TO CHANGE
- PRICES DO NOT INCLUDE FREIGHT
- SORRY, NO CODs
- RETURNS SUBJECT TO 15% RESTOCK FEE

POPULAR COMMUNICATIONS

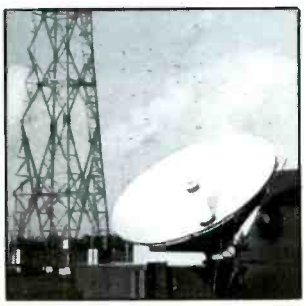
SEPTEMBER 1990 **VOLUME 9, NUMBER 1**



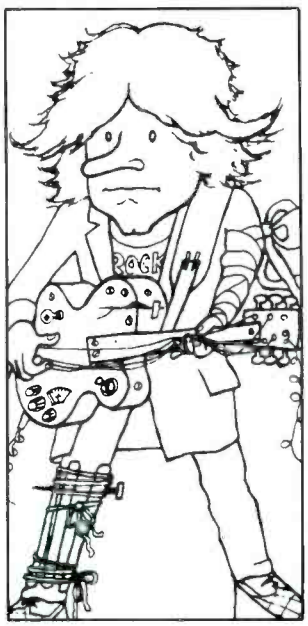
22



60



71



53

FEATURES

"TUK": World's Best Known Radiobeacon? 9
A Lonely Sentinel In Our Air Traffic Navigation System. *By Ralph C. Craig, AJ8R*

Scanning The CHiP's 14
Here's The Latest Update On The California Highway Patrol System. *By Rick Maslau, KNY2GL*

Scanning The VHF "Midband" 16
Wedged Between Two TV Channels, It's The Strangest, Least Understood, And Least Explored Little Scanner Band Going! *By Chuck Robertson*

Radio Of Yesteryear 22
Radio, From Its Earliest Days, Through It's Golden Era. *By Alice Brannigan*

POP'COMM Reviews: Diamond Systems' Radio Study Program 29
By Don Allen, N9ALK

Books You'll Like 30
Three Ring Circuits, Espionage, And The New Federal Frequency Scanner Directory. *By R.L. Slattery*

POP'COMM Reviews: Software Systems Consulting's PC HF Facsimile 32
By Don Allen, N9ALK

COLUMNS

Emergency 34
RTTY 36
You Should Know 39
Clandestine Communique 43
Washington Pulse 46
Broadcast DX'ing 49
How I Got Started 49
CB Scene 50
Pirates Den 53
Satellite View 54
Telephones Enroute 60
Scanning VHF/UHF 63
Ham Column 64
Communications Confidential 66
Listening Post 71

DEPARTMENTS

Beaming In 4
Mailbag 6
New Products 35
Worldband Tuning Tips 40
Communications Shop 77

This month's cover: *USA--California: California Highway Patrolman Ronald Walker patrolling on a CHiP motorcycle. Photo By Larry Mulvehill.*

A publication of

CQ Communications, Inc.
76 North Broadway
Hicksville, NY 11801-2953 USA.

Offices: 76 North Broadway, Hicksville, NY 11801. Telephone 516 681-2922. FAX (516) 681-2926. Popular Communications (ISSN 0733-3315) is published monthly by CQ Communications, Inc. Second class postage paid at Hicksville, NY and additional offices. Subscription prices: Domestic—one year $18.00, two years $35.00, three years $52.00. Canada/Mexico—one year $20.00, two years $39.00, three years $58.00. Foreign—one year $22.00, two years $43.00, three years $64.00. Foreign Air Mail—one year $75.00, two years $149.00, three years $223.00.

Postmaster: Please send change of address to Popular Communications, 76 North Broadway, Hicksville, NY 11801.

UNIVERSAL SHORTWAVE

Monitor More With Advanced Equipment From Universal!

COMMUNICATIONS RECEIVERS

❒ **Japan Radio NRD-525**

For the communications connoisseur. Covers .1-34 MHz. Incredible performance and features. In stock. $1149.95 (+$12 UPS)

❒ **Kenwood R-5000**
A powerful receiver for the serious DXer. An exceptional value. $849.95 (+$11 UPS)

❒ **Kenwood R-2000**
Many features: mems., scan, sweep, FM mode, 24 hr. clock etc. $649.95 (+$10 UPS)

❒ **Icom R-71A**
A well-respected time-tested performer. Notch, 2 VFOs, keypad. $849.95 (+$9 UPS)

❒ **Yaesu FRG-8800**
Beautiful LCD display, keypad, memories and more. $689.95 (+$9 UPS)

PORTABLE RECEIVERS

❒ **Sangean ATS-803A**

Keypad, memories, BFO, clock, RF gain, etc. A strong performer and unbeatable value. $189.95 (+$5 UPS)

❒ **Sony ICF-2010**
Super high performance and features. VHF air too. $359.95 (+$5 UPS)

❒ **Magnavox D2999**
A highly rated low cost fully loaded portable for every budget. $289.95 (+$5 UPS)

❒ **Grundig Satellit 500**
Hi-tech with beautiful fidelity and style. Synchronous tuning. $499.00 (+$5 UPS)

Note: Radios listed above are all LW-MW-SW-FM digital. Contact us for other models

SPECIAL RECEIVERS

❒ **Icom R-9000**

Solid all-mode coverage from .1 to 1999.8 MHz. Multi-function CRT with spectrum analyzer. The ultimate receiver! CALL FOR PRICE.

SHORTWAVE ANTENNAS

❒ **Alpha Delta DX-SWL Sloper**
MW +120-13 meter bands (60'). .... $67.95+$4

❒ **Alpha Delta DX-SWL Sloper-Short**
90-13 meter bands (40'). ..... $57.95+$4

❒ **Eavesdropper** Specify twin lead or coax type
9 SW bands (60-10 meters). ..... $74.95+$4

❒ **McKay Dymek DA100D Active Antenna**
The Cadillac of active antennas! .. $179.95+$4

❒ **Sony AN-1 Active Antenna**
For portables, covers .15-30 MHz. $84.95+$4

Note: Many more antennas available. See catalog.

MULTI-MODE CONVERTERS

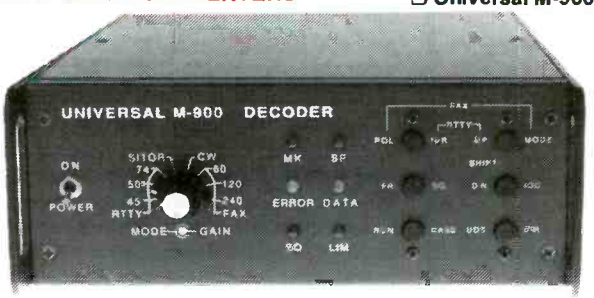
❒ **Universal M-7000**

The Universal M-7000 will permit you to intercept and decode Morse code, various forms of RTTY, FDM and FAX. Simple connections to your receiver and video monitor will enable you to monitor with the most sophisticated surveillance decoder available. No computer is required. See the world of shortwave excitement you have been missing. Requires 115/230 AC 50/60 Hz. Starting at $999.00. **Please write for full details.**

- Morse Code (CW)
- Regular Baudot RTTY
- Variable Speed Baudot
- Bit Inverted Baudot
- ASCII Low & High Speed
- Sitor Mode A (ARQ)
- Sitor Mode B (FEC)
- ARQ 2&4 chan. (TDM)
- ARQ-E and ARQ-E3
- VFT Modes (FDM)
- Russian 3rd Shift Cyrillic
- Facsimile (FAX) AM/FM
- Packet 300 & 1200 AX.25
- Remote Terminal
- Literal & Databit Modes
- Variable & Standard Shift
- Automatic Tuning
- Diversity Reception

MULTI-MODE CONVERTERS

❒ **Universal M-900**



Here is a compact, easy to use decoder that copies all the most important shortwave transmission modes. The M-900 covers Morse code for monitoring hams, ships and coastal stations. Baudot RTTY is included for decoding weather and international press broadcasts. Both Sitor A and Sitor B are supported for monitoring the extensive maritime and diplomatic traffic. Facsimile (to the printer only) lets you receive maps and pictures from around the world. Requires 12 VDC @.8A Text output to video monitor. **$499.95 (+$8)**

- Morse Code (CW)
- Regular Baudot RTTY
- Sitor Mode A (ARQ)
- Sitor Mode B (FEC)
- Facsimile (FAX) FM
- Variable & Standard Shift

M-900 System Components
A complete M-900 system would require:

- Universal M-900
- 12 VDC Power Supply
- Your SW Receiver
- Video Monitor
- Parallel Printer
- Cables for above

Please write to Universal for full information on the M-900 and the above optional items. Full system prices are available.

COMMUNICATIONS BOOKS

❒ **Passport To Worldband Radio 1991 Ed.**
By L.Magne. Graphic presentation of all SWBC stations. Reviews too. ~~$16.95~~ *Sale* $13.90

❒ **Shortwave Receivers Past & Present**
By F.Osterman. Your guide to 200 receivers with new-used value, specs, features. $6.95

❒ **Aeronautical Communications Handbook**
By R.Evans. A mammoth book on all aspects of shortwave aero listening. 266 pages. .. $19.95

❒ **Complete SWL's Handbook Third Edition**
By Bennett, Helms, Hardy. Nearly 300 pages on all aspects of SWL'ing. $16.95

❒ **Guide To Facsimile Stations**
By J.Klingenfuss. The complete guide to FAX with freqs., schedules and addresses... $19.95

❒ **Easy-Up Antennas for Listeners & Hams**
By E. Noll Low cost, easy to erect antennas for LW, MW, FM, SW, SCAN and HAM. $16.95

❒ **World Radio TV Handbook 1990 Ed.**
All SWBC stations by country with schedules, addresses, power, etc. Reviews too. .. $19.95

✓ Please add $1 per title for shipping.

COMMUNICATIONS CATALOG

Universal now offers a new combined communications catalog covering shortwave, amateur and scanner equipment. There is also an unbeatable selection of antennas, books, parts and accessories. This huge **88 page** (8½" by 11") publication covers everything for the radio enthusiast. With prices, photos and full descriptions.

★ Available for $1 postpaid ★

STORE HOURS

Monday - Friday	10:00-5:30
Except Thursday	10:00-8:00
Saturday	10:00-3:00

· We ship worldwide · Visa, MC, Discover · Prices & specs. are subject to change.

· In business since 1942! · Used equip. list available

Universal Radio
1280 Aida Drive Dept. PC
Reynoldsburg, Ohio 43068 U.S.A.
Ohio: 614 866-4267 **Toll Free: 800 431-3939**

BEAMING IN

BY TOM KNEITEL, K2AES

AN EDITORIAL

Dawn Breaks On An Innocent World

At some point a few months ago, the American public got one of those jolts of reality it can't handle especially well. This was rated at about 8 on the 10-point Kneitel Reality Rating Scale. That put it roughly between the news that Gary Powers didn't really stray off course in his U-2 spy plane over the USSR, and the realization that the Alaskan oil spill wasn't going to be completely mopped up and everything back to its pristine state within a month or two.

This time it was the realization that the cellular telephone salesman may have not told the whole story when he promised communications privacy based upon the federal law enacted to guarantee that nobody could listen in on the cellular frequency band. This has long been one of the communication world's greatest, and most laughable, open secrets. Somehow, though, it didn't trickle out to the general public until it turned up almost simultaneously in a couple of influential newspapers. Ho boy, that did it. Did it ever!

For one thing, it was a front page story in *USA Today*, which basically said that lots of people were tuned into the cellular frequencies for their entertainment value. There were some appropriate quotes from Bob Grove, and a nice mention of my book, *Tune In On Telephone Calls*. At about the same time, the Rochester (NY) *Democrat and Chronicle* ran an in-depth story by Phil Mulivor that was hot stuff. Mulivor is a ham, so he approached the topic with sufficient expertise to know the right questions to ask. He interviewed me at length for his feature. His paper (which has a circulation of 200,000) ran the story on page 1 of its Business Section in a Sunday edition.

Suddenly, everybody got a dose of truth that definitely would have required a spoonful of sugar to go down, preferably administered by Mary Poppins, herself. People were confused, concerned, and incredulous that their car phones were, after all, open lines when they had been led to believe that they offered complete security and privacy.

It didn't take long for other media to pick up the ball and run with this story. Soon, I received a call from Maureen Reagan who put me on her popular afternoon talk program over 50 kW KFBK in Sacramento, CA. Then, Dan Monuntney, of WDIV-TV, NBC's Channel 4 in Detroit, MI interviewed me to put together some additional details of this story which obviously struck like a lightning bolt.

A number of other radio and local newspaper interviews followed. Several of the radio interviews, like Maureen Reagan's, featured calls from listeners and it was a wonderful opportunity for me to speak directly with the stricken car phone users. It was interesting to observe that people in different areas of the nation were asking some of the same questions.

Several wanted to know if listeners could select a particular car phone user to monitor, or if it was a matter of random selection by the scanner. Another question asked by a few callers was whether scanners could be used to actually break in on calls and cause them to fade out or disconnect.

A strange irony was also noted in connection with something said to me by more than one interviewer. It was pointed out that my book tells about how simple it is for people to listen in on cellular phone calls. That led to the question of whether my book encouraged such monitoring. This is the old "shoot the messenger" approach, with which I am quite familiar. My reply was that their program also told people about listening in on cellular phone calls—did they feel they were encouraging the practice? Viewed on that level, the question was quickly dropped.

One irate caller to a station in Georgia that I was on took the approach that scanners were a threat to his First Amendment rights of free speech. A request for a clarification of that claim brought forth the explanation that he demands the right to determine who can hear his voice. This puzzled me at the time, but later I reflected on what he had said and found that his feelings were somewhat of a microcosm of the ECPA law that seeks to prohibit monitoring cellular calls.

It made me think that, after all, what is the value of the First Amendment guaranteeing free speech if there are restrictions put on the freedom to listen? Can you imagine a person giving a speech and the police showing up to arrest everybody around the podium for violating a law that forbids hearing him? The chump on the podium, however, still has freedom of speech. His First Amendment rights are intact.

Suppose a regime passed a law outlawing listening to a broadcast station that was critical of the government? This wouldn't in any way interfere with the broadcaster's First Amendment rights, and the station could say whatever it wanted. On the other hand, a law repressing the ability to tune in its frequency could be rubber stamped into being with the same speed and legality as the ECPA was.

(Continued on page 76)

GILFER

our 38th year

First in Shortwave

JAPAN RADIO CO.

JRC NRD-525

"No. 1 receiver outside the commercial/military bracket...way ahead of the competition...outstanding results in all modes...a best buy" – **R. Lichte.**

CPU control/150-30000 kHz/computer interface/200 memories/PBT/noise blanker/notch filter/clock-timer/tuned preselector/scan-sweep/options: UHF/VHF converter, speaker; headphones, 0.3/0.5/1/1.8 kHz filters, RTTY demod.

DATONG FL-3 AUDIO FILTER (atop NRD 525) Automatic, tunable 12 pole filtering makes weak sigs audible, removes noise, hetrodynes; dual notch plus hi/lo pass filters.

KENWOOD

Kenwood R-5000

"Best receiver ever offered by Kenwood" – R. Lichte.

Dual superhet/100 kHz – 30 MHz / all modes / dual digital VFOs / dual IF crystal filters / IF shift / tuneable Notch filter / dual mode Noise Blanker / 100 memories / programmable memory scan & band scan / dual 24 hr clocks w. timer / optional voice synthesizer, PC control-interface/speaker / UHF converter / DC cable.

WE ALSO STOCK THESE FINE RECEIVERS...

KENWOOD FRG-8800
ICOM R-71A
AOR SCANNERS

ICOM

ICOM R-7000

"Super scanner of the decade... unbelievable range (25 MHz – 2 GHz with small gap from 1000 to 1025 MHz)...multitude of functions is simply overwhelming... performance leaves nothing to be desired" – **R. Lichte.**

All modes, all bands (low band, aircraft, marine, business, FM broadcast, amateur radio, emergency, government, TV bands)/options: RC remote control, EX-310 speech synthesizer, MB-12 mounting bracket, AH-7000 scanning antenna.

World's Smallest Full-featured Handheld Receiver- ICOM IC-R1

100kHz-1300MHz; AM, FM, FM-wide; multi-scanning; keyboard and rotary tuning; 100 memories; clock; NiCd batteries; power-saver; S meter; many options.

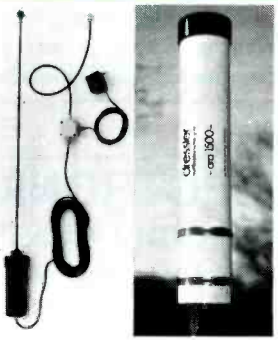
WE ALSO STOCK...
ICOM IC-R100 & -R72

Sony 2010 Cover, black waterproof fabric. $12.95.

Travel Case, padded black Dupont Codura, zipper top opening, shoulder strap, fits receivers up to 12"x8"x5" (Sony 2010, Grundig SAT-500). $32.95 (+$3)

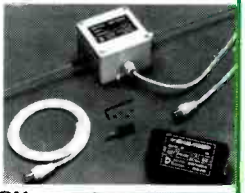
ANTENNAS

The Best in Active Antennas.



Gilfer special – **Dressler** Active Receiving Antennas. They're perfect for limited antenna space – perform like they were outdoor full size jobs, but they fit anywhere. Two models: **ara 30** is ideal for SWL, covering 200 kHz to 30 MHz optimum, up to 100 MHz reduced performance. 10 dB gain. $159.95 (+$4); model **ara 1500** is perfect for VHF-UHF scanner receivers, covering 50 MHz – 1500 MHz. Up to 16 dB gain. $189.95 (+$4).

DATONG



Outdoor Active Antenna, listed as best in famous handbook, AD-370.

Indoor Active Antenna, same as above but flexible elements, AD-270.

WE ALSO STOCK ...

Eavesdropper 3
Alpha Delta Sloper
DX-SWL
DX-SWL-5
MK DYMEK DA-100
Trans-trap Arresters

PORTABLES

WE STOCK THE BEST...
GRUNDIG SAT-650, -500
SONY 2010, -2003, -SW1S, -PRO 80 ICF-7600
PANASONIC RF-B40, RF-B65 with SSB capability
AOR AR-900 & AR-950.

BOOKS – OVER 100 TITLES

The leading Utility Listing –

GILFER'S FAMOUS "CONFIDENTIAL FREQUENCY LIST"
$19.95 + shipping

Complete and the most comprehensive list available, 2 years in the making, expanded from previous editions to include over 30,000 CW, voice, RTTY & FAX frequencies, with call signs, country, details, covering aeronautical, marine, embassy, weather, press, feeders, INTERPOL, time sigs., channel marker and more. Seven new items including international, ICAO regions charts, marine stations over 250w, NAVAREAS charts, world time chart, abbreviations list, details of press, weather, time, nav. warnings, etc. Add $2 USA, overseas add $4 surface, $10 air.

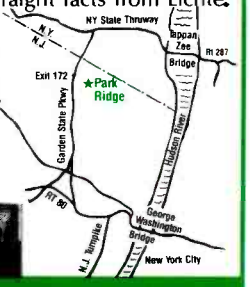
WORLD BROADCAST STATION ADDRESS BOOK. $8.95, pp USA

Fifth edition. Complete and up-to-date country-by-country listing of over 1000 broadcasters. By QSL king, Gerry Dexter.

RADIO RECEIVER, CHANCE OR CHOICE + MORE RADIO RECEIVERS... both for $18.50, pp USA

R. Lichte, world renowned professional radio engineer, tests all the famous receivers impartially (not affiliated with any manufacturer), using the same parameters and equipment, and writes the results factually so you can compare each brand and model. Over 90 reviews cover Yaesu, ICOM, JRC, Sony, Panasonic, Realistic, Sangean, Grundig, Phillips and more. Get the straight facts from Lichte.

VISIT GILFER'S STORE
Easy to find, accessible from New York City. Take Garden State Parkway (NE portion of N.J.), Exit 172. Gilfer is in the center of Park Ridge, opposite the Borough Hall. Store hours: M–F 10am–5pm, Sat. 10am–3pm.



GILFER SHORTWAVE • 52 Park Ave., Park Ridge, NJ 07656

Order operators: 1-800-GILFER-1 (1-800-445-3371) • Other business, technical & NJ res. 201/391-7887

MAILBAG

LETTERS TO THE EDITOR

Each month we select representative reader letters 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.

Cryptic & Iconoclastic

All kidding aside, I was astonished. While doing research on my thesis on modern Japanese literature, I located a book called *Yukio Mishima*, by Dr. Peter Wolfe (Continuum Publishing, New York, 1989) about the controversial author for whom the book was named. This book contains a very cryptic dedication. Not only is the dedication impossible to understand, but it is in honor of the Editor of my favorite communications magazine. What does the dedication mean? Why did a professor dedicate a serious book on a Japanese author to you? Does this mean that you have a serious side about which I didn't know? Say it isn't so.

Lawrence Bonsall, Ph D.
Berkeley, CA

Peter Wolfe, who is a professor of English at the University of Missouri-St. Louis, and I have been close friends since we were 10 years old. This probably had something to do with why he dedicated the book to me, although I also happen to be extremely interested in Mishima's writings and bizarre life. The dedication is actually hilarious, but only to someone who had the same 5th Grade teacher we had in 1943 at P.S. 93 in New York City. You really had to be there.
—Editor.

The 6 Meter FM Broadcasting Band? No Way!

Thank you for helping to oppose Lawrence Tighe's proposal to turn the 6 meter Amateur band into a commercial FM broadcasting band. It used to be that you could hear good classical music, traditional folk music and real news in the 88 to 108 MHz band. Now it's wall-to-wall rock music and country music. All of the stations sound the same, and we don't need 4 MHz additional of this where the 6 meter ham band presently exists.

Rod Sharp, N5NM
Deming, NM

To want a band like 6 meters for broadcasting is really weird. It would be like using CB. When conditions are good, 6 meters is an international band that is open to every part of the globe. Can you imagine trying to listen to music here from an American broadcaster while it is accompanied by a QSO from two hams in South America? Imagine the interference American FM broadcast signals would cause to ham communications elsewhere in the world. Broadcasting industry problems are more complex than can be solved by simply adding more frequencies. AM stereo was a farce; the FCC never established standards so it died. Besides, it didn't sound that good and AM stations don't play very much music, anyway. The receiver audio on most broadcast receivers is poorer than it was 20 years ago, and most people only listen to one or two stations, to boot. A quick survey at the col-

lege where I work revealed that an abundance of students and staff listen to tapes and CD's, and when asked to list their favorite stations, none mentioned an AM station. Of the two FM stations named, one was in Toronto! One person said that he didn't even have a radio in his car, only a CD. Until the public demands and manufacturers build better receivers, and until broadcasters provide programming that is so good that audiences can't get enough, there seems no logic in pouring more frequencies (including the new 1605 to 1705 kHz band) into broadcasting. Until the FCC can (and is willing to) establish suitable guidelines for signal quality and interference, there is a lot of good money and creative talent already being fed into this black hole.

Mark F. Henning, N2DUJ
Hamburg, NY

POP'COMM first brought this proposal to grab 6 meters to the attention of ham operators, and then we pursued the matter virtually single-handedly. Oddly, the hard-core ham radio media appeared apathetic to the matter, although SMIRK did react with suitable alarm. As a person who has enjoyed this particular band for almost 30 years, I felt I'd have a dent in my karma had I just sat back and watched as the band went down the tubes without any fuss being kicked up from those of us who love 6 meters. Even though POP'COMM doesn't normally go on ham radio crusades, there are some causes for which we'll take up the cudgel when few others seem willing. This was one of them. Thanks to those who responded to the clarion call. — Editor

Vox Populi

Enjoyed hearing you on KFBK speaking with Maureen Reagan about there being no privacy on cellular phones. Too bad there wasn't more time to get deeper into the scanner end of the story.

William T. Clark, W6KKA
Chico, CA

Maureen tells me that she hopes to do another program on these timely subjects since they got a big audience response, and quite emotional. One of Maureen's call-in listeners got so worked up that he slammed down the phone on me in rage, which is the level of involvement talk programs only dream about. — Editor

Recalls TI4NRH

I was pleasantly surprised to find the article about TI4NRH in the May issue of POP'COMM. I received a verification from this station for my reception of August 23rd, 1938. My receiver was a Howard or a National with a homemade one-tube preselector that considerably boosted the weak TI4NRH signals. The registration number of my QSL and the one shown in POP'COMM are pretty close. Apparently each veri was individually numbered. A great station; an excellent story.

Thomas L. Wirts,
Allentown, PA

Looking For Old Friends

I was in the Signal Corps during WWII. We were in North Africa in 1943 where our 5 kW station took over Radio Algiers. I was also a radio operator at our two 1 kW stations at different times in Italy, France, Sicily, Africa, Germany, and ending up in Bavaria, 1945. I also worked with several other outfits sending and receiving coded messages with hand keys and other methods. We were told that this company was the only one of its exact kind in the Army, but I don't really know if this is true. When I went into the army in 1942 I knew nothing about CW, but they taught me in short order to copy 5-letter groups at 25 to 30 wpm. I thought learning CW was easy, and fun. I still copy CW when I tune past a good signal. I just pick up a pencil and begin writing it out. I would be glad to hear from any of the guys who might be around from my old outfit. It was the 982nd Signal Service Company. Have been reading POP'COMM for several years and always find it interesting.

George F. Collins
7 Powow St.
Amesbury, MA 01913

"The Largest Dealer of Scanners in the World"

SCANNER WORLD, USA®

Scanner World, USA

10 New Scotland Ave., Albany, NY 12208 • 518/436-9606

SCANNER WORLD EXCLUSIVE

UNIDEN BEARCAT BC205XLT

$259.99 *($7.00 shipping)*

Digital programmable 200 channel hand held scanner with raised button keyboard for easy programming of the following frequency ranges: 29-54 MHz, 118-174 MHz, 406-512 MHz, 806-956 MHz.* 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 2-11/16"Wx1-3/8"Dx7-1/2" high. (Optional extended 2 yr. warranty $29.99, 3 yr. extended warranty $39.99.) (*Excludes Cellular)

RADIO SCANNERS AND ACCESSORIES

Bearcat BC145XL	$99.99	(7.00)
Bearcat BC140	94.99	(7.00)
Bearcat BC175XL	139.99	(7.00)
Bearcat BC55XLT	119.99	(6.00)
Bearcat BC800XLT	264.99	(7.00)
Bearcat BC100XLT	199.99	(7.00)
Bearcat BP205	34.99	(*)
Bearcat BC210XLT	189.99	(7.00)
Bearcat BC-ONE	129.99	(7.00)
Bearcat AD-100U	14.99	(*)
Bearcat PS-001	12.99	(*)
Bearcat VC-001	11.99	(*)
Bearcat AD-140U	14.99	(*)
Bearcat AT-054	12.99	(*)
President HR2600	219.99	(8.00)
President HR2510	239.99	(8.00)
Regency R3020	98.99	(7.00)
Regency INF.7	99.99	(7.00)
Regency INF.50	94.99	(7.00)
Regency MA-917	24.99	(*)
Regency MA-501	14.99	(*)
LifeGard 4	117.99	(4.00)
RXD MRP-1	24.99	(*)
GRE8001	62.99	(4.00)
GRE8002	79.99	(4.00)
Midland CB Radios	In Stock	
Cobra CB Radios	In Stock	
Uniden CB Radios	In Stock	
Silver Eagle Microphone	69.99	(*)
Antennas	In Stock	
Rechargeable Batteries	In Stock	

BOOKS

Covert Intelligence	8.95	(*)
Air Scan Directory	14.99	(*)
Betty Bearcat	7.99	(*)
Top Secret	14.99	(*)
Covert Techniques	9.95	(*)
Tomcat's Big CB	13.95	(*)
World Radio	18.99	(*)
Monitor America	5.99	(*)
Survival Directory	6.95	(*)
Rail Scan	7.95	(*)
Police Call	6.99	(*)
Embassy & Espionage	13.99	(*)

TWO-WAY RADIOS REGENCY-RELM

UC102	109.99	(5.50)
UC102	(2 or more) 99.99	(5.50)
RH-256B	329.99	(9.00)
RH-606B	469.99	(9.00)
WHS-1	399.99	(9.00)
RU-156B	459.99	(9.00)
UC-202	134.99	(6.00)

REGENCY TS-1

35 CHANNELS — MOBILE/BASE

Special

$149.99 *($7.00 shipping)*

Features include simple programming of the following frequency ranges: 29-54 MHz, 118-175 MHz, 406-512 MHz. Turboscan, digital display, priority, search, lockout, delay, dim control, top mounted speaker, one year factory warranty. Includes AC & DC cords, mobile mounting bracket, telescope antenna. All for only $149.99 plus $7.00 shipping. (Optional extended warranty; 3 years $39.99; 2 years $29.99.)

BEARCAT 70XLT 20 CHANNEL HAND-HELD SCANNER

SPECIAL PACKAGE DEAL **$169.99** *($7.00 shipping)*

Small size 6"Hx1"Dx2¾"W. Full digital readout, priority, search, channel lockout, scan delay, key lock. Covers following frequencies: 29-54 MHz, 136-174 MHz, 406-512 MHz. Package includes rubber antenna, rechargeable Ni-Cad battery pack, AC adapter/charger and carry case.

REGENCY R-4020

100 Channel Digital Programmable Hand-Held Scanner

$174.99 *($7.00 shipping)*

Our best price ever on a full featured complete package hand-held scanner. Manufactured by Uniden, this is the exact duplicate of the Bearcat 100XLT for a much lower price. Features include 11 bands of weather, aircraft, public service, trains, marine, plus more (29-54 MHz, 118-174 MHz, 406-512 MHz), 10 channel banks, 10 priority channels, lighted LCD display, earphone jack, channel lockout, AC/DC operation, scans 15 channels per second, track tuning. Special package deal includes following accessories: AC adapter/charger, rechargeable Ni-Cad battery pack, flexible rubber antenna, heavy duty carry case.

SANGEAN ATS-803A

SHORT WAVE RECEIVER

$189.99 *($7.00 shipping)*

AM/FM/LW and 12 short wave bands plus FM stereo, BFO for SSB reception, clock radio. Includes AC adapter, telescopic antenna, stereo headphones, and shoulder strap.

—SHORT WAVE WORLD BAND RECEIVERS AVAILABLE—

Grundig Satellit 500	$548.99	(10.00)
Grundig Yacht Boy 220	106.99	(5.00)
Grundig Cosmopolit	198.99	(7.00)
Grundig Yacht Boy 230	149.99	(5.00)
Grundig Satellit 650	899.99	(20.00)
World Radio & TV Handbook (1990)	18.99	(*)

UNIDEN RD9XL RADAR DETECTOR

SPECIAL LOW PRICE OF ONLY

$129.99 *($7.00 shipping)*

RD9XL has been rated best radar detector for 1990 by Car & Driver Magazine. Better than Passport, Whistler, and all others. RD9XL includes cigarette lighter cord, mute/audio switch, city/highway switch, mounting bracket, carry case, signal strength meter, dual tone audible alarm, bright warning lamp, plus the very small size of only 2-5/32"Wx3½"Dx11/16"H.

— RADAR DETECTORS —

Cobra RD-2102	$64.99	Cobra RD-3170	$168.99
Cobra RD-2110	66.99	Cobra RD-3112	98.99
Cobra RD-3120	104.99	Cobra RD-3168	138.99
Cobra RD-5110	159.99	Maxon RD-3	67.99
Maxon RD-25KL	86.99	Maxon RD-65	126.99
Maxon RD-21A	69.99	Maxon RD-2A	49.99
Uniden RD-9XL	129.99	Uniden RD-99GT	129.99
Uniden RD-95GT	129.99	Uniden RD-500	65.99
Uniden Talker	109.99	Uniden RD-9	114.99
Uniden RD-25	58.99	Uniden RD-3XL	154.99

NEW!

UNIDEN MR-8100

$489.99 *($9.00 shipping)*

100 channel professional mobile scanner, 10 banks of 10 channels each, scans any combination of 100 channels. Scans 30 or 100 channels per second, lockout individual channels, scan delay, digital display, hold button, priority, internal memory when power is lost, programs direct from keyboard, operates on 12 VDC. Includes mobile power cord, mounting bracket, external speaker, and programming instructions. Dimensions 5-1/2"x6-7/8"x1-3/4". Frequency coverage 29-54 MHz, 118-174 MHz, 406-512 MHz, 806-956 MHz. (Optional diskette [5¼" or 3½"] available for programming MR-8100 direct from your PC to restore cellular, for professional use only. Uses RS-232 connection $24.99.)

Not available from Scanner World® in OR, WA, ID, NV, AZ, or CA.

UNIDEN BEARCAT BC-600XLT

$199.99 *($7.00 shipping)*

Digitable Programmable 100 Channel Scanner

BC 600XLT 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", 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 preprogrammed 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 800-954 MHz. *(Excludes cellular)*

$249.99 *($7.00 shipping)*

REGENCY R-4010

$106.99 *($7.00 shipping each)*

10 channel hand-held scanner. (Same Scanner as Bearcat 55XLt). 29-54 MHz, 136-174 MHz, 406-512 MHz, digital programmable, keyboard lock switch, lockout, includes rubber flex antenna. (Optional accessory 5W-41, only $19.99 includes rechargeable Ni-Cad batteries, AC adapter/charger and cigarette lighter cord.)

REGENCY Z-60

$119.99 *($7.00 shipping)*

Programmable 60 channel, AC/DC, digital, 30-50 MHz, 88-108 MHz, 118-136 MHz, 144-174 MHz, 440-512 MHz, priority, clock, lockout, telescopic antenna, AC/DC cord, search, delay.

UNIDEN BEARCAT BC-400XLT

$99.99 *($7.00 shipping)*

Our best selling mobile scanner, 16 channel, AC/DC programmable, digital, AC/DC cords, telescopic antenna, mobile mounting bracket, weather search, priority, 29-54 MHz, 136-174 MHz, 406-512 MHz, external speaker and antenna jack.

COBRA SR-925

$99.99 *($7.00 shipping)*

Digital programmable, 16 channel AC/DC mobile/base with raised button keyboard for easy programming of the following frequency ranges: 29-54 MHz, 118-174 MHz, 406-512 MHz. 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 R-2066

$109.99 *($7.00 shipping)*

Digital programmable, 60 channels, AC base scanner, 30-50 MHz, 144-174 MHz, 406-512 MHz. Size 7⅛"x3"x9". Turbo-Scan scans 40 channels per second, 4 channel banks, weather alert, search, priority, lockout, AC cord, telecopic antenna, plus much more.

EXTENDED WARRANTY SERVICE

This extended service contract is for all scanners, CB radios, radar detectors, and cordless telephones that have been purchased anywhere in the USA in the past 30 days. This extended warranty service begins when your original manufacturer's warranty expires.

1 year extended warranty	only $18.99
2 year extended warranty	only $29.99
3 year extended warranty	only $39.99

ORDERING INFORMATION: Call (518) 436-9606 to place orders or mail orders to Scanner World, USA®, 10 New Scotland Ave., Albany, N.Y. 12208. Orders will be shipped within 24 hours by United Parcel Service if order is accompanied by MasterCard, Visa, cashier's check, money order, COD (COD shipped by United Parcel Service will be cash or money order only). (If a COD package is refused, customer will be billed for shipping and COD charges.) Mail orders with personal or business checks enclosed will be held 4 weeks for bank clearance. Prices, specifications, and terms subject to change without prior notice. If items are out of stock we will backorder and notify you of delivery date. All shipments are F.O.B. Scanner World® warehouse in Albany, N.Y. We are not responsible for typographical errors. All merchandise carries full manufacturer's warranty. Bid proposals and purchase orders accepted from government agencies only. Free full line catalog mailed 4 times per year. Merchandise delivered in New York State add 7% sales tax. No returns accepted after 7 days of merchandise receipt. *Add ($) per item, and $3.00* for all accessories ordered at same time. COD orders will be charged an additional $4.00 per package. Full insurance is included in shipping charges. All orders are shipped by United Parcel Service to street address only. (No P.O. Box). Shipping charges are for continental USA only. All others ask for quote on shipping charge.

"TUK," That Popular Radio Beacon!

A Lonely Sentinel In Our Air Traffic Navigation System

BY RALPH C. CRAIG, AJ8R

Off the coast of Massachusetts, on the wind blown moors of Nantucket Island, just a few hundred feet from where the cold gray Atlantic Ocean laps the white sandy beach, stands a lonely sentinel in the air traffic navigation system or our nation. With its ideal location, its high power, and its clear channel, this station is heard for hundreds of miles up and down the east coast, as well as far inland. Often it appears in *POP'COMM*'s UTE column, "Communications Confidential," "194 kHz, Beacon, TUK, Nantucket Mass." This report will tell a bit of history concerning this station, describe a visit to the site, and information on obtaining a verification of reception report.

There is hardly a time when the Nantucket native "Islander" cannot remember when there was not a radio station located on the sandy west end of the island near Maddaket. With the island's close proximity to the important shipping lanes to Europe, and its strategic location on air traffic's heavily traveled North Atlantic route between New York and Europe, the site has served as location of radio aids to navigation almost as long as there has been radio transmissions. In 1958 when I began working at the site the many abandoned concrete antenna foundation and guy wire anchors testified to its many uses.

During the 1950's with the Berlin air lift crisis, the war in Korea still in the nation's memory, the worsening relationships of the Cold War posed a threat to our country. On both coasts the large white domes of the air defense Radars sprouted like mushrooms on a warm spring day. "Texas Towers" planted their spinely legs on the continental shelf. Their red and white Radomes appearing like gailey colored balloons floating on the cold gray seas. Further out, the Radar picket ships and the Super Constellation Radar picket planes, monotonously traversed the oval courses of their assigned stations. ADIZ (Air Defense Identification Zones) were set up off of our coasts. Each aircraft entering the zone was tracked and identified. Any unidentifiable blip on a Radar scope could be an enemy. To assist in tracking and identifying aircrafts, a new air navigation system was installed on both coasts. Called Consolan it was a refinement

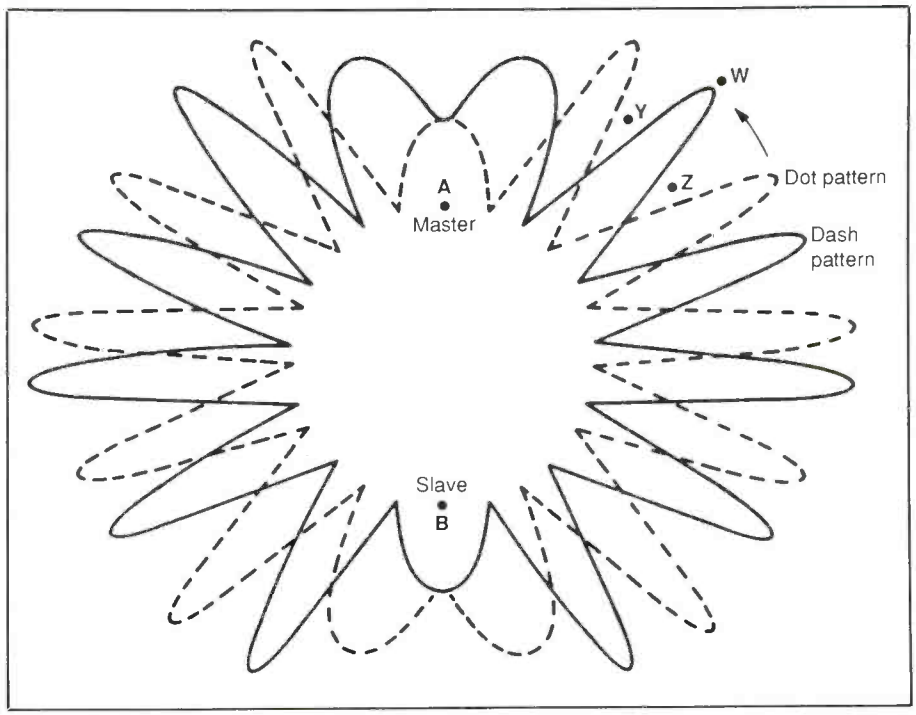


Fig. 1 - Consolan antenna radiation pattern. Observer at A would receive all dashes, at B all dots and at C a combination.

Fig. 2 - TUK radio beacon transmitter site near Madaket.

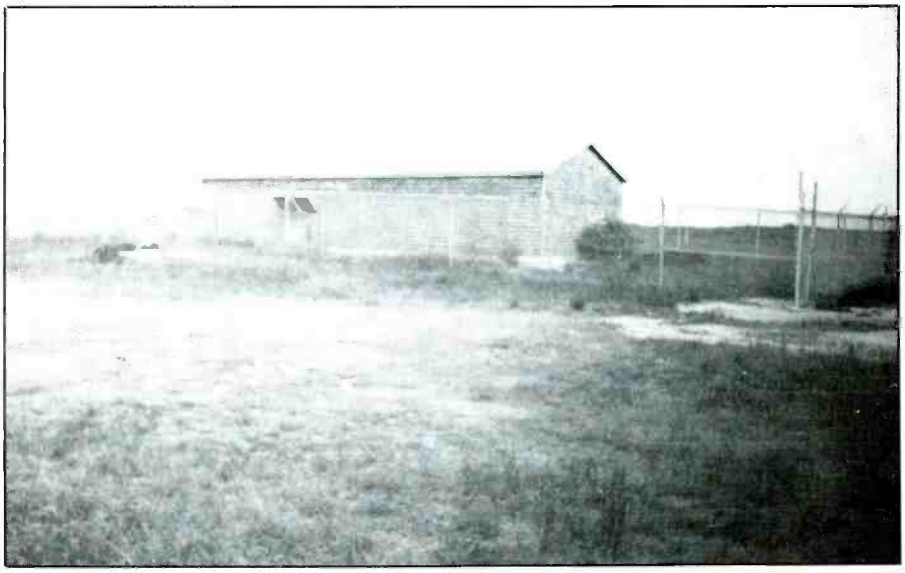


Fig. 3- TUK transmitter building.

of a European system, Console, developed from the World War II German system named Sonne. Four of the systems were installed. One near San Francisco (SFO) operated on 192 kHz, one near Miami (MMF) on 190 kHz, one near Atlantic City, operating on 512 kHz, and the system on Nantucket, (TUK), operating on 194 kHz. The system on Nantucket was converted from the then existing radio beacon operating on that frequency.

The Consolan system, operating in the Low Frequency (LF) band, utilized two widely spaced transmitter sites. One called the Slave radiated a steady signal. The other called the Master radiated a signal that changed in phase relationship to the Slave's. Electronically and mechanically manipulated, the Master's signal flipped 180 degrees in phase between a dot and a dash, at the same time the phase was slowly rotated by use of a goniometer. The wide antenna spacing resulted in a multilobed radiation pattern (see Fig. 1). The alternating dot/dash relationship caused the lobes to be displaced, resulting dots forming one pattern, and the dashes a second. The slowly rotating phase relationship resulted in the dot/dash patterns slowly exchanging place.

At end of the rotation the dash pattern occupied the location of the original dot pattern and vice-versa. The results was that an observer at any location would receive a series of dots and dashes. This varied from all dashes thru a mix of dash/dots to all dots. By counting the number of dash/dots received in a "cycle," identified by breaks in the transmissions, the observer could locate where he was. The only device necessary to do this was a LF receiver equipped with a BFO (even a single tube regenerative receiver would work), a map overlaid with the radiation pattern of the station, and the ability to count to 60. Ambiguity in identifying which "lane" he was in was resolved thru ded. reconning. The system was accurate, simple to operate, and cheap to install. The only problem was the required 1 minute counting period. This was a problem for aircraft navigators. For the fishermen and yachtmen who found the system to be very useful, this was of no concern.

Working on the system could be very exciting. The Master site was manned 24 hours per day. The winds roaring off the Atlantic Ocean would cause the antenna guy wires to vibrate. At night the eerie, wierd sounds generated were spooky, requiring many months to get used to. Because of the short antenna, high R.F. voltages were formed in and around the site. The lights in the building at the base of the tower could not be extinguished. Turning off the A.C. power simply dimmed them. A favorite trick was to invite someone to the site for a visit at night, hand him/her a 48" flourescent lamp, then have them walk around the antenna some 100 feet away. They always were amazed at the light that glowed with no wires attached. At night, laying on ones back, looking up to the tower often presented a spectacular display similar to Fourth of July fireworks. The antenna guy wire insulators, coated with wind blown spume from the nearby breakers, arced

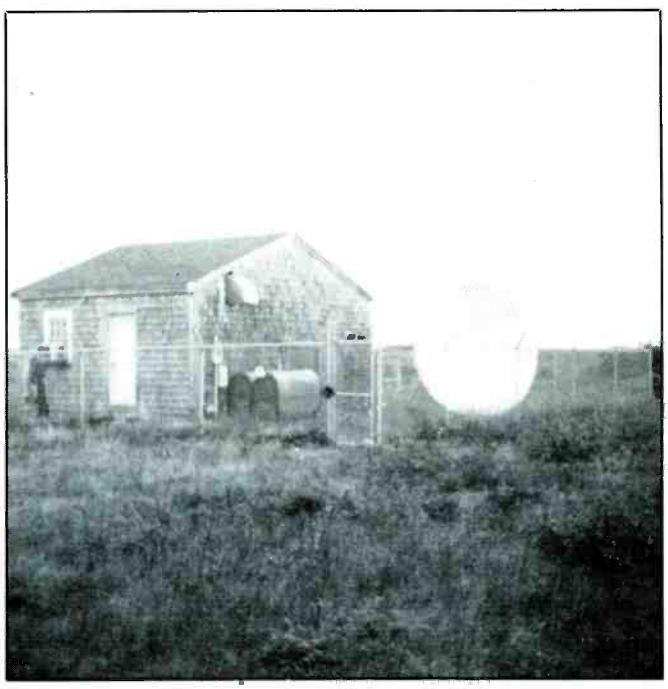


Fig. 4- Commercial FM transmitter building with satellite feed antenna.

Fig. 5- Base of antenna. Note unique coupling system for the studio to transmitter link of the FM station.

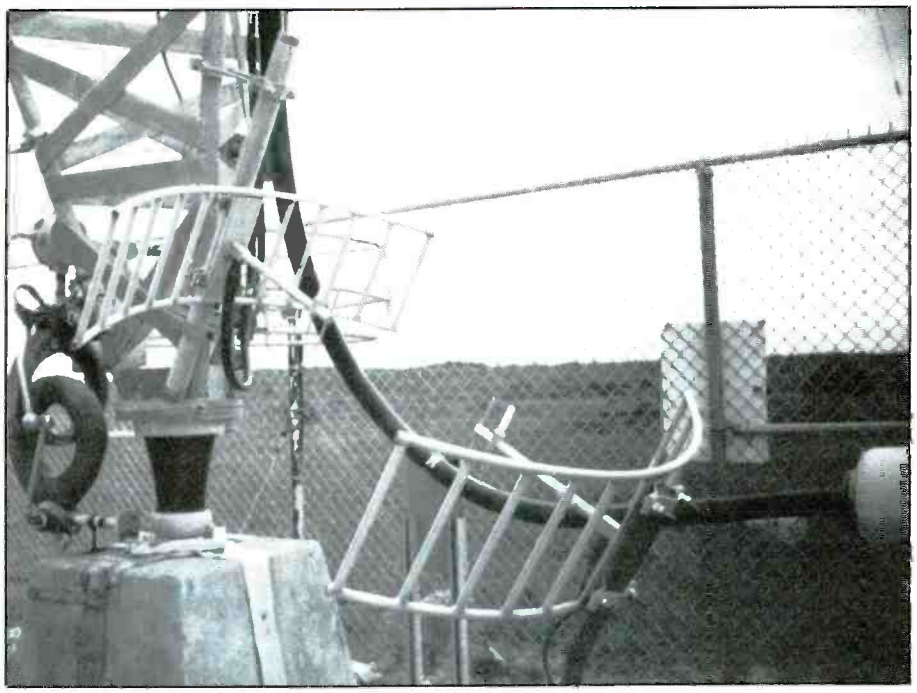


Fig. 6- Base of antenna. Note system of reflector backed dipoles used to couple studio to transmitter link system to antenna on the tower. Interlocked rings on left is the air core transformer for the tower obstruction lights. Ball tipped rods are the lightning protection spark gap. The dark colored cone shape item is a ceramic insulator, it is the sole support for several tons of tower.

over in step with the dot/dash keying of the transmitter.

As more sophisticated navigational systems became available Doppler, Inertial, LORAN-C, Omega, Consolan Systems were decommissioned. Having served their purpose, no longer needed, they disappeared from the air navigation system. Nantucket however was an exception, it was not abandoned, but was converted back to its original configuration of a NDB (Non Directional Beacon). Continuing to send out its endless signals identified by the 1020 Hertz tone AM modulating the carrier in the morse code, -..---.- (TUK). The former Slave site was obtained by the Coast Guard who uses it as a VHF, FM, transmitter/receiver site.

TUK NDB continued in operation until 1975, when the antenna tower, after nearly 20 years, capitulated to the fury of the elements. A storm swept in from the Atlantic with winds unhindered in their travels over the cold waters. Unable to withstand the fury, the tower collapsed. The FAA (Feder-

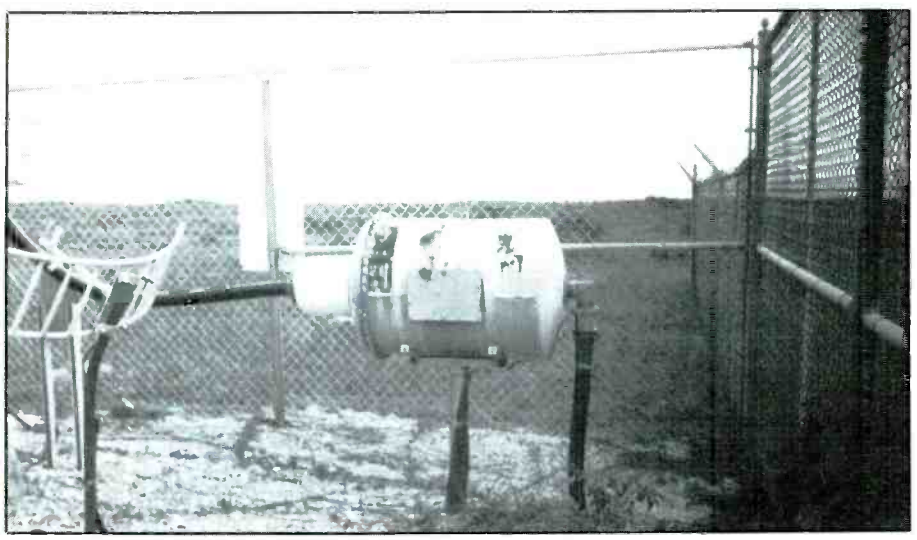


Fig. 7- Isocoupler used to couple FM antenna on top of TUK antenna to transmitter. It isolates tower from ground and FM transmitter, and prevents interreaction of FM signals and TUK's signals.

al Aviation Administration) decommissioned the facility. The receipt of letters, from the flying and boating public who used the facility was overwhelming. After discussion and public hearings the decision was made to rebuild the facility. Rebuilt at the old Master site location near Maddaket the new facility had a tower height of 325 feet, new Nautel type NX 16000BA/D transmitters (capable of 4000 watts output but currently run at a conservative level of 2000 watts). Once again the familiar signals were heard on 194 kHz, -..-..-.- (TUK).

Later when a commercial FM station was being established on the island, space was leased at the top of the antenna tower for their antenna. This increased the tower height to 405 feet. Studio to transmitter link system antennas were also mounted on the tower. With the high RF voltage generated by the low frequency, high power and short antenna, special methods were necessary to connect the FM station's antenna to their equipment on the ground. An Isocoupler was used for the main transmitter. An unusual system was used for the others. Signals from the tower mounted antennas were brought to the base of the tower by coaxial cable. There they were connected to a dipole backed by a parabolic reflector. A similar dipole backed by a parabolic reflector was mounted on the ground close to, but separated sufficiently to prevent arc over. The tight coupling of the two dipoles together with the high gain from the parabolic reflectors, results in little signal loss. See pictures for a better idea of how the system is arranged. The ground Dipoles connect to equipment in the transmitter building.

In a desire to improve service offered by the FAA to the flying public ATIS was added. ATIS (Automated Terminal Information Service) provides weather information at selected airports in the New England area (and Atlanta), by means of tape recorded, voice transmissions. This information is updated at least hourly, oftener when conditions warrant. These broadcasts provide valuable information on current weather not only to the pilots, but also to fishing, yachting, and general public listeners.

With its excellent location, high power, and clear channel the TUK radio beacon is widely received. Why don't you tune up your receiver and listen to its strong signal. 194 kHz, TUK, Nantucket Island, MA. Reception reports can be sent to:

Federal Aviation Administration
AFSFU-2222
Tower Building Room 204
Nantucket Memorial Airport
Nantucket, Massachusetts 02550

A stamped, self-addressed envelope would be appreciated. PC

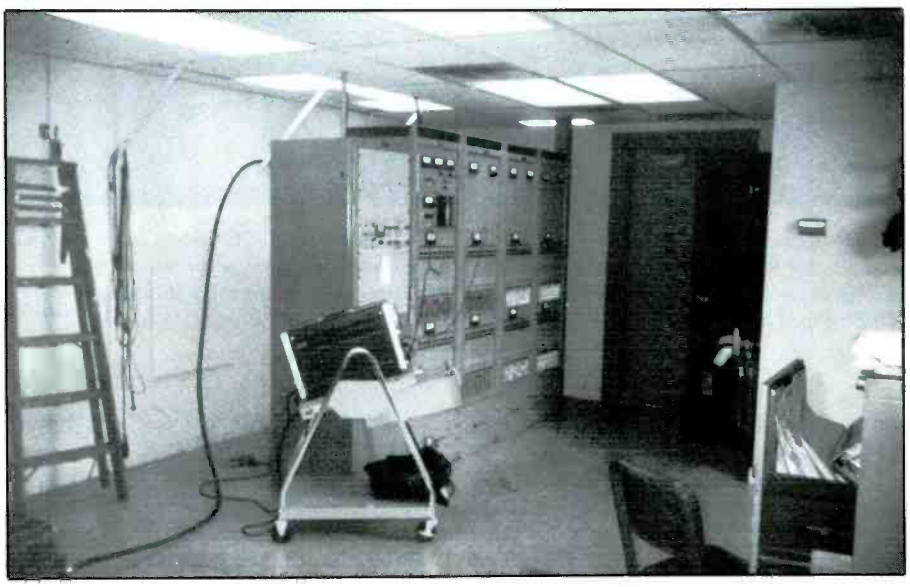


Fig. 8- Interior of TUK's transmitter building showing Nautel transmitters.

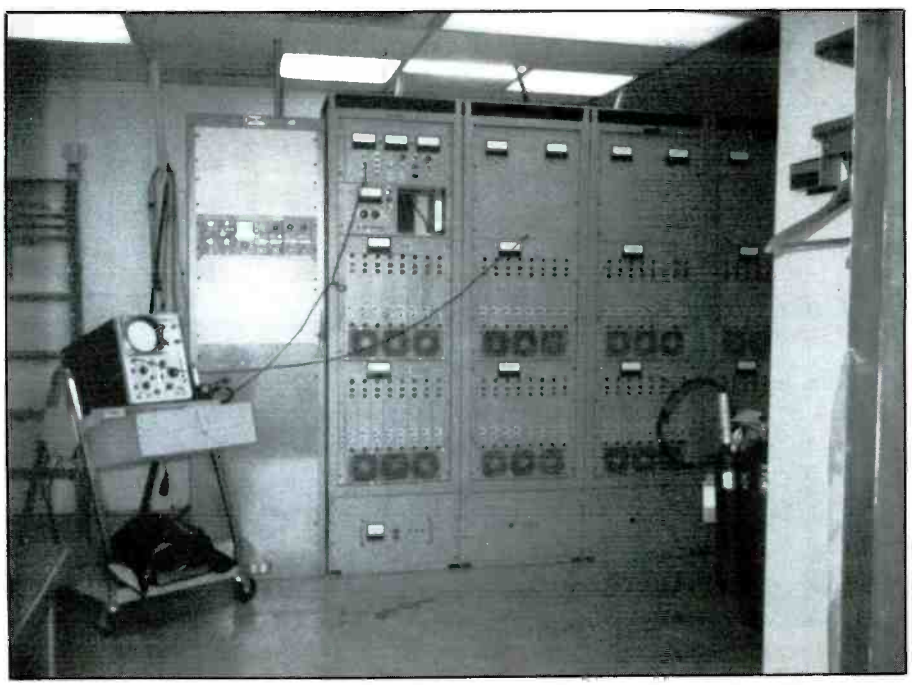
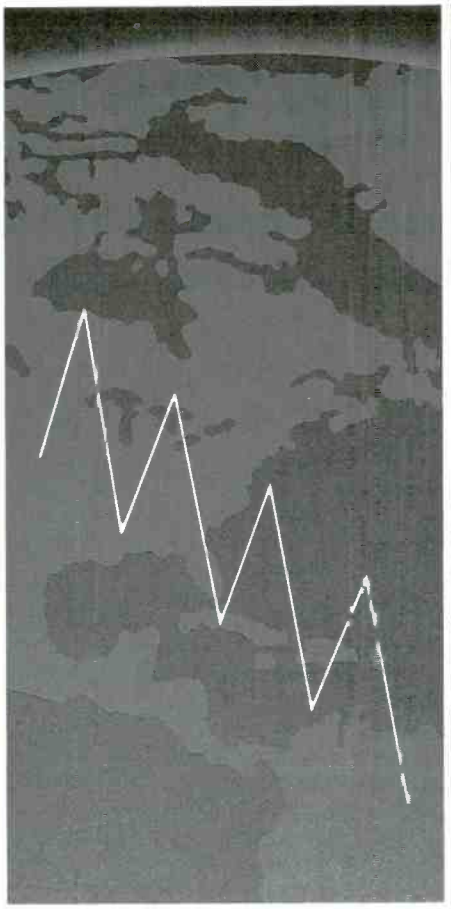
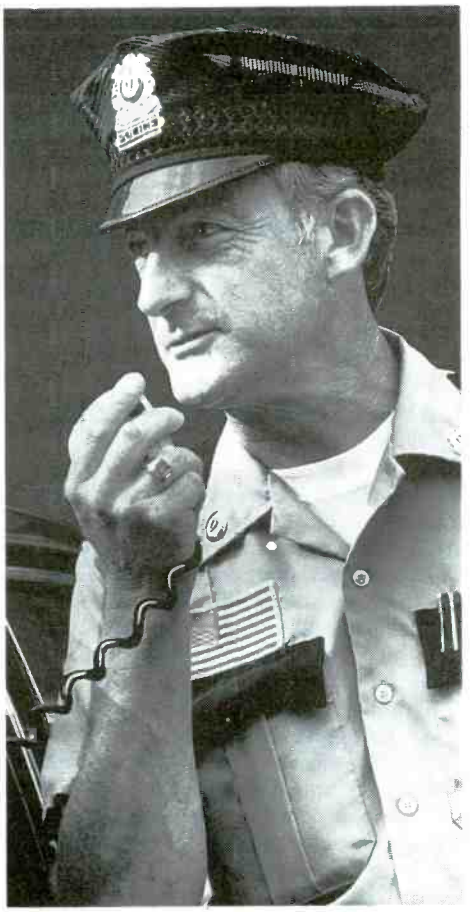


Fig. 9- Interior of transmitter building showing Nautel transmitters and ancillary equipment rack.





REALISTIC®—THE FIRST NAME IN COMMUNICATIONS EXCITEMENT

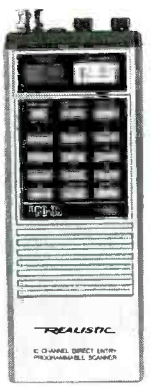
Famous for Quality At Affordable Prices

Your nearby Radio Shack offers a wide selection of quality communications equipment and a complete line of accessories.

For Hams, there's our popular HTX-100 mobile 10-meter Amateur Radio transceiver. This compact SSB/CW rig gives you a 10-frequency memory, handy mike-mounted tuning controls and switchable 25 or 5-watt output. Only $259.95

Our MTX-120 VHF marine handheld is a "must" for boating safety. It features switchable 1 or 5-watt output, full channel coverage and NOAA weather reception. High-capacity battery pack and an AC recharger are included. Only $259.95

You'll hear local news as it happens with our PRO-38 handheld scanner featuring 10-channel memory. PRO-38 covers 29 to 54, 136 to 174, and 406 to 512 MHz UHF. Only $139.95



Radio Shack has the performance-boosting antennas and accessories you need to increase your communications excitement. Come in today and join the millions who own and trust Realistic brand.

Prices apply at participating Radio Shack stores and dealers. You must have a valid FCC Amateur Radio License to legally transmit with the HTX-100. MTX-120 is positively NOT for land use; FCC license required. Mobile use of scanners may be unlawful in some areas or may require a permit.

CREATING NEW STANDARDS

PROVEN LEADERSHIP. Over 7000 USA locations, 39,000 employees, seven R&D centers, 31 USA and overseas manufacturing plants—*NOBODY COMPARES*

GUARANTEED SATISFACTION. Over 35 million customers benefit from our Satisfaction Guarantee. Putting you first made us #1 in electronics—*NOBODY COMPARES*

Radio Shack®
AMERICA'S TECHNOLOGY STORE℠

CIRCLE 75 ON READER SERVICE CARD

Scanning The CHiP's

Here's The Latest Update On The California Highway Patrol System

BY RICK MASLAU, KNY2GL

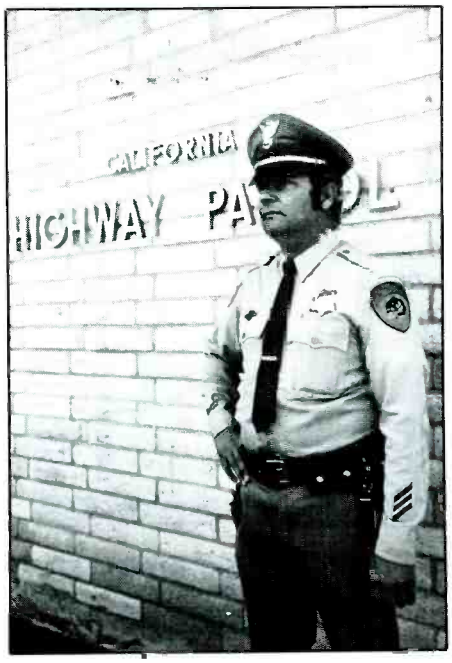
The California Highway Patrol is not only one of the largest law enforcement agencies in the nation, it is also the most well known. Of all of the mail that comes in to the *Popular Communications* offices requesting information about law enforcement frequencies, this agency has always been at or near the top of the popularity list.

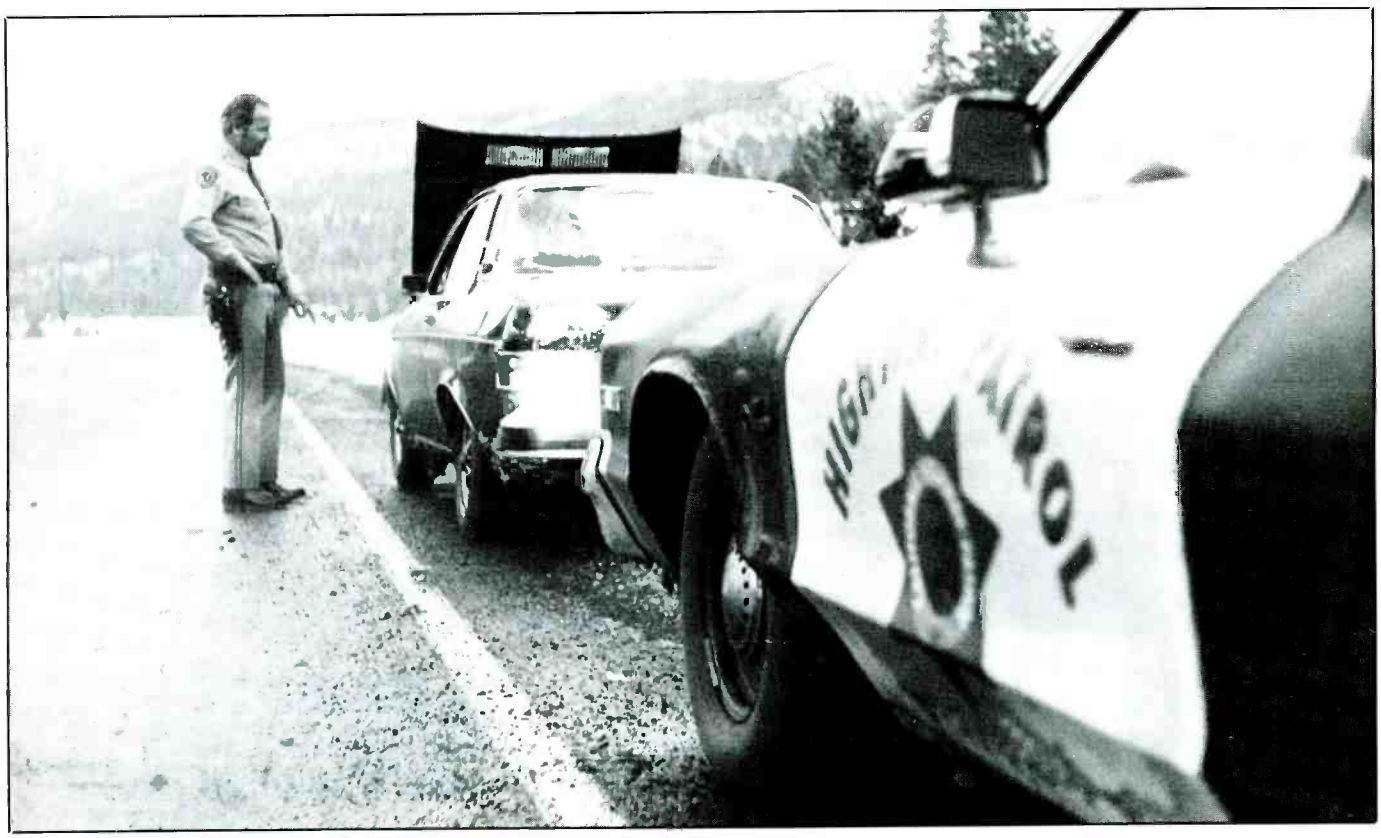
So, when reader Jan Lowry, of Hollywood, CA, sent us an updated listing of California Highway Patrol stations, we thought it would be something to share with our readers. Jan points out that the listing includes seven channel pairs that were put into service not long ago.

The CHP operates on channel pairs that are known by the names of colors. These are creatively organized from thirty two frequencies lying between 42.08 and 42.92 MHz, although some frequencies do double duty. For instance, 42.16 MHz is the mobile half of the *Purple* channel, but the base half of the *Violet* channel. The base side of *Purple*, which is 42.40 MHz, doubles as the mobile side of the *Bronze* channel. Frequency 42.60 MHz is the base half of two channels that are matched up with different mobile frequencies.

Frequency 42.36 MHz is allocated, but Jan tells us is held in reserve for future use. Channel *Ivory*, an old simplex frequency on 45.02 MHz, may possibly be obsolete at this point.

Jan goes on to note that each CHP base operates on a primary channel pair, as indicated in the chart here. Actually, the base is capable of receiving both frequencies in the pair, but it transmits on the base frequency. Cars can transmit on either channel in the pair assigned to the station with which they are affiliated, usually using the mobile channel to mountaintop receivers, and the base frequency for car-to-car and to local stations. Cars can also receive on either channel in their primary pair.





CHP Channel Usage

Division #I "Northern"

Alturas/60	Red
Garberville/105	Green
Crescent City/95	Green
Humboldt/16	Green
Lakeport/7	White
Mt. Shasta/52	Purple
Quincy/20	Blue
Red Bluff/36	Red
Redding/37	Red
Susanville/38	Blue
Trinity River/90	Red
Ukiah/18	White
Williams/39	Brown
Willows/93	Brown
Yreka/41	Purple

Division #II "Valley"

Auburn/45	Green
Chico/104	Brown
Gold Run/70	Gray
Grass Valley/42	Green
Jackson/94	White
Lake Valley/13	Grey
Modesto/48	Yellow
Oroville/35	Brown
Placerville/44	Green
Sacramento N./46	Gold
Sacramento S./112	Black
San Andreas/49	White
Sonora/61	Yellow
Stockton/62	White
Tracy/103	Yellow
Truckee/80	Grey
Woodland/47	Black
Yuba-Sutter/43	Brown

Division #III "Golden Gate"

Contra Costa/19	Maroon
Fairfield/22	Turqoise
Hayward/25	Aqua
Livermore/118	Blue
Marin-GG Br/34	Violet
Napa/21	Orange
Oakland/96	Bronze
Redwood Cy/91	Amber
San Francisco/32	Pink
San Jose/24	Ruby
Santa Rosa/17	Orange

Division #IV "Central"

Balersfield/69	Brown
Buttonwillow/117	Brown
Coalinga/88	Pink
Fresno/65	Silver
Hanford/68	Pink
Los Banos/30	Orange
Madera/66	Orange
Mariposa/63	Orange
Merced/64	Orange
Porterville/40	Pink
Visalia/67	Pink

Division #V "Southern"

Antelope Vly/89	Tan
Baldwin Park/81	Orange
Central LA/15	Black
East LA/82	Yellow
Glendale/98	Brown
Newhall/78	Tan
Ontario/84	Orange
Santa Fe Spgs/83	Gold
South LA/77	White
Tejon/102	Tan
West LA/79	Pink
Malibu/109	Pink
W. Valley/56	Brown

Division #VI "Border"

Banning/97	Red
Blythe/6	Red
Capistrano/113	Grey
El Cajon/108	Gold
El Centro/85	Blue
Indio/76	Red
Oceanside/92	Gold
Rancho CA/116	Gold
San Diego/87	Orange
Santa Ana/86	Purple
Westminster/55	Grey
Winterhaven/116	Green

Division #VII "Coastal"

Buellton/3	White
Goleta/29	Green
King City/8	Green
Salinas/27	Black
Sn Juan Bautista/23	Green
Sn Luis Obispo/28	White
Santa Cruz/26	Green
Santa Maria/14	White
Templeton/9	White
Ventura/31	Purple

Division #VIII "Inland"

Arrowhead/101	Copper
Barstow	White
Bishop/72	Blue
Bridgeport/71	Green
Mojave/59	White
Morongo Basin/106	White
Needles/114	White
Rancho CA/115	Gold
Riverside/74	Green
Sn Bernardino/75	Copper
Victorville/12	White

CHP Academy

Sacramento	Brown

The *Blue* channel is the common statewide secondary channel for all cars and stations. All units can operate on this channel.

Besides the generally high profile of the California Highway Patrol, scanner owners from coast to coast often know the agency's communications because they are so often picked up by skip reception because of the frequencies used. Here's an agency you can try to hear, no matter where you are. If the skip is rolling in, you might pick up CHP communications no matter where you are!

CHP officers have been heard from coast to coast, thanks to the benefits of skip propagation on their 42 MHz frequencies.

To a motorist having a problem on a remote mountain road, a CHP officer is a welcome sight. PC

CHP Channel Pairs

Color	Base	Mobile	Color	Base	Mobile
Amber	42.08	42.82	Orange	42.88	42.66
Aqua	42.62	42.84	Pink	42.44	42.76
Black	42.46	42.70	Purple	42.40	42.16
Blue	42.34	42.18	Red	42.44	42.28
Bronze	42.12	42.40	Ruby	42.50	42.28
Brown	42.50	42.82	Silver	42.08	42.28
Copper	42.60	42.74	Tan	42.42	42.84
Gold	42.12	42.20	Turqoise	42.60	42.14
Green	42.54	42.24	Violet	42.16	42.64
Grey	42.58	42.68	White	42.56	42.72
Ivory	45.02	45.02	Yellow	42.52	42.30
Maroon	42.92	42.74			

Scanning The VHF "Mid Band"

Wedged Between 2 TV Channels, It's The Strangest, Least Understood, & Least Explored Little Scanner Band Going!

BY CHUCK ROBERTSON

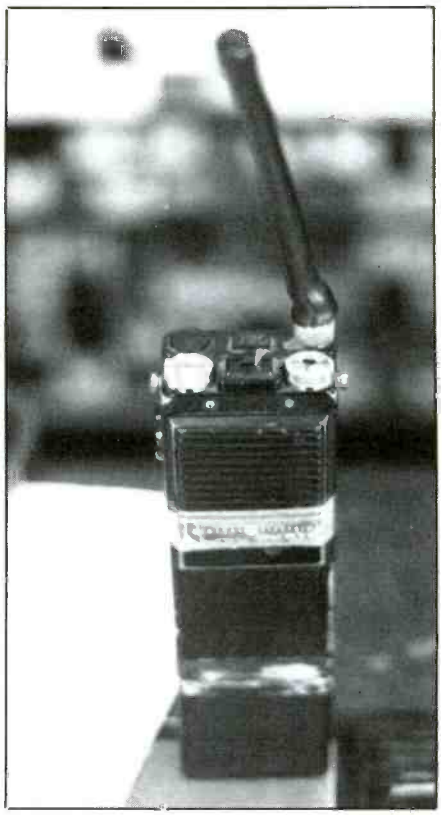
Strange things are happening between TV Channels 4 and 5, which shows up on the frequency charts as 72.00 to 76.00 MHz, and is usually known as the VHF mid band. Lying between the 30 to 50 MHz low band and the 150 to 174 MHz high band, the mid band may be small and virtually unknown, but that doesn't mean that it's not one of the most unique bands on tap. Better than that, recent FCC actions are making it even more worth your time to explore with your scanner— assuming your scanner can go there, as many can.

Mid band is overlooked by most scannists, and not all models of scanners include it in their coverage. If you have a PRO-2004, PRO-2005, PRO-2006, or several other scanners featuring wide frequency coverage, you're in luck. Well, whether or not you can presently tune there, there are things taking place in the Mid Band that you'll want to know about.

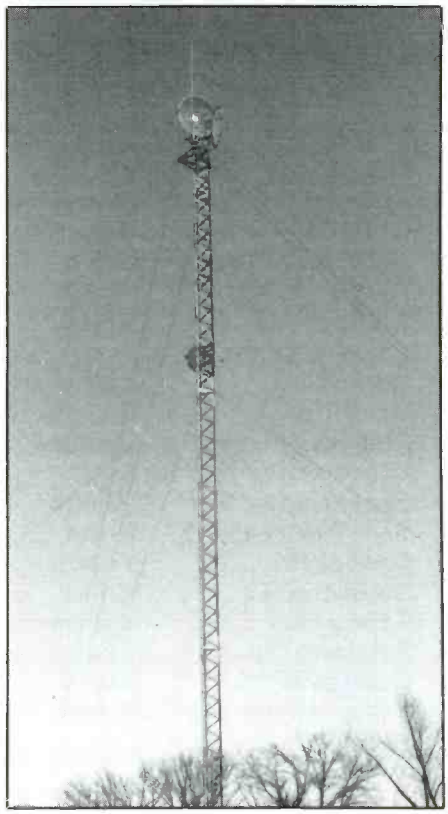
Federal agencies, virtually every type of industry and public safety service, share this band. Where else could you hope to find such an eclectic mix? About the only thing you won't find there are aircraft.

Handheld transceivers, mobile units, bases, and point-to-point systems are permitted here on any of the 78 "standard" frequencies shown in Table 1. Narrowband FM (NFM) mode is used for most voice transmissions, although military communications here are normally in wideband FM (WFM). Signals here are vertically polarized, as on other VHF communications bands.

Most multiband, low band, or high band antennas will perform suitably in this band, the main hurdle is having a scanner that will permit you to explore this strange, new dimension.



This very beat-up handheld transceiver operates on 75.88 MHz and is used by an auto supply store for their in-store comms.



A construction company rents space on this tower for their 43.12 MHz antenna. The office is linked to the tower on 75.72 MHz.

Feds on Mid Band?

Federal agencies here? You betcha! The new 7th Edition of Tom Kneitel's *Top Secret Registry of U.S. Government Radio Frequencies* lists some. Moreover, there are unconfirmed rumors of federal agency surveillance operations in this obscure band.

The military shows up between 72 and 76 MHz with voice, telemetry, and control signals. The 10th Mountain Division at Ft. Drum, NY has voice ops on 75.95 MHz. At White Sands Missile Range they run a telecommand mobile station on 75.64 MHz to operate Remote Piloted Vehicles (RPV's). The Army Rangers training school at Dahlonega, GA is reported to use 75.00 MHz for training. The 75.00 MHz frequency is also used by the FAA for "Outer Marker Beacon" radionavigational aids.

Military manpacks and mobile transceivers are often designed to operate with continuous WFM coverage from 30 to 76 MHz with 50 kHz spacing between channels. See Table 4.

Handy Handhelds

There are plenty of low-power (1 watt) handheld transceivers in this band. You'll find them used in retail stores, warehouses, on construction sites, farms, ranches, and at logging activities.

Picking up these flea-powered units takes

Table 1

Midband frequencies are allocated to aeronautical stations, businesses, public safety, special emergency, highway maintenance, forest products, press relay, local government, power, petroleum, maritime, special industry, manufacturers, railroads, taxicabs, urban transportation and federal agencies.

Channels marked by asterisks are used exclusively by railroads, special industry, manufacturers and forest products.

72.02	72.34	72.66	72.98	75.72
72.04	72.36	72.68	75.42	75.74
72.06	72.38	72.70	75.44*	75.76
72.08	72.40	72.72	75.46	75.78
72.10	72.42	72.74	75.48*	75.80
72.12	72.44*	72.76	75.50	75.82
72.14	72.46	72.78	75.52*	75.84
72.16	72.48*	72.80	75.54	75.86
72.18	72.50	72.82	75.56	75.88
72.20	72.52*	72.84	75.58	75.90
72.22	72.54	72.86	75.60*	75.92
72.24	72.56*	72.88	75.62	75.94
72.26	72.58	72.90	75.64	75.96
72.28	72.60*	72.92	75.66	75.98
72.30	72.62	72.94	75.68	
72.32	72.64	72.96	75.70	

Table 2

Auditory assistance devices are used at public gatherings. Channels with asterisks are wide-band FM. All others are narrow-band FM.

72.025	72.325	72.675	72.975	75.70*
72.075	72.375	72.70*	75.425	75.725
72.10*	72.425	72.725	75.475	75.775
72.125	72.475	72.775	75.50*	75.825
72.175	72.50*	72.825	75.525	75.875
72.225	72.525	72.875	75.775	75.90*
72.275	72.575	72.90*	75.625	75.925
72.30*	72.625	72.925	75.675	75.975

The SONY PRO-80 handheld scanner covers the mid band.

more effort than most scannists have had experience. It's easy to scan right past their feeble signals, so hearing them is a real challenge. Unless you've got a good outside antenna, above surrounding structures, you won't have much luck. With a good antenna, you'll pick up these signals from a few miles away.

In my own area, E. Blankenship & Co., an auto supply store in Marion, IL runs mid band handhelds on 75.88 MHz and I can copy them from a distance of 10 miles. In fact, they use this frequency at all of their many midwest outlets.

Several other two-way voice comms systems are also being logged, but I haven't yet been able to get any ID. They may be skipping in from distant areas. All part of the fun here!

Off The Track

You're probably familiar with railroad comms in the 160 to 161 MHz area of the spectrum. You may not know that railroads also use these frequencies for some train crew, base-to-train, and base-to-base communications.

Most of the time, handhelds and mobiles are used, and they are restricted to rail yards, terminals, shops, etc. Sometimes non-voice control tones are used to operate loading and other heavy equipment.

Next time you see a train crew member clutching a handheld, but you can't pick it up by searching the usual 160 to 161 MHz channels, track 'em down between 72 and 76 MHz!

How Are You Fixed For Signals?

This band is probably best known for its so-called Operational Fixed Stations. These provide relay, repeater, and control functions to assist stations owned by their licensees operating on other bands. These are operated by transportation companies, coastal stations, highway departments, local and state governments, aeronautical ground comms stations, construction companies, paging companies, and many businesses.

These are usually tied into the operations of VHF or UHF systems. For example, a police department relays their base comms on 72.02 MHz in order to get their headquarters to their remote transmitter site on top of a mountain 4 miles away. At the remote site on top of the mountain, a receiver picks up the signals and feeds them out through the agency's 42.60 MHz operating frequency so it can be picked up by the mobile units. The mobile units transmit on 42.68 MHz, and are received on top of the mountain where they are relayed back to headquarters on 75.98 MHz.

Fact is, many people report better reception on the mid band downlink relay frequency than by direct monitoring on the actual operating frequency of the mobile units. Little wonder, the mobile units are are at ground level and may be running 60 watts into a whip. The downlink mobile relay is on a mountaintop and running as much as 300 watts into a directional antenna!

Control stations send out tone signals in order to operate equipment such as cranes, switches, and loaders. Shipyards, steel refineries, and other heavy industrial operations are the prime users of such devices. Your automatic garage door opener is a micro example of a radio control circuit, so is a child's wireless remote controlled toy truck or car.

Radiopaging services are big users of mid band relays. The paging signals are sent by mid band link to a remote transmitter located on a tall building or tower, or on a mountain. From there, it is rebroadcast over a paging frequency, like 929.7875 MHz.

Callboxes turn up here, too, like the ones along highways used by motorists to summon police, ambulances, tow trucks, or fire apparatus. Not that this is the only band they used, but it's one of the bands. When the motorist pushes the appropriate button,

A highway callbox operating in the VHF mid band.

Table 3

Canadian cordless phone paired frequencies. Cordless phones with 46 MHz base/49 MHz handset pairing are also used widely in Canada.

Base	Handset
72.44	49.75
75.75	49.53
75.775	49.56
75.80	49.59
75.825	49.65
75.85	49.62
75.87	49.77
75.90	49.80
75.975	49.68

a short data burst goes out to a dispatch point where it reads out on a screen showing the location of the box and the type of assistance sought. The bursts go out every 10 seconds. Power is limited to 1 watt.

On The Beam

The frequency 75.00 MHz is allocated for land based Instrument Landing System (ILS) marker beacons that help aircraft land safely. These are low power (3 watts or less) transmitters usually located at several points along a runway approach. They are modulated with different tones and indicate the distance from the runway.

It was because of these marker beacons that there is a mid band. Before the present TV channels were allocated (in the 1940's), the marker beacons were already operating on 75.00 MHz. When the TV channels were established, a gap was left for their operation between TV Channels 4 and 5.

Mid Band Cordless Telephones?

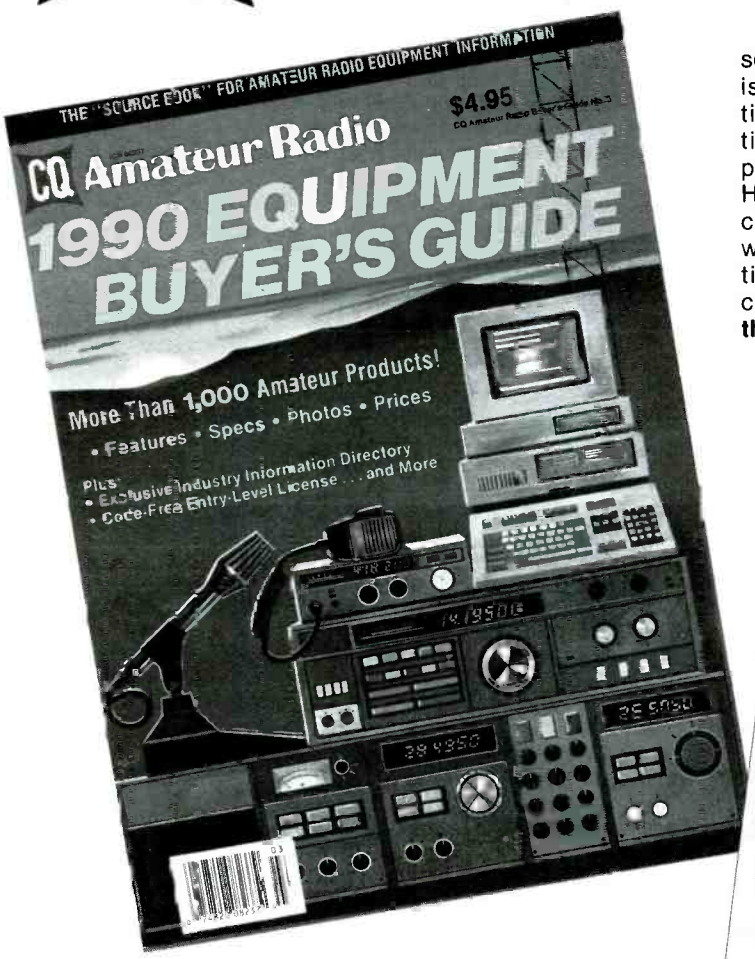
As various communications services began to fill in spectrum above and below the ILS beacon frequency, a guard band from 74.60 to 75.40 MHz was established to protect airborne receivers from picking up interference that could cause erroneous navigation readings. Recent improvements in receiver design have permitted this guard band to be cut in half and become 74.80 to 75.20 MHz. As of the beginning of this year, the two resultant sub-bands became 74.60 to 74.80 MHz, and 75.20 to 75.00 MHz. These are available for 1 watt operation.

At the present, I'm not sure which services will be allowed on these new bands, but cordless phone manufacturers have asked for them. If that idea is accepted, cordless phones and baby monitors could turn up there in the near future.

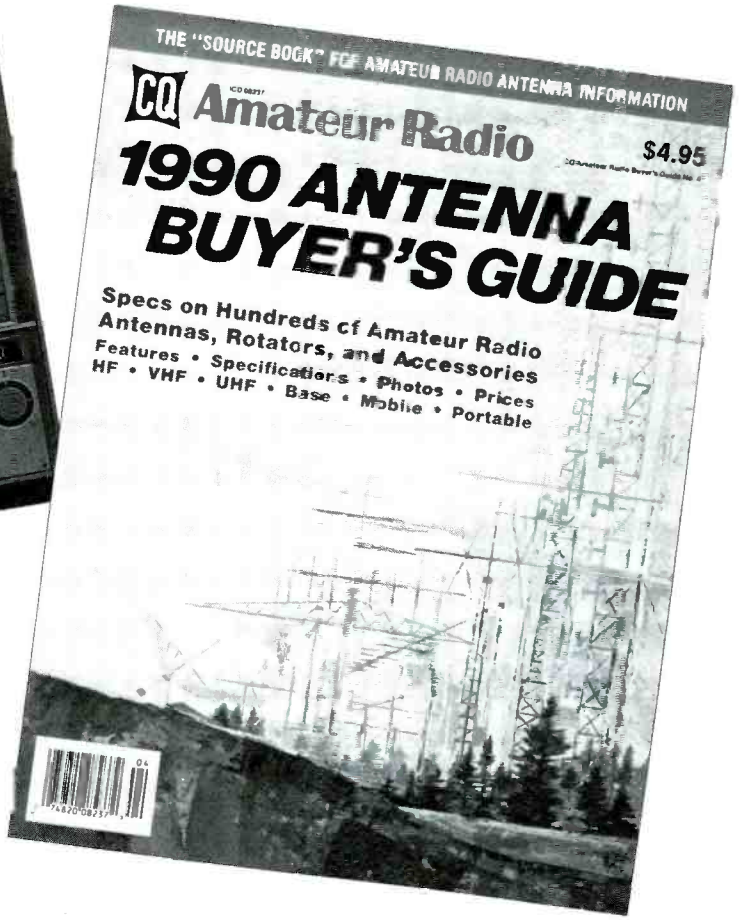
Hear Here

Auditory assistance devices for the hear-

CQ Amateur Radio
1990 Buyer's Guides



The **Equipment Buyer's Guide** gives you the edge in selecting just the right equipment for the shack, whether is be HF or VHF/UHF rigs or accessories. All the information is here in one handy, concise directory with descriptions, technical specifications, model numbers, retail prices and photographs. What do you do to get a license? How do you put a portable station on the air? What transceiver features are important to DXers? What equipment will you need for the new code-free license? These questions and more are answered in feature articles. Buy with confidence when you **make your decisions based on all the facts.**



You'll need the **Antenna Buyer's Guide** to squeeze every last dB out of your antenna dollars. Make sure you get the best possible antenna system for the best price! HF and VHF/UHF, directional and omnidirectional, vertical and horizontal, mobile and portable—they are all covered in depth. Tuners, cables, wattmeters and more! You'll find detailed charts, specifications, photos and retail prices. Advice on getting the proper tower and antenna permits from a leading authority on PRB-1. Step-by-step guide to putting up your first beam! The bands are hotter than ever right now. **You can't afford to wait.**

ORDER YOUR BUYER'S GUIDES TODAY!

Don't miss the most valuable buying guides in the Amateur Radio field!

YES, please send me _____ copies at $4.95 each:

☐ EQUIPMENT BUYER'S GUIDE
☐ ANTENNA BUYER'S GUIDE

Name _____ Call _____

Address _____

City _____ State _____ Zip _____

Send only **$4.95** each today. Foreign: $6. U.S. funds. ☐ Check ☐ Money Order

☐ MasterCard ☐ VISA ☐ Amex Card No. _____ Expires _____

Signature _____ (required on all charge orders)

Mail to: CQ Communications, Inc., 76 North Broadway, Hicksville, NY 11801/FAX: 516-681-2926

Table 4

Here are some selected midband allocations to check for. Voice and non-voice transmissions may be encountered.

72.02 Pro Electronics, Big Bear, CA.
Gulf Mobilephone, Mobile, AL. Also 72.58 MHz.
Exxon, many locations including Gulf of Mexico. Also 72.06, 72.14, 75.46, 75.50 and 75.58 MHz.
Kansas State Police, Wichita, KS. Also 72.06, 72.14, 72.24, 72.34, 72.36, and 75.66 MHz.
North Carolina State Police, Greenville, NC.
Tennessee State Police, Memphis.
Alaska Airlines, WA. Also 72.14 and 72.38 MHz.
Wyoming State Conservation Police, Rawlings, WY.

72.04 Mulzer Crushed Stone, Evansville, IN.

72.06 Electric Engineering, Des Moines, IA.
Mississippi State local gov't., Jackson. Also 75.98 MHz.
Morven Freight Lines, Charlotte, NC.
Darwin Ranch, Jackson, WY. Also 72.08, 75.58 and 75.96 MHz.

72.08 General Oil Field Surveys, Evansville, IN.
White Sands Missile Range, NM. Also 72.16, 72.24, 72.32, 72.40, 72.96 and 75.64 MHz.
Mellow Truck Express, Portland, OR. Also 75.46 MHz.

72.10 Alaska State Police, Fairbanks. Also 72.18 MHz.
Dodge City Police, Dodge City, KS. Also 75.42 MHz.
North Carolina State Police, Fayetteville, NC.
Dept. of Energy, Albuquerque, NM. Also 72.18, 72.26 MHz.

72.12 Hoaglands Transport, Mount Ballio, CA.

72.14 Wyoming State Conservation Police, Sundance, WY.

72.16 National Film Board, Canada. Used nation-wide. Also 72.85, 75.52 and 75.96 MHz.

72.18 American Mobilephone, Birmingham, AL. Also 72.68 MHz.
Newport News Shipbuilding, Newport News, VA. Also 72.36, 72.38, 72.40, 72.42, 72.44, 72.48, 72.56, 72.60, 72.66, 72.80, 75.44, 75.52, 75.56, 75.60, 75.80, 75.84, 75.86 and 75.90 MHz.
Kings Avionics, Casper, WY. Also 75.98 MHz.

72.22 Security Experts, London, KY. See 75.72 MHz.
City of Pawtucket local gov't., RI.

72.24 Dept. of Energy, Stanford, CA. Also 72.38, 72.44 and 72.55 MHz.
Mecklenburg Co. local gov't., NC.
Wright-Patterson AFB, Dayton, OH.

72.26 Sherwood Construction Co., Wichita, KS. Also 72.58 MHz.
North Carolina State Police, Elizabeth City, NC. Also 72.88 MHz.
City of East Providence local gov't., RI.

72.28 South Florida Express, Princeton, FL. Also 75.64 MHz, West Palm Beach, and 75.84 MHz, Miami.
Nebraska State Highway Dept., Lincoln, NB.

72.30 Moultrie County Police, IL.
Mahoning Valley Rail Road, Ohio. Also 72.32, 72.34, 72.36, 75.56, 75.60 MHz.
McChord AFB, WA. Also 72.70 MHz.

72.32 Cuyahoga Valley Railroad, Ohio. Also 72.34, 72.36, 72.38, 72.40, 72.52 and 72.60 MHz.
Oregon Health Services, Portland, OR.

72.34 Tug Communications, Anchorage, AK.
Federal Express Corp., TN.

72.38 Expo Stucco, Inc., San Diego, CA.

72.40 Environmental Protection Agency, Phoenix, AZ, Tampa, FL, Las Vegas, NV. Also 75.64 MHz.
Kansas City Southern Railroad, LA. Also 72.44, 72.56 and 72.60 MHz.
State Police, Rochester, MN. Also 72.82 MHz.
National Oceanic and Atmospheric Administration, Oakridge, TN.

72.42 State of Alabama local gov't., Montgomery, AL.
McKays Truck Line, Portland, OR.

72.44 Atchison, Topeka & Santa Fe, CA. Also 72.52, 72.60, 75.44 and 75.52 MHz.
CSX Transportation (Railroad), GA. Also 72.60 and 75.44 MHz.
Union Pacific Railroad, ID. Also 72.48 MHz.
Missouri Pacific Railroad, MO. Also 72.48, 72.52, 72.56, 75.44, 75.52, 75.56 and 75.60 MHz.
Burlington Northern Railroad, ND. Also 72.48, 72.52, 72.56, 72.60, 75.44, 75.48 and 75.60 MHz.
Norfolk & Western Railroad, VA. Also 72.48 MHz.

72.46 Tenneco, Gulf of Mexico.
Mobile Radio Telephone, Kalamazoo, MI.
City of Madison, WI.

72.48 Missouri Railroad, AR.
Atchison, Topeka and Santa Fe Railroad, KS. Also 72.52, 72.56, 75.44 and 75.52 MHz.
Georgetown Railroad, TX. Also 72.56 MHz.
Union Pacific Railroad, WY. Also 72.56 MHz.

72.50 American Mobilephone, Huntsville, AL.
City of Fresno local gov't., CA.
Kendall Drilling Company, Evansville, IN.

72.52 Inland Steel (train crew), E. Chicago, IL.
Arnaud Railroad, Pte Noir, Quebec.

72.54 West Virginia State Highway Dept., Huntington, WV.

72.56 M.C. Mobile Telephone, Epson, NH.
Grand Trunk Railroad, MN.
Canadair, St. Laurent, Quebec
Masteller Coal Company, WV.

72.58 City of Long Beach local gov't., CA.
Huntington County Police, IN.

ing impaired use special mid band frequencies with 25 kHz channel spacing. You'd find these no-license low-power devices in use at public gatherings like churches, theatres, auditoriums, educational institutions, and the like. See Table 2 for these frequencies.

Be A Star!

The 73.00 to 74.60 MHz part of the band is set aside for Radio Astronomy monitoring, so very few terrestrial transmissions are to be heard there. Fixed stations that were licensed prior to 1961 can continue to use these frequencies, and some stations still have valid licenses going back that far. But such old stations are drifting out of commission and no new licenses are being given out here. You might still hear the IL State Police at Kingston on 74.14 MHz, or the VA State Conservation Police at Charleston on 74.58 MHz.

Security alarms are allowed to use 73.00 to 74.59 MHz band (any frequency). These include radio controlled fire and break-in alarms. Some garage door openers are here, too. The FCC isn't allowing the importation or manufacture of any more of these devices for these frequencies after mid-October of this year. Wouldn't want to confuse the *beep* from a garage door opener with some cosmic snap, crackle, or pop from the Big Bang.

Kid Stuff?

Radio Control (R/C) devices used to operate toys and games are set up on frequencies 10 kHz offset from the mid band channels shown in Table 1. Look for them on frequencies like 72.01, 72.03 MHz. The fifty channels from 72.01 to 72.99 MHz are for model aircraft use exclusively. The thirty channels from 75.41 to 75.99 MHz are designated for games and surface models. Power is .75 watts.

Originally, R/C equipment used 72.08, 72.16, 72.24, 72.32, 72.40, and 75.6 MHz, but the FCC withdrew them from RC use more than three years ago. No new R/C equipment can be manufactured or sold for those frequencies, although there may still be some older gear still in operation.

If you live near a large park, pond, or other gathering place for R/C fans, you should try listening for these control tones just about any sunny Sunday afternoon between May and November.

The Big Picture

With few exceptions, Canada uses this band the same way it is set up in the U.S. Any military stations will be found in the 72 to 73 MHz portion, with 100 kHz channel separation. Cordless phones operate with pedestals on 75 MHz and the handsets on 49 MHz. Check the wireless microphone frequencies between 72 and 76 MHz for possible undercover surveillance operations that have been reported in Canada.

City of Salem local gov't., OR. Also 72.76 MHz.
72.60 Burlington Southern Railroad, AL. Also 75.60 MHz.
City of Middleton Fire Dept., NY.
Georgia Pacific Corp., WA.
72.62 West Virginia State Police, Charleston, WV
72.64 DeWitt County Police, IL.
City of Canton Fire Dept., Ohio. Also 75.96 MHz.
Dept. of Energy, Hanford nuclear enrichment works, WA.
72.66 City of Louisville local gov't., KY.
State of Oregon special emergency, Portland, OR.
Philadelphia Parking Authority, PA. Also 72.70 and 72.74 MHz.
City of Richland local gov't., WA.
72.68 Lake County Police, MN. Also 75.64 and 75.68 MHz.
City of Newport News local gov't., VA.
72.70 City of Elmhurst, IL.
City of Lewiston local gov't., MN.
72.72 City of Citrus Heights Fire Dept., CA.
72.76 Mt. Carmel Sand & Gravel, Mount Carmel, IL. Also 75.76 MHz.
Hydroelectric ops, Ontario-wide
City of Bellingham local gov't., WA.
72.78 Underground Construction, Vacaville, CA.
City of Orlando local gov't., FL.
City of North Tonawanda local gov't., NY
72.80 Elmendorf AFB, AK.
Dolphin County Fire, PA.
72.82 City of Biddeford local gov't., MN.
City of Billings local gov't., MT.
Medical Society of Milwaukee, WI.
72.84 North Carolina State Police, Wilmington, NC. Also 75.50 MHz.
City of Walla Walla local gov't., WA.
72.86 City of East St. Louis local gov't., IL.
72.88 City of Navato Fire, CA.
Columbus Tractor & Machinery, Columbus, OH.
City of Tulsa local gov't., OK.
72.90 Arcata Redwood Co., Eureka, CA.
Gulf Oil, Gulf of Mexico
72.92 Williams Transportation, Claremont, CA.
Perdue Farms, Salisbury, MD. Also 75.92 MHz.
State Police, Duluth, MN. Also 72.94, 72.98, 75.74 & 75.80 MHz.
City of Manchester local gov't., NH.
City of Springfield local gov't., OR.
72.94 Mobil Oil, Gulf of Mexico
North Carolina State Police, Greensboro, NC.
North Carolina State Police, Greensboro, NC.
72.96 Emergency Radio Service, Fort Wayne, IN.
72.98 Atlantic City Expressway callboxes, NJ.
City of Portland local gov't., OR. Also 75.24 MHz.
75.42 Wiltec Guam, Inc., Guam
Grant County Police, WV.
75.44 Northwest Airlines, NY. Also 75.56 MHz.
Long Island Railroad, NY. Also 75.60 MHz.
75.46 Antelope Valley Bus Service, Lancaster CA. Also other locations in CA. National Oceanic and Atmospheric Administration, Boulder, CO.
Eastern Nebraska Ambulance Service, Omaha, NB.
75.48 Quebec Cartier Mines, Port Cartier, Quebec.
75.50 Navy, Point Reyes, CA. San Francisco area.
Navy, Nanakuli, Oahu, HI.
Brooks AFB, Fort Worth, TX.
75.54 Parkland Hospital, Dallas, TX. Also 75.68 and 75.70 MHz.
75.58 Union Oil Co., Gulf of Mexico.
Macon County Police, IL.
75.60 Paducah & Louisville Railroad, KY.
75.62 Humbolt County Fire, CA.
Sonoma County Police, CA.
Withers Communications Co., Cape Girardeu, MO. Also 75.66 MHz.
75.66 South Shore Radio Telephone, La Porte & Osceola, IN.
Consolidated Freight, Harrisburg, PA.
75.68 Monterey County Police, Big Sur, CA.
75.70 Mobil Oil, Gulf of Mexico
75.72 ET Simonds Construction Co., Southern Illinois
Security Experts, Hazard, KY.
City of Baton Rouge local gov't., LA.
City of Rochester local gov't., NY.
75.74 City of Fort Wayne Fire Dept., IN.
75.76 North Central Fire Dist., Fresno, CA.
American Red Cross, OK.
75.78 State of Florida local gov't., Fort Lauderdale, FL.
75.80 Riverside Fire Dept., CA.
75.84 Sullivan Transportation, Springfield, MA.
Springfield AAA of America, Dayton, OH. Relays 150.965 MHz.
75.86 Eastern Nebraska Ambulance Service, Lincoln, NB.
75.88 E. Blankenship & Co., several stores in midwest.
Tennessee State Police, several locations. Also 75.96 MHz.
75.90 California Highway Dept., Bakersfield, CA.
Gulf Oil, Gulf of Mexico.
West Virginia State Police, Martinsburg, WV. Also 75.98 MHz.
75.92 Construction Service, Chicopee, MA.
Mobile Phone of Texas, Abilene area, TX.
75.96 Fulton County local gov't., IL.
75.98 Hoaglands Transport, Modesto, CA.

In most of Central America, South America, and the Caribbean, the entire 72 to 76 MHz band (except the 74.80 to 75.20 MHz ILS guard band) is used for land mobile comms.

Elsewhere in the world, TV broadcast allocations are different from those in the Americas, and there is no mid band, as such. In Europe, the VHF low band is 68 to 88 MHz. Recent rule changes even allow the 75 MHz ILS guard band to be used in Europe for land mobile comms on a non-interference basis.

I told you this band was an odd mix of stations. Now, see what you can discover there within range of your station. Maybe you'd like to drop me a report on the results you've had on your safari to the exotic mid band. If there is sufficient response and interest, we'll combine the information readers submit and revisit the band in print in a future issue. Write to me in care of *Popular Communications*. PC

Radio of Yesteryear

Radio, From Its Earliest Days, Through Its Golden Era

BY ALICE BRANNIGAN

On April 12, 1922, Chicago station WGU first went on the air with regular programming after a month of testing. Jointly owned by the *Fair Store* and the *Chicago Daily News*, WGU was located in the *Fair Store*, with its antenna on the roof. The station operated on 833 kHz with a 100 watt transmitter, but all was not well.

WGU ran into technical problems right from the start, mostly related to being on crowded 833 kHz and surrounded by a cluster of tall buildings. Within six months, WGU shifted to 750 kHz (a clear channel) and installed a new 500 watt transmitter. That solved the technical problems, and the image of being a station with a weak signal was shed when new call letters were assigned, WMAQ. Ed Wynn guested on WMAQ's inaugural broadcast.

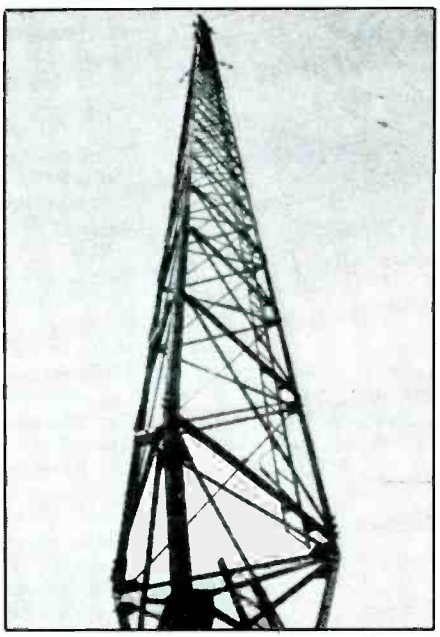
On 27 May, 1923, the *Daily News* bought out the 51% *Fair* interest in WMAQ and changed the station's frequency to 670 kHz. The station was enormously popular and was pioneering in several areas, having presented the first education series, the first music appreciation series, and the first children's series. Moving to 670 kHz meant sharing the frequency with station WQJ. Another change was the station's location; it moved into the LaSalle Hotel. By July of 1923, WMAQ began carrying the programs of the old AT&T network.

In 1925, WMAQ broadcast the first daily play-by-play baseball, and the first college football.

The popularity of WMAQ had, by 1927, grown to the point where the station felt constrained by co-channel WQJ. The solution was to buy out WQJ and merge it into the WMAQ operation. January of 1927 saw WMAQ affiliate with NBC, but in September of the same year the station joined CBS. Getting the important station back in the NBC stable meant NBC's purchase of WMAQ, which it did on August 27, 1931. Within seven months, WMAQ was relocated into the Merchandise Mart.

In September of 1935, WMAQ began operating with 50 kW from a 400 ft. tower located at Bloomingdale, 25 miles west of Chicago. Later the transmitter was moved to Elmhurst, IL.

Ute monitors will be interested in knowing that in 1928, WMAQ was the first station to broadcast a trans-Atlantic telephone conversation. Many major radio stars got their start over the WMAQ microphones, including: Amos n' Andy, Dave Garroway, Garry Moore, Hugh Downs, Red Skelton, Fibber McGee and Molly, The Great Gildersleve (Harold Peary), The Singing Lady (Irene Wicker), and Don Ameche.



The 400 ft. WMAQ tower installed at Bloomingdale, IL in 1935.

WMAQ is still located in the Merchandise Mart, and remains on 670 kHz with its 50 kW signal. Now it's owned by Group W Radio and runs an all news format. The former FM affiliate evolved from pre-WWII FM station W63C on 46.30 MHz and went on to 101.1 MHz as WMAQ-FM in 1948. The station is now known as WKQX-FM and is owned by Emmis Broadcasting. It plays the Top 40.

Tower of Power?

An unusual picture postcard was sent in by H. K. Waka, of Oakland, CA. As with many of the items submitted, it was rescued from a flea market. This is a very old card showing a tall lattice tower standing on an intersection of Santa Clara Street, San Jose, CA. The tower, which looks to be at least 125 ft. tall, is so large at the base that each of its legs sits on a different corner of a major "T" shaped downtown intersection.

The card is undated, but shows plenty of horse-drawn vehicles and no automobiles. A trolley runs along Santa Clara Street, right under the tower. A clothing store called *L. Hart & Co.* is located in the building at the extreme lower left foreground. The only caption on the card describes the structure with the term "Electric Tower." The peak of the tower has a globe-like structure from which a 6 to 10 ft. mast protects.

Mr. Waka advises that the proprietor of the flea market booth thought that the view may show a very early wireless experiment conducted by a local character who set up the first broadcasting station in San Jose.

When I saw the card, I immediately recalled a view of a similar tower (we ran photos here in March and August last year) that was once erected at a major intersection in Troy, OH as a war memorial. That tower was not used for wireless purposes, and the one in San Jose was most likely not used for wireless, either. The mast at the top was probably a lightning rod.

The story about the "local character who set up the first broadcasting station" undoubtedly relates to San Jose's Dr. Charles D. Herrold. In January of 1909, he set up a 15 watt spark transmitter, but by 1912 he was conducting two-way voice communications. By 1915 the station was broadcasting a regular schedule of musical programs from San Jose to special receivers at the Panama Pacific Exposition in San Francisco. Herrold's callsigns were 6XE and 6XF, and when commercial broadcasting became authorized his station became KQW on 833 kHz, from 467 South 1st Street, in San Jose. KQW was licensed on December 9th, 1921.

This was the first broadcaster in San Jose. Being that Herrold's experimental broadcasts predated those of Dr. Frank Conrad (of 8XK/KDKA) in August, 1916, there are broadcast historians who feel that his station was actually the first broadcasting station in the world. San Francisco's KCBS (740 kHz/50 kW) is the current heir to the KQW heritage, and they proudly list their starting date as 1909 to denote their roots going back to Dr. Charles Herrold's early experiments.

However, I wince at the term "local character" being applied to Herrold, who was a respected scientist and true broadcast pioneer. Also, his early equipment was all homebrewed and rather humble. The magnificent San Jose "Electric Tower," seems far beyond the realities of his small operations. Still, I can appreciate how, from an

NATIONAL BROADCASTING COMPANY, INC.

MERCHANDISE MART

CHICAGO

December 19th 1932.

Mr. Joseph Hueter
1722 N 18th St.,
Philadelphia, Pa.

My dear Mr. Hueter:-

We take pleasure in verifying your reception of Johnny Maitland and his orchestra from the Via Lago Cafe broadcast on December 6th at 1:30 AM EST through station WMAQ.

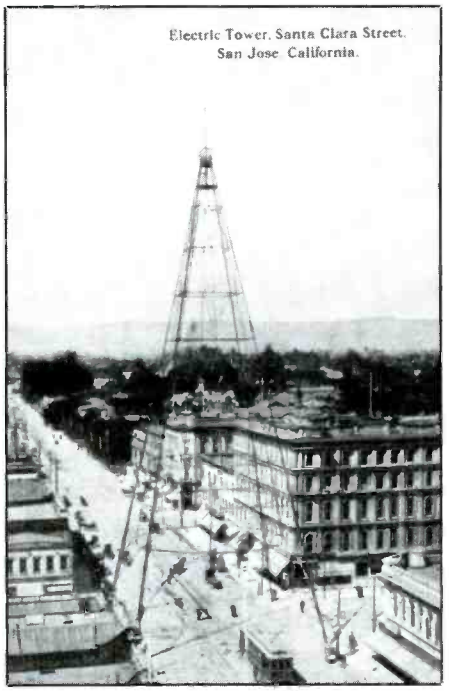
Your courtesy in writing to us, Mr. Hueter, is sincerely appreciated.

Very truly yours,

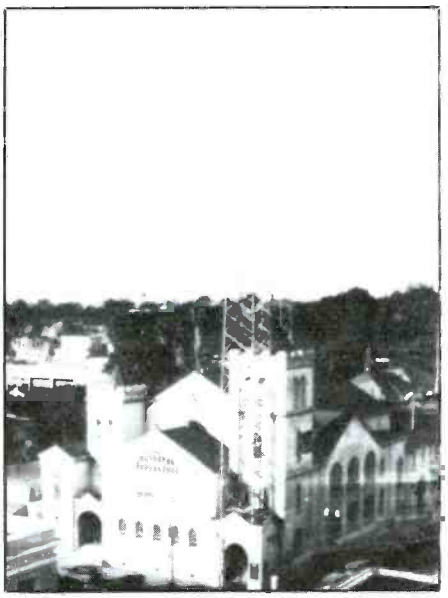
RADIO STATION WMAQ

A.K. DINKELOO

A 1932 veri letter from WMAQ displays an NBC letterhead. (Courtesy Joe Hueter, Philadelphia, PA.)



This very old, undated postcard depicts an "electric tower" standing in the middle of an intersection in San Jose, CA. It sure looks like a wireless tower, but is that what it is? (Courtesy H.K. Waka, CA.)



Here's a shot of KQW taken in 1925 when it was located in the First Baptist Church of San Jose, CA.

old postcard, it might easily summon up images of once having been a part of early wireless work done in San Jose, even though the details are beginning to fuzz out with the passing years.

Whomever erected the tower shown on the postcard, they must have had noble purpose, enormous resources, and a friend at city hall. If any of our readers can tell us anything about this tower, please do so. Our guess is that it must have been festooned with light bulbs and possibly used by the local power utility for patriotic purposes and/or to dazzle the public with the idea of replacing gas lighting with electricity.

Another Flea Market Treasure!

Lonnie J. Keller, WA2AOG, of Elma, NY went to a flea market and picked up a 1936 QSL from NBC's experimental shortwave relay station W3XAL, 17780 kHz. Lonnie points out the quick response, with the reception date being January 2nd, and the QSL postmarked 18th January. These days, Lonnie, I think it takes almost that long to get the reception report sent through the mails to the station.

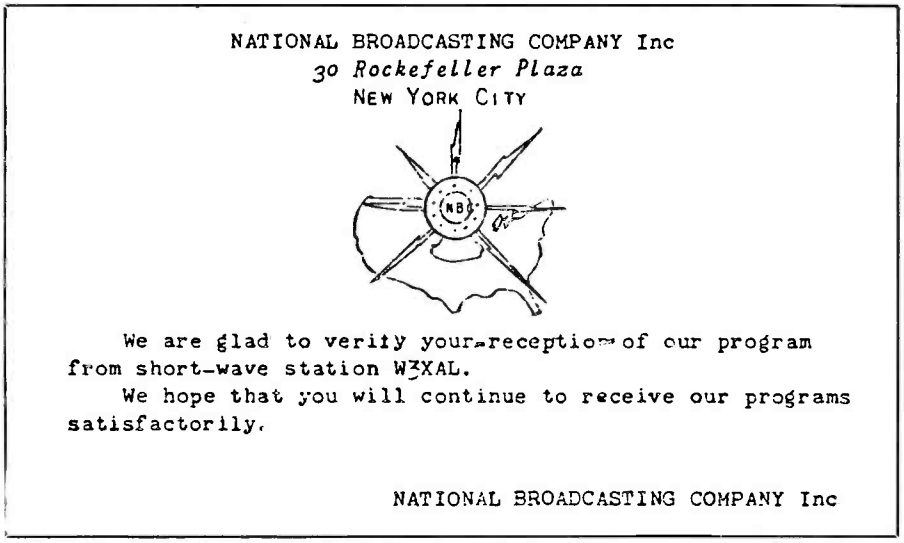
For the record, W3XAL was located in Bound Brook, NJ and relayed the programs of New York City's NBC Blue Network station WJZ (760 kHz/50 kW). W3XAL ran 14 kW on 17780 kHz, and had a 20 kW outlet on 6100 kHz. When the NBC Blue Network split away to form the ABC Network, WJZ was part of that arrangement. This station later became the present-day WABC on 770 kHz.

Laugh Was On Me

When Barbara Greenfield, of Dallas, TX sent us a postcard, she put in a little note that read only: "How'd you like to listen to the music of Harry Horlick and His A&P Gypsies coming to you from the starlight ballroom of the lovely Iroquois Hotel?"

This was pretty funny since the postcard showed a rather rickety old hotel with two late 1920's vehicles parked out front. On the roof of the four story building there were two dinky 10 ft. towers supporting a two-wire antenna system. The scene was captioned "Iroquois Hotel, Tupper Lake, N.Y." The thought of a starlight ballroom on this dump, or a radio station in it, was the laugh of the week. I pinned it to the bulletin board.

A few days later, someone came by and was looking at the card. They asked what WHDL was, since it was written in small letters on the street-level column at the far right supporting the second story veranda. That had escaped my notice completely.



NATIONAL BROADCASTING COMPANY Inc
30 Rockefeller Plaza
NEW YORK CITY

We are glad to verify your reception of our program from short-wave station W3XAL.

We hope that you will continue to receive our programs satisfactorily.

NATIONAL BROADCASTING COMPANY Inc

A flea market treasure! This 1936 QSL from shortwave relay W3XAL was a genuine "find." (Courtesy Lonnie J. Keller, WA2AOG, NY.)

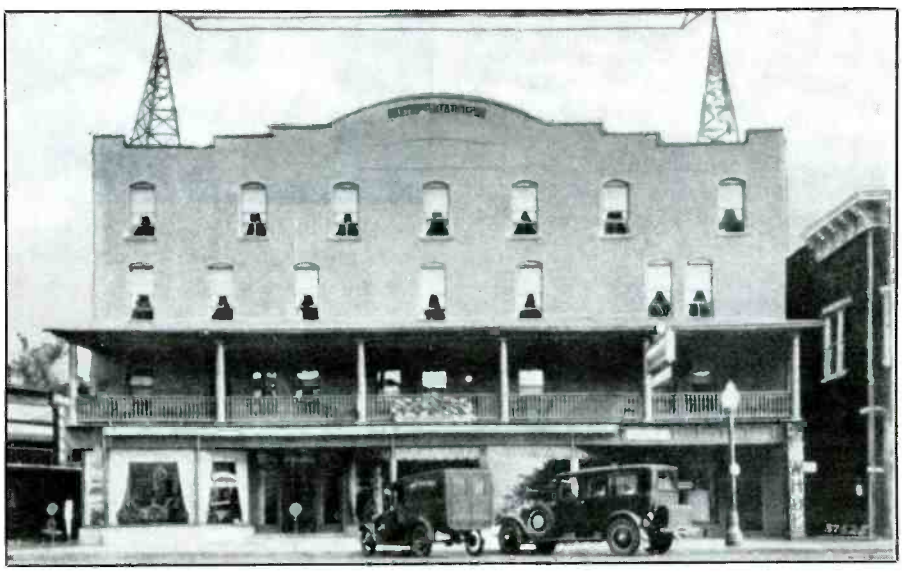
I don't know about a starlight ballroom, but there really was a radio station! This was one I just had to check out.

Tupper Lake, presently has a population of about 4,500. In 1930, some 3,000 souls lived in this trade center for the northwestern Adirondack Mountains area of New York, situated on the second largest Adirondack lake.

The principal industries were lumbering and the manufacture of wooden salad bowls. At the upper end of the lake there was an American Legion hospital. One mile from the village was the largest veterans hospital ever built, which cost $4-million after WWI. Tourism and visitors to the hospitals were what brought folks to Tupper Lake in this picturesque area.

That was the scene when George F. Bissell took out a license in 1928 for WHDL to run 10 watts on 1420 kHz. The WHDL signal was probably enough to cover the village, at least as far as the American Legion hospital to the north, and the summer colony at Moody, three miles to the south. And, he had hung out his shingle right on the main drag in front of the Iroquois, one of the town's most popular accommodations ("Rooms $1; Regular dinners and suppers in the Grill, 75 cents includes home-made pastry).

Obviously, Bissell's Tupper Lake Broadcasting was somewhat of a success, because within three years he had upped the power to 100 watts. And in late 1934, Bissell took his act to the big city of Olean, NY (population about 20,000), some 270 miles to the southwest. This was as distant a relocation of a broadcasting station as you're likely to see.



Would you believe that this rinkydink hotel was the home for a 10-watt broadcast station that started in 1928? The station, WHDL, is still on the air, but from a location 270 miles away, and now it runs a lot more power! (Courtesy Barbara Greenfield, TX.)

In the major frequency shuffle of the early 1940's, WHDL was moved to 1450 kHz, where it increased power to 250 watts. At that time its transmitting site was in Allegany, NY. WHDL is still in Olean, operating on 1450 kHz, but now it's running a 1 kW rig and an Adult Contemporary format. You can't get much further than that from 10 watts at the Tupper Lake Iroquois Hotel of 1928.

Hey, I laughed when I got my first look at WHDL's beginnings, but this station figured out how to grow from its original one-lung status, survive, and prosper for more than sixty years. No easy trick in the competitive world of broadcasting. The laugh, after all is said and done, is on me!

The present owners of WHDL, Arrow Communications, took over in August of 1989.

Close Encounters of The Worst Kind

A letter from Jim Hughes, of Mount Pleasant, MI brought us the sad news that one of the broadcasters that had hung in there since 1925 recently had some static of a most unhappy nature. That was WBCM, which began broadcasting in Bay City, MI all those many decades ago.

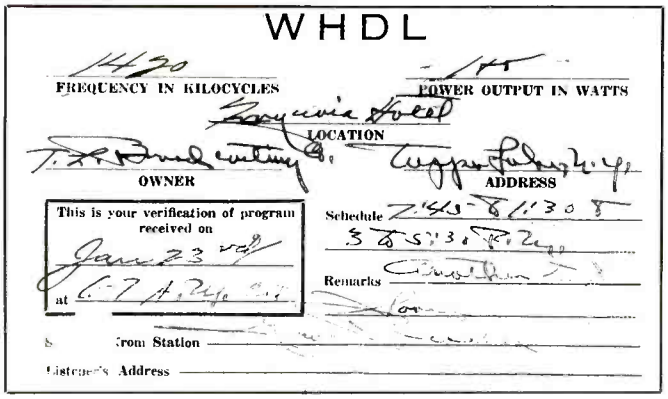
One day last May, five IRS agents walked in and seized all of WBCM's assets, claiming that the station owed withholding and Social Security taxes to the tune of $30,000-plus. This included the desks, microphones, studio equipment, transmitter, and even the antenna tower in Frankenlust Township. The station, which was located in the Davidson Building, naturally, went dark upon the IRS seizure. The IRS told everybody to go home, they shut off the lights, changed the locks, and that was that.

Plans were for the IRS to sell off the assets at public auction and apply the funds towards the federal lien. WBCM had the option to file for protection under Chapter 11, or else just come up with the funds. As this is being written, no decision had been reached as to the outcome.

WBCM started operation on June 5th, 1925 as WSKC, 1100 kHz/250 watts, as owned by the World's Star Knitting Co. In late 1928, it moved to 1410 kHz, but by 1930 had become WBCM under the ownership of James E. Davidson, who had moved the station to the Wenonah Hotel. The station soon increased its power to 500 watts, then went to 1440 kHz in the early 1940's. Eventually the station upped its power to 5 kW days, 2.5 kW nights. Until last November, WBCM had been running a religious rock music format, but it switched to a satellite-fed country music format.

Since 1987, WBCM has been owned by Kathi Broadcasting of Chicago, which also owns WNLF, Charlotte, NC. Let's hope this pioneer broadcaster is back in full swing by the time you read this.

Jim Hughes, who was kind enough to tell



WHDL

1420 — 100 watts

FREQUENCY IN KILOCYCLES — POWER OUTPUT IN WATTS

LOCATION

OWNER — ADDRESS

This is your verification of program received on

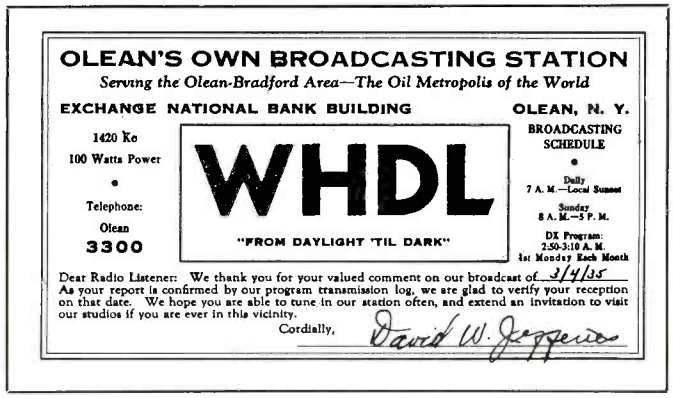
Schedule

Remarks

from Station

Listener's Address

A QSL from WHDL when it was in Tupper Lake, NY and had gone up to 100 watts. Note the generic QSL card bore the printed WHDL callsign, but all of the other info had to be filled in the blanks. Maybe they were already planning to move from Tupper Lake. (Courtesy Joe Hueter, PA).



OLEAN'S OWN BROADCASTING STATION

Serving the Olean-Bradford Area—The Oil Metropolis of the World

EXCHANGE NATIONAL BANK BUILDING — OLEAN, N. Y.

1420 Kc
100 Watts Power
Telephone: Olean 3300

WHDL

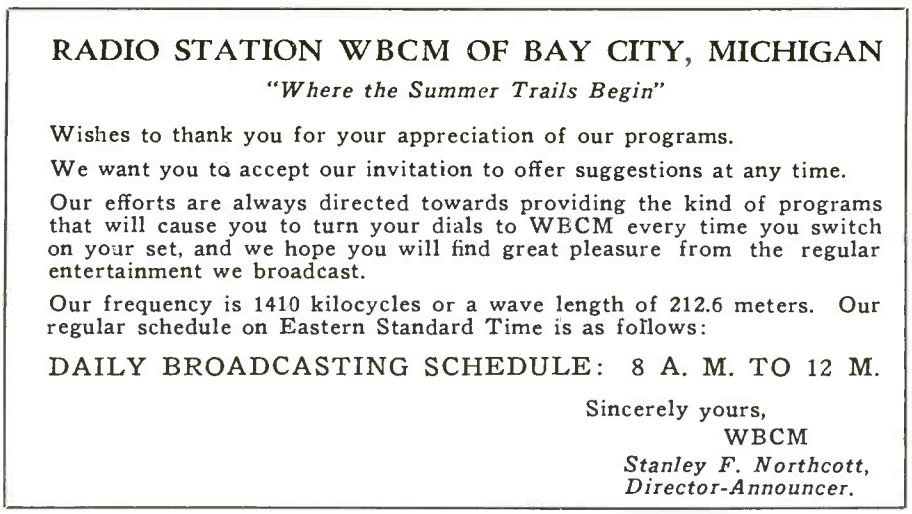
"FROM DAYLIGHT 'TIL DARK"

BROADCASTING SCHEDULE
Daily 7 A. M.—Local Sunset
Sunday 8 A. M.—5 P. M.
DX Program: 2:30-3:30 A. M. 1st Monday Each Month

Dear Radio Listener: We thank you for your valued comment on our broadcast of 3/4/35. As your report is confirmed by our program transmission log, we are glad to verify your reception on that date. We hope you are able to tune in our station often, and extend an invitation to visit our studios if you are ever in this vicinity.

Cordially, David W. Jeffries

By the time WHDL had relocated 270 miles away to Olean, NY it promptly got around to getting some attractive QSL's printed. This one was sent out only 3 months after the move to Olean and you'd never know it was the new kid in town back in March of 1935. (Courtesy Joe Hueter, PA).



RADIO STATION WBCM OF BAY CITY, MICHIGAN

"Where the Summer Trails Begin"

Wishes to thank you for your appreciation of our programs.

We want you to accept our invitation to offer suggestions at any time.

Our efforts are always directed towards providing the kind of programs that will cause you to turn your dials to WBCM every time you switch on your set, and we hope you will find great pleasure from the regular entertainment we broadcast.

Our frequency is 1410 kilocycles or a wave length of 212.6 meters. Our regular schedule on Eastern Standard Time is as follows:

DAILY BROADCASTING SCHEDULE: 8 A. M. TO 12 M.

Sincerely yours,
WBCM
Stanley F. Northcott,
Director-Announcer.

WBCM, sent out this QSL in the 1930's, which was decades before its recent problems with the IRS. (Courtesy Ted Stampleman, Ontario.)

"OK Batista" was the watchword at Cuban shortwaver COK in 1940. It was repeated numerous times on the air, and even appeared on the station's QSL card. All to pump up the massive ego of Cuba's resident dictator, Generalissimo Fulgencio Batista y Zaldivar. It was a battle cry that wore out its welcome on local residents soon after this QSL was sent, although he seized power again from 1952 until Castro took over in 1959. (Courtesy George Franklin, W0AV, MO.)

us about WBCM's problems, began in radio as an announcer at WIBM in Jackson, MI back when it ran 250 watts on 1370 kHz. Now it runs 1 kW on 1450 kHz, which means that Jim has been around radio for a long time. And, after 50 years in broadcasting, Jim is behind the mike now doing three newscasts a day over WMMI (830 kHz/1 kW stereo) in Mount Pleasant, MI. He is also with the local county prosecutor's office as Victim Witness Advocate.

Interestingly, in its reporting of the WBCM fiasco, the *Saginaw News* claimed (May 18th edition) that WBCM is "the nation's fifth-oldest radio station." Not quite accurate, but old enough to still be considered in with those whose passing would hurt just a little more than most.

Memories of Old Havana

Hard to believe that in pre-Castro days, Cuba was a place where American "turistas" were welcomed with open arms. Not that the government there (led by Fulgencio Batista, twice dictator) was so great for the local citizenry, but at least it was friendly towards Uncle Sam and liked the steady flow of dollars at the casinos.

If you think that Fidel was good at promoting himself, Fulgencio wasn't so bad, himself. A 1940 Cuban QSL sent in by George P. Frankin, W0AV, of Kansas City, MO, offers some proof of this. This QSL was received by DX'er Carl M. Sare (now long deceased), and was found in with some of Sare's papers George purchased years ago at a garage sale.

The QSL came from shortwaver COK, 11570 kHz, in Havana, which ran 1 kW. The "OK" in the callsign stood for "O.K. Batista," which was a slogan heard over the air every few minutes and which appeared in no less than two places on the QSL card. Not that it helped Fulgencio Batista. General Batista had taken power in a military coup in 1933 and was able to hold sway until 1940, which was when his QSL was sent.

After he left power, COK shifted to 11616 kHz and became the voice of the Cuban National Sports Department. By the time Batista was able to get back into power in 1952, COK was long gone. Moreover, by 1959, Batista was kicked out of power by Castro's revolution.

The QSL from COK notes that the station also sent out picture postcards of Cuba. The illustration on the QSL shows the signals

CANADIAN
RADIO BROADCASTING STATION

C J L S

OWNED AND OPERATED BY LAURIE L. SMITH

TRANSMITTER AND MAIN STUDIO
GRAND HOTEL, YARMOUTH, N. S.

We take great pleasure in verifying your reception of C J L S Yarmouth, Nova Scotia, at time and date of December 19th, 1934 as given in your report.

Please accept our thanks for your interest, and this station would be pleased to receive further reports regarding your reception of transmission from C J L S at any future date.

Radio Station C J L S Yarmouth, Nova Scotia

Laurie B. Smith

This CJLS veri card dates back to 1934, which makes the station 34 years older than it's willing to admit. Just like my Aunt Bridey. (Courtesy Joe Hueter, PA.)

UNITED STATES MARINE CORPS
First Signal Company
Marine Barracks, Quantico, Virginia.

27 March 1937.

Mr. Howard S. Kemp
250 Walnut St.,
Waterbury, Conn.

Dear Sir:

This is to verify your report on "NFV", 18 March 1937. Your report was correct in every detail. The exact location, frequency and power cannot be given due to military reasons.

We wish to thank you for making this accurate report. It was a great help in obtaining data as to conditions of this station.

In the future if you again hear this station would you be so kind as to forward us other similar reports.

Thanking you again. I remain

Very truly yours,

W. A. Wachtler,
Capt., U.S.M.C.

Howard Kemp's 1937 veri letter from the U.S. Marine Corps made an odd but meaningless show of official secrecy. This was unusual in those pre-Pearl Harbor days when federal data was easily accessible. (Courtesy Howard Kemp, NH.)

beamed over North America. The programs, in English, went out for four hours every night and promoted tourism as well as the General, himself.

George, W0AV, who passed along this attractive COK card, has been in radio since 1933, and got his ham ticket in 1935.

Nova Scotia Memories

In 1934, Laurie L. Smith opened up station CJLS with 100 watts on 1310 kHz. This station was located in the Grand Hotel, Yarmouth, Nova Scotia.

Just before WWII, Smith incorporated the station under the name Gateway Broadcasting, moved into the Radio Building on Main Street, and shifted the station to 1340 kHz. By the late 1940's, CJLS had gone up to 250 watts, and eventually went to 5 kW days, 1 kW nights. Presently, CJLS runs 5 kW days, 4 kW at night. New owners took over in 1968 and, for reasons probably best known only to themselves, list 1968 as the starting date for CJLS. Thus, they seem to have wiped away the previous 34 years of the station's proud history. Figure that out!

However, we have (thanks to Joe Hueter) a QSL from CJLS dated December 19th, 1934 just after it began operating. Let's not let the original histories of these stations get lost.

Semper Fidelis

Ute monitors should enjoy the QSL letter that Howard Kemp received from the U.S. Marine Corps in 1937. Curiously, the veri letter told Kemp that his "report was correct in every detail," but went on to refuse to provide frequency, power, and location information.

Inasmuch as Howard's report was correct, one might assume that he already knew the frequency. Since Howard's report was sent to Quantico, VA and that's where they knew it was correct, you could also figure that Howard knew the location of station NFV, especially since Quantico requested additional signal reports.

Although it's been 53 years since the letter was written, I can put Howard's mind at ease. I checked NFV out in official records of the 1930's and, sure enough, it's listed at Quantico, VA. Surprise, surprise!

Till October

Whoa! We're at the bottom of the page, so that's a wrap until next month. Hope you'll be with us. Thanks to all who have been generously sending in old radio postcards, QSL's (good photocopies will do fine if you can't part with the originals), station rosters, newspaper clipping, photos, and other items. PC

POP'COMM Reviews:

Diamond Systems' Amateur Radio Study Program

For those who express an interest in amateur radio and own an IBM-compatible computer, Diamond Systems, Inc. (P. O. Box 48301, Niles, IL 60648) can help you join the "fun" of ham radio. They have developed a series of PC-based study courses that cover Morse code (CW) and the latest in theory and regulations required by each license class for the FCC/VEC exams.

Diamond Systems has included a very well written explanation for each program's use. This is a great blessing, as many of us are still in the formative stages of learning how to use a computer! All information required to pass the exam for each license class is included with each program.

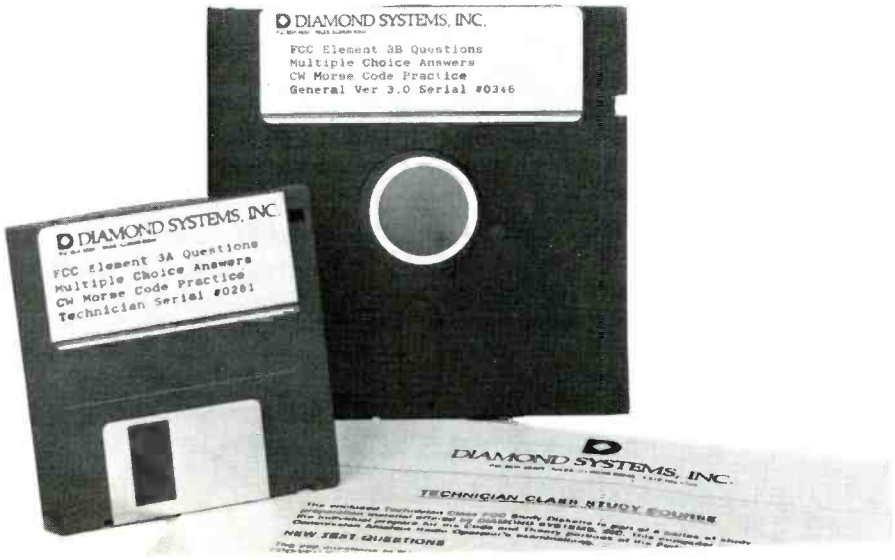
Let's look at some of the features of the program. The program is menu driven, so it is very easy to use. In the "Morse Code" section, the program allows you to select the code speed for practice. In the "Theory" section, electronics theory and F.C.C. Rules and Regulations can be chosen for study. Just as in the "real test," you select your answer from four multiple-choice answers. If help is required, "Help Screens" are available to assist you along the way.

The computer scores your answers and the results are "saved" to disk so that you may keep track of your progress. Encouraging remarks, such as "good going," keep your interest high during each training session.

In summary, Diamond Systems amateur radio study programs can help you become an amateur radio operator by providing a good understanding of the code and theory. Plus, they throw in some "old-fashioned fun" for good measure. I wish this learning aid was available when I started in amateur radio! Prices range from $39.95 to $49.95 depending on the license class of the program.

Reviewed by Don Allen, N9ALK

CIRCLE 50 ON READER SERVICE CARD



BOOKS YOU'LL LIKE

BY R. L. SLATTERY

Three Ring Circuits

Electronics authors are approaching the status of superstars. I realized this when I received a review copy of a book with the author's name not only incorporated into the title, but *ahead* of the title. Reminded me of *Cecil B. DeMille's Ten Commandments*, when the wily old superstar moviemaker figured out how to get his name there in place of The Divinity.

So, *Delton T. Horn's All-Time Favorite Electronic Projects* is actually the full name of this new book, not that this author's name rang any bells in my mind to make the book more appealing than it would have been without his name displayed so prominently.

Whomever Mr. Horn is, his 97-page book is a rather useful (albeit sparse) collection of sixteen projects for home and shop. These include an intercom, a car alarm, electronic motor speed controller, digital clock, AM/FM radio, audio and power amps, tape deck amp, voltage source, digital-to-analog converter, logic probe, digital capacitance meter, digital frequency meter, DC voltmeter, etc.

There are no photos, but the book has schematics, parts lists, and some descriptive text relating to each of the projects. There are no step-by-step or other detailed instructions for building the projects much beyond the pointing out of specific problem areas inherent in some of the circuits. Therefore, the assumption is that the book is more suited to the experienced hobbyist than to the rank beginner (although the book states that it is suitable for beginners).

Certainly, a scratch-built project requiring more than fifty components (such as the book's AM/FM receiver) is going to take a very special breed of beginner to successfully complete. And the nine pages of math equations accompanying the digital-to-analog converter project is probably scary enough to make most beginners check to see if Radio Shack sells one for $19.95, or else decide how to survive without one of these devices.

So, for someone with some experience in coping with projects, we'd say that this is a pretty good book containing several projects that will be fun to construct as well as useful when completed. Also, it's a rather inexpensive book, and it will introduce you to the author, who has more than a dozen other projects books in print. In fact, the projects in this book are all extracted from some of his other books. If you like the projects in this "sampler," you might wish to pick up some of his other books.

The title page calls it "*Delton T. Horn's All-Time Favorite Electronic Projects*, by Delton T. Horn." That alone is worth the $7.95 price, even if you don't know where you load the cartridges into a soldering gun. The book is from TAB Books, Inc., Blue Ridge Summit, PA 17294-0850. The stock number of the book is 3105.

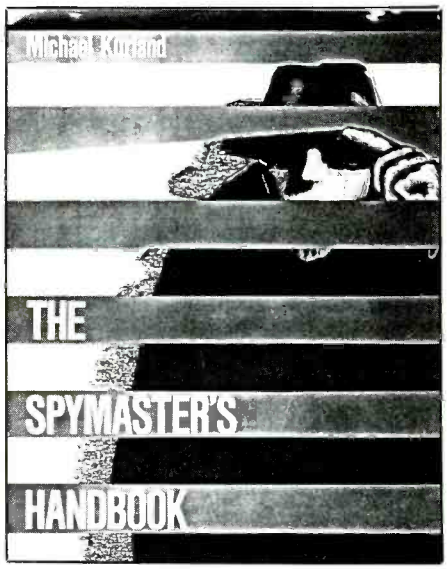
Calling All 007's!

We get a lot of espionage books here. Some are so-so and others manage to hold the interest. *The Spymaster's Handbook*, by Michael Kurland turned out to be quite a bit better than you'd imagine from its hokey pop title or glitzy front cover. *Don't* judge this book by its cover.

This is a 177-page hardcover book that offers to explain, "in clever and daring detail everything you wanted to know about spycraft—and more." It may not completely satisfy this ambitious goal, but it is a well-written overview of numerous aspects of these matters. There is, in fact, a history of espionage dating back to Babylon, then the author moves along towards the present.

He explains the qualities needed for a person to become reasonably successful in such a career, and then tell about the recruitment practices and policies of those organizations presently hiring the talents of those who appear to be adept in such matters. A sample self-test is provided so you can tell if perhaps you have any natural aptitudes in this line of work. A listing of possible employers is included for those who wish to pursue the calling.

Several of history's more notorious espionage agents are written about, plus espionage activities of persons whose talents in this area were less publicized (like actor Douglas Fairbanks, Jr., author Somerset Maugham, and others).



Of course, not all of the famous and infamous spies of the world lived quite long enough to join the AARP or avail themselves of the senior citizens' discount at the dry cleaners. This is definitely something to think about before mailing out your resume, even if the thought of being an espionage agent sounds more exciting than your present career.

The book also delves into specific modern espionage techniques, tradecraft tools, technology, terminology. A glossary and bibliography rounds out the book. The book has many illustrations, even a couple of clever cartoons.

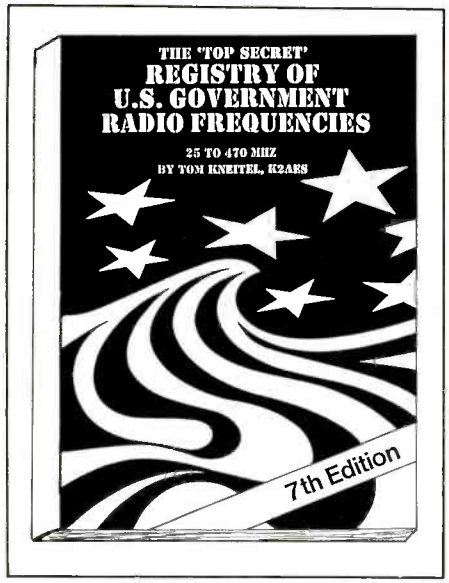
If you have ever wondered what espionage is all about, you'll probably find *The Spymaster's Handbook* worthwhile and enjoyable reading. Certainly, if you think that it's a career you might like to enter, read the book before you make a final decision or do anything rash at the company picnic.

The book is $18.95. It comes from Facts On File Publications, 460 Park Ave South, New York, NY 10016. It should be available through many bookshops.

New Federal Frequency Scanner Directory Edition

The highly-charged new 7th Edition of Tom Kneitel's *"Top Secret Registry of U.S. Government Radio Frequencies (25 to 470 MHz)* has arrived with frequencies, changes, additions, and new listings galore. For openers, it's grown to a chunky 240-page thickness and the data occupies even more area of the large 8½" by 11" pages than any earlier edition.

As has become traditional in this standard reference source for federal agency frequency information, listings cover thousands upon thousands of locations, fre-



quencies, callsigns, tactical ID's, frequency usage data, rosters of aircraft and ships, repeater pairs, and all sorts of other data. Information on the communications systems of approximately 80 federal agencies are provided, including all military services, FBI, DEA, Secret Service, FCC, Customs Service, Immigration, Border Patrol, USCG, U.S. Marshal, ATF, FEMA, EPA, CIA, NSA, Federal Prisons, Postal Service, National Forests, National Parks, FAA, NASA, Dept. of Energy, Dept. of Transportation, State Dept., Treasury Dept., GSA, Fish and Wildlife Service, BIA, Dept. of Labor, ICC, NORAD, NRC, Dept. of Commerce, and many others, including some new ones, like the Veterans Administration. There are loads of listings for major government contractors in the fields of electronics, defense, and aerospace. A special section lists frequencies for *bugs* and body mikes, other sections list agents' lingo, federal agency 10-Codes, diplomatic license plate codes, federal government vehicle license plate codes.

For fans of the exciting 225 to 400 MHz UHF federal aero band, there are extensive updated listings of these frequencies used at military and civilian facilities.

As usual, a large helping of useful HF (2 to 25 MHz) information is also provided. Moreover, this new expanded 7th Edition of the Registry has lots more Canadian federal agency scanner frequency listings than ever before.

In response to requests from users of this popular series, Tom provides interesting background information on the circumstances surrounding the original creation of the Registry series, and the many unusual things that have taken place along the way. This is illustrated by copies of letters to Kneitel from the FBI, an internal FBI memo about Tom's federal frequency listings, and letters from the FCC and the U.S. Senate Select Committee on Intelligence. Fascinating story never previously told that could make your skin crawl, as it did mine!

There is also explanatory text to enhance federal monitoring and give monitoring enthusiasts the best results. This covers basic information on antennas, discovering new frequencies, additional information sources, etc.

In all ways, this new 7th Edition of the *Top Secret Registry* remains the primary source of genuinely vital information to in-depth monitoring of federal communications. Over the years, it has become the standard reference, and is now extensively used by hobbyists, the news media, the communications industry, and law enforcement agencies. Many federal agencies also have reference copies in their libraries.

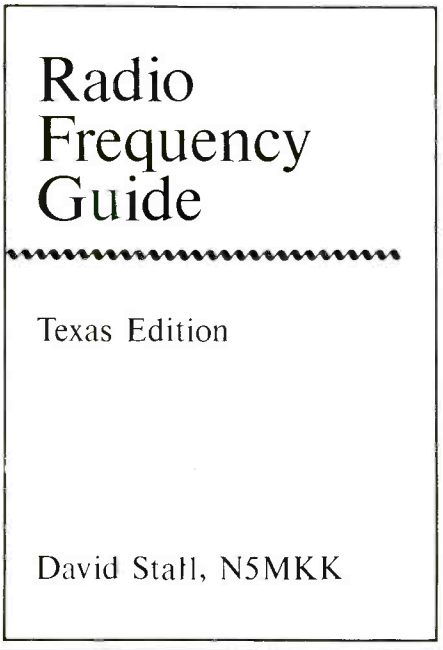
Keep in mind that more than half of the communications spectrum between 25 and 470 MHz is reserved for military and civilian communications of the federal government. Moreover, some of the most exciting communications that can be monitored are the ones that show up on those frequencies.

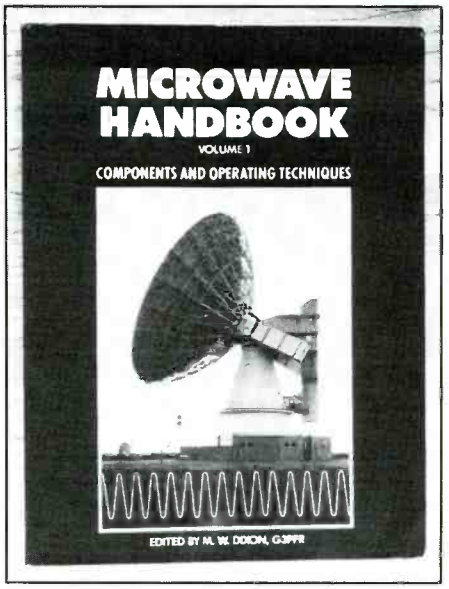
The new 7th Edition of *The "Top Secret" Registry* is available from many leading communications dealers. It can also be obtained for $19.95 plus $2 shipping to addresses in North America from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. Residents of NY State, add 1.50 sales tax.

In Addition . . .

A new scanner directory covering the Lone Star State has recently come out. Called the *Radio Frequency Guide: Texas Edition*, by David Stall, this 69-page directory covers listings throughout the spectrum from 10 kHz to 1,000 MHz. All areas of the state are included, as are a wide variety of radio services. Quite a good compilation. It's $9.95 from Luna Lumen Press, P.O. Box 58023, Houston, TX 77258. Although nothing was mentioned about postage on the material we received, we would suggest including an extra $1 for mailing.

Although we did not see a copy, we did





get a press release for the new *RSGB Microwave Handbook, Volume 1*, by M. W. Dixon, G3PFR. This 224-page book is the first of three volumes that containing a largely nonmathematical presentation of microwave theory and practice. This book covers operating techniques, system analysis, propagation, antennas, transmission lines, components, semiconductors and vacuum tubes ("valves"). It's a $35.00 book available from the ARRL, 225 Main Street, Newington, CT 06111. Add $4.50 for shipping and handling (or $5.50 for UPS). PC

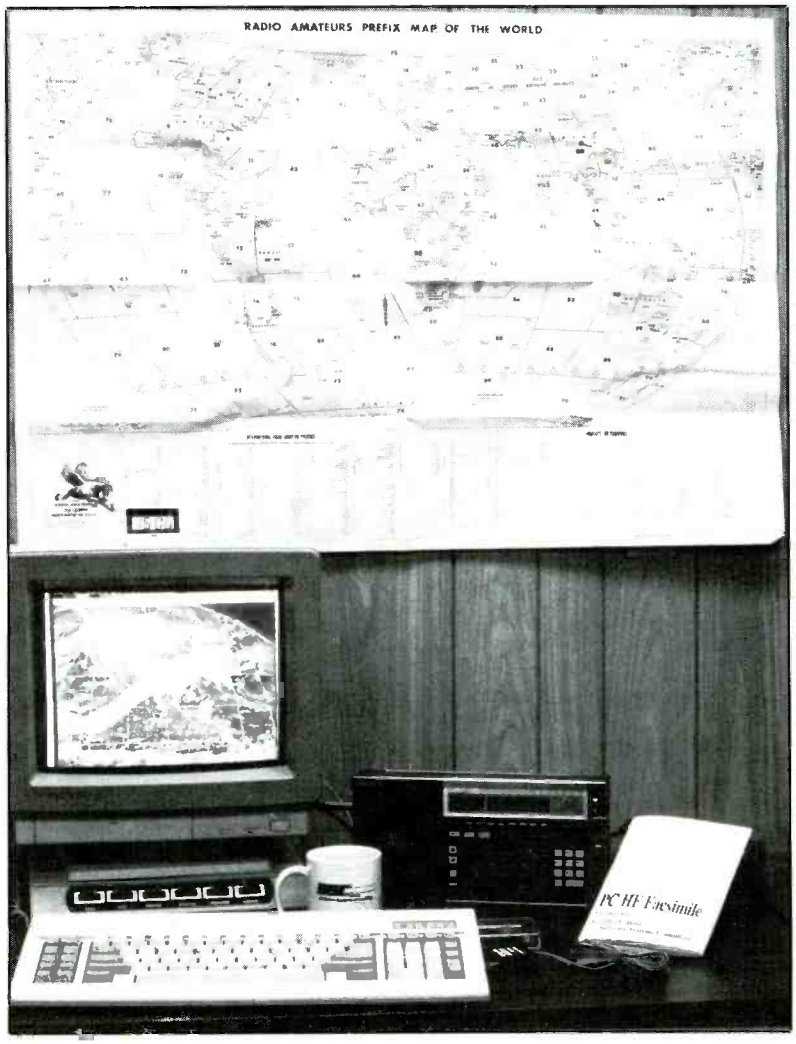
POP'COMM Reviews:

Software Systems Consulting's PC HF Facsimile Program

Last month, we reviewed Software Systems Consulting's PC SWL PC-based CW/RTTY reader program. This month, let's look at their program designed for the shortwave FAX monitoring enthusiast.

Do you want to receive WEFAX (weather facsimile) pictures as well as other FAX signals on the shortwave bands? If so, join the fast growing group of shortwave monitors who are "having a ball" monitoring this activity. All it takes is your shortwave receiver connected to an IBM-compatible computer system via SSC's PC HF FAX package.

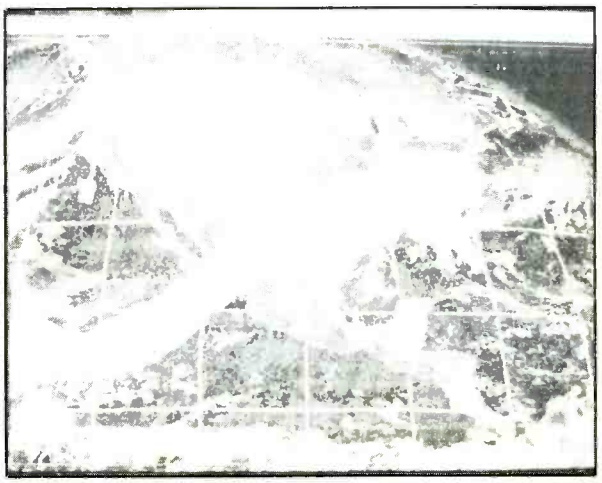
Just as the PC SWL package reviewed last month, PC HF FAX includes everything you need to interface your computer to your communications receiver. I cannot over emphasize the utility of the 80-page user's reference manual that includes appendices for sample images, international FAX frequencies, and North American FAX broadcast schedules.



What Can It Do?

The capabilities of PC HF FAX allow you to capture a received image (monochrome or color), view captured images, zoom (magnify) an image, and print an image to your computer's printer. Several DOS (Disk Operating System) file utilities are also included to keep track of everything. Other features include a built-in tuning scope, adjustable black and white modem tones, and an automatic image capture option, called autostart. A substantial package for $99, I'd say!

This WEFAX chart came in beautifully using a portable receiver.



A WEFAX chart we pulled through.

```
********************** PC HF FACSIMILE PROGRAM [V4.0] **********************
Copyright (c) 1987, 87, 89. John E. Hoot, Software Systems Consulting.
All rights reserved.

    Enter Selection --->

                    ------- Capture Options -------
                    C)olor Capture
                    M)onochrome Capture
                    A)utoStart     [off]
                    T)uning Scope
                    F)ormat        [120 LPM]
                    -------- Display Options ------
                    D)isplay mode  [Monochrome]
                    V)iew
                    P)rint
                    Z)oom
                    --------- File Options -------
                    S)et Prefix    []
                    L)ist Directory
                    W)rite to File
                    R)ead from File
                    --------- Control Options -----
                    H)ardware Configuration
                    Q)uit
```

PC HF FAX main menu.

Installation. . .

Please refer to the review on SSC's PC SWL in last month's issue. The computer requirements and overall installation instructions are very similar. Let's move on to see how PC HF FAX operates.

Operation. . .

Since PC HF FAX offers 16 intensity levels of gray scales, the captured image, either in monochrome or color, offers quite good resolution. Initial set-up for reception is not exactly easy, but after a few times, one gets the "knack" of it. Once the signal is properly tuned-in and the computer is calibrated (synchronized), sit back and watch the wonderful world of HF FAX unfold before your eyes! It takes at least a 3 S-unit signal for reliable copy. After SWL'ing the international shortwave bands since 1959, I must say that I really enjoyed this new mode of the hobby.

Summary. . .

If you want to add something different to your HF monitoring diet, take a serious look at Software Systems Consulting's PC HF FAX package. I am sure you, too, will enjoy monitoring those "strange soundin' " signals on the HF bands.

Reviewed by Don Allen, N9ALK

CIRCLE 77 ON READER SERVICE CARD PC

EMERGENCY

COMMUNICATIONS FOR SURVIVAL

BY GORDON WEST, WB6NOA

Ham Handheld With All-Band Scanning

There is more to the dual-band amateur radio handheld transceiver from ICOM than what is printed in their spec sheets. The ICOM IC-24AT, at first glance, appears to be a very small 2-meter and 440 MHz amateur radio, 2-way handheld. This, by itself, is quite a feat when you consider the tiny size of this unit—2 inches wide, 5-½ inches high, and only 1-½ inches deep, and weighing only 12 ounces with the BP-82 battery pack. This is truly a 2-way handheld small enough to fit into a shirt pocket!

The specification sheet illustrated typical transmit from 140 MHz to 150 MHz, and 440 MHz to 450 MHz. Also illustrated is expanded receive form 138 MHz to 174 MHz. The unit may also be modified to transmit on Civil Air Patrol, U.S. Coast Guard Auxiliary, and MARS frequencies, too, just outside the normal ham band limits. This requires some diode changes, and really takes a pro to make this modification because surface-mount technology is employed making the diodes smaller than the head of a pin!

But for the rescue emergency communicator, there is a lot that this handheld will do without ever having to open the case for any diode modifications. Take a look at these expanded receiver capabilities:

75 MHz to 195 MHz
200 MHz to 490 MHz
740 MHz to 960 MHz

Incredible, isn't it? The ICOM IC-24AT dual-band ham radio handheld is also a very sensitive all-band VHF and UHF scanner receiver, too.

Take another look at those specifications for all-band receiver—they include the AM aeronautical band, VHF and military high band, ham and military frequencies between 200 MHz to 400 MHz, and then fire, police, and medical communications on the 400 MHz UHF band, plus you-name-it on 800 MHz and 900 MHz, continuous receive!

In metropolitan areas that have switched from UHF to 800 MHz trunked public safety frequencies, the agile ICOM can quickly search and scan these frequencies with ease. That's right, full scanning at 800 and 900 MHz!

The receiver within the unit offers better than 2 microvolt sensitivity between the following frequency limits:

110 MHz to 174 MHz
360 MHz to 468 MHz
850 MHz to 925 MHz

As you can see by these limits, the ham 220 MHz band, plus the military band above it, may not lead to full quieting of relatively strong signals. In the unit I tested, local ham repeaters could still be heard okay, but a dedicated 220 ham radio handheld certainly did a better job.

This dual-band ham set is also on all-band scanner, too.

But on all the other frequencies, including 800 and 900 MHz, reception was equal to an all-band scanner.

This all-band receive capability, unfortunately, does not extend down to state police and fire frequencies between 30 MHz to 50 MHz. That will take a different receiver—but many agencies operating between 30 MHz to 50 MHz may use extender systems on VHF when out of their vehicles for additional range—so locate those extender frequencies, and you are back in business.

Unlocking the all-band receiver capabilities has *no* effect whatsoever on transmit. No, this unit will *not* transmit on the ham 220 band, nor will it transmit on trunked frequencies at 800 or 900 MHz. Also, some frequencies on 800 MHz and 900 MHz will not line up exactly with the stepping frequencies within the handheld—so there may be some channels that you may be a few kiloHertz off.

Here is the procedure for enabling the all-band receiving capabilities of the IC-24AT ICOM dual-band ham transceiver:

- Turn the set off.
- Turn the set on.
- Simultaneously depress the light button, the "B" button, and the "#" button.
- While simultaneously holding down these 3 buttons, use your left foot (or a friend) to turn the set off, and then back on.
- Release all the buttons, and your new dual-band is now an all-band receiver.

You will need to reprogram all of your ham radio memories at this time. You have dumped everything, including the factory

(Continued on page 76)

Aircraft reception on the ICOM-24AT dual-band handheld.

800 MHz + on the ICOM-24AT handheld dual-band transceiver.

NEW PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS

Smallest Counter-Timer Has Full Lab Features

Optoelectronics Inc., announces a new universal counter-timer for frequency test and measurement. It is battery powered. Operating from sub-audio to microwave, it is claimed to be the smallest, lightest, most cost effective such instrument on the market today.

Opto's compact HANDI-COUNTER MODEL UTC 3000 is designed for use in traditional laboratory benchtop service, as a frequency finder, and in a wide variety of field-service applications where two-way radio communication is important, including security, law enforcement and the military; broadcast media; electric utilities; ocean industries, airlines, mining, and cellular telephones.

MODEL UTC-3000 is used to measure frequencies, periods, time intervals and ratios of frequencies. Applications include the identification of broadcast frequencies at maximum distance from the source; test and calibration of transmitter frequencies, medical equipment, oscillators and other types of electronic gear. It locates noise sources, serves as signal strength indicator and satisfies hobby interests as well.

UTC 3000 weighs just 15 ounces and occupies only 30 cubic (5.3 × 3.9 × 1.4) inches, yet it offers an ultra-wide dynamic range from 10 Hz to 2400 MHz, and is useful up to 3200 MHz. No extra options are required to utilize the full performance range.

Three signal-frequency ranges include a direct counting range that goes from 10 Hz to 200 MHz, an internally-prescaled range to 600 MHz (usefull to 900) and a second prescaled range specified to 2400 MHz. (useful to 3200 MHz)

UTC-3000's time base is referenced to an internal 10 MHz crystal oscillator with ± 1 PPM accuracy. (An optional temperature compensated oscillator holds accuracy to ± 0.2 PPM) The unit's input-signal gate can be held open for 0.01 sec, 0.1 sec, 1.0 sec or 10 seconds. This determines the unit's frequency count resolution—up to ten digits.

The unit derives its many features from a proprietary ASIC, and its high sensitivity from state-of-the-art MMIC's. If offers two BNC input connectors and two independent amplifiers which present 1 M ohm and 50 ohms input impedance. A 16-segment bar graph indicates input signal strength in 3 dBm increments. It has an easy-to-read liquid crystal display, and a selection between internal rechargeable battery pack or external 9 VAC adaptor-charger. Panel switches control function select, gate duration, input A/B select, display hold, direct/prescale, range and power selections. The unit is housed in aluminum extrusion for maximum emi/rfi shielding and rugged field use.

HANDI-COUNTER MODEL UTC-3000 is priced at $375 complete. Optional TCXO is $80; three-antenna pack is 65; additional battery is $24; vinyl carrying is $15. Availability of all items is quoted off-the-shelf.

For more information on this and other personal radio frequency instrumentation, contact: Optoelectronics Inc., 5821 NE 14th Avenue, Fort Lauderdale, FL 33334, or circle 101 on our Readers' Service.

PRO PAGE Radio Pocket Paging System

Fanon Courier announces the expansion of the COURIER PRO PAGE Tone and Voice Paging System with the addition of the PPT-12—a Selective Station Transmitter/Encoder.

COURIER PRO PAGE is a one way paging system that can single out up to twelve (12) key individuals, signal them selectively and deliver a message. Designed to provide indoor and outdoor coverage, COURIER PRO PAGE is ideal for paging in or around

factories, medical facilities, conventions, construction sites, schools, restaurants, hotels and shopping malls.

COURIER PRO PAGE is packaged as a complete "Starter" Paging System (Model STVPS) consisting of two (2) PPR-1 Paging Receivers, one (1) PPT-6 Six Station Capacity AM Transmitter/Encoder, one (1) PPS-1 12V DC Power Supply. The "Starter" Paging System, STVPS, has a list price of only $495.00

Additional PPR-1 Paging Receivers (with batteries) are available at a list price of $99.95.

The COURIER PRO PAGE Paging System is marketed through Commercial Sound Distributors and Radio Paging Equipment Specialists. Fanon Courier also manufactures a broad range of Commercial Sound and Communications Products including P.A. Amplifier Systems, Intercoms, Magaphones, VHF Hand Held Transceivers and C.B. and SSB Radios.

For more information, write Fanon Courier, 14811 Muford Rd., Tustin, CA 92680, or circle 102 on our Readers' Service.

RTTY

BY ROBERT MARGOLIS

THE EXCITING WORLD OF RADIOTELETYPE MONITORING

News copy written by the Soviet news agency, Tass, is not well written, and Prensa Latina news service of Cuba is "infantile." These are the opinions of Carlos J. Ferrazzo, Chief of the Technical Communications Department for Telam, the Argentine news agency. Ferrazzo was interviewed earlier this year by Brian Webb of California, a contributor of RTTY loggings to this column. Brian was vacationing in Buenos Aires and was able to tour Telam's headquarters.

Brian had asked Ferrazzo which foreign news agencies Telam subscribed to, and Ferrazzo mentioned Deutsche Presse-Agentur of West Germany, Tanjug of Yugoslavia, and ANSA of Italy. Brian then asked if Tass or Prensa Latina news copy was used and Ferrazzo said they weren't for the reasons mentioned.

Ferrazzo told Brian, during a two-hour interview conducted in Spanish, that Telam is a government agency that provides news about Argentina to via telephone circuits to Argentine newspapers. Telam's HF Radio TTY transmissions are a "general area" service and are not directed to any specific global area, Ferrazzo said. News transmissions at 50 baud occur on 4004.5, 7428.5, and 10893.5, he added.

Brian said in a letter to this column that "obtaining a QSL card for a reception report (from Telam) may become much more difficult due to Argentina's economic problems . . .the value of its currency is falling rapidly . . . the cost of foreign goods and international postage are climbing out of reach."

He says that to better your chances of receiving a QSL card from Telam, you should write your reception report in Spanish, enclose $1.00 (U.S.) with an attached note stating that the money is to pay for postage, and sending your reception report by registered mail, for better postal service.

Reception reports should be addressed to Mr. Carlos J. Ferrazzo, Jefe Dpto. Comunicaciones Tecnica, Telam S.A., Bolivar 531, 1066 Buenos Aires, Republica de Argentina.

Gracias, er, thanks, Brian, for sharing part of your vacation with us. A ribbon of unperforated teletype tape to you for your interesting report.

Recently I was viewing encryption being sent from NAM, the U.S. Naval station at Norfolk, VA. I've noticed on occasions that some "footprints" are left behind when various governments and militaries set their cryptographic devices in operation, and I wanted to see if NAM's equipment would do the same thing.

For instance, RTTY encryption on Bulgarian diplomatic devices begins after a series of "D's" is sent. On Cuban systems, it's after a series of "Z's." On Yugoslav systems, it's after "XYXYXY" or some similar pattern. French military systems put out a string of "K's," and the West German foreign ministry uses "V's." U.S. Navy gear send mostly "Y's," and occasionally "I's."

Marquee of Telam News Agency, Buenos Aires, Argentina. (Photo by Brian Webb)

The Norfolk, VA base was sending the usual "Y's," in their encrypted messages broadcast on 12311 kHz at 1822 UTC, 850/75R, and some intriguing "footprints" were noticed along with the repeated letter. All the strings of "Y's" ended thusly, ". . . YYYKFUJ," followed by about four or five random letters before the "footprints" began.

At 1822, the footprint was, "iay;" appearing on three separate lines. Line four began, "iaygubdzj zjrdzj zjrdzj zjrdzj," followed by encrypted text. At 1826 a new footprint, "ptgesn" appeared on lines one through three, "fcr jx" on lines four and five, and "fcr jxexur:# . . ." on line six, prior to the encryption. At 1829, after the "Y" string, another footprint ran as one continuous string, "jxhychjxhychjxhychjkhychvozaowarzaowar" before going into encryption.

What causes the repeated letter patterns after the one-letter string? Maybe some reader knows and would share the "what" and "how" with us.

Dallas Williams, of Colorado, requests an ID for an RTTY signal he hears, but cannot copy, on 14322 kHz. The station, Dallas, is RFVI, the French military post at Le Port, Reunion. The mode is ARQ-E/96.

Monitors of RTTY telegrams sent by the Soviet merchant and fishing fleets will often notice the letters MMF or MRH (sometimes .R#) after the right slash (/) that comes after a ship's name and port. Michael Regan, of Maryland, tells us that MMF means "Ministry of Merchant Fleets" and MRH "is really MRKH or Ministry of the Fishing Industry."

When a reader sends us loggings of RTTY transmissions from the Soviet merchant ships and fishing industry fleets, I use any one of four reference books on ships for additional information to be included with the loggings when compiling the RTTY intercepts section. Consulted are Lloyd's Register of Shipping, Jane's Merchant Ships, the ITU's List of Ship Stations, and Soviet Merchant Ships by Ambrose Greenway.

Many times I will find the name of a particular ship to be spelled differently in two or more books. That is because of how the names are transliterated from Russian to English. Each editor has his own rules for making transliterations.

Since I'm writing a column geared toward the RTTY monitoring hobbyist who may have little knowledge of Russian spellings, and probably is not conerned with way a ship's name is spelled, I use the spelling found in whatever book I use, without considering the minor spelling variances of the other editions.

Because of that, Regan wrote a letter to this column criticizing the way I transliterate names of Soviet ships from the Russian to the English languages. I feel that his letter should have been addressed to the editors of my reference books; it is *their* job to decide on the correct transliteration, not mine.

Greenway says in his book, "Soviet ships usually carry their name in Cyrillic letters on either bow and on the stern. An English

translation, *which may vary*, appears on a nameboard on either side of or above the bridge." So, even on Soviet ship, a translation may not be exact. Therefore, this column will continue to use the spelling found in whatever source is at hand.

Abbreviations Used In The RTTY Column

AA	**Arabic**
ARQ	**SITOR mode**
BC	**Broadcast**
EE	**English**
FEC	**Forward Error Connection mode**
FF	**French**
foxes	**"Quick brown fox . . . "test tape**
GG	**German**
ID	**Identification/ied**
MFA	**Ministry of Foreign Affairs**
nx	**News**
PP	**Portuguese**
RYRY	**"RYRY . . . "test tape**
SS	**Spanish**
tfc	**Traffic**
w/	**With**
wx	**Weather**

RTTY Intercepts

4570: HZN46, Jeddah Meteo, Saudi Arabia, w/coded wx at 0249, 850/100N. (Ed.)

4583: DDK2, Hamburg Meteo, FRG, w/coded wx, 425/50R at 0247. (Ed.)

4813: LZA8, Sofia Meteo, Bulgaria, w/coded wx at 0233, 425/50N. (Ed.)

7428.5: Telam, Buenos Aires, Argentina, w nx in SS, 750/50R at 0034. (Ed.)

7457: MKK, RAF, London, England, w foxes and RYI's, FDM 170/50R at 0032. (Ed.)

7460.5: Un-ID aero sta. w coded aero wx, 425/100R at 0028. Had a S9 sig. In op past 0445 w/o ID, w sig very weak by this time. (Ed.)

7610: 3XA, ASECNA, Conakry, Guinea, w/RYRY + QJHI, 350/50N at 0015. (Ed.)

7625: HZN47, Jeddah Meteo, Saudi Arabia, w/coded wx, 170/100N at 0013. (Ed.)

7681.3-7682.9: GXQ, British Army, London, England, w RYI's/foxes on 8FDM channels, 170/50N&R at 0000. (Ed.)

7690: TUH, ASECNA, Abidjan, Ivory Coast, w/RYRY/QJH1, 425/50R at 2359 (Ed.)

7701.5: Un-ID w a s/off msg in AA, ARQ at 2355. (Ed.)

7812.5: Y7A34, MFA, Berlin, GDR, w 5L msgs at 0600, 525/50R. (Ed.)

7831: USAF MARS stas. AFA1DA and AFA1NC wkg each other at 1955, Packet 1030/300. (Ed.)

7991: USN MARS sta. NNN0XHD, relaying a MARSgram from NNN0MOH to NNN0BSP, Packet 1030/300 at 1942. (Ed.)

7980: Y31, Potsdam Meteo, GDR, w/coded wx, 850/100R at 0623. (Ed.)

10206.7: Un-ID w military NOTAMS and aviation msgs for North American and European air force bases. Was FDM 85/75N at 2300. (Hal Bilodeau, IL)

10551.5: GFL23, Bracknell Meteo, England, w coded wx, 399/50R at 2342. (Bilodeau, IL)

10565: CLP8, Cuban Embassy, Conakry, Guinea, w notices to CLP1, 0821-0825, 500/50N. (Ed.)

10610: SUA251, MENA, Cairo, Egypt, w nx in FF, 425/50R at 1855. (Harold Manthey, NY) Same sta. w nx in EE ending at 2200 foll by nx in FF until 2225, 270/50R. (Fred, Hetherington, FL)

10625: RFLI, French Navy, Fort de France, Martinique, w tfc at 1139, TDM 850/96-A. (Hetherington, FL)

10732: FDY, French Air Force, Orleans, France, w RYRY, FDYFDYFDY, and le brick, 425/50R at 0550. (Ed.)

10754: HVH, PTT, Vatican City, Vatican, idling from 0735 to past 0815, TDM/96. (Ed.)

11124.2: Un-ID sta. w strange-looking numbers tfc. Was not wx. Numbers were in grps of varying lengths, usually eight or more, sometimes separated by dashes, periods or commas. No msg intro or exit, just the numbers. Was 850/50N at 0557. (Williams, CO) A numbers racket on HF radio? Not really, Dallas. The TTY mode of this one is FEC-A/96, and not baudot RTTY. At 0557, DFL26, PIAB, BONN, FRG, runs nx in GG—Ed.

11175: 5HD, Dar-es-Salaam Aero, Tanzania, w RYRY, 175/50R at 0312. (Bilodeau, IL)

11520: RCR77, Khabarovsk Meteo, USSR, w coded wx, 1000/50N at 1351. (Ed.)

11536: HMF49, KCNA, Pyongyang, North Korea, w nx in FF at 1355, 250/50R. B/C ends at 1359. (Ed.) Same sta. w RYRY, 350/50N at 1715. (Manthey, NY)

11638: DDK8, Hamburg Meteo, FRG, w RYRY + CQ, 425/50R at 0837. (Ed.) Same sta. w plaintext wx in GG at 1755, same TTY settings. (Manthey, NY)

12075: VVD62, New Delhi Meteo, India, w coded wx at 0334, 170/50N. (Williams, CO)

12186: Jana, Tripoli, Libya, w nx in EE, 425/50R at 1805. (Manthey, NY)

12212.5: YZO7, Tanjug, Belgrade, Yugoslavia, w nx in EE at 1550, 425/50R. (Ed.)

12223.5: VOA, Tangier, Morocco, w book reviews in EE beamed to Munich, FRG, 425/75N at 0142. Un-ID sta. idling in ARQ mode 0841-0928, then ". . .nao hedu ca nada jesutonflmudl," just before ceasing xmsn. A head scratcher for sure. (Ed.)

12441.5: Un-ID sta. idling w slow pulses, ARQ/250, 1700-1720, then a brief msg that was either garbled or encrypted, and back to idling until 1750. (Ed.)

13417.7: "ABC" and "DEF" w mil. style "unclas" msg, "Please be advised that the uncoordinated cours coon is out of cigarettes. All proceeds to kill the course coon will be accepted as soon as possible." Was 85/45R, 1507-1513. (Williams, CO) FCC files show the USAF, (not Army) Fort Lee, VA, on this freq., but I wouldn't place any bets on it being your intercept—Ed.

13522: YIO71, INA, Baghdad, Iraq, w nx in EE, 425/50 at 1501. (Don Schimmel, WV)

13530: RVW53, Moscow Meteo, USSR, w coded wx, 983/50R at 1726. (Bilodeau, IL)

13563: 3MA22, CNA, Taipei, Taiwan, w RYRY, 850/50N at 1340. (Manthey, NY)

13735; 5YD7, Nairobi Aero, Kenya, w RYRY at 1844, 425/50. (Schimmel, WV)

13752.7: CNM66X2, MAP, Rabat, Morocco, w/nx in EE at 1323, and in FF at 1658, 425/50R. (Ed.)

13803: RCR78, Khabarovsk Meteo, USSR, w coded wx, 1010/50R at 1340. (Hetherington, FL)

13894: CLP1, MFA, Havana, Cuba, w "immediato" tfc to Embacuba Algiers, Algeria, 526/50 at 2236. (Schimmel, WV)

13939.8: CLP1, MFA, Havana, Cuba, w a 5F "ordinaro" msg to CLP16, Embacuba, Sao Tome, and a 5F "circular" to African embassies, 425/50N at 2335. (Ed.) Same sta. on 13940.5 w Prensaminrex nx in SS, 467/50N at 2228. (Bilodeau, IL)

13940: CLP65, Cuban Embassy, Managua, Nicaragua, w crypto after ZZZZZ and diplo tfc in SS, 425/100N at 2000. (Ed.)

13941.4: Reportedly MFA, Tunis, Tunisia, and another sta. on this freq. wkg one another in FEC at 1835. The main ID given was 1XE, which sent 5L msgs to NYH until 2221, and 5L msgs to YB3, 2030-2352. (Ed.)

13944: YOG58, Agerpress, Bucharest, Romania, w/nx in FF, 800/50R at 1615. (Ed.)

13962: HSF212BNN, Thai Embassy, Bonn, FRG, w/nx in EE, 350/50N at 1534. (Ed.)

13998.2: Un-ID w ARQ tfc in SS ending at 2150. (Hetherington, FL).

14337: BZP54, Xinhua, Beijing, China, w nx in EE. 1200-1300, 425/75R. (Hetherington, FL)

14392: AGA7RM, USAF MARS, 21st Replacement Battallion, Rhein Main AB, Frankfurt, FRG, w MARSgrams to AFA2BB in Southeastern USA. Was 170/75R at 2130. Both switched to USB voice comms on 14390.5 at 2217, and both were loud and clear. (Ed.)

14597.2: SPW, Warsaw R., Poland, w a tfc list and nx in Polish, FEC at 1755. (Ed.)

14607: UN-ID in ARQ at 1020 w ". . . vaenligen bkraefta meddeladetmo TTaget samt med . . ." (Hetherington, FL) Probably the Interpol encryption I wrote about in a recent column—Ed.

14710: CLP1, MFA, Havana, Cuba, w a circular in SS at 0508, 500/50N. (Williams, CO)

14715: RFHJ, French navy, Papeete, Tahiti, w "controle de voie," ARQ-E3/100 at 1351, and a msg at 1414. (Ed.)

14719: OST58, Oostende R., Belgium, w a tfc list FEC at 1419. (Ed.)

14761.5: NNN0IYX, USMC MARS, relaying MARSgrams from NNN0VRO and NNN0MPI, 170/75R at 1422. Altho the telegrams said "de VRO" or "de MPI," I had to get a positive ID on the sender from USB voice comms on 14760 at 1424. (Ed.)

14784.5: 9PL, Kinshasa Aero, Zaire, w RYRY, 425/50 at 2046. (Schimmel, WV) Same sta. on 14786 w RYRY, 381/50N at 0057. (Bilodeau, IL)

14825: RKS76, Murmansk, USSR, w telegrams in RR to UKS, SAM, Barentburg, Norway, 2124-2212, 425/50N. (Ed.)

14831: 9KT33, KUNA, Safat, Kuwait, w nx in EE at 1343, 425/50N. (Ed.)

14880: JMG4, Tokyo Meteo, Japan, w coded wx, 850/50R at 1701. (Ed.)

14907: DFZG, MFA, Belgrade, Yugoslavia, w telexes in SC, 3F grps, crypto after XYXYXY and XPXPXP, and Tanjug nx in SC, 425/75N at 1715. (Ed.)

14944: CLP1, MFA, Havana, Cuba, w tfc to Managua, Nicaragua, 425/75N at 1535. This freq is an often used as a TTY link between both countries. (Ed.)

15641.7: Egyptian Embassy, Algiers, Algeria, w a telegram in AA, ARQ at 1320. (Ed.)

15643: 9KT331, KUNA, Safat, Kuwait, w nx in EE, 425/50N at 1412. (Ed.)

15670: HGM36, MTI, Budapest, Hungary, w RYRY at 1613, then nx in SS at 1614 beamed to Central America, 425/50N. (Ed.)

15681.5: MFA, Rome, Italy, w tfc that appeared to be in AA, ARQ at 1513. (Ed.)

15705: YZJ6, Tanjug, Belgrade, Yugoslavia, w/nx in FF, 425/50R at 1314. (Ed.)

15710: RED52, Tass, Moscow, USSR, w nx in FF, 425/50R at 1700. (Ed)

15726: Un-ID sta w intermittent wds that were broken up, making IDing the lang. impossible. Was FEC/250, 1607-1619. (Ed.)

15729.2: Egyptian Embassy, QTH unknown, w TVXS selcal in ARQ at 1355, then on standby until 1425. (Ed.)

15752.7: CNM66X2, MAP, Rabat, Morocco, w/RYRY and freq schedule, 425/50R at 1159, + nx in EE at 1310. (Ed.)

15780: WQB35, Firestone, Akron, OH, w a msg to Harbel, Liberia, ARQ at 1450. QSX 15940. (Ed.)

15845: SUA289, MENA, Cairo, Egypt, w nx in AA, 425/50R at 1623. (Ed.) Same sta. found on 15845.6 w nx in AA at 2005, 445/50R. (Bilodeau, IL)

15856.5: DMK, MFA, Bonn, FRG, w crypto btwn VVVV and KKKK to Managua, Nicaragua, 1625, ARQ-E 170/96, and crypto to Havana, Cuba, at 1710, ARQ-E 85/96. Loggings made separate days. (Ed.)

15897.3: OLS4, CTK, Prague, Czechoslovakia, w nx in EE, 425/50N at 1421. (Ed.)

15935: SUA291, MENA, Cairo, Egypt, W nx in EE at 1400, and in FF at 1708, 350/50R. (Ed.) Same sta. w nx in FF and EE at 1930, 260/50R. (Bilodeau, IL)

15963: Y7A62, MFA, Berlin, GDR, w QR and RYRY, 425/50R at 1302. (Ed.)

16012.5: RVFI, French military, Le Port, Reunion, w "controle de voie," TDM-B/96 at 1235. (Ed.)

16066.5: IRO30, ANSA, Rome Italy, w/nx in EE re India at 1723, 425/50N. (Williams, CO)

16106: AFO nx in FF at 1120, 425/50N. The DIPLO nx svc formerly used this freq before this year. The QTH of the present user was not known when this was logged, whether it be Paris or a French possession. (Ed.)

16250: RME22, Tass, Moscow, USSR, w/nx in Armenian at 1240, 425/50R. (Ed.)

16278: MKD, RAF, Akrotiri, Cyprus, w/foxes and RYI's, FDM 170/50N at 0225. (Williams, CO)

16323: RFTJ, French military, Douala, Cameroon, w "controle de voie" at 1906, TDM-B/96. (Ed.)

16300: NNN0NIM, USN MARS, Gulfport, MS, w MARSgrams to NNN0NRI, 170/75R at 1644. (Ed.)

16343: YZI4, Tanjug, Belgrade, Yugoslavia, w/nx in EE, 425/50R at 1353, foll by RYRY at 1400, then nx in FF, 425/75R. (Ed.)

16386.6: Un-ID sta. w ARQ tfc in AA, 1527-1600. (Ed.)

17230: PCH66, Scheveningen R., Holland, w ARQ phasing sig + CW ID marker 2322. (Bilodeau, IL)

17432.3: HMV44, un-ID North Korean sta., w RYRY at 0250, 500/50N. (Williams, CO) The c/s is not listed in my files, so may be a new one. Your guess that it might be the PTT is probably correct—Ed.

18055: DFZG, MFA, Belgrade, Yugoslavia, w nx in SC, 425/75N at 1512. (Ed.)

18125: RND70, Tass, Moscow, USSR, w nx in EE, 425/50R at 1707. (Ed.)

18127: Un-ID Egyptian diplo post w msgs in EE, ARQ, 1600-1630. (Hetherington, FL)

18164: STK, Khartoum Aero, Sudan, w aero wx, 388/50R at 2242. (Bilodeau, IL)

18172: HMU33, un-ID North Korean sta., w RYRY + ID at 0355, 550/50R. (Williams, CO) Looks like another new c/s coming out of North Korea. Not listed in my files—Ed.

18385: RRQ20, Tass, Moscow, USSR, w nx in EE, 425/50R at 1601. (Ed.)

18415.3: Indonesian Embassy, Teheran, Iran, w nx in Indonesian re Iran, 1507-1530, 170/50N (Ed.)

18450: RCF, MFA, Moscow, USSR, w "CQ de RCF AS 5" repeated along w RYRY, 1443, 1445, 500/75N. At 1450 w RYRY + repeats of "For JUA RXX RZJ FOW EWZ40 UDZ21 PTF URO EWZ42 NR 56 all GR 171." At 1453 w a 5F msg and off the air by 1454. (Ed.)

18496: CNM80X11, MAP, Rabat, Morocco, w/nx in EE, 425/50R at 1323. (Ed.)

18540: RTV57, Tass, Moscow, USSR, w nx in FF at 1829, 425/50R. (Ed.)

18553.5: RFTJ, French Navy, Dakar, Senegal, w a svc msg at 1358, ARQ-E3/192. (Ed.)

18600: Un-ID French mil. w tfc that mentions "physique du personnel." Was 850/75R at 0025. (Williams, CO) RWN72, PL, Moscow, USSR, w nx in PP at 1438, 425/50N. (Ed)

18744.9: Un-ID w nx in FF, w fade out before ID was possible, 425/50R at 1718. (Williams, CO) My database comes up empty on this freq.—Ed.

18788: SUNA, Khartoum, Sudan, w nx in EE, 200/50R at 1717. (Williams, CO)

19298: NRV, USCG, Guam, w CQ, RYRY, foxes and counting, 170/75R at 0333. (Williams, CO)

19746: 6VU79, Dakar Meteo, Senegal, w RYRY at 1433, 809/50. (Schimmel, WV)

19800.3 and 19800.7: Two stas idling in ARQ mode w their phasing sigs not in synchronization, so that their "chirps" alternated back and forth. The baud rate for both was 125, and was at 1650. (Ed.)

19859: GYA, Royal Navy, London, England, w a test tape at 1750, 859/75. (Schimmel, WV)

19865.5: CLP1, MFA, Havana, Cuba, w a circular in SS at 2046, 500/50N. (Williams, CO)

20381.2: CAK, Santiago Aero, Chile, w RYRY at 0233, 850/50N. (Williams, CO)

20402: YWM1, Maracaibo Navrad, Venezuela, w unclassified mil. tfc to HDN, Quito Navrad, Ecuador. Was 991/75N at 2115. (Bilodeau, IL)

21833: NBA, USN, Balboa, Panama, w RYRY to Arauco Navrad, Chile, 850/75R at 1740. (Williams, CO)

21850: Un-ID idling, 1333 to past 1600, ARQ/425. (Ed.)

21905: CLP1, MFA, Havana, Cuba, w circulars in SS, 500/50N at 1331. (Williams, CO)

21972: End of nx xmsn in EE of items selected from Thai newspapers. May be the Thai Embassy, Washington, DC, acting as a relay sta. Was 250/75N at 1535. (Ed.)

22589: WLO, Mobile R., AL, w schedules for new automatic telex freqs, FEC at 1610. (Hetherington, FL)

22845.3: CLP1, MFA, Havana, Cuba, w 5F grps to Tanzania, 500/50R at 1722. (Williams, CO)

23011: PWZ, Rio de Janeiro Navrad, Brazil, w RYRY + "teste de PWZ." Was 85/75 at 1647. (Schimmel, WV)

23697.5: DMK, MFA, Bonn, FRG, w nx in GG, FEC-A/96. (Ed.)

24850: RFLI, French Navy, Fort de France, Martinique, w/crypto after KKKKK to RFFI, TDM-B/96 at 1336. (Ed.)

YOU SHOULD KNOW

BY ED NOLL, W3FQJ

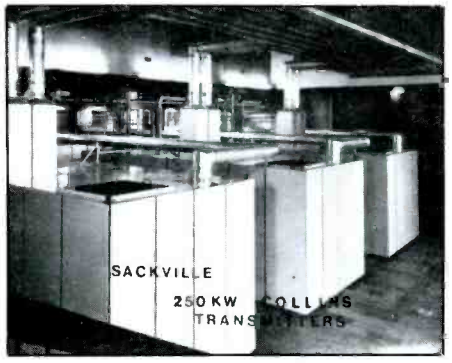
INTERESTING THOUGHTS AND IDEAS FOR ENJOYING THE HOBBY

Help For The Shortwave Program Listener

Shortwave *program listening* has never been more popular. Receiver design, high-powered transmitters, highly directional antennas and a better understanding of how to choose frequency and time for the best propagation conditions into a target area have made program listening better. A second big contribution to reliable program reception into specific target areas is the growing use of relay transmitters. Some relay transmitters are owned by the originating stations and located in a different part of the world, like the Radio Netherlands relay transmitters on Bonaire, which direct strong signals into the Americas. Other stations buy time on the transmitters owned by other stations in another part of the world. For example, Radio Japan provides coverage into the Eastern USA by way of one of Radio Canada International's tranmitters. In exchange, Radio Canada provides better coverage in the Orient by using a Radio Japan transmitter. Signals to be relayed are dispatched from the originating station to the relay point by satellites, radio point-to-point transmission, cable or tapes.

Arrangements like the above greatly improve the performance for those who prefer reliable and good quality program reception. Of course, the originating stations often transmit over the direct path from the station to the target area. For example, Japan transmits directly from their own transmitters, too, for those interested in long distance direct pick-up (DXing) and for reception in areas where the relay transmitter does not cover.

The included table shows the programs relayed to the USA from the Radio Canada International (RCI) facilities. Strong signals are provided for the American programs listener, BBC, Republic of Germany (Deutsche Welle), NHK Japan, Radio Beijing and Austria.



250 kW Transmitters of Radio Canada International.

There are other relay stations directing strong signals to the USA from more distant lands. Early evening signal from Taiwan is relayed for USA listening by one of the Florida transmitters of religious station WYFR. Radio Beijing operates a relay transmitter in Mali, Africa which has its transmission in turn beamed to the USA during the prime time evening hours. Radio Netherlands signals can be picked up via their Bonaire relay station. Deutsche Welle has relay stations on Antigua and Montserrat.

As a beginning DXer you must be careful you are picking up a direct signal from a distant station to record in your DX log rather than a relayed one. On the other hand, the program listener must know that more reliable signals are usually obtained from a relay station if such facility is available.

How does one collect the necessary information to concentrate on program listening? You can start with a selection of the top English language broadcasters such as Radio Canada International, BBC, Radio Netherlands, Germany's Deutsche Welle, HCJB in Ecuador and Radio Moscow. Those of you on the West Coast may wish to add Radio Australia to the test group.

The RCI relay table will help you with BBC and RCI frequencies. Also write directly to Radio Canada International, P.O. Box 6000, Montreal, Canada H3C 3A8. A program schedule request will bring responses

(Continued on page 42)

RCI

FINAL SCHEDULE FOR FOREIGN RELAYS VIA SACKVILLE

(Valid from november 5, 1989 to march 24, 1990)

RADIO CANADA INTERNATIONAL

ORGANIZ	UTC	EST	kHz	kW	BEAM	PROGRAM	TARGET AREA
BBC	0029:30-0429	1929:30-2329	6175	100	268	WORLD SERV.	USA
NHK	0200-0359	2100-2259	5960	250	240	- - - - -	USA
DW	0300-0350	2200-2250	6085	250	212	- - - - -	USA
RBI(CHN)	0300-0359	2200-2259	11840	250	189	- - - - -	LATINE AMERICA
DW	0400-0547	2300-0047	6085 9545	250 250	212 268	- - - - - - - - - -	USA USA
RAI (AUT)	0500-0659	0000-0159	6015	250	268	- - - - -	USA
RBI(CHN)	0500-0559	0000-0059	11840	250	272	- - - - -	USA
NHK	1100-1257 (MON-FRI)	0600-0757	6120	250	268	- - -	USA
NHK	1100-1300 (SAT&SUN)	0600-0800	6120	250	268	- - -	USA
BBC	1100-1300	0600-0800	5965	250	240	WORLD SERV.	USA
BBC	1300-1330 (MON-SAT)	0800-0830	5965 9515	250 100	240 268	WORLD SERV. " "	USA "
BBC	1300-1345 (SUN ONLY)	0800-0845	5965 9515	250 100	240 268	WORLD SERV. " "	USA "
BBC	1500-1745 (SAT&SUN)	1000-1245	15260 9515	250 250	285 268	WORLD SERV. " "	USA "
BBC	1600-1745 (MON-FRI)	1100-1245	15260 9515	250 250	285 268	WORLD SERV. " "	USA "
BBC	2200-2300	1700-1800	6175 9590	100 100	268 268	WORLD SERV. " "	USA "
BBC	2300-0029:30	1800-1929:30	6175 9590	100 250	268 268	WORLD SERV. " "	USA "

POP'COMM's World Band Tuning Tips

September, 1990

This Pop'Comm feature is designed to help you hear more shortwave stations. Each month this handy, pull-out guide will show you when and where to tune to hear a wide variety of local and international broadcasters currently active on the shortwave radio bands.

Note that the languages used will not always be English and that broadcasts may not necessarily be beamed to North America. Keep in mind that stations frequently make changes in broadcast times and frequencies. Changes in propagation conditions may also make certain broadcasts difficult or impossible to receive at times.

All times given are in UTC.

Freq.	Station/Country	UTC	Notes
2360	R. Maya, Guatemala	0100	SS & local
2420	R. Sao Carlos, Brazil	0030	PP
3200	TWR, Swaziland	0300	sign on, vernacular
3205	R. West Sepik, PNG	1130	Pidgin
3235	R. Clube Marilla, Brazil	0830	PP
3300	R. Cultural, Guatemala	0300	SS/EE
3316	SLBS, Sierra Leone	0600	sign on
3320	R. Suid Afrika, S. Africa	0300	Afrikaans
3339	R. Altura, Peru	1000v	SS, sign on
3365	R. Milne Bay, PNG	1130	Pidgin
3985	Swiss R. Int'l	0600	FF
4120	V of Nation's Saving	1200	KK, anti-S. Korea
4250	CPBS-2, China	1330	CC
4461	R. Nor Andina, Peru	0200	SS
4725	V of Myanmar (Burma)	1230	Burmese
4765v	Moscow (various)	eves	via Cuba
4790	R. Atlantida, Peru	eves	SS
4800v	R. Buenas Nuevas, Guat.	0100	Mam
4815	R. Burkina, Burkina Faso	0530	FF, sign on
4832	R. Reloj, Costa Rica	24 hr.	SS
4840	R. Valera, Venzeuela	eves	SS
4851	R. Luz y Vida, Ecuador	eves	SS
4865	LV Cinaruco, Colombia	eve	SS
4870	ORTB Benin	0500	FF, sign on
4895	R. Bare, Brazil	0-800	PP
4920	ABC, Australia	1100	EE
4935	R. Tropical, Peru	eves	SS
4940	R. Continental, Ven.	eves	SS
4950	V of Pujiang, China	1100	CC
4960	R. Federacion, Ecuador	0100	SS & Quechua
4980	Ecos del Torbes, Ven	eves	SS
5006v	R. Apinte, Surinam	0100	Dutch. Irregular
5025	R. Rebelde, Cuba	eves	SS
5030	Tonga Broadcasting Comm.	0700	EE/local
5055	RFO, Fr. Guiana	0900	FF
5075	Caracol, Colombia	eves	SS
5286	R. Moundou, Chad	0500	FF
5661	LV de Cutervo, Peru	0200	SS
5850	R. Beijing, China	1100	Mongolian
5900	V of Israel	0500	Arabic service
5940	R. Austria Int'l	2230	various
5954	R. Casino, C. Rica	1030	sign on
5960	R. Japan	0200	JJ/EE, via Canada
5975	BBC	eves	
6000	R. Moscow	eves	
6005	CFCX, Canada	24 hour	
6015	R. Austria Int'l	0500	various, via Canada
6025	R. Nigeria, Enugu	0430	EE, vernacular
6030	CFVP, Canada	24 hr	
6055	R. Continental, Peru	0930	SS
6060	RAE, Argentina	0100	SS
6070	CFRX, Canada	24 hrs	
6075	DW, Germany	0200	via Antigua
6090	R. Luxembourg	0600	German
6105	Tus Panteras, Mexico	eves	SS, irregular
6115	RBI, E. Germany	0530	German
6135	Swiss R. Int'l	0200	various
6165	R. Netherlands	0030	via Bonaire
6175	BBC	eves	
6185	R. Educacion, Mexico	eves	SS
6215	Voice of Hope, Lebanon	0300	AA/EE
6230	HCJB, Ecuador	0600	
6248	Vatican Radio	0500	various
6250	R. Nacional, Eq. Guinea	0500	SS, sign on
6305	Voz del CID	eves	SS, anti-Cuba
6540	R. Pyongyang, N. Korea	1100	JJ
6715v	Farabundo Marti	0200	SS, anti-El Salvador
6765	V of the Strait, China	1200	CC
6900	Turkish Met. Radio	0500	TT
6955	R. Beijing, China	1100	various
7105	BBC	0400	via Ascencion
7120	DW, Germany	0400	RR
7125	AWR, Italy	0600	various
7135	RFI, France	0300	FF/EE
7145	R. Polonia, Poland	0100	Polish
7155	RFE/FL, W. Germany	0200	various
7180	BBC, Hong Kong	1100	various
7210	R. Minsk, USSR	0300	RR & Byelorussian
7215	R. Australia	1100	
7230	R. Pyongyang, N. Korea	1200	CC
7240	R. Garoua, Cameroon	0430	FF & vernaculars
7255	V of Nigeria	0500	sign on
7285	DW, Germany	eves	various
7300	R. Tirana, Albania	eves	various
7310	R. Moscow	eves	
7320	BBC	0445	AA
7335	CHU, Canada	24 hr	time signals
7340	Voz del CID	eves	SS, anti-Castro
7350	R. Beijing	1130	various
7355	KNLS, Alaska	1300	various
7370	Turkish Police Radio	0500	sign on, TT
7375	RFPI, Costa Rica	eves	upper sideband
7390	R. Moscow	eves	SS
7410	Voice of Israel	0400	Hebrew
7412	All India Radio	1230	vernacular
7415	V of Vietnam	1100	various
7445	Voice of Asia, Taiwan	1200	various
7504	CPBS, China	1130	CC
9022	VOIRI, Iran	0500	various
9080	CPBS, China	1200	CC
9350	Voice of America	1200	feeder
9360	Spanish National Radio	eves	SS
9395	Voice of Greece	eves	GG/EE
9410	BBC	eves	
9445	V of Turkey	2300	
9455	R. Cairo, Egypt	0400	AA
9455	WSHB	1130	
9465	KFBS, Saipan	1400	RR
9475	R. Cairo, Egypt	0200	
9500	R. Tirana, Albania	0000	SS
9505	R. Japan	1200	JJ/EE
9515	TWR Bonaire	0700	PP
9540	R. Nacional, Venz.	eves	SS, irregular
9545	SIBS, Solomon Is.	0800	EE/Pidgin
9555	La Hora Exacta, Mexico	1200	SS
9565	R. Norway	0200	NN
9570	R. Bucharest, Romania	eves	various
9575	RAI, Italy	0100	

Freq.	Station/Country	UTC	Notes
9580	R. Australia	1200	
9590	BBC	0100	
9590	R. Netherlands	0330	
9600	R. Portugal Int'l	0200	
9600	R. Tashkent, Uzbek SSR	1200	
9610	ABC, Australia	1200	
9615	KGEI, California	0400	SS
9625	CBC, Canada	1300	various
9630	Spanish National Radio	0000	various
9640	R. Finland	1500	various
9645	Vatican Radio	eves	various
9660	R. Yugoslavia	2200	
9660	R. Rumbos, Ven.	eves	SS
9675	R. Cairo, Egypt	0200	
9680	VOFC, Taiwan	eves	EE/CC via WYFR
9685	R. Gazeta, Brazil	0100	SS
9715	HCJB, Ecuador	1130	JJ
9725	AWR, Costa Rica	1200	EE/SS, also eves
9730	RBI, E. Germany	0130	various
9735	R. Nacional, Paraguay	0100	SS
9745	HCJB, Ecuador	0030	
9750	R. Korea, S. Korea	1200	EE/KK
9760	R. Baghdad, Iraq	0200	SS
9770	R. Beijing, China	0000	via Mali
9779	R. San'a, Yemen	0300	AA
9785	KTWR, Guam	1200	JJ
9790	RFI, France	0000	FF
9795	Peace & Progress, USSR	eves	various
9805	R. Cairo, Egypt	0400	AA
9835	R. Budapest, Hungary	0100	
9850	R. New Zealand Int'l	0700	
9860	BRT, Belgium	0500	Dutch
9870	R. Austria Int'l	0000	various
9940	Voz del CID	eves	SS, anti-Castro
9950	R. Damascus, Syria	2100	
9965	R. Caiman	eves	SS, anti-Castro
11000	CPBS, China	1300	Taiwan-2 service
11375	CPBS, China	1100	various
11550	RTV Tunisia	0630	AA
11595	R. Macedonias, Greece	2100	Greek
11605	Voice of Israel	0000	
11620	All India Radio	1300	Sinhalese
11665	R. Moscow	1300	various
11670	RFI, France	0000	various
11700	KTWR, Guam	1200	CC
11705	R. Sweden	0200	various
11710	RAE, Argentina	0200	
11730	R. Oman	0400	AA
11735	R. Yugoslavia	0100	
11760	R. Havana, Cuba	eves	various
11760	R. Cook Islands	0600	EE/Maori
11780	R. Nacional, Brazil	2100	PP
11790	VOIRI, Iran	1300	Farsi
11800	RAI, Italy	0100	
11805	R. Globo, Brazil	100	PP
11825v	R. Tahiti	0600	FF/Tahitian
11830	V of OEA, USA	2345	SS
11835v	El Espectador, Uruguay	0100	SS
11840	R. Moscow	1600	
11865	DW, Germany	0100	EE/SS
11870	AWR, Costa Rica	eves	FF, SS, EE
11885	SABC, S. Africa	0530	
11900	HCJB, Ecuador	0000	Quechua
11905	R. Universo, Brazil	0900	PP
11915	R. Gaucha, Brazil	0900	PP
11925	R. Norway	0100	NN
11940	R. Bucharest, Romania	0100	various
11945	R. Beijing	0300	
11950	R. Havana, Cuba	2300	SS
11955	BBC, Singapore	1130	VV/CC
11960	HCJB, Ecuador	1200	SS
11965	V of UAE	1600	AA
11980	KSDA, Guam	1200	CC
12005	RTV Tunisia	0430	AA
12015	R. Beijing, China	0000	various
12020	TWR, Monaco	1515	various
12025	R. Ulan Bator, Mong.	1200	various
12070	R. Moscow	24 hr	various services
12085	R. Damascus, Syria	2100	
13605	V of UAE	2200	
13660	RFPI, Costa Rica	eves	
13665	R. Pakistan	1115	
13685	R. Beijing, China	0200	SS
13700	R. Netherlands	1800	various
13720	KSDA, Guam	1200	various
13730	R. Austria Int'l	0000	various
13740	Voice of America	eves	SS
13760	WSHB	eves	
13770	R. Netherlands	1500	
13861	ICBS, Iceland	1215	Icelandic
15020	All India Radio	1300	Sinhalese
15030	CPBS, China	1300	CC
15060	BSKSA, Saudi Arabia	1800	AA
15070	BBC	1600	
15084	VOIRI, Iran	1700	Farsi
15100	R. Beijing	0100	SS
15110	Spanish National Radio	0000	EE/SS
15120	Vatican Radio	2030	
15125	RBI, E. Germany	0245	
15130	R. Beijing, China	2300	SS, via Mali
15140	R. Nacional, Chile	2000	SS
15165	R. Norway	1200	NN
15170v	R. Tahiti	0500	FF/Tahitian
15185	WINB, Pennsylvania	2200	
15190	R. Inconfidenica, Brazil	0100	PP
15195	R. Bangladesh	1200	
15220	R. Budapest	0000	various
15220	HCJB, Ecuador	1500	PP
15235	LJB, Libya	0230	AA
15240	R. Australia	0000	
15260	BBC	1700	
15265	Radiobras, Brazil	1800	
15280	KGEI, California	2300	SS
15290	RFE/RL, Germany	0600	various
15300	UAE Radio	1700	AA
15310	R. Sofia, Bulgaria	0400	
15315	R. Netherlands	0100	
15320	UAE Radio	1600	AA/EE
15325	RCI, Canada	2000	various
15330	RTM, Morocco	2030	AA
15345	TWR, Bonaire	1100	
15350	R. Japan	0200	JJ/SS
15370	VOFC, Taiwan	1300	various
15375	Spanish National Radio	1900	SS
15400	R. Finland Int'l	1200	EE/Finnish
15420	BBC, Seychelles	1245	
15425	SLBC, Sri Lanka	0030	
15445	R. Veritas, Phillippines	1300	various
15460	RFI, France	1600	
15475	Africa No. 1, Gabon	1700	FF
15495	R. Kuwait	2100	AA
15560	R. Netherlands	2130	via Bonaire
15575	R. Korea, S. Korea	1400	EE/KK
15600	VOA, USA	2100	via Liberia
15630	V of Greece	1500	
15650	KUSW, Utah	1900	
17387	All India Radio	1200	
17535	V of Greece	1500	Greek
17590	Radio Moscow	0200	
17595	RTM, Morocco	1400	FF
17605	R. Netherlands	1830	via Bonaire
17610	RTV Tunisia	1700	AA
17630	Africa No. 1, Gabon	1400	FF
17650	R. Beijing, China	0100	SS
17660	R. Pakistan	0045	Urdu/EE
17675	RTBF, Belgium	1900	FF
17695	RFI, France	1600	FF
17705	R. Norway	2200	NN
17715	DW, Germany	1200	GG
17735	R. Oman	1400	AA
17745	R. Algeria	2030	various
17755	R. Japan	0100	
17770	Spanish Foreign Radio	1700	AA
17790	HCJB, Ecuador	1800	various
17820	RCI, Canada	1300	
17825	R. Japan	0200	various
17840	Vatican Radio	1100	FF/EE
17870	Peace & Progress, USSR	1300	
17880	R. Sweden	1430	Swedish
17895	R. Kuwait	1800	AA
21450	R. Moscow	1500	
21460	RTBF, Belgium	1600	FF
21470	HCJB, Ecuador	2000	various
21480	R. Netherlands	1330	Dutch
21490	R. Austria Int'l	1300	various
21515	V of UAE	1400	AA
21525	QBS, Qatar	1600	AA
21565	RFPI, Costa Rica	2200	
21570	R. Sweden	1230	
21580	RFI, France	1600	FF
21605	UAE Radio	1600	AA/EE

PC

You Should Know *(from page 39)*

from Radio Netherlands, P.O. Box 222, 1200 JG, Hilversum, Netherlands and Deutsche Welle, Postfach 100444, D-5000, Koln 1, Federal Republic of Germany. HCJB in Ecuador responds to a program request sent to HCJB Casillia, 691, Quito, Ecuador.

Of course, an ideal way to obtain English language transmission frequencies is right from *Popular Communications*. Gerry Dexter contributes to an up-to-date listing of English language broadcasts. Information given is country, UTC Time and frequency. Look for details four times a year, in the January, April, July and October issues. Of course, this information is useful to both DXer and program listener. Check each of the frequencies given for the best signal at a particular listening time. The strong signal program listener must check out the list and compile his own preferred listening scheduled of quality reception. Sometimes one frequency is better than the others listed. At times one or more signals are strong and you can pick the one that has the lowest noise and background level. Things may change if you listen to a repeat of a given program later on in the evening.

A number of the previously mentioned stations use relay facilities to punch a very strong signal into the USA evenings and, sometimes, other times of the day as well. Radio Moscow using high-powered transmitters can be heard in English day and night. Take time to find their correct frequencies by tuning over the various bands.

World radio broadcast listening does have a few quirks. Frequencies, times and programs change frequently. Shortwave propagation conditions change seasonally and often require changes in frequency and time if a given station is to direct a strong signal into your part of the world. You must keep your schedule up to date by listening for announced changes, making certain you are placed on the permanent mailing list of your favorite stations who carry the programs you prefer, or reading the various shortwave broadcast publications.

In addition, world band radio stations have few program surveys and listener rating systems. They depend very much on your correspondence and your opinions about their programs. Let them know on a routine basis, the programs you like and why. It will help keep good shows active. Stay in contact with the stations and programs you like and you will continue to receive their schedules, as well as other reading material, such as QSL cards, logos, banners, etc.

Audio Quality

Audio quality is best when you receive a strong signal and you can operate your receiver to take advantage of the full audio bandwidth, reproducing the high and low frequency modulation components of the received signal. This is particularly enjoyable when good music programs are being transmitted. It is not always possible to enjoy full bandwidth when there is interference from an adjacent channel signal or other interfering signals must sacrifice the highs of any musical programs and sometimes even reduce speech readability. A strong incoming signal helps the receiver push back such information and helps you take more complete advantage of the audio response of the receive program.

Another shortwave reception problem is fading. This is more severe on the higher frequency bands. Fortunately, for evening listening, the fading is less severe and, in general, incoming signals are stronger.

A type of fading that produces audio distortion is called *selective fading*. It causes the audio modulation on one side of the so-called carrier frequency (frequency shown on your digital read-out when you tune in a particular station) to fade out at a different rate than on the other side producing audio distortion. The two sidebands on each side of carrier interact unfavorably.

If one sideband is eliminated in the modulation process at the transmitter and the receiver has single sideband reception capability, there can be no interaction between

(Continued on page 76)

BY GERRY L. DEXTER

CLANDESTINE COMMUNIQUE

WHAT'S NEW WITH THE CLANDESTINES

The anti-Beijing government *Voice of June 4th*, which we've discussed in the past couple of columns has now issued a QSL letter for our reception of their broadcast. The letter, signed by Sanyuan Li, the program manager, gives frequencies in use as 7150, 7250, 11905 and 15280, though he still does not acknowledge the name of the station which is actually broadcasting the program, even though we now know it is the Taiwan government's Broadcasting Corporation of China. The address for reports is Voice of June 4th, P.O. Box 15-7939, Chicago, IL 60615. See last month's column for the full operating schedule.

Meantime, the other pro-democracy station is the *Voice of Democracy*. The ship, "Goddess of Democracy," from which the station will operate, arrived in Singapore early in May. Hong Kong would not allow the ship to dock there. The Beijing government is said to have refused to rule out the use of force in order to stop the broadcasts. One item in the **Bangkok Post**, forwarded by Randall Reese, reports the ship has been the target of surveillance and harassment by Chinese officials. The coalition of sponsoring groups, headed by the French magazine *Actuel* said that China has tried to place pressure on various foreign governments in an attempt to "undermine" the radio effort. The magazine said that its editorial offices in Paris were broken into, ransacked, and documents and computer disks relating to the ship were stolen. Unfortunately for us, this most interesting clandestine is not one we are going to hear, as long as it sticks to its plans to use medium wave only!

Radio Antorcha Martiana is an anti-Castro clandestine thought to have been long gone from the airwaves. So we were surprised to learn that the FCC Miami Office raided and closed the station back in February. Apparently Antorcha Martiana had made at least two broadcasts on the same day, using 7350. John L. Thiemer, engineer in charge at the Miami office, estimated the station could have been in operation for as long as a month. The station was operated by one Eloy Escagedo, using a Yaesu FT101EX transceiver and a longwire antenna. Escagedo was reported to have operated an unlicensed station in 1982 which was also closed by the FCC. We expect this was an earlier version of Antorcha Martiana. The station, at least at that time, was an effort of the Movimento Insurreccional Martiano, based in Miami. Escagedo was fined $1,000 for this most recent infraction but did not give up his equipment. (Thanks to the bulletin of the *Association of Clandestine Enthusiasts* for this story).

Still on the anti-Castro scene, Wendel Craighead, in Kansas, reports a full data QSL for the *La Voz de Fundacion* program aired over WHRI. The program is currently broadcast at "10-11am" (presumed EST and thus 1500-1600 UTC) on 15105 and 21840 Monday-Friday. And at "8-9pm" (presume 0100-0200 UTC) Monday through Saturday on 7315 and 9495. A. Bednarski in Canada reports reception on the latter frequency at 0100, with talks about Cuban reconciliation when Castro is out (returning exiles will not take your houses) and so on. Incidentally, Radio Clarin (ex-9950) has been off the air for several months so relays via this station are impossible now. Watch 9850 for a possible return.

Speaking of the Cuban American National Foundation, (which produces the "Fundacion" program) a Miami Herald story back in March reported on the transfer of *Radio Marti* director Ernesto Betancourt to another job within the USIA. Betancourt accuses CANF head, Jorge Mas Canosa, of engineering his removal in order to get his own man in as Radio Marti director. Betancourt claims he refused efforts by Mas Canosa to get Radio Marti to pay more airtime attention to the CANF and its work. Mas Canosa denies all of the charges.

And speaking of Radio Marti, William Walbesser in New York sends this current schedule for the shortwave broadcasts: 0930-1200 on 6075, 1200-1400 on 9570, 1400-2300 on 11930 and 2300-0300 on 9525. Reception reports can be sent to Radio Marti, the Voice of America, Washington, DC 20547.

Robert Ross of Ontario reports a tentative reception of one of the more rarely heard clandestines (in North America, anyway)—*The Voice of the Broad Masses of Eritrea*. Robert believes he had this one on 7487.65 at 0405 with local music and talk in local language, and bits of march music. What sounded like jamming began at 0410. Sounds quite likely, Robert, and, if so, certainly a great catch!

Watch for an unusual program on Salt Lake City commercial shortwaver KUSW which may, in fact, have begun by now. The program name is *Radio Seda-ye-Iran* and it should air at around 1430 on 15590. Our information is that it is aimed at Iranian expatriots as well as those living in Iran. The program's main thrust is to help Iranian's adjust to life in the United States, explain how things work and so on. Last we heard, the broadcast was scheduled to air for three hours per day, in Farsi and English. The program is produced in California, where it also airs on an FM sub-carrier authorization and is also on TV Channel 18. Apparently, there is also a radio outlet in New York City.

That covers things for this time. Remember to forward any items relating to clandestine broadcasting you may run across. This includes loggings, QSL information, newspaper or magazine clippings, information from stations or the groups which support them, address leads and so on. Your involvement is very much appreciated!

Until next month - good hunting! PC

The Voice of June Fourth, sent by the Independent Federation of Chinese Students in U.S.A.

WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS

Increased Fines For Unlicensed Radio Operations

The FCC is increasing the amount of a routine administrative monetary forfeiture for the unauthorized operation of a radio station. The usual amount for a first violation will be changed from $750 to $1,000. The routine amount for a first violation of unauthorized operation in the aviation, marine, public safety and special emergency radio services will be increased from $1,000 to $1,250. Additionally, the Communications Act of 1934, as amended, also authorizes seizures of equipment, revocation/suspension of licenses, and criminal penalties (fines of up $100,000 and/or one year imprisonment), for operating an unlicensed station.

The increases were prompted by numerous complaints of interference resulting from "piracy" of the airways. FCC licensees, broadcast associations and radio listeners have reported increased illegal operations and a proliferation of abusive activities. Such malicious practices violate FCC rules, impede efficient management of the spectrum and frustrate spectrum users.

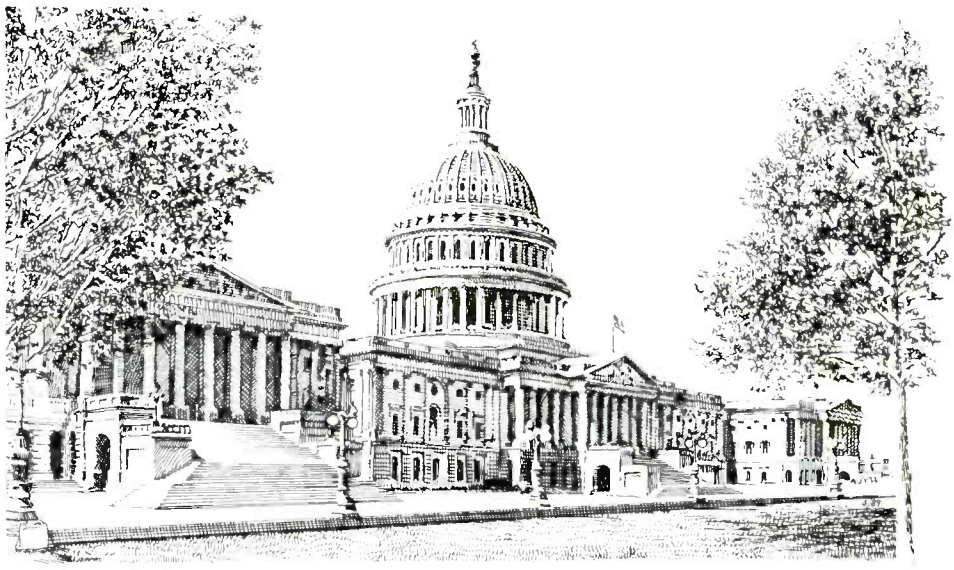
Pirate Station Shut Down In Chicago

The FCC's Field Operations Bureau, in a coordinated effort with its monitoring network and engineers from the Chicago Office, shut down an unlicensed Illinois pirate broadcast station. John L. Rosengarten, of Chicago, IL was fined $1,000 for illegally operating on 7.415 MHz, which is allocated to international fixed public radio communication service. Rosengarten's format was commentary and music. He identified the station as "Channel One CHOG the best in pirate radio."

Another Chicago Pirate Broadcast Station Busted

The FCC's Field Operation Bureau, in a coordinated effort with its monitoring network and engineers from the Chicago Office, shut down an unlicensed Illinois pirate broacast station. Eric B. Hultgren, of Rockford, IL was fined $1,000 for illegally operating on 88.1 MHz, on the FM band, Hultgren's station was used to retransmit the signal of Chicago radio station WBBM-FM.

Unlicensed operation of a radio transmitter is a violation of Section 301 of the Communications Act of 1934, as amended. Sanctions may include administrative fines of up to $10,000 and/or criminal penalties of up to $100,000 and/or imprisonment for up to one year. Such misuse of radio frequencies is a serious offense because of its potential for interfering with safety-of-life services such as aviation, marine and law enforcement.



Fined $1,500 For Unauthorized Use Of A Marine Frequency

The FCC's Seattle Office fined George M. Muchin, owner of Redmond Plumbing, $1,500 for the unauthorized and unlicensed operation of a marine radio transmitter.

Acting on a tip from a local amateur radio operator, investigators from the office observed illegal radio transmissions on 156.575 MHz which is a VHF marine frequency. These transmissions consisted of nonmarine-related business communications on VHF marine channel 71. Using mobile direction-finding equipment, the illegal transmissions were initially traced to a worker's truck and later to a private residence.

VHF marine channels are available for ship-to-ship and ship-to-shore communications only.

Illegal Equipment Seized In California

Engineers from the FCC's San Francisco Office and the U.S. Marshal's Service executed a civil *in rem* seizure of four illegal CB linear amplifiers valued at approximately $1,000 from R.H. Electronics. The store is in Magalia, and owned by Ray Hanson.

The seized equipment was capable of operating in the CB Radio Service at power levels in excess of the limits set by the Commission's Rules. The use of such illegal radio equipment, aviation and marine), other CB users and home electronic entertainment equipment.

The marketing, manufacture and use of illegal radio equipment violates Section 302(b) of the Communications Act of 1934, as amended. Violation of the law carries potential criminal penalties of up to $100,000 in fines and/or up to one year in prison. This action is part of a continuing enforcement program to assure that the FCC's ban on manufacturing and selling CB linear amplifiers and other non-typed accepted equipment is observed.

Outband Operator In Texas Fined $1,000

Mrs. Sue Swanson of Lago Vista, Texas was fined $1,000 for illegally operating on 27.970 MHz. The FCC's Field Operations Bureau in a coordinated effort with its monitoring network and an engineer from the Houston Office traced the unlicensed radio operation to her residence. Ms. Swanson had been illegally transmitting on a frequency that is allocated to the U.S. Government for fixed and mobile operations.

Amateurs Fined For Causing Deliberate Interference

Amateur operators Robert N. Frizzell, (W6UCB) of Beaty, Oregon, and Richard L. Young, (W6UGH) of Los Angeles, California, were each recently fined $1,000 for willfully interfering with other amateur radio communications.

The investigation was initiated by complaints from various Amateur operations about repeated jamming of transmissions on the forty meter band. The investigation revealed that Mr. Frizzell and Mr. Young consistently operated adjacent to the operations of other Amateurs and within the bandpass of state of the art receivers. When the affected Amateurs moved, these two

Amateurs would follow and operate adjacent to them; again within the receiver bandpass of adjacent operators.

Willful or malicious interference is a violation of FCC Rule Section 97.101(d). Violations of Commission rules are punishable by administrative fines of up to $10,000 for each violation or for each day of a continuing violation, up to a total of $75,000. Rule violations are also criminally prosecutable. Additionally, such violative activity could result in license revocation or suspension by the Commission.

Indicted In Satellite Jamming

Richard M. Smith, Chief, Field Operations Bureau of the Federal Communications Commission (FCC) and Lawrence Lippe, Chief, General Litigation and Legal Advice Section, Criminal Division, Department of Justice, announced that Thomas M. Haynie has been indicted by a Grand Jury in the Eastern District of Virginia. Haynie was charged with three counts of intentional interference and three counts of unlicensed operation of a satellite uplink. The indictment alleges that on September 6, 1987, programming carried on the communications satellites Satcom IV and Spacenet I was interfered with on three separate occasions. The indictment is the result of a lengthy investigation which began immediately after the interference occurred.

The interference consisted of a video text message which completely overrode the programming carried on the satellites. These satellites are used to relay programming to cable television systems and authorized home satellite dish users.

Investigators from a the FCC's Field Operations Bureau determined that the interference was transmitted from the satellite uplink facility of the Christian Broadcasting Network, Inc. (CBN), Virginia Beach, Virginia. Thomas M. Haynie was the uplink operator on duty at CBN at the time of the incidents.

Intentional interference with a communications satellite is a violation of Title 18, United States Code, Section 1367, which provides penalties of up to ten years in prison and fines of up to $250,000.

Application For Ship Radio Station License

As of now, only the Ship Radio Station License Application Form 506 dated October 1987 (and later editions) will be accepted for processing.

Earlier editions of the application form will delay the issuance of the license, since applications will be returned without action, along with a request to refile on a current form.

For further information, contact the Consumer Assistance Branch, Private Radio Bureau, Gettysburg, PA 17326, telephone number 717-337-1212. PC

BROADCAST DX'ING

BY ROGER STERCKX, KVT1JH

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

A Rose Is A Rose Is A Rose: Sometimes listeners notice that several air personalities at different stations sound a lot alike. One reason might well be the not-uncommon practice of radio people working under more than one name. For example, at "Z-100" in New York City, he was deejay Danny Hernandez. But at New York's WPLJ/95.5 MHz he was known as Bobby Valentine. When he was heard on New York's WQHT/97.1 MHz, listeners heard him using his real name, Ray Rossi. Next time you notice a strong similarity between different air personalities, consider that the differences may actually be very slight.

Story Behind the Story: A letter from Sgt. Alan P. DesJardins of San Angelo, TX observes that follows our monthly listings of frequency and facilities changes. He thought that our readers would be interested in some of the background of how and why these changes typically evolve, based upon his own experiences in the broadcasting industry.

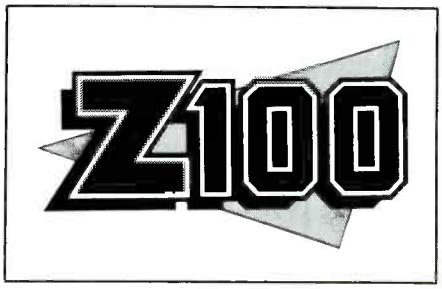
He tells us that in 1983, he worked at AM oldies station WASY/830 kHz which was in Gorham, ME. WASY was running 5 kW into an omnidirectional antenna during daylight hours, and at night it ran 2.5 kW into a tight E/NE directional pattern. They used to get reception reports from Scandinavia, but off the signal lobes at night the station was almost impossible to receive a dozen miles away. WASY was having some problems and Alan decided that maybe it was time to leave.

That put him at WJBQ/97.9 MHz and WMER/1440 kHz. JBQ was a Top-40 rocker, while MER ran a talk format. He spent most of his time working on the AM as a program controller. Not long after Alan left WASY, things got a lot worse. Eventually, one Friday in 1983 in '83 the station told the employees that no paychecks would be given out. Everybody walked out, and the deejay even left on the transmitter when he left. WASY went dark that day, and remained so for several years.

Alan left WJBQ/WMER to join the Air Force. Enter the picture WGAN-FM. GAN had been running a "Beautiful Music" format for years with a special 300 kW power authorization that gave them a huge coverage area. GAN changed its format to directly compete with JBQ, and soon thereafter changed its callsign to WTHT ("The Hit").

WJBQ reacted to this giant by changing to a more easy tempoed "Classic Hits" format, and switching its call letters to WWGT, "The Great 98." Re-enter 1590 kHz into the picture.

Acting quickly, the new owners of the former WASY jumped on the abandonment of the callsign WJBQ (an institution in southern Maine since the 1960's) and applied to the FCC for those call letters on 1590 kHz. The FCC awarded the call, and WJBQ went on the air on 1590 kHz with the old WASY transmitter and an oldies format via satellite feed.



A sticker from New York City's "Z-100" comes from Errol Urbelis, of Kings Park, NY.

Kevin Coldiron, St. Petersburg, FL passed along this sticker from Jacksonville's WFYV ("Rock 105").

Recent changes in the area involve the market dominant WBLM, Lewiston, ME. With its AOR format and "big city" image, BLM has been a market giant for a decade. When BLM eventually found that it had peaked by reaching its maximum 107.5 MHz, 50 kW audience, the next step was to swap transmitters with WTHT!

How Much is Enough? Readers often write to say that they are intrigued by the possibilities of rounding up all of the loose change in their pockets and buying a hometown-type radio station. They ask our advice, and that leads to the conclusion that most people probably don't realize the amount of money that is involved in taking over a going station in a viable hometown market.

Case in point, just recently the owner of WRCN/WRHZ, Riverhead, NY, purchased WFAS (AM/FM) in White Plains, NY. That meant that Gary J. Starr paid $12.5-million to *CRB of Westchester* for their stations. Moreover, trade publications said that Starr bought himself two stations with an excellent potential.

To be sure, there are far less costly stations to be had. WKIQ-AM in Eustis/Leesburg, FL has been advertised for $200,000 "cash," and WKFL-AM in Bushnell/Wildwood, FL has been advertised for $120,000 "cash." An unspecified AM/FM combo in a small Virginia market is available for $525,000 "or best offer." So, while you

Applications For New FM Stations

AK	Anchorage	88.1 MHz
AL	Holly Pond	95.5 MHz
AR	Prairie Grove	94.9 MHz
AZ	Flagstaff	91.1 MHz
CA	Essex	98.9 MHz
CA	Mendota	102.3 MHz
CA	Sun City	92.9 MHz
CA	Temecula	94.5 MHz
CO	Longmont	104.3 MHz
CT	Torrington	89.9 MHz
GA	Evans	92.3 MHz
GA	Martinez	107.7 MHz
IA	Decorah	88.7 MHz
IL	Norris City	90.1 MHz
IN	Lafayette Twp.	91.1 MHz
MI	Hillman	94.9 MHz
NJ	Manahawkin	105.7 MHz
NM	Texico	96.5 MHz
NY	Blue Mountain Lk.	91.3 MHz
OH	Hubbard	101.9 MHz
TN	Colonial Hts.	105.9 MHz
TN	Newport	92.9 MHz
TX	Raymondville	105.7 MHz
VI	Christiansted	90.1 MHz

Permit Granted For New AM Station

CT	Poquonok	870 kHz

Permits Granted For New FM Stations

AK	Seward	88.1 MHz
AK	Soldotna	96.5 MHz
CA	Chowchilla	93.3 MHz
FL	Mayo	89.5 MHz
GA	Warrenton	93.1 MHz
GU	Agat	91.9 MHz
ID	Gooding	101.3 MHz
IN	Cannelton	102.9 MHz
KY	Louisa	92.3 MHz
ME	Winslow	95.3 MHz
MI	Pentwater	94.1 MHz
MI	Vandalia	89.9 MHz
MN	La Crescent	91.1 MHz
MO	Osceola	92.2 MHz
NH	Jackson	99.5 MHz
OK	Holdenville	106.5 MHz
PA	Marietta	88.7 MHz
SD	Sioux Falls	101.9 MHz
TN	Blountville	88.3 MHz
TN	Harrogate	96.5 MHz
TN	Parsons	97.3 MHz
TX	Los Ybanez	107.9 MHz
UT	Richfield	97.9 MHz
VA	Emporia	99.5 MHz

Applications For AM Facility Changes

KBRF	Fergus Falls, MN	1250 kHz	Increase to 2.2 kW nites.
KEYQ	Fresno, CA	980 kHz	Increase to 250 w. nites.
KFIT	Lockhart, TX	1060 kHz	Move to Sunset Valley.
KIJN	Farwell, TX	1060 kHz	Increase to 5 kW.
KIPO	Pearl City, HI	1380 kHz	Increase to 10 kW days.
KIQI	San Francisco, CA	1010 kHz	Increase to 5 kW nites.
KJMM	Tucson, AZ	580 kHz	Move to Marana, 1 kW nites.
KRKL	Yountville, CA	840 kHz	Increase to 5 kW days.
KOKC	Guthrie, OK	1490 kHz	Increase to 1 kW.
KWNK	Simi Valley, CA	670 kHz	Increase to 5 kW days.
KWPR	Claremore, OK	1270 kHz	Increase to 1 kW.
WADE	Westboro, NC	1340 kHz	Increase to 1 kW.
WAKE	Valparaiso, IN	1500 kHz	Move to 970 kHz, 700 w. nites.
WALL	Middletown, NY	1340 kHz	Drop to 660 w.
WBCQ	Quakertown, PA	1180 kHz	Increase to 900 w.
WCHM	Clarkesville, GA	1500 kHz	Move to 1500 kHz, 1 kW.
WCMD	La Plata, MD	1560 kHz	Move to 800 kHz, 250 w. nites.
WGDL	Lares, PR	1200 kHz	Increase to 1 kW.
WKII	Pt. Charlotte, FL	1090 kHz	Move to Solana, 1070 kHz, 3.1 kW/400 w.
WMJL	Marion, KY	1500 kHz	Drop to 175 w.
WNNZ	Westfield, MA	640 kHz	Increase to 15 kW nites.
WNZQ	St. Cloud, FL	1500 kHz	Move to 830 kHz, 400/250 w.
WTLN	Apopka, FL	1520 kHz	Move to 700 kHz, 10 kW days.
WTRN	Tyrone, PA	1340 kHz	Add 250 w. booster at Altoona.
WVIN	Bath, NY	1380 kHz	Increase to 5 kW/350 w.
WXCT	Hamden, CT	1220 kHz	Increase to 5 kW.
WXEW	Yabucoa, PR	840 kHz	Increase to 5 kW nites.
WYMB	Manning, SC	1410 kHz	Increase to 5 kW.

Applications For FM Frequency Changes

(new)	Willard, MO	100.5 MHz	Seeks 105.1 MHz
KACC	Alvin, TX	91.3 MHz	Seeks 89.7 MHz
KBIC	Alice, TX	102.3 MHz	Seeks 102.9 MHz
KDDR-FM	Oakes, NM	92.3 MHz	Seeks 92.5 MHz
KSOX	Raymondville, TX	101.7 MHz	Seeks 102.1 MHz
KZTX	Refugio, TX	106.3 MHz	Seeks 106.1 MHz
WAIL	Key West, FL	95.5 MHz	Seeks 99.5 MHz
WAZR	Woodstock, VA	95.9 MHz	Seeks 93.7 MHz
WGUD	Pascagoula, MS	106.3 MHz	Seeks 105.9 MHz
WMTZ	Martinez, GA	94.3 MHz	Seeks 93.9 MHz
WVKC	Galesburg, IL	90.5 MHz	Seeks 90.7 MHz

FM Frequency Changes Approved

KCLI	Clinton, OK	95.3 MHz	To 95.5 MHz
KICR	Oakdale, LA	104.9 MHz	To 98.7 MHz
KLLR-FM	Walker, MN	99.3 MHz	To 99.1 MHz
KMGZ	Lawton, OK	95.3 MHz	To 99.5 MHz
KTAO	Taos, NM	101.7 MHz	To 101.5 MHz
KZLN-FM	Othello, WA	97.7 MHz	To 97.5 MHz
WKIO	Urbana, IL	103.9 MHz	To 92.5 MHz
WLTK	Broadway, VA	95.5 MHz	To 96.1 MHz
WMLA	Leroy, IL	92.7 MHz	To 104.1 MHz
WQON	Grayling, MI	100.1 MHz	To 100.3 MHz
WQTY	Linton, IN	95.3 MHz	To 93.3 MHz

AM Facility Changes Approved

KKGO	Hesperia, CA	540 kHz	Move to Costa Mesa.
WAEC	Atlanta, GA	860 kHz	Add 500 w. nites.
WEND	Brandon, FL	760 kHz	Increase to 10 kW days.
WSBS	Gt. Barrington, MA	860 kHz	Increase to 2.7 kW days.

How about this sticker from KSAN in the Oakland/San Francisco area? It was submitted by reader Bob Combs, Campbell, CA.

don't necessarily need millions, you still need a few greenbacks to rub together, and possibly a lot more to get a sinking station out of the doldrums and into a profitable position.

Now Hear This: The FCC authorized WQYK/1010 kHz, 50/5 kW in Seffner, FL to conduct on-the-air tests of George Yazell's Noise Free Radio (NFR) narrow band FM system for AM radio.

NFR is a method of compressing the normal 200 kHz wide band FM broadcast signal to a bandwidth of only 2 kHz so it can be transmitted on the standard AM broadcast band. Within the receiver, the narrow 2 kHz signal is reconstituted to 200 kHz so that the fidelity and noise free qualities of FM may be enjoyed.

DX'ers with all-mode receivers might be able to copy these tests. Reports can go to Dr. Frank Berry, Chief Engineer, WQYK, P.O. Box 200887, St. Petersburg, FL 33702.

Stations seeking more tech info on NFR can contact its inventor, George W. Yazell, P.E., P.O. Box 8086, Lakeland, FL 33802-8086.

Thanks to Tom Coucke, KE4KE, of Anchor Point, AK for this info. Tom is a Staff Engineer at KNLS, who also mentions that SW station KNLS has changed freqs. Now they operate 9870 kHz from 1100 to 1200 UTC, and on 11800 kHz from 1500 to 1600 UTC. These frequencies replace 9710 and 11700 kHz, Tom advises.

Collector: Kevin Coldiron, 11401 9th St. North #305, St. Petersburg, FL 33716-2310 has an extensive collection of catalogs regarding FM broadcast antennas, also news clippings on his local radio scene going back to 1978, plus album rock stickers from around the nation. If anybody has similar interests, Kevin invites correspondence.

Big Station, Low Power: In Chandler, AZ the Shumway Elementary School raised

New FM Call Letters Assigned

KBUG	Osceola, MO
KCRQ	Gooding, ID
KFAV	Warrenton, MO
KIKO-FM	Claypool, AZ
KMSI	Moore, OK
KSDC	Oakridge, OR
KSDR-FM	Watertown, SD
KTDD	Huntsville, TX
KTDE	Espanola, NM
KTDF	Manhattan, KS
KTDG	Winterset, IA
KTDH	Kawaihae, HI
KTDI	Huntsville, MO
KTDJ	Liberal, KS
KTWB	Sioux Falls, SD
KUKA	San Diego, TX
KUKB	Texarkana, AR
KUKC	Pearl City, HI
KUKE	Pasco, WA
KUKF	Omaha, NE
KYAY	Richfield, UT
KYMI	Los Ybanez, TX
KYWG	Sarles, ND
KZHR	Dayton, WA
WDHI	Delhi, NY
WELS-FM	Kinsto, ND
WEXX	Mt. Hope, NY
WEZJ-FM	Williamsburg, KY
WGSG	Mayo, FL
WJBI-FM	Winslow, ME
WJDG	Loudon, KY
WJDT	Rogersville, TN
WKCM-FM	Cannelton, IN
WMSJ	Harpswell, ME
WQHA	Aguada, PR
WQHB	Sumter, SC
WQHC	Nashville, IL
WQHD	Belpre, OH
WQHE	Elizabethtown, PA
WQHF	Freehold Twp., NJ
WQHG	Huntington, PA
WQHH	Dewitt, MI
WQHJ	Irondequoit, NY
WRQO	Monticello, MS
WUIA	Delta, OH
WUIB	Dwight, IL
WUIC	Trinity, AL
WUID	Woodlawn, IL
WUIE	Rockt Mt., NC
WUIF	Bay Minette, AL

New AM Call Letters Assigned

KLAY	Lakewood, WA

Changed FM Call Letters

New	Former	
KATP	KESE	Amarillo, TX
KBZN	KKWY	Ogden, UT
KCHH	KRIZ	Paradise, CA
KCJC	KAIO-FM	Russellville, AR
KCRN	KLHA	Wichita Falls, TX
KHCS	KYRH	Palm Desert, CA
KHOZ-FM	KWNQ	Harrison, AR
KJFX	KNYO-FM	Fresno, CA
KKPR-FM	KKPR	Kearney, NE
KKSI	KRAM	Eddyville, IA
KMZX	KWTD	Lonoke, AR
KNGV	KODK	Kingsville, TX
KNLA	KKBZ	White Rock, NM
KOKE	KGID	Giddings, TX
KOLX	KPHN	Barling, AR
KRTH	KRTH-FM	Los Angeles, CA
KSKL	KEZU	Scott City, KS
KTMJ	KGKB	Tyler, TX
KWEZ	KIHU	Trumann, AR
KXFE	KDDA-FM	Dumas, AR
KZMG	KIZN-FM	New Plymouth, ID
KZZF	KFRZ	Hanford, CA
WBNI-FM	WTOY	Roanoke, VA
WBNN	WFOW	Union City, OH
WCFL	WUEZ	Morris, IL
WCRR-FM	WYBD	Rural Retreat, VA
WDDK	WGRG	Greensboro, GA
WFHT	WIQI	Quincy, FL
WFNL	WDCW	Sturgeon Bay, WI
WFTC	WKCP	Kinston, NC
WFXO	WTIB	Iuka, MS
WGTN-FM	WQSO	Andrews, SC
WLPC	WMQA	Mexico Beach, FL
WMXK	WAZI	Morristown, TN
WOTC	WPHF	Wiggins, MS
WPAV	WCFL	Culpeper, VA
WPLC	WRAP	Spotsylvania, PA
WQFN	WQWQ	Muskegon Hts., MI
WREL-FM	WVLI	Buena Vista, VA
WRHV	WMHX-FM	Poughkeepsie, NY
WRTO	WAQI-FM	Goulds, TX
WUNS	WYBA	Lewisburg, PA
WWSS	WMRQ	Meredith, NH
WYBZ	WRJI	Crookesville, OH
WYKY	WWAM	Columbus, WI

AM Call Letter Changes Requested

Present	Seeking	
KNNQ	KTUN	Santa Barbara, CA
KBQC	KFQC	Davenport, IA
WGLH	WGSB	Mebane, NC

FM Call Letter Changes Requested

Present	Seeking	
KKCC-FM	KSWR	Clinton, OK
KQLV	KXIX	Sheridan, AR
KWTD	KMZX	Lonoke, AR
KZRX	KYRX	Chaffee, MO
WOSE	WXOF	Clinton, OH

Requests Withdrawn For Changed Call Letters

Present	Wanted	
KZAM	KERT	Creswell, OR
WIOI-FM	WAZO	Jacksonville, FL

Changed AM Call Letters

New	Former	
KDFL	KLAY	Lakewood, WA
KECR	KMJC	El Cajon, CA
KESI	KYTE	Portland, OR
KHNN	KZAM	Springfield, OR
KKHJ	KRTH	Los Angeles, CA
KKPR	KKOA	Kearney, NE
KLRG	KEZO	N. Little Rock, AR
KOSG	KRIJ	Vermillion, SD
KSAZ	KJMM	Tucson, AZ
KSWV	KWNV	Santa Fe, NM
KUCL	KIZN	Dumas, AR
KWXT	KZAO	Dardanelle, AR
WAME	WDRV	Statesville, NC
WBNI	WTOY	Roanoke, VA
WFNV	WHOT	Campbell, OH
WHOT	WFMJ	Youngstown, OH
WKTA	WSSY	Evanston, IL
WKVG	WIFX	Jenkins, KY
WMSX	WATD	Brockton, MA
WQDW	WKCP	Kinston, NC
WQKR	WHRP	Portland, TN
WQWQ	WKJR	Muskegon Hts., MI
WTOY	WSAY	Salem, VA
WWOL	WBBO	Forest City, NC
WXDX	WEZQ	Winifield, AL
WYKO	WBOZ	Sabana Grande, PR
WZRC	WJIT	New York, NY

$1,200 to put a low power AM broadcasting station on the air. That's station KdSTR ("Kid Star"), which operates on 590 kHz. The station is staffed by 6th grade students and numbers about 30. Programs can be heard throughout the school campus. Tech help is setting up the station was provided by Mike Malo, CE at Phoenix station KTAR/620. The mini-station has been shown on TV and written about in several newspapers. We appreciate Noel Brown, Chicago, IL for telling us about KdSTR.

Casting Out Simulcasting: When the the 1605 to 1705 kHz segment is opened for AM broadcasting, looks like the FCC will begin insisting that affiliated AM/FM stations will have to run separate programming. They feel that if AM stations do no more than duplicate the programming of FM outlets, there is little incentive for audiences to bother with AM. Not all AM/FM stations are pleased with this prospect as it means (in effect) running two separate radio stations instead of one. New sales tactics and air personalities might have to be dealt with, and it all adds up to a lot more time, expense, and effort for broadcasters.

Nevertheless, the FCC does make a good point with this policy. Broadcasters who are so little interested in developing AM radio past the point where it is merely an idiot step-brother of a profitable FM outlet should get off the dime. Let them either develop their AM potentials, or sell them to someone who might like to try. Otherwise AM radio will continue to sink.

That's Fine: The owners of WIMG-AM/1390 kHz in Trenton, NJ, were fined $10,000 by the FCC for operating the station without a valid license. The FCC claims it had notified the owners twice in 1989 that its license had expired, but the station continued to operate until last February 5th. WIMG had been previously fined in 1986 and 1988, and has a long list of FCC violations going back to 1983.

WIMG's licensee owns twenty other stations around the country.

This column seeks your news clippings, comments, AM/FM station bumper stickers and also photos of broadcast stations. PC

HOW I GOT STARTED

POP'COMM invites readers to submit, in not more than about 125 words, how they got started in the communications hobby. Each month, we'll accept them (preferably) typewritten, or otherwise easily legible. If you have a photo of yourself taken recently, or when you got started, please include it with your story. We can't return or acknowledge material, whether or not it is used. Your story need be submitted only once, we'll keep it on file to consider it for future issues. All submissions become the property of *Popular Communications*.

Entries will be judged taking into consideration if the story they tell is interesting, amusing, or unusual. We reserve the right to make any necessary editorial changes to improve style or grammar.

Each month, our new winner will receive a 1-year gift subscription (or subscription extension if already a subscriber) to *Popular Communications*.

Address all entries to: How I Got Started, Popular Communications, 76 North Broadway, Hicksville, NY 11801.

Our Winner For September

The winning story for September was submitted by Randall Reese, of Bangkok, Thailand. He told us:

"My adventure in communications began one cool Christmas morning. I finally received the present I had been hinting for over a period of weeks. I shook when I unwrapped the all-band receiver. For the next two years it brought the sounds of a distant world to my ears. It let me listen, look at geography books, and dream about faraway lands. But at age 15, my interests drifted elsewhere.

"At age 26, however, I found myself in one of those exotic lands I had learned about via shortwave. I was in India working for an offshore drilling firm. Radio again came into my life, not only as a source of information but as a hobby. Now I live in Thailand, and radio continues as my primary source of information on what's happening in the world." **PC**

CB SCENE

27 MHz COMMUNICATIONS ACTIVITIES

BY BILL SANDERS, SSB-295

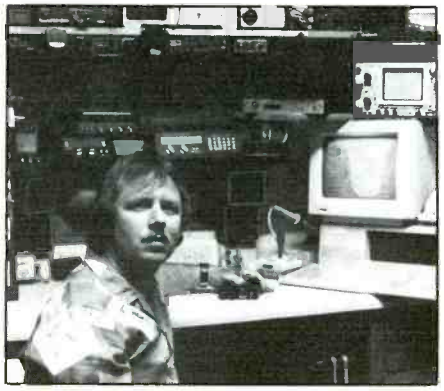
Midland International has introduced an advanced 40-channel CB for RV's and off-road vehicles exposed to weather and high ambient noise levels. The new unit, dubbed the Model 77-118, has a large, front-panel, waterproof mylar speaker for protection from the elements and maximum audio under high noise conditions.

This, plus three NOAA VHF weather channels, and Mic-ro-tune II, which permits remote channel changing. Advanced components include full ETR electronic frequency control, featuring a microprocessor chip PLL system that locks the receiver and transmitter on frequency for pinpoint channel selection. A noise limiter switch allows the operator to reduce or eliminate background noises coming through the receiver.

In addition, the 77-118 has a green, high-intensity LED channel readout system for easy visibility, a memory-hold circuit that retains the last channel used, instant Channel 9 access and a four-stage electronic S/RF meter system that displays incoming signal strength as well as output power. To reduce the chance of power transistor failure, the 77-118 is equipped with a double-layered heat sink. Easy installation and in/out flexibility are provided by a quick-disconnect bracket and DC cord.

For complete information on the Midland 77-118, contact Midland International Corporation, Consumer Electronics Division, 1690 North Topping, Kansas City, MO 64120, or circle 101 on our Readers' Service card.

The Midland 77-118 is a new mobile rig designed for the RV market.



This is Kevin, from beautiful Hawaii, saying "Aloha" to all!

Errol Urbelis is an old time CB'er who still keeps active in the hobby.

From Our Mailbag

Rodney Hammon, 823 Regnier Lane, Paradise, CA 95926, tells us that he came across a CPI 300 SSB base station and has been searching for a company that can supply parts, especially the two channel selector switches. He's run out of resources in his area. For those who are unfamiliar with this transceiver, it was a deluxe and expensive base station produced in the late 1970's by Communications Power, Inc. Despite the high quality of their equipment, the company fell by the wayside after only a relatively brief period, leaving behind a legacy of the several different base and mobile AM/SSB transceivers they designed. If anybody can help Rodney, please contact him directly.

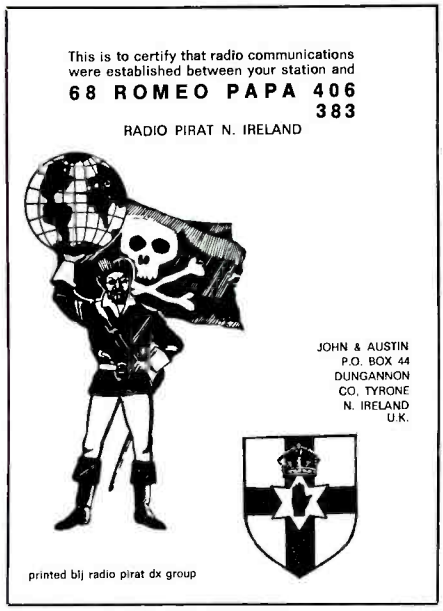
Not too many present-day operators have been on 27 MHz since the 1960's, but we recently heard from one of that breed, Errol Urbelis, SSB Network member SSB-6721. Errol started in radio back in 1957 as an SWL, and in 1962 he entered CB as KBG2879. From his shack in Kings Park, NY, he has continued to avidly pursue both of these interests and has been an SSB Network member for more than ten years. His first CB rig was a Lafayette HE-15B fed into a 45" whip. "Not much range," comments Errol. We recall that Lafayette rig, Errol, and how it was called the "Laughing-yet."

The Freehold Area Network of NJ, was mentioned in our May column. A note just received from Jerry Ham, of that organization, states that the current address for the group is P.O. Box 405, Freehold, NJ 07728. The FAN is an organization of Sidebanders in central NJ; it also operates an AM group known as the Highway Gentlemen CB Radio Club. Jerry Ham's number in the FA Network is FA-106. He's SSB Network member SSB-851, and that goes back a long way! Jerry issued us FA-295A in the group. Thanks!

Tom Birt, of Lafayette, OR, founded the Lafayette Radio Club Association back in 1981. This is an independent community watch group that operates from P.O. Box 471, Lafayette, OR 97127. We appreciate Tom's issuing us membership number 27 in the LRCA.

Kevin, of Pukalani, Maui, HI, has more communications and electronics gear than Cape Kennedy Mission Control. This consists of two precision peaked and tuned 27 MHz rigs, plus six scanners, three communications receivers, an MFJ-1278 multi-mode data controller attached to an IBM P/C, and all sorts of power supplies. The station can even be operated from batteries fed from a recharger or solar panels on his roof.

On the roof, in addition to the solar panels, he has a 3 element beam (vertical/horizontal switched) plus a Super Scanner as well as ten other sky hooks. These include long wires, discones, 2-meter ham band antennas, and other VHF and CB antennas. Kevin is member 17-AT-106 in the Italian Alfa Tango group.



A bright QSL from a station in Northern Ireland was sent to the column by Bert, SSB-35F in Texas.

Now that folks in the GDR (that's East Germany) have been permitted to use CB radio, our friends Michael and Adelheid Schroeter have finally realized their long-held dream of getting on the air. Michael tells us he's operating with the ID of *Oskar 146*. The AD there is P.O. Box 884, Berlin 1084, German Democratic Republic. Cards and letters from American and Canadian operators are always welcome.

Bert, SSB Network member SSB-35F, of Texas, tells us that he's been on the band since 1967. He's also EOT 672 in the Eyes of Texas group, which hangs out on the lower side of Channel 16. (listen around 9 PM local for this net) Bert forwarded us a nifty QSL from 68-RP-406, a station in Northern Ireland. The letters RP stand for *Radio Pirate*, which is the name of a European-based club.

From Nanaimo, British Columbia, a letter from Grant Maxwell brings up some good points. He mentions that older premium SSB rigs like the Stoner PRO-40 and ARF-2001 had notch filters ("whistlestops") to knock out AM'er heterodynes, but complains that current SSB rigs don't contain circuits that accomplish this. He then asks why no manufacturer has come up with an autoclarifier (switchable) to clarify the strongest SSB signal, and maybe even sense the sideband (upper or lower) being used by another station and then automatically switch to that mode. Would be a boon to mobile operators. Well Grant, many people in the CB industry read this column, so perhaps someone will become inspired by your suggestions.

Grant's thoughts are well taken, but it should also be kept in mind that there was a time when there were dozens of manufacturers in the CB market all trying to carve as large a piece of the pizza as possible for themselves. That caused many innovative and exotic features to show up, as manufacturers pushed hard to compete against one another for customers willing to purchase high-end deluxe rigs. Those days are long past, and the current CB market contains only a small fraction of the number of potential buyers as compared to those years (late 1970's), and is accommodated by far smaller group of manufacturers. These manufacturers do not seem to be driven as hard to produce exotic features as they were more than ten years ago.

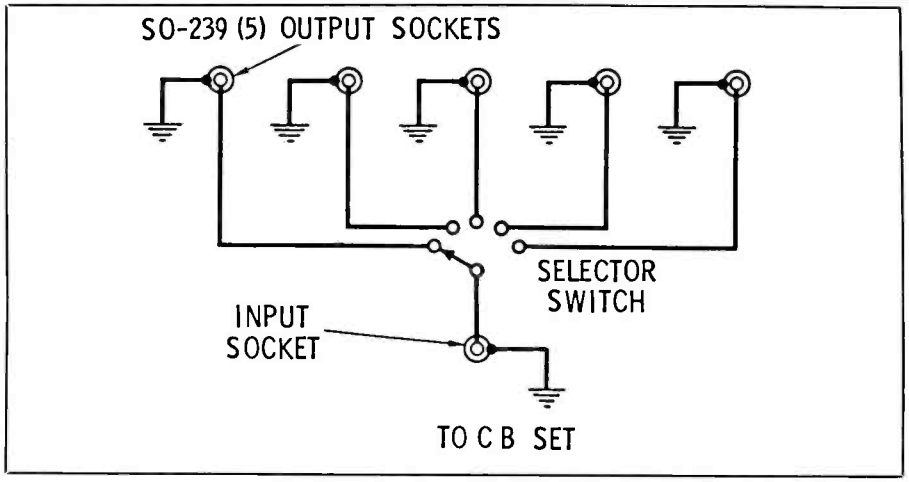
The perception of many people within the higher echelons of CB manufacturers is that while the ardent CB hobbyist was the mainstay of the late 1970's, the present-day CB market is dominated by highway travelers seeking a means of getting smokey reports and road directions. This is why most of the new rigs you see are basic mobile units, and why comparatively few base station rigs have been introduced in the past few years. As for super-deluxe base stations for the serious hobbyist, well not too many new ones have shown up in recent years. The perception that the hobby market has folded up is incorrect as well as unfortunate. It is the reason why hobbyists are forced to search out, resurrect, and repair ancient rigs like the Stoner PRO-40, CPI 300, ARF-2001, SBE Console II, Browning Golden Eagle, Cobra 142GTL, Royce I-640, Cobra 135, etc. If it weren't for a couple of current Cobra models and some export gear, there would be little in the way of modern deluxe base stations on the market.

Output Selector

Here's an accessory you can put together that enables you to switch between various antennas or other outputs used in CB troubleshooting. It eliminates the bother of unscrewing or detaching the coaxial connector from the rear of the rig and hooking up a different antenna or, for example, a dummy load. Built in a small aluminum box, it is positioned next to the CB transceiver or anywhere within arm's length.

As shown in the figure, the input socket goes to the CB rig. The selector is a five-position switch (Mallory 3115J or equivalent) that feeds the signal to any of five output sockets. Connected to the output sockets are antennas, dummy load, test equipment, etc., or different antennas. It's not necessary to utilize all of the sockets, and several may be left open for use at a future time. One possibility is to connect a No. 47 pilot lamp to one output socket. Switching to this position provides a quick check on relative power output. The lamp will glow brightly with modulation. If nothing else, this may relieve you of any need to request a "radio check" every time you turn on the ol' rig. (Just kidding!)

Assembly of the unit can be done by mounting the six SO-239 coaxial sockets on a small metal minibox. A convenient arrangement is to mount the switch and input socket on one side, and five output connec-



Easy to change between different antennas with this switcher.

tors on the other. Keep all wires in the box very short and straight. Lengths of No. 18 solid, tinned, copper wire are recommended. When mounting each socket, be sure its body makes good contact with the metal case. Scrape away any paint that might prevent a low-resistance electrical connection.

There is one precaution in operating this device, important to the health of your transceiver. Do not switch from one position to another while the transmitter is in operation. The loss of proper load between switch positions might damage the output circuitry and components in your transceiver.

An alternate way of using this device is to reverse it so that a single antenna might be shared out to five different CB rigs (one at a time, of course).

Unwanted CB-Fi

We always get inquiries about instances when CB signals enter telephone lines and stereo systems. Curing telephone interference is best left to the telco which, in some cases, will install special bypass capacitors inside the instrument.

In cases of interference to stereo systems, the CB operator's voice is heard in the speakers. It's no fun to try to listen to your favorite Jerry Reed or Willie Nelson tape while your neighbor accompanies the proceedings with a series of pleas for a reply from some guy in Bolivia.

There are measures that can be taken to reduce this type of interference. The stereo system should be well grounded. If your stereo doesn't have a three-prong electrical plug, run a heavy wire from a chassis screw to the screw that holds the cover plate to the AC wall outlet. Next, install a bypass capacitor to the leads to the speakers. These can be 0.01-ufd. capacitors rated at 600 volts. Connect a capacitor across the terminals of each speaker.

If interference persists, the stereo amp will have to be unplugged from the AC and carefully removed from its cabinet. Find where the AC line enters the chassis. From each leg of the line, inside the chassis, connect a 0.01-ufd. 600 volt ceramic capacitor to ground. If the interference occurs only when the stereo is operating from an external feed, such as a tuner, turntable, CD, or tape deck, reduce the length of the cable(s) between the outboard accessories and the amp. It's possible for the connecting cable, at certain lengths, to act like a resonant antenna for CB signals. Shortening the cable can defeat this undesirable dimension.

Let's have your CB station photos, QSL's, DX QSL's, questions, suggestions, opinions, and related CB items. We want this column to reflect the wants of the majority of its readers. PC

PIRATES DEN

BY EDWARD TEACH

FOCUS ON FREE RADIO BROADCASTING

Pirate activity continues to be extremely high. Lots of logs this month and I'll cover as many as possible. Here we go:

Radio Ganymede, the "Voice of the Ganymedian Empire" was heard at 0150 on 7415 by Bob Confer in New York. Gives Box 109, Blue Ridge Summitt, PA 17214 as its address. Also heard by Robert Ross in Ontario at 0030.

CHGO, found by Jeff Foster, Michigan, 2328 on 7415 with host Long John Silver. No address announced. Heard at 2335 by Ross.

WXZR Meontological Research Radio and **Radio USA** were heard in conversation on 7399 at 0330, reports John Wilkes of Kentucky. Several report joint broadcasts by **Radio USA, Voice of Monotony and Samurai Radio** using this frequency plus 6857 and 15053 and also announcing 88.4 FM stereo in the Elkhart, Indiana area. Foster heard WXZR on 7402 at 0313 with what sounded like dolphin sound effects and mention of a limited edition QSL card. Ross heard them twice: on 7400 at 0301 and 7415 at 2352 in conversation with other pirates. He noted a heavy echo on the voice and the DJ giving his name as "Stanya."

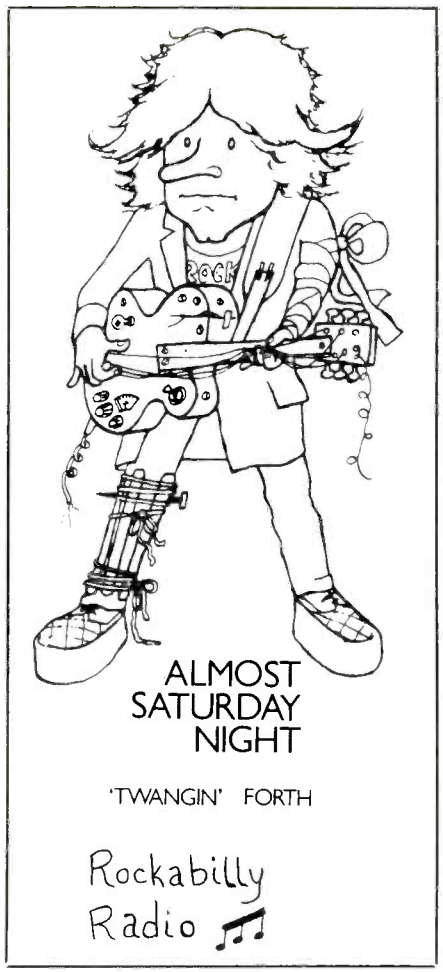
Rockabilly Radio was heard by Wilkes on 7416 at 0300 with DJ "Rockin' Rhino" and rockabilly music. Wilkes says reports for QSL's should be sent to the ACE bulletin (P.O. Box 11201, Shawnee Mission, KS, 66207—though I don't know whether they'll be printed unless you are a member—Ed). Also heard by Foster in USB at 0015. This station says it's dedicated to the "hot boppin' music of the roots rock era, 1954-59." QSL's will be sent out in response to reports in ACE, the ANARC net and "major radio publications."

Radio Outer Limits was heard by Wilkes on 7416 at 0345 with EZL music and slow jazz.

Radio Ghandi found by Foster on 7415 at 0035 IDing as the "Voice of the Ghandian Empire." Maybe this and Radio Ganymede are the same?

4th of July Radio is another one Foster heard. This on 7410 at 0115, hosted by a Tim or Ted Johnson "from the heartland of the United States of America." Off with the theme from the "Six Million Dollar Man. Wilkes also had this one, at 0235, and thinks the announcer was calling himself "Jet Johnson."

WMES was still another Foster log, at 0235 on 7400 with a 50's and 60's music format and professional-sounding station IDs. Included fake commercials. No address given but reports to hobby publications were requested.



Rockabilly Radio celebrates the early years of rock and roll.

Tube Radio was found by Jim Kalach in Connecticut on 7395 at 0058 "broadcasting from a tube to the world" with fake commercials, Happy Hour News and address as PO Box 6257, Baltimore, MD 21219.

Outlaw X was heard in conversation with other pirates at 0157 on 7415 by Robert Ross, giving address as Box 24324, Richmond, VA 23224. Also noted by Foster and Confer to 0235.

Robert Ross got a couple of Europe pirates. **Radio Stella International**, was heard on 6319.48 at 0535 with pops. ID'd as the North American Service. **European Christian Radio** was heard at 0612 on 6210 with instrumental pop music and an address in Austria.

Foster had **WPRA** (Pirate Radio of America) at 0142 on 7415. Confer had them at 0240, in conversation with Ganymede.

The Voice of Plainville/Plainsville/Slanesville was noted by several. Ross had them on 7415, closing at 0102 with host Commandante John giving the Box 6257, Baltimore address. Confer had them from 0215 in conversation with other pirates and host "John Don." Foster noted the station at 0105, claiming to be from a "plain town in Greenland" which is fighting for its independence. Jeff also noted a parody of numbers transmission he thinks came from this station.

Wilkes heard **Radio USA** on 7398 at 0110 with a feature on strange local laws and a soap opera parody. Gave Hilo, Hawaii address and went off with a police siren sound effect.

Bob Confer heard a station ID'ing as **Radio Free Kampuchea** at 0328 on 7415, in conversation with other pirates.

Foster had **WKZP** (K-ZAP) with "Sparky" found on 7415 at 0027 with a bunch of station IDs. Ross logged them at 0027.

Ross had **KFBA** (Broadcasters of Free America) in contact with WXZR at 0026 on 7415. Foster tuned them at 0046. Wasn't this one busted some months back?

ECPR went into the Ross log at 2356 on 7415 in both LSB and AM. ID as "This is ECPR" testing and into talk with other pirates. Said power 105 watts into 41 meter dipole.

Foster had the **Voice of Monotony** and host Uncle Salty at 0106 on 7415 airing punk rock. Uses a seal call sound effect as part of its ID. Aired some comedy inserts and gave both the Blue Ridge and Slanesville addresses. Ross had them on 7414.8 to 0149 close.

Ross reports **KFAT** on 7400.2 at 0209 with country/western music, promos, ID, funny commercials to abrupt closing at 0246.

WENJ was on 7416.6 at 0009 when heard by Ross, with Jack Beane and oldies. Foster copied a phone number for QSL's as (201) 525-7960. It's not likely to be any good now, though.

Foster heard a very short broadcast from **WTNU** on 7415 at 2226 with what Jeff says sounded like a "zoo gone crazy" and a song by Stevie Ray Vaughn.

Ross had a station IDing as **WFRI** on 7415 at 1944, talking with Radio Ganymede and saying he didn't have any QSL's.

Many of the reports this month were for two-way chitchats between pirate operators. I'm wondering if these should really be considered as "broadcasts." Should two-way contacts count as pirate broadcast loggings? Comments?

That does it for now. Keep sending me your loggings, along with QSLing information and so on. We would like to hear from more pirate station operators, too! PC

SATELLITE VIEW

BY DONALD E. DICKERSON, N9CUE

INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

Deep Space Network

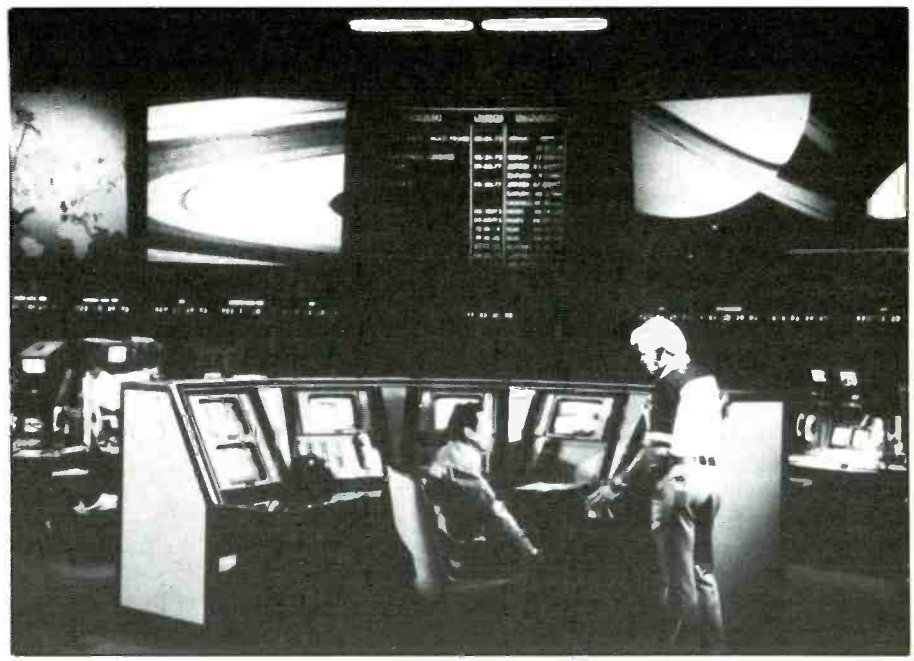
The Deep Space Network is the largest and most sensitive telecommunication and radio navigation network in the world. The Deep Space Network (DSN) is responsible for the operation and navigation of our interplanetary spacecraft. DSN is operated by the Jet Propulsion Laboratory (JPL) of California's Institute of Technology in Pasadena.

The network was established in 1958 when JPL was contracted by the Department of the Army to design and build radio tracking stations in Nigeria, Singapore and California. These stations were used to track our first successfully launched satellite, Explorer 1. The Army was the first branch of the service to reach space. Since then, JPL has become the leader in the development of low noise receivers, digital signal processing, radio navigation, tracking and telemetry systems.

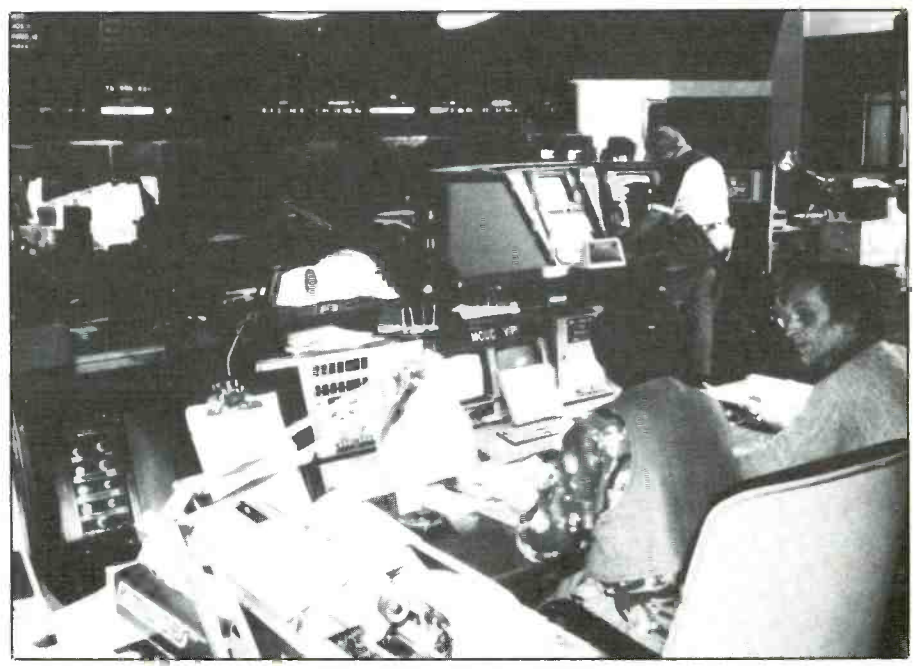
The network currently consists of 12 deep space stations positioned at three Deep Space Communications Complexes, which are located on three continents: at Gladstone in Southern California's Mojave Desert; near Madrid, Spain; and Canberra, Australia. The Network Operations Control Center, which controls and monitors operations at the three complexes, is located at JPL in Pasadena. The Network's Ground Communications Facility provides and manages the communications circuits that link the complexes, the control center and remote project operations centers together.

The unmanned space flight projects supported by the Network ar managed and controlled by NASA Office of Space Science and Applications or by foreign space agencies. The Networks responsibility is to receive the telemetry signals from the spacecraft, to transmit commands that control the spacecraft, to transmit commands that control the spacecraft and to generate the radio navigation data used to locate and guide the spacecraft to its destination. The Network is also used for flight radio science, radio and radar astronomy, very long baseline interferometry and geodynamic measurements. They are even used in NASA's search for Extra-terrestrial Intelligence.

Every U.S. deep space mission is designed to allow continuous radio communication with the spacecraft. Continuous 24-hour coverage for several spacecraft requires several Earth-based stations at locations that compensate for the Earth's rotation. The locations in Spain, Australia, and California are approximately 120 degrees apart in longitude, which ensures continuous observation and overlap coverage which allows the control of the spacecraft to be transferred to the next communications complex.

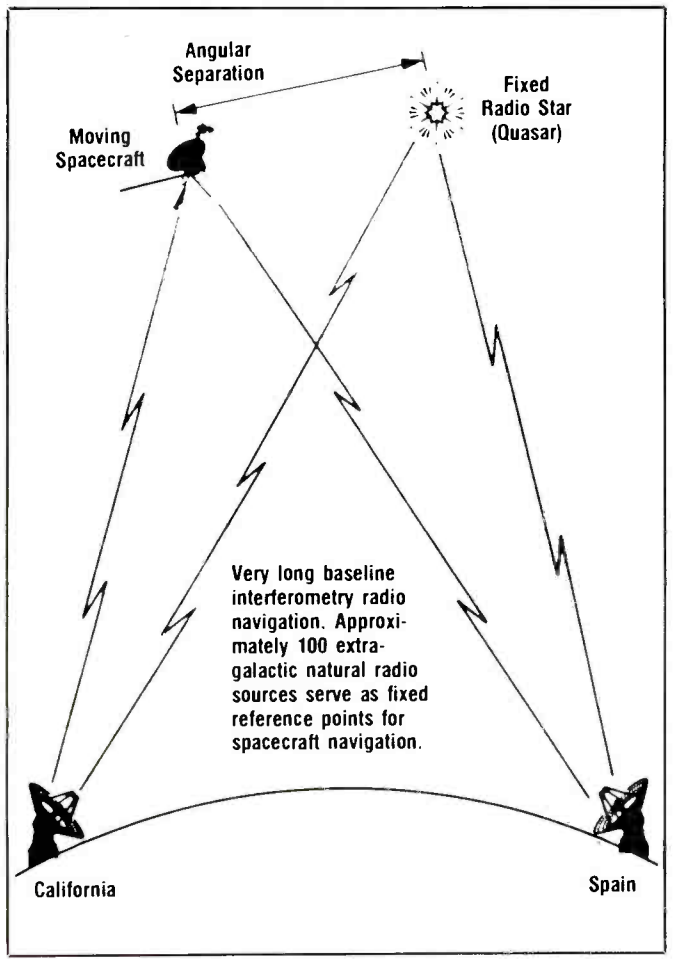


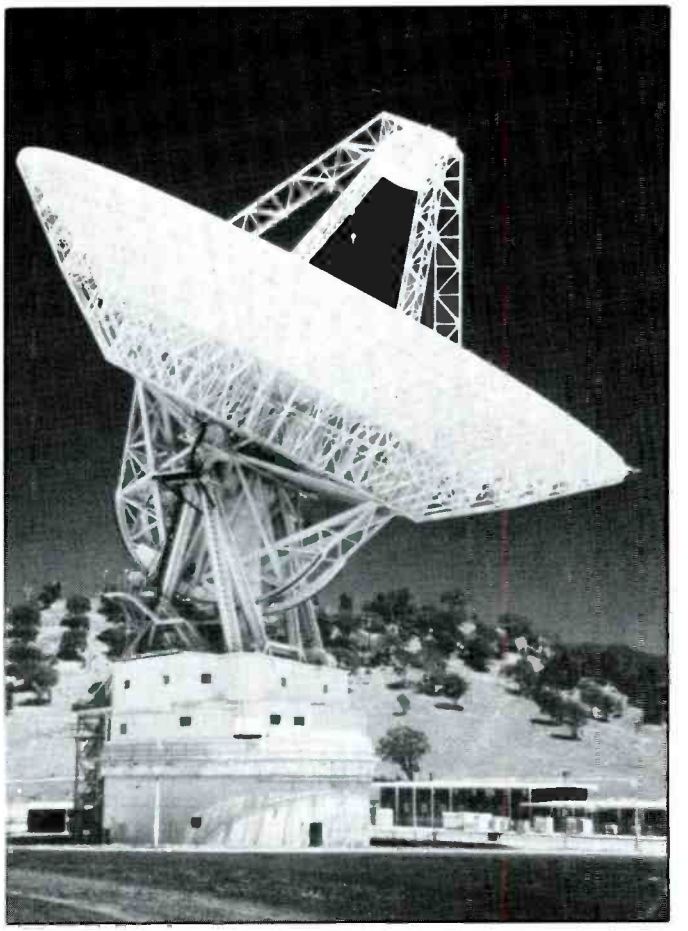
Space Flight Operations Facility



Deep Space Control Station

The Australian complex is located 25 miles southwest of Canberra. The Spanish complex is 37 miles west of Madrid. The Gladstone complex is located on the Army's Fort Irwin near Barstow. Each complex is situated in a mountainous, bowl-shaped



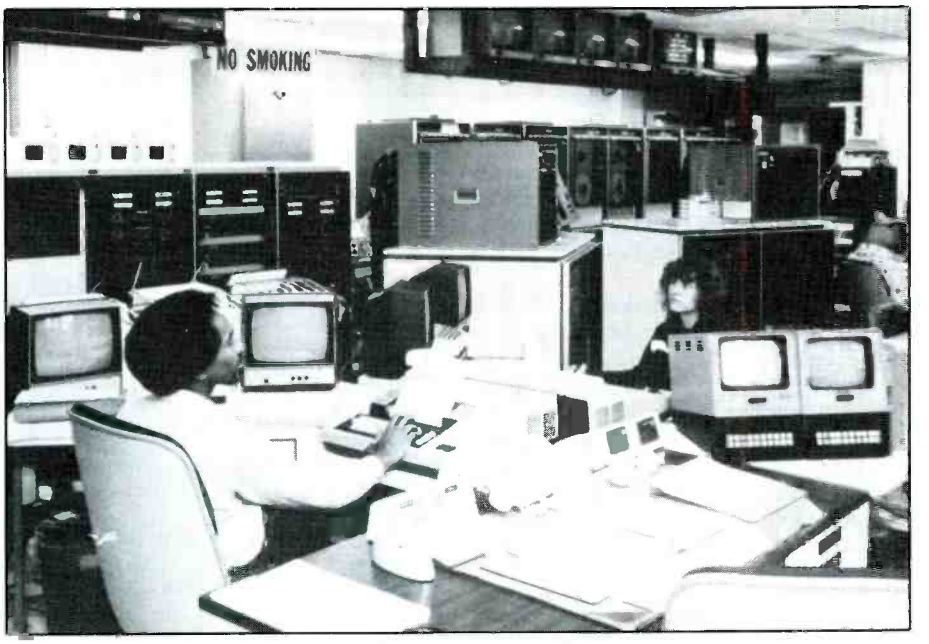


Australia 210" antenna

terrain to help shield it against radio frequency interference.

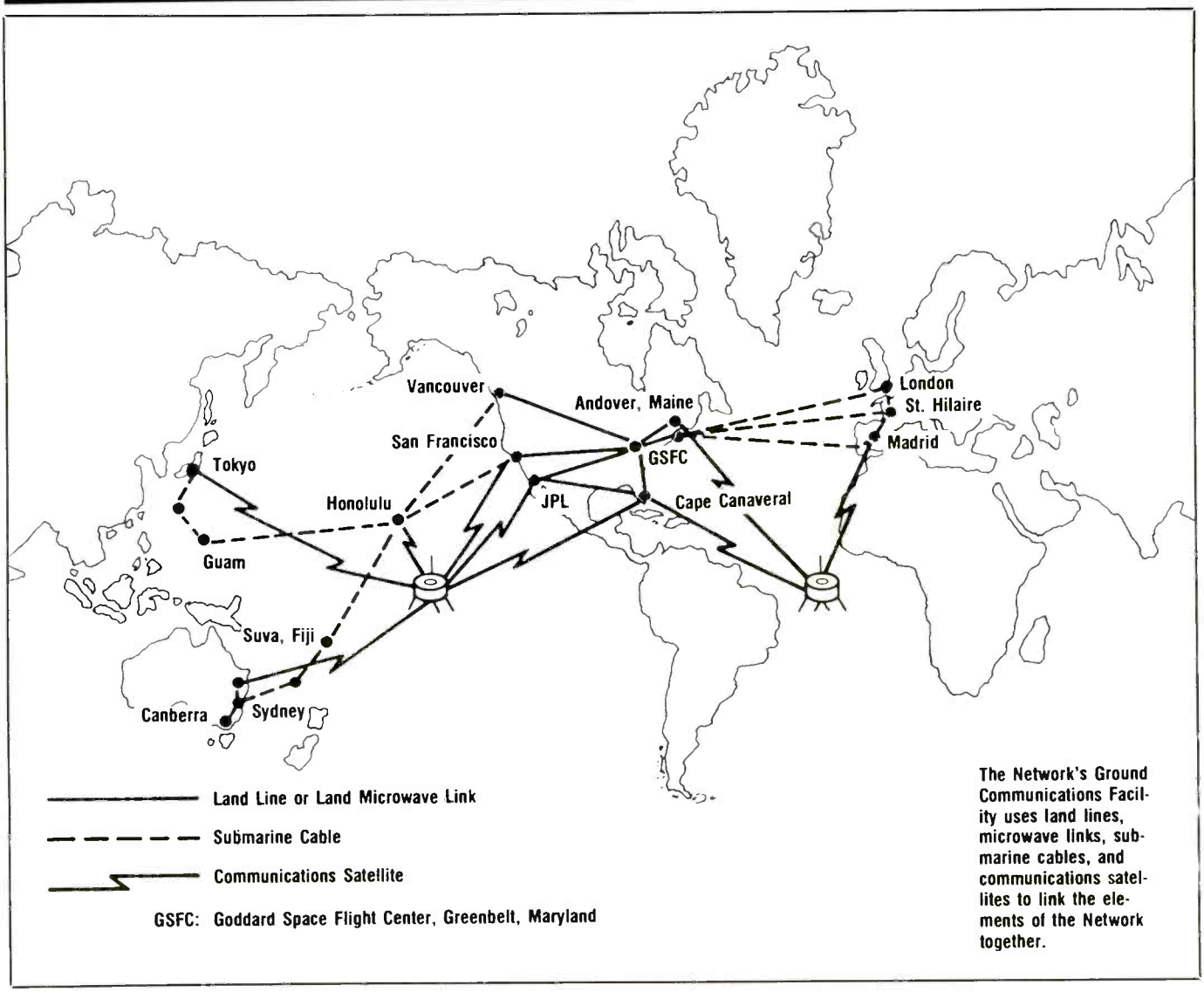
Each complex consist of four deep space stations equipped with ultra-sensitive receiving systems and large parabolic dish antennas. There are two 111 foot diameter antennas, one 85 foot antenna and one 230 foot antenna. The antenna sized form separate subnets, which have different communications capabilities. The 230 foot subnet supports spacecraft in deep space; the 85 foot subnet supports spacecraft in Earth orbit. They were designed as part of the Spaceflight Tracking and Data Network. They were consolidated into the DSN when the TDRS (Tracking & Data Relay) satellites replaced the groundstations. The 111 foot subnet support both deep space and Earth orbit missions.

The Control Center, which is the operations hub of the Network, is located at JPL in Pasadena. It's functions are to monitor operations at the three complexes, to analyze and validate the performance of the Network and to provide information for controlling and testing spacecraft capabilities.



Mission Test and Imaging System

The Ground Communications Facility provides and controls the communications circuits that link the three communications complexes to the Control Center at JPL, and the control centers overseas. The communications traffic between these various locations is sent via land lines, submarine cables, terrestrial microwave, and communications satellites. These circuits are leased from common carriers and provided to the Facility as needed by the NASA Communications Network, located at Goddard Space Flight Center. Spacecraft data sent over these circuits is automatically checked for transmission errors and outages by error detecting and correcting techniques, which

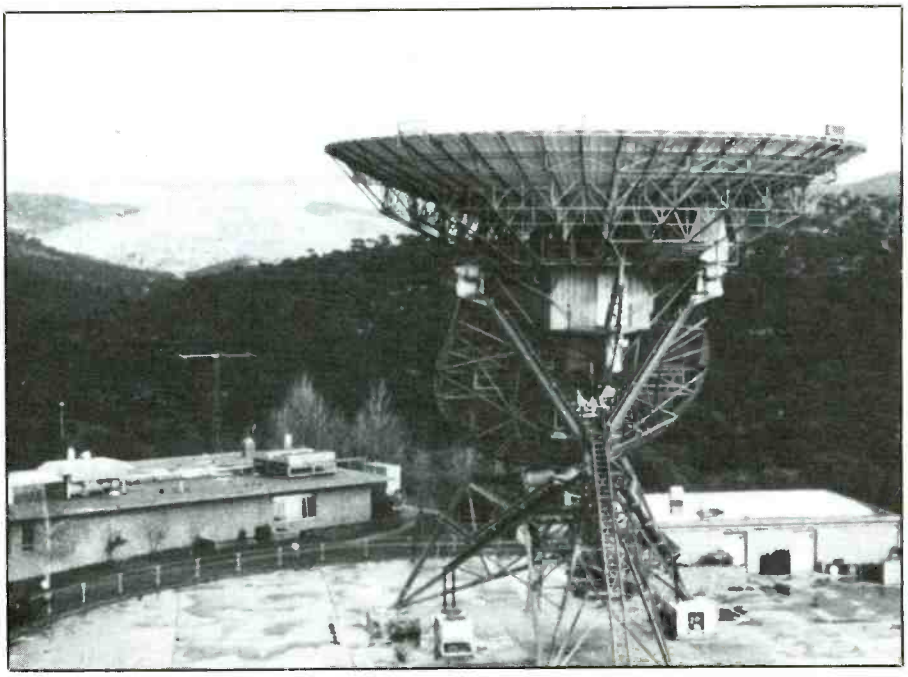


The Network's Ground Communications Facility uses land lines, microwave links, submarine cables, and communications satellites to link the elements of the Network together.

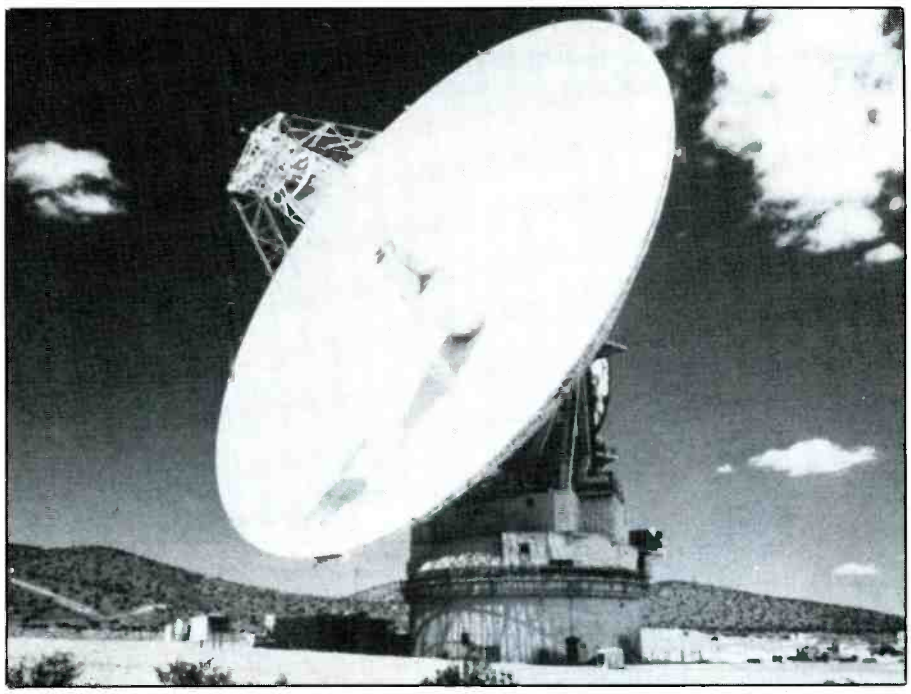
automatically retransmit any data block received with transmission error. JPL is also linked to the launch support and compatibility testing facility at the Kennedy Space Center, Florida.

The DSN's latest missions include Magellan which will map 90 percent of the surface of Venus and Galileo, the Jupiter orbiter-probe. DSN will also support the European Space Agency's Ulysses, a solar environment explorer and the Mars Observer, scheduled for 1990 and 1992 respectively.

During the relatively brief time span since the beginning of space exploration (approximately 25 years) exceptional progress has been made in the quality and quantity of scientific data returned by each mission. For example, in 1965, Mariner 4's 134 million mile voyage to Mars required 8 hours to return one 240,0000 bit image of the planet. The transmission rate was limited to 8½ bits per second. By the time the Voyager spacecraft encountered Jupiter in 1979, the transmission data rate had increased to 115,200 bits per second. One 5 million bit image was received every 48 seconds from



Spain 85" antenna



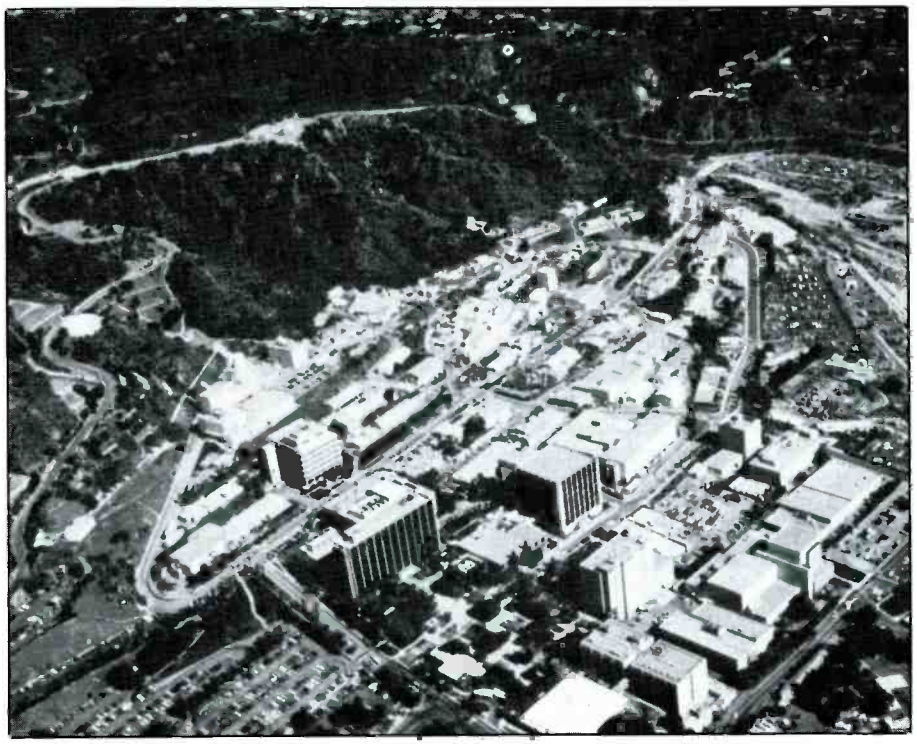
Gladstone (US) 210" antenna

the spacecraft which was 435 million miles away. The last decade has seen even greater accomplishments in advanced computer and data compression techniques.

Another network contribution to the success of deep space encounters is a radio navigation technique called "differential very long baseline interferometry," which is used to augment conventional Doppler and ranging navigation techniques. The interferometry techniques uses two widely separated Network stations on different continents to simultaneously receive signals from the spacecraft and from an angularly close natural radio source (quasars) whose celestial coordinates are very well known. The data taken by the two stations are then correlated to provide a precise measurement of the angular separation between the spacecraft and the quasar. This provides measurements 5 to 10 times more accurate than Doppler and ranging radar techniques.

Major improvements are continually taking place at DSN facilities. One of the latest changes involves the National Radio Astronomy Observatory's Very Large Array located in New Mexico. The array consists of 27 dish antennas. Each is 85 feet in diameter. It will now be connected to the Gladstone facility by microwave link and communication satellite.

The single factor that makes the deep space communications system different from other radio systems is the distance involved. The Network currently maintains direct radio links with spacecraft that have left our solar system. After traveling across the overwhelming vastness of interplanetary space, the spacecraft signal that reaches the Earth ranges in power from a billionth of a watt down to a trillionth of a watt. The main technology elements that make it possible to receive, amplify, and extract scientific data from such a ultra-weak signal is the use of high microwave radio frequencies (2110-2300 and 8400-8450 MHz), an optimum energy-per-bit telemetry scheme, and the state-of-the-art sensitivity and efficiency of the Network antennas and low-noise receiving systems . . . . See you next month.



Aerial view of JPL

TELEPHONES ENROUTE

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

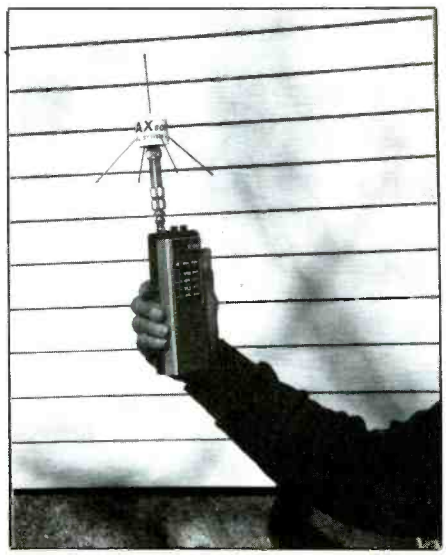
We have previously described the GTE Airfone air/ground telephone system used aboard airliners. Started in 1984, the system has been operated under experimental authority and licenses from the FCC. The FCC has now decided that air/ground telephone service has proven itself to be a viable service to the public and no longer an experiment. That means that the experimental status of air/ground telephone service is history and it can now be opened on a full commercial basis. This results in several things, including the setting aside and allocation of frequency spectrum for air/ground telephone service. The service has been allocated 849 to 851 MHz, paired with 894 to 896 MHz.

But it also means that GTE Airfone no longer has the exclusive franchise to provide air/ground telephone service. The new permanent air/ground service has been set up on an "open entry" basis. The FCC did that because they said that it would establish "a competitive public service most quickly." Under the concept, the existing GTE Airfone type of system would be required to be the format that all other companies would have to follow. One difference would be that until now only a single "pilot channel" for controlling communications was in use. With only one service supplier, that's all that was needed.

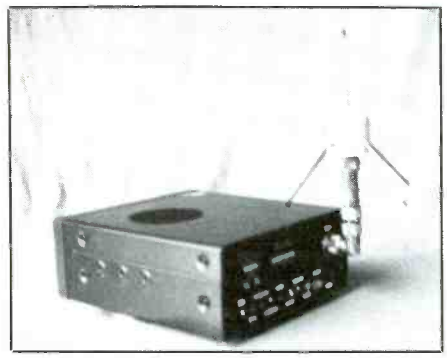
Now, with other competing suppliers also to provide service, the single pilot channel will be split to permit additional pilot channels for those other suppliers. Each supplier will have its own assigned pilot channel, although the actual voice communications channels for the telephone calls will be used by all companies on a shared basis.

The FCC intends this service to be operated on a common carrier basis, although the agency said it would entertain individual requests for waivers from companies that can prove an appropriate need for operation on as private carriers. Because of the interstate nature of air/ground telephone service, it will not be subject to state regulatory jurisdiction relating to rates, tech and operational standards, etc. The FCC retains all such jurisdiction, even on any calls which might actually be intrastate. The agency said that there would be no easy way to sort out intrastate calls from interstate calls, so it was impractical to attempt to permit split federal state regulatory jurisdiction.

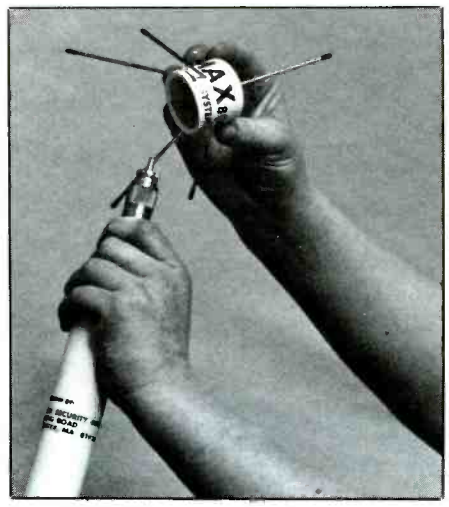
In order to ensure that only "serious applicants" seek licenses, the FCC set up rather stringent financial, technical, and service qualifications criteria to be met. Each applicant would have to have a service agreement with at least one airline (or airline organization) and will have to guarantee that the system will be constructed within five years. Service can't begin until at least twenty five ground stations are on line. Moreover, licensees must operate their systems for a minimum of one year before they can sell them to new owners.



The MAX-800 antenna may be mounted directly on top of a handheld scanner.



A simple arrangement mounts the MAX-800 right on the back of any base station scanner for reception of 800 to 900 MHz signals.



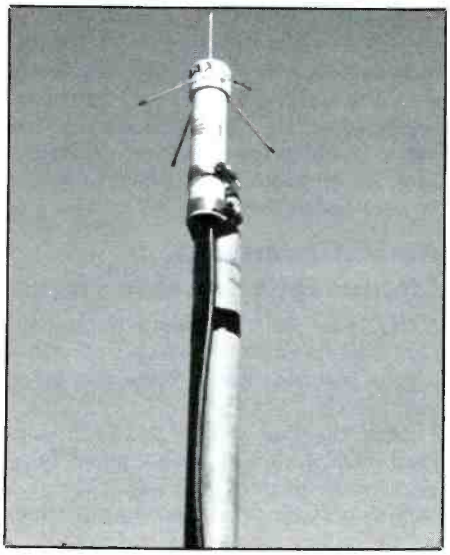
The MAX-800 accepts feedlines using popular PL-259 connectors, although you can order them with Type N connectors on request.

The FCC further said that "ancillary service" will not be permitted in the band until the primary air/ground telephone service has evolved to the point where potential interference and other coordination problems between competing suppliers are worked out. At some time in the future, the Commission said, it would take a closer look at additional services that might be provided and then issue rules regarding such matters. Although the agency didn't define "ancillary service," it probably includes things such as: FAX, telegrams, computer data, and other specialized communications beyond the realm of standard party-to-party voice telephone service.

It should be noted that FCC Commissioner Sherrie P. Marshall voted against the establishment of the air/ground telephone service and stated that it should have been continued on an experimental basis for another three to four years until competitive air/ground satellite services were available. Commissioner Marshall felt that satellite technology was a better way of providing this type of service and that this allocation was a waste of spectrum. Furthermore, with digital technologies on the near horizon, Commissioner Marshall stated that this analog system would most likely be technologically outdated by the time the new licensees got their systems operational. Digital upgrades were not covered in the FCC's plan, and would have to be addressed only after all licensees agreed upon compatible technical standards.

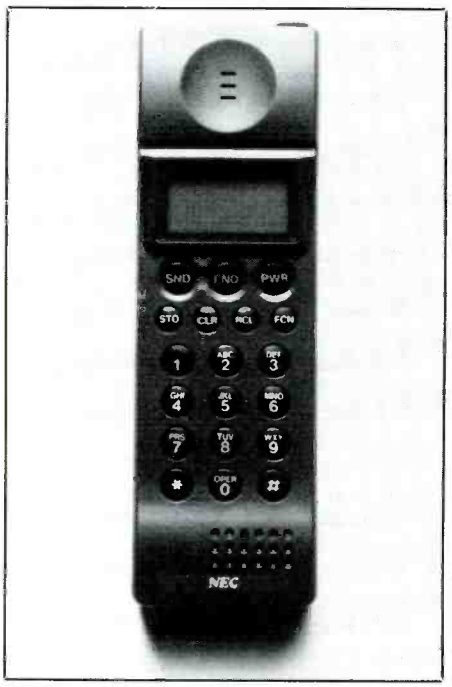
It seems to me that the requirements for going into the air/ground telephone service are such that we need not worry about a stampede of potential new service suppliers showing up at the FCC's door and seeking licenses. We'll be amazed if there will be any takers for licenses in a service that somehow looks to me as though it was custom tailored to discourage new entrants and to accommodate only one national service supplier who happens to have an extant and operational system. Maybe I'm wrong.

Meanwhile, Midwest Express Airlines



Maximum results are obtained with the MAX-800 mounted outdoors as high as possible, but you need low-loss UHF coax for this.

and GTE Airfone, Inc. announced that the GTE Seatfone air/ground telephone system in the airline's fourteen McDonnell Douglas DC-9-10, DC-9-30, and MD-88 aircraft. A telephone will be available in each window seatback. Calls are paid for with any major credit card and may be direct-dialed by the passengers. Calls to any location in North America are $2 for initiating the hookup, plus $2 per minute air time. International calls are a $4 hookup fee, plus $4 per minute. These are the standard rates for all air/ground calls via GTE Airfone, regardless of the airline. Calls may be placed while flights are anywhere over the U.S. (including Alaska and Hawaii) or southern Canada.



NEC America offers this new P-300 portable cellular with a long list of interesting features.

Here's The Answer

Car phones used to be a status symbol, but these days they have become so popular that they've transcended that phase of their development. The other day, I saw a cellular antenna sprouting from a Yugo, and if that doesn't stamp out any illusions about status then nothing will!

The next step upwards was to get a second cellular, which would put you one notch up from everyone who had a single car phone. Then, when you were chatting with someone from your car, you could rattle them by telling them your other line is ringing. Still, quite a few cars are starting to show up with two cellulars. The boat next to mine at the marina has no less than three of them.

I suppose that in the natural evolution of the cellular as a status symbol, the next obvious jump will be to install a FAX unit or an answering machine. But what message

would or could you leave on an answering machine installed on your car phone? Maybe something like, "Hello, Right now I'm not in my car, I'm at home so I can't come to the phone. At the tone, please leave your name and number and I'll call you when I'm out."

Hot Performer

The Cellular Security Group sent us one of their *MAX System 800* 800-to-900 MHz ground plane antennas to try. This is a highly specialized single-band antenna created for the person who wants to concentrate their attentions on stations operating in this frequency range without having to deal with the compromises inherent in multiband antennas.

The MAX-800 can be mounted directly on a handheld scanner, or at the rear of a base unit. Or, if you use some good coaxial cable (RG-58 is definitely *not* recommended), it may be mounted outdoors on a length of 1-inch 40-PVC pipe. Mounted outdoors, high and in the clear, it provides the maximum reception so long as a feedline intended for low-loss operation at these frequencies is used. The MAX-800 feeds with a PL-259 connector from the feedline, although a model with Type N connector is also available upon request.

The MAX-800 is made with stainless steel, silver solder, and other rugged components. It is fully assembled, and comes with a six inch PVC mounting mast. The MAX-800 is ready to be used as soon as the coax cable is connected and the antenna is mounted.

We tried the MAX-800 and are pleased to report that it really did a bodacious job when tried on several different units including a PRO-2005, a PRO-2006, a PRO-34, and also a Cobra SR-15 with a GRE America *Scanverter II*. In all cases, reception between 800 and 900 MHz was recognizably improved over standard multiband antennas, with stronger signals from stations, and with reception of stations not previously copied. For the many people who have equipment dedicated to monitoring all or part of the 800 to 900 MHz band, or who are otherwise seeking to concentrate their efforts in this band, the MAX-800 is definitely a winner.

The MAX-800 is popularly priced at $19.95 (includes shipping) with a money-back no-time-limit guarantee. It's available from The Cellular Security Group, 4 Gerring Road, Gloucester, MA 01930. Be certain to mention that you learned about it here. For additional information, circle 102 on our Readers' Service.

New Streamlined, Lightweight Portable Phone

NEC America Inc., Mobile Radio Division, introduced their P-300, a sleek, lightweight, portable cellular for use in or out of your vehicle.

Weighing in at a mere 14 oz., the streamlined P-300 travels in pocket, purse, briefcase, or the palm of your hand. The portable comes with a flip-up antenna that pops out of the way for carrying and storage. A special six-inch whip is also available to improve and increase reception when the unit is used in fringe coverage areas.

When mounted in a car, the P-300 can be equipped with a hands-free answering option so you don't have to take your eyes off the road or your hands off the wheel to answer calls. After two rings, the phone will simply "answer itself."

You get 80 minutes of incessant chatting, or up to 18 hours of continuous standby using the unit's internal rechargeable batteries. There's a button to push that lets you check on the status of your battery charge, and there's an alarm that beeps and flashes panic messages on the screen when the batteries are about to fizzle, just in case you hadn't bothered to see how they were doing.

A call alert tone gets louder and louder with each ring until you finally answer. NEC's literature says that this allows "the user to answer on the first or second ring to avoid disturbing others." You sort of get the impression that by ring number six it may well sound like a prison break at San Quentin.

If you aren't there when a call comes in, an indicator on the screen lets you know what time the call came through. The LCD screen (30 characters) can be used to bring up stored names and phone numbers, appointments, the correct time, etc. The P-300 also has speed dialing of up to 99 stored numbers.

You also get electronic scratch pad memory, last number redial, four-level electronic lock, DTMF tones for accessing answering machines, banking machines, computers, etc.

For more information on the NEC P-300 portable cellular, contact NEC America Inc. Mobile Radio Division, 383 Omni Drive, Richardson, TX 75050, or circle 103 on our Readers' Service.

We'd like to receive your questions, comments, anecdotes about cellular or paging usage, news clippings, and other related material. We also welcome press releases, product, service, and industry information from manufacturers and service suppliers.

SCANNING VHF/UHF

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

Now that vacation time is over, it's time to start thinking about cooler-weather monitoring. But, before it gets to cool, don't forget to send in those warm-weather frequencies you came across while vacationing this summer. We'll print some of those vacation-spot photos, too, if you can see antennas and radio sites in them.

Philip Cigielski of Reseda, Calif., passes along some details on the radio system used by the Southern California Rapid transit District for busses, supervisors and transit police. The frequencies used by busses are: 472.5375, F-1; 472.6375, F-2; 472.5625, F-3; 472.6625, F-4; 472.5875. F-5; 472.6875, F-6; 472.7125, F-7; 472.6125, F-8; 471.3625, F-9, and 471.3375, F-10.

Other frequencies used by the RTD include: 453.475, Channel A, staff and supervisors; 453.625, Channel C, dispatchers and transit police; 453.275, Channel D, maintenance and roving mechanics; and 453.325, Channel E, supervisors.

In addition, here's a list of radio codes used by the RTD: Code 1, General alert; Code 2, Serious accident, police and ambulance; Code 3, Crime emergency; Code 4, Emergency on bus; Code 5, Community emergency such as a fire or accident not involving the RTD; 10-12, Message; 10-13, repeat last message; 10-14, Go ahead with message; 10-15, Message acknowledged or end of message; 10-17, Location; 10-18, Call radio dispatcher by telephone; 10-19, Time check; 10-21, Farebox problem; 10-22, Equipment problem; 10-29, Radio problem; 10-31, Blockade or unusual condition; 10-32, Fire or fire equipment blocking street; 10-33, Bus involved in minor accident; 10-37, Blockage or unusual condition now clear; 10-41, Operating more than 10 minutes late; 10-52, Lost passenger; 10-53, Missile has struck bus; 10-54, Sick passenger; 10-55, Sick operator; 10-390, Intoxicated passenger.

Phillip also passes along the frequencies used by the Orange County Transit District in California: 856.4875, 857.4875, 858.4875, 859.4875 and 860.4875. Thanks for the great bus report from SoCal.

Joseph Danca of Channelview, Texas, says that he wants to know what frequencies to program in his Cobra SR900 scanner. Unfortunately, I'm not familiar with your area, Joseph. The best bet to find local frequencies that may be of interest is just to pick a Uniden Bearcat/Regency frequency guide for your region and look up the police/fire frequencies you need. These and other useful directories are available in scanner shops and from mail-order suppliers.

Also, try accessing the search function on your radio and just start jotting down all the frequencies your scanner stops on. Program these frequencies into your scanner later and try to identify the user of the frequency by monitoring the channel. You may not know, for instance, who is using the frequency of 155.685 MHz, but if you listen to it enough, you may hear police units being sent out to a factory or store you may have heard of before in a nearby town. That's the giveaway to help pin down who is using what frequency.

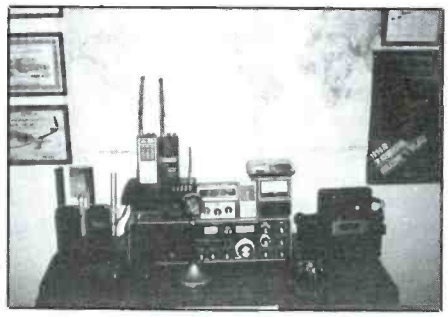
Mark Warrington, N8LZB, of North Canton, Ohio, sends in some frequencies of interest in the Canton area: 148.150 and 149.925, Civil Air Patrol repeaters; 453.225 and 453.475. Akron-Canton Airport Air Authority; 462.150, Warner Cable Co.; 505.750, WOIO-TV Channel 19 audio; 468.3625 and 463.4125, Timken Co. Mark uses a Radio Shack Pro-34 scanner with a discone mounted on his roof.

Timothy M. Ogden of Abbotsford, British Columbia, wants to know why he has been able to hear space shuttle communications for the past few shuttle missions on a local amateur radio repeater frequency of 147.060 MHz. First of all, amateurs in the United States (and also in Canada, apparently) have received special permission from the Federal Communications Commission to relay space shuttle communications over amateur radio bands. There are two reasons for this: First of all, a lot of amateurs are interested in space technology and secondly, quite a few astronauts are hams themselves and have operated from space to contact hams across the world on the ground. In addition to shuttle communications being relayed over local repeaters in the VHF and UHF bands, some HF frequencies also are used to relay these transmissions to hams around the world. You've got to admit that it's great listening!

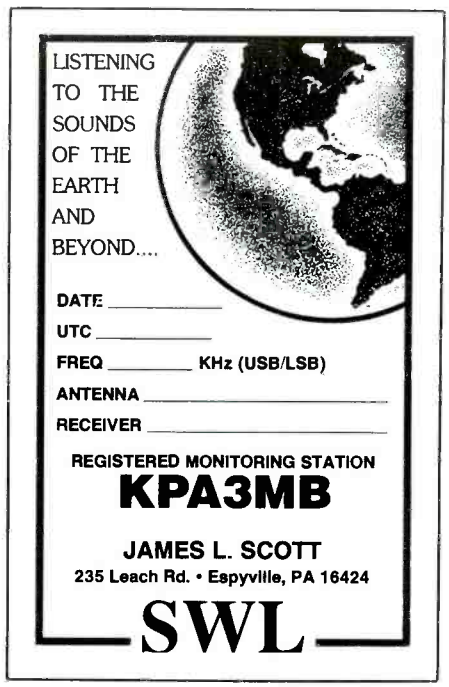
Sebastian J. Cultrera, of Wethersfield, Connecticut, says that police in Meriden, Connecticut, will be moving to two 800 MHz frequencies: 852.7875, F-1, and 854.2875, F-2. In addition, Cromwell (Conn.) fire has added an F-2 on 46.10 MHz, with F-1, 48.18, remaining the same for fire and EMS. In addition, Aetna Ambulance in Hartford, Conn., has moved to 452.675, while their wheelchair service remains on 47.54.

Tarek Matafka of Salinas, California, sends in some aero frequencies: Fristze Air Force Base tower, 125.150, ground 121.800, GCQ 128.00 and 126.200; Salinas tower 119.400, ground 121.700; Monterey ground 121.900, tower 118.400; Salinas/Monterey/Watsonville approach 127.150, departure 133.000, 133.500; San Jose tower 120.700, 124.000; Oakland tower 118.300, 124.900, 127.200; San Francisco tower, 120.500; San Jose/Oakland/San Francisco approach/departure 133.950; Bay approach 120.100. Tarek has Realistic Pro-2020 and Pro-2005 scanners and is just starting to monitor UHF military aero frequencies in the 225-400 MHz range.

What things are you monitoring? Why not send along a photo of your listening post while you're at it, too? Write to: Chuck Gysi, N2DUP, Scanning VHF/UHF, Popular Communications, 76 North Broadway, Hicksville, N.Y. 11801-2909. PC



Here's the well-equipped ham shack of Joseph, KB5HMS, and Sheila, KB5KSD, Woodall of Benton, Arkansas. Scanners included at their post are Realistic Pro-54, Pro-2011, Pro-38 and Pro-34. Look for Joseph on 10 meters.



An attractive station card used by James Scott, Registered Monitor KPA3MB, of Espyville, PA.

THE HAM COLUMN

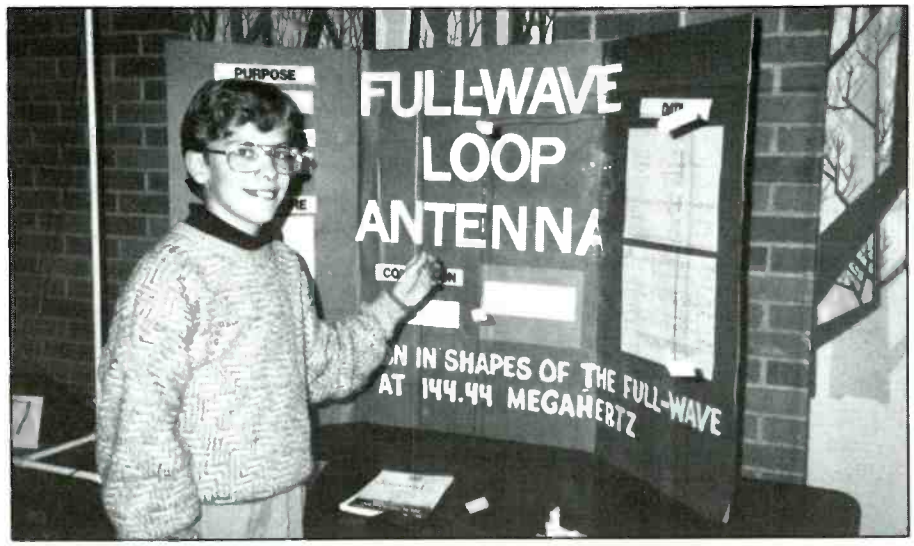
BY KIRK KLEINSCHMIDT, NT0Z
AMERICAN RADIO RELAY LEAGUE HQ

GETTING STARTED AS A RADIO AMATEUR

Instant Information

Six Yankee! Yikes, where's that? If you're a DXer, you'll find yourself asking that question before long. Some day you'll be scouting the DX bands, hear an exotic-sounding callsign, and frantically try to determine what country is on the hook. Do you need to work this station for DXCC? (the ARRL DX Century Club award) How can you find out, *fast*?

Perhaps you're on the road to WAS, (Worked All States) and are concentrating your effort on stateside QSO's. Sooner or later--it just *seems* like later—that elusive 50th state will fall, first in the log and then in your QSL card file. Operating an Amateur Radio station requires access to a lot of discrete information, and if you have the right tools within easy reach, keeping track of everything will be a piece of cake rather than a chore.



Matt Crump, N9GSW, of Muncie, Indiana, represented Amateur Radio at the East Central Indiana Regional Science Fair in March. His project, "An Investigation into the Shapes of the Full-Wave Loop at 144.44 MHz," received honorable mention. Congratulations! Matt's best loop was a vertical rectangle.

Essential Info

Let's start our information quest with Q signals. Most of us know, or soon learn, a few of them: QSL, QTH, QRM and QRN are four of the best-known. You hear them on both CW and voice, even though they're meant for CW only. But do you know them all? Quick, how about QRA, QRU, QRL, QSK? They save tons of time, but only if they're understood.

The solution? Post 'em! That's right, photocopy the list of Q signals from an ARRL publication, such as the League's booklet, *Operating an Amateur Radio Station (OARS)*. Now, tack it on the wall of your shack where you can see it. You're not in the dark anymore.

You might also want to post the frequency privileges chart, phonetic alphabet and a UTC time-conversion chart. All of these charts appear in *OARS, The ARRL Operating Manual* and other publications.

List Operation

Oh yes, we started off wondering what a Six Yankee was. Well, have you ever heard hams talk DX? "The Vee Kays were in last night, and I heard some Zed Els, too." Of course, they mean VK, Australia, and ZL, New Zealand. They're talking *prefixes*, the first part of an amateur call that indicates its country of origin. You probably know some by heart already. But I'll bet you don't know them *all*. Few amateurs do, because there is no need.

Prefixes come in two varieties, and posting quick aids in the shack for each can speed things up. The first variety is the regular prefix. For instance, VK is the standard prefix for Australia. Make sure you have a copy of the latest *ARRL DXCC Countries List* booklet at hand: It lists every DXCC country in alphanumeric order by its standard prefix. The *Countries List* also has boxes to check off countries worked and confirmed on each band and mode.

Then there are the not-so-common prefixes. The ITU (International Telecommunication Union), the United Nations agency in charge of telecommunications, assigns whole blocks of prefixes to each country, and then lets each country pass out callsigns within those parameters. For example, the ITU has assigned WAA-WZZ, KAA-KZZ, NAA-NZZ and AAA-ALZ to the US. That's why our amateur calls start with W, K, N or A. You can find a complete list of all international callsign prefix allocations in *The ARRL DXCC Countries List, The ARRL Operating Manual*, and other League publications. Posting the international list can make your DX activities easier.

Let's take our Six Yankee. You hear a station identifying as 6Y5EE and glance at your DXCC list or your international prefix list, which you have cleverly posted on the wall. There it is: 6Y, Jamaica! Holy smokes—you need Jamaica for DXCC! You hit him with your call immediately, because you identified him *before* the crowd did. Now, with the 6Y safely in your log, you listen to the pileup build. Because you had the information, you acted fast and *first*.

What about Tango Oscar? You're patrolling the band one day, and you come across TO6EZV. Where is he? Check the DXCC list. No? Then it's not a common prefix. Quick, scan the allocation list. Eureka! Tango Oscar falls between TOA and TQZ, which the ITU has allocated to France. Sure enough, it's an F6 near Paris running a special prefix. Perhaps you want a new prefix, so you give him a call. But if prefixes aren't your bag, and France is already confirmed, you can save yourself time that might otherwise be wasted calling a station you don't need.

Other Tips

Okay, so you found out where Six Yankee is. Where do you point your beam? Rather than blindly turning the antenna until the DX station peaks, post a list of beam headings to different parts of the world. This information is available in *The ARRL Operating Manual* and from suppliers who advertise in *QST* ham ads.

Quick band changing and tune-up can be critical, too. If you use an antenna tuner, make a 3 × 5 file card of knob settings by band and tape it to the front of the tuner.

Once you start filling up your log with contacts, you'll want to send QSL's. Plan ahead; have some self-addressed envelopes, IRCs (International Reply Coupons) and some stamps on hand.

Metric conversion references are handy for international ragchewing—most of the world uses the metric system. If you have an outside thermometer handy with a Celsius (Centigrade) scale, you're in business. If not, a conversion chart can be helpful. Write

(Continued on page 76)

September Book Buys

Orders 603-878-1441
(8 am to 5 pm EDST)
FAX - 24 Hr. Hot Line 603-878-1951
SAVE TIME & MONEY
SHOP BY MAIL
OR CALL TODAY!

ANTENNAS

BEVERAGE ANTENNA HANDBOOK by Victor Misek, W1WCR
Misek delves deep into the secrets of the single wire Beverage and SWA (Steerable Wave Antenna) with helpful hints and tips on how to maximize performance based upon wire size, height above ground, overall length and impedance matching. Transformer design information for both termination and feedline matching is completely revised. ©1987 80 pages 2nd Edition.
☐VM-BAH — Softbound $14.95

YAGI ANTENNA DESIGN by Dr. James Lawson, W2PV
W2PV was known world-wide as one of the most knowledgeable experts on antenna design and optimization, Loop antennas, The effects of ground, Stacking, Practical design and Practical Amateur Yagi antennas. Every Ham should get a copy for their bookshelf. ©1986 1st edition.
☐AR-YD — Hardbound $14.95

THE AMATEUR RADIO VERTICAL HANDBOOK by Cpt. Paul H. Lee, USN (Ret.), N6PL
Based upon the author's years of work with a number of different vertical antenna designs, you'll get plenty of theory and design information along with a number of practical construction ideas. Included are designs for simple 1/4 and 5/8-wave antennas, as well as broadband and multi-element directional antennas. ©1984, 2nd edition.
☐CQ-VAH — Softbound $9.95

W1FB's ANTENNA NOTEBOOK by Doug DeMaw, W1FB
Antennas have been one of DeMaw's passions in Amateur Radio. He has worked with countless designs of all shapes and configurations. This fully illustrated book give you how-to instructions on a number of different wire and vertical antennas. Also includes information on radial systems, tuners, balun and impedance transformers. ©1987 120 pages.
☐AR-AN — Softbound $7.95

LOW BAND DX'ING by John Devoldere ON4UN 2nd Edition
Based upon years of practical on-the-air experience, learn the secrets of how ON4UN has been so successful on the low bands. Extensive coverage is given to transmit and receive antennas. Dipoles, inverted V's, slopers, phased arrays and Beverages. Also covered: propagation, transmitters, receivers, operating, software and an extensive Low Band bibliography.
☐AR-UN — Softbound $9.95

EASY-UP ANTENNAS for Radio Listeners and Hams by Ed Noll W3FQJ
This book covers basic do-it-yourself antennas for SWL's, AM and FM BCB'ers, present and prospective Hams and scanner listeners. Includes dipoles, verticals, beams, long wires, and several special types and configurations. Also has time saving look-up dimension tables, constants and other helpful hints for antenna design. 1st edition 164 pages ©1988.
☐22495 — Softbound $16.95

NOVICE ANTENNA NOTEBOOK by Doug DeMaw W1FB
Novices have long wondered what is the best all around antenna for them to install. Up until now, this was a difficult question to answer. Aimed at the newly licensed Ham, DeMaw writes for the non-engineer in clear concise language with emphasis on easy-to-build antennas. Readers will learn how antennas operate and what governs performance. Also great reading for all levels of Amateur interest. 1st Edition ©1988.
☐AR-NAN — Softbound $7.95

ANTENNAS by John Kraus, W8JK
Kraus' classic antenna book has been extensively revised and up-dated to reflect the latest state-of-the-art in antenna design and theory. Includes over 1,000 illustrations and nearly 600 worked examples and problem solutions. Chapters cover basic concepts, print sources and point source arrays, dipoles, helixes, broadband and frequency independent antennas, special applications and tons more of information. 2nd edition 917 pages ©1988.
☐MH-35422 — Hardbound $59.95

ARRL ANTENNA BOOK by Jerry Hall, K1TD, 15th Edition
The 15th edition of this antenna classic represents over two years of hard work by editor K1TD. It's doubled in size too--from over 300 to over 700 pages big! 950 figures and charts cover just about every subject imaginable. Some of the highlights are: Chapters on Loop antennas, multi-band antennas, low frequency antennas, portable antennas, VHF and UHF systems, coupling the antenna to the transmitter and the antenna, plus p-l-e-n-t-y more. 15th edition 900 + pages ©1988
☐AR-AM — Softbound $17.95

ANTENNA IMPEDANCE MATCHING by ARRL
One of the most comprehensive books ever written on the use of Smith charts in solving impedance matching problems. 224 pages full of helpful information and solutions to tricky matching problems. ©1989.
☐AR-IMP — Hardbound $14.95

ARRL ANTENNA COMPENDIUM by ARRL Staff
QST gets far more antenna articles than it can publish. This collection is taken from the best submissions and represents a wide range of subjects -- from quads and loops to general information -- this book has it! ©1985 1st Edition.
☐AR-AC — Softbound $9.95

ANTENNA COMPENDIUM Vol. 2
includes MS-DOS program listings
Antennas are the #1 topic of interest among amateurs. ARRL annually receives far more antenna articles than it can use in QST. So, they decided to publish them in THE ANTENNA COMPENDIUM. These never before published articles run the range from simple, easy-to-construct antennas to sophisticated designs. Six program listings are included. You can also get the programs on a MS-DOS disk for an additional charge. ©1989 1st edition 208 pages.
☐AR-AC2 — Softbound Book Only $11.95
☐FAR-AC2 (MS-DOS) — Disk Only $9.95
☐AR-FAC2 BUY 'EM BOTH SPECIAL — Book & Disk $17.95

by W6SAI & W2LX

☐RP-WA	**WIRE ANTENNA HANDBOOK** - Wire antennas for all installations	$11.95
☐RP-CQ	**ALL ABOUT CUBICAL QUAD ANTENNAS** - The quad book	$ 9.95
☐RP-VA	**ALL ABOUT VERTICAL ANTENNAS** - Everything you want to know	$10.95
☐RP-AH	**THE RADIO AMATEUR ANTENNA HANDBOOK** - Complete guide to antennas	$11.95

1990 EDITIONS

1990 RADIO AMATEUR CALLBOOKS

NORTH AMERICAN EDITION
Fully updated and edited to include all the latest FCC and foreign government callsigns and addresses for Hams in North America. Includes plenty of handy operating aids such as time charts, QSL bureau addresses, census information and much more. Calls from snowy Canada to tropical Panama. Now is the time to buy a new Callbook when you'll get the most use out of your investment. ©1989
☐CB-US90 — Softbound $27.95

INTERNATIONAL EDITION
QSLs are a very important part of our hobby. All sorts of awards, including the coveted DXCC, require confirmation of contact before the award can be issued. Of special interest, addresses are being added daily for Hams in the USSR and other countries. While by no means complete, it's a start and will be of tremendous help in getting QSLs. Handy operating aids round out this super book value. © 1989
☐CB-F90 — Softbound $29.95

SPECIAL – BUY 'EM BOTH
☐CB-USF90 Reg. $57.90 Only $49.95 SAVE $7.95

THE 1990 ARRL HANDBOOK
Revised and updated with the latest in Amateur technology, now is the time to order your very own copy of the world famous ARRL HANDBOOK. In addition to being the definitive reference volume for your Ham shack, there are plenty of projects for every interest in Amateur Radio — from antennas for every application to the latest state-of-the-art projects — you'll find it all in the 1990 HANDBOOK. Over 1100 pages ©1989.
☐AR-HB90 — Hardbound $22.95

NEW! NEW BOOKS NEW!

1990-91 ARRL REPEATER DIRECTORY
Bigger and better! Over 14,000 listings including 1400 digipeaters -- every Ham should have a copy of this book in their car or shack. Handy resource book has listings by frequency and location. Invaluable aid while travelling. ©1990.
☐AR-RD90 — Softbound $5.95
☐AR-2RD90 (Buy 2 & Save) — $9.95

MICROWAVE HANDBOOK - Components and Operating Techniques, Vol. 1
edited by M.W. Dixon, G3PFR
The microwave region has experience an explosion in interest in the last few years. This new RSGB book contains simple and easy-to-understand theory explanations, projects and practical designs that have been tested and de-bugged. Includes: operating techniques, system analysis and propagation, antennas, transmission lines and microwave semiconductors and tubes. Great reference book! ©1989.
☐RS-MHB — Softbound $34.95

RADIO AMATEUR CALLBOOK SUPPLEMENT
both NA and DX listings
Includes all the latest calls and address changes for hams around the world. Invaluable aid to getting coveted QSLs from rare DX stations. This is the only way to be fully up-to-date. Over 300 pages ©1990.
☐CB-SUP90 — Softbound $9.95

NEW! NEW SOFTWARE NEW!

MFJ EASY-DX Program and Packet interface
(MS-DOS computer)
Here's a unique tool that organizes your DXCC quest into a simple easy-to-use format. Enter a call. Easy-DX gives you azimuth and sunrise-sunset time. It also tells you whether or not you need the contact for a new country, band or mode. Packet radio users get a built-in terminal program designed to make the most of Pavillion Software's Packet Cluster™ system or any other packet node. When connected, Easy-DX alerts you when a country you need is spotted. Comes on two 5.25" disks. Hard drive recommended. Latest version will be shipped.
☐FMFJ-EDX (MS-DOS) — $39.95

Software Orders – Don't forget to tell us which computer you have

HAM RADIO BOOKSTORE CATALOG #M90
GREENVILLE, NH 03048

Now a division of CQ Communications, Inc.

PLEASE ENCLOSE $3.75 FOR SHIPPING AND HANDLING

BY DON SCHIMMEL

COMMUNICATIONS CONFIDENTIAL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

A bit of mystery was reported by Dwight M. Brown, LA who thought his receiver had gone bad when he heard Ham band CW between 8875 and 8910 kHz. At a later date, Dwight noted an article in the Shreveport Amateur Radio Association newsletter of November 1989, which told of an HF Translator in operation. The information was from Radio Netherlands and said in part—"A communist bloc nation appears to have developed a working HF linear translator. One so advanced that it is capable of relaying part or all of an entire amateur band to new spectrum? The existence of such a repeating device came to light after numerous European SWL's reported hearing the 40 meter amateur band in the 38 meter band.

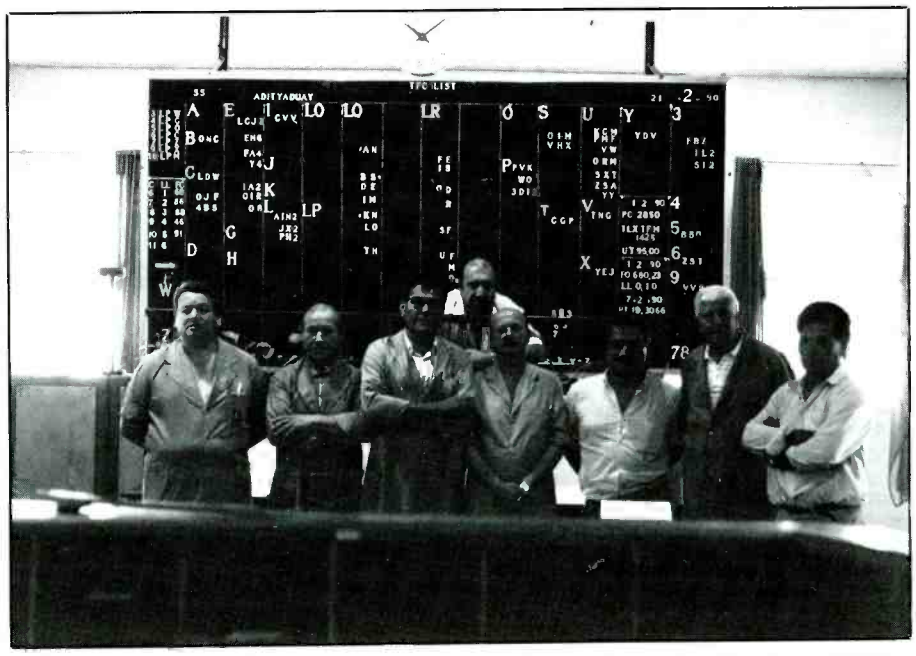
One of these SWL's, Phil Perkins, in England, was interviewed by Jonathan Marks on his Radio Netherlands Media Network Program. Perkins noted that on 8879 kHz, (a frequency often used for ground-to-air commercial transatlantic aircraft communications) that a curious transmitter was in operation. A transmitter that repeats signals from 40 meters to a new frequency about 1.8 MHz further up the band.

What caught Perkins' attention was the abnormally high amount of CW traffic heard on and about 8879 kHz. He soon realized that the communications content was that of radio amateurs on 40 meters calling 'CQ Content.' Perkins tuned to 40 meters and found the signals to originate on 7016 kHz. The SWL noted that listening on two receivers tuned to the separate signals show a slight difference in reception time between the two. This indicates that a translation process is taking place.

Since the Perkins' report, numerous other Hams and SWL's in Europe, including the people at Radio Netherlands, have confirmed the existence of this unique radio relay system. All say that this 'translator' usually comes on the air at 2100 UTC. Based on propagation at the time, Perkins believes the system is located somewhere in Eastern Europe." Dwight wondered if any other SWL's had observed such transmissions?

An individual calling himself "The Old Commo Sarge" sent in a report indicating that the Mississippi Army National Guard has established a state-wide HF radio network which is basically an administrative network intended to enhance the Guard's ability to respond to state emergencies and natural disasters. The primary is 4960 and alternate is 11578 kHz, both USB. The alternate is often subject to severe QRM in the afternoons from station WYFR, Oakland, CA on 11580 kHz.

Callsigns are tactical, but static. Table 1 shows the current list with unit identification and locations.



CW Communications Room of General Pacheco Radio. Some of staff in front of status board. SSB voice operators Oscar Canay (far left) and Urbano Flores (far right. Men between them are maritime CW operators.) Photo by Brian Webb.

Table 1
Mississippi Army National Guard

Call/Location	Unit Identification
ALPHA 5 MIKE	Net Call
ALPHA 5 MIKE 01	Headquarters, State Area Cmd., Jackson
ECHO 4 BRAVO	Individual Support Unit, Camp Shelby
SIERRA 9 LIMA	AVCRAD, Gulfport
KILO 6 MIKE	Army Avn. Spt. Facility, Jackson
YANKEE 8 MIKE	Army Avn. Spt. Facility, Tupelo
VICTOR 2 DELTA	Army Avn. Spt. Facility, Meridian
FOXTROT 0 UNIFORM	Detachment 1, State Area Cmd., Jackson
OSCAR 5 SIERRA	631sts Field Artillery Brigade, Grenada
VICTOR 3 JULIET	1st BN, 114th Field Artillery, Greenwood
NOVEMBER 5 CHARLIE	4th BN, 114th Field Artillery, Newton
JULIET 6 PAPA	1st SQND, 108th Armored Cavalary, Senatobia
DELTA 4 CHARLIE	185the Aviation Group, Jackson
XRAY 7 HOTEL	184th Transportation Brigade, Laurel
HOTEL 2 Yankee	114th Area Support Group, Hattiesburg
TANGO 3 GOLF	150th Transportation Battallion, Meridian
ROMEO 4 WHISKEY	298th Maintenance Battallion, Philadelphia
ZULU 5 XRAY	168th Engineer Group, Vicksburg
GOLF 6 DELTA	223rd Engineer Battallion, West Point
LIMA 7 ALPHA	890th Engineer Battallion, Gulfport
MIKE 9 XRAY	Company B, 890th Engineer BN., Pascagoula
QUEBEC 4 OSCAR	138th Service and Support BN., Biloxi
SIERRA 3 UNIFORM	1355th Service and Support CO., Ocean Springs
FOXTROT 2 CHARLIE	Detachment 1, 1355th S&S CO., Bay Saint Louis
PAPA 0 VICTOR	155th Armored Brigade, Tupelo
KILO 3 TANGO	106th Forward Support Battallion, Monticello
YANKEE 2 FOXTROT	2nd BN, 114th Field Artillery, Starkville
INDIA 5 ECHO	1st Battallion, 155th Infantry, McComb
CHARLIE 2 NOVEMBER	1st Battallion, 198th Armor, Armory
WHISKEY 3 ROMEO	2nd Battallion, 198th Armor, Greenville
LIMA 4 VICTOR	Maintenance Shop, Camp Shelby

At various times, Air National Guard units may enter the net. They use an ID of Delta 8 Kilo followed by a numeric.

Traffic is normally light and best listening times will be at 0745 and 1545 Central Time daily, when the net normally opens and closes. In event of a Gulf Coast hurricane, Mississippi River flood, or other disaster, however, things should be popping on these frequencies (and possibly others) around the clock. The "Sarge" said that most stations will probably QSL if a stamped PRC or a PRF w/SASE is provided.

R.C. Watts, KY has forwarded an updated QSL address for WJG: Maritel Corp., 1790 September Avenue, Memphis, TN 38116.

Rick Jones, MD sent in a list of NDB's and said he has been involved in the monitoring hobby since September 1989. His current equipment includes a Sony 2010 with a (discrete) 60 ft. longwire wrapped around his apartment building, an MFJ antenna tuner, an AEA PK-232, and an IBM P/S2 model 50. He added that most of the monitored beacons were made using the receiver built-in ferrite antenna.

First time contributor Doug Angello, MA wrote to say he uses a Realistic DX-440 with a longwire of 100 ft. for his monitoring.

Brian R. Webb, CA has furnished some excellent photos (Figs 1, 2, & 3) plus a report of observations he made when visiting General Pacheco Radio in Argentina during a vacation in that country.

Here is a summary of the report sent in by Brian:

General Pacheco Radio is operated by ENCOTEL, the government owned telephone company. The station uses two facilities:

Transmitting Site: Transmitters and transmitting antennas are located about 48 km from the receiving site in order to reduce interference. Voice and telegraph traffic is received via microwave radio from Don Bosco, (receiver site) demultiplexed, and routed to the appropriate transmitter.

Receiving Site: Receiving antennas, radio receivers, and radio operators are located at Don Bosco. The operators remotely operate transmitters via a microwave link. The domestic telephone system is interfaced with this receiving site.

The latter site performs the following communications: Maritime CW and SSB, HF radiotelephone with the Argentine interior and the Argentine Antarctic bases; and HF voice links with Argentine Border Patrol units.

The Don Bosco facility houses these functions:

Voice Room: Large room with telephone operator and switchboard and rows of operating positions. Each position used for a specific frequency (i.e., 8 MHz maritime RT) and contained an old Philips receiver. Several positions used for maritime HF SSB RT and one position dedicated to HF SSB RT service with the Argentine Antarctic bases.

CW Room: Room contains status board and several operating positions. Here again each position was for a specific frequency (i.e., 22 MHz maritime CW) and contained a Kenwood R-2000 receiver.

Border Patrol Room: Small room with two racks of receivers. One contained old Mackay receivers and the other had the somewhat newer Racal receivers. The equipment is used to provide HF voice communications with Border Patrol units outside the Buenos Aires area. Between the two shelves was a pistol. One of the Border Patrol men joked that when they couldn't raise their men via radio, they would fire the pistol into the air to get their attention!

Teletype Room: Medium sized room with teletype receiving equipment. The engineer-in-charge said the equipment was used to receive TANJUG (Yugoslavian News Agency) news copy.

Telephone/Microwave Room: Small room with telephone equipment of Argentine manufacture and Philips (?) microwave multiplex equipment. This room is where voice and telegraph traffic is received from the operating positions, multiplexed and forwarded to the transmitting facility via the microwave link.

Antenna Farm: Large parcel of land (approx 1000 x 1000 feet). Numerous lattice towers and various types of wire antennas. One was a folded dipole for use in the lower HF region (4 or 6 MHz).

Records/Billing Room: Medium sized room with stacks of bundled billing slips plus some data processing equipment. The billing slips are filled out by the radio operators at their respective positions and contain information such as ship callsign, duration of call, etc. The slips are brought to this room for processing.

Engineer's Office: Small room with a desktop computer and simple furniture. This is where the engineer-in-charge works.

Electronics Maintenance Shop: Medium sized room with a modest selection of test equipment.

The callsigns used by General Pacheco Radio consist of letters and numbers (i.e., LPD46). The letters designate the mode (LPL for voice and LPD for CW) and the numbers designate the frequency (and thus a specific operating position).

Table 2

MARS Call	Ship	Hull Nbr.
NNN0CLL	USS O'Callahan	FF1051
CIC	USS Scofield	FFG3
COP	USS Scamp	SSN588
CPA	USS Ramsey	FFG2
CQI	USS Bradley	FF1041
CWK	USS Brooke	FFG1
CZQ	USS Brumby	FF1044
CUD	USS Claude V. Ricketts	DDG5
CUI	USS Hermitage	LSD34
CXQ	USS Canisteo	AO99
CXP	USNS Waccamaw	T-AO-109
CZH	USS Koelsch	FF1049
NXZ	USS Sellers	DDG11
CMM	USS Sphinx	ARL24
CSD	USS Spiegel Grove	LSD32
CSJ	USS Coontz	DDG40
CTD	USS Henry B. Wilson	DDG7
CXW	USS Edson	DD946
CRS	USCGC Taney	WPG37
COX	USCGC Northwind	WAG282
CPE	USCGC Rush	WHEC723
CUM	USCGC Cape Shoalwater	WPB995324
CWF	USCGC Cape Small	WPB95300

Maritime CW operator in the CW communications room. Note the Kenwood R-2000 receiver. Photo by Brian Webb.

This photo of Brian Webb and Oscar Canay was taken at the end of the tour of General Pacheco radio station.

Obtaining a QSL card from General Pacheco Radio is now very difficult due to the station's limited budget. The engineer-in-charge picked up a handful of reception reports and said he was unable to reply.

Communications monitors can increase their chances of receiving a QSL by following these guidelines:

Write the reception report in Spanish.

Enclose a US $1 bill with a note explaining that the money is to cover postage. Place the dollar bill in the envelope so that it is not visible from the outside.

Send the reception report via registered mail.

Address your reception report to the following:

General Pacheco Radio
Oscar E. Canay/Urbano Flores
Lomas de Zamora 252
C.P. 1876, Bs. As.
Republica Argentina

A big thank you to Brian for his fine report and photographs.

From an anonymous reader (letter postmarked Savannah, GA) came this report: "KKN50 does speak. We heard them at 1125 on 16364 kHz break away from their marker tape and start a CW QSO with KBF60. KBF60 was very weak and KKN50 asked KWS60 to QSP. Also mentioned some frequencies: 23363, 16604, and 26640 kHz. After about ten minutes KKN50 went back to the usual marker tape."

Now for an update on USN activity we turn to reporting from Andy Gordon, CT. According to the latest count by Andy, he has logged USN warships over 2200 times. Within this total is 425 different ships and 305 QSL's received. Out of the 425 ships monitored he has heard 385 different MARS callsigns.

New MARS callsign NNN0CCN is assigned to the future USS Monterey CG61 which is in the water but not yet commissioned. SESEF in Norfolk, VA is busiest from 1130-1930 UTC on 7535 kHz, with capabilities to shift to 4040 and 12315 kHz. San Diego CSS2 8247.7/8771.6 kHz is checked regularly in the spring and summer because CSS1 4066.1/4360.5 kHz are tough to hear from the East Coast until the late night hours. And for those of you who try to keep your MARS lists up to date, Andy has compiled a list (see Table 2) of decommissioned USN and USCG ships.

OK, let's check the great loggings received this month.

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)**

195: Beacon BK or TSK at 1439. (Jones, MD) Wonder if this could be 194 kHz, TUK, Nantucket, MA?? (Ed.)

219: Beacon BA, Baltimore, MD (Jeans) at 0622. (Jones, MD)

260: Beacon ESG, Rollinsford (Dover), NH. (Fernandez, MA)

269: Beacon TOF, Topsfield, MA. (Fernandez, MA)

272: Beacon UVR, Varadero, Cuba at 0934. (Crabill, VA)

295: Beacon SH, Scituate Harbor, MA. (Fernandez, MA)

326: Beacon VV, Wiarton, Ont., Canada at 0201. (Hill, MI)

326: Beacon BHF, Freeport, Bahamas at 0419. (Crabill, VA)

335: Beacon ULD, Chapleau, Ont., Canada at 0321. (Hill, MI)

350: Beacon DF, Deer Lake, Nfld., Canada at 0055. (Crabill, VA)

353: Beacon MG, Montgomery, NY. (Fernandez, MA)

360: Beacon KIN, Kingston, Jamaica at 0704. (Jones, MD)

375: Beacon BO, Boston (Logan Apt.), MA. (Fernandez, MA)

379: Beacon FZI, Fostoria, OH at 0345. (Hill, MI)

384: Beacon F8, Victoriaville, PQ, Canada. (Fernandez, MA)

390: Beacon JT, Stephenville, Nfld., Canada at 0349. (Crabill, VA)

391: Beacon DDP, San Juan (Dorado), PR at 0702. (Jones, MD)

400: Beacon PTD, Potsdam, NY. (Fernandez, MA)

406: Beacon FLR, Fall River, MA. (Fernandez, MA)

411: Beacon FVU, Van Wert, OH at 2200. (Hill, MI)

413: Beacon TAM, Tampico, Mexico at 0905. (Crabill, VA)

418: Beacon CBC, Anahuac, TX at 0722. (Jones, MD)

2716: NDVW, USS Nashville LPD 13 clg Norfolk Tug Control at 0950; NZDN, USS Fairfax County LST1193 clg Tug Control (Little Creek) at 1045. This Tank Landing Ship was also using classified callsign 8XO; HMCS Saint Charles ATA533 wkg QHM Halifax at 0955. The St. Charles was assisting HMCS Athabaskan DDH282 in returning to port at Halifax; NSBR, USS Samuel B. Roberts FFG58 wkg Newport Port Control at 1100 requesting tug and pilot; NRDW, USS DeWert FFG45 clg Mayport Harbor Control at 1100. Newport Port Control inadvertently responded but finally realized DeWert was clg Mayport. Mayport doesn't guard HF so DeWert had to wait until he could contact Mayport on VHF; HMCS Terra Nova DD259 clg QHM (Queens Harbor Master), Halifax at 0930; NDIK, USS Miller FF1091 wkg Bermuda Tug Control at 1020; COMSUBRON-20 w/accidental ID in the clear wkg COMSUBRON-10 at 1055; NK, USS Kamehameha SSBN642 using classified callsign P2I wkg 9QJ (Canaveral Control) and Fisher (Cape Radio) at 1010 re personnel transfer; NREB, USS Exploit MSO440 wkg Newport Port Control Secondary at 1050 re immediate critical fuel replenishment; NDPG, USS Gallery FFG26 using classified callsign 3ZI clg Charleston Navy Tug Control at 0040. (Gordon, CT)

3039: Two OM/EE in USB w/abbreviated ID's Lima and Mike at 0347 w/comms re tactical ops, electronics gear. Lima later gave ID as Delta Foxtrot Lima. (Fernandez, MA)

3059.7: YL/SS in AM w/5F grps at 0314. Normally on 3060 kHz. (Fernandez, MA)

3130: Lima Mike/Lima 8 Kilo and others trying to establish comms w/net member 1 kHz away. Appears to be exercise being set up. See 3039 kHz also. USB at 0355. (Fernandez, MA)

3180: SLHFB "X" at 2152 sent 31180 15763 70467 81049 rptd 4 times then back to X mkr. (Tubbs, W. Germany)

3228: CW stn w/385 x3 UUU from 2100-2110 then into 4F grps. (Mason, England)

3824: YL/RR w/5F grps. Same YL as GG which rptd 3F's Strich 00 w/high voice. RR nbrs were modified eg. 3 = trunta, 2 = dvonta. Ended w/Konet. (Mason, England)

3923: YE1X in CW at 0736 sent VVV AR YE1X YE1X YE1X BT ZTS ZCL ZYM BT then rptd Z sigs 6 times. Then cld AXGH DE T9XC and sent BK's V's and NO QDK OK IMI QLX QEE AR. (Tubbs, W. Germany)

4015: Odd activity here at 2100. YL/GG rptng 75-strich zero zero. After the 5 (in 75) was a pause as tho mike was keyed to blot out a figure. At 2103 became 751 strich 00. (Strich is GG for slant sign) (Mason, England)

4020: AAR3USC, Ft. Indiantown Gap in USB at 1305 taking net check-ins from other Army MARS stns. (Symington, OH)

4035: AAA3USA, Ft. Meade, MD in USB at 1300 taking net check-ins from other Army MARS stns. (Symington, OH)

4270: YL/EE in AM from 2200-2215 w/32684. Then Ready x2 28 28 and into 5F grps. MOSSAD 'PCD' in background. (Mason, England)

4321.3: CW stn at 1410 rptng LNFP every few seconds. Also noted at 1434 in CW on 4796 kHz rptng LNFP every few secs. (Tubbs, W. Germany)

4367.5: KFC699, Houston, TX in USB at 0930 wkg oil rigs re check-in reports, rig status, etc. (Mierzwinski, PA)

4742: Mascot 4589 (a/c) and Architect (RAF) in USB at 0704 re flight data and SELCAL check. Other a/c also wrk Architect w/like comms. (Fernandez, MA)

4779.5: WGY912, w/3L grps in CW at 0539. (Scalzo, PQ, Canada) This is FEMA Special Facility, Berryville, VA. (Ed.)

4805: CW stn at 1452 rptng A6DXC every few secs. (Tubbs, W. Germany)

4904: CW stn at 1456 rptng YDTS every few secs. (Tubbs, W. Germany)

4956.5: KKN39 w/QSX 4/13/17 at 0629 in CW. (Scalzo, PQ, Canada)

5183: YL/GG w/718 718 718 1 from 2300-15. Then 420 420 42 42 and into 5F grps. (Mason, England)

5320: NOK, CG Group Key West, FL in USB at 0629 wkg USGCG Salvia. (Symington, OH)

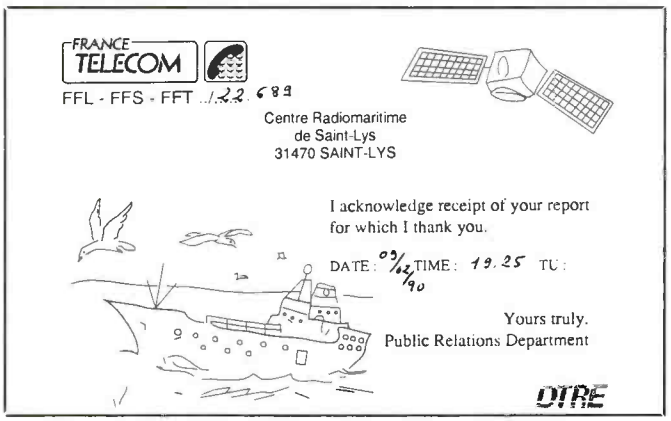
5437: YL/EE (Mossad) in AM at 0339 w/5L grps ending w/END OF MESSAGE, REPEAT REPEAT GROUP 35 GROUP 35 TEXT TEXT and then the 5L text rptd. (Fernandez, MA)

5441: MKL, RAF Edinburgh w/wx in USB at 1914. (Mason, England)

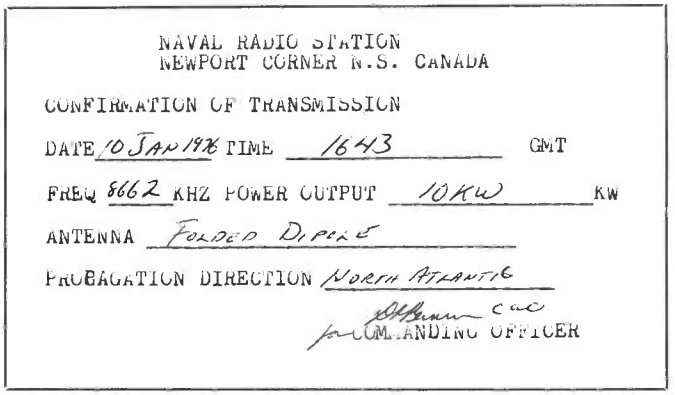
5695: YL/EE in USB rptng 40690 from 2200-15. Ready x2 14 14 and into 5F grps. (Mason, England)

5696: Rescue 1472 (helo) wkg Commsta Boston. 1472 out of Otis AFB, MA on way to vessel taking on water 30 miles off Portsmouth, NH. USB at 2156. (Fernandez, MA)

5696: Rescue 1483 in USB at 0210 wkg ComSta Portsmout, VA re poss search mission. At 0219 pp to Elizabeth City Air re refuel and return to Oceana NAS to



QSL card received by R.C. Watts, KY.



CFH Operators furnished this card as a QSL to Vince Reh, NY.

change crews. At 0232 pp to E. City Air w/request for Rescue 1490 to take off at 2400 (EST). At 0247 reported flares inoperable; requesting "Night Sun" on other Helo. At 0259 pp to E. City Air; reported lost port gyro, returning to Oceana. (Hill, MI)

5696: A/C L7B in contact w/Cutter Seneca re vessel Super Star 1 taking on water 160 miles SE of Kingston, Jamaica at 0301; at 0345 CG 1702 clg CG stn San Fran re contact Sacremento NAS re VFR?? At 0417 L7B reqstd pp w/Miami Ops re only enough ruel to stay on scene 45 mins, need quarters for crew at Guantanamo Bay plus fuel and wx. At 0500 crew of Super Star 1 abandoned ship. M/v Devery enroute 1 hour, Cutter Seneca eta 5 hrs. Crew in life raft w/UHF FM Portable. (Angello, MA)

5704: Speed 12 in USB at 2353 wkg Raymond 28 (Berstom AFB) w/target report. (Symington, OH)

5806.5: CW stn rptng LNFP every few secs. At 1543 stopped for few secs then sent LNFP LNFP LNFP DE XYGL XYGL QTC 50 20 25 1641 BT 227 BT and into 5L grps. After text sent BT XYGL XYGL FOR 3FLS RPT QLN AR and back to the LNFP callup. At 1555 sent LNFP DE XYHL QTC . . . 25 1651 BT and into antoher 5L grps msg sending w/BT XYGL BT and back to the LNFP bandslip. (Tubbs, W. Germany)

5892: YL/SS in AM from 1025-1036 w/5F grps. (Scott, NY)

6506: USS Impervious MSO449 clg USCG Comsta Portsmouth, VA in USB at 0337. No answer. (Hill, MI)

6708: YL/GG rptng 999 x3 79428 60 from 1900-05. Then five tones and into 5F grps. (Mason, England)

6746: Halifax CG w/ice reports at 0423 in USB. (Hill, MI)

6755: Lima Mike Sierra/Three Mike Sierra in USB at 0452 re setting up RTTY comms on same freq. 3MS sounded like an a/c and later gave ICM a rdo check. Then D7M/ICM re getting copy on CRR freq. (Fernandez, MA)

6787: YL/SS in AM every Sunday at 0845. Sends 5F grps. (Toms, Australia).

6875: YL/EE rptng 734 between 2100-05. At 2105 169 169 29 29 and into 5F grps. Rpts 2200 on 5640 kHz. (Mason, England)

6995: OM/RR w/147 x3 000 in AM from 2000-05 then off. (Mason, England)

7404: YL/GG rptng Kilo Romeo 0730-35. Then 5F grps for 171 w/78 grps. (Mason, England)

7535: Following were checking equipment w/Norfolk SESEF: NCQI, USS Ainsworth FF1090 at 1530; NJUL, USS Bainbridge CGN25 at 1430; NDIB, USS Briscoe DD977 at 1930; USNS Capable T-AGOS-16 at 1755; NCAS, USS Clifton Sprague FFG16 at 1720; NGJS, USS Pharris FF1094 at 2000; NJFY, USS Platte AO186 at 1430; NJAC, USS San Jacinto CG56 at 1710, due poor propagation on 7 MHz, both stns shifted to 12315 kHz; NNWI, USS Whidbey Island LSD41 at 1730; Suitcase 23 was callsign used by unit at Pautuxant River NAS wkg Norfolk SESEF at 1850, this NAS is where new and unproven a/c are tested for the USN. (Gordon, CT)

7600: Time stn Ecuador in AM at 0405 w/time bips. (Mierzwinski, PA)

7605: Mossad YL rptng VLB14 Bravo 7 at 2000 in AM mode. (Mason, England)

7723.2: KRH50 w/QRA DE KRH50 5/7/11/13/?? K, poor signal. Hrd 0700 in CW. (Scalzo, PQ, Canada)

7860: YL/EE w/387 387 655 655 655 then into 5F grps x2 in AM at 0635. Good sig. YL had GG accent. Off at 0652. (Scalzo, PQ, Canada)

7861.5: Unid CW stn at 0817 w/5L grps. (nite before above logging) (Scalzi, PQ, Canada)

8075: YL/SS sending #s in strange format. Atencion Atencion (3L 3L 3L 3L 4L) x3 then 9 tones (4L 5L 2L 3L 3L) then 3L and Final. (Toms, Australia)

8161: Darwin Control, Australian Navy w/routine tfc to warships/bases. Also hrd on 8122 kHz. You'll need to brush up on your Australian vernacular to understand the very strange style of military contact. eg. Darwin Control calls of warship and the ship replies "Gidda Mate, this is ABZ to Jennie Fred. Wats for dinner mate?" etc etc. (Toms, Australia)

8247.7: NBHE, USS Belleau Wood LHA3 wkg San Diego CSS2 (on 8771.6 kHz) at 0035. COMTHIRDFLEET aboard the Belleau Wood rqstd pp, CSS2 opr advised Belleau Wood to QSY to CSS1 (40066.1 kHz/4360.5 kHz) but no joy so pp made on CSS2. COMTHIRDFLEET rqstd Agricultural inspections as well as port services for 1000 arrival next day. Also rqstd CINCPACFLT to come up on TA299 HICOM net. (Gordon, CT)

8719: COMSUPRON-8, Little Creek, Norfolk, VA wkg NIHI, USS Opportune ARS41 at 2330 and wkg NQOD, USS Preserver ARS8 at 2210; NQTN, USS Fortify MSO446 in rdo check w/ntnwx, USS Hoist ARS40 at 1830. (Gordon, CT)

8771: NBGV, USS Lexington AVT16 "Spartan" clg "Raspberry Pensacola" at 0030. This Aviation Training Carrier, one of original Essex WW2 Carriers, is soon to be retired. (Gordon, CT)

8875: YL/SS w/3 + 2F grps. In AM at 0211. (Scalzo, PQ Canada)

8900: Unid stn w/5F (cut nbr) grps in CW at 0005. (Hamlin, NY)

8939: Moscow Airport VOLMET hrd on USB 1248 and 1310; Kiev VOLMET hrd 1250; Riga VOLMET hrd 1300; Leningrad VOLMET hrd 1305; Rostov VOLMET hrd 1325. All were in RR. (Margolis, IL)

8975: Ausy 623 wkg AF Sydney at 0020 re malfunction in engine, switching off. Rqsts alternate flight path to Canberra; Wombat 951 at 0204 clg AF Sydney w/rqst for pp to 33 Squadron Sydney. Call put through on 9023 kHz but terminated as Wombat 951 having problems w/radio gear; Navy vessel HMAS Warrnambool clg AF Sydney at 0036 re emergency rdo check. Not often you hear Navy ships on AF freqs; Sheppard 73 (RAAF Orion P3 series C) clg AF Auckland, NZ in AM w/routine tfc. (Toms, Australia)

8993: Lima Alpha 054 (USN P-3) in USB at 1502 wkg Macdill w/pp to Base Ops; King 52 in USB at 1508 wkg Macdill w/pp to Hurlburt Base Ops. (Symington, OH)

9027: Bird Track w/coded msg (L/F grps) at 0443, again at 0446 on 13241 kHz in USB. (Hill, MI)

9222: YL/GG (??) w/4F grps. Off at 0640. (Warrington, OH)

9457: Music box tune here every Sunday at 1000. At 1005 soft voiced YL/GG rpts 5F headings (usually 3) for 1 min. then into 5F grps for each heading. (Mason, England)

10125: Unusual Mossad xmsn here at 0515. YL rptng CIO Tango 12 Bravo 50 Zulu Mike 50 Tango Romeo. At 0600 w/CIO2. (Mason, England)

11191: 8HT/Hershey in USB at 0532 w/comms re electronic equip repairs. hershey is tactical ID for CINCLANT, Joint Air Reconnaissance Center, Key West, FL. (Fernandez, MA)

11246: MAC 10843 at 1317 w/Macdill for pp to Format; Igloo 19 w/Macdill at 1321 w/pp to Loring Dispatch; Fre 91 for pp to Minuteman at 1517 thru Macdill. (Symington, OH)

11300: Khartoum ATC, Sudan in USB at 0342 wkg many a/c re flight data in EE. (Fernandez, MA)

11535: SOL353, PAP, Warsaw, Poland w/nx in Polish. CW at 1441. (Margolis, IL)

12282: CW stn at 1700 sends VVV VVV VVV 8BY 8BY 8BY 325/131/316/689/058/034/641/716/473/106. (Tubbs, W. Germany)

12944.2: ZLP2/3/4/5 AR at 0217 in CW. Royal Navy, Wairouru, NZ. (Scalzo, PQ, Canada)

13285: Worldways 641 wkg Edmonton LDOC at 2242 reporting ill passenger. Rqstd LDOC to contact York Co. (Ont.) Hospital and advise Doctor (name given). Plane due arrive Toronto at 0005. At 2306 controller said ambulance would meet plane, rqstd have all passengers remain seated while paramedics tended ill person. At 2355 Worldways 703 wkg Dispatch bound for Toronto from Acapulco reported 355+3 passengers. Required wheechair upon arrival at 0135. All USB mode. (Hill, MI)

13436: Unid CW stn at 1431 w/callup of GWW TT BT BT BT and into 5F (cut nbr) grps. Down w/AR SK. (Ed.)

13612: Unid CW stn at 1149 w/5F grps w/pause after every 10 grps. (Ed.)

13775: YL/GG rptng Golf Charlie 1000-05. Then 082 082 24 und 124 Gruppen and into 5F grps. (Mason, England)

13921: Israeli Mossad activity in USB. UL rpts CIO2 from 2236 one day to 1300 next day. At 1310 CIOM 14B2 Sedyunit. (this wd was unclear and is approx how it sounded) 1354 begins rptng CIO2; 1510 CIO3; 1515 CIAT CA; 1559 CIOT 1A14 B4 O; 1633 CIO2; 1634 CIOT 84; 1718 CIO8 Z; 1948 CIO2 continuously thereafter. Two days later YL passes 5L grps in phonetics after CIOT preface, sent at 1342; at 1348 CIOT rpts. Other calls hrd intermittently until stn shut down at 1700, most calls of the CIO2 variety. Week later YL tptd CIOT 14BO1 from 1945-2242 then rptd CIU8 from 2245 to past 0215 fadeout. (Margolis, IL)

13974: NNNONPA, Palmer Station in USB at 2356 wkg NNNOJET w/pp. (Syminton, OH)

14441.5: NFPW, USS Flint AE32 (NNNOCWO) wkg NNNOTSD at 2355. (Gordon, CT)

14477: USS Fanning FF1076 (NKBP) NNNOCWW and USS Flint AE32 (NFPW) NNNOCWO skg NNNONIG and then NNNONRJ at 0200. (Gordon, CT)

14491.1: Unid stn in CW at 1357 sends 5L grps (cut nbrs-ADGIMNRTUW) to unid stn on 14491.3 kHz. (Margolis, IL)

14686: Unid stn wkg Flint 61 (a/c) in USB at 1912 re wkg south coast of "Bluegill Office." (Fernandez, MA)

16614.7: Unid CW stn at 1208 sending 5L grps, vy weak sig. (Ed.)

16936: RIT, Soviet Navy, Vaygach, USSR w/VVV mkr in CW at 1735. (Margolis, IL)

17975: McClennan in USB at 2345 w/Sky King bcst. (Symington, OH)

18385: YL rpts "esing lat chadoon" from 1502-1505 in USB. (Margolis, IL)

20064: RMSY (prob RR ship) DE RIT (Moscow Naval Rdo) VVV T77 25 26 1517 T77 BT SSSSS. (5L grps w/some cyrillic characters) CW at 1547. (Tubbs, W. Germany)

20127.9: Unid CW stn at 0635 sending approx 7 wpm—VTN4 E4NN NE6N. Good sig. This went on for about an hour. No sign off. (Scalzo, PQ, Canada)

20443.5: Prob CLP1 or CLP2 w/nx in SS re Central America. IN CW at 1830. S/oo 1850 w/"hasta aqui el otro boletin." (Margolis, IL)

20656: BLOAD QRA DE K1L in CW at 1928 foll by T1 msgs. (Margolis, IL)

20678.5: NNHB, USCGC Yocona WMEC168 (NNNOCPU) wkg NNNONRJ at 2350. Yocona is ex-USS Seize ARS26, a large salvage ship which was transferred to USGC as a Medium Endurance Cutter in 1968. (Gordon, CT)

20820: Karachi Naval, Pakistan in CW at 1635 w/VVV AQP2/4/5/6/10 mkr. (Tubbs, W. Germany)

25130: ROT, Moscow Naval, USSR in CW at 1423 w/VVV VVV CQ CQ DE ROT ROT QSX 22269.5 KC K. (Tubbs, W. Germany)

25417.5: DMK, MFA Bon n, FRG w/VVV mkr and ID in CW at 1605. (Margolis, IL)

29709.5: DKI, Bulgarian Embassy, Havana, Cuba w/VVV's and callup in CW at 2106. Learned ID from RTTY xmsn on 29708 kHz just prior to this bcst. (Margolis, IL)

LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

Shortwave listeners got a nasty surprise when Radio RSA announced the close down of its external services for areas outside of the African continent. Reasons given included problems with providing the necessary funding and the belief that new technologies, such as satellites, offered more efficient methods of reaching a world audience.

Radio RSA has consistently provided us with the strongest source of English language programming out of Africa. And well-produced programs they were, too—notwithstanding the politics. While there is probably very little chance that this decision can be reversed, letters expressing such a hope certainly can't hurt. The address is Radio RSA, PO Box 4559, Johannesburg 2000, Republic of South Africa.

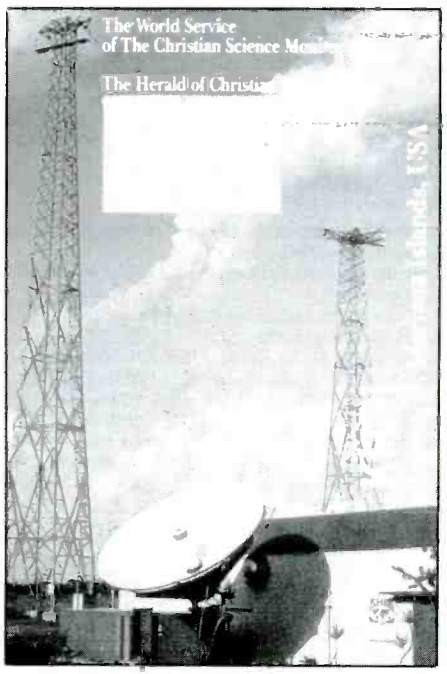
The initial contracted Radio RSA schedule is: 0358-0655 in FF on 9675, 11745, 15220 and 17745; 0428-0530 in P/P on 5960 and 7270; 0858-0955 in Tsonga (Saturday and Sunday) on 9585; 1058-1155 in EE on 9555, 11805, 11900 and 17835; 1158-1255 in EE (same), 1358-1555 in EE on 9555, 11925 and 17835; 1358-1655 in Swahili on 15365; 1458-1755 in Lozi on 1190; 1558-1755 in Chi-Chewa on 5960; 1658-1755 in PP on 7230; 1758-1955 in FF on 15365 and 17745; 1858-2055 in PP on 11950 and 15220.

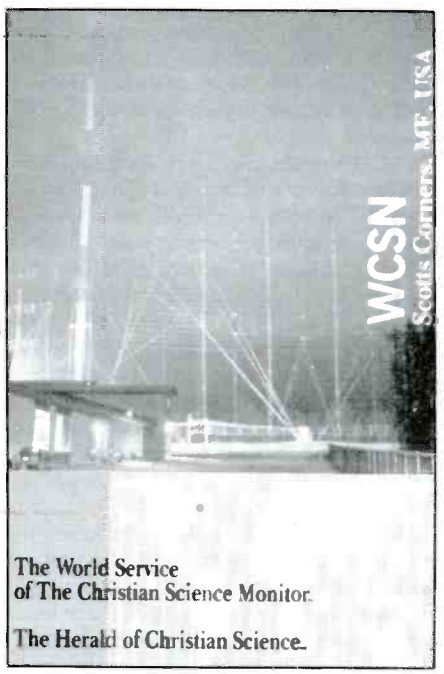
Radio Vilnius, discussed in last month's column, hasn't been completely cut off by the Soviets, after all. The first cut off was excused by the Soviets as a switching error (and if you believe that we can give you a great buy on a bridge!) Apparently, there was a second such occurrence a couple of weeks after the first instance, which also lasted a couple days. Otherwise, the Radio Vilnius programs are going out—but at drastically reduced modulation levels which makes the broadcasts very hard to follow.

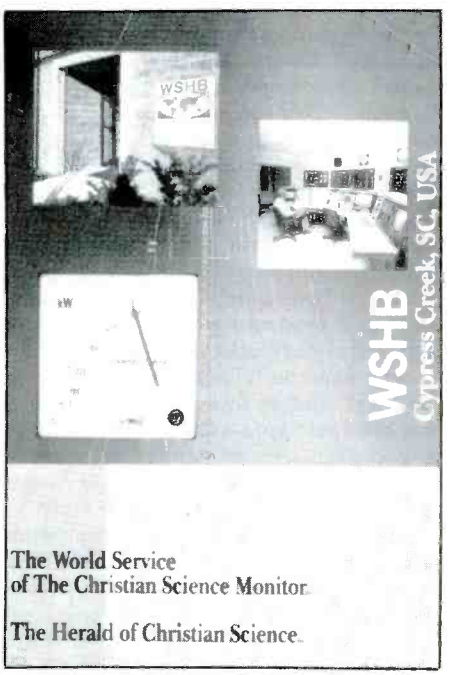
"We read the opinions of your Latvian and Lithuanian friends with great interest. We can well understand their distrust in everything the Soviet government does." So wrote Edvinas Butkus, Deputy Chief Editor of the Lithuanian Radio in a letter to Bill Walbesser of Ravena, New York. The re-

Here is Radio Canada's International's 1990 QSL; a black background and varying shades of green and yellow.

The (unnamed) director of RAE in Argentina (seated) and announcer Silvana Licciardi. Photo courtesy of Brian Webb.







The beautiful and individualized full color QSL cards for the Christian Science stations. If you didn't receive a set and instructions on using them drop a line to: World Service/Herald, PO Box 860, Boston, MA 02123.

Radio Moscow's programs originate in this building at Pyatnitskaya Ulitsa 25, Moscow.

marks were made in response to comments Bill made in his reception report to the station and Bill says he was surprised to learn there is this much hostility toward the Soviet Union "within the ranks of Radio Vilnius." Bill says that if the Lithuanian independence movement should fail and there comes a shakeup in the station staff, that's probably the reason.

Speaking of shakeups, that's at least part of the reason why Radio Prague's foreign services went off the air on April 1—though they were scheduled to have returned by now. An internal reorganization was underway—apparently cleaning out some employees suspected of having a preference for the former communist government. Incidentally, the country has changed its name to the "Czech and Slovak Federative Republic." That was a compromise after an earlier decision to name the country the "Czechoslovak Federative Republic" in the Czech part and the "Czecho-Slovak Federative Republic" in Slovakia.

HCJB has made major changes in its English program line up, a move caused by a lacked of personnel. "Virtually all" Quito-produced programs are now consolidated into a one hour block called "Studio 9." The longtime favorite "Passport" has been dropped and another favorite, "Happiness Is" has been cut from seven days a week down to two. Studio 9 begins with Latin American news, then a segment of news and current events on weekdays. The second half hour contains (Sunday through Saturday, in that order): Saludos Amigos, Dateline 90, Happiness Is, Ham Radio Today, Happiness Is, Musica del Ecuador and DX Party Line. Comments on the changes are wanted by the station and can be sent to HCJB, Casilla 691, Quito, Ecuador.

A couple of months ago we mentioned the policy change on QSL's at Christian Science's Herald Broadcasting (WCSN, WSHB and KHBI). Quite a number of readers sent us extra sets of the trio of individualized cards these stations are now using. These full color beauties are superb and we again congratulate the folks in Boston for making this change!

We have some interesting information about Argentina's RAE, sent by Brian R. Webb of California, who paid a visit to the station back in February. The station's offices and production facilities are in a building at Maipu 555 in central Buenos Aires (a recent move from the former location at Ayacucho 1556). The second floor contains the production area which consists of an announcer studio and engineer's booth. The third floor houses the director's office and a "work bay" where announcers prepare programs and the secretarial staff works. Programs are fed to Argentina's central radio transmitting facility at Gral Pacheco.

Webb had a chance to meet with the director and an announcer and learned they were unaware of such problems as interference to their signal, or even the fact that other stations also use their frequencies! Many thanks to Brian Webb!

The popular Radio Earth, which was on the air from 1983 until last August should be back on the air by now. Formerly aired on such stations as WRNO and WHRI, you should now be able to hear Radio Earth on Radio For Peace International. Only now the program is called "Music From Everywhere." It's scheduled on Saturdays only at 2300-2330 on 13660 and 21565. And thanks to E. Wallesen of LaGrange Park, Illinois for that information in the form of a feature item in the *Chicago Tribune*.

Tim Johnson in Galesburg, Illinois thinks he may have solved his unidentified station on 4920 we mentioned a month or two back. Tim says it's a program called "Rock and Roll USA" and it seems to be aired by Radio Quito. Just what we need—tropical band stations playing syndicated US rock programs!

J.M. Heumann in Port Arthur, Texas wonders what the SIO code is. That's Signal strength, Interference level and Overall quality—a kind of abbreviated SINPO code. "1" is bad, "5" is very good. He also wonders about a "radio listener's database" mentioned on Radio Moscow's DX program. Don't know what this is, J.M., unless they refer to the rather extensive files they keep on listeners who write to them.

Bill Walbesser notes Italy's RAI using "Radio Rome" as an ID in its English programming, and just "Ici la radiotelevision" in French.

Bill says he heard Radio Baghdad spending "a good deal of time" reading letters from listeners in the US and says "it would be interesting to know if any of these letter writers ever received a Radio Baghdad QSL! This station has really "gone black" in the last couple of years, Bill. But, if history is any guide, you can expect a swing in the other direction—eventually!

Remember to make both reading and reporting to The Listening Post a part of your month, every month! Comments, questions, station news, news clippings, schedules, shack photos, spare QSL cards—all are welcome. Of course, your shortwave loggings are wanted, too. But please leave us some cutting space between each item and add your last name and state abbreviation after each. Thanks!

Here are this month's logs. All times are UTC and broadcasts in English except as noted.

Albania: Radio Tirana, 9480 at 2340 and 0429. (Johnson, IL) 9500 at 0429 with IS, into FF. (Meece, OH) 9760 at 0450 in unidentified language. (Heumann, TX)

Antigua: Deutsche Welle relay, 2353 on 5975. (Moser, PA) 6040 at 0132. (Heumann, TX) 9535 at 0323. (Johnson, IL) 9670 at 0501 (Meece, OH) 11965 at 0600 in GG, 15105 at 0105 and 15205 at 0300. (Walbesser, NY)

BBC relay on 5975 at 0209 and 0634. (Heumann, TX) 9640 at 0500. (Walbesser, NY).

Argentina: RAE, 11710 with news at 0122. (Ross, WA)

Radio Nacional in SS on 6060 at 0445. History of Buenos Aires trolleys. (Riddle, Argentina)

Radio Rivadavia relay by Argentine PTT on 13255 at 0050-0545 in SS. (Johnson, IL)

Armenian SSR: Radio Yerevan at 0250 with music and talk about Azerbaijan on 15180//17655//17690. (Johnson, IL).

Ascension Island: BBC Atlantic relay, 6005 at 0317. (Moser, PA) 9600 at 0445 and 15260 at 1701. (Heumann, TX) 15400 at 0738 and 17860//21470//21660 at 1700. (Walbesser, NY).

Australia: Radio Australia, 9505 at 1840, 13740 at 1710 and 15320 at 0520. (Johnson, IL) 9580 at 1134. (Moser, PA) 11930 at 0706, 17795 at 0236, 17715 at 0715. (Carson, OK) 15160 at 0805, 15240 at 0626 and 15320 at 0552. (Walbesser, NY) 15485 at 1830. (Yohnicki, ONT) 17630 at 0855. (Reese, Thailand) 17795 at 0521. (Meece, OH) 21740 at 0305. (Heumann, TX)

ABC, Brisbane, 9660 with pops at 1232. (Johnson, IL)

Austria: Radio Austria International, via Canada on 6015 at 0554 with ID, frequency/program schedule, SS and FF IDs. (Meece, OH) 9870//9875 at 0130. (Johnson, IL) 13730 at 0135. (Ross, WA)

Belgium: RTBF-Radio 4 Internationale, 15540//25645 in FF at 1705. (Walbesser, NY) 25645 with xylophone and drum IS at 1547. (Johnson, IL)

BRT at 0053 on 9925. (Walbesser, NY) 21810 at 1525 with IS, also 17555/21810 at 1242. (Johnson, IL)

Benin: ORTB on 4870 at 0505 in FF with African music. (Johnson, IL)

Botswana: Radio Botswana, 7255 at 0415 with business education program. (Johnson, IL)

Brazil: Radiobras, 11745 at 0234 with ID, Brazilian pops. (Carson, OK)

Radio Nacional Amazonia on 11780 at 0950 in PP (Johnson, IL)

Swiss Radio International, Brazilia relay, 17730 at 0234. (Walbesser, NY)

Bulgaria: Radio Sofia, 11680//15330 at 2132. Also 11735 at 0300 (Johnson, IL) 11720 at 0338. (Carson, OK) 15330 at 1832 sign on. (Carpenter, OH) 15290//15340//15370 at 2110. (Heumann, TX) 15335 at 2330 sign on in FF. (Walbesser, NY)

Cameroon: CRTV, Yaounde, 4850 at 2330 in FF. (Johnson, IL)

Canada: BBC via Sackville, 6175 at 0209. (Heumann, TX) 15260 at 2030. (Walbesser, NY)

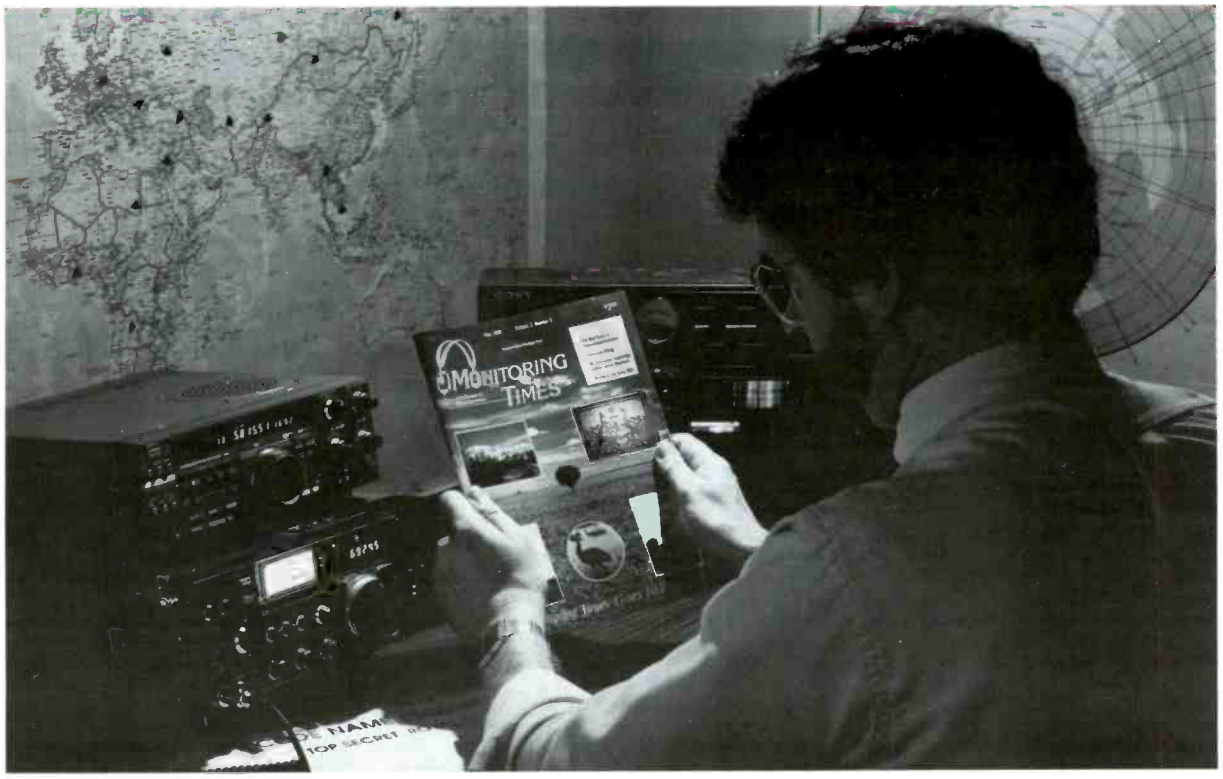
Radio Japan, via Sackville, 6120 at 1156. (Heumann, TX)

CFRX 6070 at 0027. (Heumann, TX) 1353 with ID and address for reception reports repeated 11 times til 1359 went suddenly into sports. (Meece, OH)

CHNX, Halifax, 6130 at 0740 with rock. (Johnson, IL)

CBC feeder with Toronto Blue Jays baseball at 2345 on 7571.8. (Johnson, IL)

THE PROS SUBSCRIBE.



SHOULDN'T YOU?

Several professional monitoring agencies, in fact, have subscriptions to **Monitoring Times**. That's because every month **Monitoring Times** offers the latest in:

- International Broadcasting
- Utility Monitoring
- Scanners
- Shortwave and Longwave
- Satellites
- Electronic Projects
- Listening Tips
- Frequency Lists
- Broadcasting Schedules
- News-breaking Articles
- Features
- Exclusive Interviews
- Insights from the Experts
- New Product Reviews & Tests

Jammed with up-to-date information and concisely written by the top writers in the field, **Monitoring Times** is considered indispensable reading by top government agencies.

From longwave to microwave, if *you* are interested in communications, **Monitoring Times** is your foremost guide to international broadcasters; new equipment and accessories; profiles of government, military, police and fire networks; home projects; and tips on monitoring everything from air-to-ground and ship-to-shore to radioteletype, facsimile and space communications.

Order your subscription today before another issue goes by: only $18 per year in the U.S.; 26 USD per year for foreign and Canada. For a sample issue, send $2 (foreign, send 5 IRCs).

MONITORING TIMES

Your authoritative source, every month.

P.O. Box 98
Brasstown, N.C. 28902

☐ Yes, begin my subscription to Monitoring Times. I've enclosed a check.
☐ Send me a sample issue. Enclosed is a check for $2. (Foreign, send 5 IRCs).
☐ For MC/VISA orders, call 704-837-9200.

Name

Street

City State Zip

CIRCLE 6 ON READER SERVICE CARD

RCI, 9670 at 0647, 11845 in SS at 0157, 11940 in SS 0033 and 0240 in EE, 11955 at 1646, 15325 at 1705 on FF. (Heumann, TX) 13675//15260//17820 in FF at 1815. 21675 at 1847. (Walbesser, NY) 15325 at 2140. (Johnson, IL)

Chad: Radiodiffusion National Tchadienne, 4904.5 at 0507 with FF talks. (Meece, OH) 0427 with national anthem. (Johnson, IL)

Chile: Radio Nacional, 15140 at 0338 in SS. (Walbesser, NY)

Radio Santa Maria, Coihaique, 6030 with news in SS at 2200. (Riddle, Argentina)

Radio Patagonia Chilena in SS with discussion on cattle raising a 2230. (Riddle, Argentina)

China: Voice of the Strait, 7280 in CC at 1154. (Carpenter, OH)

CPBS-2 on 12200 at 0959 in CC with announcement, music. (Johnson, IL) 7515 in CC 1150. (Carpenter, OH)

Guangxi PBS, Nanning, 4915 at 2135 in CC. EE ID 2144. Weak. (Meece, OH) (Very unusual propagation! Editor)

Swiss Radio International, via Xian, 9620 at 1314. (Johnson, IL)

Radio Beijing, 9690//9770 at 0305. (Heumann, TX) 15100 at 0000. (Walbesser, NY) 15330 at 2350. (Ross, WA) 17855 at 1135. (Moser, PA)

Colombia: La Voz del Cinaruco, Arauca, 4865 at 0515 with Caracol net, ID, announcements in SS. (Meece, OH)

Caracol Neiva, 4945.3 at 0502 in SS with ID, slogan "Caracol es primera informacion" and into national news. (Meece, OH)

Ondas del Meta, Villavicencio, 4885 at 1123 ID, time checks, talk and Latin music. (Meece, OH)

Caracol Bogota, 5075 in SS at 0354 and 0515. (Walbesser, NY)

Costa Rica: TIFC, Faro del Caribe, tentative, 5055 at 1148 with religious program in SS. (Heumann, TX)

TIAWR, Adventist World Radio (aka Radio Lira) 9725 in SS at 0003. (Heumann, TX) 1230. (Carpenter, OH)

Radio For Peace International, 7376 USB at 0435 with woman's program. Carrier only from 0448. (Carson, OK) 2156 at 2230. (Walbesser, NY)

Radio Impacto, 5045//6150 at 0300 in SS. (A. Bednarski, BC) (Nominal 5044, editor)

Radio Reloj, 4832 at 0400 in SS with ID. (Johnson, IL)

Cuba: Soviet All-Union relay, 4766 at 0320 with Russian home service. (Walbesser, NY)

Radio Rebelde, 5025, SS at 0122. (Heumann, TX) 1200. (Johnson, IL)

Radio Havana Cuba, 5965 at 0429. (Meece, OH) 6165 at 2354 and 0033 in SS, 9550 at 0155 in SS, 9710//11820 at 0208, 11800 at 0208, 15285 at 2051, 15340 at 0000 in SS. (Heumann, TX) 11760 at 0429. (Carson, OK) 11835 at 0649. (Moser, PA) 11950 in SS at 2340 and 15230 in SS at 0720. (Walbesser, NY)

East Germany: Radio Berlin International, 6040 with sign off in PP at 0045. (Riddle, Argentina) 1185 at 0515. ID and frequency schedule at 0527. (Meece, OH) 11890 at 0131 in GG. (Ross, WA) 15125 at 0435. 15240 in SS at 0222 and 15350 at 1747. (Walbesser, NY) 15145 at 0120. (Johnson, IL)

Ecuador: 9745 at 0100, EE to North America. (Heumann, TX) 11925 at 1040. (Johnson, IL) 15125 in Romanian at 0435. (Walbesser, NY) 15155 at 0315. (Olson, ND) 21740 at 2155. (Walbesser, NY)

Radio Centro, 3290 in SS at 0945-1020 with "Radio Centro" IDs. (Mierzwinski, PA)

Radio Federacion, Sucua, 4960 at 1135 with music, SS, slow-spoken calendar of events. (Meece, OH)

Radio Quito, 4920 at 0329 with commercials, ID in SS. (Johnson, IL)

Egypt: Radio Cairo, 9475 at 0305 with news. (Moser, PA0 9850 in AA at 2335. (Mierzwinski, PA) tentative on 9900 in AA at 0322. (Heumann, TX) 12050 at 0405 in AA; 2048. (Ross, WA; Heumann, TX)

England: BBC with World Service on 3995 at 0540. (Walbesser, NY) Here and //5975 at 0634. 5875//6110//9915 in SS at 0300, 5975//7325 at 0018. 11775 at 1212, 15260//15400 at 1701, 15390 at 0254 in PP, 15420 at 0303. (Heumann, TX) 9410 at 0700, 12095 at 0530. (Johnson, IL) 9915 at 0500, 15070 at 2217. (Walbesser, NY) 11820 at 0430 in SS. (Riddle, Argentina) 15360 at 0748. (Reese, Thailand) 17640 at 1646 and 17880 at 1647. (Carson, OK)

Equatorial Guinea: Radio Africa, 7188.9 at 2148 with religious program. Best in LSB mode, with ham QRM. (Meese, OH)

Finland: Radio Finland International, tentative, at 0003 on 9645 (Heumann, TX) 11755 at 0635 and 21550 at 1300. (Johnson, IL) 15400 at 1218 with letterbox. (Moser, PA)

France: Radio France International, 5945 at 0216 in FF; 17650//17850//17860 (Fr. Guiana—Ed) //21635//21645 in FF at 1218. (Heumann, TX) 7135//9550//9790//11705 at 0330. Also at 0027 on 9800 in FF. (Walbesser, NY) 9800//11705//11995 at 0315. 21770 at 1429 sign off. Also on 25820 in FF at 1551. (Johnson, IL) 17620 at 1630. (Yohnicki, ONT) 21685 in FF at 1707. (Walbesser, NY) 21770 at 1402. (Moser, PA)

French Guiana: RFO Guyane, tentative, 5055 in FF at 0919. (Heumann, TX)

RFI relay, 11670 at 0052 in SS or PP. Also 21645 in FF at 1218, into EE 1230. (Heumann, TX) 9675 in JJ at 0836 and 15325 at 0310. (Walbesser, NY)

Gabon: Africa Number One, 9580 at 2119, African music and rock. (Johnson, IL) 15475 at 1922 with Afropops. (Carpenter, OH)

Ghana: GBC-1, 4915 at 0530 sign on in vernacular. (Johnson, IL)

Greece: Voice of Greece, 9395//9420 in Greek at 0229. (Walbesser, NY) 9420 at 0133 in EE. (Ross, WA) 11645 at 2352. (Moser, PA) 0346 in EE. (Carson, OK)

VOA Kavala relay, 17800 at 1940. (Walbesser, NY)

Guam: KTWR, 11805 at 0903 with sermon. (Moser, PA) 15200 at 0830. (Reese, Thailand)

KSDA (Adventist World Radio) with radio play at 1020 on 13720. (Johnson, IL)

Guatemala: Radio Tezulutlan, 4835 at 1207 with Indian music and announcements (presume local languages, editor). ID 1210. (Meece, OH)

Radio Buenas Nuevas, 4800 with SS religious program at 0320; 0327 to 0331 sign off. (Johnson, IL; Carson, OK)

TGNA - Radio Cultural, 3300 in EE with religion from 0300. (Heumann, TX; Moser, PA; Johnson, IL)

Honduras: Radio Luz y Vida, tentative, 3250 at 0306 in SS. Also at 1145. (Heumann, TX)

HRVC, La Voz Evangelica, tentative, 4820 in SS at 0117, 0220 and 1150. (Heumann, TX)

Hungary: Radio Budapest, 9520//9835//11910 at 0127. (Walbesser, NY) 9835 at 0046. (Moser, PA)

Iceland: ICBS, 13855//15767 in Icelandic with man and woman with news at 2302. Also at 1945 with news in Icelandic on 13855//15770//17440. (Johnson, IL)

India: All India Radio, 11620 at 1930. (Johnson, IL)

Iran: VOIRI, 15084 in Arabic at 1809. (Walbesser, NY) 0550 in SS (Johnson, IL)

Iraq: Radio Baghdad, 9515 at 0200. (Johnson, IL) 11720 at 2040 and 15150 in AA at 2220. (Walbesser, NY)

Israel: Kol Israel/Voice of Israel, 9435 at 0112. (Ross, WA) 11605 at 0400. (Bednarski, BC) Here and //15640//17575 at 2150. (Johnson, IL) 11590 in Hebrew at 0452, EE at 0500, 15615 in Hebrew at 0422 and 21760 in Hebrew at 1609. (Heumann, TX)

Italy: RAI on 7275 with bird call IS at 0425. Also at 2022 on 11800 under Havana. (Johnson, IL) 9710 at 0104, ID as "Radio Rome." (Walbesser, NY)

Italian Radio Relay Service (IRRS) 9860 at 0722 with mailbag, UN program "Perspective," "Scope," ID, address, Unesco program. (Carson, OK)

Ivory Coast: Radiodiffusion TV Ivorienne, 4940 at 2353 in FF with national anthem and sign off. (Johnson, IL)

Japan: Radio Japan, 9505 at 1405 with news. (Meece, OH) 11835 (via Gabon, editor) at 2318. 11865 at 2318. (Carson, OK) 15195 at 0510, 21700 (via Gabon, editor) at 1529. (Johnson, IL) 15325 (via French Guiana, editor) at 0314. (Walbesser, NY) 17825 at 0326. (Olson, ND) 21610 at 2301. (Ross, WA)

Jordan: Radio Jordan, 9560 at 2110 in AA. (Johnson, IL)

Kiribati: Radio Kiribati, 14917.7 (sideband, editor) at 0555 sign on, BBC news at 0600, then local program with country/western. (Johnson, IL)

Kuwait: Radio Kuwait, 13610 in AA at 2359. (Ross, WA) 13710 at 1830 with news. (Johnson, IL) 15495 in AA at 2118. (Heumann, TX) 15505//21675 in AA at 2240. (Walbesser, NY)

Abbreviation Used In Listening Post

AA	**Arabic**
BC	**Broadcasting**
CC	**Chinese**
EE	**English**
FF	**French**
GG	**German**
ID	**Identification**
IS	**Interval Signal**
JJ	**Japanese**
mx	**Music**
NA	**North America**
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**

Lebanon: Voice of Hope, tentative, 6280.3, very weak with music at 0415. (Johnson, IL)

Lesotho: BBC relay on 3255 at 0414 with "Newsdesk." (Meece, OH)

Liberia: ELWA on 4760 at 0642 with greetings. (Moser, PA)

VOA Relay, 6035//9525 at 0326. (Moser, PA) 6180 in FF at 0645. 15600 at 2058, 17705 in FF at 1920, 17870 at 2152 and 21485 at 2150. (Walbesser, NY) 15580 at 1618. (Heumann, TX)

Libya: Voice of the Great Homeland, 15235//15415//15450 in AA at 0352. (Walbesser, NY) 15415 in AA at 0410. (Ross, WA)

Lithuania: Radio Vilnius, 17665 at 2325 in EE with Russian lesson. (Ross, WA) Here and 17690 at 2258 in unidentified language. (Moser, PA)

Luxembourg: Radio Luxembourg, 6090 at 0156. (Johnson, IL) 0606 in GG. (Meece, OH)

Madagascar: TRV Malagasy, 5010 at 0305 in unidentified language with religious program. Tentative logging. (Johnson, IL)

Radio Netherlands relay, 15150 at 1449, //Flevo outlets on 13770 and 17605. (Moser, PA) 15560 at 1838. (Walbesser, NY)

Mali: Radio Beijing relay, 9770//11715 at 0317. (Walbesser, NY)

Malta: Deutsche Welle relay, 9565//11865 at 0104. (Moser, PA) 2168 in GG at 1220. (Heumann, TX)

Voice of the Mediterranean, 9675 at 0600, 0641. (Johnson, IL; Moser, PA)

Mexico: Radio Educacion, 6185 at 0703 in SS with mostly music, mention of Mexico and station ID. (Mierzwinski, PA)

Mongolia: Radio Ulanbator, 12015 at 0937 ending EE. (Johnson, IL)

Morocco: VOA relay, 15205 at 1822. (Carpenter, OH)

Netherlands: Radio Netherlands, 9895 in PP at 0044, 13700 at 2113. (Walbesser, NY) 13770 at 1447. (Moser, PA)

Netherlands Antilles: Radio Netherlands Bonaire relay, 6165 at 0113. (Ross, WA) 6165//15315 in Dutch at 0205. (Heumann, TX) 15310 in PP at 2244. (Johnson, IL) 15315 at 0053, 17605//21685 at 1838. (Walbesser, NY)

Trans World Radio, 9535//11930 at 0320. (Johnson, IL) 11815//15345 at 1221. (Moser, PA)

New Zealand: Radio New Zealand, 17680 at 0500 with commercials, weather, call-in contests. (Banner, NV) Cricket at 0400. (Ross, WA)

Nicaragua: La Voz de Nicaragua, 6000 in SS from 0330 with music and news. (Bednarski, BC)

Niger: ORTV Niamey, 5020 at 0530 with national anthem, native flute IS and chants. (Johnson, IL)

Nigeria: Voice of Nigeria, 7255 at 0502 with program preview, into Sunday "Reflections" program. (Carson, OK) 0615. (Johnson, IL)

Radio Nigeria, Kaduna, 4770 at 0540. (Walbesser, NY)

North Korea: Radio Pyongyang, presumed, 6540

//6560 in Asian language at 1122. (Johnson, IL) 9977 at 1137. (Moser, PA) 15115 at 0010. (Carson, OK)

Norway: Radio Norway, 9615 at 0057 with IS, ID in NN. (Johnson, IL) 17765 at 1604 with Scandanavian news. (Moser, PA)

Pakistan: Radio Pakistan, 21740 at 1615 with frequency schedule. (Johnson, IL)

Papua New Guinea: NBC Port Morseby, 4890 at 1048 to 1152 fade. Program on the Beatles after 1100. (Johnson, IL)

Peru: Radio Andina, 4996 in SS 0930. (Johnson, IL)

Radio Lircay, 5059 at 1028 with ID and rooster crow. (Johnson, IL)

Radio Continental, 6055.4 at 1230 with jingle, ID, "Weekly Round-Up." (Meece, OH)

Philippines: VOA relay, 9760 at 1421. (Carpenter, OH)

Poland: Radio Polonia, 7270 at 2332. (Walbesser, NY) 9675 at 0630 with IS, ID, news. (Johnson, IL) (presume all Polish, editor)

Portugal: Deutsche Welle relay via Sines, 6085 at 0323. (Johnson, IL)

Radio Liberty, via Gloria, 7165 at 2331 in RR. ID 2340. (Meece, OH)

Radio Portugal, 9705//11840 at 0230 with ID. (Johnson, IL)

Romania: Radio Romania International (new name) 5990//6115//9570 at 0200. (Walbesser, NY) 9570 at 0405, 11940 at 0400 with IS, ID, news. (Johnson, IL) 17745 at 0540. (Carson, OK)

Rwanda: Deutsche Welle relay, 11965 at 0656 in GG. (Heumann, TX)

Saudi Arabia: BSKSA, 15060 in Turkish at 0433. (Ross, WA) 15140//15435 at 0546 in AA. (Heumann, TX)

Singapore: BBC Relay, 9740 at 1140, 1159. (Johnson, IL; Carpenter, OH)

Solomon Islands: SIBC, 5020 at 1021 with music, ID. Some island music. (Mierzwinski, PA) 9545 at 0800. (Bednarski, BC)

South Africa: Radio RSA, 7270 at 0429 in EE/PP. 15120 at 0215. (Carson, OK) 9580//9615//11935 //15120 at 0308. (Moser, PA) 15365 at 0420 in FF. (Ross, WA) 21590 in presumed Afrikaans at 1846. (Heumann, TX) 21535//25790 at 1618. (Meece, OH)

South Korea: Radio Korea, 15575 at 2358. (Ross, WA)

Spain: Spanish National Radio, 9360 at 0030 in SS, 17815 at 1552 in SS. (Heumann, TX) 9630//11880 at 0000, 15110 in SS at 1930, 21555 in SS at 2203. (Walbesser, NY) 21595 at 1305 in SS with "Radio Rama." (Johnson, IL)

Radio Beijing relay, 9690 at 0207 in CC, 0305 in EE. (Heumann, TX)

Sri Lanka: Deutsche Welle relay, 17810 at 1855 with ID and site. (Walbesser, NY)

Sweden: Radio Sweden, 11705 in Swedish at 0043. (Heumann, TX) In EE at 0230. (Johnson, IL) 17880//21610 at 1530. (Walbesser, NY)

Switzerland: Swiss Radio International, 6135//12035 at 0202. (Moser, PA) 9810 at 0215. (Johnson, IL) 12035 in EE at 0220 and 15525 at 1856 in GG. (Carson, OK) 13635 at 2100. (Walbesser, NY) 15570 in GG at 2357. (Ross, WA)

Syria: Radio Damascus, 12085 at 0407 in AA. (Ross, WA) 12085//15095 at 2020. (Johnson, IL)

Tahiti: Radio Tahiti, 15171 at 0512 in FF and Tahitian. (Walbesser, NY)

Taiwan: WYFR, via VOFC, 5275 at 1110. (Johnson, IL) (presumed in CC, editor)

Turkey: Voice of Turkey, 9445 at 2200. (Johnson, IL) 2358 sign on in non-EE language. (Moser, PA) 0259 IS and ID. (Johnson, IL) 0404. Also 2300 on 17880. (Walbesser, NY)

Tunisia: RTT, 7475 in AA at 0441, 11550 at 0449 in AA. (Heumann, TX) 12005 at 0424 in AA. (Ross, WA)

Ukraine SSR: Radio Kiev, 7400 at 0302, 12060 at 0042. (Heumann, TX) 11770//12005//12060 at 0203. (Walbesser, NY) 17660 at 1400. (Yohnicki, ONT) 17690 at 2300. (Carson, OK)

United Arab Emirates: UAE Radio, Dubai, 11940//15400//15435 at 0333. (Heumann, TX) 21605 at 1330, 1636. (Johnson, IL; Carson, OK)

Voice of the UAE, Abu Dhabi, 9600//11985//21605 at 2340. (Heumann, TX) 21735 in AA at 1646. (Walbesser, NY)

United States: Voice of the OAS, via VOA Bethany, SS at 0004 on 9565. (Meece, OH)

15295 at 1850. (Johnson, IL)

Radio Marti to Cuba in SS on 11930 at 1912. (Heumann, TX)

WWVH (Hawaii) 15000 at 0329 over WWV. (Olson, ND)

Voice of America feeders on 9350, East Asia service on LSB, EE lessons on USB at 1017. (Johnson, IL)

USSR: Kamchatka Radio, Petropavlovsk, 4485 with domestic service in RR at 1027, 1215. (Johnson, IL; Meece, OH)

Radio Moscow, 7195 in SS at 2343. (Meece, OH) 9685//11840//11950 at 2117. 15475//17585//17810 at 1730. 21690 at 2211. (Walbesser, NY) 11735 at 0050, 13665 at 0550, 15425 at 0428 and 17690 at 0309. (Carson, OK) 11850 at 0010. (Johnson, IL) 21790 at 0225. (Olson, ND)

Uzbek SSR: Radio Tashkent, 9540 at 1215, "You are tuned to Tashkent" at 1216. (Meece, OH)

Vatican City: Vatican Radio, 9605 at 0010 with IS. (Ross, WA) Here and 11780 at 0050 sign on. (Moser, PA) 17710 in FF at 1658 and 17730 in SS at 0100. (Carson, OK)

Venezuela: Ecos del Torbes, 4980 at 0121 in SS. Also 0910. (Heumann, TX)

Radio Valera, 4840 in SS at 0915 with ID. (Heumann, TX)

Radio Rumbos, 4970 with ID, slogan, Latin pops. (Meece, OH)

Radio Tachira, 4830, SS at 0135. (Walbesser, NY) 0356 sign off. (Johnson, IL) 1050. (Meece, OH)

Radio Continental, 4939.6 at 1039 with Latin music, ID in SS, announcements. (Meece, OH)

Vietnam: Voice of Vietnam, 15010 at 1020 with mailbox. (Johnson, IL) 2030 sign on. (Walbesser, NY)

West Germany: Deutsche Welle, 6085 (via Canada, editor) at 0312. 11705 at 0509. (Carson, OK) 6145 in PP at 2110. (Riddle, Argentina) 0103. (Moser, PA) 15275 at 2033. (Walbesser, NY) 17860 at 2334 (via Kigali, editor) (Ross, WA)

Radio Free Europe, 11815 at 2145 in RR. (Johnson, IL 15115 in Bulgarian at 1648. (Walbesser, NY)

Yugoslavia: Radio Yugoslavia, 0000 on 7215//15105//17735. (Walbesser, NY) 11735 at 0114. (Ross, WA) 17740 at 1229 ending EE. (Johnson, IL)

Zaire: La Voix du Zaire, Mbandaka, 5995 at 0611 in African dialect, ID in FF. (Walbesser, NY) (Pretty rare. Not Mali? editor)

Thanks and a tip 'o the hat to the following reporters this month:

A. Bednarski, N. Vancouver, BC; Tim J. Johnson, Galesburg, IL; Joe Banner, Las Vegas, NV; Frank Mierzwinski, Mt. Penn, PA; Beale Riddle, Washington, DC (reporting from Argentina); William Moser, New Cumberland, PA; Clem Carpenter, Cincinnati, OH; Randall Reese, Bangkok, Thailand; David Olson, Watford City, ND; James Ross, Vancouver, WA; William F. Walbesser, Ravena, NY; Mark Meece, West Chester, OH; Mike Yohnicki, London, ONT; J.M. Heumann, Port Arthur, TX and John Spencer Carson, Jr., Norman, OK.

Thanks to all. Till next month, good listening! PC

Beaming In *(from page 4)*

In nations where there aren't any guarantees of freedom of speech, such things take place and Americans have always been outraged. Hitler forbade listening to the BBC. Eastern Bloc nations blacklisted the VOA, RFE, RL and other Western broadcasters, and enforced those laws with decades of electronic jamming to ensure compliance.

Now that we have a law that seeks to forbid freedom of reception of unscrambled signals going out over the public airwaves, what next? Can some special interest pass a law that prohibits looking at a person walking down the street because that person feels that their privacy is being invaded?

The U.S. Supreme Court recently ruled that cordless phone users cannot expect communications privacy. These are 46 MHz unscrambled communications devices. Common Sense dictates that, if put to the test, the Supreme Court could hardly justify continuing the fallacy of the ECPA, which gives cellulars a status more than that of cordless telephones. Not only that, but there really does seem to be some question of the First Amendment rights of those who would listen to such signals.

Well, anyway, the evil genie is out of the bottle concerning the realities of cellular privacy. That's a start. Now what we need is someone to go to the Supreme Court and knock over the preposterous ECPA, all that it stands for, and every ominous potential it holds for the future. PC

Ham Column *(from page 64)*

down the height of your antenna in meters or your distance from the nearest big city in kilometers so that you can rattle them off like a pro.

And let's get a real atlas in the shack. Random maps are fine, but hams always seem to be in places that aren't on the map, whatever its detail. Wouldn't it be nice if you could just pick his/her QTH out, and tell the other operator something about where he or she lives? A nice surprise.

Read It And Reap

Amateur Radio is an information-oriented hobby. There's a lot to know, and sometimes an overwhelming amount to remember. If you find yourself looking up the same piece of data time after time, do yourself a favor; copy it and post it where you can conveniently see it from your operating position. Eventually, you won't need to look quite so much—but it's a comfort to know you can.

In keeping with our "Instant Information" theme, I have a couple of goodies that might interest you. If you'd like a copy of *Operating an Amateur Radio Station, send $1 to me in care of ARRL, Department PCN, 225 Main Street, Newington, CT 06111. You can also request a free copy of our handy world time, signal report and Q Signal chart. It'll save you the trouble of photocopying! Welcome to the information age!* PC

Emergency *(frompage 34)*

lock-outs for normal ham reception.

If you have an early serial number set, you may need to open up the unit and remove diode #6. This only pertains to the very first shipments of this unit in early 1990. Try the keypad tricks first before deciding to go on the inside.

This dual-band transceiver also sports some features that the emergency communicator might use, and an optional "super feature" is the full incode/decode squelch circuit and the optional DTMF alert feature. Full incode/decode squelch allows you to quietly monitor a frequency and only hear those stations with the right PL tone.

The DTMF feature allows your unit to remain absolutely silent until the right sequence of 3 incoming DTMF keys are depressed. Your unit immediately "wakes up", and sounds off alerting you of a call-out. Combine this with the sleep-saving circuitry, and your unit could run for days in between battery charges when in the stand-by mode.

You may call ICOM direct for an specification sheet on this unique amateur radio transceiver and all-band receiver. Simply call 1/800/999-9877 and leave your name and address, and they will send you the information for the unit you specify. ICOM will get this information out to you immediately. PC

You Should Know *(from page 42)*

sidebands and no audio distortion. Fading is not stopped but it can no longer cause audio distortion.

Even in copying a regular AM shortwave broadcast station, you can use your sideband receive mode, if it is included, to your advantage. Choose one of the sidebands and tune in the signal to improve readability. Try the other sideband now and determine which is better. This is useful for the DXer and of only limited benefit to the shortwave listener interested in good audio reproduction. However, things can change over the years. Perhaps sometime in this new decade, the single sideband method of modulation with high quality audio may become more common in shortwave broadcasting.

Certainly now and in the future, program listening will be enjoyed by many more people as world band radios continue to be marketed and sold. More and more information concerning shortwave broadcast listening is beginning to appear in the general public media. Many people will be attracted to this fascinating hobby. Many schools are now using shortwave receivers to help students gain almost a direct knowledge of the peoples of far-away lands. If you like shortwave broadcast listening, spread the word around. Ask people to drop in during the prime-time evening reception hours and let them hear some of the foreign broadcasts you like. PC

COMMUNICATIONS SHOP

Advertising Rates: SCAN members and *POP'COMM* subscribers are entitled to one FREE 30-word, non-commercial classified ad per year. Enclose subscription name label with ad copy. For those people not in the previously mentioned groups, non-commercial ads are 30 cents per word, including abbreviations and addresses; minimum charge $6.00 per issue. Ads from firms offering commercial products or services are $1.00 per word; minimum charge $20.00 per issue. Boldface words are $1.20 each (specifiy which words). Leading key words set in all caps at no additional charge. All ads must be prepaid in full at time of insertion; a 5% discount is offered for prepaid 6 time insertions. All ads must be typewritten double spaced.

Approval: All ad copy is subject to Publisher's approval and may be modified to eliminate references to equipment and practices which are either illegal or otherwise not within the spirit or coverage scopy of the magazine.

Closing Date: The 10th day in the third month preceding date of publication. Because the advertisers and equipment contained in Communications Shop have not been investigated, the Publisher of Popular Communications cannot vouch for the merchandise listed therein. Direct all correspondence and ad copy to: PC Communications Shop, 76 N. Broadway, Hicksville, NY 11801.

SURVEILLANCE-COUNTERMEASURES! Transmitters, detectors, phone security, night vision, stunguns, secret devices, restricted books, **MORE! GUARANTEED LOWEST PRICES! HUGE CATALOG $5.00 (REFUNDABLE)** Protector, P.O. Box 520294-D, Salt Lake City, UT 84152.

PRO-2004/5/6 OWNERS: Search-and-Store finds elusive frequencies while you work or sleep. Internal no-holes installation—Key-board control—retain present functions. Wired-tested-postpaid: Ten channel $24.95 (check)—Selectable to 255 channels $44.95 Key Research, POB 846P, Cary, NC 27512-0846.

CW? NO PROBLEM. You can increase your speed, no matter how many times you've failed before. **Results guaranteed** when you follow the instructions. PASS Publishing's **CW Mental-Block Buster** program helps you **explode mental blocks** that hold you back. Based on 40 years of research, the **CW Mental-Block Buster** uses guided meditation, dynamic visualizations, and powerful affirmations to blast through mental blocks. **You can do code!** That means new bands, more contacts, more fun! (This is not a CW practice tape.) The **CW Mental-Block Buster** audio cassette and practice booklet are only $24.95 ppd. in the US (NY residents add $1.87 sales tax). (Quantity discounts available for classes.) PASS Publishing, P.O. Box 570, Stony Brook, NY 11780.

MORSE code got you down? Why let a mental block stand between you and upgrading? Use PASS Publishing's **CW Mental-Block Buster** to **blast through those barriers.** Just follow the instructions for 30 days—**Results Guaranteed!** Based on 40 years of research, the **CW Mental-Block Buster** uses guided meditation, dynamic visualizations, and powerful affirmations to blast through mental blocks. **You can do code!** That means new bands, more contacts, more fun! (This is not a CW practice tape.) The **CW Mental-Block Buster** audio cassette and practice booklet are only $24.95 ppd. in the US (NY residents add $1.87 sales tax). (Quantity discounts available for classes.) PASS Publishing, P.O. Box 570, Stony Brook, NY 11780.

NEW! 7th Edition: Top Secret Registry of Government Radio Frequencies, by Tom Kneitel. Grown to gigantic 240-pages! 1000's of new listings, frequencies, stations for all scanner owners, nationwide. Includes: FBI, DEA, Customs, Secret Service, FCC, Immigration, Border Patrol, U.S. Attorney, ATF, Treasury, Fed. Prisons, U.S. Marshal, CIA, Postal Service, NSA, NORAD, USAF, USN, Army, USMC, FAA, NASA, DOE, NRC, FEMA, Dept. Agriculture, National Parks, USCG, EPA, DOT, V.A., UHF aero (225 to 400 MHz) listings, bugs & surveillance freqs, agents' lingo, codes, many more agencies, lots more info! Expanded Canadian listings. Only $19.95, plus $2 postage to N. American addresses. NY State residents add $1.50 sales tax. Order now from CRB Research Books, P.O. Box 56, Commack, NY 11725. Dealer Inquiries Invited.

ELECTRONIC SPYING is the name of the game. It's also the title of a startling book which reveals the closely guarded methods & equipment used by professionals & amateurs who eavesdrop on homes & businesses with (sometimes) legal and (usually) illegal *bugs & wiretaps*. Written in non-technical language everyone can easily understand, ELECTRONIC SPYING has photos & illustrations clearly revealing exactly how they do it & where they get the equipment (much of it inexpensive & easily available). Leaves nothing to the imagination! Latest techniques covered & offers an in-depth wealth of information on the ever increasing electronic invasion unavailable from any other source. This book is used by law enforcement agencies as a reference manual. Only $8.95 (plus $1.00 postage) per copy from CRB Research, P.O. Box 56, Commack, N.Y. 11725. (NY residents add sales tax.)

NEW! AIR-SCAN 5TH EDITION by Tom Kneitel. Complete guide to aero comms. Now in gigantic 192-page large-size format containing 60,000 + listings, including 2-30 MHz HF, 118 to 174 MHz VHF, 406 to 512 MHz UHF, and 800 MHz listings. Covers civil, military, private, and unlisted landing areas, heliports, and seaplane bases. Control towers, ground, approach/departure, FSS, unicoms, multicoms, crop dusters, air-ambulances, federal ops, traffic 'copters, aviation business, airline enroute, airport security/fire, etc. throughout USA. All Canadian mil, civilian airports and seaplane bases listed, plus lots more, including how-to text on aero monitoring. Most comprehensive aero frequency guide ever compiled. Only $14.95 + $2 postage to USA/Canada/APO/FPO. NY State residents add $1.13 sales tax. From: CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. or ask your favorite communications dealer.

SCANNER MODIFICATION HANDBOOK by Bill Cheek ("Doctor Rigormortis"). New 160-page book. More than 20 performance improvement modifications. Simple step-by-step instructions, many photos. Primarily PRO-2004 & PRO-2005, some for PRO-34, BC-200/205XLT, BC-750XLT, BC-750XLT. Restore blocked out bands, speed up scanning rate, disable "beep," increase number of channels, improve squelch action, add an S-meter, interface with shortwave receivers, etc. Make the PRO-2004 & 2005 into a 6,400 channel scanner; put 3,200 channels into the PRO-34! Plus, cellular frequency charts, antenna info & mods, inside info on frequency management, operating hints, emergency power supplies, scanners & the law, lots more! Just issued, latest info. Only $17.95, plus $2 postage to addresses in USA/Canada. Residents of NY State add $1.35 tax. CRB Research Books, P.O. Box 56, Commack, NY 11725.

SIDEBAND OPERATORS! Join the oldest/largest network of 27 MHz SSB operators. Now more than 100,000 strong! Send self-addressed stamped long (#10) envelope for FREE details and application (no obligation). SSB Network, P.O. Box 908, Smithtown, NY 11787.

TUNE In On Telephone Calls. Tom Kneitel's new 160-page book. Everything you need to know to effectively use a scanner and communications receiver to eavesdrop on private telephone calls from homes, offices, cars, ships, aircraft, trains. Explanatory text, photos, extensive listings section covers USA/Canada on HF, VHF, UHF, and above; thousands of locations, frequency assignments. Explains equipment, best techniques, laws regarding monitoring cellular, cordless, ship/shore, high seas, Air Force 1, airliners, 1-way paging, more. Only $12.95 (plus $2 postage to USA/Canada/APO/FPO) from CRB Research. Box 56, Commack, NY 11725. NY residents add sales tax. Dealer inquiries invited.

NEW! UNDERSTANDING & REPAIRING CB RADIOS by Lou Franklin. Giant 380-page technical book picks up where THE "SCREWDRIVER EXPERTS" GUIDE leaves off. Includes circuit descriptions and troubleshooting guide for virtually all CB radios: 23 and 40-channel, crystal and PLL, solid-state and tube, AM, FM, SSB, CW, American, British and export models. Covers test equipment, transistor basics, synthesizers, receivers, transmitters, power supplies, T/R switching, antennas, interference, parts and accessory sources. Over 350 illustrations plus huge subject index. Moneyback Guarantee! Only $29.95 plus $3.50 U.S. & Canadian Air Mail, VISA/MC accepted. Free catalog of unique CB books, plans, and modification kits with order. Catalog only, $2. CB CITY INTERNATIONAL, BOX 31500PC, Phoenix, AZ 85046. Thousands of satisfied customers since 1976.

Advertiser's Index

AMC Sales, Inc. . . . 38
ANARCON '90 . . . 79
ARRL . . . 29
Ace Communications, IN . . . 80, Cov. III
Action Data Processing, Inc . . . 51
Antennas West . . . 75, 78, 79
Antique Radio Classified . . . 59
Associated Radio . . . 21
Barry Electronics . . . 77
CBC International . . . 77
CQ Bookshop . . . 65
CQ Buyer's Guide . . . 19
CRB Research . . . 45, 69
Cellular Security Group . . . 38
DECO . . . 79
Diamond Systems, Inc . . . 28
Digitech Concepts . . . 35
Electrolert . . . 77
Electron Processing . . . 37
Electronic Engineering . . . 78
Electronic Equipment Bank . . . 1
G & G Electronics . . . 18
GRE America, Inc . . . 61
Gilfer Shortwave . . . 5
Hamtronics, Inc . . . 75
ICOM . . . 42, Cov. II
JoGunn Ent . . . 31
Kenwood U.S.A. Corp . . . Cov. IV
MFJ Enterprises, Inc . . . 11
Medicine Man . . . 51
Metaltech . . . 51
Monitoring Times . . . 73
Moonbeam Press . . . 77
OPTOelectronics . . . 6, 7
Pacific Cable Co . . . 59
Palomar Engineers . . . 76
RF Limited . . . 18
Radio Shack . . . 13
React, International . . . 70
Republic Cable Products, Inc . . . 38
SGG, Inc . . . 33
Scanner World, USA . . . 8
Signal Engineering . . . 12
Software Systems Consulting . . . 33, 76
Systems & Software . . . 77
Universal SW Radio . . . 3

BLIND, bedridden man seeks donations of shortwave radio—Sony Model 2010 (or any other), wp, typewriter, pc or fax. Please help. Call Richard Jastrow (213) 938-5347. Or write 5909 W. 6th St., Los Angeles, CA 90036.

SCANNERS, PRO-2005 800 MHz Mod. Like new in box $300. Regency HX 1500 with stand up charger and all accs. Like new in box $175. (307) 532-7204. P.O. Box 1385, Torrington, WY 82240.

REALISTIC PRO-2004 Base Scanner. 300 channels. Like new with original box. First cc/mo for $325 takes it. Up to 1300 MHz will ship UPS. Ed O'Connell, 615 Stuyvesant Avenue, Irvington, NJ 07111.

REALISTIC PRO-32 Handheld Scanner. 200 channels with heavy duty leather case. Works great. First cc/mo for $225 takes it. Will ship UPS. Ed O'Connell, 615 Stuyvesant Avenue, Irvington, NJ 07111.

SCANNER MODIFICATION HANDBOOK, TOP SECRET #7, AIR SCAN #5. Plus many books by CRB, TAB, ARRL and others. We take phone orders and VISA/MASTERCARD. FREE catalog. DOYLE COMMUNICATIONS-PC, Route 8, Box 18, Lake Pleasant, N.Y. 12108 (518) 548-5515.

SPECTRUM ANALYZERS (2 ONLY) 25-925 MHz $999.00 ea. Works with most 'scopes. Will ship. SASE info or tel. (514) 276-8467. B. Maguire, 7689 Drolet St., Montreal, Quebec H2R 2C6, Canada.

LOWER YOUR PHONE BILLS LEGALLY! Secret methods used by big corporations will work for your phone. Guaranteed results. Easy to understand manual only $10. Larry WB2NEL, Box 2732, Alexandria, VA 22301.

YOUR ENTIRE STATE ON MICROFISHE: All FCC licensed frequencies in your state on standard 4x6 Microfishe $20.00 (postpaid). Box 1239, Charleston, SC 24902.

SALE Item: Uniden HR-2510 CB, brand new $225.00. Contact: John Zidanich, 362 Linwood Avenue, North Tonawanda, NY 14120. (716) 693-5290.

FOR SALE: Bearcat 400, $65.00. Bearcat 210XL, $95.00. Regency HX1200, $100.00. All in excellent condition. Money order or check to: Brian Volz, P.O. Box 635, Glenham, NY 12527.

INFO-TECH M-800. Excellent condition with V.3 ROM. Complete with all manuals. $250 or best offer. Will ship COD. Call Pat (818) 248-2967, leave message.

FOR SALE: Japan Radio NRD 525, 6 months old used 20 hrs. 850.00 firm. Prefer local sale. Contact: Edward J. Nawrocki, 110 4th Ave., Bradley Beach, NJ 07720 (201) 988-3408.

WANTED: VHS videocassettes of foreign TV broadcasts. NTSC or PAL. Music programs, commercials. W. Smith, P.O. Box 52823, Knoxville, TN 37950.

WANTED: Frequencies for the Lightfoot, Williamsburg, Yorktown, VA area. Police, fire, business, railroad, federal, etc. Will trade for Baltimore, Maryland area. Send to Joe Bagrowski, 1517 Chivalry Court, Baltimore, Maryland 21237-1634.

FOR SALE: Motorola BPR 2000 numeric beeper. New condition. Best offer. Contact: David Abbou, 6605 Randolph Rd., Morningside, MD 20746.

FOR SALE: Regency HX2000. Used 20 ch scanner with 800 MHz band. Includes manual, charger, 2 antennas, case and new NICADS. $100. Includes shipping. (505) 835-0911.

Order Form
Please print in block letters.

POPULAR COMMUNICATIONS 76 North Broadway, Hicksville, NY 11801

Name _____

Street _____

City _____

State _____ Zip _____

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

ATARI Computer users. Looking for ATARI programs to use for SWL. Willing to pay. Send info or lists to: Michael Dick, 1259A Palau, APO San Francisco 96334.

SONY 2010 - $300. BEARCAT 800 - $200. Neither ever plugged in. Still in original cartons. Call Don at (407) 439-0427.

REALISTIC PRO-34 Handheld Scanner. 200 channels. Low band thru 960 MHz. Original box. Leaving hobby. Must sell. First cc/mo $250. Will send UPS. Ed O'Connell, 615 Stuyvesant Avenue, Irvington, NJ 07111.

RADIO NEW YORK INTERNATIONAL official off the air recording of our first broadcast from the good ship Sarah. $15.00 gets you a 60 minute cassette, plus an official letter and certificate from the RNI staff. Also available: RNI video (VHS) with tour of ship, news footage, the FCC boarding, and more. Only $29.95. Radio New York International, Monticello, ME 04760.

AR-1000 HANDHELD 6-1,300 MHz $455, BC-200 XLT with cellular $269, BC-760 XLT with cellular $289, TS-2 with cellular $299, used gear, trades, shortwave, CB, ham gear, much more! 1990 picture catalog and used gear inventory $1.25—Galaxy, Box 1202, Akron, Ohio 44309 (216) 376-2402, 9-5 EST.

FEDERAL FREQUENCIES the newest, most complete listing available yet. Law enforcement, military, defense, justice, treasury, plus much much more. T.V.—satellite—telephones—paging and other freqs. 224 pages! $24.95 plus 2.00 p&h to: ARTSCI, dept. RKY, P.O. Box 1848, Burbank, CA 91507. (818) 843-4080. MC, VISA, AMEX, DISCOVER. CA residents add 6.75% sales tax.

TRAVEL! HIGH INCOME! Radio officers needed for shipboard employment. Must have FCC Second Class Radio-Telegraph license and background in electronics. Approximately $7000.00 per month to start after 6 month training. Call or write: Rae Echols, W7FFF. American Radio Association, 5700 Hammonds Ferry Rd., Linthicum Heights, MD 21090, 301-850-5379.

FOR SALE: Kaypro CP/M, computer. Software: Mite terminal, Wordstar, Calcstar, Datastar, BASIC $375. F2 Faximile $75. Analog Plotter $75. Okidata u92 Printer $75. P.O. Box 864, Decatur, GA 30031. (404) 377-7742.

DESCRAMBLERS: OAK M35B, $39.95. Also **Jerrold, Zenith, Scientific Atlanta,** etc. Guaranteed. Cable Plus, 14417 Chase #481-K Panorama City, CA 91402. 1-800-822-9955.

SURVEILLANCE - Audio/Video Equipment - Debugging. Industrial or private. 500 Item Catalog $7.00. Security Systems 3017E. Hudson New Orleans LA 70131.

TRADE my electronic test equipment (20 items include SENCORE & WESTON etc.) for your working Sony ICF-2010 and/or PRO-2005. Contact Phil Hanson, 207 Long Ave., North Aurora, IL 60542. (708) 896-0239.

WANTED: Schematic diagrams and service data sheets for CB transceivers as follows: (1) Lafayette "Micro 66," stock #99-32716W, and (2) Dynascan "Cobra" Model 132 AM/SSB. Will be happy to pay for these. Frank B. Turberville, P.O. Box 246, Milton, NC 27305.

FOR SALE: Uniden BC200XLT - Full cellular coverage - $220.00. Regency TS-2 - Turboscan - $240.00. Both like new. Prices include UPS. Call (209) 299-9261 days - (209) 299-7807 evenings.

PRO-2005. Perfect condition. Cellular band restored. Box, manual, antenna, batteries, DC car adaptor included. Ship UPS/COD or prepaid. $229. Rick (201-235-2713, 10-4 PM EST.

FOR SALE: Sony ICF-PRO80. $200.00. Bearcat BC-300. $200.00. Both excellent condition. Contact: Herbert C. Lauber, 3346 Cutter Lane, Maineville, OH 45039 (513) 398-2558.

FOR SALE: Microwave Associates MA-12XC 12GHz FM microwave transmitter and companion receiver. Transmit color video up to 10 miles. With manual, dish antennas. EC $900. (305) 661-1595 Lv msg.

COMMUNICATIONS PLANS, BOOKS, KITS! AM/FM broadcasting (licensed/unlicensed), 1750 Meter transceivers, Ham/CB amplifiers, surveillance bugs, more. FREE catalog. PANCOM, Box 130-P12, Paradise, CA 95967.

WORLD'S MOST UNUSUAL Communications Books! A large selection of outstanding titles covering scanners, "confidential" frequency registries, bugging, wire tapping, electronic surveillance, covert communications, computers, espionage, monitoring, and more! New titles being added constantly! Ask for our large new FREE catalog. CRB Research, Box 56-PC, Commack, NY 11725.

COMMODORE 64 HAM PROGRAMS—8 disk sides over 200 Ham programs—$16.95. 25¢ stamp gets unusual software catalog of Utilities, Games, Adult and British Disks. Home-Spun Software, Box 1064-PC, Estero, FL 33928.

POPULAR COMMUNICATIONS

76 NORTH BROADWAY
HICKSVILLE, NEW YORK 11801

FREE READER SERVICE CARD

ENTER MONTH AND YEAR OF THIS ISSUE:

Month _____ Year _____

(REQUESTS CANNOT BE PROCESSED WITHOUT DATES)

1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	34	36
37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81	82	83	84
85	86	87	88	89	90	91	92	93	94	95	96
97	98	99	100	101	102	103	104	105	106	107	108
109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132
133	134	135	136	137	138	139	140	141	142	143	144
145	146	147	148	149	150	151	152	153	154	155	156
157	158	159	160	161	162	163	164	165	166	167	168
169	170	171	172	173	174	175	176	177	178	179	180

Did you purchase this issue of Popular Communications from either a newsstand or magazine store? **Yes** ☐ **No** ☐

Name _____

Company Name _____

Address _____

City _____ **State** _____ **Zip** _____

ACE COMMUNICATIONS

AOR Scanners.

Great Performance. Great Service. Great Value.

Free Freight
25-Day Money-Back Guarantee
Toll-Free Service and Support
No Credit Card Surcharge
One Year Warranty

AR1000 $499

1000 Channels. 8-600MHz, 805-1300MHz

Standard Features:

- Extremely compact size.
- Continuous coverage (except UHF TV 600-805)
- Antenna attenuator switch, 10db.
- Manual tuning knob.
- Earphone jack, 3.5mm.
- AM, FM and wide band FM tuning modes.
- Backlighted LCD display.
- 10 Scan Banks, 10 Search Banks.
- Selectable Priority Channel.
- Delay, Hold Features.
- Selectable Search Increments, 5-955KHz.
- Permanent memory backup.
- 4 AA Ni Cad batteries included.
- AC adaptor/charger.
- Carry Case.
- Cigarette Lighter Charger.
- Belt Clip.
- Earphone.

Options:

External Speaker. Mobile Mount.	MS190	$19.50
Extended Warranty. 2/3 yrs		$45/$55

Specifications:

Coverage:	8-600, 805,1300MHz
Sensitivity:	.35uV NFM, 1.0uV WFM, 1.0AM
Speed:	20 ch/sec. scan. 40 ch/sec. search
IF:	561.225, 58.075, 455KHz or 10.7MHz
Increments:	5 to 955KHz selectable/ 5 or 12.5 steps.
Audio:	.4 Watts
Power:	Input 9 - 13.8 V. DC
Antenna:	BNC
Display:	LCD
Dimensions:	6 7/8H x 1 3/4D x 2 1/2W. 12oz wt.

AR950 $239

100 Channels. Low, Air, High, UHF & 800MHz.

Standard Features:

- Extremely compact size.
- Unrestricted 800MHz coverage.
- 100 channels permanent memory.
- Earphone Jack & Attenuator.
- Delay, Hold features.
- Channel 1 Priority.
- 5 Scan Banks, 5 Search Banks.
- Telescopic and Flexible Antennas w/ BNC connector.
- AC & DC Power cords w/ mtng hardware.
- One Year Limited Warranty.

Options:

Base type antenna 25 to 1000MHz w 50'coax.	AS300	$59.95
Mag Mnt Mobile Antenna. 15' coax.	MA100	$25.00
Cigarette Lighter power adaptor.	CP100	$4.00
External Speaker with mobile mount.	MS100	$19.50
Extended Warranty. 2/3 yrs		$40/$55

Specifications:

Coverage:	27-54, 108-174, 406-512, 830-950MHz
Sensitivity:	.4uV Lo,Hi. .8uV Air. .5uV UHF. 1.0uV 800
Scan Speed:	15 ch/sec.
IF:	21.4MHz, 455KHz
Increments:	10,12.5,25,30
Audio:	1W
Power:	12.8VDC, 200MA
Antenna:	BNC
Display:	LCD w/backlight
Dimensions:	2 1/4H x 5 5/8W x 6 1/2D. 14oz wt.

We offer 100's of communications products.

ACE COMMUNICATIONS

AR2515 $695

2016 Channels. 5-1500 MHz.

Standard Features:

- Extremely compact size.
- Continuous coverage.
- 2016 channels permanent memory.
- AM, FM wide and narrow modes.
- Signal strength meter & Tuning Knob.
- Bank 1 Priority.
- 62 Scan Banks, 16 Search Banks.
- Telescopic antenna w/ BNC connector for >25MHz.
- AC & DC Power.
- One Year Limited Warranty.

Options:

RS232 cable to DB25 connector.	BW-1.	$24.95
RS232 cable & software for MS DOS.	EG-1.	$39.95
BFO for SSB listening.	BFO-1.	$159.00
Base type antenna 25 to 1000MHz w 50'coax.	AS300	$59.95
Mag Mnt Mobile Antenna. 15' coax.	MA100	$25.00
Cigarette Lighter power adaptor.	CP100	$4.00
External Speaker with mobile mount.	MS100	$19.50
Extended Warranty. 2/3 yrs		$30/$45
Mobile Mtng Bracket.	MM1	$14.90
Cigarette Lighter power adaptor.	CP100	$4.00

Specifications:

Coverage:	5 - 1500MHz
Sensitivity:	.35uV NFM, 1.0uV WFM, 1.0uV AM >3.0uV SW AM
Scan Speed:	<=36 ch/sec.
IF:	750MHz, 45.03MHz, 5.5MHz, 455MHz.
Increments:	5,12.5,25KHz
Audio:	1W
Power:	12VDC, 200MA
Antenna:	BNC
Display:	LCD, backlighted
Dimensions:	3 1/7H x 7 7/8D x 5 2/5W. 2lb 10oz wt.

AR3000 $995

400 Channels. 100KHz to 2036MHz.

Standard Features:

- Extremely compact size.
- Continuous coverage
- Attenuation Programmable by Channel.
- Manual tuning knob.
- Tuning increments down to 50Hz.
- AM, FM, wide band FM, LSB, USB, CW modes.
- Backlighted LCD display.
- 4 Scan and Search Banks, Lockout in Search.
- 4 Priority Channels.
- RS232 control through DB25 connector.
- Delay, Hold Features.
- 15 band pass filters, GaAsFET RF amp.
- Sleep and Alarm Features.
- AC adaptor/charger. DC power cord.
- Telescopic Antenna.

Options:

Earphone.	EP200	$2.00
External Speaker. Mobile Mount.	MS190	$19.50
Extended Warranty. 2/3 yrs.		$65/75
Mobile Mounting Bracket.	MM1	$14.90
RS232 Control Package (software & cable) offers spectrum display and database.	SCS3	$295.00

Specifications:

Coverage:	100KHz - 2036MHz
Sensitivity:	.35uV NFM, 1.0uV WFM, 1.0AM/SSB/CW
Speed:	20 ch/sec. scan. 20ch/sec. search
IF:	736.23, (352.23) (198.63) 45.0275, 455KHz
Increments:	50Hz and greater
Selectivity:	2.4Khz/-6db (SSB) 12KHz/-6db (NFM/AM)
Audio:	1.2 Watts at 4 ohms
Power:	Input 13.8 V. DC 500mA
Antenna:	BNC
Display:	LCD
Dimensions:	3 1/7H x 5 2/5W x 7 7/8D Wt. 2lb 10oz.

To Order Call 1·800·445·7717

In All 50 States and Canada. 24 Hours a Day. Fax Orders: 1-800-448-1084, 24 Hours a Day.
ACE Communications Monitor Division 10707 E. 106th Street, Indianapolis, IN 46256
Int'l Voice# 317-842-7115. Int'l Fax# 317-849-8794.
Service and Support Lines: Mon-Fri 9a.m. to 9p.m., Saturday 10-4. EST
MasterCard, Visa, American Express, Checks, Approved P.O.'s. & C.O.D. (add 5.00)
Prices and specifications subject to change.

KENWOOD

...pacesetter in Amateur Radio

NEW RZ-1 Wide-Band Receiver.

Hear it All!

R-5000
R-2000
High performance receivers.

Scan the world bands with Kenwood's R-5000, R-2000 and RZ-1. Listen in on foreign music, news, and commentary. Monitor local police, fire, and other public safety services, as well as the Marine channels, and the many other services 50 MHz and above.

(The VHF converter options must be used in the R-5000 and R-2000.)

R-5000

The R-5000 is a high performance, top-of-the-line receiver, with 100 memory channels, and direct keyboard or main dial tuning—makes station selection super easy! Other useful features include programmable scanning, large, built-in speaker, 110 volt AC or 12 volt DC operation (with optional DCK-2 cable), VHF capability (108-174 MHz) with the VC-20 option, dual 24-hour clocks with timer, and even voice frequency readout with the VS-1 option.

R-2000

The R-2000 is an all band, all mode receiver with 10 memory channels and many deluxe features such as programmable scanning, dual 24-hour clocks with timer, all-mode squelch and noise blankers, a large, front- mounted speaker, 110 volt AC or 12 volt DC operation (with the DCK-1 cable kit), and 118-174 MHz VHF capability with VC-10 option

Optional Accessories R-2000:

- **VC-10** VHF converter
- **DCK-1** DC cable kit for 12 volt DC use.

R-5000:

- **VC-20** VHF converter • **VS-1** Voice module • **DCK-2** for 12 volt DC operation • **YK-88A-1** AM filter • **YK-88SN** SSB filter • **YK-88C** CW filter • **MB-430** Mounting bracket.

Other Accessories:

- **SP-430** External speaker • **SP-41** Compact mobile speaker • **SP-50B** Mobile speaker • **HS-5** Deluxe headphones • **HS-6** Lightweight headphones

RZ-1
Wide-band scanning receiver

The RZ-1 wide-band, scanning receiver covers 500 kHz-905 MHz, in AM, and narrow or wideband FM. The automatic mode selection function makes listening easier. One hundred memory channels with message and band marker, direct keyboard or VFO frequency entry, and versatile scanning functions, such as memory channel and band scan, with four types of scan stop. The RZ-1 is a 12 volt DC operated, compact unit, with built-in speaker, front-mounted phones jack, switchable AGC, squelch for narrow FM, illuminated keys, and a "beeper" to confirm keyboard operation.

Optional Accessory

- **PG-2N** Extra DC cable

KENWOOD

CIRCLE 109 ON READER SERVICE CARD

KENWOOD U.S.A. CORPORATION
COMMUNICATIONS & TEST EQUIPMENT GROUP
P.O. BOX 22745, 2201 E. Dominguez Street
Long Beach, CA 90801-5745
KENWOOD ELECTRONICS CANADA INC.
P.O. BOX 1075, 959 Gana Court
Mississauga, Ontario, Canada L4T 4C2