

POPULAR COMMUNICATIONS

FEBRUARY 1991 \$2.95

\$3.95 CANADA

High Adventure Scanning!

20:47

16.46-29
21:05:54

14:46

Also in this issue:

- On The Track Of Shortwave Mysteries
- We Review A Remote Controlled Scanning System
- Shortwave Frequencies Changed: New Listings!
- Profiling: Radio For Peace International

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



74820 08635



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 blinder, 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

All stated specifications are subject to change without notice or obligation. All ICOM radios significantly exceed FCC regulations limiting spurious emissions. Receivers-89


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 V. 12VDC, Computer
- Many EEB Options Listed In Our 1990 Catalog
- 117/220/234 VAC 13.8 VDC (Opt)
- 11.25W x 4.44 x 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 x 4.4H x 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 (100Hz) 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 Optinal Power Supply And Filters
- 16.7W x 5.9H x 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**

CLASSIC



ICF2010 RECOGNIZED BY THE EXPERTS AS THE WORLDS BEST PORTABLE RECEIVER, "IT EVEN RIVALS SOME TABLE MODELS".

- AM/CW/LSB/USB .15-30MHz
- FM Wide 76-108MHz
- Air Band AM 116-136MHz
- 32 Memories-Keyboard Entry
- Synchronous Detection
- Separate Multi Function Clock
- 6.2 x 11.4 x 2 Inches 3.8 Pounds
- Power AC120V Adaptor Incl. Option 12VDC DCC127A 3 "D" Cell, 2 "AA" Not Included
- Free EEB RS-1 Radio Stand With Order

List \$429.95 **EEB \$349.95 + \$6 UPS**

CATALOG

NEW

1991



CATALOG

- Full Line SWL Receivers
- Many SWL Antennas
- Scanners & Accessories
- Books, Books & More Books
- Converters, Filters
- Clocks, Speakers & More
- Ask To Be Put On Our Mailing List For Future Publications

**FREE Call Or Mail In
For Your FREE Copy**

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) AM FM
- Keyboard Frequency Entry
- Complete System Including Ext Ant, Headset, Book, AC Adapter
- New Replacement For ICF-2003
- Free EEB RS-1 Radio Stand With Order

List \$259.95 **EEB \$219.95 + UPS**

ORDERS: 800-368-3270

LOCAL TECH: 703-938-3350

FAX: 703-938-6911

• PRICES SUBJECT TO CHANGE

• PRICES DO NOT INCLUDE FREIGHT

• SORRY, NO COD'S

• RETURNS SUBJECT TO 15% RESTOCK FEE



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

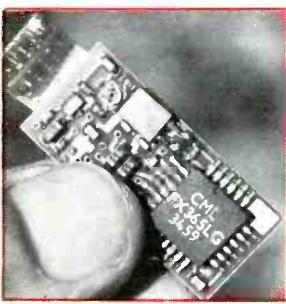
POPULAR COMMUNICATIONS

FEBRUARY 1991

VOLUME 9, NUMBER 6



34



62



71



9

FEATURES

High Adventure Scanning

9

From Military Communications To Mystery Stations,
Let Your Scanner Transport You Into An Exciting
New World
By Chuck Robertson

Where The Shortwave Mysteries Are

14

When It Comes To Shortwave, They're All Over
The Bands
By Harry Helms, AA6FW

Radio, Way Back When

16

Leafing Through The Pages Of History
By Alice Brannigan

Books You'll Like

22

RNI on Video, Electronics Projects and More Federal
Frequencies
By R.L. Slattery

Communications Frequencies Juggled!

24

It's Not Easy Keeping Up—But Here They Are!
By Don Schimmel

POP'COMM Reviews: System & Software International's Remote-Controlled Scanning System RCSS™ Program

28

By POP'COMM Staff

RFPI - Radio With A Difference

30

Fighting For A Cause—Costa Rican Shortwaver
Is A 1990's "Flower Child"
By Gerry Dexter

COLUMNS

Broadcast DXing.....	34
Ham Column.....	37
You Should Know.....	38
Satellite View.....	42
RTTY.....	46
Clandestine Communiqué.....	51
Listening Post.....	52
Telephones Enroute.....	58
Scanning VHF/UHF.....	60
Emergency.....	62
How I Got Started.....	64
Communications Confidential.....	66
Pirates Den.....	71
Washington Pulse.....	72
CB Scene.....	74

DEPARTMENTS

Beaming In.....	4
Mailbag.....	6
Worldband Tuning Tips.....	40
New Products.....	45
Communications Shop.....	76

This month's cover: USA -- Los Alamos, NM. Donald Winston, Director, at Emergency Operations Center, Los Alamos National Labs. Photo by Larry Mulvehill.

EDITORIAL STAFF

Tom Kneitel, K2AES/KNY2AB, Editor
Jeanine M. O'Connor, Associate Editor

CONTRIBUTING EDITORS

Gerry L. Dexter, Shortwave Broadcast
Robert Margolis, RTTY Monitoring
Gordon West, WB6NOA, Emergency
Don Schimmel, Utility Communications
Edward Teach, Alternative Radio
Harold A. Ort, Jr., Military Consultant
Janice Lee, Radar Detectors
Chuck Gysi, N2DUP, Scanners
Roger Sterckx, AM/FM Broadcasts
Harry Helms, AA6FW, Thoughts and Ideas
Donald Dickerson, N9CUE, Satellites
Kirk Kleinschmidt, NT0Z, Amateur Radio

BUSINESS STAFF

Richard A. Ross, K2MGA, Publisher
Donald R. Allen, N9ALK, Advertising Mgr.
Emily Kreutz, Sales Assistant
Dorothy Kehrwieder, General Manager
Frank V. Fuzia, Controller
Catherine Ross, Circulation Director
Melissa Kehrwieder, Data Processing
Carol Minervini, Data Processing
Karen Nauth, Customer Service

PRODUCTION STAFF

Elizabeth Ryan, Art Director
Barbara Terzo, Artist
Dorothy Kehrwieder, Production Manager
Emily Kreutz, Production
Pat Le Blanc, Phototypographer
Florence V. Martin, Phototypographer
Linda Romanello, Typesetting
Hal Keith, Technical Illustrator
Larry Mulvehill, WB2ZPI, Photographer

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 \$19.95, two years \$38.00, three years \$57.00. Canada/Mexico—one year \$22.00, two years \$42.00, three years \$63.00. Foreign—one year \$24.00, two years \$46.00, three years \$69.00. Foreign Air Mail—one year \$77.00, two years \$152.00, three years \$228.00.

U.S. Government Agencies: Subscriptions to Popular Communications are available to agencies of the United States government, including military services, only on a cash with order basis. Requests for quotations, bids, contracts, etc. will be refused and will not be returned or processed.

Entire contents copyright ©1991 by CQ Communications, Inc. Popular Communications assumes no responsibility for unsolicited manuscripts, photographs, or drawings. Allow six weeks for change of address or delivery of first issue. Printed in the United States of America.

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. \$1129.95 (+\$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 AE3805BK

A digital radio at an analog price. Covers 3.2-7.3 & 9.5-21.7MHz \$119.95 (+\$4 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.

COMMUNICATIONS BOOKS

Passport To Worldband Radio 1991 Ed.

By L. Magne. Graphic presentation of all SWBC stations. Equipment reviews too. \$16.95

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 Utility Stations 1991 9th Edition

By J. Klingenfuss. The definitive guide to utility stations- CW, SSB, FAX and RTTY..... \$29.95

Guide To Facsimile Stations

By J. Klingenfuss. The complete guide to FAX with freqs., schedules and addresses... \$24.95

World Radio TV Handbook 1991 Edition

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 92 page (8½" by 11") publication covers everything for the radio enthusiast. With prices, photos and full descriptions.

★ Available for \$1 postpaid ★

MULTI-MODE CONVERTERS



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. With video fax and real time clock only \$1159.00 Please write for full details.

Universal M-7000

- ♦ 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 (PDM)
- ♦ 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



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)

Universal M-900

- ♦ 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.

STORE HOURS

Monday - Friday 10:00-5:30 • Visa, MC, Discover since 1942!
Except Thursday 10:00-8:00 • Prices & specs. are used equip.
Saturday 10:00-3:00 subject to change. list available

• We ship worldwide 11 business days

Universal Radio

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

BEAMING IN

AN EDITORIAL

BY TOM KNEITEL, K2AES

Rowin' Down to Radio Row

Readers send this magazine some great stuff, but certainly one of the most interesting things had to be a Hallicrafters S-40B communications receiver. The 40-year old set needed a new speaker, a switch, and a new 6SK7 tube, but was in remarkably good condition. It was tenderly hand-delivered to our offices by its former owner. That was months ago, and I've been itching to get some time to give it the few minor bits of attention it required.

Only yesterday did I get to the set. Sitting there on the bench getting spruced up, the S-40B made me think of a magical place once known to SWL's and hams as "Radio Row." New York City's World Trade Center now stands on the spot once occupied by Radio Row. But for a few moments, as I worked on the S-40B, I thought about how I used to go to Radio Row all the time, especially the time I went there, as a teen-ager, to buy a new Hallicrafters S-40A receiver. And it made me think about a lesson I learned on Radio Row.

Officially, Radio Row was shown on street maps with the name Cortland Street. In the late 1940's, at the peak of its fame, it was a rather dingy street. Less than a half-mile in length, it was located in a terrible waterfront area, and terminated at an old ferry terminal.

From the several wholesale coffee dealers located on the street, there usually wafted the pungent aroma of the coffee beans being ground. The odor permeated the entire street at times. The sounds of Radio Row were almost always spiced up by the amplified raspy voices of the pitchmen at a sleazy storefront place that called itself an "auction."

This wasn't really an auction, just a place that attracted passers-by to mill around in a crowd and think they were getting bargains on things like overstocked and discontinued ratchet sets, electric razors, kitchen utensils, and similar.

But the main attractions on Radio Row, and what gave the place its nickname, were the dozens of grubby little stores selling nothing but electronics and communications equipment—new, used, and war surplus. Can you imagine strolling down a street like that?

Most stores had lots of wares on display out in the street. Wooden crates were filled with assorted vacuum tubes. For a dime each, you didn't care that they no longer had boxes, and possibly no visible type numbers printed on the glass. Out on the

sidewalk in front of some stores there were large military transmitters, aircraft bomb sights, overflowing boxes of used capacitors, speakers with torn cones, thermostats, surplus 440 volt transformers, and spectacular electronics mystery gadgets left over from the recent war. The stores didn't even know or care what much of the surplus equipment was intended to be used for. But you could buy it to take apart for the components. For 25 cents, even a 32-volt rectifier that put out 24-volts, or a 28-volt dynamotor seemed to be worth having.

Inside the stores, the jumble continued. The shelves were groaning under the weight of the latest equipment from RME, National, Hallicrafters, and Hammarlund, sitting there next to old sets from those companies, plus war trophies like military receivers, transmitters missing the meters, or riddled with bullet holes. Everything was for sale, and prices were anything you could work out, especially if you had a trade-in to offer.

I made regular pilgrimages to this wonderland almost weekly. I knew all the stores on this street, even those radio stores that overflowed on to the side streets because they couldn't squeeze in one more radio store on Cortland Street. One of those stores had offered me a very appealing deal. I had a beginner's receiver, a Hallicrafters S-38. But my dream receiver, at age fourteen, was a Hallicrafters S-40A, which was a \$90 marvel. Sight unseen, the salesman offered me a \$25 trade-in on my old S-38, which had cost only \$40 when it was new a year earlier. After months of saving my allowance, fortified by odd-job earnings, loans from friends and relatives, plus birthday money, I had finally accumulated exactly enough cash, to the penny, to swing this deal.

The trip to Radio Row to finalize the transaction was scheduled for the following Saturday. It mattered not that it was pouring like I hadn't seen it rain in years. I was determined to get the new receiver even if I had to get there by rowboat. I securely wrapped my old S-38 in layers of brown paper and wax paper, to keep it from getting soaked. Several radio pals arrived to make the joyous excursion with me.

There was a slight snag. As we were noisily getting ready to brave the storm, my dad appeared at my room and wanted to know what we were doing. This was definitely a bad omen. When I told him, he was against the idea on every possible level.

My mother was in the next room reciting a

monologue about how only a crazy person would go out in such weather, occasionally asking various deities to please explain why they were punishing her, and begging them to put some sense into her son's head. For his part, the Old Man was rattling off a lengthy litany of specific objections to the Radio Row deal, including my needing the money for college, plus the fact that there was nothing wrong with my old radio. Also, he was sure that the guy on Radio Row was going to take unfair advantage of me because I was a kid. Dad was always certain that, unless a person took strong precautions, they would be mercilessly swindled at every possible opportunity.

No other way to go except to invite him along on this trip, something I would not have elected to do if there were any other alternative. All the way there, on the subway, he kept thinking up new reasons for me not to waste my money. The reason he eventually selected as the best one to support his point was that nobody ever heard of a company called Hallicrafters—that I should get a well known radio like an Emerson. Why he selected Emerson, I have no idea. We never even owned one. Probably was the first brand name he thought of, but that was the brand selected for that day. He insisted that even \$20 Emerson table radios could pick up stations every bit as good as the \$90 radio I wanted. There was no arguing with him on this point.

When we got to Radio Row, we began to slog through the driving rain towards my favorite store. The Old Man cautioned me to let him do all the talking. In his own youth he had been interested in radio and was going to impress the salesman with his knowledge of the topic just to show that we weren't to be trifled with.

Drenched, our delegation arrived at the counter. I could see the gleaming S-40A on the shelf. It was beautiful. The Old Man immediately launched into his best radio dissertation. He always referred to vacuum tubes as *bulbs*, loudspeakers were called *horns*, and an antenna was generally known as an *aerial*. The salesman listened patiently, although it probably had been twenty years since he had heard any of those terms used. From there, the Old Man changed the conversation to the fact that I could get a better buy with a known brand radio like, say, an Emerson.

The salesman looked at me. I shrugged. When the salesman tried to explain that

(Continued on page 76)

ULTIMATE HANDI-COUNTERS™

No other counter can compare to OPTOELECTRONICS' 10Hz to 2.4GHz HANDI-COUNTERS™. Performance, Sensitivity, Quality packed in a compact size...to go anywhere you need to go.

- 2210A Full Range Pocket Size LED. \$239.

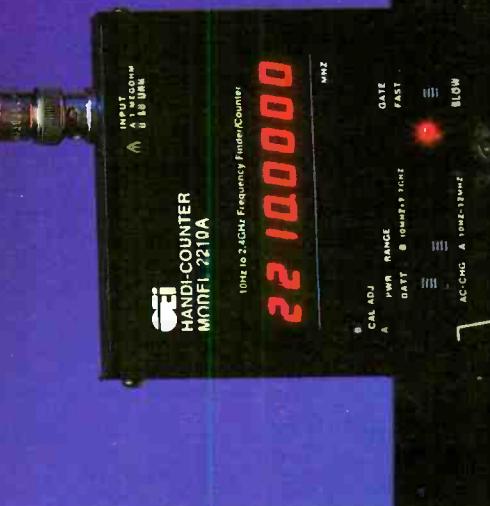
- *8030 Bench Portable (fits in an attache case) with all the HANDI-COUNTER™ features plus more. \$579.

- *3000 Top of the line Universal Handi-Counter™. \$375.

*Pictured below with optional Back-Light/Beeper.

OPTOELECTRONICS

Toll free order line: 1-800-327-5912
FL(305)771-2050 • FAX(305)771-2052
5821 NE 14th Avenue, Ft. Lauderdale, FL 33334



OPTOELECTRONICS

CIRCLE 117 ON READER SERVICE CARD

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.

Timely Observation

Your July story on "Standard Time Broadcasts" around the world was useful and opened up a new area of monitoring for me. Based on the information you provided, I have verified seven of these stations. Last weekend my friend and I listened to the WWV time signal for 24-hours straight. I'm certain that we must be the first people ever to do this. What do we get?

Mickey Waldman,
Palos Verdes Estates, CA

I don't know what you get, but if I had to listen to it for even 24 minutes straight, I'd get the bends. —Editor

A Real Find

At a swap meet, I traded an old CB microphone for two packages of German electronic components. Each package contains 200 tiny glass tubes with a single lead sticking out of each end. One lead is copper, the other is tinned. The label on each package reads "Stromzuführungen," followed by the tech data "KPS: 0,30/46, FMB: 0,30/14, KO: 0,125/17, NI: 0,60/27 mit schutzpatrone." My question is, did I get anything worthwhile in this trade?

Mike Navarro,
Muskegon, MI

Are you serious? What a find! The schutzpatrone, alone, made these stromzuführungen a fantastic deal. —Editor

Calling Old CB Radios

Several radio enthusiasts and I am involved in a unique venture. Our goal is to provide communications to those who may need it most, such as elderly, handicapped, and other shut-ins who have neither transportation nor telephone due to financial hardships. Through donations of used CB

equipment, we give these people a communications lifeline to the outside world, offering entertainment as well as potentially life-saving capabilities. Whatever expenses there are, come out of our pockets, and we need publicity to secure donations of used CB equipment. The demand exceeds our present supply. Could you mention this in POP'COMM? We'll take anything, working or not working, base, mobile, or handheld. At times we can pay shipping costs on equipment that justifies the expense. Many CB'ers have old rigs gathering dust. We can put them to a worthwhile use.

Bob DesRosiers,
P.O. Box 515,
Millbury, MA 01527

Although we haven't investigated this service, it certainly sounds like an excellent idea. Readers who have equipment that might fit in are welcome to contact Bob directly should more information be needed.
—Editor

Doing Something Right

This is in reference to the letter you ran from Mr. Christiansen in the June issue. He's the fellow who sent out 100 reception reports to hams and found that his return rate was only 17%. He's definitely doing something wrong. In my four years of QSL chasing, I have a 96% return from utes, 98% from shortwave broadcasters. Reception reports to hams regarding CW, AMTOR, RTTY and SSB have resulted in a 74% return. For RTTY, CW, and AMTOR reports, I always enclose a printout of the reception report, as well as an SASE. I hesitated in sending reports to hams as I had heard that they wouldn't respond to SWL's. However, along with the QSL's they sent, I've received full page letters, station photos, antenna diagrams, etc. I've never run across a nicer group of people. I repeat, Mr. Christiansen is doing something wrong.

Hugh M. Hawkins
San Antonio, TX

The fact that you had heard from others that hams had responded poorly to SWL reports would lend credence to the notion that you may be doing more things right than Christiansen was doing "wrong." Certainly, enclosing an SASE was a plus for you. Sending SWL reports (accompanied by printouts) to RTTY, CW, and AMTOR stations was another plus, because such stations probably aren't as used to receiving SWL reports as those using voice. Since Christiansen was sending only to SSB stations, the only valid comparison would be for those stations and the return percentage

you achieved by enclosing an SASE. I stick to my own observations that hams just don't QSL the way they used to, even for two-way contacts. I send QSL's out to many of my own contacts and find that for two-way SSB skip contacts on 10 meters: 1) I get a 33% return to the QSL's I send out, and 2) I've received virtually no QSL's from stations that I hadn't sent to first —Editor.

Broadcaster Qualifications

Although I read many magazines, I can't recall ever reading a better editorial than the one in POP'COMM for October, about the FCC now tightening the restrictions on who can qualify for a broadcasting license. It is nothing short of ludicrous that political appointees running an agency should sit in that kind of judgment on citizens. If broadcasters can be stifled in this manner, maybe the print media will be next. Every magazine should want to reprint your thought on this.

Dennis Halverson,
Moose Lake, MN

Your October editorial convinced me of the inequities of the existing system, but surely there needs to be at least some basic screening system established to evaluate those who seek to broadcast. Until I read the October Popular Communications, I was satisfied that the method that had been established, and recently strengthened, was reasonable. You made me stop and think.

Peter Melendez-S.,
Los Angeles, CA

Please accept this letter as a vote in disagreement with your opinions presented in October. Although you expressed your viewpoint eloquently, it doesn't take away from the fact that just because someone has a bundle of cash, that should entitle them to set up shop on a broadcasting frequency with little (or no) regard for what caliber of person they are. A lot of inferior people have managed to amass small fortunes.

(Name withheld by request.)
Pembroke Pines, FL

I sat down at the typewriter to write a lengthy letter citing reasons to support and agree with your comments in October about broadcaster qualifications. After spending an hour staring at the blank sheet of paper in my machine, I couldn't think of anything you hadn't already covered in your editorial. Anyway, you struck a blow for the little guy and it was appreciated.

W. S. Cooper,
Rolling Fork, MS

SAVE on KENWOOD **SHORTWAVE at AES®**

Large Stocks • Top Trades • Fast Service
AES® Ships Coast to Coast

Amateur Electronic Supply® • a supplier of Major Brand electronics for Shortwave Listeners & Radio Amateurs since 1957, over 33 Years! For the Consumer we carry a large selection of Scanners, Telephones, Radar Detectors, Marine Radio and Land Mobile.

Call Now Toll Free for Low Prices!

Store Hours:
Mon.-Fri. 9am-5:30pm; Sat. 9am-3pm

KENWOOD R-5000 • Competition class communications receiver with superior dynamic range, with every conceivable feature. Receives SSB/CW/AM/FM & FSK from 100kHz-30MHz & 108-174 MHz with opt. VHF converter. Key features: 10 Hz step dual digital VFOs, 100 memory channels (store mode, frequency, antenna selection), memory scroll, memory & programmable band scan. High/low-Z antenna terminal. Selectable IF filters, IF shift, tunable notch, dual noise blanker. 120V AC, optional 13.8V DC kit. 10.6" w x 3.78" h x 10.6" d, 12 lbs.

Optional Receiver Accessories • Call for Prices

R-2000: 250Hz & 500Hz CW filters, VHF Converter, DC kit.
R-5000: Ext. speaker, AM filter, 270Hz & 500Hz CW filters, 1.8kHz SSB filter, Mobile mount, VHF converter, IC kit for computer control, Level translator, DC kit, Voice synthesizer.

KENWOOD RZ-1 • Ultra-compact, multi-purpose Base or Mobile **AM/FM** receiver. Covers 500 kHz-905 MHz, including FM Stereo and Multichannel TV Sound. Key features: 100 memory channels (store frequencies with messages and band marks), ten band program capability (store upper/lower limit scan range). Keyboard frequency selection, auto-mode and auto-step operations. VFO scan, memory scan plus programmable channel lock-out and four scan stop modes. Large LCD display. 13.8V DC @<1A. 7.09" w x 1.97" h x 6.22" d,



R-2000 Communications Receiver

★ \$150 off! ★

List \$799⁹⁵ • Sale Price \$649⁹⁵

KENWOOD R-2000 • All-mode SSB/CW/AM/FM receiver that covers 150kHz-30MHz and 118-174 MHz with optional VHF converter. Microprocessor control. Key features: digital VFOs, 10 memories (store frequency, band and mode information), memory scan, programmable band scan, digital display, 24 hour dual clock/timer. All-mode squelch, noise blanker. 110/220V AC, optional 13.8V DC. 14.8" w x 4.5" h x 8.3" d, 12 lbs.



R-5000 Communications Receiver

★ \$200 Off! ★

List \$1049⁹⁵ • Sale Price \$849⁹⁵



RZ-1 AM/FM Wide Band Receiver

★ \$100 Off! ★

List \$599⁹⁵ • Sale Price \$499⁹⁵

Order Toll Free: 1-800-558-0411 FAX: (414) 358-3337

AMATEUR ELECTRONIC SUPPLY® Inc.

5710 W. Good Hope Road; Milwaukee, WI 53223 • Phone (414) 358-0333

AES® BRANCH STORES

WICKLIFFE, Ohio 44092
28940 Euclid Avenue
Phone (216) 585-7388
1-800-321-3594

ORLANDO, Fla. 32803
621 Commonwealth Ave.
Phone (407) 894-3238
1-800-327-1917

CLEARWATER, Fla. 34625
1898 Drew Street
Phone (813) 461-4267
No Toll Free Line

LAS VEGAS, Nev. 89106
1072 N. Rancho Drive
Phone (702) 647-3114
1-800-634-6227

Associate Store
CHICAGO, Illinois 60630
ERICKSON COMMUNICATIONS
5456 N. Milwaukee Avenue
Phone (312) 631-5181
1-800-621-5802



"The Largest Dealer of Scanners in the World"

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, sidetone 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)

#CC-008 Heavy Duty Leather Carry Case \$27.99

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	(7.00)
Bearcat BC800XLT	249.99	(7.00)
Bearcat BC100XLT	199.99	(7.00)
Bearcat BP205/200	34.99	(*)
Bearcat BC210XLT	189.99	(7.00)
Bearcat BC-ONE	129.99	(7.00)
Bearcat AD-1000	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	89.99	(7.00)
Bearcat BC-310A	85.99	(7.00)
Bearcat BC-330A	109.99	(7.00)
Regency MA-917	24.99	(*)
Regency MA-501	14.99	(*)
LifeGard 4	109.99	(4.00)
RXD MRP-1 High Band	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	7.49	(*)
Scanner Modification Handbook	17.99	(*)

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)

ORDERING INFORMATION: Call (518) 436-9606 to place orders or mail orders to Scanner World, USA®, 10 New Scotland Ave., Albany, NY 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.

REGENCY TS-1

35 CHANNELS — MOBILE/BASE



Special

\$138.99
(\$7.00 shipping)

Features include simple programming of the following frequency ranges: 29-54 MHz, 118-174 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" Dx2 1/4" 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, carry case.

SANGEAN ATS-803A SHORT WAVE RECEIVER

\$168.99

(\$7.00 shipping)



AM/FM/LW and 12 shortwave 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** (*)

SPECIAL!!

LOWEST PRICE EVER FOR A PROGRAMMABLE SCANNER

Cobra



SR-901

AVAILABLE ONLY FROM SCANNER WORLD

ONLY! \$74.99 Each
(Plus \$6.00 Shipping Each)

\$69.99 (2 or more)

Features include: 10 programmable channels, one touch memory programming, external speaker jack, 29-54 MHz, 136-174 MHz, 406-512 MHz, squelch, lockout, full frequency digital readout, AC or DC operation, retains memory up to 3 days without power, scan button. Includes AC adapter, telescopic antenna, and complete operating instructions. Size: 7 1/4" W x 2" H x 7 1/4" D. One year factory warranty. (Optional mobile cigarette lighter cord #901MPC \$4.99)

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" x 6 7/8" x 1 3/4". Frequency coverage 29-54 MHz, 118-174 MHz, 406-512 MHz, 806-956 MHz. (Optional diskette (5 1/4" or 3 1/2") available for programming MR-8100 direct from your IBM PC to restore cellular and program alpha. Uses RS-232 connection. \$24.99.)

UNIDEN BEARCAT BC-600XLT

\$199.99

(\$7.00 shipping)

Digitizable 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.)

SCANNER WORLD HAS BEEN SELLING SCANNERS FOR OVER 21 YEARS
ALL MERCHANDISE NEW, IN FACTORY SEALED CARTONS

COMPLETE CATALOG PUBLISHED 4 TIMES PER YEAR.
FREE UPON REQUEST

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

\$99.99

(\$7.00 shipping)

Digital programmable, 60 channels, AC base scanner, 30-50 MHz. Size 7 1/4" x 3" x 9". Turbo Scan scans 40 channels per second, 4 channel banks, weather alert, search, priority, lockout, AC cord, telescopic 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

High Adventure Scanning

**From Military Communications To Mystery Stations,
Let Your Scanner Transport You Into
An Exciting New World!**

BY CHUCK ROBERTSON

Who said wintertime is boring? Get that person a scanner! The other day I was monitoring a bootleg two-way system operating on 47.77 MHz from south Florida. They were talking about a boat that had been taken without permission. Were these smugglers I was tuned to from my listening post in Illinois?

On 30.15 MHz I zeroed in on US military chemical warfare defensive operations somewhere at a point when something got out of hand. One station on frequency announced, "We just got a real-world casualty."

Other frequencies produced private detectives chatting on 30.92 MHz as they were tailing a couple along the Atlantic City Boardwalk—and the couple spotted them! And then there was that eerie network of "gypsy taxicabs" in New York City . . . and the rest of the excitement found this time of year between 30 and 50 MHz. See for yourself!

The Middle East

The Middle East is a complex area that is presently generating lots of scanner-band communications as things crackle across the entire region. It certainly seems that there will be military forces from the US and other nations stationed there for a long time to come.

This winter, it's possible to monitor US military comms there in the 30 to 50 MHz "low band." Begin checking for them soon after your local sunrise. Start out searching the lower part of the band, 30 to 35 MHz. If you pick up activity there, try higher frequencies, too.

I've discovered several Turkish repeaters that seem to show up first and let me know it's time to search for other stations in the region. Listen for them on 34.25, 34.30, 34.35, 34.40, 34.50, 34.55, 34.60, 34.70, and 34.75 MHz. The language is Turkish, but sometimes they pick up and re-broadcast German Autobahn vehicle assistance comms. These repeaters seem to come in best mid-morning (9 to 11 a.m.), and can be heard most of the year (except



A Raven aircraft, outfitted with bomb and heat seeking missile.

summer). Also check 41.00 MHz for a Turkish duplex radio telephone.

Israeli governmental comms have turned up on frequencies like 32.425 and 33.125 MHz. Private duplex telephone systems are in the 42 to 48 MHz band, check 46.11, 46.20, and 47.13 MHz.

Arabic language transmissions are being monitored on 32.20, 32.40, 33.25, and 34.40 MHz.

There should be plenty of *Desert Shield* activity cropping up in the F-2 layer skip this winter. US forces normally use 50 kHz spacing in this band, although occasional 10 kHz stepping has been noted.

Other nations participating in *Desert Shield*, such as England, may use the 30 to 90 MHz band in 12.5 kHz steps.

Iraq has plenty of Soviet radio gear, so look for low band activity with 12.5 kHz channel spacing. Where manually-tuned Soviet radios are used, look for split frequencies to turn up, for example, one unit

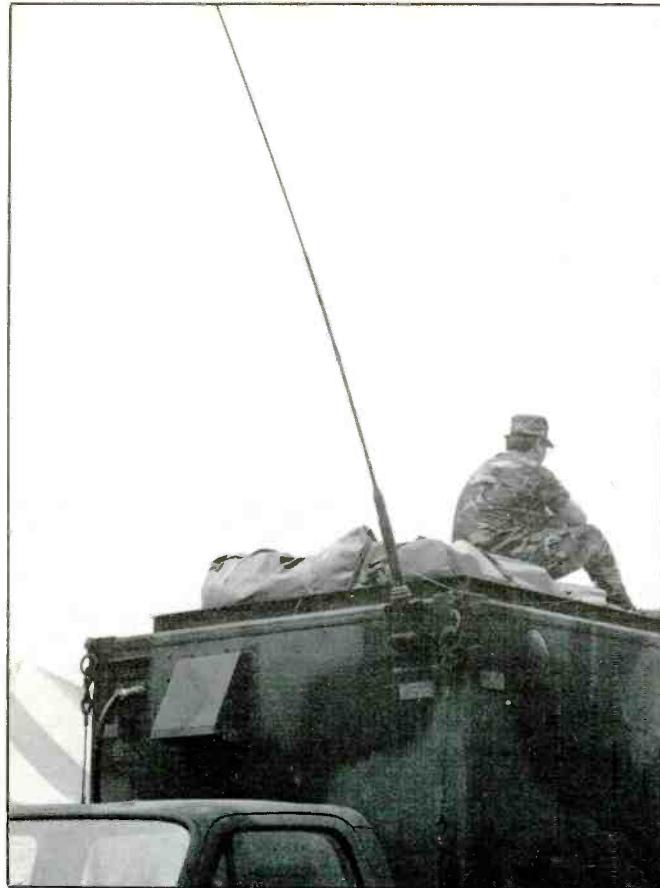
on 30.335 MHz talking to a second unit on 30.345 MHz. Use your scanner's search function to spot these comms.

Even check between 29.70 and 30 MHz for Middle East activity. The UK military has tactical comms there, AM mode, in 25 kHz steps. The US uses 10 kHz spacing, WFM mode. Soviet radios have been monitored on 29.80, 29.94, and 29.95 MHz, WFM mode.

Screaming Eagles

The US Army's 101st Airborne Division ("Screaming Eagles") calls Ft. Campbell, KY home, although it's among the US forces sent to the Middle East. They have Apache air assault helos equipped with Hellfire anti-tank missiles.

Screaming Eagle air-to-air comms from Ft. Campbell are on 30.20, 32.20, 34.60, and 36.30 MHz, with Medevac on 36.90 MHz. It's entirely possible that these fre-



The tall whip antenna on this US Army convoy vehicle is a telltale indicator that low band VHF is in use.



This infantry soldier demonstrates an experimental oversuit that protects him from nuclear/biological/chemical agents. A two-round missile launching system is in his backpack. His helmet contains a two-way radio. (Department of Defense photo.)

quencies are also being used by the 101st in the Middle East.

Listen for Ft. Campbell live-fire range operations right on 50.00 MHz. Some ID's noted there include Hellfire 6, Redleg 1, Fire Control, Fire Marker 2, Range 6, and Jackson Crossing.

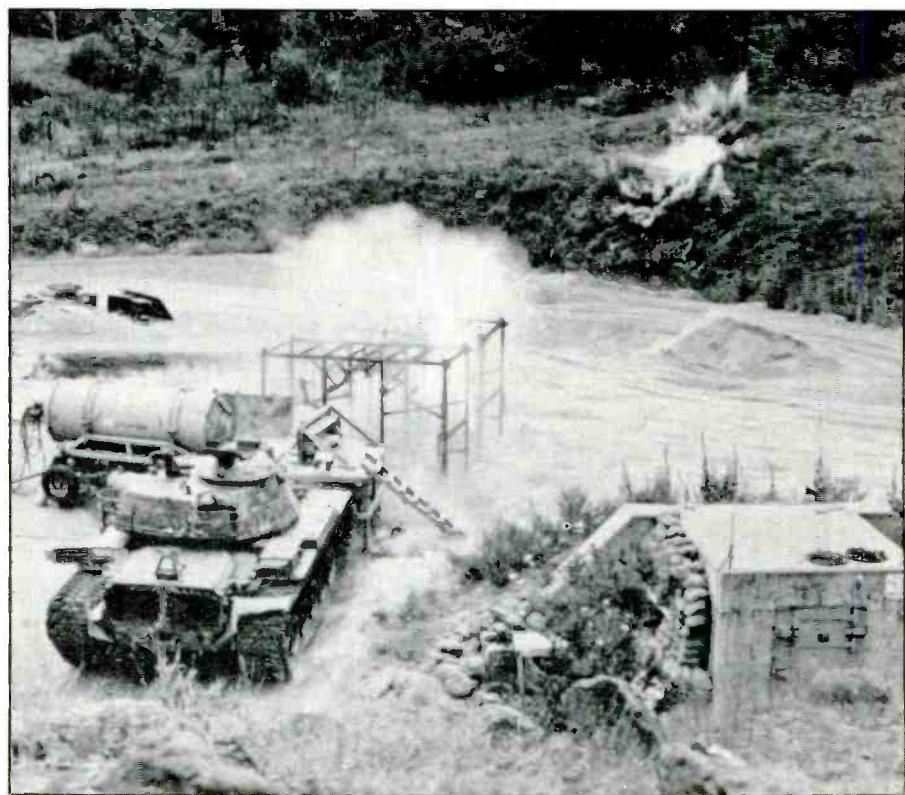
Duel In The Sun

US military desert warfare training operations, on a large scale, take place at the Fort Irwin National Training Center, in the Mojave Desert south of California's scorched Death Valley. Army units from across the nation travel to this place for wargames against mock enemy tanks and infantry. The favorite training location is known as "The Valley of Death."

During this time of year, Fort Irwin comms can be heard via skip almost every day. The facility has numerous active low band frequencies regularly being monitored via skip, as shown in the 7th Edition of Tom Kneitel's *Top Secret Registry of US Government Radio Frequencies*.

Frequencies there I recommend highly include the wargames on 61.00 MHz; Dust Off and Medevac on 38.90 MHz; and Range Control on 32.70, 38.45, and 48.00 MHz.

The weather ("metro") station at Ft. Irwin's Bicycle Lake AAF uses 32.40, 32.45,



At the Los Alamos National Lab's Advanced Technology Assessment Center, in New Mexico, tank armaments are put to the test. Check out your scanner for some of these communications.

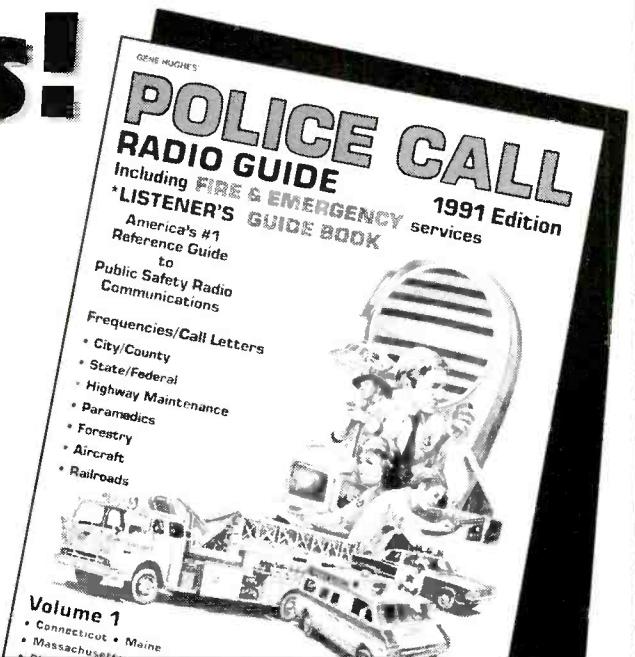
We've Got Your Numbers!

(OVER 270,000 FREQUENCIES)

POLICE CALL 1991 Edition

With These New Features

- Highway Maintenance (Toll Roads, Snow Plows, etc.)
- Illustrated Listener's Guide
- Personal Log Section
- FCC Licenses through October, 1990.



More People Buy **POLICE CALL** Than All Other Frequency Guides (VHF/UHF) Combined.

CIRCLE 172 ON READER SERVICE CARD

and 49.05 MHz. The control tower is on 41.50 MHz.

Chemical warfare training has been noted on 33.85, 35.85, and 36.00 MHz. Listen for ID's like Nerve 15, Blackbox 66, Goldminer 7, Dragon 26, Dragon Land, and China Site.

Wargames at Ft. Irwin proliferate on 30.25, 30.35, 31.75, 31.90, 32.00, 32.10, 32.15, 32.50, 32.95, 33.05, 33.15, 33.25, 36.50, 36.95, and 37.00 MHz. Crash inspectors turn up on 33.55 MHz, with VIP escorts noted on 32.25 MHz, with VIP escorts noted on 32.25 MHz. The top brass at this facility use 30.30 MHz.

Mojave Marines

The US Marine Corps has desert training at Camp Pendleton and also nearby Twentynine Palms Marine Corps Air Ground Combat Center, both in CA. For years I've listened to their "Long Rifle" (range control) on 30.35 MHz.

Listen for Channel 1 on 32.25, and Channel 2 on 32.75 MHz. Medevac helos are on 38.80 MHz. Amphibious landing ("Splash") operations are heard on 41.00 MHz.

Training and wargames are noted on many low band frequencies, especially between 30 and 33 MHz. Also try 40.35, 49.30, and 65.10 MHz.

Desert Laboratory

On the cutting edge of our national defense is a high security facility in the New Mexico Desert. This is the Los Alamos National Laboratory, dedicated to the design, and testing of nuclear weapons; research into defenses against ballistic missiles; research and development of advanced conventional weapons; development of means to detect secret nuclear explosions; and other national security programs. Los Alamos designed about two thirds of the weapons in the national stockpile.

Some of the Department of Defense programs at Los Alamos include those relating to lasers, high explosives, missile warheads, tank armor, and electromagnetic projectile launchers driven by explosives.

If you try to approach this facility to see them testing these things, armed guards will turn you away miles from the action. Still, if you have a scanner, no matter where you are, you might be able to tune in on it when skip conditions are right.

Try listening on 32.02, 34.14, and 40.47 MHz.

Readers Report

In response to previous POP'COMM features regarding low band skip scanning, a number of readers have contacted me.

Among the incoming information was a message from Mark in southern Florida. He reports Italian comms on 37.75 and 38.26, Irish on 38.95, Russian on 38.675 and 38.875, a UK phone on 39.60, South American repeater outputs on 40.46 (33.86 input), and 42.00 (37.26 input). An Afrikaans language radiophone was logged on 39.60 MHz.

Mark sells comms equipment and told me that the "mystery repeater" we reported on 42.04 MHz (37.26 input) in the January '90 issue was one he sold to a customer in Colombia. He didn't care to reveal the name of the customer, and had no idea what business they used it for. This repeater rebroadcasts US police skip for hours on end.

Geoff, in Wales, UK picks up lots of US skip. On 47.22 MHz he snagged the Ohio State Highway Dept. On 35.60 MHz he received the automatic CW ID of paging stations in New England. Nice going!

Russ Hill, Oak Park, IL picks up the Oklahoma Highway Patrol being rebroadcast over a mystery repeater on 42.04 MHz, probably from South America. Russ has Central American military traffic on 30.40 MHz, Mexican military ops on 33.60 MHz, Canadian industrials on 33.44 and 34.38, and the Gulf Fleet Marine Co. on 31.48 MHz.

Mark Lucas, Columbus, OH tells us of West Coast FD's on 36.60 MHz. Chances

are that this was Los Angeles FD Channel 11 (33.60 MHz) being rebroadcast over an unknown South American repeater.

From Hamilton, Ontario, Mark Veerman reports excellent skip reception. He picked up the Marshall Islands on 32.16 MHz.

James Jablonowski, Detroit, MI uses a handheld scanner for skip DX'ing. He's

heard many stations on 37.42 MHz, including the El Dorado County Sheriff, CA, and a Spanish language pager in Uruguay. That's 5,000 miles of DX on a PRO-30 and a center-loaded whip! James also picks up the Nevada Test Site on 36.05 MHz, plus the Ft. Hood, TX range control on 30.45 MHz.

Mark A. Cobblewick, Ft. Payne, AL enjoys monitoring the TVA. Would like to know the input of their repeaters on 38.98 MHz.

Hope you take advantage of the winter F2 skip. Your low band loggings, frequency lists, and comments are invited. Write to me in care of POP'COMM.

PC

Some Recent Low Band Loggings (SS= Spanish)

- 29.84:** SS, maybe Mexican PD, "05 Oficina."
- 30.00:** Chem warfare. A steady broadcast of command personnel as they gave orders. Much shouting, XXX-language, machine-gun firing. "Ready? Gas, gas, gas!" Channel used to monitor & evaluate performance. Heard for several days. "Charlie 92," "65 Delta." Related 2-way comms on 32.30 MHz. Some SS.
- 30.25:** US mil wargames, "Tango 3 to Werewolf--drop off pyro."
- 30.30:** "Vulture" at Ft. Irwin NTC annoyed at incoming skip from an SS station, "Get out of here, Mexico!"
- 30.45:** Ft. Hood range, "We'll be firing lasers only." Henson Mt. Complex, PK Blackwell Complex, Daulton Range Radio, Bedtime, Cow House Machine Gun Range all monitored here.
- 31.00:** Yakima Firing Range, WA: "I'm 300' from the Columbia River."
- 31.30:** German mil wargames in US desert. Also try 30.60, 30.80, 31.10, 31.50, 31.60, 31.70, 31.80, 32.00, & 33.10 MHz.
- 31.45 & 32.45:** USN, Pacific: "Texas Jake, Tac 1."
- 31.50:** Canadian trawlers in Pacific. Unauthorized freq with speech inversion.
- 31.55:** US mil: "Rattler Base," "Alpha 24."
- 31.75:** US MP's, Panama: "Echo Bunker," "Foxtrot Bunker," "Rover," "Work Site."
- 32.00 & 34.00:** US mil range control in Eastern Time Zone: "Range 2," "Winnebago," "Drumbeater," "229 Talk," "Firing Point 4," "Gate 3233."
- 32.10:** US mil, maybe in Calif.: "Sandcastle," "Bunting Blue 2," "Bubblegum 83," "Beachmaster," "Beach Patrol."
- 32.30:** US Mil, Washington: "Ft. Lewis TCG Control," "Oscar Papa (Obs. Post) 1," "Gulf 18." Also US mil convoy near Amsterdam, NY: "Davartie Column Commander," "Davartie Trail," "Headquarters 99." Also a/c enroute El Kataw (Portland, OR) wkg "Musket."
- 32.45:** US conservation? "Tree 2, Tree 2. We have no buns or hot dogs." Also USN "Seahawk 12" saying, "We're tied up along the Jolly Roger."
- 32.60:** US mil, open mic, machine gun fire.
- 32.70:** US mil wargames, infantry & tanks, "Blue 5, this is Blue 1. Proceed in wedge formation. Lock & load machine guns. There's a tank at the foot of the hill. Watch my tracer on the tank. Engaged and destroyed one tank."
- 32.75:** US mil wargames. "You are cut off at the pass... do you copy? Are you alive? Over."
- 32.80:** US mil wargames. "Drumbeater" advising, "You have permission to Splash." Also "Redneck to 01, I'm at the bottom of the quarry."
- 32.95:** Ft. Irwin NTC wargames: "Scorpion 7, "Bronco 7," "Claymore Bravo," "Task Force Commander."
- 33.25:** US mil wargames: "Silver Lake," "Charlie Battery."
- 33.35:** US mil, "Bay Center Base to any Bravo element."
- 33.50:** US mil range control, maybe Ft. Irwin. Shells fired at target tank ("Septic Tank"). This is "Ivan" freq. "Safety Tower," "Cullman Area," "Xray 69," Maintenance 5."
- 34.31:** White Sands Missile Range, NM repeater out (34.85 input). "Highway will be closed at 9:30 for Stinger launch."
- 34.35:** USS Saginaw, "Inspect all M-16-A-2 pistol grip screws." Clear voice & DES.
- 34.50:** Plattsburgh AFB, NY, "Headquarters 1st, Range Control." Also US a/c enroute Montebello (Los Angeles) with chit-chat.
- 34.60:** US a/c, "That's Memphis, isn't it?" Might be from Ft. Campbell. Mentioned UHF 346.4 MHz. Also heard "India Tree Delta 22" & "India Tree Delta 63."
- 34.85:** US mil "Armor 2." Western state. Also USN "Tac 1" "Tac 2," & "Tac 3."
- 35.90:** US mil, "Rhinestone 2."
- 36.20:** US mil, "Hardhead."
- 36.22:** US Dept. Health & Human Services, DC area, repeater out. "1 to 4-- Pick up at 25 Circle."
- 36.35:** US mil, 115th Convoy Commander, "We have a Medevac to Fredericksburg, Virginia."
- 36.40:** "92 to Ambulance." Maybe DC area.
- 36.45:** US Dept of Interior, Walla Walla, WA.
- 36.50:** Ft. Lewis, WA, Security, "Guard 7." Also Ft. Irwin NTC, "Saber 7 to Saber Task Force-- I'm weaving my way through a mine field in the Valley of Death & a Hammerhead is coming at me!" Also a repeater in Brazil that sometimes rebroadcasts PD skip from USA.
- 36.60:** US mil security, "Total Patrol 47," "Total MP 8," "Delta Base." Also US mil range, "Charge 4," "Greenbag."
- 36.63, 36.69, 36.91:** VIP mil limos in DC area.
- 36.65:** US mil, "Marathon 25, Bravo 20. Radio check."
- 36.80:** US a/c bombing practice, "Freezedry to 89."
- 36.85:** US a/c, "Raven to Vladimir. Use Yuma."
- 36.90:** US mil, "Four Corners."
- 36.99:** Pentagon (DC) FD. Radio Check.
- 37.00:** RSA police.
- 37.90:** US mil target practice, repeater out (33.25 input), "Target 7008," "Hotel 71," "Holtel Alpha."
- 38.00:** US a/c tracking a storm.
- 38.50:** US mil range control to a/c, maybe Ft. Hill, VA, "Take instruction from Richmond Tower." Also another US mil, "Medevac enroute to Hubbard."
- 38.70:** US mil, "Apo Range Control, Brandywine Operations."
- 38.80:** US mil, Area 3, "Range 142," "Range Control."
- 38.90:** US mil live fire range: "Davarti Talk" training on 33.00 MHz; "Davarti Metro" on 38.85; Convoys 32.30.
- 40.20:** Ft. Lewis Range Control, WA.
- 40.30:** US a/c at Fallon NAS, NV, "Bluejay," "Calahan 12."
- 40.50:** Colombian PD, maybe Cartagena.
- 41.05:** Range operations, "You are on Ft. Pickett primary frequency." Also US mil wargames, "Wolf 10."
- 41.15:** Kaneohe Bay USMC Air Sta., Oahu, HI ops & phone patch. Helos on 36.50 MHz.
- 41.30:** US mil range control & a/c, "Army 237 to Victory. I'm in pattern for Taro."
- 42.35:** Russian comms with alerting tones.
- 44.20:** US mil, "Romeo 36," "Papa 36."
- 44.25:** US mil wargames, "DSEE, DSEE Rear. Radio Check."
- 47.45:** US mil wargames, "Echo 54," "Kilo 25."
- 61.00:** Ft. Irwin NTC, CA. Channel F-1. Wargames, "Echo 98," "Hotel 08."

C COMMUNICATIONS ELECTRONICS INC.

Emergency Operations Center
has expanded to our new two acre facility and World Headquarters. Because of our growth, CEI is now your one stop source for emergency response equipment. When you have a command, control or communications need, essential emergency supplies can be rushed to you by CEI. As always, for over twenty two years, we're here and ready to help.

Our RELM two-way radio transceivers were especially created for government agencies. When you need to talk to police, fire, ambulance, or state, federal and international response forces, RELM transceivers may be quickly programmed for up to 48 frequencies. Listed below, are some of our most asked about transceivers. For additional assistance, call CEI at 313-996-8888.

NEW! RELM® RSP500-A

List price \$465.00/CE price \$319.95/SPECIAL
20 Channel • 5 Watt • Handheld Transceiver
Frequency range: 148-174 MHz, continuous coverage. Will also work 134-148 MHz, with reduced performance. The RELM RSP500B-A is our most popular programmable 5 watt, 20 channel handheld transceiver. You can scan 20 channels at up to 40 channels per second. It includes CTCSS tone and digital coded squelch. Snap on batteries give you plenty of power. Additional features such as time-out timer, busy-channel lockout, cloning, plug-in programming and IBM PC compatibility are standard. It is F.C.C. type accepted for data transmission and D.O.C. approved. We recommend also ordering the BC45 rapid charge 1½ hour desk battery charger for \$99.95, a deluxe leather case LC45 for \$48.95 and an external speaker microphone with clip SM45 for \$59.95. Since this radio is programmed with an external programmer, be sure to also order one PM45 at \$74.95 for your radio system.

NEW! RELM® UC102/UC202

List price \$128.33/CE price \$79.95/SPECIAL
Now...Handheld gear you can afford.
CEI understands that all agencies want excellent communications capability, but most departments are strapped for funds. To help, CEI now offers a special package deal on the RELM UC102 one watt transceiver. You get a UC102 handheld transceiver on 154.5700 MHz., flexible antenna, battery charger and battery pack for only \$79.95. If you want even more power, order the RELM UC202 two watt transceiver for only \$114.95.

NEW! RELM® RH256NB-A

List price \$449.95/CE price \$299.95/SPECIAL
16 Channel • 25 Watt Transceiver • Priority Time-out timer • Off Hook Priority Channel
The RELM RH256NB is the updated version of the popular RELM RH256B sixteen-channel VHF land mobile transceiver. The radio technician maintaining your radio system can store up to 16 frequencies without an external programming tool. All radios come with CTCSS tone and scanning capabilities. This transceiver even has a priority function. A 60 Watt VHF 150-162 MHz. version called the RH606B is available for \$429.95. A UHF 15 watt, 16 channel similar version of this radio called the LMU15B-A is also available and covers 450-482 MHz. for only \$339.95. An external programming unit SPM2 for \$49.95 is needed for programming the LMU15B.

NEW! RELM® LMV2548B-A

List price \$423.33/CE price \$289.95/SPECIAL
48 Channel • 25 Watt Transceiver • Priority
RELM's new LMV2548B gives you up to 48 channels which can be organized into 4 separate scan areas for convenient grouping of channels and improved communications efficiency. With an external programmer, your radio technician can reprogram this radio in minutes with the PM100A programmer for \$99.95 without even opening the transceiver. A similar 16 channel, 60 watt unit called the RMV60B is available for \$489.95. A low band version called the RML60A for 30-43.000 MHz. or the RML60B for 37-50.000 MHz. is also available for \$489.95.

RELM® Programming Tools

If you are the dealer or radio technician maintaining your own radio system, you must order a programming tool to activate various transceivers. The PCKIT010 for \$149.95 is designed to program almost all RELM radios by interconnecting between a MS/DOS PC and the radio. The PM100A for \$99.95 is designed to externally program the RMV60B, RML60A, RML60B and LMV2548 radios. The SPM2 for \$49.95 is for the LMV25B and LMU15B transceivers. The RMP1 for \$49.95 is for the RMU45B transceiver. Programmers must be used with caution and only by qualified personnel because incorrect programming can cause severe interference and disruption to operating communications systems.

★★★ Uniden CB Radios ★★★

The Uniden line of Citizens Band Radio transceivers is designed to give you emergency communications at a reasonable price. Uniden CB radios are so reliable they have a two year limited warranty.

PRO310E-A3	Uniden 40 Ch. Portable/Mobile CB	\$72.95
PRO330E-A3	Uniden 40 Ch. Remote mount CB	\$99.95
GRANT-A3	Uniden 40 channel SSB/CB mobile	\$152.95
PC122-A3	Uniden 40 channel SSB/CB mobile	\$113.95
PC68A-A	Uniden 40 channel CB Mobile	\$78.95
PRO510XL-A3	Uniden 40 channel CB Mobile	\$34.95
PRO520XL-A3	Uniden 40 channel CB Mobile	\$49.95
PRO535E-A	Uniden 40 channel CB Mobile	\$73.95
PRO538W-A	Uniden 40 ch. weather CB Mobile	\$78.95
PRO640E-A3	Uniden 40 ch. SSB/CB mobile	\$133.95
PRO810E-A	Uniden 40 channel SSB/CB Base	\$174.95

★★★ Uniden Radar Detectors ★★★

Buy the finest Uniden radar detectors from CEI today. CARD-A3 Uniden credit card size radar detector ... \$127.95 RD3XL-A3 Uniden 3 band radar detector ... \$124.95 RD9GTL-A Uniden "Passport" size radar detector ... \$89.95 RD9XL-A3 Uniden "micro" size radar detector ... \$107.95 RD25-A Uniden visor mount radar detector ... \$54.95

Bearcat® 200XLT-A

List price \$509.95/CE price \$239.95/SPECIAL
12-Band, 200 Channel • 800 MHz. Handheld Search • Limit • Hold • Priority • Lockout

Frequency range: 29-54, 118-174, 406-512, 806-956 MHz. Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz. The Bearcat 200XLT sets a new standard for handheld scanners in performance and dependability. This full featured unit has 200 programmable channels with 10 scanning banks and 12 band coverage. If you want a very similar model without the 800 MHz. band and 100 channels, order the BC 100XLT-A3 for only \$179.95. Includes antenna, carrying case with belt loop, ni-cad battery pack, AC adapter and earphone. Order your scanner now.

Bearcat® 800XLT-A

List price \$549.95/CE price \$239.95/SPECIAL

12-Band, 40 Channel • No-crystal scanner

Priority control • Search/Scan • AC/DC
Bands: 29-54, 118-174, 406-512, 806-912 MHz.
Now...nothing excluded in the 806-912 MHz band.
The Uniden 800XLT receives 40 channels in two banks. Scans 15 channels per second. Size 9¼" x 4½" x 12½". If you do not need the 800 MHz. band, a similar model called the BC 210XLT-A is available for \$178.95.

NEW! Uniden® MR8100-A

List price \$849.95/CE price \$486.95

12-Band, 100 Channel • Surveillance scanner

Bands: 29-54, 116-174, 406-512, 806-956 MHz. The Uniden MR8100 surveillance scanner is different from all other scanners. Originally designed for intelligence agencies, fire departments and public safety use, this scanner offers a breakthrough of new and enhanced features. Scan speed is almost 100 channels per second. You get four digit readout past the decimal point. Complete coverage of 800 MHz. band when programmed with a personal computer. Alphanumeric designation of channels, separate speaker, backlit LCD display and more. To activate the many unique features of the Uniden MR8100 a computer interface program is available for \$19.95. Due to manufacturers' territorial restrictions, the MR8100 is not available for direct shipment from CEI to CA, OR, WA, NV, ID or UT.

NEW! Ranger® RCI2950-A

List price \$549.95/CE price \$249.95/SPECIAL

10 Meter Mobile Transceiver • Digital VFO

Ful! Band Coverage • All-Mode Operation
Backlit liquid crystal display • Repeater Splits R/T • 10 Programmable Memory Positions
Frequency Coverage: 28.00000 MHz. to 29.69999 MHz.
The Ranger RCI2950 Mobile 10 Meter Transceiver has everything you need for amateur radio communications. The RF power control feature in the RCI2950 allows you to adjust the RF output power continuously from 1 watt through a full 25 watts output on USB, LSB and CW modes. You get a noise blower, roger beep, PA mode, mike gain, digital VFO, built-in S/RF/MOD/SWR meter. Frequency selections may be made from a switch on the microphone or the front panel. The RCI2950 gives you AM, FM, USB, LSB or CW operation. For technical info, call Ranger at 619-259-0287.



RELM
LMV2548B
Only \$289.95

OTHER RADIOS AND ACCESSORIES

XC365-A	Uniden Ultra Clear Plus Cordless Phone	\$89.95
CT785S-A	Uniden speakerphone cordless phone	\$109.95
BC55XLT-A	Bearcat 10 channel scanner	\$114.95
AD100-A	Plug in wall charger for BC55XLT	\$14.95
PS001-A	Cigarette lighter cable for BC55XLT	\$14.95
VC001-A	Carrying case for BC55XLT	\$14.95
BC70XLT-A	Bearcat 20 channel scanner	\$159.95
BC142XL-A	Bearcat 10 ch. 10 band scanner	\$84.95
BC147XLT-A	Bearcat 16 ch. 10 band scanner	\$94.95
BC172XL-A	Bearcat 20 ch. 11 band scanner	\$134.95
BC177XLT-A	Bearcat 16 ch. 11 band scanner	\$134.95
BC590XLT-A	Bearcat 100 ch. 11 band scanner	\$194.95
BC780XLT-A	Bearcat 100 ch. 12 band scanner	\$254.95
BC002-A	CTCSS tone board for BC590/760XLT	\$54.95
BC003-A	Switch assembly for BC590/760XLT	\$22.95
BC855XLT-A	Bearcat 50 ch. 12 band scanner	\$199.95
BC1-A	Bearcat Information scanner with CB	\$129.95
BC330A-A	Bearcat Information scanner	\$99.95
BC560XLT-A	Bearcat 16 ch. 10 band scanner	\$94.95
BP205-A	Ni-Cad batt. pack for BC200/BC100XLT	\$39.95
ATS808-A	Sangean shortwave receiver	\$159.95
ATS803A-A	Sangean shortwave receiver	\$159.95
ATS800-A	Sangean shortwave receiver	\$99.95
MS103-A	Sangean shortwave receiver	\$84.95
74102-A	Midland emergency weather receiver	\$39.95
77116-A	Midland CB with VHF weather & antenna	\$66.95
77118-A	Midland CB mobile with VHF weather	\$62.95
77913-A	Midland CB portable with VHF weather	\$79.95
76300-A	Midland CB base station	\$92.95
FBE-A	Frequency Directory for Eastern U.S.A.	\$14.95
FBW-A	Frequency Directory for Western U.S.A.	\$14.95
RFD1-A	AMI, IL, IN, KY, OH, WI Frequency Directory	\$14.95
RFD2-A	CT, ME, MA, NH, RI, VT Frequency	\$14.95
RFD3-A	DE, DC, MD, NJ, NY, PA, VA, WV Dir.	\$14.95
RFD4-A	AL, AR, FL, GA, LA, MS, NC, PR, SC, TN, VI	\$14.95
RFD5-A	AK, ID, IA, MN, MT, NE, ND, OR, SD, WA, WY	\$14.95
RFD6-A	CA, NV, UT, AZ, HI, GU Freq. Directory	\$14.95
RFD7-A	CO, KS, MO, NM, OK, TX Freq. Directory	\$14.95
ASD-A	Airplane Scanner Directory	\$14.95
TSG-G7	"Top Secret" Registry of U.S. Govt. Freq.	\$16.95
TTC-A	Tune in on telephone calls	\$14.95
CBH-A	Big CB Handbook/AM/FM/Freeband	\$14.95
TIC-A	Techniques for Intercepting Communications	\$14.95
RRF-A	Railroad frequency directory	\$14.95
ECC-A	Embassy & Espionage Communications	\$14.95
SMH-A	Scanner Modification Handbook	\$16.95
LIN-A	Latest Intelligence by James E. Tunnell	\$16.95
A60-A	Magnet mount mobile scanner antenna	\$34.95
A70-A	Base station scanner antenna	\$34.95
USAMM-A	Mag mount VHF ant. w/ 12' cable	\$39.95
USA-K-A	4" hole mount VHF ant. w/ 17' cable	\$34.95
Add \$4.00 shipping for all accessories ordered at the same time.		
Add \$12.00 shipping per radio and \$4.00 per antenna.		

BUY WITH CONFIDENCE

Michigan residents please add 4% sales tax or supply your tax I.D. number. Written purchase orders are accepted from approved government agencies and most well rated firms at a 10% surcharge for net 10 billing. All sales are subject to availability, acceptance and verification. Prices, terms and specifications are subject to change without notice. All prices are in U.S. dollars. Out of stock items will be placed on backorder automatically or equivalent product substituted unless CEI is instructed differently. A \$5.00 additional handling fee will be charged for all orders with a merchandise total under \$50.00. Shipments are F.O.B. CEI warehouse in Ann Arbor, Michigan. No COD's. Not responsible for typographical errors.

Mail orders to: Communications Electronics, Box 1045, Ann Arbor, Michigan 48106 U.S.A. Add \$12.00 per radio for U.P.S. ground shipping and handling in the continental U.S.A. For Canada, Puerto Rico, Hawaii, Alaska, or APO/FPO delivery, shipping charges are two times continental U.S. rates. If you have a Discover, Visa, American Express or MasterCard, you may call and place a credit card order. 5% surcharge for billing to American Express. For credit card order, call toll-free in the U.S. Dial 800-USA-SCAN. For information call 313-996-8888. FAX anytime, dial 313-663-8888. Order today. Scanner Distribution Center™ and CEI logos are trademarks of Communications Electronics Inc. Sale dates 12/15/90 - 6/30/91 AD #010591-A Copyright © 1991 Communications Electronics Inc.

**For more information call
1-313-996-8888**

**Communications Electronics Inc.
Emergency Operations Center**

P.O. Box 1045 □ Ann Arbor, Michigan 48106-1045 U.S.A.
For orders call 313-996-8888 or FAX 313-663-8888

Where The Shortwave Mysteries Are

When It Comes To Shortwave, They're All Over The Bands

BY HARRY HELMS, AA6FW

You want to catch fish? Drop your line where the fish are. Want to hear some amazing things on your shortwave radio? Then tune to 6840 and 7415 kHz!

I've been following covert and underground shortwave stations for many years (too many years, I sometimes think!), and I've noticed that certain frequencies seem to attract more than their fair share of really weird activity. These "hot spots" vary, but year-in and year-out 6840 and 7415 kHz deliver the goods. It's a rare night that I can't find at least one station from the Twilight Zone on one or both of those channels!

6840 kHz Madness

Table 1 is a listing of the signals I and others have logged on 6840 kHz within the past year. Just about every variety of English and Spanish numbers activity you can imagine has been heard there!

What's really fascinating about these receptions is how they defy the conventional explanation that four-digit numbers stations come from "our" side (the CIA) while five-digit stations are from "their" side (the KGB and the DGI—the Cuban intelligence service). It's hard for me to imagine that the CIA, KGB, and DGI have some sort of "gentlemen's agreement" to share 6840 kHz!

Another interesting point is that "Echo Zulu India" and "Echo Zulu India Two" are found on 6840 kHz. In the April, 1984 issue of *Pop'Comm*, Greg Mitchell presented some compelling evidence that these "phonetic alphabet" stations are operated by the Mossad, the Israeli intelligence service, for communications with their operatives around the world. I happen to think that's a reasonable conclusion, but why is the Mossad sharing the same frequency with the CIA, KGB, and DGI?

6840 kHz is also home to stations that do nothing more than just repeat two or three four-digit groups in Spanish. When I noticed these loggings, I did a search of my database of over 500 frequencies where unus-

ual signals have been heard in the past year with similar reports. Nothing was found. Thinking something was wrong with my computer software, I "dumped" the contents of the database file and checked each of the 500 frequencies manually. Still no match! Apparently, these signals are heard on 6840 kHz and nowhere else. But what kind of information could be conveyed by just two or three four-digit groups?

In trying to sort through all this, I remembered two pieces of information. A few years ago, there was a book called *The Spy Who Got Away* by David Wise. This was the story of Edward Howard, the first CIA agent known to have defected to the Soviet Union. In it, Wise wrote how Howard was trained by the CIA to receive and decode messages sent by shortwave radio as *five-digit* groups. At the time I first read this, I

Warrenton Training Center National Communication System Communication School's Authorized Frequency List.

AA 3215	AP 4890	BG 6874	BX 10896	CQ 15820
AB 3220	AQ 4920	BH 7650	BY 11036	CR 15840
AC 3237	AR 5065	BI 8062	BZ 11526	CS 14876
AD 3250	AS 5070	BJ 8186	CA 11606	CT 17630
AE 3300	AT 5090	BK 9052	CB 11692	CU 17660
AD 3980	AU 5097.5	BL 9112	CC 12186	CV 18560
AE 4061	AV 5115	BM 9206	CD 12190	CW 19470
AF 4460	AW 5207.5	BN 9284	CE 12318	CX 19490
AG 4520	AX 5250	BO 9460	CF 13392	CY 20269
AH 4540	AY 5360	BP 9470	CG 13554	CZ 20940
AI 4545	AZ 5790	BQ 9786	CH 13732	DA 22820
AJ 4580	BA 5810	BR 9888	CJ 14832	DB 23390
AK 4610	BB 5830	BS 9952	CL 14679	DC 24660
AL 4785	BC 5845	BT 10350	CM 14910	DD 26142
AM 4830	BD 5882.5	BU 10396	CN 15513	DE 27325
AN 4870	BE 6795	BV 10488	CO 15594	
AO 4885	BF 6840	BW 10698	CP 15732	

Table 1
Strange Stuff On 6840 kHz

Time	Description
0230	Four-digit Spanish numbers in AM
0230	Four-digit Spanish numbers in USB
0600	Five-digit Spanish numbers in AM
0220	Five-digit English numbers in AM
2300	3/2-digit English numbers in AM
2330	3/2-digit English numbers in USB
0200	"Echo Zulu India" repeated in AM
0200	"Echo Zulu India Two" repeated in AM
0240	"2137 7810" repeated in Spanish
0240	"1417 0997" repeated in Spanish
0240	"3698 0198 8921" repeated in Spanish
0230	"2732 9429" repeated in Spanish
0055	"56Z DE AMGQ AS BK" in CW, then five-letter groups
0240	Rapid Spanish chatter by man in AM

wondered if perhaps the author meant four-digit groups or if the five-digit groups were actually sent by radio or just used in a classroom situation.

All the attention people paid to the area around 7415 kHz to catch pirates resulted in the discovery that other unusual signals are found there, too. For example, five-digit *Russian* number groups read by a male announcer are often heard in eastern North America around 0130 and 0230. This happens to be the most commonly reported frequency for Russian language numbers stations.

Weird CW stations also lurk around 7415 kHz. One of the most commonly heard is a five-digit CW numbers station which apparently monitors pirate radio activity before beginning operation! Well-known pirate broadcasting expert Andy Yoder has caught this station starting operation *immediately* after a pirate station leaves the air. One curious aspect is that these stations usually use modulated CW (MCW), which is nothing more than Morse code sent via AM using audio tones to form the various characters. These stations sign on with an "interval signal" of a series of dashes repeated for several minutes.

The "Foghorn" also shows up around 7415 kHz at times. This signal defies easy

description, but sounds like a combined video game sound effect and coffee grinder, all electronically synthesized! The Foghorn operates for ten to twenty of being "on" followed by about a minute of silence. These signals are perhaps some sort of over-the-horizon radar, but their exact purpose and who's behind them isn't precisely known.

If you hear any pirates on 7415, let Ed Teach know about them at *Pirate's Den*. The other signals should be reported to Don Schimmel at *Communications Confidential*. See what new mysteries you can locate on 6840 and 7415 kHz!

The second piece of information was sent to me by *Pop'Comm* editor Tom Kneitel in early 1989. This was a copy of a "CS Authorized Frequency List" supposedly used by the "Warrenton Training Center of the National Communication System." The NCS, as it's known, was created by an executive order of President Kennedy back in 1963 and its basic purpose is to tie together all the communications facilities of the U.S. government of everything from routine business to national emergencies. The NCS is under the authority of the Secretary of Defense. "Warrenton" refers to the U.S. State Department's KKN50.

Figure 1 shows a copy of this list. Look down the list at frequency "BF." That happens to be 6840 kHz!

Putting all of this information together, it's my hunch that the transmissions heard on 6840 kHz are actually *training* broadcasts instead of actual espionage communications. The diversity of signals heard there make me suspect that the old theories about who is responsible for various signals aren't always correct. I wouldn't be too surprised if it turned out that some five-digit and phonetic alphabet transmissions originated from within the United States.

There are several National Communications System transmitter sites around the country, usually in conjunction with a military facility. (Some of these NCS facilities are even listed in local telephone books!) If you live near one, be alert for strong, local-like signals on 6840 kHz. You might discover something very interesting.

Even if you don't live near a NCS site, 6840 kHz is the place to start if you want to

hear unusual signals. And be sure to report your receptions to *Communications Confidential* so others can be aware of what's being heard there.

Pirates And CW Numbers

If you've never heard a pirate radio station, 7415 kHz is the place to start listening. During the "DX season" (late September to late April), 7415 and frequencies a couple of kHz above and below it are loaded with pirate activity, particularly on weekends. There's usually a lot of activity on holidays, such as the Fourth of July and Halloween, and a pirate is likely to show up around 7415 kHz anytime. The best time to tune is from sunset along the East Coast (about 2200 to 2330 UTC during the DX season) to about 0700 UTC.

A good way to keep up to date with pirate radio activity is through the *Pirate's Den* column each month in *Pop'Comm*. An even better way to stay current is to listen around 7415 kHz. This is because many pirate stations operate for only a few days or weeks before they leave the air. Sometimes this is because of a FCC bust, but is more usually because the operators get bored with pirating. You'll hear more pirates if you're located in the eastern and central parts of North America, since that's where most pirates are located and most pirates use low power, usually less than 100 watts.

PC

East Coast Pirate Radio



This is to confirm your reception of ECPR on 7415 kHz, from 0434 UTC until 0516 UTC on 22 April 1990.

Transmitter: 100w

N. Tesla - Chief Engineer

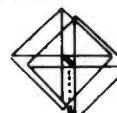
Antenna: 1/2 λ Dipole

Look for more 40500 & 20800 on 48m

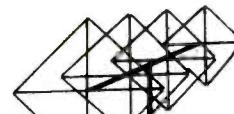
SE SIGNAL ENGINEERING's
High Performance CB Antennas

SUPERHAWK

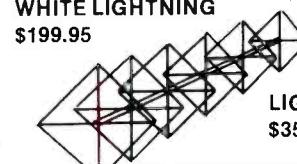
\$114.95



Goldenrod
45 Mobile
Antenna

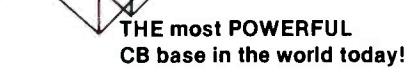


SPYDER A
\$35.95



WHITE LIGHTNING
\$199.95

LIGHTNING 6
\$359.95



THE most POWERFUL
CB base in the world today!

ALL SE PATENTED rotary beams are true quads and OUTPERFORM their counter parts (quad/yagi types). SE's patented SFS matching system makes SE QUADS the most technologically advanced antennas in the world today.

If your dealer doesn't have SIGNAL ENGINEERING, write or call for full specs. DEALER Inquiries invited.

SIGNAL ENGINEERING

2624 Fayette Drive, Mountain View, CA 94040
(415) 948-3833

Radio, Way Back When

Leafing Through The Pages Of History

BY ALICE BRANNIGAN

Among those readers who responded to our recent inquiry concerning the broadcasting studio in Renfro Valley (KY) was Larry Baysinger, the Assistant Chief Engineer of WHAS (840 kHz/50 kW), Louisville, KY. Along with the data Larry passed to us about Renfro Valley, he included an excellent history he had compiled about WHAS, one of America's pioneer broadcasters. Inasmuch as we haven't previously spotlighted this station, we have selected some of the information from Larry's lengthy comprehensive history.

He recalls how, in 1922, the *Louisville Courier-Journal* obtained a license for Kentucky's first broadcasting station. The Dept. of Commerce license specified the call letters as WHAS, with the station to broadcast weather on 618 kHz, and regular programming on the common 833 kHz frequency shared by all broadcasters at that time.

The original thought was to locate WHAS right in the newspaper building, but the plan was dropped for fear that the noise and vibrations of the printing presses would cause problems to the radio equipment. WHAS was then built in space rented from the Fireproof Storage Company, located next door to the newspaper. The antenna system, however, was put up on the Courier-Journal building.

The antenna, which was completed by July 15, 1922 consisted of two sixty-foot towers supporting an inverted "L" made up of four 130-ft. wires spaced 6-feet apart, all 7-strand number 20 phosphor-bronze wire. The counterpoise was a wire grid covering 95 by 85 feet on the building's roof.

WHAS took to the airwaves for the first time at 7:30 p.m. on July 18, 1922, running 500 watts. In November of 1922, WHAS was allowed to move off of crowded 833 kHz to the relative seclusion of 750 kHz, which had been opened to broadcasters. By the end of the first year of operation, WHAS had received about 64,000 letters from listeners, including reports from DX'ers in Canada, Central America, and the Azores.

The government needed more frequencies to accommodate the broadcasters who were clogging the available channels. That resulted in frequency reallocations, putting WHAS on 650 kHz by the summer of 1927. But the Federal Radio Commission was just coming into existence and taking over from

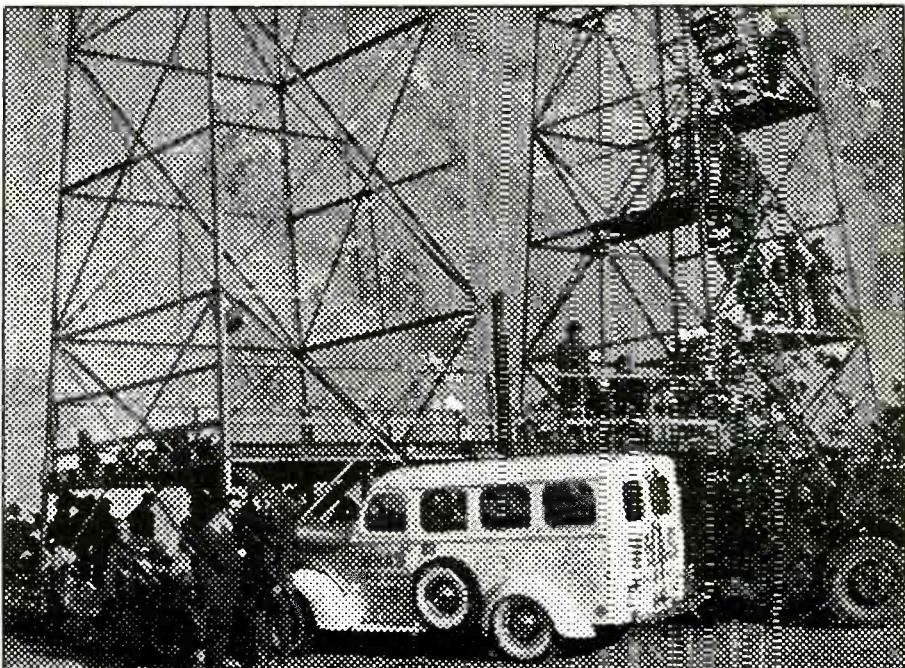
the Dept. of Commerce. The FRC wanted frequency allocations set up their own way and, in early 1928, shifted WHAS to 930 kHz. At that time, WHAS was allowed to move its transmitting site to near Jeffersontown, KY.

A transmitter building was built to house the RCA Model 5-A (5 kW) transmitter. Two 200-ft. towers were put up to support the antenna system, which was a modified "fan" type. A 190-ft. horizontal cable ran between the two towers and supported the antenna's 177-ft. vertical wire elements. The new facility began operation in November of 1928, but on yet another new frequency, 820 kHz. In 1929, the power was increased to 10 kW, and it went to 20 kW by a year later. In December of 1933, WHAS was authorized for 50 kW operation. (In 1936 applied unsuccessfully for experimental authority to use 500 kW.) WHAS moved to its present 840 kHz frequency just prior to WWII.

The next major technical revamp came in 1938. In March of that year, WHAS began using its new Western Electric 407A (50 kW) transmitter fed into its new 654-ft. single vertical radiator. This transmitting site



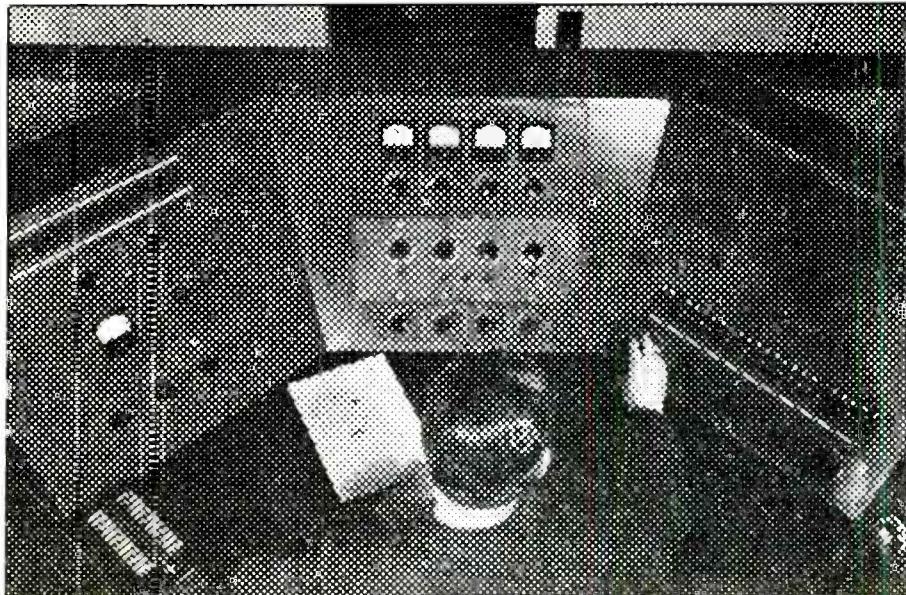
Orrin W. Towner, the Chief Engineer at WHAS during the 1930's and 1940's. He's shown at the station's transmitter control panel



The WHAS mobile news unit on location at Ft. Knox during WWII.



The WHAS transmission line end seal during the 1940's.



WHAS master control in the 1940's.

had been put up just off of US 60 near Eastwood, KY. This was eighteen miles from the half-million modern dollar WHAS studios that were opened in October of 1937.

In 1949, the WHAS AM/FM/TV studios were opened in the new Courier-Journal and Louisville Times building. The TV station (then on Channel 9, but now on Channel 11) commenced operation in 1950. In 1968, these studios were replaced by a new two-story building on Chestnut Street.

In 1944 and 1945, WHAS established W9XEK at the Eastwood site. This was an experimental FM station operating on 92.3 MHz during the period when the FM band was still between 40 and 50 MHz. The W9XEK experiments aided in the decision

to relocate the FM band at its present 88 to 108 MHz spot. Between 1947 and 1950, WHAS operated 10 kW FM station WCJT on 99.5 MHz, the South's first commercial FM station.

During 1949, WHAS sent out a daily FAX newspaper over its own station running 500 watts on 25.25 MHz. Another interesting experiment took place in the early 1960's. At that time (along with several other clear channel stations, such as WLW, WSM, WSB, and WHO), the station sent narrow-shift (19 Hz) RTTY along with its regular AM programming. The RTTY could be received only on special receivers and was being tested as part of a national emergency communications system.

The Western Electric 407A transmitter was relegated to stand-by use in the mid-60's. The main transmitter became a new General Electric unit. Ten years later, the GE transmitter was replaced by a Continental 50 kW transmitter. All three transmitters are still on-site at Eastwood.

WHAS's present FM outlet began operations on 97.5 MHz in September of 1966 with a classical music format and the call letters WHAS-FM. In the 1960's the station went all-news with the call letters WNNS. In 1977, this station became WAMZ, running country music.

And what of the Eastwood site? In 1985, the 47-year old tower blew down in a storm. WHAS operated with a makeshift antenna



New WHAS facilities, still under construction in the late 1930's.



The original WHAS studios in 1922, above the fireproof storage.



A WHAS remote in the early 1950's. Note the engineer in the foreground manning the reel-to-reel tape machine.

for seven months until a new 654-ft. tower and ground system was installed.

In 1986, the WHAS family of stations were sold. The TV station was purchased by the Providence Journal newspaper. The radio stations were acquired by Clear Channel Communications, Inc.

Thanks to Larry Baysinger for providing us with this invaluable background information on WHAS.

Broadcasting Exhibit

The development of radio technology and its impact on society during the Great Depression is explored in a new exhibition *Radio Daze: The Radio in American Life, 1920-1940*. The exhibit opens at the Strong Museum (1 Manhattan Square, Rochester, NY 14607) on February 16th, and will be on view until June of next year.

The exhibit explains how radio works and explores the influence that scientists, inventors, and hams had on the development of radio's technology before 1914. It also shows the early days of broadcasting, and features audio excerpts from actual programs from the 1920's, plus displaying equipment of the era. The exhibit includes coverage of governmental control of broadcasting; advertising's influence on radio; types of programming. There are still photos, old time radios, and audio excerpts.

Radio Daze is presented with the research assistance of the Old Fashioned Wireless Association. Admission is \$2 for adults; \$1.50 for students (with ID) and senior citizens; and \$.75 for children aged 4 to 16; younger children and members of the Strong Museum are admitted free. Parking is free. Exhibit hours are Monday through Saturday from 10 a.m. to 5 p.m.; Sundays from 1 p.m. to 5 p.m. The museum is accessible to persons with handicaps. For more information, call (716) 263-2700, Extension 208.

This 1930's QSL from WHAS offered DX'ers the chance to collect the five different station stamps, sent upon receipt of five reception reports. (Courtesy Joe Hueter, Philadelphia, PA.)

Greetings
from
WHAS
LOUISVILLE, KY.



Please Always Mention
Name of Programme



We hope you will listen and report our station a second time, whereupon we shall send Stamp No. 2; a third time, Stamp No. 3, and so forth until you have our full collection of five radio stamps. These are sent with no expense to you. Merely inclose an addressed stamped envelope when making your subsequent reports.

Wishing you success,
Very truly yours,
THE WHAS STAFF.

Television DX

An Illinois reader, who requests that we don't print his name, sent the column a very appealing assortment of TV verifications dating back into the 1950's. One card was a real eye-catcher, and that was the QSL from Houston's TV Channel 2, KPRC-TV. The station was verifying reception that occurred late one afternoon in June, 1959.

Instead of the letter or picture postcard veri sent out by about half of the TV stations in the 1950's, KPRC-TV sent out a regular QSL card, and referred to itself as *The Nation's "DX" Station*. That would lead you to believe that they got plenty of reception reports, and they encouraged the TV DX'ing hobby. Nice change of pace from a couple of the early TV veries we have seen that seem almost puzzled by a request from a distant hobbyist for a verification. By the 1960's, TV stations began to get hip.

As a postscript to the 1959 QSL from

Thank You for Your Report of Reception of This Station On

Nov. 10 1947

WHAS
LOUISVILLE, KY.
50,000 WATTS CLEAR CHANNEL 840 K.C.

A QSL from WHAS sent out in 1947 displayed the callsign in blazing red. (Courtesy Tom Kneitel, NY.)



The Strong Museum in downtown Rochester, NY. This month they are kicking off a large exhibit dedicated to pre-1940 radio.



A 1959 verie for DX reception of Houston's TV Channel 2.

KPRC-TV, at that time the station listed its antenna as being 749-ft. above sea level. Now they use an antenna listed as 1,878-ft. tall, 1,918-ft. above ground. KPRC-TV started broadcasting in 1949 and is the NBC affiliate in Houston.

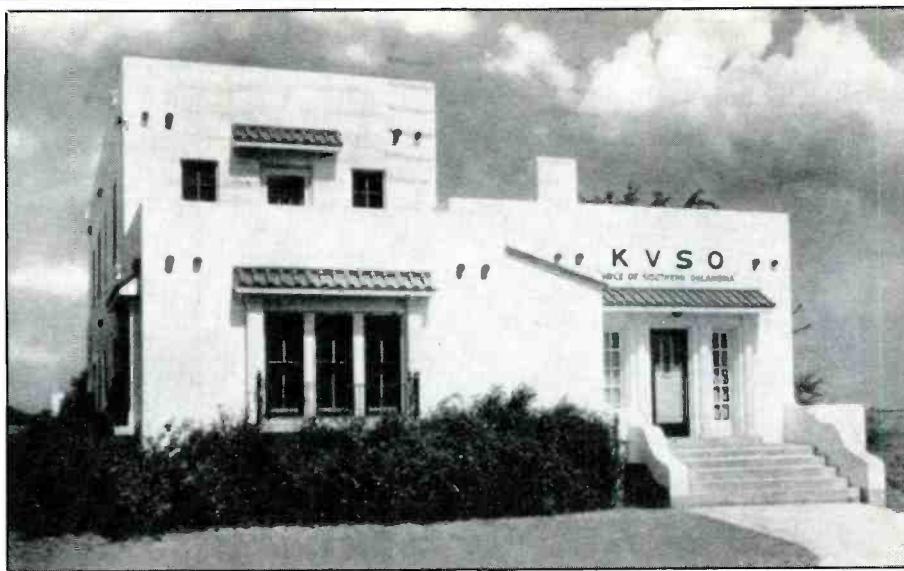
Everything's OK

The Voice of Southern Oklahoma is what the call letters KVSO stood for. That station went on the air in September of 1935, running 250 watts (100 at night) on 1210 kHz under the direction of Albert Riesen. Licensed to the Ardmoreite Publishing Co., it was rather a bold venture inasmuch as the 1930's were an especially rough era for Oklahoma.

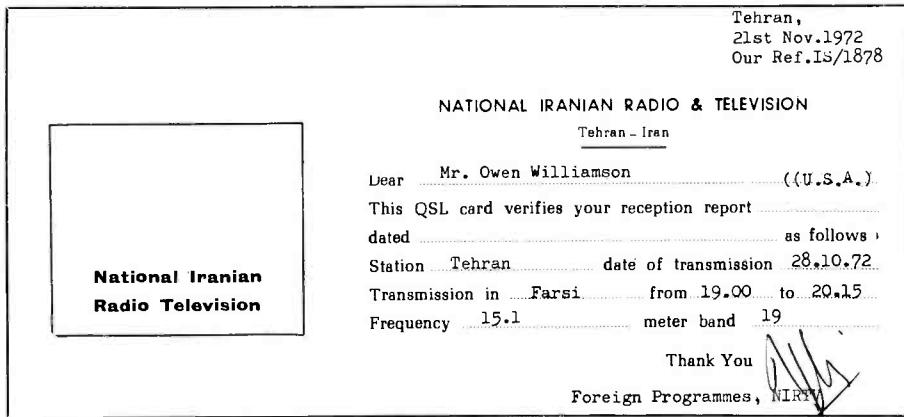
KVSO had its transmitting plant at Chickasaw and Northwest Boulevard, and used a 184-ft. tower for its antenna. But, Oklahoma and its feisty people survived the 1930's, and so did KVSO. When the FCC jiggled frequency assignments as the 1940's were ushered in, KVSO found itself moved to 1240 kHz.

By 1946, KVSO was owned by John F. Easley, but still managed by Albert Riesen. The transmitter stayed at its original location, but the studios had checked into the Hotel Ardmore.

In September of this year, KVSO will observe its 55th year of service to Ardmore. Presently, KVSO remains on 1240 kHz, but runs 1 kW with its oldies format. Since 1986 the station has been owned by Sunburst Broadcasting, Inc. As of 1974, there's also



Here's a view of KVSO, Ardmore, OK in 1941.



Owen Williamson included this 1972 QSL from NIRT with a collection of veries he donated to the POP'COMM archives.

been an FM affiliate, a country music outlet called KKAJ on 95.7 MHz.

Shah Enough

Can anybody remember back when we were friendly with Iran? Those were the days when we were pumping those good old greenstamps into the coffers of Iran's Shah, Mohammed Reza Pahlavi. Until he fled Iran in 1979, we had a friend in Tehran. After 1979, it was a new ball game, and you know that story only too well.

Still, when Owen Williamson, of El Paso, TX presented us with a sizable QSL collection, we noted that it contained a verie from National Iranian Radio & Television (NIRT). It was dated 1972, quite a few years before our man in Tehran...er...ran!

Owen's QSL was for shortwave reception on 15100 kHz (actually 15084 kHz, although the QSL doesn't indicate so) for a Farsi program. Ah, those were the days before the VOIRI.

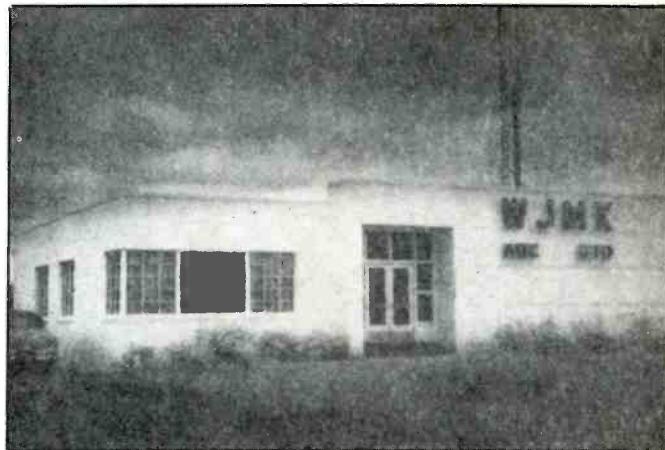
But, let's go back, even before both VOIRI and its predecessor, NIRT. Before

then, in the 1950's and 1960's, there was the Iranian Government's Department of Publication and Broadcasting. This was Radio Iran on 1340 kHz (10 kW) medium-wave, plus 20 kW shortwave 11703 and 15100 kHz. Actually, this is what later evolved into the pro-Western NIRT and set up in grand style with offices on Pahlavi Road (a boulevard the Shah named in honor of himself), in Tehran. As NIRT, there were shortwave transmitters running from 100 to 350 kW on nine frequencies, plus dozens of mediumwave outlets pushing anywhere from 1 to 600 kW.

When the Shah beat a hasty retreat on his flying carpet, he didn't take along the palace, the 18-karat gold telephones, the 18-karat gold bathtubs, the fleet of Rolls Royces, or the NIRT. At least he still had the Swiss bank accounts, some art treasures, and a few meager condos and other real estate holdings around the world to offer him some small degree of solace. The ayatollahs took control over whatever the Shah couldn't carry, and that included NIRT. That was turned into the *Voice of the Islamic*



A mystery station for February shows a scene in Hudson Falls, NY.



The old WJMX building, shown here, was torn down a few years ago.

Republic of Iran (VOIRI), which they expanded on shortwaves. Certainly, American dollars contributed greatly to the original construction of the NIRT, which is now the anti-Yankee VOIRI.

Next time you're nibbling Beluga caviar and listening to VOIRI, think about it, you'll be eating your own words. Literally.

February Mystery Photo

Your record for identifying mystery photos is excellent, and now readers are specifically asking for more of them. Pleased to oblige!

We came across a picture postcard of what appears to be a restaurant or other roadside business establishment. The card

isn't dated, but none of the vehicles look to be newer than early 1930's vintage. To the left side of the photo the building has an attached portico, and right next to that there's a radio tower that looks to be about 60-ft. in height (even though its top isn't included in the photo, and the entire tower doesn't show up all that well).

A caption on the postcard reads "Colonial Display House and Radio Station, Hudson Falls, N.Y." We weren't able to find a listing for any early broadcasting station in Hudson Falls, although we did spot one 50 watt station in nearby (and larger) Glens Falls that existed in 1930 and 1931. That was WBGF on 1370 kHz, owned by Herbert H. Metcalfe and W. Neal Parker, of 10 Numan Street.

Glens Falls is only three and a half miles down the road from Hudson Falls, and WBGF appears to us to have been the only broadcaster active in the area during the time period of the photo. Whatever the Colonial Display House was, the caption on the postcard would lead you to believe that the radio station was a part of the overall operation there. Whether this was in any way related to WBGF is only speculation, and the "GF" in the call letters would lead you to believe that it really was in Glens Falls and not in adjacent Hudson Falls.

If any readers have better guesses, or really know what radio station used this tower, we are anxious to get the information to run in a future issue.

970 On Your Dial

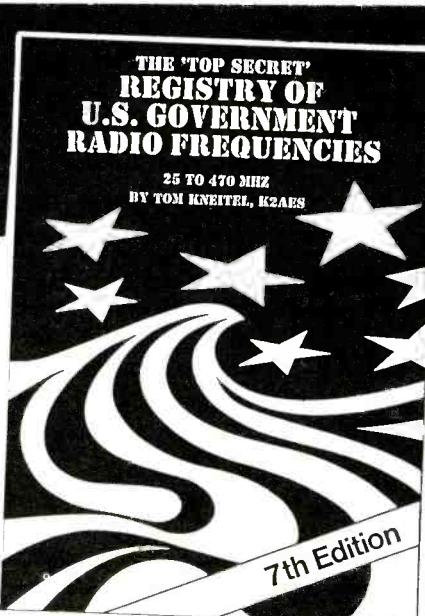
Ken Evans, of Quinby, SC passed along information on WJMX, 970 kHz, 5 kW, of Florence, SC. He tells us that WJMX went on the air on July 13th, 1947, from its facilities at the intersection of I-95 and US 52. They stayed at this location until 1987. When they moved out, the old building was torn down and the site is now occupied by a service station.

Presently, the WJMX studios are located in a modern office building on East Evans Street in downtown Florence, with the

YOU AIN'T HEARD NOTHIN...YET!

Since 1967, CRB Research has been the world's leading publisher and supplier of unique hobby and professional books and information including:

- Scanner Frequency Guides
- Shortwave Frequency Guides
- Military/Federal Communications
- Broadcast Station Registries
- Undercover Communications
- Survival Communications
- Covert Operations
- Electronic Espionage
- Surveillance
- Monitoring
- Cryptography & Codes
- Bugging
- Wiretapping
- Communications Antennas
- Electronics & Projects
- Regency Scanner Directories
- Computer Technology
- & Other Related Topics!



New titles are constantly being added to our exciting catalog. If it's interesting and unusual, we've got it. You'll see! Ask for our latest FREE catalog.

CRB RESEARCH
P.O. Box 56 Commack, NY 11725

CIRCLE 171 ON READER SERVICE CARD

Frank Jenne, C.E. 2 way
Radio Logbook page of Bomb drop
day.

3-1-58 740P-750P Tested with K1125Z
" 800P-845P Transmitted music pages
from Dream Ranch Barn Radio
3-8-58 730P-750P Tested with K1125Z
" 800P-845P Transmitted music
page from Dream Ranch Barn Radio
3-11-58 405P-420P Talked with K1125Z
Re news #9.
425P-435P Transmitted News
#9 Bomb Drop at Mars Bluff #9
445P-550P Talked with K1125Z
Re news #9.
740P-750P Talked with K1125Z
Re news #9.
800P-840P Transmitted News Re
Bomb - from Airport
830P-835P Talked with K1125Z
840P-847P Trans. news from
news Bluff #9
930P-950P Trans. news conf
from Air Force (Re Bomb)
3-12-58 1000A-1015P Trans. news from
Mars Bluff #9
1155A-1210P Trans. news Conf
from Mayor's office #9

The March 11, 1958, page from the WJMX two-way radio logbook indicates the station "transmitted news of bomb drop at Mars Bluff."

AM/FM transmitters outside the city. WJMX has an Adult Contemporary format. The FM outlet (103.3 MHz) plays CHR.

When WJMX first went on the air it was owned by the Atlantic Broadcasting Co., which produced many local programs. The all-night deejay was Charlie Mason; Dave Thomas had a daily gospel program; there was a daily country music show with Slim Mims and his Dream Ranch Boys; Ervin Melton gave farm and other news several times each day; Bob Forbes was the morning man. The staff announcer was Graham Caddell. The resident zany at WJMX was known as Uncle Ugly who held down the fort late afternoons. There were also programs from the ABC Network.

One of the more exciting local events took place on March 11, 1958. That's the day the USAF accidentally dropped an atomic bomb on nearby Mars Bluff, SC. Luckily, it didn't detonate. But the WJMX Chief Engineer, Frank Jenne, duly noted in the station's two-way radio logbook that he had transmitted news of the "bomb drop" to the WJMX mobile unit. The bomb drop incident was immortalized on the *National Lampoon Bicentennial Calendar* as a tongue-in-cheek "black day in American history."

A Wrap

Where has the time gone? And still a big stack of things to share with you. Oh well, I hope that you'll join us in March. Thanks to all who sent old time radio clippings, old QSL's, old photos about broadcasters, comments, and kind words. See you in March, same time, same station!

PC

The Best* Just Got Better!

The Eavesdroppers™ now includes our new Zap Trapper™ Electronic Gas Tube Lightning Arrestors. Receive-only design shunts damaging transients to ground at only 1/7th the voltage buildup of the available 200 watt transmit-type arrestors, providing maximum solid state receiver protection.

Protect your investment - combine an excellent shortwave receiving antenna with the best receiver protection money can buy.



- Completely assembled and ready to use
- Only 42" overall length
- 8 trap circuits permit reception on all shortwave bands, 11-90 meters
- All connections soldered and enclosed in ultrasonically-welded, hermetically-sealed trap covers
- Includes 50' of 450 lb. test nylon rope

Model T includes 100' twinlead feedline

Model C includes weatherproofed center connector for your coax & coax sealant

- Either model \$79.95
- UPS for lower 48 states \$4.00
- COD add \$3.00, IL add 7% sales tax
- Foreign shipping quoted

"The best...built like an antenna should be." —Larry Magne in *World Radio TV Handbook*

"Our best seller." —EEB in their recent ads and catalogs

"Now in use in 45 countries." —Gifer Shortwave in 1983

Antenna Supermarket

P.O. Box 563 Palatine, IL 60078 Tel (708) 359-7092 Fax (708) 359-8161

At your dealer or direct • Visa & Mastercard accepted

CQ Amateur Radio Buyer's Guide

You can buy with confidence when you have all the facts. The 1991 Equipment Buyer's Guide gives you in-depth coverage of HF/VHF/UHF rigs and accessories. All the information is here in one handy, concise directory with descriptions, technical specifications, model numbers, retail prices and photographs. How do you get a ham license? What's the latest on the code-free license? What equipment do you really need to work the satellites? Should you buy a computer for your shack? How do you add computer control to your rig? You can buy with confidence when you have all the facts. Order the 1991 Equipment Buyer's Guide today!

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

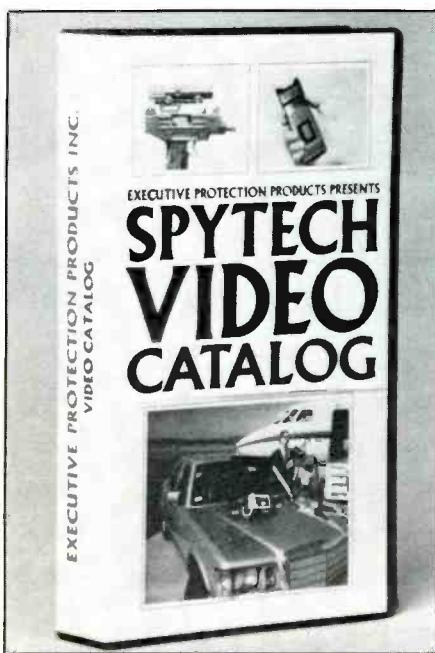
BOOKS YOU'LL LIKE

R. L. SLATTERY

All The Better To See You

Let's start off with some news of relevant videos.

Last November we told you about the interesting Radio Newyork International (RNI) hour-and-a-quarter video that had been brought out by the (former) offshore broadcasters. At that time we noted that the video was very engrossing, although a little rough around the edges in its production. The RNI execs turned the material they had over to RNI staffer Randi Steele and asked him to give it a little more polish. He worked it over, smoothing off some of the rough edges, and added some more material.



What's now emerged is a more slick looking RNI videotape that runs about 90 minutes. It has a tour of the radio facilities aboard the former radio ship *M/V Sarah*, official FCC tapes of the ship being raided, news tape, and other documentary footage.

This VHS format tape is (as before) \$29.95. It may be ordered from RNI, P.O. Box 270, Flushing, NY 11352. RNI has most recently been heard four hours every Sunday evening at 0200 UTC over shortwave WWCR, 7520 kHz, in Nashville. An excellent program, too!

If you suspect your phone is tapped or your home or office is bugged, or if you feel you need personal protection, you'll probably be interested in a new video catalog from a company called Executive Protection Products, Inc.

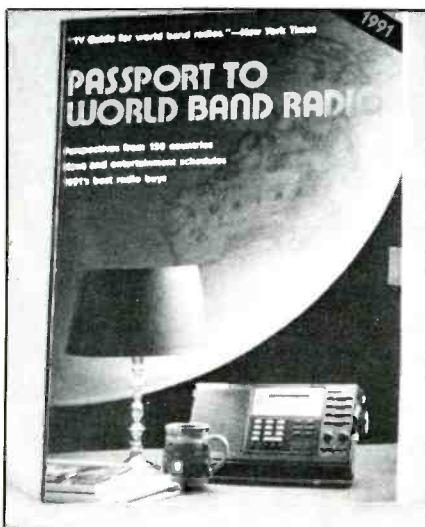
This video features dozens of items the company has available in the personal protection and security field. Along with des-

criptions, it is loaded with little-known tricks used by protection and security professionals. Some of the things covered in this video are listening and detection devices, recorders, transmitters, body "wires," phone loggers, hidden transmitter detectors, voice changers, scramblers, contact microphone—more than thirty items in all.

The VHS format video is \$14.95 from Executive Protection Products, Inc., 1325 Imola Ave. West, #504, Napa, CA 94559.

Your Passport

The 1991 version of *Passport to World Band Radio* is a 384-page book that, as usual, keeps getting better with each passing year. If you're into tuning the world's international broadcasting bands (2.3 to 26 MHz), this reference volume will become a much-used factor in your efforts this year.



The primary feature of the grid-section. In it are very useful hour-by-hour activity charts for each and every known broadcast frequency. So, if you should tune across the 49 meter band and hit a frequency with some interesting station you can't quite identify, all you do is look it up in the grid and find out which station uses that frequency at that hour of the day, its power, language, whether it is normally jammed, and other vital facts. Nothing else like it.

Stations in 150 nations are listed in these grids, so coverage is very comprehensive and based upon actual monitoring from various world locations.

Also on the 1991 *Passport* are some useful features written by knowledgeable people on the topic of international broadcasting. A high point of each edition is the Buyer's Guide which has detailed reviews of the current batch of shortwave receivers, in-

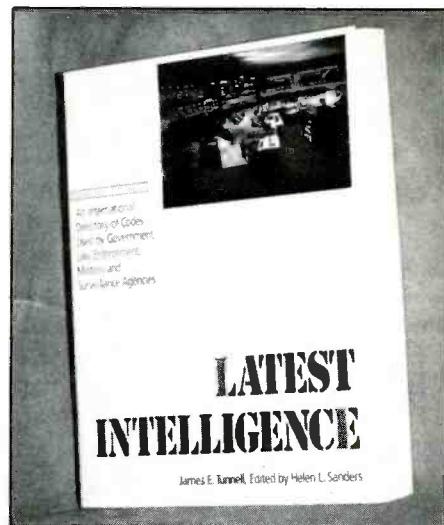
cluding portables—the best as well as the worst, and everything between. Very perceptive and incisive.

The MSRP of the 1991 *Passport to World Band Radio* is \$16.95 in the USA. It's available from many leading stores and mail order dealers in communications products and books. Well worth having for ready reference. Even if the only part of this attractive book you use is the big frequency grid section, you'll feel it was well worth having.

For All Federal Fans

The continuing popularity of Kneitel's "Top Secret" *Registry of U.S. Government Radio Frequencies*, now in its 7th Edition, attests to the boundless curiosity about federal activities by communications interests. If you're one of the many who are intrigued by such matters, *Latest Intelligence*, by James E. Tunnell, is another fine volume to add to your reference library.

Tunnell has, for the first time, collected the meanings of more than 15,000 terms, codes, phrases, abbreviations, acronyms, agents' jargon and buzzwords used in the federal law enforcement, surveillance, military, and related fields, including aeronautics. It has now been published in a thick



304-page book that will be of immense use to communications monitors, the news media, and many others interested in deciphering the unclassified cryptography of the world's most powerful intelligence gathering organizations.

But wait, there's more! The author has also included some juicy extra features! There are loads of federal frequencies in this book, including Mystic Star, Border Patrol and Immigration, Dept. of Justice, Treasury Dept., plus cellular car phones, and more. He's included a big reference list of publications and sources, and all sorts of other incidental

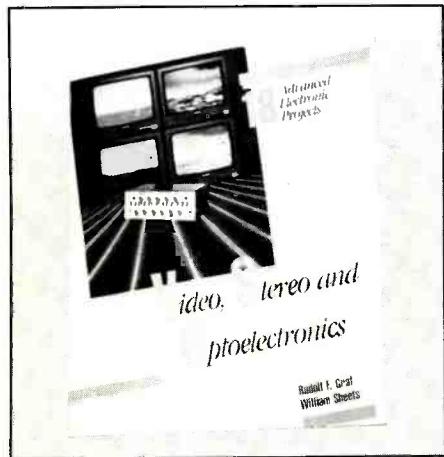
information that should be invaluable to federal fans.

This is an excellently prepared reference volume which we recommend highly. It encompasses an enormous amount of fascinating and very useful federal data, the majority of which is not available in any other published sources.

Latest Intelligence is available at \$16.95, plus \$2 postage from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. Residents of NY State, please add \$1.27 sales tax.

Down With Boring Projects!

Tired of do-nothing gadgets and gizmos—useless circuits whose only purpose is to beep or flash? A new 356-page projects book called *Video, Stereo, and Optoelectronics*, by Rudolf F. Graf and William Sheets offers you eighteen advanced electronics projects that serve useful purposes.



They include cordless headphones, video-effects generator, FM broadcast receiver, shortwave converter, FM stereo transmitter, longwave receiver, and other original designs using RF and digital techniques. A few projects are for photographic use.

This book has plenty of photos, charts, tables, and schematics, also layouts of PC boards. While the information given is very lucid and well done, the projects are best suited to experimenters with some previous experience building projects. That is, these projects are excellent, but this isn't a book of first projects for beginners who aren't yet quite certain which end of the soldering gun they're supposed to hold.

Video, Stereo, and Optoelectronics is \$18.95, plus \$3 postage from TAB Books, Blue Ridge Summit, PA 17294-0840. Ask for book #3358. Residents of PA, NY, and ME, please add sales tax.

In Addition . . .

Here's one we haven't reviewed in the flesh, but the press release looked interesting. It's called *Potential Use of Spread Spectrum Techniques in Non-Government Applications*, being a complete reprint (with illustrations) of a 1980 report prepared under

**POTENTIAL USE
OF
SPREAD SPECTRUM
TECHNIQUES
IN NON-GOVERNMENT APPLICATIONS**

PLUS COMPREHENSIVE REFERENCES AND ILLUSTRATIONS

by Walter C. Scallan

© From Aegean Park Press

Spread Spectrum technologies have existed primarily in military and aerospace environments, where the usual objectives are to provide resistance to jamming, multipath and interception. Spread Spectrum techniques may also have non-governmental applications. This book covers these non-governmental applications.

an FCC contract. If you're interested in learning about spread spectrum technology, this could be a fine way of approaching the task. The book is organized into six major sections, plus references and appendices. It is primarily a nontechnical presentation. The 210-page book is \$28.80, plus \$1 postage, from Aegean Park Press, P.O. Box 2837, Laguna Hills, CA 92654. Residents of CA, please add 6% sales tax.

The latest edition of *The Equipment Directory of Audio-Visual, Computer & Visual Products* was recently announced in its 36th Edition. The press release says it lists 2,500+ products in 200+ categories, with illustrated listings showing specs, prices, applications, and other details. Information is provided relating to manufacturers, with names and addresses. This guide is \$45 from The International Communications Industries Association, 3150 Spring St., Fairfax, VA 22031-2399. We didn't see a review copy, however.

PC

**FREE
SAMPLE
COPY!**

ANTIQUE RADIO CLASSIFIED

*Antique Radio's Largest-Circulation
Monthly Magazine*

Articles - Classifieds - Ads for Parts & Services
Also: Early TV, Ham Equip., Books,
Telegraph, 40's & 50's Radios & more...

Free 20-word ad each month. Don't miss out!
Free Sample. 6-Month Trial - \$13.
1-Year: \$24 (\$36 by 1st Class). Foreign - Write.
A.R.C., P.O. Box 802-T6, Carlisle, MA 01741

**High Performance
800MHZ**

- Enjoy the best possible reception
- Hear signals other antennas miss
- Astonishing performance outside
- Hear 10 times more signals when mounted directly on scanner

Only **\$19.95**

- Free shipping (Continental USA)
- Money back guarantee

MAX System™
GROUND PLANE ANTENNAS
CK-MO-MC-VISA Accepted (MA add 5% sales tax)

Send payment to: Cellular Security Group,
4 Gerring Rd., Gloucester, MA 01930
Or charge by phone: (508) 281-8892

CIRCLE 120 ON READER SERVICE CARD

**Add New Enjoyment To Your SW Receiver
with the *MICRODEC™ Decoder**

\$199
LIST PRICE \$229.95

MICRODEC™ decodes MORSE, RTTY, and ASCII to ALPHANUMERIC CHARACTERS

- Automatically tracks MORSE code speeds from 5 to 70 WPM
- Decodes 60, 67, 75, 100 wpm RTTY and 110, 330 BAUD ASCII
- Standard ASCII port to interface with your computer
- Internal practice code oscillator
- Standard cockpit green display (red & yellow optional)
- Power switch/Volume control/Internal speaker

SHIPPING AND HANDLING: Continental United States add \$8.50 for UPS ground. Florida residents add 6% sales tax. Other types of Express shipments and foreign destinations will be quoted on request.

METHODS OF PAYMENT: MasterCard, VISA, Money Orders, Certified Checks, and Personal Checks. (Please allow two weeks for personal checks to clear.) QUANTITY DISCOUNT FOR HAM/SWL CLUBS. Dealer Inquiries Welcome.

SOMERSET ELECTRONICS, INC.
1290 HIGHWAY A1A, SATELLITE BEACH, FL 32937 • ORDER & FAX: (407) 773-8097

CIRCLE 121 ON READER SERVICE CARD

Communications Frequencies Juggled

It's Not Easy Keeping Up – But Here They Are!

BY DON SCHIMMEL

In the Spring of 1990 the Federal Communications Commission released several Public Notices detailing frequency changes that would take place for Maritime Mobile stations effective 0001 hours UTC on 1 July 1991. These changes were necessary in order to have US Rules conform to revisions in the International Radio Regulations adapted by the Final Acts of the World Administrative Radio Conference for the Mobile Services held in 1987 in Geneva, Switzerland.

Other possible changes being reviewed in 1990 were: Ship station changes for calling and safety frequencies and Morse Code working frequencies.

In the frequency list for the narrow-band direct printing (NDBP) and data transmissions, four frequency pairs (indicated by an *) are subject to change.

Some of the published changes have been carried in the *Pop'Comm Communications Confidential* column in recent months. The remaining changes, too extensive for inclusion in the column, are listed here. These cover the NDBP and Data transmission frequencies and the frequencies for stations operating duplex radiotelephony for public correspondence. These listings will be of interest to those SWL'ers who enjoy monitoring ship/shore radio-telephone traffic and ship/shore RTTY activity. With the foregoing as a background, here are the frequencies.

Good listening!

Duplex Public Correspondence Channels Carrier Frequencies (kHz)

Channel Number	Coast Transmit	Ship Transmit
401	4357.0	4065.0
403	4363.0	4071.0
404	4366.0	4074.0
405	4369.0	4077.0
409	4381.0	4089.0
410	4384.0	4092.0
411	4387.0	4095.0
412	4390.0	4098.0
414	4396.0	4104.0
416	4402.0	4110.0

Channel Number	Coast Transmit	Ship Transmit	Channel Number	Coast Transmit	Ship Transmit
417	4405.0	4113.0	1631	17332.0	16450.0
418	4408.0	4116.0	1632	17335.0	16453.0
419	4411.0	4119.0	1641	17362.0	16480.0
422	4420.0	4128.0	2201	22696.0	22000.0
423	4423.0	4131.0	2205	22708.0	22012.0
604	6510.0	6209.0	2210	22723.0	22027.0
605	6513.0	6212.0	2214	22735.0	22039.0
802	8722.0	8198.0	2215	22738.0	22042.0
803	8725.0	8201.0	2216	22741.0	22045.0
804	8728.0	8204.0	2222	22759.0	22063.0
805	8731.0	8207.0	2223	22762.0	22066.0
807	8737.0	8213.0	2227	22774.0	22078.0
808	8740.0	8216.0	2228	22777.0	22081.0
809	8743.0	8219.0	2231	22786.0	22090.0
810	8746.0	8222.0	2236	22801.0	22105.0
811	8749.0	8225.0	2237	22804.0	22108.0
814	8758.0	8234.0			
815	8761.0	8237.0			
822	8782.0	8258.0			
824	8788.0	8264.0			
825	8791.0	8267.0			
826	8791.0	8270.0			
829	8803.0	8279.0			
830	8806.0	8282.0	1	4210.5	4172.5
831	8809.0	8285.0	2	4211.0	4173.0
1201	13077.0	12230.0	3	4211.5	4173.5
1202	13080.0	12233.0	4	4212.0	4174.0
1203	13083.0	12236.0	5	4212.5	4174.5
1206	13092.0	12245.0	6	4213.0	4175.0
1208	13098.0	12251.0	7	4213.5	4175.5
1209	13101.0	12254.0	8	4214.0	4176.0
1210	13104.0	12257.0	9	4214.5	4176.5
1211	13107.0	12260.0	10	4215.0	4177.0
1212	13110.0	12263.0	11	4217.0*	4179.5*
1215	13119.0	12272.0	12	4215.5	4178.0
1222	13140.0	12293.0	13	4216.0	4178.5
1223	13143.0	12296.0	14	4216.5	4179.0
1225	13149.0	12302.0	1	6314.5	6263.0
1226	13152.0	12305.0	2	6315.0	6263.5
1228	13158.0	12311.0	3	6315.5	6264.0
1229	13161.0	12314.0	4	6316.0	6264.5
1230	13164.0	12317.0	5	6316.5	6265.0
1601	17242.0	16360.0	6	6317.0	6265.5
1602	17245.0	16363.0	7	6317.5	6266.0
1603	17248.0	16366.0	8	6318.0	6266.5
1605	17254.0	16372.0	9	6318.5	6267.0
1607	17260.0	16378.0	10	6319.0	6267.5
1609	17266.0	16384.0	11	6325.5*	6274.5*
1610	17269.0	16387.0	12	6319.5	6268.5
1611	17272.0	16390.0	13	6320.0	6269.0
1616	17287.0	16405.0	14	6320.5	6269.5
1620	17299.0	16417.0	15	6321.0	6270.0
1624	17311.0	16429.0	16	6321.5	6270.5
1626	17317.0	16335.0	17	6322.0	6271.0

Paired Frequencies For NBDP and Data Transmissions (in kHz)

Channel Number	Coast Transmit	Ship Transmit
1	4210.5	4172.5
2	4211.0	4173.0
3	4211.5	4173.5
4	4212.0	4174.0
5	4212.5	4174.5
6	4213.0	4175.0
7	4213.5	4175.5
8	4214.0	4176.0
9	4214.5	4176.5
10	4215.0	4177.0
11	4217.0*	4179.5*
12	4215.5	4178.0
13	4216.0	4178.5
14	4216.5	4179.0
1	6314.5	6263.0
2	6315.0	6263.5
3	6315.5	6264.0
4	6316.0	6264.5
5	6316.5	6265.0
6	6317.0	6265.5
7	6317.5	6266.0
8	6318.0	6266.5
9	6318.5	6267.0
10	6319.0	6267.5
11	6325.5*	6274.5*
12	6319.5	6268.5
13	6320.0	6269.0
14	6320.5	6269.5
15	6321.0	6270.0
16	6321.5	6270.5
17	6322.0	6271.0

Channel Number	Coast Transmit	Ship Transmit	Channel Number	Coast Transmit	Ship Transmit	Channel Number	Coast Transmit	Ship Transmit
18	6322.5	6271.5	44	12601.0	12498.5	62	16837.0	16714.0
19	6323.0	6272.0	45	12601.5	12499.0	63	16837.5	16714.5
20	6323.5	6272.5	46	12602.0	12499.5	64	16838.0	16715.0
21	6324.0	6273.0	47	12602.5	12500.0	65	16838.5	16715.5
22	6324.5	6273.5	48	12603.0	12500.5	66	16839.0	16716.0
23	6325.0	6274.0	49	12603.5	12501.0	67	16839.5	16716.5
1	8430.0*	8390.0*	50	12605.0	12501.5	68	16840.0	16717.0
2	8417.0	8377.0	51	12604.5	12502.0	69	16840.5	16717.5
3	8417.5	8377.5	52	12605.0	12502.5	1	22376.5	22284.5
4	8418.0	8378.0	53	12605.5	12503.0	2	22377.0	22285.0
5	8418.5	8378.5	54	12606.0	12503.5	3	22377.5	22285.5
6	8419.0	8379.0	55	12606.5	12504.0	4	22378.0	22286.0
7	8419.5	8379.5	56	12607.0	12504.5	5	22378.5	22286.5
8	8420.0	8380.0	57	12607.5	12505.0	6	22379.0	22287.0
9	8420.5	8380.5	1	16807.0	16683.5	7	22379.5	22287.5
10	8421.0	8381.0	2	16807.5	16684.0	8	22380.0	22288.0
11	8421.5	8381.5	3	16808.0	16684.5	9	22380.5	22288.5
12	8422.0	8382.0	4	16808.5	16685.0	10	22381.0	22289.0
13	8422.5	8382.5	5	16809.0	16685.5	11	22381.5	22289.5
14	8423.0	8383.0	6	16809.5	16686.0	12	22382.0	22290.0
15	8423.5	8383.5	7	16810.0	16686.5	13	22382.5	22290.5
16	8424.0	8384.0	8	16810.5	16687.0	14	22383.0	22291.0
17	8424.5	8384.0	9	16811.0	16687.5	15	22383.5	22291.5
18	8425.0	8385.0	10	16811.5	16688.0	16	22384.0	22292.0
19	8425.5	8385.5	11	16812.0	16688.5	17	22384.5	22292.5
20	8426.0	8386.0	12	16812.5	16689.0	18	22385.0	22293.0
21	8426.5	8386.5	13	16813.0	16689.5	19	22385.5	22293.5
22	8427.0	8387.0	14	16813.5	16690.0	20	22386.0	22294.0
23	8427.5	8387.5	15	16814.0	16690.5	21	22386.5	22294.5
24	8428.0	8388.0	16	16814.5	16691.0	22	22387.0	22295.0
25	8428.5	8388.5	17	16815.0	16691.5	23	22387.5	22295.5
26	8429.0	8389.0	18	16815.5	16692.0	24	22388.0	22296.0
27	8429.5	8389.5	19	16816.0	16692.5	25	22388.5	22296.5
1	12579.5	12477.0	20	16816.5	16693.0	26	22389.0	22297.0
2	12580.0	12477.5	21	16817.0	16693.5	27	22389.5	22297.5
3	12580.5	12478.0	22	16817.5	16694.0	28	22390.0	22298.0
4	12581.0	12478.5	23	16818.0	16694.5	29	22390.5	22298.5
5	12581.5	12479.0	24	16902.5*	16784.5*	30	22391.0	22299.0
6	12582.0	12479.5	25	16818.5	16695.5	31	22391.5	22299.5
7	12582.5	12480.0	26	16819.0	16696.0	32	22392.0	22300.0
8	12583.0	12480.5	27	16819.5	16696.5	33	22392.5	22300.5
9	12583.5	12481.0	28	16820.0	16697.0	34	22393.0	22301.0
10	12584.0	12481.5	29	16820.5	16697.5	35	22393.5	22301.5
11	12584.5	12482.0	30	16821.0	16698.0	36	22394.0	22302.0
12	12585.0	12482.5	31	16821.5	16698.5	37	22394.5	22302.5
13	12585.5	12483.0	32	16822.0	16699.0	38	22395.0	22303.0
14	12586.0	12483.5	33	16822.5	16699.5	39	22395.5	22303.5
15	12586.5	12484.0	34	16823.0	16700.0	40	22396.0	22304.0
16	12587.0	12484.5	35	16823.5	16700.5	41	22396.5	22304.5
17	12587.5	12485.0	36	16824.0	16701.0	42	22397.0	22305.0
18	12588.0	12485.5	37	16824.5	16701.5	43	22397.5	22305.5
19	12588.5	12486.0	38	16825.0	16702.0	44	22398.0	22306.0
20	12589.0	12486.5	39	16825.5	16702.5	45	22398.5	22306.5
21	12589.5	12487.0	40	16826.0	16703.0	46	22399.0	22307.0
22	12590.0	12487.5	41	16826.5	16703.5	47	22399.5	22307.5
24	12591.0	12488.5	42	16827.0	16704.0	48	22400.0	22308.0
25	12591.5	12489.5	43	16827.5	16704.5	49	22400.5	22308.5
26	12592.0	12489.5	44	16828.0	16705.0	50	22401.0	22309.0
27	12592.5	12490.0	45	16828.5	16705.5	51	22401.5	22309.5
28	12593.0	12490.5	46	16829.0	16706.0	52	22402.0	22310.0
29	12593.5	12491.0	47	16829.5	16706.5	53	22402.5	22310.5
30	12594.0	12491.5	48	16830.0	16707.0	54	22403.0	22311.0
31	12594.5	12492.0	49	16830.5	16707.5	55	22403.5	22311.5
32	12595.0	12492.5	50	16831.5	16708.5	56	22404.0	22312.0
33	12595.5	12493.0	51	16831.5	16708.5	57	22404.5	22312.5
34	12596.0	12493.5	52	16832.0	16709.0	58	22405.0	22313.0
35	12596.5	12494.0	53	16832.5	16709.5	59	22405.5	22313.5
36	12599.0	12494.5	54	16833.0	16710.0	60	22406.0	22314.0
37	12597.5	12495.0	55	16833.5	16710.5	61	22406.5	22314.5
38	12598.0	12495.5	56	16834.0	16711.0	62	22407.0	22315.0
39	12598.5	12496.0	57	16834.5	16711.5	63	22407.5	22315.5
40	12599.0	12496.5	58	16835.0	16712.0	64	22408.0	22316.0
41	12599.5	12497.0	59	16835.5	16712.5	65	22408.5	22316.5
42	12600.0	12497.5	60	16836.0	16713.0	66	22409.0	22317.0
43	12600.5	12498.0	61	16836.5	16713.5	67	22409.5	22317.5

POP'COMM Reviews:

Systems & Software International's Remote Controlled Scanning System (RCSS™) Program

Do you own an ICOM™ IC-R7000 receiver? If so, read on as Systems and Software International, Ltd. has an IBM™-compatible and Apple™ Macintosh™-based scanning system available which makes searching for those intriguing frequencies effortless. This product review covers the IBM-compatible version.

What Does It Do?

The software package and its related hardware interface to the computer will allow you to tune your IC-R7000 from the computer, automatically detect and store active frequencies while you are scanning, and improve your capability to monitor half-duplex communications. The package enhances the receiver's capabilities by providing automated computer control over the scanning and memory functions of the IC-R7000.

Along with your IC-R7000, you will need an IBM™-compatible computer based on an 80286 or 80386 microprocessor with at least 640K of RAM (Random Access Memory) preferably with a hard disk drive, Microsoft™ Windows™ Version 2.1 (a graphi-

cal user interface program), and a mouse. The mouse greatly simplifies the use of the RCSS program within the Windows™ environment.

As space does not permit a discussion of the step-by-step installation, suffice to say it is very easy. You should be able to complete the total hardware hook-up and software installation within 15 minutes. After this is done in accordance with the instructions in the manual provided, start the Windows software and "double-click" your mouse on the RCSS.EXE file to begin the fun of remote controlled scanning. That's all there is to it!

Because the RCSS™ program operates under a graphical user interface environment, mastery of its use comes quickly. Most facets of the tuning, scanning, and memory features can be learned easily. The program improves the receiver's operation by allowing you to remotely control tuning in steps from 10Hz to 100MHz. Plus, you can scan a range of frequencies, the memories, and even have the radio turn itself on to scan selected frequencies. You can specify what mode to monitor (AM, FM, or SSB), what class of service to monitor (po-

lice, fire, etc), and even the type of unit (mobile, airplane, etc). With its memory capacity of 1,000 frequencies, you will probably never run out of possibilities! The program is a cinch to use and the manual is well-written.

In addition to these features are file utilities which include, for example, the ability to print selected information on command.

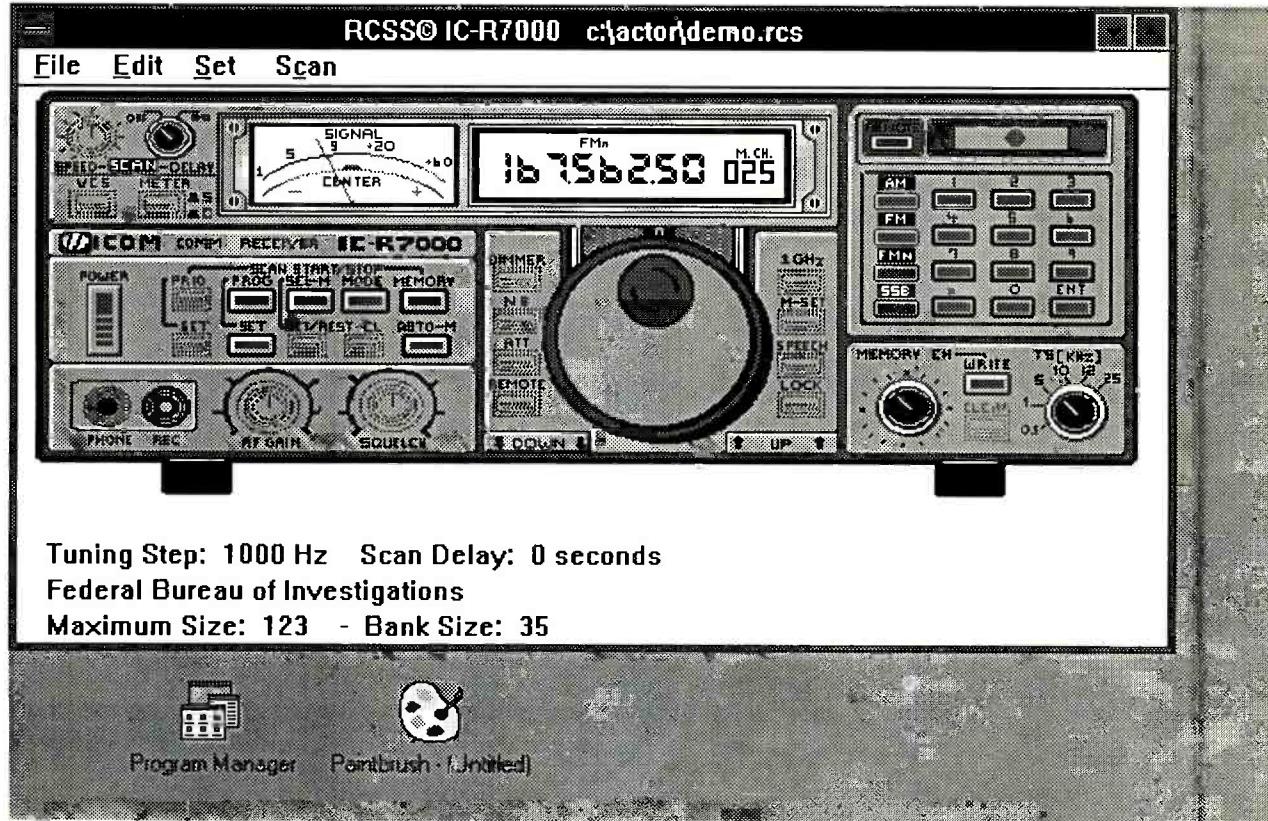
Summary

The Remote Computer Scanning System (RCSS™) for the ICOM™ IC-R7000 is really a lot of fun to use. Most importantly, however, it enhances my monitoring capability. What more can you ask?

Watts Hill of SASI, Ltd. told us that they now have a new version of the software package that runs under Windows Version 3.0; this upgrade and a new instruction manual are offered free of charge to all current owners of the previous package tested here. Contact Systems and Software International, Ltd., 4639 Timber Ridge Drive, Dumfries, VA 22026 for more information. Price of the IBM™-compatible RCSS package is \$239. A demo version is available.

Reviewed by Pop'Comm staff.

CIRCLE 170 ON READER SERVICE CARD



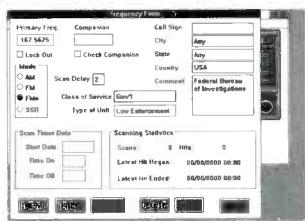
PC Control Over ICOM™ R7000 Receiver

The Remote Computer Scanning System™



Radio
Control &
Scanning
Screen

Database
Storage &
Retrieval
Screen



MACINTOSH VERSIONS FOR
R7000 & R71

SYSTEMS & SOFTWARE
INTERNATIONAL LTD

PC DEMO VERSION
AVAILABLE

To order or receive more information, contact us at 4639 Timber Ridge Drive, Dumfries, VA, 22026, USA.
Phone (703) 680-3559, Fax (703) 878-1460. RCSS™ requires MS Windows 3.0 and an IBM compatible.
RCSS™ for Macintosh computers is also available for R7000 and R71A.

CIRCLE 177 ON READER SERVICE CARD

Over 75,000 active amateurs in over 125 countries throughout the world read and enjoy a different kind of ham magazine every month. They read CQ.

It's more than just a magazine. It's an institution.

SUBSCRIBE TODAY!



CQ The Radio Amateur's Journal
76 N. Broadway, Hicksville, NY 11801

- Please send me CQ for Life 3 Years 2 Years 1 Year
 New Renewal Start with _____ issue
 1 year - 12 issues \$22.95
Save \$12.45
 2 years - 24 issues \$43.00
Save \$27.80
 3 years - 36 issues \$63.00
Save \$43.20

Name _____ Call _____
Street _____ Zip _____

Charge My Order To: Payment Enclosed \$ _____
 MasterCard My account number is _____



RFPI – Radio With A Difference

Fighting For A Cause – Costa Rican Shortwaver Is A 1990's "Flower Child"

BY GERRY DEXTER

"**U**nique" is a word all of us do damage to on a daily basis, tossing it into all kinds of places where it doesn't belong. But in this case it accurately describes Radio For Peace International. This three year old broadcast sounds like something which might have been more at home in the "peacenik" and flower-child era of the 1960's, yet its overall message may make more sense today than it would have back then.

Radio For Peace International promotes—peace! And ecology, and having enough food for all and human rights. The RFPI schedule includes virtually none of the program categories you hear on most of the international broadcasters.

RFPI is a joint effort of the World Peace University of Eugene, Oregon and the University For Peace in Costa Rica. Had these two organizations never been born it's very probable that RFPI would never have been born either. So perhaps we should take a look at the parents first.

The idea for a University For Peace came from Dr. Rodrigo Carazo who, as President of Costa Rica at the time, presented his plan to the UN General Assembly back in 1979. A resolution to establish such a university in Costa Rica was adopted by the General Assembly the following year. The university is set up as an independent institution in both its programs and funding and is devoted to seeing world peace "by means of education, with a humanistic purpose and in accordance to the postulations of the Charter of the United Nations and the Universal Declaration of Human Rights."

Its 750 acres of land are on a mountain-side near one of Central America's last remaining rain forests. The nearest real town is Ciudad Colon, about 7km away, on a twisting road. The University offers masters programs in "Communications For Peace" and "Natural Resources and Quality of Life." It also undertakes various research projects, provides training in peace research, negotiation and conflict resolution. It publishes various books and periodicals, has a TV production center and has a satellite uplink which provides live conferencing and other hookups. One was a Colorado



A view of the University For Peace in Costa Rica.

conference at which singer John Denver spoke of his support for RFPI. The university also operates an international computer network which links various peace and environmental groups.

Aside from tuition fees, funding comes from contributions from individuals, foundations, governments and other organizations. The Dalai Lama donated \$15 thousand of his 1989 Nobel Peace Prize to the university. Other support comes from the Friends of the University For Peace based in New York and the California Council of the University For Peace, based in Pasadena. The President of the Governing Council is Dr. Carazo, the former Costa Rican president. A former president of Nigeria is on the council and UN Secretary General Javier Perez de Cuellar is one of the ex-officio members.

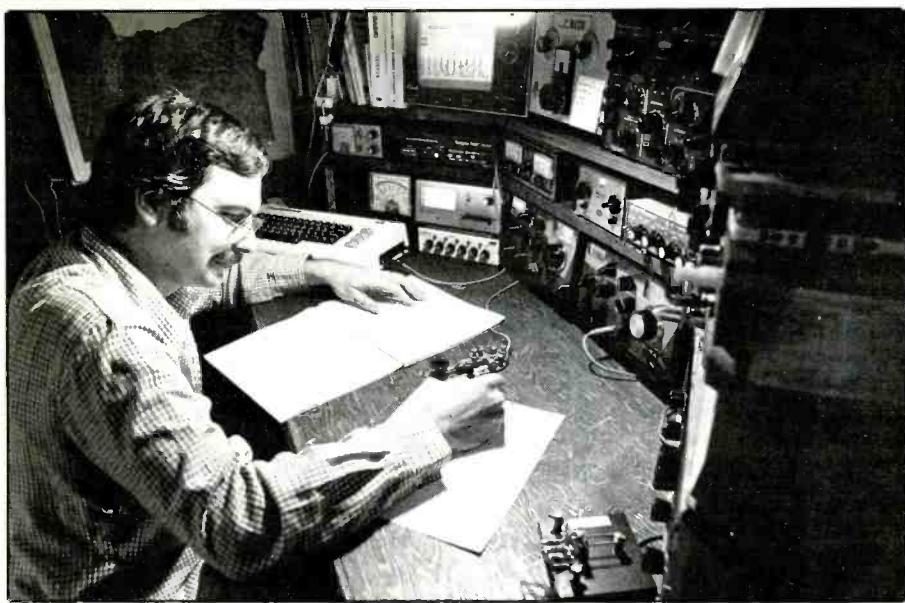
The other parent, the World Peace University, was established in 1980 as a non-profit educational corporation. It was the brainchild of Richard Schneider, Dr. of Philosophy. The University states its goal as



RFPI's General Manager Debra Latham.

aiming to "contribute to the creation of a world free of war, where peace is a way of life, where hunger no longer exists and where individuals are enabled to achieve their highest degree of personal fulfillment."

WPU has three major departments: internships, which focus on peace studies, cultural exchanges and hands-on experi-



RFPI's manager, James Latham, is also a ham, holding call letters KA7KDU.

ence, consciousness raising, personal growth and development and telecommunications. Two terms, consisting of two 15 week curriculum sessions plus such subjects as The Anatomy of Peace, Hunger in a World of Plenty, Conflict Resolution, Non-Violent Direct Action, Effective Communication, Spanish as a Second Language, Meditation, Inner Journey Exploration, Awareness Through Music, Principles of Radio Broadcasting, Basic Computer and a number of others—something of a mix of the practical and things with a New Age tinge.

WPU's second division is Radio For Peace International and interns "have the opportunity to learn the many aspects of radio and develop practical experience" with some time spent at the station. The third part of the university, not yet completed, is the International Research Library for Peace. The university also publishes books and other materials which fit into its interests.

A Canadian branch was opened recently in Salmon Arm, British Columbia (PO Box 2385) which last summer offered a two-



A Spanish language program goes out to a rural Costa Rican audience.

week retreat under the theme "22 Steps to Self-Mastery" and a four day spiritual retreat "The Hero Within: The Magician."

Both WPU and the University For Peace sponsor or are otherwise involved in a steady stream of special events, seminars, special courses and other activities. In February, for example, the two institutions sponsored the Global Outreach Consciousness Banquet in Eugene, which featured speeches by the Indian ambassador to the US and actor Dennis (McCloud) Weaver.

The real link between the two is Radio For Peace International. WPU leaders began work on the RFPI idea in 1984 and later signed a cooperative agreement with UFP in which WPU would be responsible for operating the station—which would be housed on the UFP campus.

It took more than two additional years to get the station on the air. Part of the equip-

RADIO FOR PEACE INTERNATIONAL (PROGRAM SCHEDULE)								
INTERNATIONAL BROADCAST May / June 1990								
MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	21.565 MHz and 13.660 MHz (7.375 MHz on USB!!)	21.565 MHz and 13.660 MHz (7.375 MHz on USB!!)		
"Steppin' out of Babylon" Sue Supriano (P)	EARTH CARE (P)	Consider the Alternatives (P)	EARTH CARE (P)	"World of Radio" Glenn Hauser (P) DX - Newservice	2000 UTC	2330 UTC		
WINGS (P) Interviews	Red Cross B. S. Radio Canada (2)	"Voices of Our World" Maryknoll Media Relations (P)	Social Thought H. Phillips (H)	Common Ground Stanley Found (P)	2030 UTC	0000 UTC		
New Dimensions Radio (P) Interviews	"World Citizen's Hour" Various Programs	New Dimensions Radio (P)	"Alternative Radio" David Barsasian (P)	New Dimensions Radio (P) Interviews (RP)	2100 UTC	0030 UTC		
New Dimensions Radio (P) (cont'd.)	"World Citizen's Hour" Various Programs	New Dimensions Radio (P) (cont'd.) (RP)	"Alternative Radio" (cont'd.)	New Dimensions Radio (P) (cont'd.) (RP)	2130 UTC	0100 UTC		
"European profile" Radio Netherlands United Nations Daily News	Science in Society (P) United Nations Daily News	U Peace News U. for Peace (P) United Nations Daily News	RN/WOR in Spanish (4) = United Nations Daily News	The Neumaier Report /IWTW (5) = United Nations Daily News	2200 UTC	0130 UTC		
United Nations	"World of Radio" Glenn Hauser (P) DX-Newservce	United Nations	The Other Americas Radio (P)	United Nations	2230 UTC	0200 UTC		
"Peace Forum" German Programs (1)	RFPI's MAILBAG RFPI (P)	"Peace Forum" French Programs (3)	"Second Opinion" The Progressive (P)	"Peace Forum" German Programs	2300 UTC	0230 UTC		
(1) Red Cross Broadcasting Service in German (2) RCI: "Canada à la Carte" (3) Red Cross Broadcasting Service in French (4) WDR: "World of Radio"; Glenn Hauser (P) (5) "The World This Week"; Dr. Keith Suter (P)				Sign-off	2330 UTC	0300 UTC		
(1) Red Cross Broadcasting Service in German (2) RCI: "Canada à la Carte" (3) Red Cross Broadcasting Service in French (4) WDR: "World of Radio"; Glenn Hauser (P) (5) "The World This Week"; Dr. Keith Suter (P)				21.565 MHz > 13 n 13.660 MHz > 22 n 7.375 MHz > 41 n	* = alternating programs P = Producer H = Host RP = Repeat			
Other Broadcasts: 1400 - 1600 UTC, 7.375 MHz + 13.660 MHz (SPANISH) 1800 - 0030 UTC, 21.565 MHz + 13.660 MHz weekends 0215 - 0645 UTC, 7.375 MHz (USB!), Mon - Fri and 0045 - 1345 UTC, 7.375 MHz (USB!), Sat. and Sun								
RFPI's schedule lists an eclectic selection of program topics.								

(RFPI - English Weekend Schedule)		
May / June 1990		Frequencies: 21.565 MHz (13 n) 13.660 MHz (22 n)
SATURDAY	SUNDAY	
New Dimensions Radio (P)	"Steppin' out..." S. Supriano (P)	1800 UTC
New Dimensions Radio (P) (cont'd.)	Common Ground	1830 UTC
United Nations	"Second Opinion"	1900 UTC
The World in Review		
"World of Radio" Glenn Hauser (P)	EARTHCARE (P)	1930 UTC
RFPI's Mailbag	New Dimensions Radio (P)	2000 UTC
"Heartland" Brian Baker (P)	New Dimensions Radio (P) (cont'd.)	2030 UTC
"Consider the Alternatives" (P)	United Nations	2100 UTC
The World in Review		
WINGS (P)	FOOD FOR THE THOUGHTFUL (1)	2130 UTC
The Other Americas Radio	"Music from Everywhere" Jim Bean (P)	2200 UTC
Social Thought H. Phillips (H)	"World of Radio" Glenn Hauser (P)	2230 UTC
World Goodwill Forum Lucis Productions	"Peace Talks" Baha'i's of CA	2300 UTC
World Goodwill Forum (cont'd.)	SCAM (2)	2330 UTC
EARTHCARE (P)	Peace Forum / U Peace on Target	0000 UTC
(1) Cultural Media Services (P) (2) American Lutheran Church (P)		Sign-off 0030 UTC



A student intern from World Peace University puts in some time "behind the board."

ment was purchased used, some of it was donated. The transmitter was built in Oregon by Station Manager James Latham. Once that job was completed the transmitter was dismantled and all the equipment packed into 47 boxes (total weight: 2,975 pounds). Latham and two others then trucked it 1,000 miles to Los Angeles and the offices of the Costa Rican government airline, which then trucked it to Miami where it was airfreighted to Costa Rica. And there it sat in customs for another two months.

RFPI finally went on the air in September, 1987. Trouble was, not many knew it at first. Due to a transmitter malfunction the first programs went out with a mere 40 watts, rather than the intended 1 kilowatt. The original 2 hour per day schedule was soon increased to six and has grown even more since.

Currently the station is trying to raise \$250,000 so it can implement a power upgrade from the present 2.5 kW to something between 20 and 40 kW. (Even if RFPI could afford 100, 250 or 500 kW transmitters it would not use them since it believes such high power levels are both unnecessary and wasteful). One day the station hopes to operate transmitters using solar power.

At present, RFPI's effective radiated power is 26 kW for its 7 and 21 MHz frequencies and 16 kW on its 13 and 25 MHz frequencies. 6 and 3 element yagi antennas on a 35 tower are rotated to beam broadcasts to North America, Europe and the South Pacific. A bi-directional, two-element antenna gives coverage of Central and South America.

Experiments using single sideband transmission were begun in 1989 and listener response was so positive the station has made this a regular practice, using upper sideband on 7375 for about three hours per day.

The current money-raising effort also hopes to provide funds for new studio equipment as well as increased studio and office space and some additional staff. This would lead to more locally produced programming. The station makes do with a budget that wouldn't buy a month's electricity at some station. RFPI's operating costs for the first two years were \$172,000 per year.

RFPI is organized as a non-sectarian, non-political, non-confrontational, non-partisan voice which promotes such goals as world peace, food sufficiency, environmental balance, social justice and so on. It is

meant to serve as a peace communications tool with an emphasis on positive action and methods.

The station has a six member board of directors, three from each of the two universities. Funding comes from donations by individuals and organizations and the sale of program time. Individual memberships, a la your local NPR FM station, are \$25 and \$40 per year, both of which include the now quarterly RFPI newsletter.

James L. Latham, mentioned earlier, is the station manager. He holds ham call KA7KDU/T12 and is also an enthusiastic shortwave listener. He has coordinated several peace marches via radio communications and was in charge of advance communications for World Peace University's "Operation Salt March" in 1984.

RFPI's General Manager is Debra Latham, N7FNW, who holds bachelor and master of science degrees and was formerly director of Sunrise International, a seminar, retreat and workshop center. RFPI's total staff numbers only four.

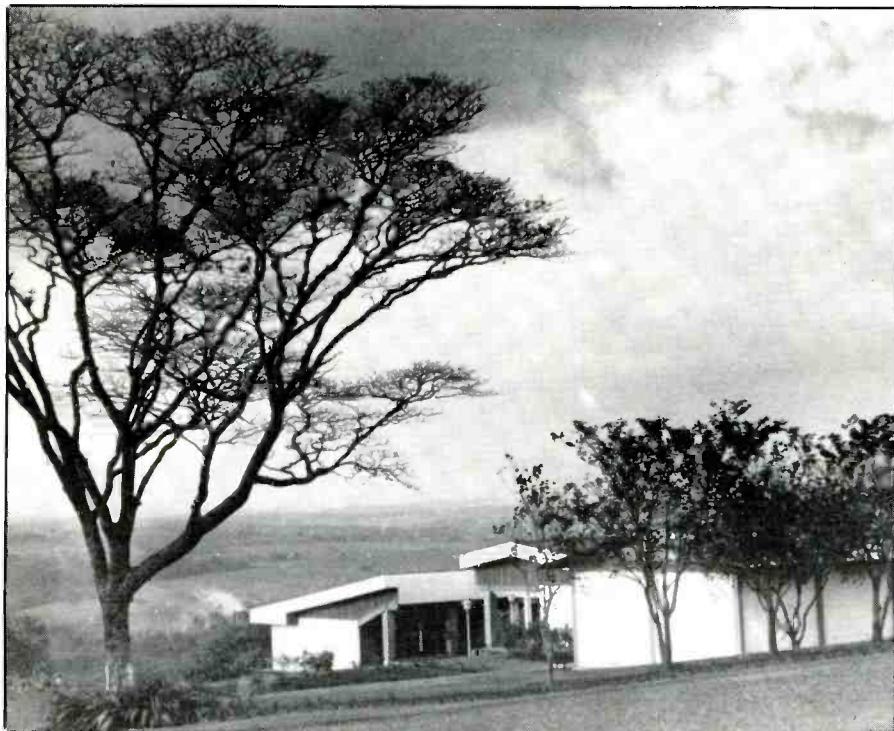
Most of the programs on Radio For Peace International are produced by independent groups. The station carries much, if not all of the programs produced by the United Nations as well as shows from such organizations as Maryknoll, Radio Netherlands, the World Council of Churches, the Red Cross, Evangelical Lutheran Church of America, Earthwatch and any number of other, lesser known groups and individual program producers. The schedule changes frequently as programs come and go. As part of its Spanish language transmission, RFPI broadcasts a regular math course, directed at students in the small towns in its area. In November, 1989, the station carried live reports from San Salvador during the FMLN's offensive. RFPI's coverage centered on the human tragedy caused by the fighting, rather than the politics involved.

RFPI received some 1,00 letters over its first nine months on the air, with responses from 35 countries. Some of that mail is, undoubtedly, reception reports. Other letters may contain contributions or orders for the RFPI T-shirt (a yellow-orange-white design on royal blue, available for \$15). The station estimates its daily audience at 35 thousand.

The current RFPI schedule runs weekdays from 2000-2300 on 13660 and 21565 and 2330-0300 on 7375 (USB), 13660 and 21565. Also at 0315-0645 on 7375 (USB). Saturdays and Sundays the schedule is 1800-0030 on 13660 and 21565 and 0045-1345 on 7375 (USB). There are brief French and German language programs during the English language schedule. Spanish programming airs from 1400-1600 on 7375 and 13660. All three of RFPI's frequencies tend to vary 1 to 2 kHz high.

Reception reports and other correspondence may be sent to RFPI, PO Box 1869, Eugene OR 97440 or PO Box 88, Santa Ana, Costa Rica. Letters are welcome and correct reports are QSL'd.

PC



The University For Peace campus is about 6 miles from the nearest town, connected by a winding road and a dangerous bridge.

- Confused by today's electronics?
- Looking to learn and develop your building skills?
- Want to explore beyond Amateur communications?

**CALL
TOLL FREE
(800) 457-7373**

COMMUNICATIONS QUARTERLY
THE JOURNAL OF
COMMUNICATIONS
TECHNOLOGY

**Collector's
Edition**

■ A Communications System Using Gunnplexer Transceivers

■ Basic Concepts of Scattering Parameters

■ Digital Signal Processing: Working in the Frequency Domain

■ Transmitter IMD Measurements on Utility-Grade Spectrum Analyzers

■ The Enhancement of HF Signals by Polarization Control

■ Interface Your Computer to the "Poor Man's Spectrum Analyzer"

■ High Dynamic Range Receiver

■ Super Narrowband Techniques Equalize Power Inequity on 1750 Meters

Just \$27.95 for a one year charter subscription (USA only.*)

Save \$2.00 off the regular yearly rate.

COMMUNICATIONS QUARTERLY will push the technical envelope to the limit. Articles will be selected from only the very best available. State-of-the-art electronics like direct digital synthesis, digital signal processing and computer control will be fully investigated and explained so that you can take advantage of these new technologies. COMMUNICATIONS QUARTERLY will also have articles that cover high speed data communications, the latest in antennas using computer designed models, plus much more. COMMUNICATIONS QUARTERLY is the publication you've been looking for. Challenge yourself technically. Stay up-to-date with all the latest developments in the fast paced world of electronics.

Act now. Subscribe Today!

*Foreign surface \$39.95 per year.
Air mail rates upon request.



COMMUNICATIONS QUARTERLY

a publication of CQ Communications Inc., 76 North Broadway, Hicksville, NY 11801 USA

BROADCAST DX'ING

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

BY ROGER STERCKX, KVT1JH

Messages Galore: Talk of community service, here are two broadcasters that provide the most unique kind. They are WELY (1450 kHz, 1 kW) of Ely, MN, and CFOB (640 kHz, 1 kW) of Fort Frances, Ontario.

Both stations serve the general area of northern Minnesota and southern Ontario. This area, noted for its natural beauty, is one of the most rugged and isolated wilderness areas in North America. Throughout the area are numerous lakes, dotted with small islands. Scattered through the region in remote cabins and on islands are about 1,000 residents who are far from things such as telephones and even electricity.

Stations WELY and CFOB, therefore, are the only way personal messages can be sent to specific persons in the area. The messages are transmitted free of charge during several daily time periods. They routinely contain information about births, deaths, family problems, and even romantic matters. It's the main link that many of these people have to the outside world. At the scheduled message times, the wilderness residents turn on their radios (either battery or generator powered) to see if there are any messages addressed to them.

One resident of the area is so dependent upon the message relay service that, if he is going to be away from his AM receiver for a while, he gets on the CB and requests others to listen for his messages. And when WELY ran into some financial problems a few years ago and wasn't certain to stay in operation, the wilderness took up a collection and contributed funds to help see it through the hard times.

It could be that radio telephones will eventually diminish the need for these services, but that doesn't look to be something in the immediate future. Twenty people have thusfar had the UHF phones installed, and are willing to spend \$1,500 for the first years' worth of service. The phones, however, aren't reliable when the temperature gets to 20 degrees below zero, which isn't at all uncommon for this region.

Thanks to Gary Heinonen, of Minnesota for letting us know about all of this via Pat Doyle's story in the Minneapolis Star Tribune.

A Whatzit Station: A letter from E. Wallen, 1445 Kemman Avenue, LaGrange Park, IL 60523-1214, reports picking up what sounded like a strong local signal with music on 1700 kHz. He wonders if it is an experimental station or a pirate.

We would have liked a bit more information on this station, such as time of day, day of the week, announcements, type of music, how long on the air (hours, days), etc. Based only on the information submitted, our guess would be a pirate. If any readers



The mobile news van of the BBC's Radio Suffolk, 103.9 MHz in the UK. (Courtesy Ed Bunch, stationed in the UK.)

have better information, contact Mr. Wallen directly.

Congratulations!: Steve Sellers, N5GZP, of San Diego's KGMG (1320 kHz/102.1 MHz) recently received two broadcasting awards from United Press International for two radio documentaries he produced and reported. The awards were for best investigative documentary in the Western Region, and outstanding achievement in reporting in the Western Region.

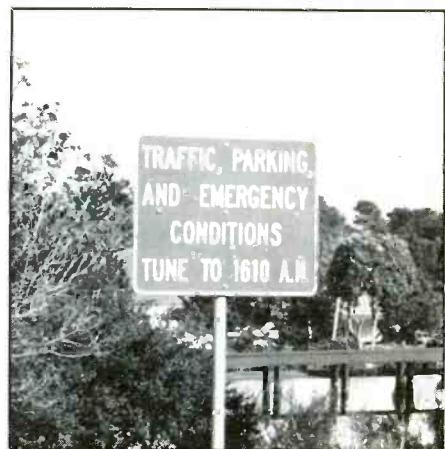
Steve has been a ham operator since age 12. He's active on the 10 meter band.

Swiss Stations: The column received lots of very colorful and attractive bumper stickers from a DX'er in Switzerland. He tells us that he would very much like to get some bumper stickers from North America, especially the New York City area. Might be a good opportunity to exchange bumper stickers for some Swiss ones, which are not easy to come by on this side of the puddle.

This DX'er can be contacted as follows: DeMartin Ferdy, Chasriere 1, 2013 Colombier, Switzerland.

Tote Board: The latest FCC broadcast station totals show 4,977 AM stations, 4,343 Commercial FM, 1,434 Educational FM, 1,842 FM Translators and Boosters, 677 VHF Television, 783 UHF Television, 4,980 TV Translators, and 748 Low Power TV.

New Broadcast Regulations: Very shortly, the FCC will begin a complete review of the regulations governing broadcasters. New technologies, financial considerations, program distribution and syndication methods, and other factors are now arising that aren't covered by existing rules, or may be retarded by the present rules. The review will most likely result in an overhaul of those



TIS station WNHN752, 1610 kHz, at Monterey, CA advertises its presence with this roadside marker. (Photo by David Palmer, CA.)

sections of the regulations that have lost touch with broadcasting today—and where the FCC hopes it will be tomorrow.

Too Much Noise?: It wasn't the noise from rock music videos that caused all the noise, said the FCC, it was the signal leakage in the 108 to 136 MHz VHF aero band. The FCC said the level was high enough to violate the cumulative leakage index and pose an interference potential to aero communications. That got Multivision Cable TV (Hermosa, CA) closed down by FCC engineers.

TV Broadcaster Loses License: Chicago's WSNS-TV, on Channel 44, was not permitted to renew its FCC license. Another company was given a permit to put up a TV

New FM Call Letters Assigned

KBFS-FM Belle Fourche, SD
 KBMA Bryan, TX
 KHIQ Alva, OK
 KISK Lowell, AR
 KKAQ-FM Thief River Falls, MN
 KNCA Burney, CA
 KNCB-FM Vivian, LA
 KQMN Thief River Falls, MN
 KRCQ Indio, CA
 KSHN Liberty, TX
 KTNA Talkeetna, AK
 KXGA Eldora, IA
 KXGH Lincoln, NE
 KXGJ Bay City, TX
 KXGM Muenster, TX
 KXGP Deer River, MN
 KZMU Moab, UT
 KZPB Ft. Bragg, CA
 KZPC Goldendale, WA
 KZPD Ash Grove, MO
 KZPE Ford City, CA
 WAGW Waynesboro, GA
 WAVX Thomaston, ME
 WFXQ Chase City, VA
 WGRT South Bend, IN
 WHHM Henderson, TN
 WJBZ Seymour, TN
 WJK Palm Bay, FL
 WJSJ Balzoni, MS
 WJXY-FM Conway, SC
 WKBE Warrensburg, NY
 WKXO-FM Berea, KY
 WMOO Derby Center, VT
 WNNG Valley Falls, NY
 WQME Anderson, IN
 WQZS Meyersdale, PA
 WRTY Jackson Twp., PA
 WTRL Tomah, WI
 WXKD Ripley, OH
 WXF K Terre Haute, IN
 WXMK Dock Jct., GA
 WZBR Lake Luzerne, NY
 WZMF Danville, IL
 WZWA Clarksburg, WV
 WZWB Berwick, PA

New AM Call Letters Assigned

KZPA Yukon, AK
 WFBA Miami, FL

Changed AM Callsigns

New	Former
KAOI	KHEI
KBSR	KFBN
KDVE	KQXY
KGTN	KWWB
KKDS	KRSP
KMAJ	KEWI
KMPQ	KFRD
KNSI	KCLD
KNZR	KPMC
KRNI	KLSS
KSBN	KRSS
KSPE	KDB
KVJY	KIKN
KXBX	KWTR
KZXX	KENY
WBCI	WIRE
WBNM	WYGO
WKQS	WJNL
WLYV	WEZR
WOGL	WCAU
WTRX	WDLZ
WVSJ	WWBZ
WXYM	WKGK

Changed FM Call Letters

New	Former
KAOI-FM	KAOI
KAVE	KZAM-FM
KBCM	KQHU
KCGR	KISQ
KCIE	KJAT
KCLR	KDBX
KDB	KDB-FM
KDBZ	KRAA
KIKN	KSML
KKCY	KKLU
KMAJ-FM	KEWI
KMPQ-FM	KFRD-FM
KPYR	KMPZ
KSRR-FM	KITY
KTEX	KTXF
KWME	KZED
KXBX-FM	KXBX
KXTZ	KMCC
KYTE	KPQA
KZAK	KLKT
WANC	WXTY
WCCA	WPGO
WDKZ	WBBK
WEZO	WUMH
WEZR	WLWR
WFXD	WRUP
WFXF	WMJC
WGLR	WAXL
WHET	WQZZ
WIRE	WBCI
WJLT	WEZV
WKQS	WJNL
WMGF	WJYO
WMXN	WZCL
WMMO	WEZO
WMRW	WYGO-FM
WMXT	WPHO
WOGL-FM	WOGL
WOPW	WGUS-FM
WQUL	WKEU
WRNX	WHCI
WSHG	WZBZ
WSTS	WZYZ
WVSG	WDRP
WVVO	WKCN
WXHD	WDHZ
WYMK	WEMR-FM
WYPR	WHUM
WZMX	WLHV

FM Call Letters Changes Requested

Present	Seeking
KAUB-FM	KCOE
WBQM	WYFD
WCPC-FM	WSYE

AM Call Letters Changes Requested

Present	Seeking
KVFW	KKLE
WONO	WAVJ

Requests Withdrawn For Call Letters

Present	Wanted
(New)	WXKH
KESY	KLAQ
KTNR	KKCR
WINX	WTKZ

BOOST RECEPTION



ANTENNA PLUS 1

Only \$90

Hear those rare stations you've been reading about! Make your receiver spring to life! Great performance from a tabletop box. Models for ALL BANDS, SCANNER or SHORTWAVE. Internal 15-22db amp! 115VAC pwr. Jumper cable to rcvr. NOW INCLUDED! (specify conn.) ANTENNA PLUS-1 105-1300MHz "All Bands" (for wide coverage rcvr.) ANTENNA PLUS-2 105-30MHz "Short-Wave" (peaked for SWL's) ANTENNA PLUS-3 30-2000MHz "Scanner" (peaked for VHF-UHF)

SCANNER STICK

Only \$40

Great scanner reception on all bands is yours with our new SCANNER STICK antenna. Receives all frequencies from 30 to 1000 MHz. Only 35" long and easy to install on masts up to 1.5" dia. Rugged and high quality. 25' of coax cable supplied with either BNC or Motorola connector. For your scanner. (please specify)

Only \$34.95

SUCTION CUP MOUNT VAK-TENNA!

IDEAL FOR APARTMENTS, OFFICES OR RV's Mount to your window for the BEST SCANNER coverage! Cups hold for months! Great reception in apartments. Landlords love it! Telescopes to 79" folds to 12". 30-500MHz Choice of BNC, PL259, F or Motorola connector. (specify when ordering)

TAPE SAVER

TS-1 \$59.95

Eliminates dead time on your scanner tapes! Listen to an entire nights scanning while driving to work! Interfaces scanner to your tape recorder for ACTIVATION ONLY recording.

SIGNAL INTENSIFIERS

Make your antenna come to life!

RFP-40 1-1300 MHz 15 DB GAIN! \$69.95



STRONGER SIGNALS for scanners, shortwave, AM-FM-TV, cable and more. 115VAC pwr. Choice of BNC, SO239 (PL259 male) and F connectors. Battery or DC powered, remote mounted versions available. Some priced from \$34.95! (RFA16B/RFA20)

CB INTENSIFIER

Only \$49.95

Improve your CB's range! The RFTR booster received signals by 13db! Internal T/R relay. 12VDC pwr. (AC pwr add \$10)

SSB Version \$64.95
MARINE-VHF version \$99.95



INTERFERENCE FILTERS & ACCESSORIES

SCANNER FILTER, HFP-1 (passes above 45 MHz) \$8.95, SHORTWAVE FILTER LFP-1 (passes below 50 MHz) \$10.95; ANTENNA SWITCH AS-5 3 position \$14.95 VARIABLE ATTENUATOR VA-20 \$12.95
COMPLETE LINE OF CABLES AND ADAPTERS AVAILABLE
Ask for our SCANNER/SHORTWAVE BOOKSTORE flyer.

MANY MORE PRODUCTS AVAILABLE

SEND FOR FREE SPECIFICATIONS!

MASTERCARD and VISA NOW ACCEPTED!

Conterminous US shipping/handling \$5, AK, HI, PR, Canada \$8
NY and MI residents add local sales tax.

ELECTRON PROCESSING, INC.
P.O. BOX 68
CEDAR, MI 49621
616-228-7020

SATISFACTION GUARANTEED!

Order any product (except software) from EPI and if not satisfied return it within 15 days for a full refund (less shipping/handling).

CIRCLE 173 ON READER SERVICE CARD

February 1991 / POPULAR COMMUNICATIONS / 35

Permits Granted For New FM Stations

AL	Florence	96.1 MHz	3 kW
AR	Clarksville	100.5 MHz	3 kW
AR	Marked Tree	93.7 MHz	3 kW
CA	Orland	106.5 MHz	3 kW
CA	Rohnerville	100.5 MHz	16 kW
CA	Sacramento	89.7 MHz	371 watts
GA	Ocilla	98.5 MHz	3 kW
GA	Waynesboro	107.1 MHz	3 kW
IL	Christopher	103.5 MHz	3 kW
IL	Golconda	105.1 MHz	922 watts
IL	Kankakee	91.1 MHz	1.75 kW
IL	Kankakee	95.1 MHz	3 kW
IL	Peoria	92.3 MHz	3 kW
IN	Bicknell	105.7 MHz	3 kW
MN	St. Peter	91.5 MHz	8.5 kW
MO	Cassville	93.3 MHz	1 kW
MS	Columbus	94.9 MHz	50 kW
MS	Lucedale	106.9 MHz	300 watts
NE	Chadron	91.9 MHz	8.4 kW
NE	Merriman	91.5 MHz	92.3 kW
NE	N. Platte	91.7 MHz	3 kW
NY	Palmyra	99.7 MHz	3 kW
OK	Lawton	107.3 MHz	50 kW
PA	Harrisburg	88.1 MHz	260 watts
SC	Bishopville	93.7 MHz	3 kW
TN	Lawrenceburg	97.5 MHz	1.8 kW
TN	Calhoun	104.1 MHz	3 kW
TX	Elgin	92.5 MHz	1.3 kW
TX	Liberty	99.9 MHz	50 kW
VA	Marion	91.9 MHz	3.2 kW
WI	Elk Hound	92.9 MHz	3 kW

Applications For AM Facility Changes

WLCK Scottsville, KY 1250 kHz Drop to 860 watts.

Applications For FM Facility Changes

KQWC-FM Webster City, IA 95.9 MHz Seeks 95.7 MHz.
WKZY Labelle, FL 92.1 MHz Seeks 92.5 kHz, 6 kW.

FM Facility Changes Approved

KEUS	Lubbock, TX	106.5 MHz To 106.5 MHz, 34 kW.
KITR	Creston, IA	101.7 MHz To 101.3, 18.75 kW.
KLUA	Kailua-Kona, HI	93.5 MHz To 93.9 MHz, 40 kW.
WKDO-FM	Liberty, MO	105.5 MHz To 98.7 MHz.
WTUG	Tuscaloosa, AL	92.7 MHz To 92.9, 12.5 kW.

AM Facility Changes Approved

KBRF	Fergus Falls, MN	1250 kHz Increase nights to 2.2 kW.
KIPA	Hilo, HI	620 kHz Increase to 10 kW.
KIPO	Pearl City, HI	1380 kHz Increase days to 10 kW.
KITH	Apple Valley, CA	1550 kHz Increase days to 5 kW.
KKGZ	Brush, CA	1010 kHz Run 10 kW/5 kW.
KSUR	Soledad, CA	700 kHz Increase nights to 2.5 kW.
WALL	Middleton, NY	1340 kHz Drop to 660 watts.
WAYR	Orange Park, FL	550 kHz Increase to 5 kW.
WKNV	Dublin, VA	810 kHz Drop to 350 watts.
WOEQ	Royal Palm Beach, FL	1190 kHz Run 890 watts/1 kW.
WPZA	Ann Arbor, MI	1050 kHz Increase days to 10 kW.



Steve Sellers, N5GZP, a familiar voice on KGMG-AM/FM in San Diego/Oceanside, CA. How 'bout those two awards Steve recently won?



Here's an eye-catching bumper sticker from KDOG, 96.7 MHz, Mankato, MN. The station owns a converted Cadillac ambulance dubbed the "Dogcatcher," which is a popular sight around town. (Courtesy Dennis Spreng, Lake Crystal, MN.)

TV more recently ended news, non-entertainment, and locally originated programming.

WSNS-TV was expected to appeal the decision.

Reaching Out: One of the more talked about innovations in the volatile New York metro broadcast market came about when popular rocker WNEW-FM (102.7 MHz) took a giant step. The station signed an agreement with station WWB (107.1 MHz), Hampton Bays, NY for WWB to simulcast as much as 164 hours per week of WNEW-FM's programming. Hampton Bays is about 100 miles east of New York City, and beyond WNEW-FM's signal area. However, it's in the heart of the upscale Hamptons resort area where many of WNEW-FM's listeners go for relaxation. Thus, WNEW-FM becomes a "superstation," and WWB at-

tracts to itself a whole new audience.

WWB is owned by musician Paul Simon and his brother, Ed Simon. Another WWB principal is Lorne Michaels, the producer of Saturday Night Live on NBC-TV.

Meanwhile, rumors abound that similar arrangements are being explored that would match one or more other New York City FM'ers up with other local stations covering the Hamptons area.

If the idea clicks, it could be used in many other areas. You might have Philadelphia stations simulcasting in Atlantic City; or Los Angeles stations simulcasting in Palm Springs. The possibilities are fascinating to ponder.

Why not keep in touch? Send us station photos, news clippings, bumper stickers, and your thoughts relating to AM/FM/TV broadcasting.

station on Channel 44. Prior to mid-1985, WSNS-TV had been running pay-TV programming. Since that time, the station has had a Spanish language format. The FCC contends that, during its pay-TV era, the station may have aired an obscene program. Further, the FCC alleges that WSNS-

THE HAM COLUMN

KIRK KLEINSCHMIDT, NT0Z
AMERICAN RADIO RELAY LEAGUE HQ

GETTING STARTED AS A RADIO AMATEUR

Phonetics: Words To The Wise

International Telecommunication Union Phonetics

A—Alfa (AL FAH)
B—Bravo (BRAH VOH)
C—Charlie (CHAR LEE or SHAR LEE)
D—Delta (DELL TAH)
E—Echo (ECK OH)
F—Foxtrot (FOKS TROT)
G—Golf (GOLF)
H—Hotel (HOH TELL)

I—India (IN DEE AH)
J—Juliett (JEW LEE ETT)
K—Kilo (KEY LOH)
L—Lima (LEE MAH)
M—Mike (MIKE)
N—November (NO VEM BER)
O—Oscar (OSS CAH)
P—Papa (PAH PAH)
Q—Quebec (KEH BECK)

R—Romeo (ROW ME OH)
S—Sierra (SEE AIR RAH)
T—Tango (TANG GO)
U—Uniform (YOU NEE FORM or OO NEE FORM)
V—Victor (VIK TAH)
W—Whiskey (WISS KEY)
X—X-RAY (ECKS RAY)
Y—Yankee (YANG KEY)
Z—Zulu (ZOO LOO)

Note: The **Boldfaced** syllables are emphasized. The pronunciations shown in this table were designed for speakers from all international languages. The pronunciations given for "Oscar" and "Victor" may seem awkward to English-speaking people in the US.

The explosion of activity on the 10-meter Novice band has not only opened up wonderful opportunities for beginners to make many DX and stateside QSO's on phone, it's created a need for beginning operators to know standard voice operating procedures. On phone, in addition to using standard QSO procedures, such as the customary practice of telling the other station how you're receiving him (*RST*), what your location is - (*QTH*) and what your name is, to make sure our voice communications are as understandable as possible (for hams from around the world), we use the phonetic alphabet. Standardization is the key!

Properly used, phonetics can go a long way towards smoother voice operation. This month's column focuses on the dos and don'ts of phonetics in Amateur Radio.

The Phonetic Alphabet

The phonetic alphabet is a useful convention. Over the years, several alphabets have come and gone. Many radio services use their own. Remember the TV show *Adam-12*? Remember officers Reed and Malloy calling in license plates? "Lincoln, X-ray, Ida . . . ?" Phonetics at your service.

Today, most countries of the world are members of the International Telecommunication Union, or ITU. The ITU has its own phonetic alphabet, which all amateurs should know and are encouraged to use: Nobody says you *have* to use it, however, and you'll hear a lot of variation. Many hams devise "cute" personal phonetics specifically for their call signs.

Experienced SSB operators often vary from approved ITU phonetics on occasion, especially in pileups, when many stations are calling a rare DXCC country. "German-

ny" and "Kilowatt" are popular substitutes for Golf and Kilo, respectively. Being longer and stronger words, they're more likely to be heard under tough conditions. And, for example, in the push and shove of a pileup, just the "watt" might get through, and the DX station might come back, "Ending in Kilowatt, go ahead." Some hams think other phonetics sound better in the wacky world of sideband. They may be right, too!

So why use ITU phonetics? Language, for one thing. Although English is the world's universal language, your cute phonetics, the ones you use when talking to your radio friends or on the local repeater, may not be so catchy to a foreign ear. But even spoken with a foreign accent, "Uniform," "Whiskey," "Victor" and so on are easily recognizable.

Standardization is another reason—and so is speed. Much like learning code, when you hear someone spell his name as "Juliett Oscar Hotel November," you won't hear

simply the words, your brain will instantly register them as J-O-H-N, with no middle step. Without standard phonetics, you couldn't do that. Stick with ITU phonetics—most everybody does!

Nobody wants to be welded to the rules just for the sake of the rules. But conventions are something else. We need them for smooth operation, to better our chances of being understood the *first* time. And there may well be a time in your Amateur Radio career when you'll need to be understood without delay. Remember, someone else might be counting on you!

If you're interested, drop me a line at the address listed below and I'll send you a handy card that lists ITU phonetics and other items of interest to hams and SWLs.

Send your questions, suggestions and comments to me at ARRL, Department PCN, 225 Main Street, Newington, CT 06111.

See you on the Alfa India Romeo . . . **PC**

The Pirate Radio Directory

Formats, frequencies,
times, QSL data.

\$7.95 + \$2 s/h
(\$3 foreign)

Catalog \$1, free w/order - Visa/MC

Tiare Publications
PO Box 493P
Lake Geneva WI 53147

CIRCLE 125 ON READER SERVICE CARD

***** PRESENTING *****
CABLE TV DESCRAMBLERS
***** STARRING *****
JERROLD, HAMLIN, OAK
AND OTHER FAMOUS MANUFACTURERS
• FINEST WARRANTY PROGRAM AVAILABLE
• LOWEST RETAIL / WHOLESALE PRICES IN U.S.
• ORDERS SHIPPED FROM STOCK WITHIN 24 HRS.
• ALL MAJOR CREDIT CARDS ACCEPTED
FOR FREE CATALOG ONLY 1-800-345-8927
FOR ALL INFORMATION 1-818-709-9937

PACIFIC CABLE CO., INC.
7325½ RESEDA BLVD., DEPT. 1159
RESEDA, CA 91335

Please send all reader inquiries directly.

YOU SHOULD KNOW

BY HARRY HELMS, AA6FW

INTERESTING THOUGHTS AND IDEAS FOR ENJOYING THE HOBBY

Those QSL cards that you see in such POP'COMM columns as *Listening Post* look pretty neat, huh? So you decide to get some for your walls. You hear some stations, drop them a note saying you heard them, and tell them to send you a QSL.

You wait. And then you start getting program schedules instead of QSLs. Or you get "sorry, we can't confirm your report" notes from the stations. And a lot of stations don't answer your reports at all.

Guess what? There's no law that says stations have to send out a QSL card every time you write them a letter. Instead, you have to give stations a reason to reply with a QSL, and that reason is a properly written, accurate, and useful reception report.

Writing good reception reports that result in QSLs takes a little time and effort, and the techniques to use vary depending on whether you're reporting a major international shortwave broadcaster or a domestic shortwave station serving a local audience. This month let's talk about how to report to international stations; next month, we'll look at the techniques for domestic stations.

There's certain information you need to include with any reception report, regardless of whether it's to the Voice of America or a station somewhere in the middle of Indonesia. Without the following items, there's no way a station can verify your report: the date you heard them; the time you heard them; the frequency you heard them on; enough details to prove you really heard them.

That's all you really need for a reception report. All the fancy trimmings you might want to add will do no good if you don't have the "big four." Now sending a reception report with just these four items might not always net you a QSL, but forgetting one of the four will always kill your chances for one!

A lot of SWL's trip up over the time and date. You should express the time in UTC (a.k.a. GMT or "world time") when reporting major international broadcasters. What many SWL's forget is the UTC applies to the *date* as well as time. Let's suppose an SWL in New Hampshire hears a transmission from Radio France Internationale at 10:00 PM EST on a Tuesday. When the SWL reports, he correctly converts 10:00 PM EST to 0300 UTC. But in UTC, the date is no longer Tuesday—it's Wednesday! And if the SWL reports reception at "0300 UTC Tuesday," then the good folks in Paris will likely bounce the report back without a QSL since they'll be trying to confirm the details you report against the wrong day's broadcast. (Nothing personal on their part, but suppose you're in Paris. You can either try



to figure out when a SWL heard the station or hit a cafe for a bottle of wine. Which would you choose? Me, too . . .)

Another place where some SWL's mess up involves the details of what they heard. The key word here is *details*. An item like "news and commentary by a man" doesn't go a long way toward convincing a station you heard them, since that's the sort of information you could get out of a program schedule or even POP'COMM. Your task when you report reception is to give infor-

mation you could only have gotten by hearing that station.

What sort of information makes good, verifiable details? Lots of stuff: names of announcers, items in a newscast, subjects of commentaries and editorials, names of songs or pieces of music you hear, guests interviewed on shows, etc. You'll need to indicate when you heard something, and the easiest way is to just preface each item by the time. There's no need to transcribe a tape recording of a broadcast; something like the following gives all the details you'll need to report:

0200 - Station identification by a woman as "you are listening to the New Jersey service of Radio Transdeutschlovakia International."

0201 - "DX Corner" program, hosted by Joe Zilch. Tonight's topic was a question by listener H. Helms, who wondered what he should do about his expired WPE monitor certificate.

Stuff About Signals

Believe it or not, most international broadcasters aren't that interested in getting signal reports from SWL's. That's because they usually have regular monitors throughout the world giving them detailed information about how loud their signals are and any interference. But signal information can't hurt, and some stations do appreciate it.

A lot of SWL's used what's known as the "SINPO" code. SINPO stands for Signal



РАДИО МОСКВА

RADIO MOSCOW

Dear Mr. Helms,

This verifies your report on the reception of Radio
Moscow's broadcast

Date November 17, 1987

Time 06:38-07:00 UTC

Frequency 7.34 MHz via Petropavlovsk-Kamchatsky.

Best wishes from
Radio Moscow

MOSCOW. The Lenin Library

Государственная ордена Ленина библиотека СССР имени В. И. Ленина

Фото Е. Рябова



© Издательство «Планета». З. 2490

strength, Interference, Noise, Propagation, and Overall quality. Each of these factors is assigned a number from 1 to 5. 1 represents the very worst conditions—a barely detectable signal or interference so heavy the signal can't be understood. On the other hand, a 5 means a signal so loud and free from interference like that of a local AM or FM broadcast station. Most international broadcasters will have a rating of 4 (good) or 3 (average or normal).

Personally, I don't like SINPO. It reminds me of those record ratings on the old "American Bandstand" show ("... I give it an 85 because it's got a good beat and you can dance to it!"). Personnel at international broadcasters complain that a lot of SINPO reports don't make sense, such as "SINPO 32334." Instead of SINPO, why not try plain old English? A report like "your signals were of fair to good strength with some interference after 0330 by the Radio Nederland relay at Bonaire on 9540 kHz; propagation conditions were average and atmospheric noise was low" is much more useful to the station than "SINPO 33433"!

About Your Equipment

Some SWL's really go ape when describ-

ing their equipment. They list every last item in their shack from the antenna tuner down to their battery charger. There's no need to do that. If you're using one of the major brands of receiver, just give the make and model ("my receiver is a Voltronic DX195.") Otherwise, add a short descriptive note such as "communications receiver" or "portable shortwave radio" to the make and model number. Describe your antenna in general terms, such as "sloper," "trap dipole," "random wire," etc. If you use something like an antenna tuner or preamplifier, note that.

Party Manners And Randomness

Many international broadcasters say they value listener comments about programming more than they do reception reports. Whenever I hear someone at an international broadcaster say something like that, I get the feeling they really mean they want *favorable* comments! By all means, if you liked something you heard, let the station know. But don't be shy about telling them what you don't like either. A lot of international broadcasting is dull, and it won't

get better if we don't tell them what we really want to hear.

Sending return postage to most international broadcasters isn't necessary, although a few such as Radio New Zealand International do appreciate it. Instead of return postage, try politely asking for a QSL instead of demanding it, and thank the reader of your letter for taking the time to read and process it. Let's face it, reading a pile of SWL reports every day must get old quickly, and some nice words might help expedite a reply or motivate the station to send you a pennant or other nice souvenir.

Finally, don't forget to include your name and return address! You'd be surprised at how many letters from SWL's I've received that have omitted either or both of those items.

If you follow these tips, you'll soon have a mailbox full of QSL's from major international broadcasters. Getting QSL's from domestic shortwave stations is a bit more difficult, and next month we'll look at how you can extract a QSL from them. Good DXing!

Editor's Note: Harry Helms is the editor of the Umbra et Lux newsletter, c/o DX/SWL Press, 10606-8 Camino Ruiz #174, San Diego, CA 92126.

PC

ICOM's IC-R9000 The Best Of Both Worlds

The pacesetting IC-R9000 truly reflects ICOM's long-term commitment to excellence. This single-cabinet receiver covers both local area VHF/UHF and worldwide MF/HF bands. It's a natural first choice for elaborate communications centers, professional service facilities and serious home setups alike. Test-tune ICOM's IC-R9000 and experience a totally new dimension in top-of-the-line receiver performance!

Complete Communications Receiver. Covers 100KHz to 1999.8MHz, all modes, all frequencies! The general coverage IC-R9000 receiver uses 11 separate bandpass filters in the 100KHz to 30MHz range and precisely tuned bandpass filters with low noise GaAsFETs in VHF and upper frequency bands. Exceptionally high sensitivity, intermod immunity and frequency stability in all ranges.

Multi-Function Five Inch CRT. Displays frequencies, modes, memory contents,

operator-entered notes and function menus. Features a subdisplay area for printed modes such as RTTY, SITOR and PACKET (external T.U. required).

Spectrum Scope. Indicates all signal activities within a +/- 25, 50 or 100KHz range of your tuned frequency. It's ideal for spotting random signals that pass unnoticed with ordinary monitoring receivers.

1000 Multi-Function Memories. Store frequencies, modes, and tuning steps. Includes an editor for moving contents between memories, plus an on-screen notepad for all memory locations.

Eight Scanning Modes. Includes programmable limits, automatic frequency and time-mark storage of scanned signals, full, restricted or mode-selected memory scanning, priority channel watch, voice-sense scanning and scanning a selectable width around your tuned frequency. Absolutely the last word in full spectrum monitoring.

Professional Quality Throughout. The revolutionary IC-R9000 features IF Shift, IF Notch, a fully adjustable noise blinder, and more. The Direct Digital Synthesizer assures the widest dynamic range, lowest noise and rapid scanning. Designed for dependable long-term performance. Backed by a full one-year warranty at any one of ICOM's four North American Service Centers!

 **ICOM**

First in Communications

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

All stated specifications are subject to change without notice or obligation. All ICOM radios significantly exceed FCC regulations limiting spurious emissions. 9000489

CIRCLE 127 ON READER SERVICE CARD

POP'COMM's World Band Tuning Tips

February, 1991

This PopComm 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.

Not all of the listings are for transmissions in English, nor are most beamed to North America. Keep in mind that stations make frequent changes in their broadcast times and frequencies. Changes in propagation conditions may also make certain stations difficult or impossible to receive at times. Your own receiving location and equipment also have a bearing on what stations you are able to hear.

Note: EE, SS, FF, etc. are language abbreviations for English, Spanish, French and so on. All times are in UTC.

Freq.	Station/Country	Time	Notes	Freq.	Station/Country	Time	Notes
2360	R. Maya, Guatemala	0100	vernaculars	4990	FRCN, Nigeria	0500	EE
2390	R. Huayacocotla, Mexico	0030	SS	5010	R. Garoua, Cameroon	0430	FF
2485	VL8K, Australia	1100		5025	R. Rebelde	0400	SS
3200	V of the Strait, China	1200	CC	5045	R. Cultura do Para, Brazil	0230	PP
3200	Trans World R., Swaziland	0300	vernaculars	5055	RFO, Fr. Guiana	0800	FF
3205	All India Radio, Lucknow	1300		5075	Caracol Bogota, Colombia	24hr	SS
3215	Radio Oranje, S. Africa	0300	Afrikaans	5910	BRT, Belgium	2100	various langs.
3220	HCJB, Ecuador	0100	Quechua, SS	5945	R. Austria Int'l	2200	
3315	R. Pastaza, Ecuador	0300	SS	5965	Aden Radio	0300	sign on, AA
3320	Radio Orion, S. Africa	0200	R. Suid Af. from 0300	5982	AWR, Guatemala	0100	SS
3325	R. N. Solomons, P/New Guinea	1200	Pidgin	6005	RIAS, Germany	0800	GG
3335	R. Alvorada, Brazil	0200	PP	6020	R. Netherlands	0030	
3338v	R. Mocambique	0250	PP, sign on	6025	R. Illimani, Bolivia	1000	sign on, SS
3345	RRI, Pontianak, Indonesia	1230	II	6040	V of Germany	0100	via Antigua
3360v	R. Rebelde, Cuba	eve	SS	6060	RAE, Argentina	0100	SS
3365	R. Milne Bay, P/New Guinea	1200	Pidgin	6070	CFRX, Canada	eves	relay CFRB
3366	GBC, Ghana	0525	sign on	6090	R. Luxembourg	2300	GG, EE
3370	R. Tezulian, Guatemala	0200	vern., SS	6095	Swiss R. Int'l	0130	
3380	R. Chortis, Guatemala	0200	vernacular	6110	R. Budapest, Hungary	0130	
3381	R. Iris, Ecuador	1000	sign on, SS	6115v	Voz del Llano, Colombia	0300	SS
3385	RFO, Fr. Guiana	0800	FF	6130	R. Portugal	0500	PP
3395	R. Zaracay, Ecuador	0330	SS	6135	R. Santa Cruz, Chile	0900	SS
3401	R. Ed. 6 Agosto, Brazil	0100	PP	6150	Caracol Neiva, Colombia	0400	SS
3480	V of N'tl Salvation	1300	Korean clandestine	6165	R. Netherlands	0030	via Bonaire
3905	R. New Ireland, P/New Guinea	1200	Pidgin	6185	R. Educacion, Mexico	0700	SS
3950	Qinghai PBS, China	1100	CC	6230	TWR, Monaco	0400	GG
3960	R. Liberty, Germany	0200	RR	6305	Voz del CID	0600	clandestine to Cuba
3965	RFI, France	0315	EE	6726	R. Satelite, Peru	0200	SS
3990	VOA, Liberia	0500		6995	R. Beijing, China	1100	Vietnamese
4000	R. Bafoussam, Cameroon	0430	FF/EE	7120	BBC	0500	world service
4035	Xizang PBS, Tibet	1300	Tibetan	7155	R. Liberty, Germany	eves	various languages
4238v	R. Inca, Peru	1000	SS	7170	RFO New Caledonia	0800	FF
4300	R. Moderna, Peru	0300	SS	7189	R. Africa, Eq. Guinea	2230	EE religion to 2300
4462v	R. Norandina, Peru	0400	SS	7200	R. Mogadishu, Somalia	0300	sign on
44600v	R. Perla del Acre, Bolivia	0100	SS	7215	R. Yugoslavia	2330	FF, EE
4610	Khabarovsk R., USSR	1200	RR	7265	Sudwestfunk, Germany	0700	GG
4680	R. Nacional Espejo, Ecuador	0100	SS	7270	R. Polonia, Poland	0100	Polish
4755	Caracol Bogota, Colombia	eves	SS	7300	R. Tirana, Albania	eves	various langs
4765v	R. Moscow	eves	via Cuba	7315	WHRI, Indiana	eves	EE
4770	FRCN, Kaduna, Nigeria	0430	EE, vernaculars	7335	CHU, Canada	time signals	
4783	RTVM, Mali	0600	sign on, FF	7345	R. Prague, Czechoslovakia	0100	EE
4790	R. Atlantida, Peru	0300	SS	7370	Turkey Police Radio	0400	Turkish
4800	LNBS, Lesotho	0300	sign on	7376	R. for Peace Int'l, C. Rica	0100	EE
4815	RTV Burkina, Burkina Faso	0530	sign on, FF	7416	V of Vietnam	1200	EE
4825	R. Cacao Nova, Brazil	0200	PP	7430	V of Greece	0500	Greek
4830	R. Tachira, Venezuela	0300	SS	9022	VOIRI, Iran	0500	various
4835	R. Tezulian, Guatemala	0200	SS	9045	Iran's Flag of Freedom	0330	clandestine
4845	ORTM, Mauritania	0600	sign on, FF	9345	R. Pyongyang, N. Korea	1000	RR
4845	R. Fides, Bolivia	0300	SS	9410	BBC	0500	world service
4851	Luz y Vida, Bolivia	0230	SS	9475	R. Cairo, Egypt	0200	EE
4865	LV del Cinaruco, Colombia	0300	SS	9510	R. Romania Int'l	eves	various
4875	Super Radio, Brazil	0300	PP	9520	R. Budapest, Hungary	0130	EE
4885	R. Clube do Para, Brazil	0830	PP	9530	KHBI, Saipan	1400	Christian Science net
4890	NBC, P/New Guinea	1100	EE	9535	TWR, Bonaire	0300	
4910	Voz Evangelica Mosquitia, Hond.	0130	SS, Moskito	9540	R. Nacional, Venezuela	1100	SS
4920	R. Quito, Ecuador	0400	SS	9545	SIBC, Solomon Is.	0800	
4934	V of Kenya	0300		9560	V of Ethiopia	1500	various
4945	Caracol Neiva, Colombia	eve	SS	9575	RAI, Italy	0100	EE
4960	R. Federacion Sucua, Ecuador	0030	SS	9585	R. Excelsior, Brazil	0900	PP
4975	R. del Pacifico, Peru	0300	SS	9600	R. Renascensa, Portugal	0015	PP

Freq.	Station/Country	Time	Notes	Freq.	Station/Country	Time	Notes
9605	Vatican Radio	0100	FF/EE	15020	All India Radio	1300	Sinhala
9630	REE, Spain	eves	various	15060	BSKSA	1800	
9635	RCI, Canada	1200	EE	15070	BBC	1400	
9640	Ecos del Torbes, Venezuela	1100	SS	15084	VOIRI, Iran	1700	
9670	AWR Europe, Portugal	0600	various	15090	Vatican Radio	1500	various
9680	R. Portugal	0200	PP, EE	15095	R. Damascus, Syria	2110	EE
9690	RAE, Argentina	0100	SS	15100	R. Beijing, China	0000	SS
9695	V of UAE, Abu Dhabi	0200	AA	15105	R. Yugoslavia	2100	EE
9700	R. Sofia, Bulgaria	0300	GG	15115	HCJB, Ecuador	1200	EE
9710	BSKSA, Saudi Arabia	0400	AA	15130	R. Beijing, China	0000	EE, via Mali
9725	AWR, Costa Rica	0200	EE	15135	R. Record, Brazil	2200	PP
9735	R. Oman	0200	AA	15140	R. Nacional, Chile	2300	SS
9745	HCJB, Ecuador	eves	various	15145	WINB, Pennsylvania	2300	various
9750	R. Korea, S. Korea	1200	KK/EE	15150	RCI, Canada	2100	FF/EE
9765	V of Mediterranean, Malta	0600		15165	R. Denmark	1230	Danish, via Norway
9770	R. Australia	1400		15185	R. Finland	1405	EE
9785	TWR, Guam	1200	JJ	15190	R. National Lao, Laos	1100	FF, via USSR
9790	R. France Int'l	eves	FF/EE	15215	Voz Sahara Libre	2200	SS, via Algeria
9805	R. Cairo, Egypt	0300	AA	15220	R. Budapest, Hungary	0145	SS
9810	Swiss R. Int'l	2300	various	15235	LJB, Libya	0300	AA
9815	IRRS, Italy	0600		15250	R. Portugal	1400	PP, weekends
9825	BBCF	eves	various	15260	R. Canada Int'l	1800	EE/FF
9835	R. Budapest, Hungary	eves	various	15270	R. Norway	2200	NN
9870	R. Austria Int'l	eves	various	15280	KGEI, California	2300	SS
9895	R. Netherlands	eves	various	15290	R. Sweden	2230	PP
9910	All India Radio	0100	EE	15300	R. France Int'l	2100	FF
9977	R. Pyongyang, N. Korea	1200		15315	R. Netherlands	0030	EE, via Bonaire
10010	Voice of Vietnam	1100	various	15325	FEBA, Seychelles	1230	various
11418	ISBS, Iceland	1215	Icelandic	15325	R. Japan	0200	JJ, via Fr. Guiana
11550	RTV Tunisia	0430	AA	15330	RTM Morocco	2000	AA
11580	Voice of America	0000		15335	All India Radio	1330	EE
11605	Kol Israel	0200	RR	15340	R. Havana Cuba	1900	various
11620	All India Radio	1300	Sinhala	15345	TWR, Bonaire	1100	EE
11645	V of Greece	1500	Greek	15350	R. Luxembourg	2200	FF
11660	R. Beijing, China	1200		15365	All India Radio	1215	CC
11670	R. France Int'l	0300	FF	15365	R. Netherlands	2130	Dutch
11680	KGEI, California	0200	RR	15375	REE, Spain	1900	
11695	R. Beijing, China	0300	CC/EE	15415	FEBA, Seychelles	1100	AA
11700	TWR, Guam	1200	CC	15420	WRNO, Louisiana	1500	
11705	R. Sweden	0230	EE	15445	R. Liberty, Germany	1330	various
11710	R. Havana Cuba	2200	EE	15460	R. France Int'l	1600	FF
11710	RAE, Argentina	0200		15475	Africa No. One, Gabon	2000	FF
11720	R. Australia	1200		15476	R. Nac. Sao Gabriel, Antarctica	2300	SS
11735	R. Denmark	0230	DD, via Norway	15490	R. Peace & Progress	0000	SS
11735	R. Yugoslavia	0000	EE	15507	RTV Tunisia	2300	AA
11745	R. Nacional/Radiobras, Brazil	0200	EE	15520	R. Bangladesh	1230	Bengali/EE
11750	BBC	2300	world service	15540	RTBF, Belgium	1600	FF
11755	R. Baghdad, Iraq	0130	EE to N. America	15560	R. Netherlands	2030	EE
11775	HCJB, Ecuador	0030	EE	15575	R. Korea, S. Korea	1400	EE
11785	R. Tashkent, Uzbek SSR	1200	EE	15590	KUSW, Utah	1800	
11785	R. Guaiba, Brazil	0030	PP	15600	Voice of America	2100	via Liberia
11800	RAI, Italy	0100	EE	15630	Voice of Greece	1500	Greek
11805	R. Globo, Brazil	2300	PP	15640	Kol Israel	1800	Hebrew
11810	R. Baghdad, Iraq	0130	EE	15690	WWCR, Tennessee	1800	
11815	TWR, Bonaire	1200	EE	15767	ISBS, Iceland	1410	Icelandic
11825	R. Liberty, W. Germany	0100	RR	15880	CPBS, China	1200	Taiwan-2, CC
11830	R. Baghdad, Iraq	0130	EE	17550	BRT, Belgium	1530	
11840	R. Beijing, China	0400	EE	17575	Kol Israel	1700	Hebrew
11840	R. Moscow	1600	via Cuba	17595	RTM Morocco	1400	AA
11840	R. Moscow	1600	via Cuba	17605	R. Netherlands	1630	DD, via Bonaire
11845	R. Norway	0500	NN	17630	Africa No. One, Gabon	1500	FF
11860	R. Baghdad, Iraq	2000	EE	17670	R. Cairo, Egypt	1700	AA
11870	AWR Costa Rica	2300	EE	17710	R. Pakistan	1200	AA
11880	R. Peace & Progress, USSR	2100	EE	17725	Vatican Radio	2330	PP
11890	R. Netherlands	1030	EE via Bonaire	17730	REE, Spain	2100	SS
11910	R. Budapest, Hungary	0130	EE	17735	R. Oman	1400	AA
11910	HCJB, Ecuador	1200	SS	17740	R. Sweden	1130	EE
11920	R. Abidjan, Iv. Coast	2200	FF	17740	R. Yugoslavia	1200	EE
11938	VOPC, Cambodia	1200	EE, others	17745	R. Tashkent, Uzbek SSR	1200	EE
11950	R. RSA, S. Africa	1900	PP	17765	R. Denmark	1530	Danish, via Norway
11965	V of UAE, Abu Dhabi	2100	AA	17775	KVOH, California	1600	EE/SS
11980	AWR Guam	1500	JJ	17810	R. Japan	2200	JJ
11985	BRT, Belgium	0400	Dutch	17815	R. Cultura, Brazil	2300	PP
12005	RTV Tunisia	2230	AA	17825	QBS, Qatar	2100	AA
12015	R. Ulan Bator, Mongolia	1300	CC	17850	All India Radio	1130	Tamil
12035	REE, Spain	0500	SS	17870	HCJB, Ecuador	2100	PP
12035	Swiss R. Int'l	eves	various	21455	R. Liberty, Germany	1400	various
12077	Kol Israel	0400		21500	R. Sweden	1430	Swedish
12085	R. Damascus, Syria	2110	EE	21530	R. Portugal	1500	PP
12200	CPBS, China	1300	CC	21555	R. Yugoslavia	1200	EE
13620	R. Baghdad	irr/days	via Kuwait txs	21566	RFPI, Costa Rica	2200	EE
13655	R. Jordan	1200		21605	UAE Radio, Dubai	1600	AA
13660	RFPI, Costa Rica	1900		21685	R. Netherlands	1830	EE, via Bonaire
13730	R. Austria Int'l	eves	various	21705	R. Denmark	2130	DD, via Norway
13760	WSHB, N. Carolina	eves	Christian Science net	21765	R. France Int'l	1200	FF, via Fr. Guiana
15010	V of Vietnam	1100	various				

News And Notes

Milstar - Congress has cut \$40 million from the Milstar budget. Milstar is the newest high-tech military communications satellite. With the current US economic crisis, DOD is looking for a simpler solution. The solution appears to be microsats: low orbit, easily replaced and inexpensive spacecraft. The Soviets have always used such a system for their military communications.

French Spysat - The French will launch their first spysat, the Helios, in 1993. It measures 2 by 10 meters and will carry equipment for photo and signal intelligence.

SDI BOONDOGGLE - The Office of Technology Assessment, a non-partisan scientific arm of Congress, has been studying the SDI program for several years. Its recent report indicates that the computer technology needed to make even the simplest SDI system work, cannot currently be produced nor will it be in the foreseeable future. In other words, "it just don't work!" This OTA report is several million dollars too late!

The Hubble Telescope brought to you by the makers of the B-1, the Space Shuttle, the Bradley, the Abrams M-1, the Phalanx, the Trident 3 and the \$1,900 toilet seat. (They are: an aircraft, spacecraft, armored personnel carrier, a tank, a nuclear missile and an over-priced toilet seat, respectively.)

Lost in space - No, we're not talking about the Magellan spacecraft, but about two So-

viet Cosmonauts. On an EVA (extra vehicular activity) to check the thermal covering of Mir found the hatch was locked or jammed and they had to use an emergency exit to re-enter the depressurized space station. Now that a third module, a laboratory named crystal, has been added to the complex, it is now shaped like a 'T'.

ITT or Up the Organization - Our current fleet of weather satellites will pass their expected life span in 1992. The new 1 billion dollar replacement satellites have been plagued with problems, including bad mirrors! Cost of the project has risen from \$294 million to over \$1 billion before production was halted. ITT and Ford are the contractors. I wonder what the executives at ITT and Ford think of the word 'Nationalization'?

DOVE - The amateur radio satellite that carries an FM voice synthesizer should be back in operation soon. The spacecraft has been having problems since launch. AMSAT thinks they have the problem fixed.

145.825 MHz is now a very busy frequency. It is being used by DOVE, 2 UoSAT and a new Pakistani satellite called BADR-1. It was launched on a Chinese booster. BADR-1 is a packet satellite. The UoSAT uses 1200 baud ASCII.

Evolution Revolution - A recent NASA report states that many scientists now believe the earth was too hot during its early evolu-



An SDI Launch.

tion to support or sustain even primitive life forms. The temperature of earth about the time life was to have developed, would have been just under 200 degrees on the surface. The super-heated atmosphere of largely carbon dioxide is not conducive to any life forms. NASA spokespersons state this makes the idea of complex molecules of life



SATA-LINK mobile TVRO system. Small enough for your apartment or even your camper.



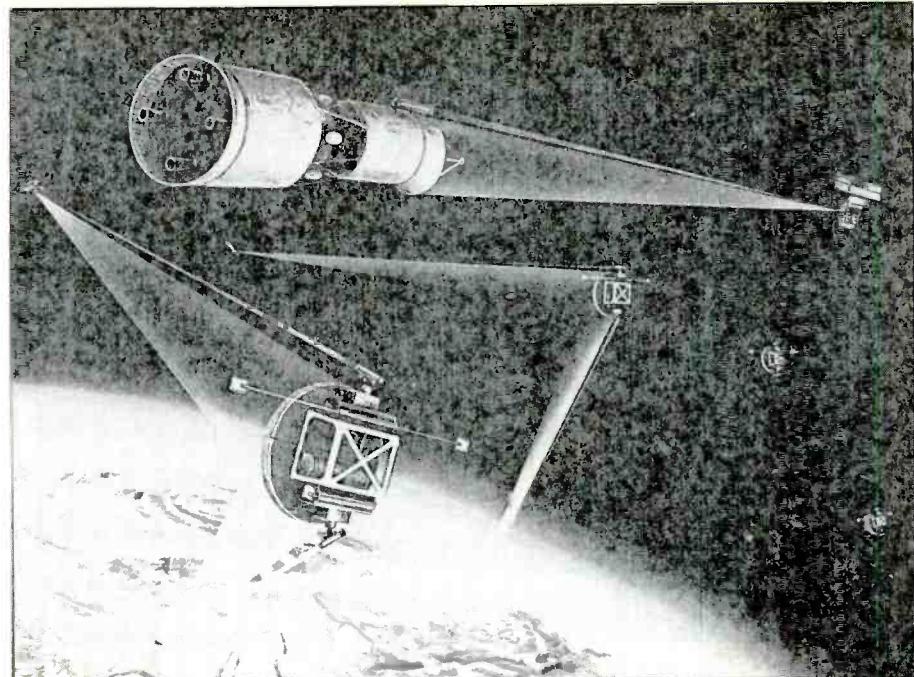
arriving by some extraterrestrial source of life less astonishing. (The mad Dutchman, i.e. the Chariots of the Gods, lives!)

Pioneer, launched in 1972, was our first space probe to leave our solar system. On September 22nd of 1990, Pioneer was 50 times farther from the Sun than earth. This translates into 4,647,809,899 miles from earth. Communications with our deepest deep space probe is expected to continue till the year 2,000 when the spacecraft will be 6.9 billion miles from earth.

Happy Campers - If you ever wanted to mount your 10' dish on top of your camper you are a TVRO enthusiast of the first order. A company called SATA-LINK has made just such an idea practical. They have designed a complete mobile TVRO system which includes a four foot dish for both C and Ku-band operation. If you are interested in KU you can only use their three foot dish. It not only mounts nicely on your camper but it can be used in apartments and other limited space locations. Give them a call at 1-800-762-7952.

143 Spacecraft - During the first 6 months of 1990 the following countries launched a total of 143 spacecraft: USSR-73, US-49, Japan-8, UK-4, China-3, France, Argentina, Brazil, India, Germany, ESA and Indonesia one each.

ESA, The European Space Agency (ESA), plans to deploy their own Synthetic Aperture Radar (SAR) satellite. It will be used to monitor compliance with arms trea-



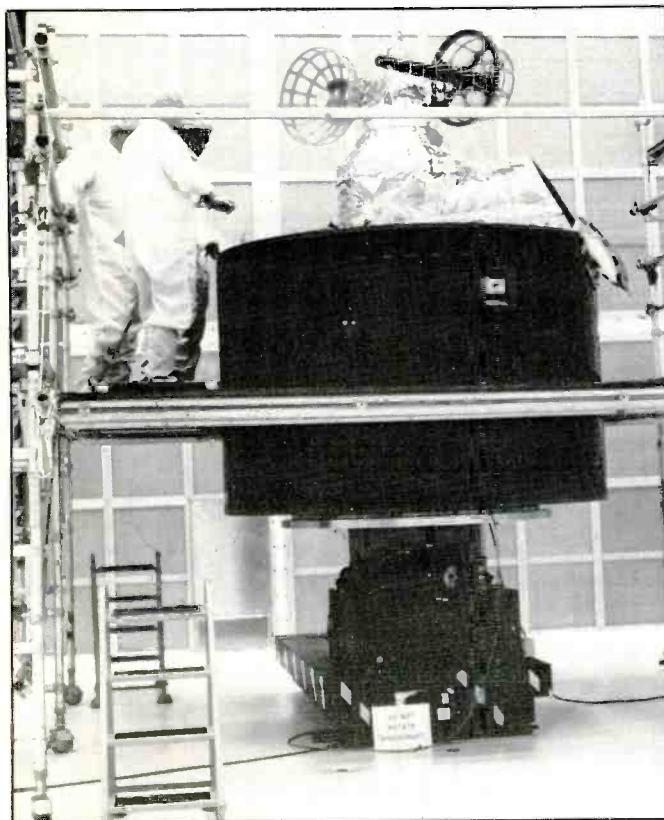
SDI Science fiction.

fies. A prototype, ERS-1, was launched in December.

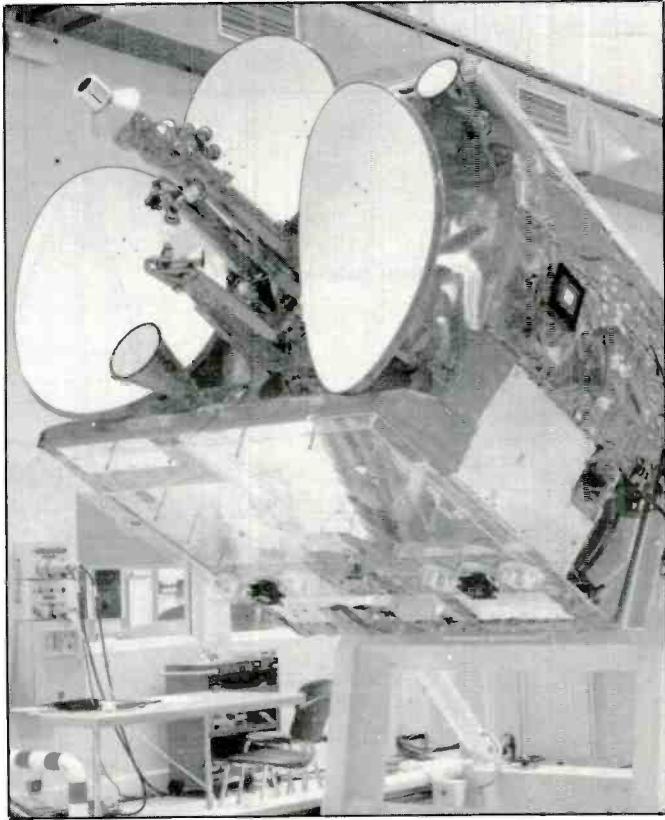
ASTRA - Luxembourg has launched its first and one of Europe's first direct broadcast TV satellites. ASTRA is located at 19° E and transmits between 11.214 and

11.436 GHz. Radio Deutsche Welle can be heard on 11.229 GHz with audio subcarrier on 7.38 MHz.

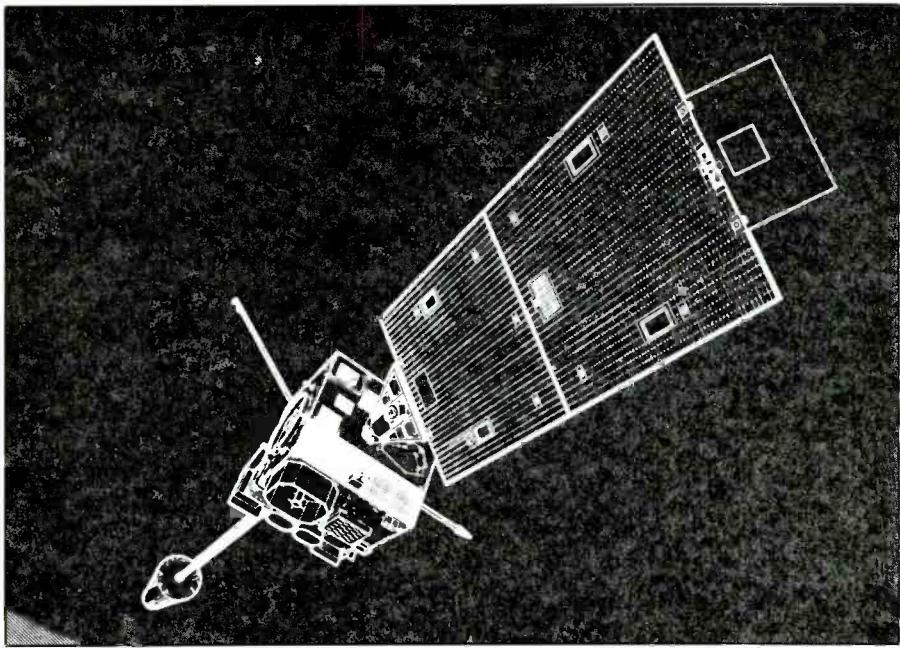
Japan has a new TV satellite called BS-A. It is located at 110° E. It transmits on 11.170 to 11.436 GHz. Radio Deutsche Welle can



Current class weather satellite.



Direct broadcast TV satellite.



New generation weather satellite.

be heard on 11.229 GHz with audio subcarrier on 7.3 MHz.

Ulysses is a joint mission of NASA and ESA to study the polar regions of the sun and interplanetary space above the poles. The spacecraft's electronics are contained in a 10.5 by 10.8 by 6.9 feet spacecraft bus. It uses a 5.4 foot diameter parabolic high-gain antenna. It has two S-band receivers, two 5 watt S-band transmitters, two 20 watt X-band transmitters. The dish is used to transmit X and S-band and receive S-band. Two

additional antenna are used on S-band. The spacecraft receives on 2111.607 MHz and transmits on 2293.148 and 8408.209 MHz. *Ulysses* was launched on October 6, 1990.

STS-41, the mission that launched *Ulysses*, conducted experiments with Voice Command System. VCS will be used to control the space shuttle cameras. Voice prints were made for each astronaut on board the shuttle. The computer will match the voice with the command and obey if there is a match.

Meteoric Communications - For several years now military and government agencies have been experimenting with an exotic form of communication. It should also be mentioned that this form of communication is one often used by Amateur Radio operators. It utilizes meteors. Meteorites are continually entering the earth's atmosphere. When they do they leave an ionized trail of gas 50 to 75 miles long. This ionized area will reflect VHF/UHF radio signals just like the ionosphere reflects HF. This tail will exist for only a very few seconds, but it is long enough to send a high speed burst of data. Trucking companies are experimenting with small transmitters that are always transmitting updated information. As the meteorites arrive between the truck and the home office the signal gets through.

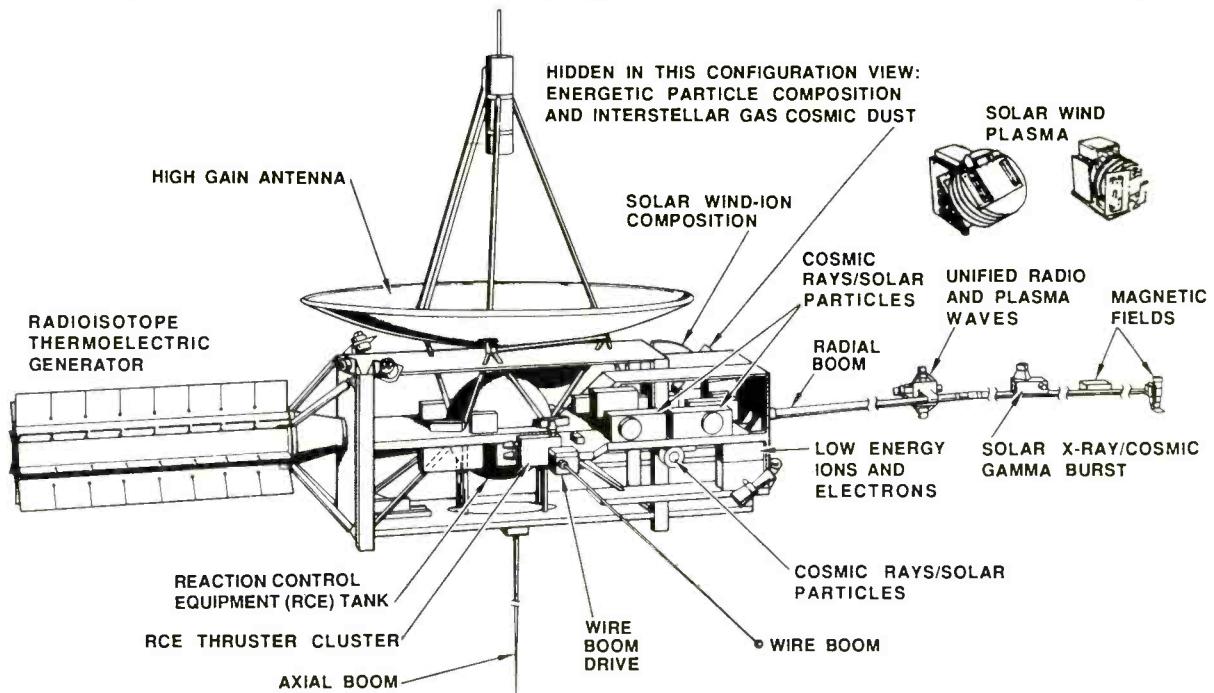
Ambler is the name of a six-legged, 12-foot tall prototype robot. It will be used to travel rugged terrain on Mars. It uses a similar motion to that of cross-country skiing.

CNES, the French space agency will host the International Space Year in 1992. The conference will be held in Deauville, France, February 12-15.

NASA - NASA Select TV is available on Satcom F-2R, Transponder 13, located at 72° W on 3960.0 MHz audio 6.8 MHz. A voice TV schedule update can be obtained by dialing (202) 755-1788. Live shuttle transmissions can be heard by dialing 1-900-909-6272 during shuttle missions. Live re-broadcast of shuttle voice communications is provided by WA3NAN (Goddard) as a public service on 31.860 MHz, 7.185 MHz, 14.295 MHz, 21.395 MHz and 28.650 MHz.

See you next month.

PC



Ulysses Spacecraft

NEW PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS

2000 Channel Receiver Covers 1 MHz to 1500 MHz

ACE Communications announced the introduction of a scanning monitor which features 2000 channels, extremely broad coverage and high speed scanning. Additionally, the unit has built-in interface to a computer's RS232 port for programmed, unattended, control and frequency surveillance logging.

The new radio is designed for either table top or underdash use, and has dimensions of 2½" H x 5¾" W x 6½" D and weighs 1 lb 2 oz. Frequency coverage of the receiver allows it to pull in distant short wave broadcasts from all over the world in addition to being able to listen to super high frequency microwave broadcasts; and everything in between.

The design of the unit assures an extremely high level of image rejection, the most common cause of interference in broad coverage receivers. Sensitivity will typically be better than .35 uV 12dB S/N in narrow band FM from 10MHz to 1.5GHz. AM sensitivity in the 5MHz to 1.0GHz range is better than 1.2uB for 10dB S/N. Tuning increments are 5KHz, 12.5KHz plus 25KHz and are user selectable. A BFO for SSB/CW ability is included in the unit.

The receiver is capable of scanning 62 banks of 32 frequencies each for a total of 1984 scanned frequencies. An additional 16 memory locations are set aside for beginning and ending search limit frequency pairs. Bank 1 can be designated as a priority bank, thus giving higher priority to up to 32 different frequencies. The scan rate of 36 channels or search increments per second will automatically slow to compensate for tuning lags if adjacent frequencies are more than 300MHz apart.

A built-in RS232 interface device allows the radio to be controlled or programmed by any computer with a standard serial port. A suggested retail price of \$499 has been set for the unit. An optional software package is available to handle frequency databases and even provide spectral analysis graphics.

For more information contact: ACE Communications Monitor Division, 10707 East 106th St, Indianapolis, IN 46256, or circle 101 on our Reader's Service.

Noise Reducing Audio Filter

Electron Processing, Inc announced a new audio filter that improves reception of signals that are either weak or experiencing interference. The Sound Purifier makes reception more enjoyable by effectively sharpening your receivers' filters and eliminating annoying "garbage" from the sound.



Noise and interference are greatly reduced, thanks to two multi-stage active "switched capacitor" audio filters. Operation is easy with the two front panel tuning controls. A handy volume control is also provided. A potent 5-watt audio amplifier delivers plenty of sound, too!

Easily used with any receiver or transceiver, the Sound Purifier connects between the external speaker and the receiver. The unit is housed in a handsome 6" x 5.25" x 3" metal cabinet and powered by regular 115 VAC. For mobile use, a +12V DC powered version is also available for an additional \$4.

The Sound Purifier is priced at \$89.95 with a special limited time introductory price of \$79.95. For additional information, contact Electron Processing, Inc. at PO Box 68, Cedar, MI 49621, or circle 102 on our Readers' Service.

AmeriCom Mobiles

E.F. Johnson 35 and 15-watt 800 MHz mobiles are available with AmeriCom networking features, including over-the-air



programming, roaming with automatic check-in, and unique ID codes.

The 8615-AN and 8605-AN mobiles also offer radio-to-radio selective call, and can operate on LTR™ systems as well as on AmeriCom networking systems. Both models provide user flexibility with up to 16 systems with 10 groups per system.

For more information, contact E.J. Johnson Co., 11095 Viking Drive, Minneapolis, MN 55344-7292, or circle 105 on our Readers' Service.

HAM RADIO IS FUN!

It's even more fun for beginners now that they can operate voice and link computers just as soon as they obtain their Novice class license. You can talk to hams all over the world when conditions permit, then switch to a repeater for local coverage, perhaps using a transceiver in your car or handheld unit.



Your passport to ham radio adventure is TUNE-IN THE WORLD WITH HAM RADIO. The book tells what you need to know in order to pass your Novice exam. Two cassettes teach the code quickly and easily.

Enclosed is my check or money order for \$19.00 plus \$3.50 for shipping and handling or charge my

() VISA () MasterCard () Am. Express

Signature _____

Acct. No. _____

Good from _____ Expires _____

Name _____

Address _____

City _____ State _____ Zip _____

PC

THE AMERICAN RADIO RELAY LEAGUE
225 MAIN ST.
NEWINGTON, CT 06111

THE EXCITING WORLD OF RADIOTELETYPE MONITORING

The 170-meter band is at the bottom of the shortwave radio spectrum at a spot where one may not expect to find RTTY signals from utility stations in the United States. Any RTTY monitored there is usually from European utility stations and is seen by European monitors.

Last August and September, however, reports began circulating that a station in the U.S. was sending some type of RTTY data on 1742.5 kHz. Was this data about missile firings or rocket launchings we were viewing? Or perhaps weather or propagation conditions? Maybe it was either geological or astronomical, as opined by Ken Downs, KD7CA, of Tennessee? Several *POP' COMM* readers were mystified—and so was I.

The station was on a frequency listed in FCC files as being set aside for use by the U.S. Air Force and non-government facilities. In this area of the radio dial, one finds a cacophony of night-time sounds ranging from beacons to navigational signals, and from Morse Code to broadcast remote pick-ups and worldwide maritime coastal voice communications.

From my observations of this station, I found it to operate from 0000 to 1200 UTC, using both 110 baud ASCII and 150 baud ACII in a non-stop transmission. Never was any type of identified ever seen. There were two types of data. One had column headings of "ID," "Day," "DOY" (day of year), "Date," "Time," "Latitude," "Longitude," "HGT" (height), "PDOP," "Clock," "V.Vel" (vertical velocity), "H.Vel" (horizontal velocity), "HDG" (heading), "Freq. Offset," "Cont," "S," and "SVS." The other data's column headers were "SV," "EL" (elevation), "AZM" (azimuth), "SN," "IODC," "CONT," and "GPS.TIME."

Under the "Date" column heading, I noticed that it remained the same for several days when I first monitored that station, and that date was past by nearly two months. The data started playing catch-up in the "Date" column after that, and by the time I began writing this column, the date had progressed to six days into the future! Weird.

The latitude-longitude coordinates initially seen were "37:23.000N" and "122:02000W." This places an "X" on the map at Sunnyvale, California. A few days later, I saw the coordinates given as "29:45.5128N," and "093:34.9633," or in the Gulf of Mexico, just off the Louisiana coastline. What do these two locations have in common? *POPCOMM* readers want to know!

Initially, I found this station transmitting at 110-baud ASCII, but several days later it upped the speed to 150-baud ASCII. It also

Who's Brent? That's what Harold Manthey of New York State would like to know. He monitored this test transmission on 18549.3 and 20742.2 kHz. The top line was not sent by the station. It is a status line printout from his M-7000 RTTY decoder. (Fig. 2)

widened the 350 Hz shift to 850 Hz.

Reception for the most part was quite good at my radio room, while some readers, such as J.M. of Kentucky, complained of extremely garbled copy. Ken Downs sent me a nicer printout of the data than what I had gotten and we share it with you (Fig. 1).

Any of you scientists out there who can make heads or tails out of this data are welcome to share your insights with us.

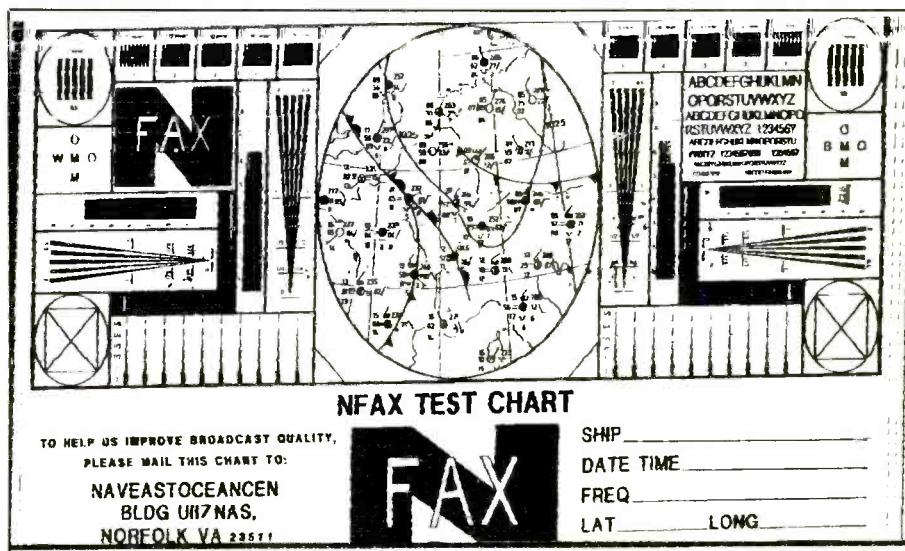
Whozit-whatzit Dept: Recently I was trying to identify a FAX station found at 1525, on 16401 kHz, which is unlisted in frequency guides. There was no way of getting a printout of any graphics, although I made a futile attempt for more than two hours. It seems that whoever was at the controls of the transmitter was getting his jollies by constantly shifting the frequency up and down.

In a follow-up to queries from loggings

contributors about their unidentified catches, Mark Gribble of Virginia writes:

"In the August issue, "Bunky" of Illinois wonders about the 425Hz ARQ transmission on 22854 which idles for a long period of time. I've monitored SAM (MFA, Stockholm, Sweden—Ed.), which sends 425Hz ARQ and FEC (also SWED-ARQ—Ed.) on 18810 daily at 1530. They send a daily news brief in Swedish in FEC mode, sometimes preceded by cables sent in ARQ mode. Before and after the above transmissions, they idle at half speed, which sounds peculiar. However, I don't find SAM listed on the frequency "Bunky" mentions.

"In September's issue, Thomas Harrington was puzzled by a logging on 14607 kHz, in which he copied 'vaenligen bkraefta med-deladetmo TTaget samt med . . .' I can't deduce who the sender would be, but the text



NAM, U.S. Navy, Norfolk, VA, sent this fax test chart on 16410 kHz at about 1655. Speed: 120 rpm. 10C: 576 (Logged by the RTTY column editor)

SV EL AZM SN IODC CONT GPS TIME
 14 17 183 09 0022 0767 +558970.000
 02 40 212 11 0407 0098 +558970.000
 11 12 128 16 0200 0013 +558970.000

ID	DAY	DOY	DATE	TIME	LATITUDE	LONGITUDE	HGT	PDOP
CLOCK	V. VEL	H. VEL	HDG	FREQ.	OFFSET	CONT	S	SVS
[00	WED	206	25-JUL-90	01:48:03	37:23.0000N	122:02.0000W	+0000	00.0
390480	+000.00	000.00	000.0	+3.1810E-07	0014 0 14,2,11]			
[00	WED	206	25-JUL-90	01:48:03	37:23.0000N	122:02.0000W	+0000	00.0
398418	+000.00	000.00	000.0	+3.1868E-07	0015 0 14,2,11]			
[00	WED	206	25-JUL-90	01:48:03	37:23.0000N	122:02.00 0W	+00000	.P
405413	+000.00	000.00	000.0	+3.1868E-07	0016 0 14,2,11]			
[00	WED	206	25-JUL-90	01:48:03	37:23.0000N	122:02.0000W	+0000	00.0
408914	+000.00	000.00	000.0	+3.1933E-07	0017 0 14,2,11]			
[00	WED	206	25-JUL-90	01:48:03	37:23.00 0N	122:02.0000W	+0000	00.0
412418	+000.00	000.00	000.0	+3.1932E-07	0018 0 14,2,11]			
[00	WED	206	25-JUL-90	01:48:03	37:23.0000N	122:02.0000W	+0000	00.0
418242	+000.00	p00.00	000.0	+3.194E-p7	0019 0 14,2,11]			
[00	WED	206	25-JUL-90	01:48:03	37:23.0000N	122:02.0000W	+0000	00.0
419749	+000.00	000.00	000.0	+3.1987E-07	0020 0 14,2,11]			
[00	WED	206	25-JUL-90	01:48:03	37:23.0000N	122:02.0000W	+0000	00.0
423259	+000.00	000.00	000.0	+3.1985E-07	0021 0 14,2,11]			
[00	WED	206	25-JUL-90	01:48:03	37:23.0000N	122:02.0000W	+0000	00.0
426770	+000.00	000.00	000.0	+3.2000E-07	0022 0 14,2,11]			
[00	WED	206	25-JUL-90	01:48:03	37:23.0000N	122:02.0000W	+0000	00.0
430604	+000.00	000.00	000.0	+3.2046E-07	0023 0 14,2,11]			
SV	EL	AZM	SN	IODC	CONT	GPS	TIME	
14	16	183	14	0022	0777	+559107.000		
02	41	213	13	0407	0108	+559107.000		
11	13	127	17	0200	0023	+559107.000		
ID	DAY	DOY	DATE	TIME	LATITUDE	LONGITUDE	HGT	PDOP
CLOCK	V. VEL	H. VEL	HDG	FREQ.	OFFSET	CONT	S	STS
[00	WED	206	25-JUL-90	01: 8:03	37: 3.0000N	122:02.0000W	+0000	00.0
434122	+000.00	000.00	000.0	+3.2054E-07	0024 0 14,2,11]			
[00	WED	206	25-JUL-90	01:48:03	37:23.0000N	122: 2.0000W	+0000	00.0
441802	+000.00	000.00	000.0	+3.2087E-07	0025 0 14,2,11]			
[00	WED	206	25-JUL-90	01:48:03	37:23.0000N	122:02.0000W	+0000	00.0
448851	+000.00	000.00	000.0	+3.2172E-07	0026 0 14,2,11]			
[00	VED	206	25-JUL-90	01:48:03	37:23.0000N	122:02.0000W	+0000	00.0
452701	+000.00	000.00	000.0	+3.2183E-07	0027 0 14,2,11]			
[00	WED	206	25-JUL-90	01:48:03	37:23.0000N	122:02.0000W	+0000	00.0
456233	+000.00	000.00	000.0	+3.2162E-07	0028 0 14,2,11]			
[00	WED	206	25-JUL-90	01:48:03	37:23.0000N	122:02.0000W	+0000	00.0
459765	+000.00	000.00	000.0	+3.2192E-07	0029 0 14,2,11]			
[00	WED	206	25-JUL-90	01:48:03	37:23.0000N	122:02.0000W	+0000	00.0
463297	+000.00	000.00	000.0	+3.2192E-07	0030 0 14,2,11]			

Several POP'COMM readers logged a transmission similar to this one last August and September. The station, unidentified and in the United States, was on 1742.5 in the 170 meter band. Data was sent in ASCII mode at 110 and 150 baud. This printout was made by Ken Downs, KD7CA, of Tennessee.

is Swedish or Norwegian and translates, 'please confirm message received along with . . ."

East and West Germany became one nation last October, shortly after this column was written. Since all of this month's loggings occurred before the unification, it was necessary in some cases to distinguish their separations. Loggings of diplomatic stations will list the two countries as they were before the merger, while maritime, weather, press, and other utility stations will be considered belonging to a unified Germany. Beginning in next month's column, all loggings, of German origin will be listed as being from one Germany.

RTTY Intercepts

4464: TRK25, ASECNA, Libreville, Gabon, w/ RYRY, 390/50 at 0100. (Fred Hetherington, FL)

4622: RFLID, French Navy, Point-a-Pitre, Guadeloupe, w/tfc, ARQ-E 850/96. (Hetherington, FL) No time given—Ed.

4813: LZA4, Sofia Meteo, Bulgaria, w/coded wx, 425/50 at 0129. (Harold Manthey, NY)

Abbreviations Used In The RTTY Column

AA	Arabic
ARQ	SITOR mode
BC	Broadcast
EE	English
FEC	Forward Error Correction 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

LOL, 850/75 at 0230 (J.M., KY)

7807.2: Lots of military-style c/s's in Packet 200/300 at various times. Calls included T2W72, F6L83, S5J83, Q8Y18, X9M59, & O6U18. (J.M., KY)

7832.5: AIR, USAF MARS. Andrews AFB, MD, w/msgs at 0322, 847/75. (Bilodeau, IL)

7875.2: R2A72 & D9P83 w/tfc at 1312, Packet 200/300. One msg from R2A72 said, "Reporting thresholds and all outages of antenna systems should be made by an immediate telephonic report with CEASR." (J.M., KY)

7887.2: A2Z72, A2Z74, C4W75 & U5V32 in Packet 200/300 at 1405. (J.M., KY)

7937.3: "MacDill WX" (MacDill AFB, FL) w/foxes & counting for "Homestead WX," "Eglin WX," and "Charleston WX," at 1245, 850/75. Same stas used LSB voice on 7939.5. (J.M., KY)

7943.3: UN-ID idling in ARQ mode, 0000-0200. (Hetherington, FL)

7954.6: LRN85, DyN, Buenos Aires, Argentina, w/nx in SS, 846/75 at 0148. (Bilodeau, IL)

7955.6: Un-ID idling in ARQ-E 410/72 mode at 1750. (Peter T., England)

7980: Y3K7, Potsdam Meteo, Germany, w/CQ & RYRY at 2340, 790/100. (Hetherington, FL)

7996: YZD9, Tanjug, Belgrade, Yugoslavia, w/nx in EE at 2330, 452/50. (Hetherington, FL)

8037.7: WGY912, FEMA, Berryville, VA & sta using c/s A1A in 200/300 Packet mode at 1527. At one point, WGY912 asked A1A for a list of c/s's for a certain county. (J.M., KY) Hmm... A1A is the emission designation for Morse Code. Wonder if there's a connection with the FEMA station that uses CW? —Ed.

8069.9: Un-ID w/continuous RYRY at 0100, 500/50. (Hetherington, FL)

8087: KMI, Dixon R., CA, w/a tfc list in FEC at 1310. (Ed.)

8126.6: Un-ID idling in ARQ-E/72 mode at 1845. (Peter T., England)

8127.1: KEM80, FAA, Washington, DC, sending a test to KLN80, FAA, Atlantic City, NJ. Text of the test was, "This is a test of the PK-232 in ACC. We will be testing with the EOF in Atlantic City, New Jersey. Test 1: XOXO . . . Test 2: RYRY . . . Now is the time for all good men to come to the aid of their country." Was ASCII 170/150 at 1424. (J.M., KY)

8164: XVM3, VNA, Hanoi, Vietnam, w/QRA, RYRY & freq of xmsn. 50 baud at 2257, foll by nx in VV at 2305. Met QRM from 8165 kHz, where 5YD, Nairobi Aero, Kenya, was sending RYRY at the same time, also 50 baud, 5YD began sending aero wx data 2343. (Ed.)

8354.9: KHW, NOAA, Pensacola, FL, wkg WTED. NOAA ship Chapman, Packet 200/150 at 1325. (J.M., KY)

8450.9: MNM, USCG, Portsmouth, VA, w/nx for WTDO. NOAA ship Oregon II, at 1253, 170/75. (J.M., KY)

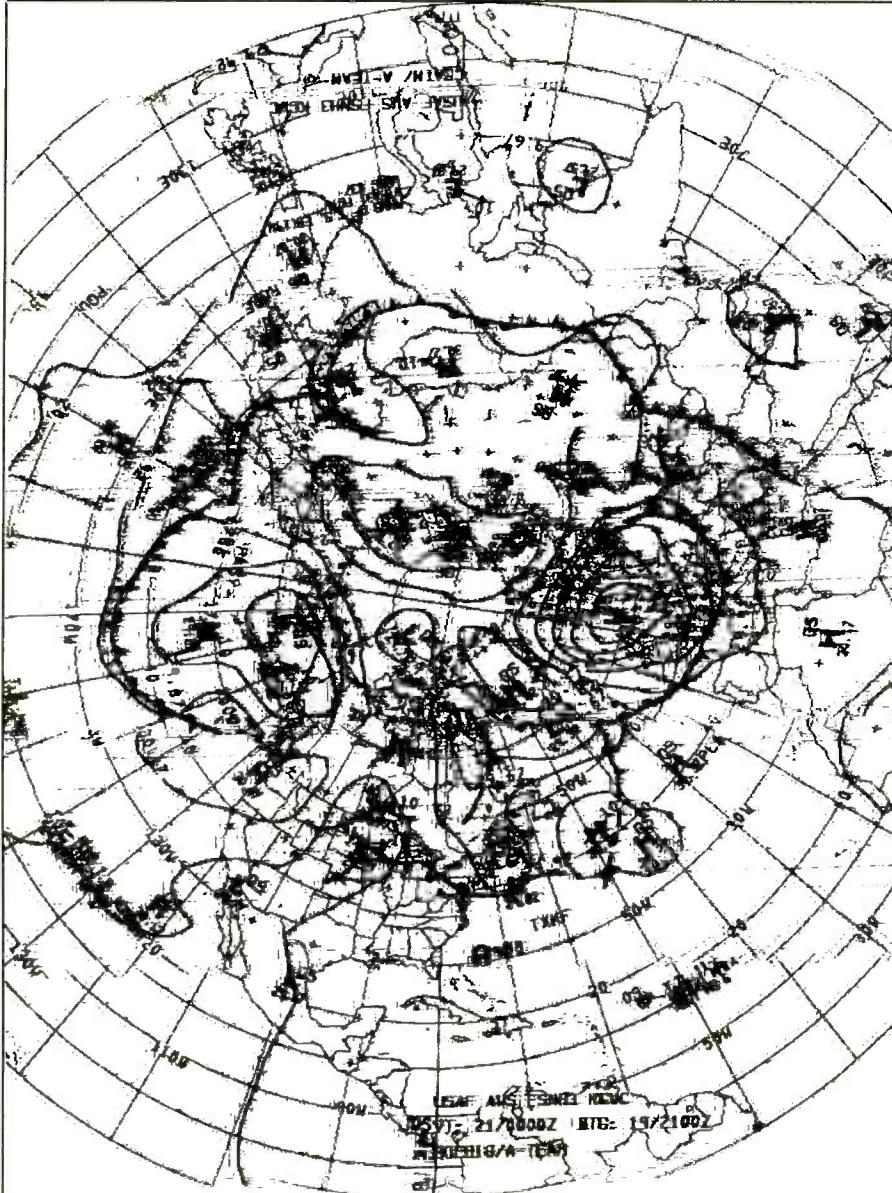
8531.8: WLO, Mobile R., AL, w/wx in FEC at 0540. (J.M., KY)

8715: WCC, Chatham R., MA, w/plaintext wx, FEC at 1255. (Ed.)

9070.5: Un-ID idling in ARQ-E3/72 mode at 1215. (Peter T., England)

9983.5: "RFFA," Defense Ministry, Paris, France, w/"controle de voie." ARQ E3/100 at 0205. (Ed.)

10749.5: Un-ID w/encryption that was interrupted briefly for a manually-typed msg re ZBW (change of



Fax polar weather map issued by the U.S. Air Force Air Weather Station, Elk Horn, NE. The western hemisphere is at the bottom of the chart, southeast Asia is at the top, and northern Africa is at the righthand side. (Printout by the RTTY column editor)

xmsn freq.), foll by a return to encryption. Was 100 baud at 0356. (Ed.)

10800: "RFLI," French Navy, Fort de France, Martinique, w/nx in FF, 100 baud at 0128; and plaintext wx in FF, ARQ-E/72, at 0908. (Ed.)

10900: Un-ID sta w/c/s GKR2 in East Asia, w/RYRY at 1100, 500/50. This sta has been active for years. It is time for someone to ID the QTH. (Hetherington, FL) Will someone please help Fred solve this puzzler?—Ed.

10916: "RFTJ," French Military, Dakar, Senegal, w/a sked of "programmes televises interessant les armées" (televised programs of interest to the armies), TDM2/96, ch A, at 0500. (Ed.)

10955: "RFTJ," Dakar, w/"controle de voie," ARQ-E/48 at 0405. (Ed.)

11112.4: ETD3, Addis Ababa Aero, Ethiopia, w/RYRY at 0323, 837/50. (Bilodeau, IL)

11299.9: "HY5D" w/RYRY + HY5D ZHC? at 1000, 500/50. Contact made at 1020 w/ "OKOKOK" foll by more RYRY to past 1055, when the sig was noticeably weaker. This sta has been active for at least five years, and also uses freqs in the 16 MHz band, and the 9.8-10 MHz area. Anyone have an ID? (Hetherington, FL)

11541.5: "RFLI," Ft de France, w/tfc at 1220, ARQ-E/96. (Ed.)

12100.5-12102: Un-ID w/foxes, 10 count & TEST w/o ID on 7 FDM channels, 75 baud at 1322. (Ed.)

12223.6: USIA, Tangier, Morocco, w/nx in AA at 0405, 406/75. (Bilodeau, IL)

12245: HZN, Jeddah Meteo, Saudi Arabia, w-coded wx, 50 baud at 1333. (Ed.)

12265: BZR62, Xinhua, Beijing, China, w/nx in EE, 75 baud at 1351. (Ed.)

13072: GKE5, Portishead R., England, w/a tfc list in FEC at 1100. (Ed.)

13082: EHY, Pozuelo de Rey R., Spain, w/a FEC tfc list at 0306. Signs itself as "madridradio." (Ed.)

13417: CCS, Santiago Navrad, Chile, w/RYRY, 75 baud at 1201, & tfc at 1208. (Ed.)

13520: RVW53, Moscow Meteo, USSR, w-coded wx, 50 baud at 1530. (Ed.)

13528.7: Un-ID w/telexes in EE, ARQ at 1300. Weak sig. Local QRM prevented possible ID. (Hetherington, FL)

13803: RCR78, Khabarovsk Meteo, USSR, w-coded wx, 50 baud at 1543. (Ed.)

13842: OBC, Callao Navrad, Peru, w/msgs in SS to

HDN at 1113, 75 baud. (Ed.)

13940: CLP65, Cuban Embassy, Managua, Nicaragua, w/crypto after ZZZZ & msgs in SS, 100 baud at 2048. (Ed.)

13985: "RFFA," Defense Ministry, Paris, France, w/a service msg to Martinique, ARQ-E/48 at 2053. (Ed.)

14339.4: BAA7, Tianjin Meteo, China, w/coded wx, 1000/50 at 1030. (Hetherington, FL)

14373: YIL73, INA, Baghdad, Iraq, w/nx in FF at 1200, 400/50. (Hetherington, FL)

14429: Un-ID idling in ARQ mode, 2011-2017. (Ed.)

14605: Y7K30, MFA, Berlin, GDR, w/a very lengthy 5F msg, 50 baud, 1504-1520. S/off w/ QRU SK. (Ed.)

14633: 9UA, Usumbura Aero, Burundi, w/RYRY, 50 baud at 0202. (Ed.)

14760: BAT93, Xinhua, Beijing, China, w/nx in EE at 1132 & 1527, 50 baud. (Ed.)

14785.3: ATP65, MEA, New Delhi, India, w/nx best in EE ending at 1140, 275/50. Poor reception. (Hetherington, FL) 9PL, Kinshas Aero, Zaire, w/RYRY, 50 baud at 1908. (Ed.)

14795.3: BZM45, Xinhua, Yuryumqi, China, w/nx in EE at 1210, 425/50. (Hetherington, FL)

14818: WFK54, USIA, New York, NY, w/nx in FF & EE at 1620, 75 baud. Covered by lots of QRM/QRN, and w some fading. Later determined to be a spur of 14638. Similar xmsn found on 14738 at 1911, w same reception problem. Also determined to be a spur. (Ed.)

14846.2: Un-ID w/encryption, TDM2/96, ch A, at 1743. Might be MUA, British Army, London, to Ottawa, ON, Canada. (Ed.)

14914-14915: Un-ID w/encryption on all FDM channels, 100 baud at 1905. Might be VER, Ottawa, ON, Canada. (Ed.)

14915: 5KM, Bogota Navrad, Colombia, w/tfc in SS to CCS, 75 baud at 1306. (Ed.)

14931: Many U.S. Army MARS stas w/msgs. Packet 300 baud, at 0101. (Ed.)

14936.2: NNNONIK, USN MARS afloat mailbox, Mayport, FL, relaying MARSgrams from NNNOCRW, USS Guam, (LPH-9), an amphibious assault ship. Was in ARQ at 1732. (Ed.)

14964: "RFFXL," French Military, Beirut, Lebanon, w/"controle de voie" RYRY, le brick, & 10 count. at 1858, ARQ-E/72. (Ed.)

15026: Un-ID, poss U.S. Army, w/"This is a test for 101 mi. to 34th ENG" + RYRY, foll by encryption, 850/75 at 1400. (Hetherington, FL)

15856.7: DMK, MFA, Bonn, FRG, w/a msg in GG & crypto after VVVVV to Havana, ARQ-E 170/96 at 1407. (Hetherington, FL)

15933.7: PWX, Brasilia Navrad, Brazil, w/RYRY to 5KM at 2330, 170/75. (Hetherington, FL)

15935: SUA291, MENA, Cairo, Egypt, w/nx in EE & FF, 1800 1900, 270/50. (Hetherington, FL)

16005: Un-ID w/5Lgrps, 300/50 at 1426. ("Bunky," IL)

16045.5: CLP1, MFA, Havana, Cuba, w/circulars to Burkina Faso, 50 baud at 1110. (Ed.)

16107.5: Un-ID, possibly KNY27, Swiss Embassy, Washington, DC, w/encryption to Bonn, Moscow, Paris, London, Beijing, Baghdad & Amman. Dateline read "New York 7.9.90." Was in ARQ at 1138. Conjecture that the xmsn pertained to the UN Security Council & the Iraqi invasion of Kuwait, because four of the five council members are represented in the list of capitals, as well as the Iraqi capital. This freq is regularly used by HBD20, MFA, Berne, Switzerland. (Ed.)

16109.5: CLP1, MFA, Havana, w/prensaminrex at 2155, 50 baud. (Ed.)

16111: HBD20, MFA, Berne, w/a long ARQ msg, 1236-1253. (Ed.)

16121: RFQP, French Military, Djibouti, w/"controle de voie," TDM2/200 at 2155. (Ed.)

16140: RGW29, Tass, Moscow, w/nx in EE, 50 baud at 1305. (Ed.)

16145: RWM77, APN, Moscow, w/nx in EE at 0910, 425/100. (Hetherington, FL)

16147.5: Un-ID French military w/many routing ID's & a "non protege msg," TDM2/200 at 1118. At 2229, HDN, Quito Navrad, Ecuador, was on this same freq w/RYRY & SGSG, 75 baud. (Ed.)

16148.5-16150.7: MKD, RAF, Akrotiri, Cyprus, w/foxes, 10 count, & RYI's, on all channels, FDM 50 baud at 1758. (Ed.)

msg & msg/EE via "UDTEX" to Riyadh, Saudi Arabia. Was SWED-ARQ at 1338. (Ed.)

19622: SAM, MFA, Stockholm, w/tfc in Swedish, 1440-1508, ARQ. (Ed.)

19671.5: Un-ID w/5L grps in ARQ at 1530. Header ment Rome, Khartoum & Addis Ababa ("Buny," IL). Freq. usually used by MFA. Rome, Italy, and its embassies —Ed.

19675: "RFQP," French Military, Djibouti, w/"controle de voie," at 1601 & 1606, and a 5L msg at 1308, all on ch A. TDM2/200. (Ed.)

19735: 4UN w/UN tfc in AA at 1545, 850/75 ("Buny," IL). I doubt that 4UN would ever send telex tfc in AA. You see, 4UN is at—Jerusalem, Israel! The day the Israelis use Arabic in international telex tfc will be the same day that a Saudi Arabian woman appears as the centerfold of Playboy magazine—Ed.

19821.7: 4UZ, UN, Geneva, Switzerland, w/as-sorted tfc, including, nx in EE, ARQ at 1137 on a Saturday. (Ed.)

19980: EPJ2, IRNA, Teheran, Iran, w/nx in EE at 1530, 425/50. ("Buny," IL)

20091: My computer database shows one possibility as being the GDR Embassy at Havana. —Ed.

20093: Un-ID in Rome w/tfc in Italian. Very weak ARQ sig at 1800. ("Buny," IL)

20162.5: Un-ID idling in ARQ mode at 1240. (Ed.)

20166: CLP1, MFA, Havana, Cuba, w/prensamin-rex & encryption at 1515, 425/50. ("Buny," IL)

20179.8: RFFA, MOD, Paris, France, relaying "controle de voie" msgs at 1505 & 1732, ARQ-E3/100. (Ed.)

20411.7: HDN, Quito Navrad, Ecuador, w/RYRY, SGSG, & 10 count, 75 baud at 1632. TFC to NBA,

1641-1645. (Ed.)

20456: Un-ID w/continuous encryption from 1807 to past 2129, when I gave up waiting to see an ID. Mode was ARQ-E/192. (Ed.)

20590.2: HBD20, MFA, Berne, Switzerland, w/encrypted tfc, ARQ at 1345. (Ed.)

20609.5: HBD20, MFA, Berne, w/encryption in ARQ at 1456. (Ed.)

20615: FRCC75, Tass, Moscow, w/nx in EE at 1350 & at 1527, 50 baud. (Ed.)

20683: CCS, Santiago Navrad, Chile, w/RYRY, 850/75 at 1345 ("Buny," IL)

20734: 4UZ, UN, Geneva, Switzerland, w/tfc in EE & FF to Kenya, ARQ at 1531. (Ed.)

20792.3: PWX33, Brasilia Navrad, Brazil, w/RYRY to RPFN at 1340, 850/50. ("Buny," IL)

20840: Y7A82, MFA, Berlin, GDR, w/5L grps at 1330, 425/50. ("Buny," IL)

20845: "RFPQ," French Military, Djibouti, w/a 5L msg at 1600, TDM2/200, ch A, and another 5L msg, on ch B, at 1603. (Ed.)

20863: FDY, French Air Force, Orleans, France, w/le brick at 2050, 425/50. ("Buny," IL)

21831.5: Un-ID w/a continuous TQQV selcal repeated in ARQ at 1542. (Ed.)

21833.3: NBA, USN, Balboa, Panama, w/RYRY & SGSG, 900/75 at 1330. ("Buny," IL)

21862: OBC, Callao Navrad, Peru, w/msgs to ZPK, 850/75 at 1555. (Hetherington, FL)

21862.7: Un-ID w/a msg in Swedish, ARQ 400/100 at 1725. (Hetherington, FL)

21880: Un-ID w/ "RG TKS YM QSL 4 QTC1 QRX NXT 73 GB GB," ARQ-E 170/96 at 1348. (Hetherington, FL)

21960: Un-ID idling, ARQ-E 170/96, 1430-1630. (Hetherington, FL)

22550.7: GYA, Royal Navy, London, England, w/a test tape at 1305, 75 baud. (Ed.)

22560: URL, Sevastopol R., USSR, w/telegrams at 1316, 50 baud. (Ed.)

22562: GKE7, Portishead R., England, w/a telex, ARQ at 1320. (Ed.)

22563: FFT91, St. Lys R., France, w/a telex at 1324, ARQ. (Ed.)

22565: PCH75, Scheveningen R., The Netherlands, w/a telex at 1328, ARQ. (Ed.)

22566.5: HEC52, Berne R., Switzerland, w/a tlc list, FEC at 1330. (Ed.)

22570: OXZ, Lyngby R., Denmark, w/nx in Danish, FEC at 1360. (Gribble, VA)

22577: SAB932, Goeteborg R., Sweden, w/ship tfc, ARQ at 1342. (Ed.)

22579: OXZ, Lyngby R., Denmark, w/a telex, ARQ at 1344. (Ed.)

22581: Y5M, Ruegen R., Germany, w/a telex at 1345, ARQ. (Ed.)

22586: HEC62, Berne R., w/a telex at 1349, ARQ. (Ed.)

22587: LGG3, Rogaland R., Norway, w/a telex, ARQ at 1521. (Ed.)

22589.5: DCF, Norddeich R., Germany, w/a telex in ARQ at 1352. (Ed.)

22592.5: UFB, Odessa R., USSR, w/a telex at 1402, ARQ. (Ed.)

22594: GKQ7, Portishead R., w/a telex, ARQ at 1400. (Ed.)

22837.7: CLP15, Cuban Embassy, Cotonou, Benin, w/msgs in SS at 1830, 505/50. (Hetherington, FL)

22904: FRG Embassy, Kinshasa, Zaire, w/tfc to Bonn at 1628, ARQ-E/96. (Ed.)

22975: HBD20, MFA, Berne Switzerland, w/a 5L msg, ARQ at 1633. (Ed.)

23013.5-23015: GXQ, British Army, London, England, w/foxes, 10 count & RYI's on all FDM channels, 50 baud at 1343. (Ed.)

23017.3: PWX33, Natal Navrad, Brazil, w/foxes, RYRY & 10 count to warship w/c/s PWJP, 50 baud at 1348. Sends msg at 1354, ending xmsn. (Ed.)

23166.5-23168.5: Un-ID, but possibly ZLO47, Irangi Navrad, New Zealand, w/encryption to Vancouver, BC, Canada, FDM 50 baud, several channels, at 1823. (Ed.)

23234: RFPQ, French military, Djibouti, w/a 5L msg at 1604, TDM2/200, ch A, foll by aero wx at 1608 & more 5L tfc at 1609. On ch B at 1611, a 5L msg was xmttd. (Ed.)

23355.5: MFA, Lagos, Nigeria, w/nx in EE, FEC-A/96, 1732-1806. X's were used as periods at the ends of sentences. Signed as "External Lagos." (Ed.)

23357: Un-ID idling, 1651-1724, ARQ6-90/200. This mode is a simplex system similar to ARQ (SITOR-A) (Ed.)

23405: SOY240B, PAP, Warsaw, Poland, w/nx in Polish, FEC at 1451. (Ed.)

23602.7: Un-ID w/encryption, ARQ, 1419-1423. (Ed.)

23697.6: DFX69H6, PIAB, Bonn, FRG, w/nx in EE 1819-1820, FEC-A/96, then s/off w/ "ende der sending fuer mitteramerika." (Ed.)

24037: CLP45, Cuban Embassy, Luanda, Angola, w/tfc in SS & crypto aster ZZZZZ to CLP1, 50 baud at 1840. (Ed.)

24432: PWX, Brasilia Navrad, Brazil, clg "RPN," Monstanto Navrad, Portugal, 850/50 at 1300. ("Buny," IL)

25012.5: GYA, Royal Navy, London, w/a test tape at 1858, 75 baud. (Ed.)

25083: URL, Sevastopol R., USSR, w/msgs in RR to Antarctica, 170/50 at 1500. (Hetherington, FL)

25390: GKY2, Portishead R., England, w/ARQ tfc at 1445. ("Buny," IL)

25417.5: FRG Embassy, Brasilia, Brazil, w/tfc in GG relayed from Bonn to the consulate at Sao Paulo, ARQ-E 170/96 at 1311. (Hetherington, FL)

26207: "DFZG," MFA, Belgrade, Yugoslavia, w/nx in SC, 425/75 at 1050. (Hetherington, FL)

26441.7: FUX, French Military, Le Port, Reunion, w/tfc to Paris, ARQ-E3 390/200 at 1210. (Hetherington, FL)

PC

SUPER LONG PLAY TAPE RECORDERS
12 Hour Model — USES 120 TAPE \$119.00*

Modified Panasonic Slimline, high quality AC-DC provide 6 continuous hours of quality recording & playback on each side of cassette for 12 hours total. Includes • Voice level control • Digital counter, etc. TDK - 120 Cassette Furnished.

PHONE RECORDING ADAPTER

Records calls automatically. All Solid state connects to your telephone jack and tape recorder. Starts recording when phone is lifted. \$28.50* FCC APPROVED

VOX VOICE ACTIVATED CONTROL SWITCH

Solid State. Self contained. Adjustable sensitivity. Voices or other sounds automatically activate either a recorder or remote mike. \$28.50*

*Add for ship & hdg. Phone Adapter & Vox \$1.50 ea. Recorders \$4.00 ea. Cal. Res. add tax. Mail Order. VISA. MIC. COD'S OK. Money Back Guarantee. Qty. disc. avail. Dealer Inquiries invited. Free data. © AMC SALES INC. Dept. P 9335 Lubec St. Box 928. Downey, CA. 90241. Phone (213) 869-8519 FAX (213) 923-1478

CIRCLE 130 ON READER SERVICE CARD

Jo Gunn Enterprises

- CB Antennas - Mobile Antennas

- 10 Meter Antennas - Coax

'Local - Groundwave - DX' Combination Antennas



JG 3 + 3 Star

SPECIFICATIONS:

TYPE: Horz. & Vert.

Polarization Twin Feed

GAIN: 14.5 DB

FRONT TO BACK RATIO:

40 DB True

SIDE REJECTION:

40-45 DB True

BACK REJECTION:

40 DB True

WEIGHT: 28 Lbs.

LENGTH: 8 Ft.

SWR: 1.1

HORZ. to VERT.

SEPARATION: 20-25 DB

WIND SURVIVAL: 100 MPH

POWER MULTIPLICATION:

40X

AUDIO GAIN: 18 DB

WIND LOAD: 2.8

TYPE: Horz. & Vert.

Polarization Twin Feed

GAIN: 16.5 DB

FRONT TO BACK RATIO:

48 DB True

SIDE REJECTION:

50-55 DB True

BACK REJECTION:

40 DB True

WEIGHT: 37 Lbs.

LENGTH: 17 Ft. 6 In.

SWR: 1.1

HORZ. to VERT.

SEPARATION: 25-30 DB

WIND SURVIVAL: 100 MPH

POWER MULTIPLICATION:

65X

AUDIO GAIN: 22 DB

WIND LOAD: 5.2

JO GUNN Antennas

DEALER INQUIRIES, PLEASE CALL

Route 1 - Box 32C, Hwy. 82

Ethelsville, AL 35461

(205) 658-2229

Hours: 10 am - 6 pm (CST)

Monday - Friday

CIRCLE 131 ON READER SERVICE CARD

CLANDESTINE COMMUNIQUE

WHAT'S NEW WITH THE CLANDESTINES

Clandestine radio fans have been keeping an ear on one so-called legitimate broadcaster since it came on the air in 1983. *Radio Impacto*, broadcasting from San Pedro de Montes de Oca, near San Jose, Costa Rica, was supposed to be a commercial broadcaster. But its program schedule included few, if any, commercials. What the schedule did contain was a lot of anti-Sandinista and, later, anti-Noriega programming.

Last spring, *Radio Impacto* declared that, since democracy had arrived in both Nicaragua and Panama, its work was finished. Sure enough, both shortwave outlets—5044 and 6150—left the air at the end of the month. The 980 kHz medium wave transmitter closed down about two weeks later and *Radio Impacto* is no more. There can now be no question as to the real reason for this station's existence, but the question of who was running this show remains unanswered. Many guess the CIA, and one earlier news item did state that the CIA was running anti-Nicaraguan broadcasts from a station in Costa Rica, but did not specify the station. So there is still some doubt—not much, but some—as to who held the purse strings for this particular propaganda effort. We can't help wonder, too, whether anyone will buy that facility and put a new shortwave station on the air. We understand the medium wave facility has been sold.

For some time now the residents of the island of Bougainville have been trying to break away from Papua New Guinea and gain their independence. Via the grapevine, we've heard that the Port Moseby government has pulled all PNG government workers off the island and closed *Radio North Solomons* there. The diesel fuel which powers the station's generators was taken, but the broadcasting equipment was left intact. It wouldn't be a surprise then if *Radio North Solomons* (3325 in the 90 meter band) returns to the air as a "clandestine" broadcasting against the Papua New Guinea government. You might want to check 3325 around your local dawn for a "Radio Free Bougainville" or similar.

Zacharias Liangas of Greece faxed us some info and two requests for an address for the anti-Castro *Radio Caiman*, after having heard it on 9965 with music and commentary from 2350 tune in. Unfortunately, there's no known address for this station. In fact, *Radio Caiman* does not even make reference to a sponsoring organization.

Liangas also notes one of the other anti-Castro outlets, *La Voz del Cid*, from 2225 tune in on 9942, announcing 9930.

Propaganda efforts against the embattled government of Ethiopia continue. The Ethi-



Radio Impacto, the "legitimate" commercial station with no commercials, says now that democracy has come to Nicaragua and Panama, its job is done. The station closed down late this spring.

opian People's Revolutionary Party is operating EPRP Radio, broadcasting in Amharic between 0330-0400 and 1730-1800 on 7010 and 9400. The 0330 broadcast would seem a likely reception possibility for North American listeners, especially on 9400, but there don't seem to be any reports so far. The EPRP announces a U.S. address: P.O. Box 710358, Dallas, Texas 75371, and on in France: 46 Rue de Vaugirard, Paris 75006.

Clandestine activity in Latin America may be down some, but *Radio Patria Libre*, the station broadcasting against the Colombian government, is still going strong. It's heard with programs in Spanish from 0030

to closing around 0115-0120. 6300 is the nominal frequency, but the station hops about a bit so scan throughout the area if you don't find it right away. It uses such frequencies as 6284.8, 6305, 6315, 6319.8 and 6338.5. Unfortunately, this is another station for which no one has been able to locate an address.

The pro-Palestinian station *Al Quds Radio*, has taken up regular use of shortwave though, to our knowledge, it hasn't been heard in North America yet. It's supposed to be active between 0600 and 1100 on 15050, using upper sideband. That frequency area tends to attract other unusual signals, including pirate broadcasters, so use caution.

Another clandestine operating near this frequency is the *Voice of the People of Kurdistan*, an anti-Iraq outlet on 15048 (also 4030-4340 and 7100 variable). It is supposed to be in operation daily except Fridays from 0400 to 0430 and 1600-1730, and Fridays only from 0900-1100 in Arabic and Kurdish.

The Southwest Africa People's Organization (SWAPO), now in power in newly independent Namibia, has discontinued its *Voice of Namibia* broadcasts.

Radio SNM (Somali National Movement) has switched frequency to 6250 (from 6300) and is operating between 1500-1700. With a schedule like that, however, it's very unlikely it will be heard by North American listeners.

Here's our usual reminder that we always welcome any information you can supply relating to clandestine radio. That includes loggings, (on a separate sheet from contributions to "Listening Post," please), QSL information, addresses, material received from stations or their backers, news clippings and so on. We can keep your identity confidential if you wish.

Thanks! And, good hunting!

PC

Coast Guard Radio - A Guide to Using and Monitoring US Coast Guard Communications

Frequencies, calls, addresses, more.

\$12.95 + \$2 s/h (\$3 foreign)

Catalog \$1, free w/order - Visa/MC

Tiare Publications
PO Box 493P
Lake Geneva WI 53147

LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

Goodbye Radio Berlin International! As we knew, the inevitable happened and, with the reunification of Germany, RBI is no more. It's political message aside, RBI was always a very friendly station that took special pains to please its DX audience. The last broadcasts from RBI were around 2300 or later on 2 October. The last minutes of RBI haven't been pinpointed yet but, sometime after 0000 on 3 October, the transmitters on all of the former RBI frequencies we could hear were identifying as Deutsche Welle. So, as expected, DW has absorbed all of the RBI facilities, adding ten shortwave transmitters to their stable. Now wouldn't it be nice if Deutsche Welle would confirm these as ex-RBI transmitters, at least for awhile?

As the Germans go about the business of reunification, the situation in the Gulf continues and is reflected on shortwave. We'd "guesstimate" that close to two dozen broadcasters now have special or increased broadcasts to that region, either in Arabic or their own language. There are many new Arabic language transmissions on the air; many of them too recent to be listed in the standard shortwave frequency directories. So, it's a good idea to proceed with extra caution when trying to identify these unlisted broadcasts and not assume anything.

Believe it or not, Radio Prague is now carrying a program in Czech from its former arch enemy Radio Free Europe! It's aired locally on 1287 medium wave and reported to be aired in parallel on shortwave over 6115, 7245, 9595 and 15255 between 2000-2030.

Another radio sign of the interesting times in which we live: we've noted that the USSR's Radio Peace and Progress is now carrying programs from United Nations Radio! It was noted at 1330 during the English service to Asia on 15180.

By now Radio For Peace International in Costa Rica will have moved its transmitters about two miles from the campus of the University for Peace. RFPI should also have increased its power by now as well. This fast-growing station has dropped its 13660 frequency, substituting 13630 between 2000-0300 weekdays and 1800-0030 weekends.

The 15350 frequency of Radio Luxembourg is reported to be carrying an English service, called RTL International, between 0600-1350. It's also been heard in North America during our local evening hours.

Readers who haven't yet logged Radio Bangladesh should check for the 1230 English segment which is being heard well of late on 15195. 17817.5 is also used at this time but, here at least, isn't being received.

A new station in Chile is Radio Esperanza, located at Temuco. It's scheduled from



This building was the headquarters of Radio Berlin International. Who lives here now?

1400-2100 Monday through Saturday, Saturdays from 0400-1100 and Sundays 1100-0400, all in Spanish. The power is only 1 kW, so it may be a tough one to hear.

Another tough one, the Voice of Kenya, is said to now be identifying as the Kenya Broadcasting Corporation; another step, however small, in taking the romance out of shortwave. Most North American logs of "KBC" are around 0300 on 4934.

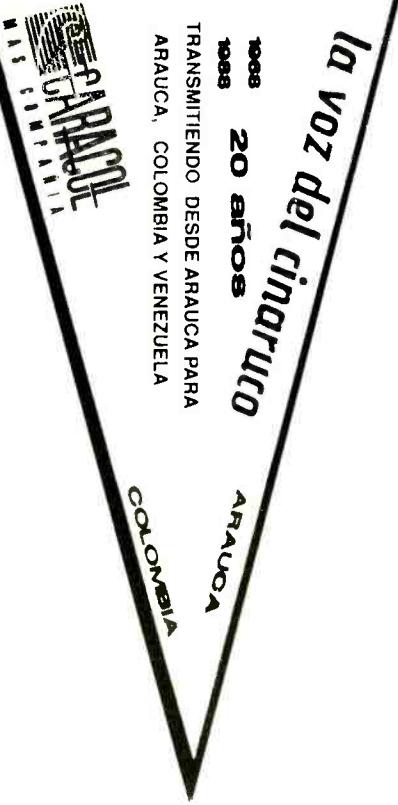
The Christian Science Network has increased its weekend schedule to 24 hours which is an addition of four hours per day. The extra programming will be a continuation of the weekend "Herald of Christian Science."



This shack full of classic receivers belongs to Ed Turner of Youngstown, Ohio.



Supporters of RNI (over WWCR, 7520 kHz, every Sunday at 0200-0600 UTC) receive one of these certificates. RNI's address PO Box 270, Flushing, NY 11352. Be sure to give a listen!

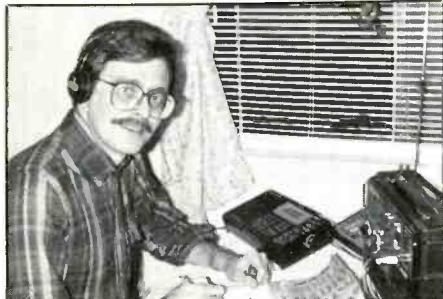


La Voz del Cinaruco in Colombia sent this 20th anniversary pennant to Frank Mierwinski in Pennsylvania.

Check 9830 between 1000-1600 and 9820 between 2000-0000 for the new High Adventure Ministries station KHBN, which should be on the air from Guam by now, broadcasting to Asia in English, Korean and Mandarin.

MAILCALL: Mike Perry in Texas says he's been having trouble hearing Argentina's RAE lately and he wonders if they've moved or changed schedules or what. As far as we know they're still active on 9690 and 11710 and should be audible in our local evenings, Mike.

Another Texan, Kevin Story, is celebrating a QSL from Radio Ulan Bator in Mongolia and notes that, currently, the station is



Here's regular Listening Post reporter William Walbesser in his shack in Ravana, New York.

being heard much better on its new 12025 frequency than on the old 12015. This is during the 1200 English broadcast. Kevin is trying to get QSL's out of Morocco, Syria, Jordan, Tunisia, Cameroon and Radio Nigeria in Kaduna. Many of these are tough ones, Kevin, but keep at it and you'll eventually get them!

William Moser of Pennsylvania enjoyed a visit to WINB in Red Lion, Pennsylvania, where he met engineer Fred Wise and announcer Bob Greenwald. Bill got a tour of the studios, transmitters and antenna farm and WINB QSL'd his day old report right on the spot! Bill even got to make a station identification announcement!

"Shortwave Feedback," Bill, is what Radio Korea describes as its "listener contact program." The broadcast you heard on 11715 was via the Radio Canada transmitters at Sackville.

Richard Stare of New Hampshire says that, despite the troubles others are reporting, he got a QSL from Radio Australia on the second try. In general, replies from Radio Australia tend to be very spotty, even with the reported new policy of issuing only one per customer per broadcast season.

Please keep those loggings, comments, questions, spare QSL's, schedules and other shortwave broadcast information coming our way. We need shack photos, too, so don't be shy about sending yours in. Remember that your loggings should be listed by country with cutting room between each and your last name and state abbreviation after each one. Following those few guidelines makes our job much easier. Thanks for your support and cooperation!

Here are this month's logs. All times are UTC and broadcast language is English, except where noted as SS (Spanish) and FF (French) etc.

Alaska: KNLS at 0833 with religious message, letters, interview, ID. (Moser, PA)

Albania: Radio Tirana, 7300 at 0225 in possible Albanian, ID 0230. (Perry, TX) 9760 at 2341. (Moser, PA)

Antigua: Deutsche Welle relay, 6040 at 0059 with IS, sign on, news. (Moser, PA)

Armenian SSR: Radio Yerevan, 11790 at 0252 with Armenian news. (Johnson, IL) 0254. (Ross, WA)

Argentina: RAE at 0426 with news in EE on 11710. (Ross, WA)

Australia: ABC, Perth, 6140 at 1113 with horse race highlights. (Johnson, IL)

Radio Australia, 9580 at 1100. (Philipps, FL) 9710 with Papua/New Guinea service at 0805. (Foss, AK) 15560 at 0627, 17795 at 0200 and 21490 at 1450. (Bailey, AR) 17630 at 1330, special to middle east. (Watts, KY) 17795 to South Africa at 0300. (Vaage, CA)

Austria: Radio Austria International, 9875 at 0130 with news. (Moser, PA) 13730 at 0049 in FF. (Walbesser, NY)

Bangladesh: Radio Bangladesh at 1230 on 15195 with IS an ID "This is the General Overseas Service of Radio Bangladesh." (Johnson, IL)

Belgium: BRT on 9925 at 2350-2359 with "Brussels Calling." (Perry, TX) 13675 at 1735. (Johnson, IL) 21810 at 1230 1300. (Stare, NH)

Brazil: Radio Anhanguera, 4915 at 0341 in PP. (Ross, WA)

Radio Nacional Amazonia, 15200 at 0038 in PP. (Ross, WA)

Bulgaria: Radio Sofia, 11660 at 2342. (Moser, PA) 15330 at 2304. (Perry, TX)

MFJ SHORTWAVE ACCESSORIES REMOTE ACTIVE ANTENNA

Receive strong clear signals
\$129.95 from all over-the-world with this 54 inch active antenna that rivals long wires hundreds of feet long.

"*World Radio TV Handbook*" rates the MFJ-1024 as "a first rate easy-to-operate active antenna ... Quiet with excellent dynamic range and good gain ... Very low noise factor ... Broad frequency coverage ... the MFJ-1024 is an excellent choice in an active antenna."

Remote unit mounts outdoors away from electrical noise for maximum signal and minimum noise pickup. Mount it anywhere - atop houses, apartments, ships, buildings, balconies.

Covers 50 KHz to 30 MHz. High dynamic range eliminates intermodulation. Control unit has 20 dB attenuator, gain control. Lets you switch 2 receivers and auxiliary or active antenna. 'On' LED. 6x2x5 inches. Remote has 50 ft. coax and connector. 3x2x4 in. 12 VDC or 110 VAC with MFJ-1312, \$12.95

INDOOR ACTIVE ANTENNA

Now you'll rival or exceed the reception of outside long wires with
\$79.95 this tuned indoor active antenna. "*World Radio TV Handbook*" says MFJ-1020 is a "fine value ... fair price ... best offering to date ... performs very well indeed."

Its unique tuned circuitry minimizes intermod, improves selectivity, reduces noise outside tuned band. Functions as a preselector with external antenna. 0.3-30 MHz. Telescoping antenna. Controls are Tune, Band, Gain, On-Off/Bypass. 6x2x6 in. Use 9 Volt battery 9-18 VDC or 110 VAC with MFJ-1312, \$12.95



ANTENNA TUNER/PREAMP



Don't miss rare DX because of signal power loss between your antenna and receiver.
\$89.95

The MFJ-959B provides proper impedance matching so you transfer maximum signal from your antenna to your receiver from 1.6 to 30 MHz. You'll be surprised by significant increases in signal strength.

20 dB preamp with gain control boosts weak stations. 20 dB attenuator prevents overload. Select from 2 antennas, 2 receivers. 9x2x6 inches. Use 9-18 VDC or 110 VAC with optional AC adapter, MFJ-1312, \$12.95

For your nearest dealer or to order:

800-647-1800

Order from MFJ and try it. If not satisfied return within 30 days for refund (less s/h). Add \$5.00 s/h. One year unconditional guarantee. Free catalog.

MFJ ENTERPRISES, INC.

Box 494, Miss. State, MS 39762
601-323-5869 Telex: 53-4590 MFJSTKV

MFJ . . . making quality affordable

Cameroon: CRTV, Yaounde, 4850 at 2350 in FF over soft music, then man with sign off announcements in FF and EE and national anthem. (Johnson, IL)

Canada: CFCX, Montreal, 6005 at 0430. (Perry, TX)

CBC on 9625 at 0204. (Olson, ND)

CHU time station, 14670 at 2230. (Olson, ND)

CFRB Toronto, 6070 at 0646. (Moser, PA)

RCI on 5960 at 0010 with interview. (Moser, PA) 9755 at 0012-0031 with EE to FF and ID. (Perry, TX) 21675 with news, ID at 1830. (Vaage, CA)

Chad: RTV Tchadienne, 4904.5 at 0525 with talks in FF. (Johnson, IL)

China: Radio Beijing, 9690 (via Spain, ed) at 0338. 15100 at 0300. (Bailey, AR) Here and 17705 at 0000-0100. (Stare, NH) 11600 at 1300 with news. Better on 11855. (Moser, PA) 11685 via French Guiana at 0334 in CC. (Foss, AK) 15450 at 1250. (Northrup, MO) CPBS-1, 11330 at 1215 in CC. (Johnson, IL)

Voice of Jinling, 4875 in CC with possible news at 1138. (Johnson, IL)

Colombia: Caracol, Bogota, 5075 at 0126 in SS with song repeating "Bogota." ID 0129. (Moser, PA) 0430. (Ross, WA)

Costa Rica: Radio For Peace International, 7375-USB at 0223. Into Mailbag at 0232. Also 2100 on 21566. (Carson, OK) 7375 at 0620. (Johnson, IL) Radio Reloj, 4832 at 0823 in SS with ID. (Moser, PA) Adventist World Radio, 9725 at 1253 with end of EE, into SS. (Moser, PA)

Cuba: Radio Rebelde, 5025 at 0446 in SS. (Ross, WA)

Radio Havana Cuba, 9710 at 0241. (Olson, ND) 11760 in SS at 0055. (Walbesser, NY) 11820 in EE at 0110. (Bailey, AR) 11835 at 0610. (Carson, OK)

Czechoslovakia: Radio Prague International, 5930 at 0300. (Carson, OK) 5930//7345 at 0100 with EE sign on. (Walbesser, NY) 7345 at 0300-0330. (Phil-

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

For 25 years,
our people have
endured long hours
and tough
working conditions
for no pay.



And 9 out of 10 would
do it again.

TO FIND OUT WHY

call

(316) 263-2100

or write

REACT INTERNATIONAL, INC.
242 Cleveland
Wichita, KS 67214

CIRCLE 126 ON READER SERVICE CARD

lips, FL) 7345//11680//11990 at 0000-0015 and 0100-0130 in EE. (Stare, NH)

Denmark: Radio Denmark, 11840 with EE ID at 0530 and on 15165//15325 weekends with news in Danish, ID in EE at 2330. (Vaage, CA)

Dominican Republic: Radio Clarin, 11700 at 0335 in SS with ID and music. (Ross, WA) (Wasn't aware this was back here and active again! ed)

Radio Zaracay, 3394.8, tentative at 0300 in SS but barely audible. Sign off at 0305. (Johnson, IL)

HCJB, 15115 at 1334 with sermon, music, address. (Moser, PA) 15155//17875 at 0038. (Walbesser, NY)

Egypt: Radio Cairo, 9475//9675 with news, music, ID 0158 0231. Also in AA on 9475 at 2335. (Perry, TX)

England: British Forces Broadcasting Service, via BBC, 13745 beamed to troops in the Gulf, at 0200 with personal messages. Dual 7125 (CW QRM) and 9640 (weak). (Watts, KY) 0200. (Carson, OK)

BBC, 5975 (via Antigua, ed) 0145 with "A Little Bit of Britain In a Box" (Phillipps, FL) 6175 (via Canada) at 0125. 12095 at 0303 and 15260 (via Ascension) at 0226. (Bailey, AR) 6005 at 0307, 9490 at 2203, 9915 at 0122 and 15070 at 2117. (Olson, ND)

Equatorial Guinea: Radio Nacional, 6250 at 0510 with SS and Hi-life music. (Johnson, IL)

Finland: Radio Finland International, 15185 at 2322. (Walbesser, NY) 15400 with news at 1202. (Moser, PA) 21550 at 1410//11820. (Carson, OK)

France: Radio France International, 9790 at 0319 with news. (Moser, PA) 15425 at 1235 in FF; different from 15435. 17650 at 1225 in FF. (Northrup, MO) 17850//17620 at 1600 with "Paris Calling Africa." (Miller, GA)

French Guyana: RFI relay, 9800 in EE at 0307. (Bailey, AR) 15200 in SS at 2328. (Walbesser, NY) 15435 at 1230 in FF. (Northrup, KY)

Radio Japan relay on 15325 in EE 0300-0330, then into SS. (Carson, OK)

Africa No. One, 9580 at 2140 with hi-life music. (Johnson, IL) (Presume FF? editor)

Germany: Deutsche Welle, 6085 (via Canada) at 0307. 6145 at 0135, 9565 at 0142. (Bailey, AR) 6120 at 0315. 9615 at 0200, 15435 at 2129. (Olson, ND) 6145 at 0101. (Moser, PA) 9765 at 0426. (Carson, OK)

Sudwestfunk, 7265 with German pops at 0415. (Watts, KY)

Bayerischer Rundfunk at 0001 with news in GG. (Watts, KY)

Greece: Voice of Greece, 9395 with news at 0410. (Ross, WA)

9420 at 0131 with news, better than 7430. (Moser, PA)

Guam: KSDA in CC at 0917 on 13720. (Foss, AK) KTWR on 11805 at 0941 with religious talk. (Moser, PA) 13720 at 1040 with "Voice of Prophecy." (Perry, TX)

Guatemala: Radio Cultural, 3300 at 0317 in EE. (Moser, PA)

Hawaii: WWVH time station, 10000 at 0642, woman with time checks, info about satellite usage. (Moser, PA)

Honduras: HRVC on 4820 at 0318 with Latin music. (Moser, PA)

Hungary: Radio Budapest, 9520//9835//11910 at 2330-0000 Mon-Sat and 0030-0100. Winter times are one hour later. (Stare, NH) 9835//1110 at 0034. (Moser, PA)

Iceland: INBS, 13855 at 2221 in Icelandic. (Moser, PA)

India: All India Radio, 11620 at 2220 with "Radio Newsreel." Close with frequencies at 2230. (Miller, GA)

Indonesia: Voice of Indonesia, 11784 at 1156 with IS under heavy QRM. (Johnson, IL)

Iran: VOIRI on 15084 at 0137 in SS with ID, talk about Iraq. (Johnson, IL)

Iraq: Radio Baghdad, 13660 to Europe at 2036 with Arabic music, commentaries. (Carson, OK) 2100 with feature "Kuwait: Parcel and Province." (Johnson, IL)

Israel: Kol Israel, 9435//11605//12077 at 2230-2300, 0000-0030, 0100-0130; 11605//12077//15640 at 2000-2030. 17575//21790 at 1100-1130. (Stare, NH) 9455 at 0015 and 17590 at 1900. (Bailey, AR)

Italy: RAI, 9575 at 0102 with news. (Moser, PA)

Japan: Radio Japan (via Canada, editor) 5960 at 0100 with news. (Phillips, FL) 11865 at 1500. (Johnson, IL) 0515. (Vaage, CA) 15480 in JJ at 1250. (Northrup, MO) 17825 at 0304. (Ross, WA)

Lithuania: Radio Vilnius, 11675//11790//15485 at 2200-2230. (Stare, NH) 15485 at 2207, 2216. (Carson, OK; Moser, PA)

Luxembourg: Radio Luxembourg 6090 at 0125 with pops. (Johnson, IL) 15350 with music at 0130. (Walbesser, NY)

Mali: Radio Beijing, via Mali relay, 11715 at 0322 with "Tibet Travelogue." (Moser, PA)

Radio Mediterranean, 9765 at 0609 with travel feature. (Moser, PA)

Deutsche Welle relay, 9565 at 0106 with news. (Moser, PA)

Mauritania: ORTM, 4847 (nominal 4845) 0639 with possible Koran recitations. (Johnson, IL)

Mexico: Radio Educacion, 6185 at 0655 in SS with announcement and opera music. (Johnson, IL)

Monaco: Trans World Radio, 0638 with IS, ID and sign on 9480 "Arise" feature. (Moser, PA)

Morocco: VOA relay, Tangier, 15205 at 1921. (Walbesser, NY)

RTV Marocaine, 15335 from 0200-0103 with Arabic music, ID and presume news. (Story, TX) (FF?, editor)

Netherlands: Radio Netherlands, 6020 at 0040. (Bailey, AR) 15560 at 0051 with "Media Network." (Carson, OK) 17605 at 1830-1925. (Stare, NH)

Netherlands Antilles: Radio Netherlands Bonaire relay, 6165 at 0028 with IS, schedules, sign on. (Moser, PA) 9590 at 0340. (Carson, OK) 15315 at 1000-0130. (Phillips, FL)

Trans World Radio, Bonaire, 11815 at 1105. (Moser, PA) 11930 at 0330 with "Bonaire Wavelength" Moscow QRM. (Carson, OK)

New Zealand: Radio New Zealand International, 15485 at 1810 with music and "Maori News" in EE. (Johnson, IL) 17675 at 0301. (Ross, WA)

Niger: ORTF, La Voix du Sahel, 5020 at 0459 with national anthem and FF announcements from woman, then Koran recitations. (Johnson, IL)

Nigeria: Voice of Nigeria, 7255 at 0447 with IS, sign on, schedule and "Africa Safari." (Moser, PA)

North Korea: Radio Pyongyang, 9977//11735 at 1103. (Moser, IL) 9977 at 1105-1115. (Perry, TX)

Norway: Radio Norway International, 9615 at 0100 with "Norway Today" on Saturday and Sunday. (Miller, GA) 11840 weekends with music and talk to Arab countries, EE ID at 0529. 11865 with news in NN, EE ID at 0310. 15165//15325 news in NN, EE ID 2322. (Vaage, CA)

Radio East New Britain, 3385 at 1020 with native music, country/western, Pidgin English vocals, ID and drums at 1100, mention of Papua New Guinea. (Johnson, IL)

Pakistan: Radio Pakistan, 15605//17555 at 1615 with "Typewriter Song" and feature on Pakistan citizens caught in Iraq. (Johnson, IL)

Peru: Radio Atlantida, 4790 at 0942 with music, man in SS, ID 0945. (Moser, PA)

Philippines: VOA relay, 15120 at 1109 with news. Tentative. (Moser, PA)

Poland: Radio Polonia, 1270 at 2348 with current events, schedule. (Moser, PA) EE at 2230-2300 and

2305-2355. (Stare, NH)

Portugal: Radio Portugal, 9705 with ID at 0200 and 0300. (Vaage, CA)

Romania: Radio Romania International, 11940 at 2100 with news, talk. (Miller, GA) 0300 in SS. (Carson, OK)

Saudi Arabia: BSKSA, 15060 at 0357 with lute IS, anthem and Koran recitations. (Johnson, IL)

Seychelles: FEBA on 11860 at 1815 with xylophone IS and man in presumed Amharic. Off at 1833. (Johnson, IL)

Singapore: BBC Far Eastern relay, 11955 at 1154 with "English by Radio." Tentative site. (Moser, PA)

Solomon Islands: SIBC, 5020 at 1118. Man with local news and sports. (Johnson, IL)

South Africa: Radio RSA, 11790 at 0354 with IS, ID, into FF. (Carson, OK) 11925 at 1358 with bird and guitar IS to 1400 sign on, then buried by Radio Marti-11930. (Moser, PA) 17745 with IS over unidentified AA station, sign on in FF. (Johnson, IL)

Radio Orion, 3125 at 0400 with ID and easy listening music. (Johnson, IL)

South Korea: Radio Korea, 9750 at 1225 with news. (Johnson, IL) 11715 at 1030 with news. (Perry, TX) 13670 at 0925 with weekly news review. (Ross, AK)

Spain: Spanish National Radio, 9630 at 0053; 15325 at 2250. (Olson, ND) 11880 at 2358 with IS and sign on. (Moser, PA) 0027. (Ross, WA)

Sri Lanka: SLBC, 1400-1505 on 9720 political interview, news. (Story, TX)

Swaziland: Trans World Radio, 15210 at 1805 with letter program. (Johnson, IL)

Sweden: Radio Sweden, 11705 at 0251 with call-in program. (Ross, WA) 21500//21655 at 1530 with news. (Johnson, IL)

Switzerland: Swiss Radio International, 6135 at 0200. (Bailey, AR) Here and parallel 9650 at 0200 sign on. (Moser, PA) 12035 at 0245. (Ross, WA) 15430 at 1520; 17730 at 0224 (via Brazil). (Carson, OK)

Syria: Radio Damascus, 12085 at 2027 in AA. (Perry, TX) 0415. (Perry, TX) 15095 at 2130 in EE. (Johnson, IL)

Tahiti: Radio Tahiti, 11825 at 0821 in FF. (Moser, PA)

Taiwan: VOFC (via WYFR) at 0247 on 9680. (Ross, WA) 21720 at 2202. (Olson, ND)

WYFR via VOFC at 0907 in CC on 9280.

Togo: RTV Togolaise. 5046.5 at 0526 with soft chime IS, national anthem and sign on in FF. (Johnson, IL)

Tunisia: RT Tunisienne, 11550 at 0315 with AA and music. (Johnson, IL)

Turkey: Voice of Turkey, 9445 at 0300 with news, press review and letterbox. (Miller, GA) 17880 at 0306. (Johnson, IL)

United Arab Emirates: UAE Radio, Dubai, 15435 at 1655 in Arabic, 0346 in English. (Carson, OK) 21605 at 1329 with frequencies, news. (Moser, PA)

Ukraine: Radio Kiev, 11790 at 2352. (Bailey, AR) 15485 at 2330. (Walbesser, NY)

Unidentified: 7189.4 at 0615 with inspirational music and talk in presumed German. Think this is NBC, Namibia. (Johnson, IL)

United States: Radio Marti, 11930 at 1400 via Greenville with IS, ID and sign on. All SS. (Moser, PA)

WINB, Red Lion, PA, 15145 at 2320, into FF 2330. (Carson, OK) 15295 at 1630. (Moser, PA)

USSR: Petropavlovsk-Kamchatka, 4485 at 1128 with woman in RR. (Johnson, IL)

Radio Moscow, 9530 at 2310, 11675 at 0350, 15355 at 2300, 15425 at 0224, 17575 at 1606. (Bailey, AR) 11710 at 0245. (Perry, TX) 11730 at 2259 and 11930 at 0300. (Carson, OK) 11840//15230 world service at 2130. (Vaage, CA) 11850//11980//12040//15290 at 0128. (Walbesser, NY) 15410 at 0619, 15585 at 0706. (Foss, AK) 15580 at 2145. (Olson, ND) 15920 (? editor) parallel 15355//15425 at 2100-0200. (Phillips, FL)

Uzbekistan: Radio Tashkent, 9715 from 1335-1345 with news. QRM from VOA. (Story, TX) 11785//15470 at 1200-1230. (Stare, NH)

Vatican: Vatican Radio, 9605 at 0051. (Bailey, AR) 11725 at 0310 with features. (Johnson, IL)

Venezuela: Radio Tachira, San Cristobal, 4830 in SS at 0114. (Walbesser, NY)

Ecos del Torbes, 4980 at 0947 with Latin music, man in SS, ID 0949. (Moser, PA)

Radio Nacional, 9540 at 0050 with Latin pops and ID/sign off routine in SS. (Johnson, IL)

Vietnam: Voice of Vietnam, 9840 at 1008-1030 with news, current affairs. (Story, TX) 12030 at 2242. (Ross, WA) 15010 at 1805. (Johnson, IL)

Yemen: Radio San'a, 9779.6 at 2055 with AA music and talk, news on the hour, Koran, anthem and off at 2114. (Johnson, IL)

Yugoslavia: Radio Yugoslavia, 7215//11735 at 0009. (Moser, PA) 11735 at 0002. (Carson, OK) 15105 at 0026. (Johnson, IL)

A bow and a tip 'o the hat to this month's reporters:

John Miller, Thomasville, GA; Jim Ross, Vancouver, WA; John S. Carson, Norman, OK; R.C. Watts, Louisville, KY; Richard Stare, Portsmouth, NH; Kelly Bailey, Midland, AR; William Moser, New Cumberland, PA; Tim Johnson, Galesburg, IL; Bjorn Vaage, Granada Hills, CA; David Olson, Watford City, ND; Kevin Story, Midland, TX; Mike Perry, Beeville, TX; Marty Foss, Anchorage, AK; Sharon Phillipps, Miami, FL; Mark Northrup, Gladstone, MD and William F. Walbesser, Ravana, NY.

"Til next month—good listening!"

PC

ASSOCIATED RADIO

8012 CONSER BOX 4327
OVERLAND PARK, KANSAS 66204

CALL 913-381-5900

FAX 913-648-3020

SHORT WAVE

AMATEUR

RADIO

CALL FOR
YOUR
LISTENING
NEEDS

New and reconditioned equipment.

BUY—SELL—TRADE—SERVICE



Send \$3.00 for our current catalog and wholesale sheet.

Please send all reader inquiries directly.

TELEPHONES ENROUTE

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

Jack Gruver, a reader from Florida, wrote in to note that in the evolution of newer forms of personal communications, such as cellular, the terminology describing these things is also being born. He likes to read our column, he says, because it helps him to keep up on these words. He's waiting for us to tell him the meaning of the terms *activated* and *nonactivated*, which he sees in some ads for celluarls.

When you see those terms, you'll note that the phone described as activated is being offered for less money than the nonactivated one. That's because when you buy the activated one you agree to take out a contract with a particular company to handle your calls for a certain minimum period of time. This is an incentive to expand the subscriber rolls of the cellular service supplier, who has made the special pricing arrangements with the equipment dealer. There are some good deals to be had with these arrangements if you watch for them, so long as you know what *activated* means when you see the word.

On the other hand, nonactivated means you pay full price but can sign on with the company of your choice for an indeterminate period of time.

Watch This

Dick Tracy has a wrist radio, and now you can have one too. Not a two-way job, mind you, but the new generation of exotic pagers. When your wristwatch signals you, instead of a box on your belt, you'll raise some eyebrows.

Motorola's Wrist Watch Pager costs less than \$300, and weighs less than two ounces. The company hopes that it will appeal to persons who have resisted using paging devices. Initially, it is being marketed in the U.S. through RCC paging companies, but eventually it will also be marketed in the U.S. by Timex. It is also available in Canada, the United Kingdom, and many Pacific areas.

This unit is compatible with existing RCC signals. Four buttons on the side of the pager are used to operate the unit, which gets more than 45-days of continuous operation on one 1.3 volt zinc-air battery. When messages are received, the watch displays the phone number of the caller on its LCD display screen. At the same time, it sounds a *beep* tone which, thankfully, can be shut off if you temporarily don't wish to hear the alert tone.

The Motorola unit stores up to eight messages, all of which are "time stamped" to advise the user of what time they came through. There is also an automatic timer so



Motorola's Wrist Watch Pager is something new.

that the device will be able to receive messages only during certain specified hours.

There's a memory saver circuit in this, so that no messages are lost when the unit is turned off, or when the battery is changed. And, yes, it does display the time, too. You can set it to show the time (either 12 or 24-hour clock), the day, and the date. There's also an alarm.

You were wondering about its technology. It has an advanced microprocessor decoder, several IC's, and a two-part omnidirectional antenna located in the housing and the wrist band. It has been designed to

resist water, shock, perspiration, and static electricity.

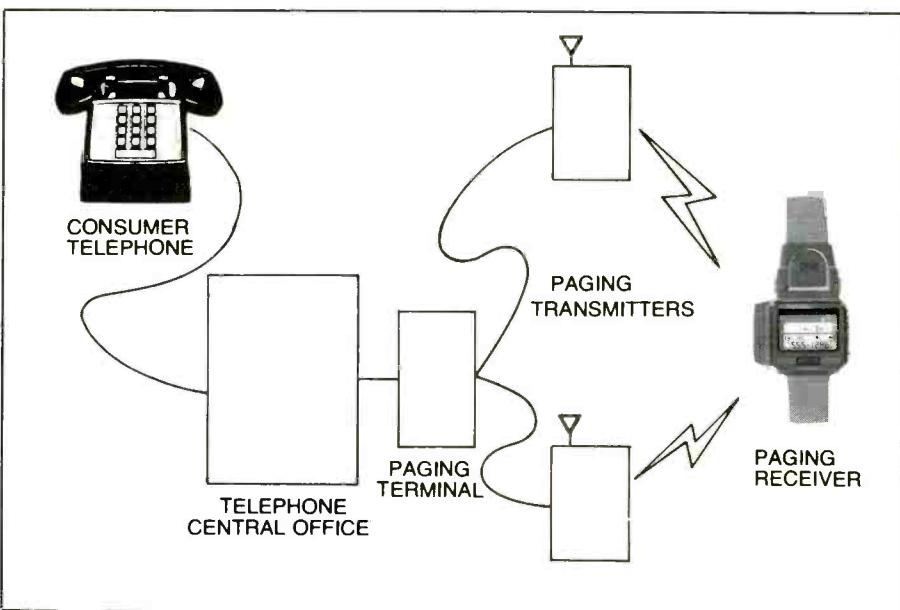
This is a clever idea, although it's hardly a style leader as wristwatches go. That is to say, you might not think it's going to look as sharp on your wrist as a gold Rolex. Maybe even not as good as a stainless steel Rolex. But then, can a Rolex receive paging messages? This comes from the Motorola Paging Division, 1550 N.W. 22nd Ave., Boynton Beach, FL 33426-8753.

A somewhat different approach is being taken by the Seiko Receptor Message Watch. This is a \$275 wrist pager which picks up its paging messages from SCA subcarriers of FM broadcast stations. Paging services, nationwide, are provided by AT&T Laboratories, Portland, OR.

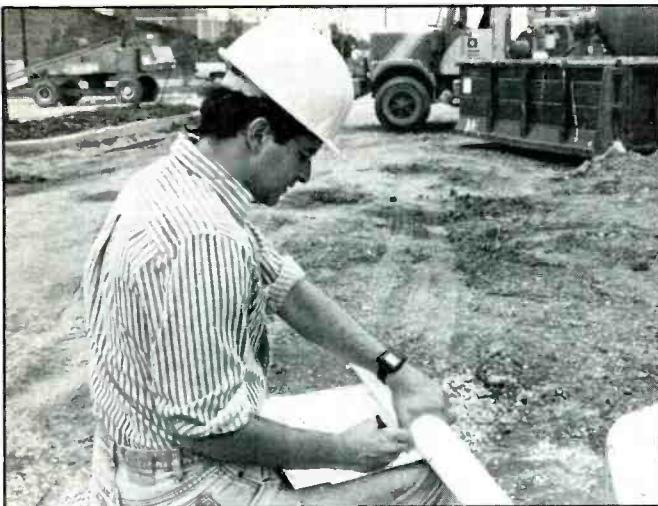
Regardless of the city where the watch is used, the unit will automatically seek out the local FM stations (up to three) carrying the proper messages. Phone numbers (sixteen digit limit) can be displayed, as well as messages to call the office or home. Users are also able to establish their own private prearranged message codes. Yes, this watch gives a read-out of the time, but it has no internal clockworks. The precise local time is transmitted in the radio signals.

The Seiko watch doesn't run continuously, but turns itself on to look for messages at intervals of slightly less than two minutes. This gives its lithium battery a life of about nine months. The circuitry has its antenna in the watch band.

Callers wishing to pass messages to sub-



How the calls get through to the Motorola Wrist Watch Pager.



The wrist pager is hoped to appeal to those who didn't care for the idea of belt or pocket pagers.



"Hock my gold Rolex? No, but would you believe this is my new beeper?"

scribers are given a local number for the Receptor system, and the message will reach the subscriber in any city. Of course, this is a new system, so it hasn't yet been opened up coast-to-coast. It has been operating in Portland, OR and there should be seventeen more cities on line by the end of this year.

News From Here and There

Herndon REACT, in Virginia, received a donation of two transportable cellars from Bell Atlantic Mobile Systems, of Bedminster, NJ. Herndon REACT serves northern VA, DC, and adjacent areas of MD, primarily monitoring CB Channel 9 for calls from motorists in distress. Secondarily, the Herndon group provides support for special events such as parades, bike races, charity runs, etc.

The cellars will be placed in REACT's vans, which serve as mobile communications centers that are at times called upon to provide emergency services.

In Bismarck, ND they've decided to incorporate cellular phone usage as part of the driver training program at Hughes and Similke Junior High Schools. US WEST Cellular, one of the cellular service suppliers in Bismarck, noted that cellars are becoming so much a part of car usage these days, that it's only natural to expect that the area's young drivers will have occasion to use the devices. But using a cellular from a vehicle is done best when there has been some special training provided.

Bismarck broadcaster KXMB-TV (CBS affiliate) prepared a 15-minute video that teaches how to place emergency (9-1-1) calls, to use call forwarding, and speed-dialing features to avoid distractions on the road. The video also tells drivers to drop the phone handset and use the hands-free feature on most phones in order to keep both hands on the wheel.

In Bismarck, there are drivers as young as 14 on the road behind the wheels of farm



Nokia is going to score big with their versatile PT612 handheld.

vehicles. Many of these vehicles have cellars, so Bismarck seemed like a good place to start this program. Another factor is the severe winter weather, and the hope that youngsters caught in a blizzard will know how to use a cellular to summon help. This is a pilot program which, if successful, will be evaluated for use by US WEST Cellular in other areas it serves. US West New Vector Group, Inc., is headquartered in Bellevue, WA.

New Hardware

Nokia-Mobira, Inc. announced a new handheld cellular with lots of options that makes it one of the more versatile units around.

Called the PT612, the new phone is so

lightweight that it can be tucked away in a suit pocket. Using the optional Portable Road Kit transforms the PT612 into a portable-mobile unit. This kit includes a quick-charge cigarette lighter adapter, also a transferable antenna for maximum signals. The lighter adapter rapidly recharges the phone's battery so it's ready for use when removed from the vehicle.

The optional PT612 car installation kit provides all the features of a permanently-mounted car phone, including data interface, a cradle to hold the phone, and hands-free operation. The Nokia-Mobira Noise-Canceling Hands-Free System eliminates feedback, noise, and echo.

Of course, the PT612 can still be removed from the car and taken with its owner for security purposes, or for use as a handheld. As a handheld, it has an hour and a quarter of talk time, or 14 hours of standby, without needing a charge. It can be fully recharged in only an hour.

A desktop charger and AC adapter are included with the PT612. The PT612 has a 40-number memory, automatic redial, speed dialing, a call forwarding indicator, and provisions for registering the unit with two different calling numbers. An electronic locking system and outgoing call restriction capability eliminates the possibility of unauthorized use.

Other features include low battery warning; 16-digit display; call-in-absence indicator; adjustable receive volume; scratch pad memory; automatic power off; signal strength indicator.

For more information on the versatile PT612, contact David N. Scott, Nokia-Mobira Inc., 2300 Tall Pines Drive, Suite 100, Largo, FL 34641.

This column seeks your input in the form of questions, opinions, news clippings, and photos relating to personal communications, pagers, etc. We are also interested in hearing from cellular service suppliers as well as equipment manufacturers.

SCANNING VHF/UHF

BY CHUCK GYSI, N2DUP

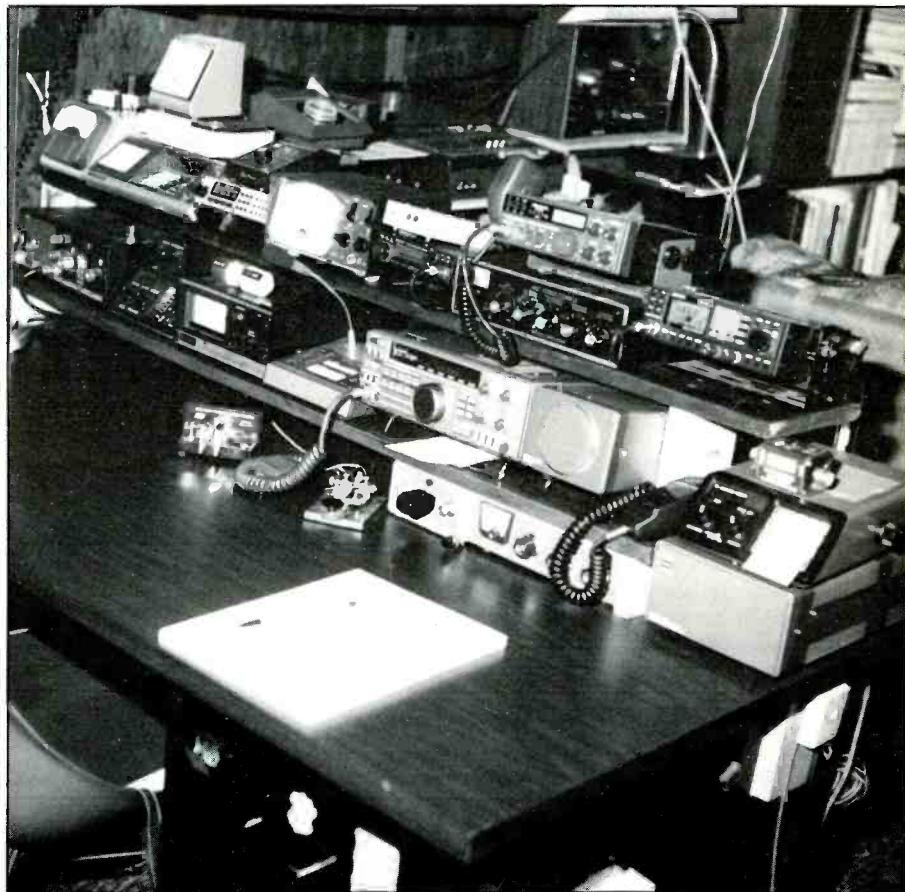
MONITORING THE 30 TO 900 MHz "ACTION" BANDS

One of the nice things about scanning is that you never seem to run out of things to listen to. When you get tired of listening to police and fire calls, you can try to tune in federal agents or mall security or even satellites in space. There's plenty to listen to, no matter where you live.

Leonard Akers of Clinton, Indiana, says that the sheriff's department in Vermillion County, Ind., has started scrambling about 10 percent of its communications. In a news clipping that Leonard sent along, the sheriff said the type of information that would be scrambled would be what officers normally would have to stop and use a telephone to pass along. The sheriff adds that his department isn't trying to hide anything, but that it is safer for his officers not to be overheard in certain cases. Leonard says that the Vermillion County sheriff's office uses 155.130 base, 154.890 mobile and 155.925 for car to car, and that they scramble on any of the frequencies. He adds that the scrambling sounds like Donald Duck, which would indicate voice-inversion scrambling. In this type of scrambling (which is the most prevalent), the highs become lows and the lows become high, which makes it almost unintelligible. Leonard's question for POP'COMM is whether there is a modification he can make to his Realistic PRO-2005 scanner or whether there is an add-on device available to descramble these transmissions.

First, the Electronic Communications Privacy Act of 1986 makes it illegal not only to sell, but to own a descrambler for the purpose of decoding encoded messages. There are penalties set forth under this federal law. Prior to Congress' enactment of this law, it was perfectly legal to sell or own one of these devices, so many people do still have one of these decoder boxes in their possession. Unless you are one of these lucky few, you're pretty much out of luck unless you feel like building such a device (which is not an entry-level project). In the meantime, unless you can convince someone who already owns a descrambler to part with his or her device for a pretty sum, you'll have to contend with listening to the occasional quacking.

George Bandorf of Daytona Beach, Florida, writes in to ask about the so-called UHF citizens band he has read about. George asks whether a private citizen can use this band for personal communications or does one need to use it for business communications. He also asks where equipment for this band can be obtained from and whether a license is necessary. To start off with, this band, which is known nowadays as the general mobile radio service or GMRS, is available to individuals exclusively. The Federal



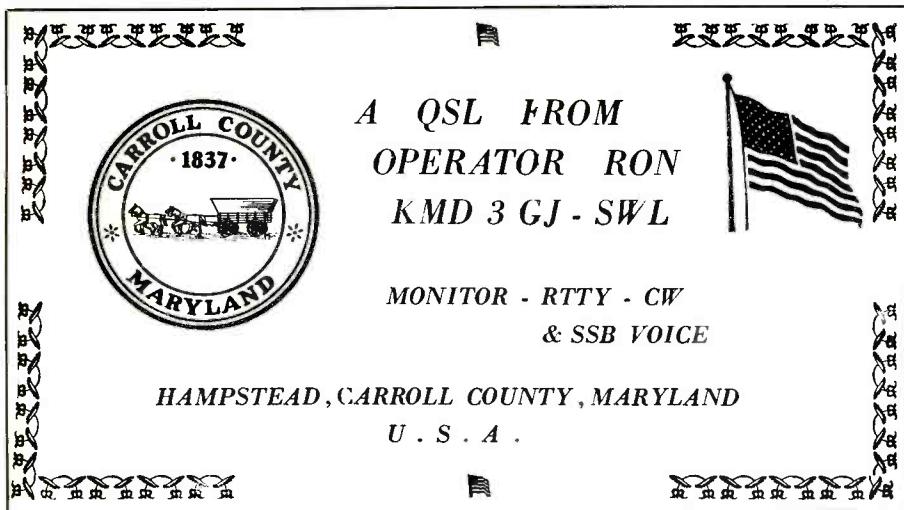
This is the well-equipped listening post belonging to Maurice Dandeneau, K1STB, of Warwick, Rhode Island. Quite an array of scanners, ham equipment and two-way radios can be seen here.

Communications Commission recently revised GMRS rules to exclude all types of operations on this band except for individuals. While many businesses, clubs and governmental agencies also use this band in some areas, their licenses are grandfathered and can be renewed as long as they choose not to modify their licenses by adding mobiles, increasing antenna height, etc. GMRS equipment is readily available from almost any two-way radio shop. Virtually all two-way radios are type accepted under FCC Part 95, which governs CB, radio control and GMRS stations. There are a number of low-cost two-way radios available to the GMRS user these days. Mobile or handheld radios can be purchased for less than \$500 if you look around carefully.

GMRS utilizes eight channel pairs and seven simplex channels. The frequencies of 462.550, 462.575, 462.600, 462.625, 462.650, 462.675, 462.700, and 462.700 can be used for base and mobile or handheld operations. The paired channels, 467.550 to 467.725 MHz, can be used for

repeater input use only. In other words, if you used a repeater to extend your mobile units' coverage, you would use the frequency 5 MHz higher than your 462 MHz channel to access the repeater. Some GMRS clubs operate repeaters for their members. In addition, the seven frequencies—462.5625, 462.5875, 462.6125, 462.6375, 462.6625, 462.6875, 462.7125—can be used for low-power (5 watts effective radiated power) use only, typically for handheld radios only, however, base stations and mobiles can operate here, too, but under the power restriction.

A GMRS license is required to operate a GMRS station, and it is the typical license obtained by a police department, business, etc. The form, available from the FCC, requires a \$35 filing fee. However, before applying for the license, one should monitor the eight main channel pairs in their area to find the quietest channel to operate on. Individual licensees are allowed to request up to two channels pairs to operate on. In addition, the FCC automatically allows licensees



The station card from Ron, Registered Monitor, KMD3GJ, of Maryland. Why not send us your card?

to operate on all the seven low-power channels, plus, the channel pair of 462.675/67.675 can be used without specifying being licensed on it for emergencies or motorist assistance only. Many REACT and emergency clubs monitor this frequency (most with a CTCSS tone of 141.3 Hz) for emergency assistance. If you are considering be-

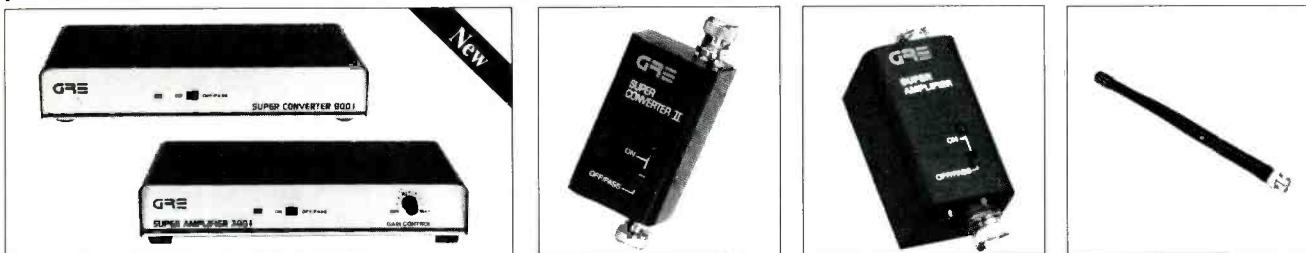
coming a GMRS licensee and user, you might want to contact the Personal Radio Steering Group, which is a watchdog group that publishes sporadic bulletins on GMRS news, as well as having a library of information available for getting involved in GMRS. For information on PRSG, write to: PO Box 2851, Ann Arbor, MI 48106.

Matt Heinze of Downey, CA writes in with a trick he discovered on his Uniden Bearcat 205XLT handheld (which is the same radio as the Bearcat 200XLT). Joe read in POP'COMM not too long ago the trick to clear the memories of the 200 channels. That trick read as follows: First press and hold the 2, 9 and manual keys simultaneously and turn on the power. Turn the radio off. Then, press 2 and 9 and scan simultaneously while turning on the power. This will clear the memory except the first 25 channels, which will be test frequencies. Matt says that he did just the first step and all 200 channels were blank. He tried it using both of the two steps described above, but then the test frequencies were entered in the first 25 channels. Again, he tried just the first step (2, 9 and manual), and the test frequencies were gone. He wants to know if anyone else has noticed this trick. (I'd try it on mine, but I really don't want to reprogram 200 channels!)

What are you hearing on your scanner this winter? Have any scanning tricks you'd like to share with our reader? How about a picture of your monitoring post? Send your questions, photos and frequencies to: Chuck Gysi, N2DUP, Scanning VHF/HF, Popular Communications, 76 North Broadway, Hicksville, NY 11801-2909. **PC**

Improve Your Scanning Coverage!

GRE America is proud to introduce a new family of products to enhance your scanning pleasure! First, GRE has designed the new **Super Converter 9001** for base model scanners. The 9001 converts 810 MHz - 950 MHz down to 410 MHz - 550 MHz. The 9001 is the perfect alternative to buying a new, expensive scanner covering the 800 MHz band. Next, GRE announces the new **Super Amplifier 3001** for base model scanners. The 3001 will increase gain by as much as 20 dB, and is engineered to help scanners with low sensitivity pull in weak signals. Both products use BNC connectors, (1) 9 volt battery and have an off/pass switch for returning to normal operation.



Super Converter 9001 & Super Amplifier 3001

Super Converter II

Super Amplifier

All-Band Antenna

U.S. & International Distributorship inquiries welcome. Please call GRE for further information!

Let GRE Manufacture Your Radio Products!

GRE America, Inc. is a leading OEM developer and manufacturer of radio telecommunications products such as:

- Cordless Telephones
- CB & Marine Radios
- Spread Spectrum "engines"
- Remote Monitoring Systems

If you need a high quality, cost competitive, reliable manufacturer, GRE will provide you with a free production quotation.

For more information, please call GRE at (800) 233-5973. GRE is a subsidiary of General Research of Electronics, Inc.



GRE America, Inc.

GRE America, Inc.

425 Harbor Blvd., Belmont, California 94002

(415) 591-1400 Outside California: (800) 233-5973

CIRCLE 123 ON READER SERVICE CARD

DTMF Selective Calling

If you carry a pager, you know all about tone call. The pager incorporates a tiny chip which listens in on a PLL or crystal-controlled channel, waiting for a special series of tones or digital pulses. Once the chip recognizes the unique tones or pulses, it activates alerting circuitry, and your pager goes beep. On more sophisticated pagers, the receiver also downloads a message, stores it, and displays it on a tiny LCD screen for later retrieval.

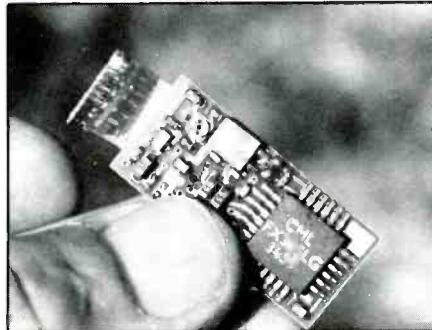
Pagers—a very smart device that will sound off on cue.

Ready for one of the best kept secrets in the amateur radio industry? In fact, most hams don't even know their VHF or UHF mobile and handheld sets may have this option—an option called DTMF DECODE.

"DTMF" (dual-tone multi-frequency) are the dual-tones produced by pushing the keypad when transmitting on VHF or UHF ham set. This allows the amateur radio operator to place phone calls directly through an autopatch. The more advanced amateur transceiver, such as the Kenwood -2530/50/70 series, also will store several DTMF combinations for a "quick dial" of a phone number. Also, the DTMF pad allows hams to control repeater functions using the right-hand-most letters A, B, C, D.

But it's the DTMF decode that offers emergency groups some incredible tone-alert features.

"Many amateur radio emergency group members are purchasing VHF and UHF transceivers with specific capabilities for DTMF group calling," explains Raul Garcia, KB6GMR, sales manager at Jun's Electron-



Alinco tone unit (left) slides into bottom of handheld (right) and plugs into place.



ics in Culver City. "It's about 60 bucks extra for the board and the plug-in installation, and it allows our members to keep their radios on at night, perfectly quiet, until one, or all, members are sent the special DTMF tones that activate their transceivers," adds Garcia.

Kenwood calls their tone alert feature, "Digital Tone Signal System," where ICOM simply calls theirs "DTMF Encoder/Decoder Unit."

Bill Everett, K7RIE, from ICOM comments, "Many amateur radio emergency groups prefer our IC-901 series of transceivers with encode/decode DTMF paging capabilities. The master control station can send a series of DTMF codes that may alert all members at once, or alert individuals members, or groups of members." ICOM models 970, 2400, 3220, and all "SAT" handhelds also offer DTMF decode. The popular ICOM 24AT does not have DTMF decode capabilities.

The DTMF alert function may operate in the following group calling modes:

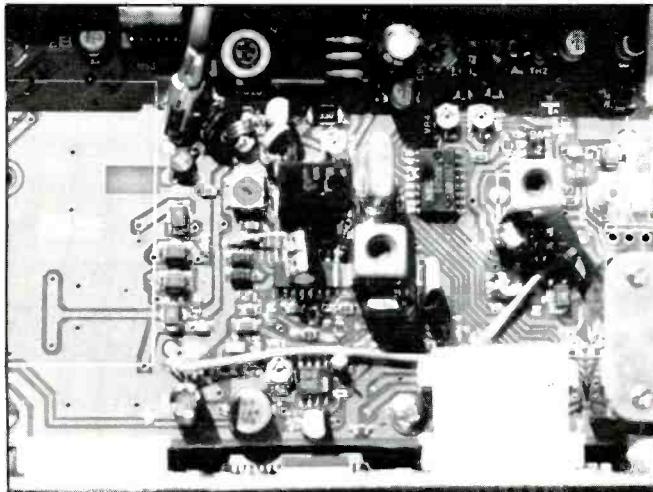
—All call—3 common numbers, plus 2 wild card tones, with unlimited amount of receivers.

—Group calls in 100's or 10's. Two common numbers, specific group numbers for 10's or 100's, and a wild card.

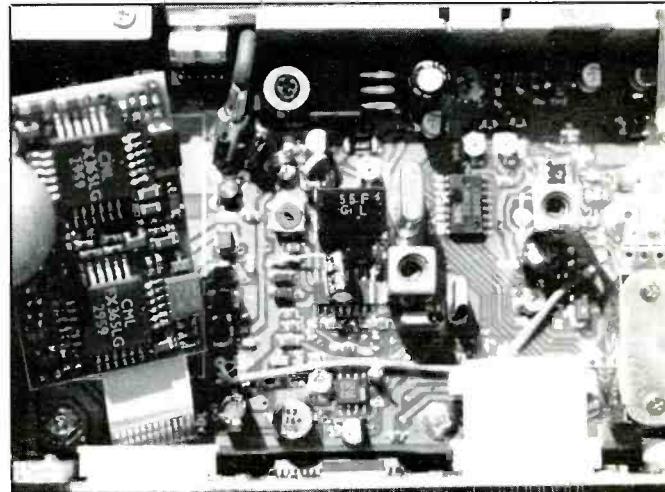
—Individual calling. Three number all call, plus 1 number group call, plus final number member call.

Bill Everett at ICOM points out that DTMF calling is most effective between units of the same design. "It's much easier to program encode and decode numbers into similar units, rather than mixing units." I also found this to be true, and although I could generate the proper tone code sequence using any type of handheld, it was much easier to go with a handheld that held the preprogrammed memory tones.

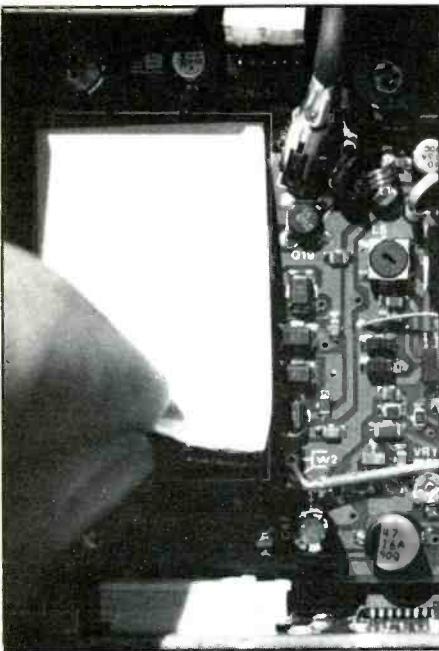
At Yaesu, their Model #212, 912, 712 series offers an interesting twist to selective



Alinco tone unit goes into place on circuit board (left).



Alinco tone unit simply plugs in. No soldering required.



Cover with protective strip to add additional Alinco plug-in tone options.



Amateur radio rescue squads go to DTMF for emergency callups at night.



The Yaesu system with DTMF and DVS capabilities.

calling, and it's called "DVS," Digital Voice System. A 4-digit DTMF sequence allows members to access a master control station with DVS. Once they get into the proper DVS mode, individual hams may leave messages for one another using plain language voice that is memorized on a tiny chip! Messages up to 30 seconds in length may be left. It's then possible for other hams to come onto the system, get into the DVS mode, and see what type of messages are holding for them—in the actual speaker's voice!

At Alinco Electronics, Greg Pearson, N6ZSW, comments, "Most hams working in emergency groups prefer our DJ-160 or DJ-460 VHF or UHF handhelds with plug-in DTMF decode pager capabilities. Our Alinco units are so sophisticated we can even show on the top panel exactly who is trying to page you, too." The dual-band VHF/UHF Alinco DR-590 also accepts tiny plug-in circuits for DTMF all call, group call, or individual calling. I found that adding the boards was a simple 5 minute, plug-in job, and initial programming of a 3-digit code plus 2 wild card codes was no problem at all. But with all transceivers, I really needed to study the instruction manual on how to set up group call, single 5-digit call, and variations of the two in order to get both units properly exchanging the DTMF tones. I found the Alinco units easiest to work with and most predictable on how my programming would come out.

We even tried mixing units. An ICOM 901 series and the portable SAT series talking to a Kenwood TH-26 with digital selective calling, and that unit tied into the Yaesu and Alinco systems. After a good day of trying tonal combinations, we got all of these

sets intercommunicating.

"Tone calling possibilities are endless. Husbands and wives would simply program 3 tones with 2 wild cards, and unless someone else should happen to hit this exact combo, only their 2 sets will alert each other." Comments Dan Fort, AA6LM, a DTMF tone user.

For an amateur radio emergency squad covering a city in 4 quadrants, you could set up the numbers for alerting everyone, one group in each quadrant, or individual members in any quadrant, one at a time.

Most handhelds, with freshly charged batteries, may be trickle-charged in the "on"

mode at night while silently listening for the DTMF alerting tones. This would allow you and your emergency amateur radio group members to grasp your freshly charged handheld, verify whether it was a group call, all call, or individual call, and then get on the air to see what's going on.

Will DTMF spell the end of separate pagers? Not for some time—especially those pagers that record messages. But when you listen to Yaesu digital voice system, we now see a whole new type of technology emerging where simple VHF and UHF radios might also double as very sophisticated pagers and voice message retrieval systems.

The Radio Collection "SHORTWAVE LISTENERS Do It With Frequency"

This plus great radio graphics make for a fabulous T-Shirt!
Bright primary colors, 50/50 blend, one size fits all.

Order Yours (And One For Your YL) Today!

US Orders \$15.95 Postpaid - Free Catalog With an SASE
PO Box 149, Briarcliff Manor, NY 10510

CIRCLE 119 ON READER SERVICE CARD

CABLE TV CONVERTERS Why Pay A High Monthly Fee? Save \$100's A Year

- All Jerrold, Oak, Hamlin, Zenith, Scientific Atlanta, and more.
- 60 Day Money Back Guarantee
- Shipment within 24 hours
- Visa/MC and C.O.D.

WE WILL BEAT ANYONE'S PRICE

No Illinois Orders Accepted
Electronic Engineering
P.O. Box 337, Barrington, IL 60011
Free catalog 1-800-542-9425 Information 1-708-540-1106

ICOM™ R7000 Sweeping 1300 Channels/Min.

DELTACOMM™ 1.04 gives you a custom interface and optimized software that will not just control but will maximize the potential of your R7000. Spectrum log at speeds in excess of 1300 channels/min. while automatically generating a histogram of frequency/activity. Advanced priority channel monitoring and program control, by channel, of remote tape recorders during scanning. Here are a few (there are many more) examples of the advanced features DELTACOMM has to offer:

- Birdie log during frequency search automatically characterizes your R7000, then locks out those frequencies.
- Auto histogram and scan file creation during spectrum log
- Scan file channel lock-out feature allows scanning around channels without removing that frequency from database.
- Resume scan and maximum monitor values unique on each channel scanned
- Each frequency within a scan file has an area (40 characters wide) for channel information
- Auto frequency detection and storage during search and spectrum log
- User friendly installation program reduces need for DOS knowledge
- Full support of serial ports COM1-COM4
- On-screen HELP reduces need to refer to user manual
- REQUIREMENTS MS-DOS microcomputer with minimum 512K memory. DELTACOMM's performance is proportional to baud rate setting, style of display card and type of computer used.



\$299 incl. Ext. Interface & Components for Cabling.
Check, MO, VISA or MASTER
Accepted + \$4 for S&H
(WI Res. Add 5% Sales Tax)



DELTA RESEARCH

PO Box 13677 • Wauwatosa, WI 53213
FAX or Phone Weekdays (414) 353-4567

CIRCLE 118 ON READER SERVICE CARD

HOW I GOT STARTED

Pop'Comm invites readers to submit, in approximately 150 words, how they got started in the communications hobby. Each month we'll select one from those in our files. You are invited to submit an entry, (preferably typewritten) or otherwise easily legible, and (if possible) a photo of yourself and/or your station. We can't return or acknowledge your material, whether or not it is used. Your story need be submitted only once, we'll keep it on file and 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 especially interesting, unusual or even amusing. We reserve the right to make any editorial changes in order to prepare the material for publication.

We will present a 1-year gift subscription (or subscription extension) of *Popular Communications* to the writer of the story selected for the month.

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

Our Winner For February

The story selected for this month's issue was submitted by Ron Bruckman, Registered Monitor KMD3GJ, of Hampstead, MD. Ron told us:

"When I was nine years old I first found radio communications. That's when I discovered my grandfather's shortwave re-



1. Main operating position at Monitoring Station KMD3GJ.

ceiver. I just knew as I listened to international broadcasts from around the world that it would be something that would always fascinate me. As the years passed, I finally received a ten-channel scanner as a gift. I was so intrigued that I saved here and there and kept adding (and adding, and adding) new equipment to my station. Eventually, I had to install special shelves on

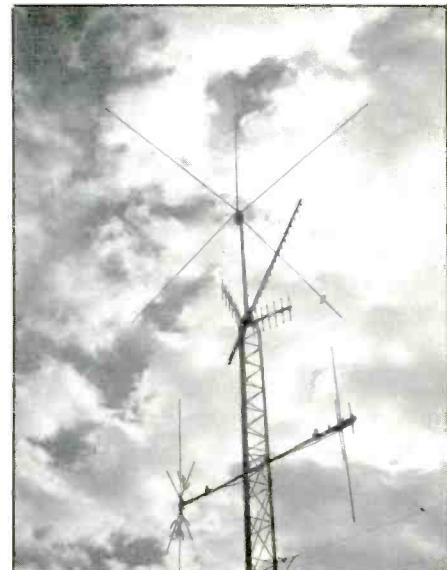
which to place my communications equipment. Now, at age 39, I have a fine station, which is still expanding.

"My interest in the hobby is such that I founded a publication known as *The Radio Monitors Newsletter of Maryland* (P.O. Box 394, Hampstead, MD) so that serious listeners might use its pages to exchange frequencies and friendship."

PC



2. Some of the shelves of equipment at KMD3GJ (in 1984).



3. The antenna farm is impressive at KMD3GJ.

Reference

1991 EDITIONS

1991 RADIO AMATEUR CALLBOOKS

NORTH AMERICAN EDITION

Fully updated and edited to include all the latest FCC and foreign government callsigns and address to 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. © 1990.

□ CB-NA91

Softbound \$29.95

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. © 1990.

□ CB-191

Softbound \$29.95

BUY 'EM BOTH SPECIAL

REG. \$59.90 ONLY \$54.95

SAVE \$5.00

THE 1991 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 value 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 1991 HANDBOOK. Over 1100 pages. ©1990.

□ AR-HB91

Hardbound \$24.95

NEW BOOKS

WEATHER SATELLITE HANDBOOK New ARRL 4th Edition

by Ralph Taggart, WB8DQT

Taggart has long been recognized as one of the foremost experts on weather satellite picture reception. This new edition of his famous book has been updated and expanded to include all the latest information on satellite picture reception. Subjects covered include a complete section on what satellites are in orbit, everything you'd want to know on what kind of antenna, receiver, video formats and displays to use, plus much more! You get all the information you need to get your satellite system up and running. © 1990 4th Edition

□ AR-WSH

Softbound \$19.95

PRACTICAL ANTENNA HANDBOOK

BY Joe Carr, K4IPV

A comprehensive blend of theory and practical antenna applications make this new book by noted author Carr, a valuable book to have on hand. Features detailed analysis and construction information for all kinds of antennas, an explanation of the secrets of radio propagation, theory and use of transmission lines, a comprehensive overview of the radio spectrum as well as 22 BASIC programs for designing antennas. Learn from an expert — get this book today. © 1990 1st edition 448 pages

□ T-3270

Softbound \$21.95

FREQUENCY MASTER FILE Vol. 1

Federal Assignments

by The Communications Research Council

Contains all the latest information on frequencies in use by the US Government. Over 200 pages of listings arranged by Government agency, location, callsign and other available information. © 1990 1st edition 215 pages

□ ATSI-FA1

Softbound \$24.95

PASSPORT TO WORLD BAND RADIO 1991 Edition

Brand new, fully revised and expanded. Now includes a bigger and better SWL's buyer's guide. Also includes all the latest broadcast schedules from countries around the world. Great reference text for Hams as well as the serious SWL and casual listener. ©1990

□ IBS-RD191

Softbound \$16.95

POP'COMM'S

CQ HR BOOKSTORE BOOK IDEAS

(800) 457-7373 8AM-5PM EST

CALL TOLL FREE

Shipping and handling \$3.75 to US and Canada.

All others addresses FOB Greenville, NH, USA plus \$3.75 handling

Fun Reading

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 freeline matching is completely revised. ©1987. 80 pages, 2nd Edition.

□ VM-BAH

Softbound \$14.95

1991 EQUIPMENT BUYER'S GUIDE

Brand new and fully up-to-date. Complete listing of equipment available from the various equipment and accessory manufacturers. Includes radios and accessories plus helpful hints and tips and a complete listing of addresses and telephone numbers. ©1990

□ CQ-EQP91

Softbound \$4.95

WORLD RADIO TV HANDBOOK 1991 Edition

Loaded with the latest callsigns, frequencies and other important information for radio and TV broadcasting around the world. Covers LF, MF, shortwave and TV services. Also has equipment reviews and other special features. ©1990. 45th Edition.

□ GL-WRTV91

Softbound \$19.95

1990 ANTENNA BUYER'S GUIDE

Looking for the latest in antennas? It's all here in theCQ Antenna Buyer's Guide. Crammed full of articles, product information and a who's who section listing all of the manufacturers and importers. Get your's now and start planning for Spring 1991 antenna projects. © 1990

□ CQ-ANT90

Softbound \$4.95

TOMMY ROCKFORD BOOKS by Walter Tompkins, K6ATX

These thrilling stories introduced a whole generation of Hams to the wonderful world of Amateur Radio. Great reading, and gift ideas for all levels of Amateur Radio Interest. Each story is full of action packed excitement.

□ AR-DV Death Valley QTH

Softbound \$4.95

□ AR-SO SOS At Midnight

Softbound \$4.95

□ AR-CQ CQ Ghost Ship

Softbound \$4.95

□ AR-DX DX Brings Danger

Softbound \$4.95

□ AR-GC Grand Canyon QSO

Softbound \$4.95

□ AR-MO Murder by QRN

Softbound \$4.95

□ AR-TR All 6 books, Reg. \$29.70 Save \$4.75

\$24.95

Study Guides

ARRL LICENSE MANUAL

by ARRL Staff

ARRL License Manuals are keyed to the latest Exam. Written in easy-to-read conversational style that enhances understanding without scaring the student away. All technical subject areas are explained in clear terminology and with plenty of illustrations, diagrams and schematics. Each book has the official ARRL multiple choice question Pool with answers and a key to the Exam syllabus for reference to other study applications. These are the study guides to have. Latest editions shipped.

□ AR-T Tech

Softbound \$6.00

□ AR-G General

Softbound \$6.00

□ AR-AG Advanced

Softbound \$5.00

□ AR-EG Extra

Softbound \$8.00

AMECO STUDY GUIDES

Designed for VEC Exams

AMECO Study Guides are taken from the latest FCC/VEC Exam question pool. Each book has the latest questions along with the ARRL/VEC multiple choice answers, immediately followed by a full discussion explaining each question. While nothing can guarantee that you will pass, AMECO study guides will make sure that you are fully prepared and ready to go. Written in clear, concise, easy-to-read format, each question is fully explained. Novice and General books are cross referenced to AMECO's 102-01 for a more thorough explanation.

□ 27-01 Novice Class

\$5.95

□ 28-01 Technician Class

\$4.95

□ 12-01 General Class

\$5.95

□ 26-01 Advanced Class

\$4.95

□ 17-01 Extra Class

\$5.95

□ 102-01 Radio Amateur Theory Course

\$6.95

COMMUNICATIONS CONFIDENTIAL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

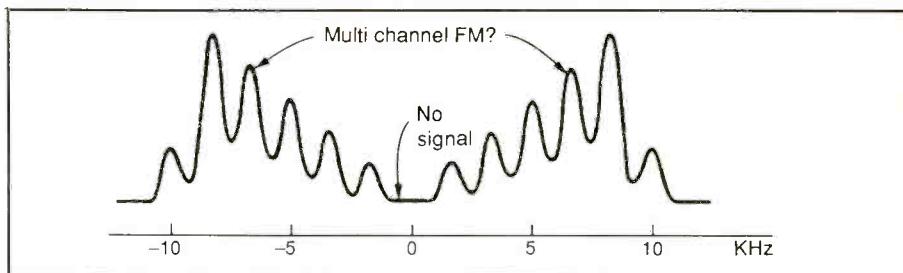
Perry Crabill, VA wrote that he had noted in the October column a logging from Putrich, MN which indicated FAX in LSB on 520 kHz. "I wonder if he wasn't hearing the NAVTEX FEC mode of SITOR, which is on 518 kHz?" Based on the intercept time of 0443, this may have been the NAVTEX broadcast from San Juan, PR.

A report from Charlie McAtee, WV indicated he heard WGY977, FEMA, Jefferson City, MO in voice contacts with Denver and Mt. Weather FEMA stations but the majority of the communications were with Mt. Weather. WGY977 said they were testing a new antenna, an ABB-1000, as well as a longwire antenna. Charlie included this address: FEMA, PO Box 116, Jefferson City, MO 65101.

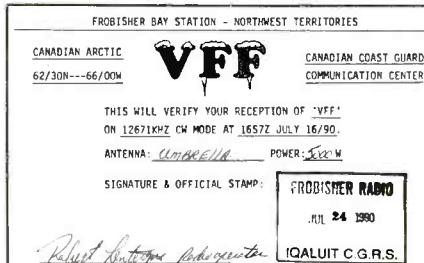
We have received two explanations for the strange raspy dots/1 dash signals which many monitors have been encountering in the shortwave bands. An individual signing as Delta Echo Romeo, claims this type of signal is from the AN/GRA-71 Code Burst Set which is used in conjunction with the AN/PRC-74 equipment among others. These equipment items were used in Vietnam by the US Special Forces. I note that the Code Burst Set is on the surplus market now and in fact Fair Radio Sales Co. catalog shows they have them at \$125 a copy. The AN/GRA-71 allows the tape recording of Morse-code messages and has a keyer device for keying the transmitter at a burst rate of 300 words per second.

Commenting on the same signals, Gregg Arens, BC, Canada said, "If one would listen to these signals in the SSB mode, they would hear that the 'Raspy CW' is actually FSK in a Vestigial Side Band mode similar to a television signal only with a suppressed carrier. The exact makeup of these signals (most of them anyway) are usually two parallel and inverted Vestigial Side Band carriers transmitting bursts of high data rate RTTY. Figure 1 shows what this would look like if viewed on a spectrum analyzer. This unique modulation technique allows the signal to be detected clearly on AM, FM and SSB with near equal audio 'quality' on all three modes. My ear tells me (my computer is broken) that the contents of these transmissions are bursts of 5 to 9 characters at about 1200 baud and the long 'dash' I am positive (I've heard the sound often enough) is a string of RY's, probably for synchronization. My DX-200 and I have travelled all over this country and I am sure that these transmissions do not originate in Canada."

Perhaps another reader can shed some additional light on this subject so that the type of equipment utilized can be confirmed.



Sketch of the raspy dots-raspy dash signals. Submitted by Gregg Arens, BC, Canada.



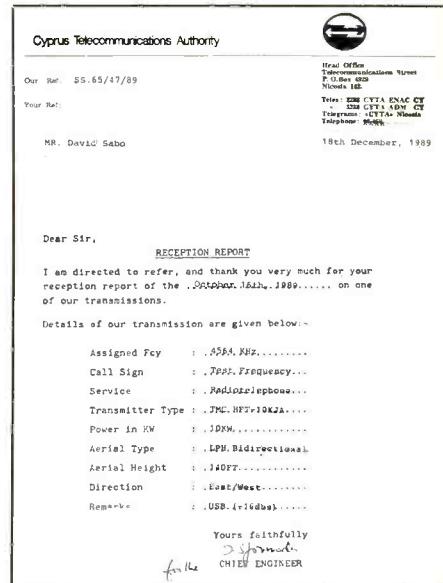
Here is a PFC returned to Steve McDonald, BC, Canada.

Frank Donovan, MA asked for identification of a CW signal on 5657 kHz which consists of 551 sent at 1-second intervals. I have not heard this particular station nor do I have any information on it in any of my reference publications. Maybe another reader has an ID for this logging.

We received quite a bit of MARS information and here it is. An anonymous contributor in GA forwarded these newly assigned MARS callsigns: NNN0CHO - USN Hospital Ship Mercy T-AH-19; NNN0CCF - USN Hospital Ship Comfort T-AH-20; NNN0CLZ - USS Princeton CG59; NNN0CBW - USCAG Sweetbriar WAGL-405.

Next we heard from Ken Walton, CA who explained, "Was going through the September 90 column and saw some MARS listings and thought I would drop two of them for you. NNN0CTL = USS Mauna Kea AE22. They used to operate a TS-520 Kenwood with a 28' vertical whip and a Dentron GLA 1000 Amplifier and tuner. I operated USB on 7495 kHz while assigned on board the USSS Mauna Kea. NNN0NSD is Naval Station San Diego, CA. NNN0HKM is an independent operator out of Northern San Francisco Bay area.

And from Stuart, DE we received these: USS Greenling SSN614, NNN0CEL (NI-QO) is temporarily assigned to this Attack Sub; NNN0CEK, USS Wasp LHD1; NNN0CEM, USS Nicholas FFG47; NNN0CEJ, USS Philippine Sea CG58; NNN0CYV assigned to Oceanographic



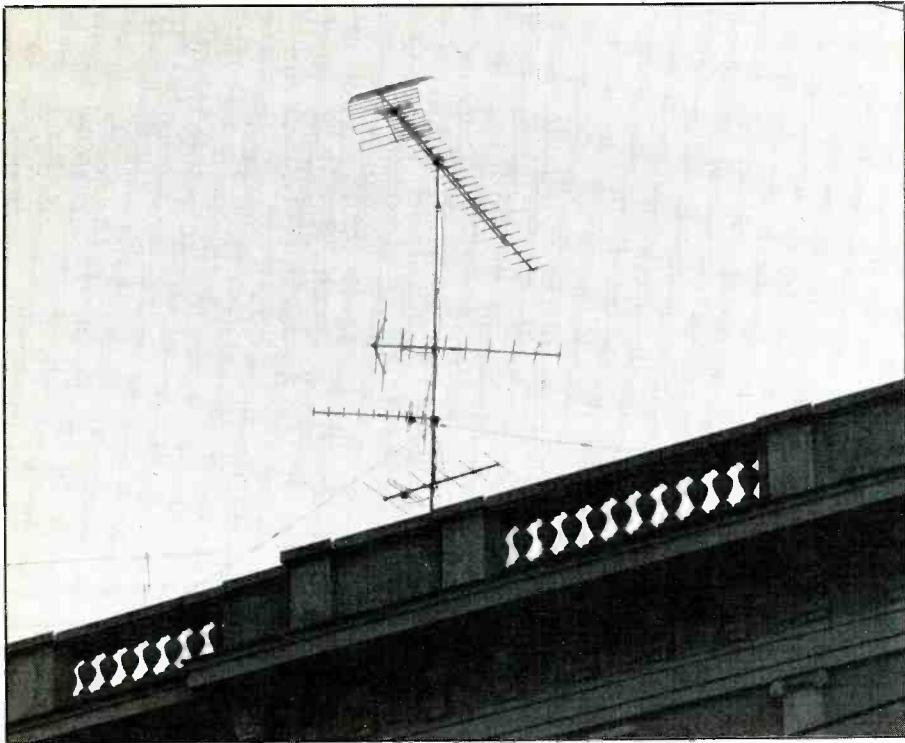
Dave Sabo, CA received this QSL letter from the CYPRUS Telecommunications Authority.

Unit 2 is now embarked on USNS Tanner T-AGS-40.

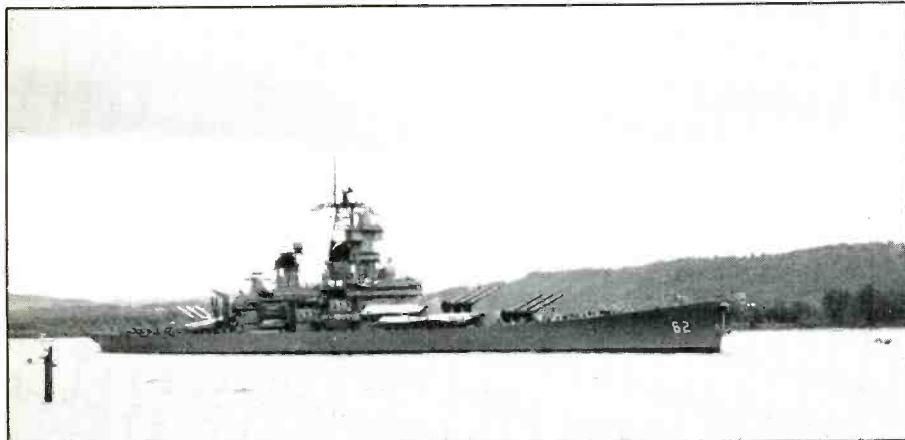
Our thanks to all of the above contributors for supplying these MARS details.

Tony Colonello, CA sent in a note and said, "My primary listening equipment is a DX-440 with a Datong audio filter, and MFJ-959B antenna tuner/preamp connected to a 330' wire antenna. I also have a World War II era Hallicrafters SX-28A that still is in operating condition. However, I use it more for a conversation piece than anything else. I have just recently gotten back into SWL after an absence of several years."

Jim Moeller, NY informs us that "there's been a complete change in the station with the replacement of my old receiver with a Sangean ATS-803A, and the old Bearcat scanner has been upgraded to a Realistic PRO-2024. I'm still using a Helically-wound vertical for an antenna as it seems more impervious to QRN."



Antennas on roof of Soviet Embassy, Vienna, Austria. Photo supplied by Desmond Ball, Australia.



Jerry V. Cody, WA forwarded this photo he took of the Battleship USS New Jersey.

A QSL address was received from Dave Sabo, CA for the USCGC Sherman (WHEC-720), c/o Logistics Support Group, 1519 Alaskan Way, South Pier 36, Bldg 7, Seattle, WA 98134-1192. Thanks Dave.

And a thank you also to R.C. Watts, KY who furnished this QSL address. "Correct address for the Thule GCCS Station is FELEC Services, Inc/FSCG, BMEWS Site 1, BMEWS Box 5, APO New York 09023. Current lead operator at the GCCS is Robert E. Kilburn who sent a nice QSL letter after two mailings were returned. The APO at Thule did not know what/where the GCCS was!"

A note from Frank Donovan, MA gave a description of his station as having an ex-

Navy RBS as his principal receiver and he uses it with a ground-plane antenna with 36' vertical member and three 18' radials at the base.

Another anonymous contributor said the net security during the airlift to Saudi Arabia in August/September 1990 was sloppy at best. Most aircraft gave out home bases, identified their units, and one cheerfully revealed his tail number. Also nobody on the nets would listen before transmitting. EAM and Capsule transmissions were started at a station while that station was working an aircraft. Aircraft stepped on each other and/or talked while a ground station was working another station. The contributor said if net discipline had been graded, quite a few F's would have been handed out. He also men-

To Radio/SWL Bill Koechig

Romulus, Michigan

at 1357 UTC On 31 DEC 1989

Frequency: 12740 kHz

Equipment:

Antenna:

73 AWA/1989

Photograph
Operating Station
Location Radio
as it was during
the 1920-30's

29 MAR 1990

TELECOM IS NEW ZEALAND'S LEADER IN THE BUSINESS OF HELPING PEOPLE COMMUNICATE. OUR AIM IS TO STAY THAT WAY - AND GET BETTER.

Awarua Radio/VLB commenced operation on December 1913, using a 50kW Telefunken spark transmitter. The antenna was an umbrella type on a 40 foot high mast which weighed over 120 tons and sat on glass insulators. The callsign was changed to ZLB on 1 January 1929. Today, the station continues to operate, providing radio communications with International shipping and remote localities on frequencies from 500kHz to 22MHz.

Telecom

Dear Bill Koechig:

Thank you for your letter dated 28 March 1990.

I am now pleased to verify your reception report of our identity loop. The identity loop indicates to the ship's radio frequencies that this station is keeping a watch on. In this case, the high-frequency radio frequencies are being used and the station was maintaining a watch on the international distress frequencies only.

This station maintains a watch on the high frequency bands for only 18 hours of the day. From 1900GMT to 0700GMT, keep a watch on 4, 8, 12, 16 and 20MHz. During the nights, up to 1230GMT, we monitor 4, 8 and 12MHz. However, these can vary as propagation dictates.

The station is manned by a total of twelve operators and one manager. The maximum number of operators on watch at one time is three, during the daylight hours, reducing to two operators from 1900 to 1230GMT. There are two operators on watch to monitor the distress frequencies of 2182, 4125 and 500kHz from 1300GMT to 1900GMT.

There are many types of receivers used at the station. For scanning all the HF channels, we use HF Communications single frequency receivers. The operator uses an electronic scanner to switch between each receiver. JRC 1000's are fully automatic scanners. These are used for the HF watch. For the radiotelephone watch, remotely controlled Codan single frequency receivers are used. This facilitates push-button operation. JRC 1000's are also used to key the operators on the HF frequencies not provided by the Codans and as a back-up. The radiotelegraph distress frequency of 500kHz is combined with the radiotelephone watch.

The transmitting station for our HF services, is located at Hesitangi, in the North Island - about 800 miles north of the receiving station. The transmitters are light weight and are via cable feed into end caped quad antennas. The transmitters are keyed from the receiving station via a combination of conventional landline, fiber optic cable and microwave links. Here is a list of all our HF radiotelegraph transmitting frequencies:

4277kHz, 6393kHz (presently not in use), 8504kHz,
12740kHz, 17170kHz and 22533kHz

The transmitters for 500kHz, 2182kHz and 4125kHz are housed only a quarter of a mile from the receiving station. The transmitters for these services are JRC 1000's respectively. Antennas used are Marconi T and disc cone for transmitting and Marconi T and three-wire dipole for receiving.

This station also acts as a receiving station for radiotelephone and radio telex links from New Zealand to Scott Base in Antarctica, and Chatham Island.

Thank you for your interest in this coast radio station and hopefully this letter may answer any questions you may have had. On the back of the QSL card, you will find a short run-down on the station's history.

(Letter signed by Bevan J. Simpson)

In addition to the QSL card, Bill Koechig, MI also received an informative letter from Awarua radio station.

tioned that the air-to-air refueling tankers were using their color identifiers of Azure, Blue (base at Mildenhall, England), Ebony, and Gold (based at Pease AFB, NH)

220: Beacon IHM, Mansfield, MA. (Donovan, MA)
227: Beacon SJY, San Jacinto, Riverside, CA at 1410. (Vaage, CA)

241: Beacon SPZ, Smithfield, RI. (Donovan, MA)
289: Beacon MR, Marina del Rey (Light 3). CA at 1431. (Vaage, CA)

290: Beacon AOP, Rock Springs, WY at 0607. (Vaage, CA)

296: Beacon LB, Long Beach Light. CA at 2352. (Vaage, CA)

304: Beacon BH, Boston Harbor, MA. (Donovan, MA)

320: Beacon HTN, Miles City, MT at 0826. (Vaage, CA)

359: Beacon YAZ, Tofino, BC, Canada at 0838. (Vaage, CA)

400: Beacon QQ, Comox CFB, BC, Canada at 0930. (Vaage, CA)

402: Beacon LW, Lawrence, MO. (Donovan, MA)

406: Beacon FLR, Fall River, MA. (Donovan, MA)

410: Beacon NZJ, Riverside, El Toro MCAS, CA at 1906. (Vaage, CA)

415: Beacon IEE, Platform Irene (Union Oil), Pacific Ocean at 1908. (Vaage, CA)

2716: NJLK, USS Kaufman FFG59 clg NOAL, USS Affray MS0511 at 2300; NBIO, USS Shenandoah AD44 clg QHM Halifax at 1035; NWVP, USS William V. Pratt DDG44 clg Navy Bermuda Control at 1000. (Gordon, CT)

2716: NJFY, USS Platte AO186 clg Norfolk Port

Abbreviations Used For Intercepts

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

Control at 0200; NREB, USS Exploit MSO440 wkg Newport Port Control Secondary at 0930. Exploit requested Newport Port Control be advised to bring up Channel 7 VHF bridge-to-bridge circuit. NFVC, USS Capodanno FF1093 wkg Newport Port Control at 0905, ship returning to Newport from Bermuda. NRDW, USS DeWert FFG45 clg Charleston Navy Tug Control at 1005. (Stuart, DE)

3188.5: YL/EE with 1-0 count and 307 between 2300-2310. Was parallel with 4196.5 in RCS. (Mason, England)

3293: YL/SS in AM at 0510 w/5F grps. (Harwood, CA)

3732: SLHFB "P" (formerly on 3590 kHz). Line bearings obtained with shielded loop were 150/330, favor the 150. (White, ME)

4011: YL/EE with 572 and 1-0 count from 2000-2010. Warblers affecting this and the parallel freq of 5137 kHz. (Mason, England)

4066.1: NZBI, USS McCloy FF1038 clg Norfolk ICSB at 0840. NPGC, USS Cushing DD985 wkg San Diego CSS1 at 0500. Cushing made phone patch to Duty Officer Naval Station San Diego, CA; NMKD, USS Paul F. Foster DD964 wkg San Diego CSS1 at 0400. (Gordon, CT)

4370: YL/RR rptng 187 Prunta 27 between 2300-05. Then into 5F grps. At 2308 on same freq Scheveningen Radio, Netherlands with YL/EE giving shipping ttc list. (Mason, England)

4470: At 0215 Raymond Zero AAY wkg Raymond Zero AAC w/comms re radios. At 0234 Raymond Zero AAY relaying personal msgs to Raymond Zero ADR. All in USB. (Hill, MI)

4640: CW stn at 0015 w/5F grps. (White, ME)

4723: YL?RR rptng 671 Prunta 00 in USB at 2300 w/RAF Volmet in background w/airbase wx. (Mason, England)

4882.5: YL/Bulgarian in AM w/5F grps (each grp x2). Hrd at 0342. (Fernandez, MA)

4885: YL/Bulgarian in AM w/5F grps (each grp x2). No simulcasted w/4882.5 kHz. Hrd at 0347. (Fernandez, MA)

4999: Time Signal station, Caracas, Venezuela under WWV at 0320. (Anon, TX)

5015: YL/GG rptng Quebec Lima from 2200-05 w/electronic tones. At 2205 5F msgs for 410 and 028. Quebec is last ltr of alphabet to be used by these 2L GG stations. (Mason, England)

5320: USCGC Buttonwood clg Comsta New Orleans in USB at 0255 but no answer. (Hill, MI)

5574: San Francisco radio wkg Polar 90 (USAF a/c) destined for Norton AFB, CA at 0852. (Pritchett, CA)

5650: Gander Airways in contact with a Caladonian airliner at 0321. (Anon, TX)

5680: USCGC Airsta Sitka (NOU) wkg Rescue486 in USB at 0721. Holo reporting flight ops not normal w/unid noise & vibrations. Group Ketchikan (NMJ) assumed Holo radio guard at 0726 due Sitka loss of comms w/holo. Holo apparently landed safely, reporting on deck at unspecified location at 0743. (Sabo, CA)

5692: CG Rescue9691 at 0236 in USB wkg Traverse City, MI USCG Air Station. (O'Connor, NH)

5696: Rescue 1493 (holo) in USB wkg Comsta Honolulu who taking holo radio guard due unable raise Boston Comsta. 1493 on way to vessel taking on water 80 miles SE of Cape Cod, MA from Otis Air Station, MA. At 0852 Boston & holo shifted guard to him. Vessel was



Antenna Site of 167th Tactical Airlift Group of the WV Air National Guard, Martinsburg, WV. Photo by Charlie McAtee, WV.

80' Scalloper and holo later could not locate vessel due to only 50' visibility and high winds on edge of hurricane. At 0939 holo located boat & hoisted all crew & returned to Hyannis, MA. Vessel later sank. Hrd 0815. (Fernandez, MA)

5929.3: YL/EE w/tfc in 3/2 grps. Clobbered by BC stn w/program in FF. USB at 0033. (Ed.)

6200: USCGC Blackhawk (NODI, WLB390) wkg USCG Campspac (NMC) in USB mode at 0100. Duplex w/6506.4 kHz. (Sabo, CA); NPEJ, USNS Antares T-AKR-294 wkg NNJH, USNS Joshua Humphreys T-AO-188 at 1210. Antares advised they dead in the water but if Humphreys came alongside, Antares could replenish supplies for Humphreys. NMN, Portsmouth, VA checked w/both units & made sure Antares was in no danger. (Stuart, DE); NKID, USS Kidd DDG993 clg USCG Portsmouth at 0940. Kidd requesting covered freq for RTTY tfc; NOHP, USS Oliver Hazard Perry FFG7 wkg USCG Comsta Boston at 1105 w/pp to SUP-SHIPS Boston (Supervisor of Shipbuilding, Conversion & Repair). Circuit became unusable due to NMN wx bctn on their freq of 6506.4 kHz so Perry shifted to 6212.4 and NMN to 6518.8 kHz. (Gordon, CT)

6240: YL/EE in AM at 0415 with 3/5F groups. (Harwood, CA)

6411: KLB, Seattle, WA at 0311 w/call mkr. (Anon, TX)

6518.8: USCGC Forward (NICB, WMEC-911) in simplex wkg w/USCG Comsta Miami (NMA) in USB at 0553. (Sabo, CA)

6519: Canadian CG wx in EE & FF, USB at 0215; Halifax CG w/tfc in USB at 0133. (Hill, MI)

6655: Honolulu aero comms w/various a/c. Primary 5574, Secondary 5628 kHz. USB at 0958. (Colonello, CA)

6683: SAM971 wkg andrews in USB w/various patches from 0202 to 0230 w/State Comm Center, Shannon Airport, Ireland and State Ops Center. (Hill, MI)

6716: Comox 5 Maintenance clg Vancouver Mil for rdo check at 0609. HMCS Oriole clg Vancouver Military at 0615 w/relay msg for MarPac. (Pritchett, CA)

6738: MAC 60417 wkg Thule for pp to Altus AFB, reported 2 passengers, no cargo at 0412. MAC F2408 wkg Mainsail for pp to Format to report position at 0420. MAC 00445 wkg Thule for pps to Stewart CP, Format & Dover CP. All comms in USB. (Hill, MI)

6761: Pyot-69 (B-52) clg Air Guard w/pp to Blue Thunder Control at 0625. Pyot declaring inflight emergency as oil pressure in engine #3 dropped to zero:

Coho-26 (KC-135) w/pp to Crystal Palace (Wurtsmith AFB) at 0519. Coho-26's Wingman in some sort of trouble. 26 advised that runway will be closed for 2 hrs after his wingman lands and that 26 shud hold at maximum altitude to conserve fuel. (Pritchett, CA)

6785: YL/SS in AM at 0009 w/5F grps. (Hill, MI)

6846: OM/SS in AM at 0305 w/5F grps. (Hill, MI)

6853: YL rptng Alfa Lima 0800-0805, then GG 5F grps for 043 and 969. Rptd at 0830 on 7404 kHz. USB mode. (Mason, England)

6985: YL/EE clg Sugar 50 at 1138. Asked if they had any joy. Sugar 50 reported negative & was moving 3 South & wud try again. USB mode. (Colonello, CA)

7335: CHU, Canadian Time Signal station at 0335. (Anon, TX)

7375: YL/GG w/1-0 count and 592 from 0900-0910. After ten tones-Gruppen 218 and into 5F grps. (Mason, England)

7391: Navy MARS station NNN0CPC (USS Bronte) and NNN0COC (USS Sacramento) w/pp in USB at 0630. (Harwood, CA)

7423: YL/SS in AM at 0310 w/4F grps. Hrd almost rightly this time frame. (Harwood, CA)

7485: USS Theodore Roosevelt CVN71 (NNTR) clg SESEF Charleston at 1750 for test of their xmtrs. (Stuart, DE)

7527: YL/SS in AM at 0700 w/5F grps. (Harwood, CA)

7535: Foll ships tested their xmtrs w/Norfolk SESEF: NRKX, USS La Moure County LST1194 at 1800; NQCE, USS Raleigh LPD1 at 1800; NULW, USS Kittiwake ASR13 at 1645; NSQY, USS Hunley AS31 at 1900; NKZI, USS Pensacola LSD38 at 1500; NNAL, USS Abraham Lincoln CVN72 at 1605; NLDL, USS Milwaukee AOR2 at 1110. (Gordon, CT)

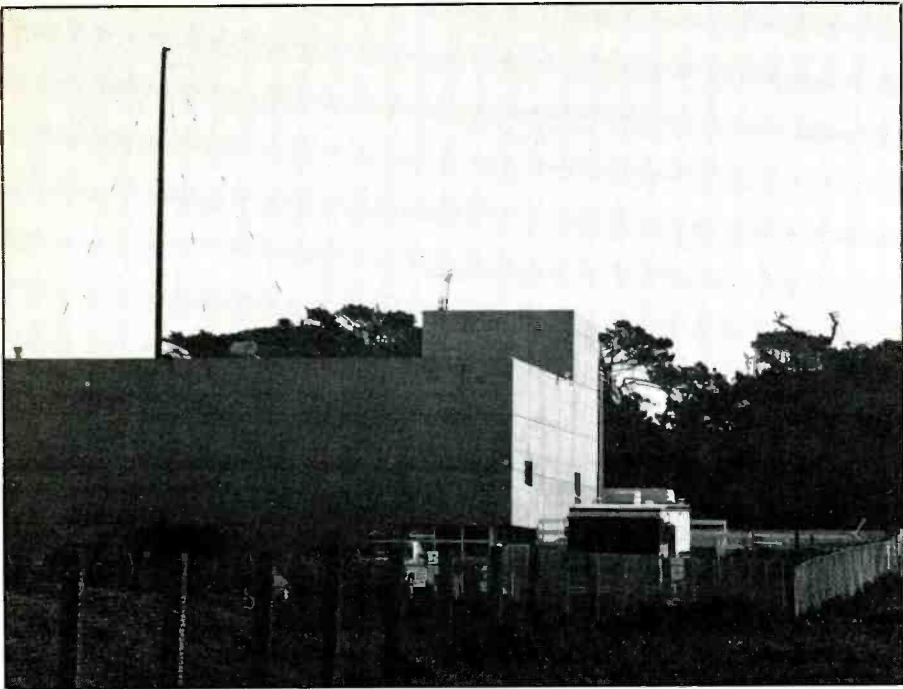
7886: YL/SS in AM at 0812 w/5F grps. (Watts, KY)

8000: Time Signal station JJY, Japan at 0846. (Colonello, CA)

8188: YL/GG w/music box 'Swedish Rhapsode' sign-on here every Sunday at 0800. At 0805 had 5F grps for 45835/47996 and 68837. USB mode. (Mason, England)

8260: Ship SXHL, Armonia, in USB clg unknown shore stn at 0828. (Watts, KY)

8241.5: USCGC Sweetgum (NRQW, WLG-309) at 0112 wkg Comsta New Orleans (NMG) re RTTY tfc; USCGC Buttonwood at 0223 (NRPX, WLB-306) w/tfc to NMG. Tfc was list of names, DOB's and MS DL #'s of crewmembers of unspecified vessel. Both were USB and duplex 8765.4 kHz. PFC returned from the Sweetgum



US Naval Reserve Center, Pacific Grove, CA. Photo by David Palmer, CA.

27 August 1990
Communications Officer
USS Lexington (AVT-16)
FFO Miami, FL 34088

Mr Norman E. Pritchett Jr.

Dear Mr. Pritchett,

I received your letter and reception report dated 18 August 1990.

I am surprised at your reception of our signal. While operating in the Gulf of Mexico, we are in constant communications with NAS Pensacola, Florida, via the "Raspberry" circuit. We utilize three different frequencies for this communication: 3110.5 kHz, 6836.5 kHz and 8773 kHz. As you undoubtedly know, the U.S. Navy tunes their transmitters 1.5 kHz below the assigned carrier frequency when operating in the single sideband mode.

On Lexington, we operate an AN/URT-23 Transmitter capable of 1000 watt output in AM or 735 watt in single sideband. This transmitter is capable of RATT, AM, ISB, USB, LSB operation.

Inclosed, please find one U.S. dollar, Lexington PR pamphlet and Lexington shoulder patch.

Enjoyed hearing from you.

W. Andrews

W. ANDREWS
LT USN

Norm Pritchett, CA received this QSL letter from the USS Lexington. The ship returned his postage money.

for this reception stated that the vessel has since been decommissioned. (Sabo, CA)

8408: Soviet vessel UVMV hrd in CW at 0507 acting as new control and taking Odessa fcc from: T/H Dubrovnik (ULAZ), T/H I. Kulik (UYHW), T/H Kushnarenko (UQHW), T/H Ndobrolyubov (ULAK), T/H Kapitan Trubkin (UBQT), T/H Syzranx (UOOU), T/H A. Gerzen (UTNC). Full CW break-in used w/many breaks for message "fills." Vessel's positions placed them in the Caribbean/North Atlantic areas. (Halstead, WV)

8483: DAN, Norrdeich, Germany in CW at 0333 w/call mkr. (Anon, TX)

8719: USS Paitue ATF159 (NZNGO) wkg Raider 41 (poss DEA stn) at 1035. (Stuart, DE)

w/position report over BOILS (Nandi/Oakland FIR boundary). Gave eta BEAKS as 0814. (Halstead, WV); Aukland wkg KIWI-841 and Hawaiian-493 w/posis reports at 0453 hrs, Sydney wkg a/c whose last xmssn was fuel load. Sydney advised them to turn on emergency beacon. Sydney later hrwd wrkng Rescue 161 who was enroute to scene. No further info noted. (Pritchett, CA)

8891: Martin Air 66 hrd in SSB at 0611 wkg Iceland w/posis report over 66N/50W. Gave eta for 65N/40W as 0642. (Halstead, WV)

8903: Portugal 202 hrd in SSB at 0041 wkg Accra w/position report over Charlie Mike and eta for PAMPA as 0120. (Halstead, WV)

8964: MacDill w/coded msg. Simulcast on 6750 kHz. USB at 0338. (Hill, MI)

8970: YL/GG here every Sat/Sun at 1100 rptng 3Fx3, 5F, 2F. This time it was rptng 669 x3, 26035, 48. At 1105 five CW dashes and into 5F grps. Parallel freq is 10255 kHz. (Mason, England)

8984: NPIN, USCGC Chilula in USB at 1813 wkg a/c CG 1503 & USCG Comsta Portsmouth, VA. (O'Connor, NH); CG Air Rescue-1601 clg Comsta Honolulu Joint Rescue Control Center (HJRCC) re sailing vessel whose operator suffered broken arm and has fever. USNS Tenacious (using call P8P) to rendezvous w/vessel. (Pritchett, CA)

8989: Lark-77 in USB at 1948 w/pp thru McClellan to 55th WRS Job Control w/msg for relay to 55th Ops re aerial refueling w/KC-135 "Primo-46." (Sabo, CA)

8993: Warlord clg NCDill in USB at 0430. After contact QSY'd several times for workable freq. Stayed on 6730 kHz USB until "Internal" broke in to say this is his primary wrkng freq. Warlord QSY'd to 6751.5 kHz USB to complete business. (Harwood, CA)

9006: Royal Australian AF Sydney wkg a/c (QSY'd from 8975 kHz). (Pritchett, CA)

9023: NORAD stn Brewmaster w/pp's thru Edmonton Military in USB mode at 1551, foll by calls to Trenton. (Sabo, CA)

9180: YL/EE w/5F grps each 2X. Was AM mode at 0538 and right on top of Radio Moscow SSB bcst feeder. (Sabo, CA)

PC SWL \$99.00

A Complete Digital Reception System

PC SWL contains the hardware, software, instructions and frequency lists needed to allow you to receive a vast variety of digital broadcasts transmitted over shortwave radio with any IBM PC or Compatible computer. The product consists of:

Demodulator
Digital Signal Processing Software
80 Page Tutorial Reference Manual
World Press Frequency List
Tutorial Audio Cassette with Samples

PC SWL automatically decodes Morse code, Radio Teletype, FEC (forward Error Correcting Code), SELCAL (Selective calling transmissions), and NAVTEX.

ADVANCED FEATURES:

Tuning Oscilloscope
Digital Waveform Presentation
Auto Calibration and Code Recognition
Continuously Tunable Filter Frequencies
Variable Shift
Adjustable CW Filter Sensitivity
Farnsworth Code Compatibility
Unattended Capture and Printing

Software Systems Consulting
150 Avendia Cabrillo "C"
San Clemente, CA 92672
(714) 498-5784

CIRCLE 122 ON READER SERVICE CARD

9325: YL/GG in AM at 0118 w/5F grps (each grp x2), finished w/ENDE at 0119. (Fernandez, MA)

10050: Honolulu w/aero comms wkg various a/c at 0945 LSB. (Colonello, CA)

10070: WX forecast for Manchester, England to a pilot flying from South America. Hrd at 0345. (Anon, TX)

10665: YL/SS in AM at 0108 w/callup 805 805, 1-0 rptd until 0112. 10 tones, 170 Grupo, then 4F grps. (Fernandez, MA)

10780: Steady carrier came on freq approx two days before a scheduled space launch. Was on freq 24 hrs a day until sometime before postponed launch finally went off. (McAtee, WV)

11058: OM/SS in AM at 0212 with 3/2F grps. (Hill, MI)

11110: YL/FF in AM at 0610 w/5F grps. Stopped then into Foghorn type bursts of 4 secs in duration, every 20 secs. (Westinghouse, MA)

11176: Anderson GCCS in USB at 1020 w/"All frequencies broadcast." MAC 6962 clg Mainsail at 0038. Croughton GCCS answered. (Watts, KY); AGAR 13 (EC-135) at 1435 in USB wkg Croughton, England USAF GCCS. (O'Connor, NH)

11191: USNS Mercy/USNS Comfort, both Navy Hospital ships, hrd USB 0400-0800 w/comms plus lots of tactical callsigns. This freq ref'd as Delta. (Talley, CA)

11214: Net Control Jacob w/Image F, D, C. Image E wkg Raymond 24. Others included Urge, Marrow, ID as Charlie-STX FRQ. USB at 0130. (Westinghouse, MA)

11226: Zanzibar skg Face Plate w/rdo check in USB at 2057. Then moved to W-109 due poor comms on 11226 kHz. (Fernandez, MA)

11234: SAM 29000 in USB at 1912 clg Mama Bear. No joy so clg Skybird. Griswold advised no Mama Bear on Alpha. (Watts, KY)

11237.5: YL/GG in AM at 2105 w/call-up (1-0, 3F) rptd til 2108 when 3/2F grps began. (Fernandez, MA)

11243: Exxon 87, Pele 87 & poss Sparky 23. SAC comms in USB at 0205. (Westinghouse, MA); Bigtown S393 clg Newbook for sig check at 1653; Newbook clg Skyking w/crypto msg at 1654. Other calls hrd were Memorial, Internal. Memorial told Bigtown that Internal uses Xray 03 as primary and secondary was Whiskey 106. (Moeller, NY)

11271: MAC 206SM in USB at 1915 wkg Lajes, Azores w/phone ttc, enroute Pope AFB, NC. (O'Connor, NH)

11300: Saudi 1160 hrd in SSB at -520 wkg Tripoli w/pos report over DITAR w/eta for ARADA as 0556. Bravo November Alfa (Benina) is next. Also gave eta for BONAR as 0629 which is located at the Tripoli/Malta FIR boundary. Arabic pronunciation Sau-di-yah noted. (Halstead, WV)

11306: American 900 hrd in SSB at 0440 wkg Lima Flight Support w/pos report over Rio Branco. Gave eta for Leticia as 0519. (Halstead, WV)

12162: Signal started out w/A6 then into UD6B 6EVN TTA6 and rptd the 3 grps for approx 10 mins. Apparently a daily 2330 sked. Bcsts first hrd 21 May and continued on this freq until 3 Aug. Not known if these cut nbr transmissions shifted freq. (White, ME)

12535: Soviet M/V Akademik Tupolev (UWFX) hrd in CW at 0710 wkr EAD w/msg in EE for Las Palmas. Vessel enroute from Conakry to Odessa w/ETA for Las

Palmas. Carrying crew of 30. Msg stated they required 50 tons fuel oil, 90 tons gas oil, 200 tons fresh water and cash in amount of 350 thousand Pesetas. (Halstead, WV)

12664.5: FUM, Papeete Naval, Tahiti, Society Island in CW at 0637 w/VVV DE FUM mkr. (Scalzo, PQ, Canada)

12699: HPP, Panama Itelmar Radio w/mkr foll by ttc in CW at 0647. (Scalzo, PQ, Canada)

12792.2: CLA, Havana, Cuba w/coded ttc in CW at 0017. (Scalzo, PW, Canada)

12587: 6WW, Dakar, Senegal in CW at 0322 w/call mkr. (Anon, TX)

13204: Image A QSY'd fm 11176 kHz wkg Ascension w/patch to Raymond 24 re air refueling/tanker status & Satcom problems, i.e. No green on Satcom. Hrd USB at 0140. (Westinghouse, MA)

13214: MAC 188 Sierra Mike clg Mainsail in USB at 2046 but no reply. Then clg any stn for rdo check but still no response. (Fernandez, MA)

13214: Loring in USB at 0148 w/coded msg. (Hill, MI)

13241: Essential in USB at 1446 w/coded msg; Headache in USB at 2059 w/coded msg. (Hill, MI)

13244: MacDill AFB, Tampa, FL in USB at 2003 in conversation w/flight from Panama to Norfolk, VA; Flight 31 Navy 4-AAA3 in USB at 2045 w/MAC phonetics and conversation where Maguire mentioned. (Hollis, WV)

13306: New York wkg TWA 917, Clipper 157 & CanForce 109 for wx in USB at 1453. (Hill, MI)

13333: Speedbird 172 at 1051 and Speedbird 182 at 0155 wkg USB w/London w/pos flight info. (Hill, MI)

14383.5: USS Badger FF1071 NNN0NZI (NHDT) wkg NNN0TQH at 0230. (Stuart, DE)

14441.5: USS Benjamin Stoddert DSDG22, NNN0CPZ (NHMC) clg "Any Sprint capable MARS station" at 0030; USS Bolster ARS38, NNN0CTK (NHEW) clg NNN0NTV (Japan) at 0200. (Stuart, DE)

14449.9: 4XZ, Haifa Naval, Israel w/tfc in 5L grps. (Ed.)

14463: NNN0CMA, USS John Hall FFG32 wkg NNN0NIK, Special Services, Mayport, FL w/MARS ttc in USB at 0013. (Hill, MI)

14470: NNN0PWT (Easton, KS) clg NNN0CWY, USS Carl Vinson CVN70 at 1615; NNN0CSW, USS Saipan LHA2 off Liberian coast wkg NNN0NIK w/pp's at 0034. (Pritchett, CA)

14487: YL/EE w/Lincoln Poacher tune sign-on w/5F grps at 1840. Unusual jamming, not be normal warblers but by Arabic music/speech. Also on 15682 kHz. At 1900 back to warble jamming. (Mason, England)

14670: CHU, Canadian Time Signal stn in AM at 1640. (Watts, KY)

14927.7: 8BY, Indonesian alloc, w/CW mkr of 8BY 8BY 8BY 414/763/095/780/401/014/536 VVV VVV VVV and rpts. (Ed.)

14944: CLP65, Cuban Embassy Managua, Nicaragua from CLP1, MINREX, Havana, Cuba w/request for CLP65 to QSV. CW at 1358. (Ed.)

15024: RFNV, Moscow Aeradio hrd in CW at 1934 wkg Aeroflot 352, a/c 86467, attempting confirm ETA for Sal (Cape Verde). Aeroflot 352 believed be a Luanda flight. (Halstead, WV)

15048: Semipro w/sig check to Retaliante, then ref'd maintaining W-105 (7831 kHz) as secondary. Was USB mode at 2306. (Sabo, CA)

16935: 7TF, Boufarik, Algeria in CW at 0322 w/call sign mkr. (Anon, TX)

17270.1: AAEC, US Army Vessel General Frank S. Besson Jr. LSV1 wkg USCG Comsta Portsmouth, VA NMN at 0105. Vessel was underway and requested pp w/Ft. Eustis. Both stns QSY'd to 13196.9 kHz to complete QSO. (Stuart, DE)

17975: Toaster in USB at 2245 w/coded msg. (Hill, MI)

18002: Yokota AFB, Japan at 0603 w/hourly EAM bcst. (Pritchett, CA)

18410: YL/SS in AM at 2012 w/5F grps, ending at 2013 w/Final, then Atencion (3F) at 2014 and another 5F text began. (Fernandez, MA)

21370: USNHS Comfort T-AH-20 on Amateur Maritime Billo net clg CQ & attempting to raise an Amateur stn near Bethesda Naval Hospital. (Stuart, DE)

23402.5: Flint 311 wkg Atlas at 2110 in USB requesting Atlas notify Rainbow of Flint 311's arrival time at Bluegill. (McAtee, WV)

YOU AIN'T HEARD NOTHIN...YET!

Since 1967, CRB Research has been the world's leading publisher and supplier of unique hobby and professional books and information including:

- Scanner Frequency Guides
- Shortwave Frequency Guides
- Military/Federal Communications
- Broadcast Station Registries
- Undercover Communications
- Survival Communications
- Covert Operations
- Electronic Espionage
- Surveillance
- Monitoring
- Cryptography & Codes
- Bugging
- Wiretapping
- Communications Antennas
- Electronics & Projects
- Regency Scanner Directories
- Computer Technology
- & Other Related Topics!



New titles are constantly being added to our exciting catalog. If it's interesting and unusual, we've got it. You'll see! Ask for our latest FREE catalog.

CRB RESEARCH
P.O. Box 56 Commack, NY 11725

CIRCLE 137 ON READER SERVICE CARD

CB TRICKS OF THE TRADE I & II

Tricks I and Tricks II, plus a free set of plans for CB Super Modulation.

Special: \$40.00

Order each book separately for \$19.95

C.O.D. Orders Accepted
Medicine Man CB
P.O. Box 37
Clarksville, AR 72830
(501) 754-2076

CIRCLE 134 ON READER SERVICE CARD

Order Back Issues of POPULAR COMMUNICATIONS

FREE CATALOG! 1-800-648-7938

JERROLD HAMLIN OAK ETC

CABLE TV DESCRAMBLERS

- Special Dealer Prices!
- Compare our Low Retail Prices!
- Guaranteed Prices & Warranties!
- Orders Shipped Immediately!

REPUBLIC CABLE PRODUCTS, INC.
4080 Paradise Rd. #15, Dept. 115
Las Vegas, NV 89109

For all other information (702) 362-9026

CIRCLE 136 ON READER SERVICE CARD

PIRATES DEN

BY EDWARD TEACH

FOCUS ON FREE RADIO BROADCASTING

The comments I'm getting indicate that many of you look upon pirate QSO's as not being real broadcasts. Some readers even find them annoying. Said one: "If this chat keeps up I'm going to spend my Friday and Saturday nights listening to repeats of Vasily's Weekend and start writing to Moscow Mailbag on a full-time basis." I agree. It takes no program talent or even planning to get on the air and chat with one or more other pirates; it's not a whole lot different than what the hams and CB'ers do. You don't even need a turntable or cart, cassette, CD or tape player. Because of this, and our space limitations, reports on pirate QSO's have been moved to the bottom of the priority list here in *The Pirate's Den*.

Action Radio tells Tim Johnson of Illinois that its announcers are Radio Animal (formerly of WKND) and A.J. Michaels. The regular transmitter is a Johnson Viking II.

H.V. Short of **Radio Free Massachusetts** tells Chris Meloche in Canada that RFM will be keeping a low profile for awhile since he's discovered he's not the only pirate in his area and doesn't want to "aggravate the powers that be and get shut down."

Voice of Free Radio in America was found by Mark Henning of New York at 0145 with tests and a claim that it had \$10 thousand worth of equipment. **Fourth of July** came up on the same frequency causing QRM.

WORK, Working Man's Radio, was on at 0245 on 7415 with commercials and contest spoofs, labor jokes and mention of the Wellsville, NY mail drop, reports Henning. Jim Kalach in Connecticut had them from 0324 and a couple of days later on 7395 at 0053, playing Rush's "Working Man." John Wilkes of Kentucky had them on 7414 at 0404 with game and talk show parodies and humor relating to work and labor. In Michigan, Randy Kaeding found them at 0251 on 7418 and at 0110 on 7394.

Hope Radio International continues to be quite active. Kaeding had them at 0205 to 0244 on 7394 with host Phil Muzak from KNBS sitting in. Floyd Cureton in Maine had them on 7395 at 0200-0245 with a pirate news segment by John Arthur. William Hassig of Illinois found them on 7394 at 0209 to 0245 sign off. The address on this one announced as PO Box 109, Blue Ridge Summitt, PA 19274. Hope Radio was also heard by Joshua Wilkes in Kentucky at 0353 to 0400 on 7394 with rock and a commercial by Ray Camoke of Tube Radio. Tim Johnson had the station on 7394 at 0148 with pirate news and a humorous commercial for "Dr. Drive Thru"—a drive through medical practice.

Thank you for your report on the reception of

ACTION RADIO

This confirms your report of our

DATE: July 4, 1990 (July 5 UTC)

TIME: 0315 UTC

FREQ. 7480 kHz

POWER 25 watts

ANTENNA ALPHA-Delta DX-A

MODE AM - 41 meters

BROADCAST

**ACTION RADIO
REQUEST LINE
412-551-7392**

QSL

ACTION RADIO



"Pirate Radio From The City of Three Rivers"

Tim Johnson got this nice QSL card from Action Radio.

WRFH—Radio Free Harlem, was logged on 7396 at 0428 by Scott R. Wilson of Indiana. The frequency was announced as "3868 kilocycles" and the station boasted it was using an input power of 15 thousand watts. Program was 60's music, comedy recordings and requests for money to be sent to the station at New York. WRFH signed off with a march number at 0518.

Jim Smith in Missouri heard XERK on 7435 at 0436. "Johnny" was the DJ and "Scott" answered phone calls. The station claims to have its studios in Texas and transmitter just over the border in Mexico. QSL's come from PO Box 25302, Pittsburgh, PA 15432.

Radio Wolf International/Radio Animal was snared by Don Snider in Maryland between 0100-0200 on approximately 7.400. The station gave the same address as that for XERK.

Samurai Radio was logged by Jim Kalach on 7415 at 0106-0138. Tim Johnson had them at 0059 with a piano interval signal and rock music. The signal was weak at Tim's Illinois location.

Joshua Wilkes reports what sounded like IDs for the **Voice of Bob** on 7415 at 0420-0430, though he indicates he could be wrong about the ID. I wonder if this might

have been the Voice of Bono, Josh.

Tim Johnson had **One Voice Radio** on 7380LSB at 0000 with talks and music. Chris Meloche in Ontario had them on 7415 at 2345, though this was via the Canadian pirate CFBN, according to several announcements made by "Joe," the One Voice Radio announcer.

Chris had CFBN on 7430 at 0143 with heavy QRM and then had them again at 0228 on 7417.8. Randy Kaeding found them on 7419 at 0215 with such songs at "My Mother Chose My Husband" and "Tired Little Teddy Bear." They use PO Box 452, Wellsville, NY 14895. Robert Ross of Ontario had the station on 7419 at 0156 sign on to 0219 close with its loon interval signal and ID as "CFBN, fly by night radio, Canada's worst."

Ross also logged **Radio USA** on 7415 at 2305 sign on with a taped syndicated program of hard rock, "Radio USA" ID and mention that it was a test broadcast.

That will do it for this month. Please keep those pirate logs coming this way, along with originals or good copies of pirate QSL's (not returnable). As always, I am interested in receiving news direct from your station operators, too!

See you next month!

PC

WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS

Pirate Station Shut Down In Los Banos, California

The FCC's San Francisco Office shut down an unlicensed FM radio station called "KJAM" operating on 90.7 MHz in Los Banos, California. An FCC engineer using mobile radio direction-finding equipment located the station at the residence of Victor E. Ruiz. On September 26, 1990, Mr. Ruiz was fined \$1,000 for unlicensed operation. Call sign "KJAM" is assigned to an AM and FM radio station in Madison, South Dakota.

Pirate Radio Station Shut Down In Adrian, Michigan

The FCC's Detroit Office shut down an unlicensed FM radio station operating on 89.5 MHz in Adrian, Michigan. An FCC engineer using mobile direction-finding equipment located the station at the residence of Joe and Connie Mattausch. The station used the identifier of Citizens Emergency Broadcasting Service. The Mattausches were fined \$1,000 for unlicensed operation.

Unlicensed radio operation 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. Misuse of radio frequencies is a serious offense because of its potential for interfering with safety-of-life services such as aviation, law enforcement and marine.

CB Radio Station Shut Down In Oakland, California

U.S. Marshals, with the assistance of Engineers from the FCC's San Francisco Office, executed a civil in rem seizure of illegal radio equipment valued at approximately \$2,000 from the home of CB operator Harvey Peters, Jr., Oakland, California.

The CB equipment seized included five non-type accepted (modified) transceivers capable of operating on frequencies not authorized for use in the CB Radio Service and two CB linear amplifiers capable of boosting transmitter power to 300 watts, well above the 4 watt legal limit. The use of such illegal radio equipment violates Section 302(b) of the Communications Act of 1934, as amended, and can cause harmful interference to safety-of-life services (including law enforcement, aviation and marine), other CB users and home electronic entertainment equipment.

The FCC received over 30 complaints from area residents stating that Peters' CB radio transmissions could be heard on tele-

vision, telephone and stereo equipment. FCC letters to Peters about his CB operation went unheeded. He had been previously issued Commission forfeitures (fines) for failure to allow inspection of his CB station by FCC personnel. FCC Rules (47 C.F.R. 95.426) require that all CB radio stations be made available for inspection upon the request of an authorized FCC official.

FCC Fines Two Amateurs For Violations On Twenty Meters

The following enforcement actions have been taken by the Commission's Field Operations Bureau:

Gordon N. Skul, WB9BCL, of Crete, Illinois, and glen Baxter, K1MAN, of Belgrade Lakes, Maine, were issued Notices of Apparent Liability to Monetary Foreclosure (NAL) for \$1,000. They were charged with violating Section 97.101(d) of the Commission's Rules which prohibit willful interference. Mr. Baxter's NAL included an additional amount of \$500 for violating Section 97.113(c) which prohibits repeated incidents of broadcasting.

New York Vessel Traffic Services System Re-Established

Effective last October 1, the Commission amended its Maritime Services Rules to redesignate vessel traffic services (VTS) channels in the port area of New York for exclusive VTS system use.

In February 1989, the Commission amended its rules to permit the use of two marine VHF frequencies in the New York VTS area by eligible users of operations other than VTS. This action was taken because the Coast Guard had discontinued the new York VTS system due to budgetary constraints, pending the system's possible re-establishment at a later date. On April 30, 1990, the Coast Guard informed the commission that, as a result of a Congressional directive and appropriation of funds, the New York VTS system was being re-established.

In its previous Order, the Commission specified that if the New York VTS system were to be re-established, any coast station licensees authorized as a result of the Order would be required to cease operation. Consequently, the operations of those licenses must now cease. The Commission has already individually notified the five affected private coast station licensees of the Coast Guard's plans and of this present Commission action.

VTS systems are ship movement reporting systems operated by the Coast Guard and designed to prevent damage to ships, bridges, and other structures in the U.S. navigable waters. In New York, marine channels 11, 12, and 14 are assigned to the VTS system.

Rule Changes For The Private Land Mobile Radio Service

The Commission initiated a proceeding to amend its rules governing the private land mobile radio (PLMR) services. The proposals put forth by the Commission have been designed to modify/clarify its rules and policies governing station construction, license cancellation, and license reinstatement after failure to renew. The Commission also proposed to establish a finder's preference offering incentive for persons providing information to the FCC about unconstructed, unloaded, or non-operational PLMR systems.

Private land mobile frequencies have become congested and extremely scarce in many areas, making it difficult for new applicants to obtain licenses and for existing licensees to expand their systems. It is essential therefore, the Commission said, that channels are used in an effective and spectrum efficient manner. Based on discussions with industry representatives as well as a review of its own rules, the Commission is offering a number of proposals to accomplish this goal.

To encourage more active industry monitoring of the use of the spectrum, the Commission has proposed a finder's preference. Existing users, and others, have often provided the Commission with information concerning abandoned channels that has ultimately resulted in a channel recovery. These individuals, however, have received no credit for their efforts even though they have conducted the necessary research to find such channels. Rather, these frequencies have been reassigned on a first-come, first-served basis through the frequency coordinators. Under the finder's preference, those individuals would be rewarded for reporting on unconstructed, unloaded, or non-operational stations which ultimately result in a channel recovery action. The finder's preference would apply to channels where it is possible to obtain exclusive usage, such as those above 470 MHz, and would limit the class of eligibles to those meeting minimum acceptable standards.

The Commission said that it would closely monitor for any signs of abuse and, in this regard, is asking for comments on whether

applicants seeking a preference should certify that they have not compensated the licensee of the unconstructed station to accomplish this transaction.

Next, the commission is considering reducing, or eliminating, the time period for reinstating PLMR licenses. Current policy permits licensees to seek reinstatement within six months following the license expiration date for the facility. If the licensee fails to reinstate during that period, the license is deleted from the FCC data base making the frequency available for reassignment. Comment is requested on whether a 90 day, or less, reinstatement period would be sufficient to meet the needs of PLMR licensees. Alternatively, comment is requested on whether licensees should be required to file for renewal by the license expiration date, with no reinstatement period.

To streamline the reinstatement process, the Commission proposed giving licensees wider latitude on what application to use when seeking reinstatement. Previously, the Commission has permitted licensees to use only FCC Form 574. Upon review, the Commission is now proposing to allow licensees filing on a timely basis for reinstatement, without modification, to use either FCC Forms 405-A, 574, or 574-A. Comments are requested.

Finally, the Commission has proposed to clarify a number of its existing rules. Specifically, the Commission is seeking clarification of its rules which define when a PLMR station is considered operational and clarification of its rules to explicitly state that a license cancels automatically upon discontinued operations for a period of one year or more.

Currently, commission rules require licensees to construct and place their stations in operation within prescribed time periods. Conventional land mobile radio stations must be constructed within eight months of a license grant and trunked stations within 12 months of a license grant. Construction of a base station alone does not satisfy the requirements of the rules. The Commission will not consider a base station operational if it does not have an associated mobile station(s) operating as well.

With respect to the rules governing station discontinuance of operation, such rules are a condition of a station's authorization. The license is valid only as long as the station has not discontinued operation on a permanent basis, i.e., more than one year. If the licensee does not meet this condition, its license automatically becomes null and void.

Rules Concerning Public Mobile Service Applicants

The commission granted various requests for modification of its *Report and Order*, issued August 2, 1989, amending Part 22 of its rules to allow certain Public Mobile

Service (PMS) applicants to begin construction after filing FCC Form 401 and without receiving prior authorization. The new rule also contains certain conditions under which applicants may construct prior to receiving authorization.

Alascom, Inc., requested that the Commission apply the rule to allow Rural Radio Service applicants to begin construction prior to receiving FCC authorization. McCaw Cellular Communications, Inc., asked for modification of the rule to allow applicants to obtain any required antenna marking and lighting authorization only from the Federal Aviation Administration (FAA), and not from the Antenna Survey Branch (ASB) of the Commission as well. Additionally, Centel Cellular company suggested that the Commission permit prior construction of cellular facilities where the applicant proposes a *de minimis* extension of a cell contour beyond the borders of its market.

Therefore, in accordance with Alascom's request, the Commission has revised its rule to apply to all applicants in the public mobile service. With respect to McCaw's request, the Commission clarified that, as with Part 22 applicants generally, applicants who propose pre-authorization construction are not required to obtain ASB clearance if the proposed antenna structures are exempted from FAA notification under Commission rules. The Commission declined to adopt McCaw's broader request and affirmed the rule that ASB clearance is generally required prior to engaging in pre-authorization construction.

The Commission agreed with Centel that allowing pre-grant construction of facilities where *de minimis* extensions are proposed would expedite service to the public and allow cellular operators and applicants to modify their systems quickly in response to market demand.

PC

CB RADIO OWNERS!

We specialize in a wide variety of technical information, parts and services for CB radios. 10-Meter and FM conversion kits, repair books, plans, high-performance accessories. Thousands of satisfied customers since 1976! Catalog \$2.

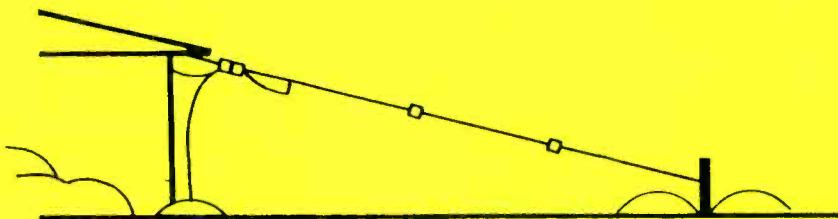
CBC INTERNATIONAL
P.O. BOX 31500PC, PHOENIX, AZ 85046

G5RV All-Band QuickKits

created by: AntennasWest	Box 50062, Provo, UT 84605
Fast & Easy to Build	
• Fully illustrated instructions	\$39.95
• No measuring or cutting	
• Everything included	
• Finish antenna in minutes	
Quality Components	
• Pre-soldered Silver Fittings	
• Kinkproof Quadplex wire	
• Fully insulated, wax sealed, no-corrode, low noise design	
Tune All Bands Incl. WARC	
Build your own from scratch. Order TechNote #124-C \$5.95 ppd USA	All 55.95
Call 801-373-8425 for Tech advice.	1-800-926-7373

CIRCLE 5 ON READER SERVICE CARD

When it comes to effective multi-band DX antennas for limited space applications, it comes to the world class **ALPHA DELTA DX-SWL family of High Performance SLOPERS!**



- Fully assembled, ready to use and built for long life. So strong, it can even be used to transmit—up to 2 kW!
 - Superior multi-band performance on 13, 16, 19, 21, 25, 31, 41, 49, 60, 90, 120 meters plus the AM broadcast band (.5-1.6 MHz). All in a single compact antenna. Alpha Delta first!
 - Efficient multi-band frequency selection by means of special RF choke-resonators—instead of lossy, narrow band traps.
 - Overall length just 60 feet. Requires only a single elevated support—easier to install than a dipole.
 - 50 ohm feedpoint at apex of antenna for maximum DX reception. A UHF connector is provided on the mounting bracket for easy connection to your coax.
 - A top overall rating in Radio Database International's hard-hitting White Paper, "RDI Evaluates the Popular Outdoor Antennas."
- Model DX-SWL, AM broadcast thru 13 mtrs, 60' long \$69.95
 • Model DX-SWL-S, as above but 90 thru 13 mtrs, only 40' long \$59.95

Available from your local Alpha Delta Dealer or direct. Add \$4.00 shipping and handling (U.S.A. only) Exports quoted.



ALPHA DELTA COMMUNICATIONS, INC.

P.O. Box 51117, Phoenix, AZ 85076 • (602) 966-2200



CIRCLE 129 ON READER SERVICE CARD

One of the best looking AM/SSB mobile rigs we've gotten a look at in a while is the Realistic TRC-465 from the Radio Shack Division of the Tandy Corp.

Sidebanders who have been around a while will recall those bulky knee-buster SSB mobile rigs of bygone days. But look, this rig is only 2" high, about 6" across, and just 8" deep! Yet, it has the same talk power as those biggies we used to use. An effective (switchable) ANL/NB cuts out noise when necessary.

We like that the clarifier control is placed right next to the large channel control knob. That saves you a lot of groping to clarify in a station while you're driving. A visual depiction of the unit's RF output is via a five-stage LED meter.

The price tag is \$199.95, and you can see the Realistic TRC-465 at your nearest Radio Shack store.

From Our Readers

In our October column we noted that information we received from a CB manufacturer claimed that they had a new "7 watt" CB rig. We facetiously pointed out that AM CB rigs usually carry a power rating of 4 watts, and left it at that, figuring that readers would fill in the blanks for themselves. We guessed incorrectly.

Of the large number of letters the fabled "7 watt" rig brought in, about three quarters wanted to know if the regulations had been changed and if all new CB rigs would now be pushing 7 watts. The rest of the letters came from readers explaining the "7 watt" rating to us, or else chiding us for being so naive as to take such a rating seriously.

Well, we didn't take it seriously, and didn't think (at this point) very many others would either. This hokey "7 watt" rating has been around for a year or two now and we surmised that it no longer had the ability to catch very many people with their guards down. More than one manufacturer has taken the "7 watt" CB rig approach, although it is a bit tricky for the uninitiated.

So, just for the record, the CB rules have not been changed. AM CB rigs still run 4 watts of RF power, SSB CB rigs are rated at 12 watts PEP, and that's how they are properly and usually rated. However some rigs have 7 watts of audio power, meaning you can turn up the loudspeaker to the point where they can hear the CB set across the street; a rather meaningless advantage on a CB rig. Only PA systems and audio amplifiers usually are rated as to their audio power; communications equipment is normally understood by the public to be rated in watts of RF. A few CB manufacturers have hoped that if the wattage rating was not specified as



Radio Shack's TRC-465 AM/SSB mobile rig. A good looking unit that offers a chance to get into Sidebanding at a reasonable price.

being either audio or RF, the higher audio wattage rating would be assumed and perceived by the public to represent an attractively high RF rating. Unfortunately, they were right. While not an illegal representation, it is obviously confusing. The next time we get manufacturers' data containing this type of information, we'll point out that their specs are misleading, and possibly deliberately so. Thanks to all who flooded us with letters!

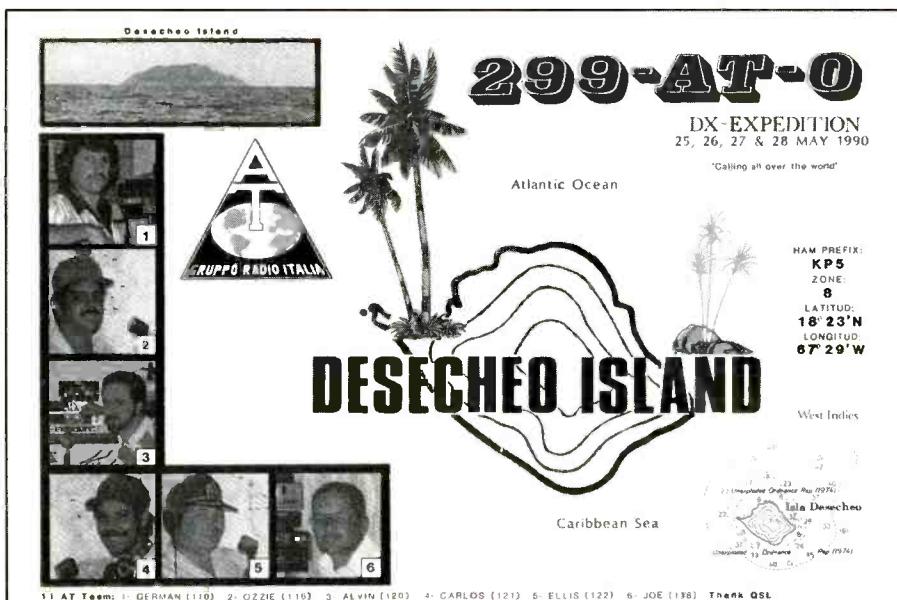
Norman Maine, 9-America-50, of Bristol, NH suggests that Sideband operators in

the VT/NH areas might like to come up on the lower side of 27.385 MHz at from 7:30 to 10:30 (we assume p.m.) every Wednesday and Thursday. He says the America net is active there.

A request for help came in from Brandon Wilson, 920 Briggs Avenue, Modesto, CA 95351. He purchased a used AM/SSB mobile rig called a WKS Model 100. He suspects it's imported, but if anybody can provide information on when and where it was made, he'd be most appreciative. That unit's a new one on us, Brandon!

Daniel Delaney, of Cardiff, NJ is an enthusiastic new reader of POP'COMM. He wrote, "I have just read my second issue, and I read it from cover to cover and enjoyed every page." Daniel tells us that his first CB rig is a Realistic TRC-450 AM/SSB unit. He understands the basics of AM operation, but he quickly realized that single sideband operation is something totally different. He wants us to suggest where to start in embarking upon a career as a Sidebander.

Our advice to Dan, and others who have written in seeking similar advice, is to write to the SSB Network, P.O. Box 908, Smithtown, NY 11787. Send them a stamped, self-addressed long envelope for them to return you information on becoming part of the exciting world of Sidebanding.



This is to certify that radio communications were established between your station and

91 ROMEO PAPA 1109
RADIO PIRAT INDONESIA



printed bij radio pirat dx group

Op. BONY
100 JOHAR STREET
PONTIANAK 78112
WEST BORNEO INDONESIA



A QSL from 91-RP-1109, who goes by the handle Bony, and hails from West Borneo, Indonesia. (Courtesy Bert, SSB-35F, of TX.)

Lost Power

When you've gone to all the trouble to assemble a station full of equipment you really like, it certainly would be foolish to accept less than everything your station can offer you.

Now, you've probably heard that 3 dB gain is double power, 6 dB is 4X power, 9 dB is 8X power, 12 dB is 16X power, etc. It works in both directions. A 3 dB loss cuts away half of the power, etc.

If you look at the specs for common RG-58A/U coaxial cable, you'll see that at 30 MHz the stuff has a 2 dB loss per 100 ft. That means, 150 ft. has a 3 dB loss, or half power, built right in at the far end. Cheap, or old, coaxial cable may show even greater loss than new RG-58A/U. You may have heard this before and were told to use RG-8A/U instead.

RG-8A/U is rated with a loss of 1.33 dB per 100 ft. at 30 MHz, so you could get a run of 225 ft. before you lost half your signal. To be sure, there are other, more efficient cables made—low loss types. In general, they are more costly, not as readily available from all local sources, some require special (expensive) connectors, and some are rigid or semi-rigid in composition and difficult to work with or without special tools and training.

Since most CB operators appear to rely so heavily upon the two types mentioned, there's a good probability that you should take the location of your antenna into consideration when deciding if your station is doing the best possible job for you.

Many operators in apartment houses think they have it made in the shade because their antenna is on the roof, perhaps 150 feet above street level. Sounds good

until you calculate in the 100 ft. run of coaxial cable it takes to link the rig to the antenna. Same with stations out in the boonies, where there is a tower, tree, or hill about 100 ft. away used for mounting the antenna. The loss in the cable could be significant.

Fact is, going to a seemingly less appealing antenna mounting location only 20 or 40 feet from the rig could well offset the apparent advantage of a distantly mounted antenna at a higher point. This is because at 20 feet the signal loss will be relatively minor. And don't forget that signal losses affect incoming signals as well as those you're sending out. There are no free lunches when it comes to moving RF from here to there.

Wait To Key Up

Never ceases to amaze me how quick most operators are in keying up when you turn it over to them. What's the hurry? Anybody with a half-ounce of manners isn't going to jump in and steal the channel away from you and your friend for their own purposes if they are given a chance to get a word in edgewise between transmissions. Think about it.

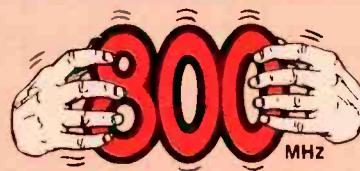
On the other hand, whether you're an AM or SSB'er, there are undoubtedly a number of operators reading the mail on your working channel. It could very well be that whatever you are discussing is of genu-

ine interest to one or more of these people. Maybe they'd like to ask a question, or inject some information to enhance your conversation. Perhaps if there was as short a lag between key-ups as only one or two seconds, they could make themselves known to you and your friend. They can't if the transmission exchanges are fit together so closely that there's scarcely a microsecond of dead air time.

When I'm at the home base just chatting, I like to allow as long as three seconds to pass before I go back to the other station. Furthermore, I appreciate it when stations I work do the same. I'm also aware everybody listening may not be aware why we do this. Some may be aware, but still feel it would either be rude or pushy of them to join in. So, every five minutes or so, I usually invite stations on frequency to make themselves known and add whatever comments they might have. Met a lot of new friends that way, too.

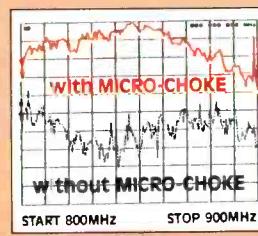
That's what 27 MHz is all about, friendship. So, slow down, take your time, enjoy it, and make it easy for people to become your friend. Your mike button isn't a trigger, and you're not Marshal Earp. Next time, don't be so quick on the draw. Allow a short pause between transmissions. Pass it on.

We always seek your comments, photos, CB QSL's, questions, and 27 MHz information. We're by and on the side. QSK? **PC**



MICRO-CHOKE™ grabs those 800MHz signals you've been missing.

Antenna Specialists all-band scanner antennas, with our exclusive MICRO-CHOKE, offer pinpoint resonance at 800MHz and excellent performance from 25 to 1000MHz. Now—base or mobile—all police, fire, emergency and other FM communications (even portables) are within earshot. Start hearing more by sending for the FREE 16-page A/S Personal Communications Antennas catalog today!



Tenfold signal improvement at 800 MHz!



MON-53 Mobile Roof/Deck-Mount Antenna



MON-52 Mobile Trunk Lid Mount Antenna



MON-58 Base Station Antenna

a member of The Allen Group Inc.



"Stands of Quality"

CIRCLE 124 ON READER SERVICE CARD

Beaming In (from page 4)

what I needed was exactly the receiver I wanted, things rapidly went downhill. The salesman was suspected of trying to hustle an expensive piece of equipment onto a gullible kid who didn't know any better. The salesman having been discerned as an out-an-out crook, we left the store. I was heartbroken.

We ended up at another store where the Old Man quickly explained to the salesman the folly of my ways. The salesman readily agreed with him, saying that today's kids are all wiseguys and know-it-alls, and it was a pity that nobody can tell them anything. He didn't dispute that the Hallicrafters S-40A was being sold at an inflated price, and said that everybody knew the name Emerson meant a fine radio, but only one person in ten thousand would know the name Hallicrafters. This guy and my father obviously spoke the same language, and I wanted to get my hands around the salesman's throat.

The salesman went on to say that when he and my dad were my age, kids had enough respect to listen to the advice they were given by their parents; and those who didn't heed that advice were given the pains of learning the hard way. He suggested something along the lines of letting "the stupid kid throw his money away on the over-priced piece of junk he wants, and the next time maybe he won't be so anxious to ignore the advice of his parents."

The Old Man thought this over for a few moments and came the conclusion that it made sense. Maybe his idea was worth a try. The salesman tossed me a wink and asked to take a look at my trade-in. Within minutes, a deal had been worked out, and my S-38 was appraised at the same \$25 value as the other store had offered. Through the entire transaction, the salesman kept

emphasizing how sorry I'd be for not taking the Old Man's advice.

Best of all, while my radio was being wrapped, the salesman went in the back and eventually emerged carrying a dusty box containing an Emerson table model radio. Looked like it had been kicking around the store for years. He showed the Old Man this Emerson as shining example of what I had missed out on because I was such an arrogant kid. The salesman gave it to the Old Man as a gift, assuring him that it would still be working long after the S-40A was only a memory. We all marched back to the sub-way, dripping wet, and thoroughly content.

Years later, long after my Hallicrafters S-40A had been replaced by a succession of other receivers, as I continued to upgrade my station, the Old Man still had his Emerson. Nothing could part him from the set. With each new receiver I bought, he never failed to remind me that his trusty Emerson was still serving him well, that he hadn't ever seen any need to replace it, the horn was still good, and I had thrown my money into the gutter like a stubborn fool. Even the salesman had said so.

Here it is, almost 45-years later, and that stormy day down on Radio Row flashed back into my memory as I dug around the innards of this Hallicrafters shortwave receiver. There'll never be another Radio Row. And there were few lessons in my life that quite matched those taught by the Old Man, or that most wonderful of all Radio Row salesman.

Yesterday, as I plugged the new 6SK7 tube into the Hallicrafters S-40B from the office, it made me think about it all and laugh. Somewhere, that miserable Emerson table radio is probably still playing, and with all of its original bulbs. The Old Man would have loved it.

Update Stuff

Ed Noll, W3FQJ, has been a monthly

columnist with POP'COMM for many years. Recently, Ed told us that he'd like to devote more time each month to his family, hamming, fishing, and the other highly touted benefits of retirement. Ed felt that while he would like to write occasional feature stories for us, the rigors and regimen of wrestling with a monthly column deadline were things he wouldn't miss at all in the event we were willing to let him off the hook so he could devote some more time to putting fish on the hook.

Far be it from me turn down a request like that, as much as readers have always enjoyed the columns Ed has written for us for so long, and as much as I have found Ed a pleasure to work with.

So, beginning in this issue, our popular You Should Know... column, which Ed originated for us a while back, will be taken over by Harry Helms, AA6FW. Harry is the honcho at the *Umbra et Lux* newsletter, the author of many books on DX'ing, and a regular feature author here at POP'COMM. Readers who have been with us for a long time will recall that years ago Harry was the curator of our *Communications Confidential* column.

Harry's got his own unique approach to the You Should Know... column, and I know it will please the many Helms fans who continually ask us to run more of his writings.

So, let's give Ed Noll our thanks for putting up with yours truly and about 100 of our copy deadlines (he never missed one, either), and hope that he can find time to send us some of those feature stories he's promised. And, welcome back aboard as a monthly columnist, Harry Helms.

In other update news, in the November Mailbag section we ran a listing of some SWL and scanner related clubs and newsletters. We explained the rather changeable status of clubs and newsletters. Since that listing was compiled, for instance, we note that the excellent *Radio Monitors Newsletter of Maryland* has changed its subscription price to \$15 per year. Furthermore, it's now been several months since we've seen copies of A.C.E. here at the office. They used to show up here monthly, and our guess is as good as yours as to its current status.

And, in response to the November Mailbag, a reader in Washington State sent us a recent copy of the *RCMA Journal*, the membership publication of Radio Communication Monitors Association. He wanted to know why this publication wasn't listed in our November issue since it was such a worthwhile effort. As explained last November, we listed only those newsletters that are sent on a regular basis to our offices as a public relations gesture of those who issue them. We aren't on the RCMA mailing list and don't normally see their publication, however the copy just sent to us looks very good. It's put out by RCMA, P.O. Box 542, Silverado, CA 92676. Membership is \$22 in the USA, or US\$22.50 in Canada. **PC**

Compact Slinky Indoor Antenna from AntennasWest Box 50062 Provo UT 84660
for Attic, Apartment, Motel, & Portable Use
Small • Simple • Fast • Versatile • Effective •
Complete with 18 ft. Decorator white feedline & all-transparent mounting
hooks, line and suction cups for installation anywhere—attic, basement,
parlor, bedroom, hallway, staircase—horizontal, vertical, sloping, or bent.
Work all bands 40-10 on basic \$21.95 80-m \$4.95
15' antenna. Manual included: +\$4.95 Coils -\$3.95
Extend in a minute. Zip out of sight in an instant.
Build your own from scratch. Order TechNote #123-B \$5.95 ppd USA
800-926-7373 Order Hot-Line. For Tech Info call 801-373-8425

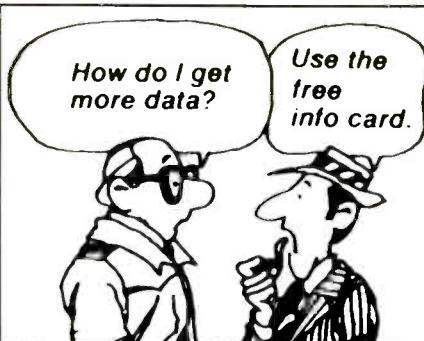
CIRCLE 5 ON READER SERVICE CARD

**SHORTWAVE RECEIVERS. HAM RADIOS.
ANTENNAS, SCANNERS. Business Radios.
ICOM, YAESU, KENWOOD, SONY,
MOTOROLA.**
... our 40th Year ... Worldwide shipping.
Sales ... Service. Large Showroom. Open 7 days.

WE ARE BORN AGAIN
Barry Electronics Corp.
WORLD WIDE AMATEUR RADIO SINCE 1950
Your one source for all Radio Equipment!
212-925-7000 or Fax 212-925-7001
512 Broadway, NYC, NY 10012

CIRCLE 133 ON READER SERVICE CARD

PIRATE RADIO ON VIDEO
Inside Pirate Radio, a video documentary, looks into the free radio movement. Talks to those involved about tuning in, logging, QSLs, avoiding the FCC if you broadcast, and much more.
Inside Pirate Radio retails for \$19.95 (VHS) including S/H. We offer a money back guarantee **\$19.95**
and accept VISA, MC, Checks and UPS C.O.D.
THE FRANKLIN VIDEO GROUP
875 NORTH YOUNG STREET • FRANKLIN, IN 46131
1-800-255-2659
Inside Pirate Radio running time: approx. 60 minutes



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 (specify 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 scope 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.

ELECTRONIC EAVESDROPPING EQUIPMENT DESIGN, reviewed by **Popular Communications** and **Popular Electronics**, gives 58 schematics of Sheffield Electronics' surveillance devices. Circuits explained. Transmitters range from pens to one-mile VOX's including crystal, subcarrier, carrier current, infrared, automobile, mains powered cube tap and duplex types. Demodulators given. Eighteen telephone transmitters are leach and battery types including crystal and subcarrier. Countermeasures chapter. Much more. This 8½ x 11 inch 110-page book is illustrated with photographs. Price: \$30.00 + \$4.00 S&H. First Class Mail US/Canada. Overseas Airmail S&H \$9.00. Money Order or Cashier's Check, immediate shipping. Personal checks, 21 days. Send to: WINSTON ARRINGTON, 7223 S. Stoney Island Ave., Chicago, IL 60649.

ONE TOLL-FREE PHONE CALL COULD EARN YOU \$500. We are a nationwide market leader in the fire/water restoration business and we are looking for people across the country. **LIKE YOU,** to join our team. If you are interested in learning more about our **FIRE SPOTTERS NETWORK**, please call Judy Winn, Peregren, at 800-544-1666, or write, PO Box 3298, Oakland, CA 94609.

SECRET NEW INVENTION STOPS EAVESDROPPERS! Easy to build. Stops extensions and most autostarts. Plans \$20.00. Parts \$10. \$3.00 S&H. **FREE** gift with order. SpyTex, P.O. Box 1258PC2, Austin, Texas 78718-1258.

ICOM IC-R1 Communications Receiver - Handheld portable scanner. Wideband frequency coverage: 100 kHz to 1300 MHz continuous coverage. Signal strength indicator. 100 memories. 10 banks of search frequencies. FM, Wide FM and AM modes. Selectable channel separation: 0.5, 5, 8, 9, 10, 12.5, 15, 20, 25, 30, 50 kHz. Clock and power on/off timers. Built-in NiCd battery. Many other features. Uses same accessories as other ICOM handhelds. Includes AC adapter/charger, antenna, carrying strap, and belt clip. Dimensions: 1.9" W x 4" H x 1.4" D, weight 9.9 oz. New with warranty. \$495. (703) 222-7554.

PAN-COM INT'L CATALOG. Over 350 Kits, Plans, Books about Licensed/unlicensed AM/FM broadcasting, Ham/CB/SW/DX amplifiers, 1750M transmitters, Surveillance devices, Computers/Software, Science Projects, MORE. \$1.00 refundable. Box 130-P02, Paradise, CA 95967.

SWL SLOPER covers AM broadcast through 13 meter bands, 60' long, \$53.95 ppd., Jr. SWL Sloper covers 90 through 13 meter bands, 40' long \$43.95 ppd., VGE, Box 21305, S. Euclid, Ohio 44121.

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.

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.

PC HF FACSIMILE 5.0 \$99



NOW EVEN BETTER!

A complete facsimile reception system for the IBM PC and compatibles. Receives in 16 intensity levels for full gray scale images. Includes:

Demodulator 200 Page Manual
DSP Software Tutorial Cassette
Worldwide FAX Directory Interpretation Guide

Features:

Printer output, Disk Storage, Automatic operation, Programmable line rates, IOC, LCD support, Integrated file management and more.

PC GOES/WEFAX \$250

Designed to decode the AM subcarriers from U.S., Soviet and Chinese meteorological satellites. The product includes the demodulator, DSP software, orbital tracking system and many professional image processing features. Call or write for product information.

Software Systems Consulting

150 Avenida Cabrillo, "C", San Clemente, CA 92672

(714)-498-5784

CIRCLE 174 ON READER SERVICE CARD

GILFER — first in Shortwave



Try JRC's new HF transceiver JST-135 at Gilfer's store.

• Gen. coverage triple conversion receiver, 100 kHz-30MHz, microprocessor controlled, direct digital synth. IC • Low distortion adjustable power amp. 10-150W out • Pass-band shift, Notch, Blanker, Processor, Dual VFOs, 200 ch memory, VOX, AGC, RIT, Squelch, Full/Semi Break-in.

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.



Order operators: 1-800-GILFER-1

(1-800-445-3371) NJ 201/391-7887

GILFER SHORTWAVE

52 Park Ave. • Park Ridge, NJ 07656

CIRCLE 132 ON READER SERVICE CARD

Advertiser's Index

AMC Sales, Inc.	50
ARRL	45
Ace Communications, IN	80, Cov. III
Alpha Delta Communications	73
Amateur Electronic Supply	7
Antenna Specialists	75
Antenna Supermarket	21
Antennas West	73, 76, 79
Antique Radio Classified	23
Associated Radio	57
Barry Electronics	75
CBC International	73
CQ Bookshop	65
CQ Buyer's Guide	21
CQ Communications Quarterly	33
CRB Research	20, 70
Cellular Security Group	23
Communications Electronics	13
DECO	79
Delta Research	63
Electron Processing	35
Electronic Engineering	63
Electronic Equipment Bank	1
Excellent Technology	78
Franklin Video Group, The	75
GRE America, Inc.	61
Gilfer Shortwave	77
Hollis Radio Data	11
ICOM	39, Cov. II
JoGunn Ent.	50
Kenwood U.S.A. Corp.	Cov. IV
MFJ Enterprises, Inc.	53
Medicine Man	70
Moonbeam	63
NBO Distributors, Inc.	79
OEI OPTOElectronics	5
Pacific Cable Co.	37
React International	54
Republic Cable Products, Inc.	70
Scanner World, USA	8
Signal Engineering	15
Software Systems Consulting	69, 77
Somerset Electronics	23
Systems & Software	29
Tiare Publications	37, 51
Universal SW Radio	3, 79

RINGDIRECTOR™

The Ultimate Voice-Fax- Modem Switch

RingDirector™ works with the new distinctive ringing feature from your telephone company. Now up to four separate numbers can be assigned to your phone. RingDirector™ detects the distinctive rings and automatically connects the call to the appropriate device. No phantom ringbacks or recorded messages. Eliminates dedicated lines. Works every time, automatically.



\$149
+ \$5 Shipping



1-800-677-7969
EXCELLENT TECHNOLOGY
69 Smith Street
Glen Head, NY 11545

TOMCAT'S BIG CB HANDBOOK, by Tom Kneitel. Just published, 221 large pages, fully illustrated. Complete guide to worldwide AM, SSB, Freeband, 27 MHz operations. Everything they never told you (legal & otherwise) from world's leading CB authority. Only \$13.95 (plus \$2 postage to North America) from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. (NYS residents add sales tax). Dealer inquiries invited.

SCANNER FREQUENCY SEARCH SERVICE. Hear all there is to hear! SASE to: Heald, 6886P Jefferson Street, North Branch, MI 48461.

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.

WOW! 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.

225-400 MC RECEIVERS Tunable. Government Reconditioned. Satcom Antennas 240-270 MC Military Helical Type. New (419) 726-2249.

THE Red Onion Express Bulletin Board has moved to 914-342-4585. Free. 24 hours a day. Set your modem to 300, 1200, or 2400 baud. Scanner and Shortwave information. NO ringback!

BROWNING "BARON" CB mobile trncvr w/ Pace PS. \$125.00. NOVA CB portable rec.-D/F \$25.00. Scanners: BEARCAT BC 155XL \$80.00. REGENCY ACT-E10 H/L/U & TME-8 H/L/U \$45.00 ea. Sullivan, 18 Mallard Way, Waltham, MA 02154.

Commodore 64/128 AEA Com Pakratt with Fax. I have changed over to an IBM system. \$55.00. Plus Commodore RS-232 Modem Interface Cable. \$15.00. Robert M. Hinton, P.O. Box 6044, Boulder, Colorado 80306, or call (303) 499-4189.

25 Security and Control Projects contains useful security and electronic control devices for your home, shop, or business. All circuits use standard components. 36 pages, 8½ x 11 inches. Price \$9.95 plus \$1.75 P/H. John P. Shields, 2550 Second Street, Cuyahoga Falls, Ohio 44221.

HELP! Verify my KSC9190 CB callsign from 1969. Can you look me up in your callbook and send a copy? Michael D. Neff, 832 Diamond Drive, Gaithersburg, MD 20878.

SWAP: UK/English magazines for back issues of Popular Communications. Write to: Mike Evans, 120 Loughton Way, Buckhurst Hill, Essex IG9 6AR, England.

Trade a Sony ICF-SW1 for a Realistic DX-440 or similar radio. Call (305) 787-9723.

Bearcat III in need of grave repair. Hums when turned on. No other operations. Crystal controlled scanner - manual, schematic enclosed. Ready to ship. Will pay costs of parts, repair and S/H. Richard Soltow, PO Box 497, Immokalee, FL 33934-0497.

Radio Newyork International! Listen for us every Sunday night at 9 pm (Eastern), 8 pm (Central), 6 pm (Pacific) over WWCR, 7520 kHz. All of your favorites: Al Weiner, Randi Steele, Dan Lewis, Pirate Joe, John P. Lightning, & more! Live call-in at 1-(800)-736-9764. QSL's (send SASE) from RNI, PO Box 270, Flushing, NY 11352. Spend your Sunday nights with RNI!

Grundig Satellit-500. Brand new. Never used and in box. First check or postal money order gets it. \$465. Shipped. Write Grundig on envelope. M. O'Neill, PO Box 2501, Glenbrook, CT 06906-0501.

SWAP: My mint Sony ICF-2010 and accessories for your mint Sony ICF-PRO80 and accessories. Weiss, PO Box 321, Valparaiso, IN 46384 (219) 663-2324.

For Sale 1 Regency VHF Handtalkie 2 ch 154.5700, 154.6000. 1 holder, 2 batteries. New \$145.00 COD - call 1-718-837-8820, Joe. 9 am - 2 pm EST.

FOR SALE: Tandy 1000XL pc. 1989 ed in mint condition. Inc. instruction manual/color monitor/keyboard/disks - \$500. Willing to trade for a decent wp. Call (516) 822-2322 after 5pm EST.

WHY BUY STANDARD 40 CHANNEL CB'S WHEN FOR ALMOST THE SAME PRICE YOU CAN GET QUALITY EXPORTS, JACKSONS, GALAXY'S, etc. AMPLIFIERS, TEXAS STAR, TNT, etc. BROWNS AND TRAMS ALSO AVAILABLE, AND OTHER HARD TO GET EQUIPMENT. SEND \$5.00 CASH OR MONEY ORDER, NO CHECKS, FOR BROCHURE AND SASE #10. A&J ENTERPRISES, PO BOX 1011, BERWICK, ME 03901.

Statement of Ownership, Management and Circulation Nov. 12, 1990, Popular Communications, 76 North Broadway, Hicksville, NY 11801. Publication #07333315. Issued monthly, subscription price \$19.95 per year (12 issues). Publisher: Richard A. Ross; Editor: Thomas Kneitel, owned by CQ Communications, Inc. Stockholders: Richard A. Ross, Alan M. Dorhoffer, Thomas Kneitel, Arthur S. Salsberg. Circulation (Average of Preceding 12 Months): Net Press Run 96,395. Sales Through Dealers and News Agents 34,566, Mail Subscriptions 31,745, Total Paid 66,311, Free Distribution 2,150, Total Distribution 68,461, Copies Not Distributed 1,500, Returns from News Agents 26,434, Total 96,395. Circulation (Single issue nearest filing date): Net Press Run 96,549, Sales through Dealers and News Agents 34,201, Mail Subscriptions 31,899, Total Paid 66,100, Free Distribution 2,150, Total Distribution 68,250, Copies Not Distributed 1,500, Returns from News Agents 26,799, Total 96,549. /s/ Richard A. Ross, Publisher.

STOP PRANK PHONE CALLS electronic device displays phone number of person calling you. Brochure \$1.00, EDE, POB 337, Buffalo, NY 14226.

SURVEILLANCE-COUNTERSURVEILLANCE electronic equipment catalog, \$5.00, EDE, POB 337, Buffalo, NY 14226.

PAY TV AND SATELLITE DESCRAMBLING The 1991 edition is our best and is now ready. The latest build-your-own, turn-ons, bypasses, and circuits for cable, wireless and satellite. Only \$14.95. Pay TV and Satellite Descrambling Vol. 1 (the basics). Build Satellite Systems under \$600. \$12.95. Wireless Cable Handbook \$9.95. Any 3/\$29. Scrambling News Monthly \$19.95/yr. The latest info and circuits. Sample \$3. New catalog \$1. COD's are OK. (716) 874-2088. SCRAMBLING NEWS, 1552 Hertel Ave., Buffalo, NY 14216.

THE Complete Manual of Pirate Radio. Free schematics. Send \$5.95 plus \$1 postage to: ACME Enterprises, 1356 Coney Island Ave., Suite 200, Brooklyn, NY 11230.

FOR SALE: ICOM-R71A \$650.00 used 3 hours. Radio Shack PRO2004 (400 channels) \$175.00 EXCELLENT CONDITION. Certified check plus \$10.00 insured postage. PO Box 1431, Jacksonville, NC 28541-1431. (919) 577-8273.

MOTOROLA TWO WAY RADIOS, Radius Mobiles and Portables from \$197.00, Three Year Warranty, Synthesized Models Available, MC/VISA, DATACOM 1-800-654-3660 EST.

DECODER secrets for hotel pay-per-view movies. Easy and works. Send \$5.00 CASH/M.O., to **DECODER SECRETS**, Dept PC, Box 416, Rutland, MA 01543.

NEW AR-1000 w/cellular \$455. AR-3000 \$899, AR-2500 \$499. BC-200XLT w/cellular \$259, BC-760XLT w/cellular \$279, BC-800XLT w/cellular \$249 ICOM, KENWOOD, YAESU, SONY, CBs, antennas, accessories, much, much more!! Free UPS shipping & insurance, same day C.O.D. shipping, and we take trades!! We have new & used gear!! Catalog and huge used gear list \$1.25. Galaxy, Box 1202, Akron, Ohio 44309 (216) 376-2402.

SURVEILLANCE - Audio/Video/Infra-red/Laser Equipment. Industrial or Private. 500 Item Catalog \$7.00. Security Systems, 3017E Hudson, New Orleans, LA 70131.

TOUCH-TONE DECODER. Decode, store, and display touch-tone (DTMF) digits directly from your **scanner, tape recorder, telephone line**, or virtually any audio source. Decode dialed numbers received on **cordless, cellular!** Information for SASE, HB Technologies, POB 2771-P, Spring Valley, CA 91979.

FCC GENERAL RADIOTELEPHONE LICENSE CORRESPONDENCE COURSE. Also: Digital Electronics; BASIC Language; Computers; Electronics; Engineering; Drafting. Most courses just \$39.50! Satisfaction guaranteed. Free information. American Technical Institute, 730 S. Pleasantsburg Dr., Suite 486, Greenville, SC 29607.

FOR SALE: APCO Bulletins, 9/88 to 12/90, complete 26 issues. \$35.00 includes shipping. Kevin Hobson, 3227 NE 88th St, Seattle, WA 98115.

BEARCAT 800XLT 40 channel scanner unrestricted 800 MHz. Like new \$175.00. Pearce Simpson Cheetah CB-USB, LSB, 23 channels \$50.00. DAK MR101 World Band Receiver \$25.00. Bob (708) 526-0973.

BUY OVERSEAS! There are lots of great electronics kits, devices, parts, radios, etc. overseas that are NOT AVAILABLE in the US. I have compiled a huge list of mailorder electronic supply houses in the UK that will export. Names, addresses, telephone numbers, credit cards accepted and a description of what they sell. Send \$4.00 and YOUR ADDRESS WRITTEN NEATLY to Lists(PC), c/o Tom Frank, P.O. B. 267, Newport, RI 02840.

THE NEW YORK MONITOR NEWSLETTER—a monthly Newsletter that provides CB'ers with the latest up-to-the-minute Technical information—Radio Repair and Modification—Phase Lock Loop (PLL) Circuit/Expander—**2 YEAR COURSE IN ELECTRONIC COMMUNICATION** and much much more!! \$24 per year mail to **LORD/WYATT COMMUNICATIONS, P.O. Box 030128PCD, Brooklyn, NY 11203-0001**.

PRO-2004/5/6 OWNERS: Search-and-Store finds elusive frequencies automatically. Internal no-holes installation—Key-board control—retain present functions. Wired-tested-postpaid! Ten channel \$24.95—Selectable to 255 channels \$44.95. US checks or MO. 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.

BACK ISSUES - Popular Communications Sept. 82-Sept. 90 Monitoring Times Jan. 83-Apr. 90. Both sets \$135 plus S/H. Gower 717-697-6191.

RADIO MONITORS NEWSLETTER OF MARYLAND FOR THE SERIOUS SHORTWAVE AND SCANNER LISTENERS. P.O. Box 394, Hampstead, MD 21074. For a one year subscription: \$15.00. Sample copy: one dollar.

COMMUNICATIONS AT ITS BEST. AR-900 \$234, AR-1000 \$453, BC-200XLT \$269, BC-100XLT \$215, BC-800 \$266, BC-760XLT \$290, BC-210XLT \$199, plus low prices on CB's and RADAR DETECTORS. **TURBO ELECTRONICS**, PO BOX 8034, Hicksville, NY 11802 Questions Welcomed (516) 938-1946.

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.

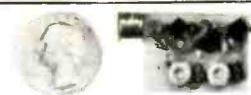
CW Lite is the easiest Morse code training method in the world, bar none! And it is the fastest, too. Just close your eyes and relax. This powerful **hypnosis cassette tape** does the rest. Subliminals speed you along! Only \$14.95 ppd in US (NY residents add \$1.12 tax). Order today! **PASS Publishing**, Box 570, Stony Brook, NY 11790.

WANTED FOR MUSEUM: Pre-1980 microcomputers and journals. David Larsen, KK4WW, Blacksburg Group, (703) 763-3311/231-7961.

WANTED: Goodwill donation of IBM-PC, packet TNC, technical books or transceivers for the Soviet Amateur Radio emergency radio service. David Larsen, International Amateur Radio Network, KK4WW, (703) 763-3311/231-6478.

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.

NEW AR-1000 \$455, BC-200XLT w/cellular \$269, BC-760XLT w/cellular \$289, TS-2 w/cellular \$299, Radio Shack modifications. CB radios, antennas, converters, books, much, much, more! Free shipping. 28 page picture catalog with used gear list \$1.25. Same day COD shipping. Galaxy, Box 1202, Akron, Ohio, 33409. (216) 376-2402. 9-5 PM EST.



PICKS UP A WHISPER 50 FEET AWAY!

The model WAT-50 miniature FM transmitter uses a 4-stage circuit NOT to be confused with a simple wireless microphone. Simply snap the unit on top of a 9V battery and you can hear every sound in an entire house up to 1 mile away! Use with any FM radio. Tunes to any frequency from 70mhz - 130mhz. Easy to assemble kit includes all parts and instructions. Only 29.98 tax incl.



THE WIRELESS TELEPHONE TRANSMITTER model WTT-20 is only about the size of a dime, yet transmits both sides of a telephone conversation to any FM radio with crystal clarity. Completely automatic. Uses power from the telephone line itself - never needs a battery! Up to 1/4 mile range. Tunes from 70mhz - 130mhz. Easy to assemble kit includes all parts and instructions. Only \$29.98 tax incl.

Call or send MO, VISA, MC for immediate delivery. Single kit orders include \$1.50 S&H. FREE SHIPPING on orders of 2 or more. All orders shipped by U.S. Mail. COD add \$4.00. Personal checks allow 21 days.

DECOR INDUSTRIES
BOX 607, BEDFORD HILLS, NY 10507
914-232-3878

CIRCLE 175 ON READER SERVICE CARD

HotWire

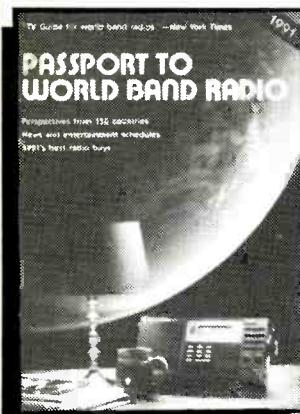
The Low-Noise Long Wire
for World Band Receivers
Ten times the capture area of a whip antenna

Ready to Use Installs Quickly Indoors or Out
Fully Insulated Weather Sealed Never Corrodes
HotWire improves reception without overloading your receiver. Its 45 ft antenna section snags weak signals while its 15 ft shielded feedline cuts noise from computers and appliances.

Hang horizontal, vertical, sloping, or bent. Indoors or outdoors. \$39.95
portable or fixed Infopak \$1.00
Order 1-800-926-7373 Hot-Line Box 30062 Provo UT 84605

CIRCLE 5 ON READER SERVICE CARD

1991 PASSPORT TO WORLD BAND RADIO Your Complete Guide To Shortwave Listening



Here is your must have companion to shortwave listening! The all-new 1991 **Passport** covers worldwide broadcasting by frequency, by country and hour-by-hour. It's jam packed with just the information you need for every transmitter on the air - from Afghanistan to Zimbabwe. There is also Passport's award-winning Buyer's Guide, with hard-hitting ratings of virtually every receiver on the market. Plus the latest on news, music, places to write and how-to tips. No wonder this is North America's best selling guide to shortwave listening!

Only \$16.95 (+\$1)

Other Titles Available...

- ◆ World Radio TV Handbook 1991 \$19.95 (+\$1)
- ◆ Shortwave Receivers Past & Present \$ 6.95 (+\$1)
- ◆ The DXer's Directory 1990-91 Edition \$ 4.95 (+\$1)
- ◆ FM Atlas & Station Directory \$ 9.95 (+\$1)
- ◆ Pirate Radio Stations \$11.95 (+\$1)

Universal Radio
1280 Aida Dr. Dept. PC
Reynoldsburg, OH 43068
■ Toll Free: 800 431-3939
■ In Ohio: 614 866-4267

★ HUGE CATALOG ★
Universal publishes a giant 92 page communications catalog covering shortwave, amateur and scanner products with prices. Only \$1 postpaid.

Satellite TV Components and COMPLETE SYSTEMS



Join our thousands of satisfied customers and receive a universe of entertainment...

delivered right to your home 24 hrs/day with crystal-clear video and digital stereo sound.

FREE CATALOG

1-800-346-6466



'Name Brands Only'

NATIONAL HOME SATELLITE STORE

CIRCLE 176 ON READER SERVICE CARD



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.

**AR3000****\$995****AR2500****\$499****2016 Channels. 1 MHz to 1500 MHz****Standard Features**

- Continuous coverage
- AM, FM, wide band FM, & BFO for SSB, CW.
- 64 Scan Banks.
- 16 Search Banks.
- RS232 port built in.
- Includes AC/DC pwr crd. Antenna, Mntng Brckt.
- One Year Limited Warranty.

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	SCS2	\$295.00

(software & cable) offers spectrum display and database.

Specifications:

Coverage:	1 MHz - 1500MHz
Sensitivity:	.35uV NFM, 1.0uV WFM, 1.0AM/SSB/CW
Speed:	38 ch/sec. scan. 38 ch/sec. search
IF:	750.00, 45.0275, 5.5MHz 455KHz
Increments:	5,12,5,25 KHz
Audio:	1.2 Watts at 4 ohms
Power:	Input 13.8 V. DC 300mA
Antenna:	BNC
Display:	LCD, backlit.
Dimensions:	2 1/4H x 5 5/8W x 6 1/2D Wt. 1lb.

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	SCS3	\$295.00

(software & cable) offers spectrum display and database.

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, Fishers, IN 46038

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

Hear it All!



R-5000

R-2000

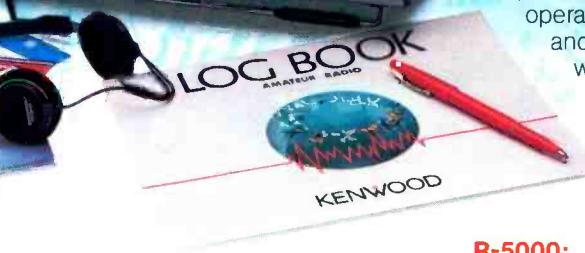
**High performance
receivers**

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.

(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



KENWOOD

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.

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

R-2000

The R-2000 is a full 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

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

KENWOOD

...pacesetter in Amateur Radio

CIRCLE NO. 10 ON FREE INFORMATION CARD