

POPULAR COMMUNICATIONS

DECEMBER 1993 \$2.95

\$3.95 CANADA

The Two Lives Of Station KCBI!

Also in this issue:

- **Review: Cobra's Radar/Laser Speed Detectors**
- **Our LF Standard Frequency Stations**
- **Space Log: 117 Satellite & Space Probes**
- **Which Is The Best SW Broadcaster?**



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





NRD-535D

"Best Communications Receiver"

World Radio TV Handbook 1992



"Unsurpassed DX Performance"

Passport to World Band Radio 1992

Setting the industry standard once again for shortwave receivers, the NRD-535D is the most advanced HF communications receiver ever designed for the serious DXer and shortwave listener. Its unparalleled performance in all modes makes it the ultimate receiver for diversified monitoring applications.

Designed for DXers by DXers! The NRD-535D (shown above with optional NVA-319 speaker) strikes the perfect balance between form and function with its professional-grade design and critically acclaimed ergonomics. The NRD-535D is the recipient of the prestigious World Radio TV Handbook Industry Award for "Best Communications Receiver."

JRC *Japan Radio Co., Ltd.*

Japan Radio Company, Ltd., New York Branch Office - 430 Park Avenue (2nd Floor), New York, NY 10022, USA Tel: (212) 355-1180 / Fax: (212) 319-5227

Japan Radio Company, Ltd. - Akasaka Twin Tower (Main), 17-22, Akasaka 2-chome, Minato-ku, Tokyo 107, JAPAN Tel: (03) 3584-8836 / Fax: (03) 3584-8878

- Phase-lock ECSS system for selectable-sideband AM reception.
- Maximum IF bandwidth flexibility! The Variable Bandwidth Control (BWC) adjusts the wide and intermediate IF filter bandwidths from 5.5 to 2.0 kHz and 2.0 to 0.5 kHz—continuously.
- Stock fixed-width IF filters include a 5.5 kHz (wide), a 2.0 kHz (intermediate), and a 1.0 kHz (narrow). Optional JRC filters include 2.4 kHz, 300 Hz, and 500 Hz crystal type.
- All mode 100 kHz - 30 MHz coverage. Tuning accuracy to 1 Hz, using JRC's advanced Direct Digital Synthesis (DDS) PLL system and a high-precision magnetic rotary encoder. The tuning is so smooth you will swear it's analog! An optional high-stability crystal oscillator kit is also available for ± 0.5 ppm stability.
- A superior front-end variable double tuning circuit is continuously controlled by the CPU to vary with the receive frequency automatically. The result: Outstanding 106 dB Dynamic Range and +20 dBm Third-Order Intercept Point.
- Memory capacity of 200 channels, each storing frequency, mode, filter, AGC and ATT settings. Scan and sweep functions built in. All memory channels are tunable, making "MEM to VFO" switching unnecessary.
- A state-of-the-art RS-232C computer interface is built into every NRD-535D receiver.
- Fully modular design, featuring plug-in circuit boards and high-quality surface-mount components. No other manufacturer can offer such professional-quality design and construction at so affordable a price.

ICOM Simply The Best

IC-R1 • Smallest Scanner
150kHz-1300MHz (no gaps); 100 memories; Hold the world in your hands. **\$489.95**



IC-R100 • Mobile or Base
Wide-band scanning, SW and more; 500kHz-1.8GHz; 100 memories; AM, FM, FMW. **\$849.95**



IC-R71A • HF At It's Best
100kHz-30MHz; 32 mems; Pass band tuning; Lots of options. **\$1059**



IC-R7000 • VHF/UHF
25-2000MHz; AM, FM, FMW, SSW, CW; The pros workhorse. **\$1269**

IC-R72A • HF Compact
30kHz-30MHz; 99 memories; Keyboard entry; 100, 120, 240 AC; 12VDC. **\$949.95**



IC-R7100 • VHF/UHF Compact
25-2000MHz (no gaps); 900 memories; All mode; 5 scan modes. **\$1339**

LOWE Made in the U.K.

HF-150 • HF

30kHz-30MHz; 60 mems; AM, AMN, LSB, USB, CW, Synchro ASU, ASL, ASF, ASD; Rugged & Robust!



\$599.95

HF-225 • HF

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KENWOOD R-5000 • HF

100kHz-30MHz; 100 memories; All mode; Opt. VHF. **\$899.95**

DRAKE R-8 • HF

100kHz-30MHz; 100 memories; All mode; Opt. VHF. **\$989.95**

JRC NRD-535D • HF

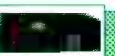
Band width control; 100kHz-30MHz; 200 memories; ECCSS. **\$1699**



Less BWC, 1kHz filter, ECCSS **\$1249**

WJ HF-1000 • Ultimate HF

10kHz-30MHz; 100 mems; 56 filter positions; Digital Signal Processing - wave of the future. **\$3990**



YAESU FRG-100 • HF

50kHz-30MHz; 50 mems; All mode; Opt. FM; No keyboard; EEB offers filter upgrades & high performance pkg. **\$589.95**

AOR

AR-3030 • All New HF

30kHz-30MHz; 100 mems; Key board; Scan; Opt. VHF, 10 tuning steps; All mode; Front speaker; 12VDC; Opt. NiCads; 120VAC adapt.; RS232 port **\$CALL**



AR-1000XLT •

#1 Portable Scanner
.5-1300MHz (no gaps); 1000 mems. in 10 banks; AM, FM, FMW; Incl. NiCads charger and more! **\$419.95**



AR-3000A • Compact Scanner

.1-2036MHz; 400 mems. in 4 banks; RS232; All mode; 12VDC AC adapt. incl. **\$1029**



BEARCAT Scanners

BC-200XLT •

29-54, 118-174, 406-512, 806-956MHz*; 200 mems; 10 banks; NiCads & adapt. incl. **\$229.95**

BC-760XLT • Mobile

Same range* as BC200; 100 mems; 5 banks; 13.8VDC adapt. incl. **\$219.95**

BC-800XLT • Desktop

Same range* as BC-200; 40 mems; 2 banks; 117VAC or 13.8VDC. **\$209.95**

BC-890XLT • NEW Base/Mobile

29-956MHz*; 200 mems; Turbo, WX, VFO tuning. **\$259.95**



BC-8500XLT • NEW Base/Mobile

25-13000MHz*; 500 mems; VFO tuning. **\$379.95**

BC-2500XLT •

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25-1300MHz*; 400 mems; Turbo; WX; VFO tuning. **\$349.95**



REALISTIC Scanners

PRO-2006 • Base/Mobile

25-520, 760-1300MHz*; 400 mems; 10 banks; Hyper-scan 26ch/sec. **\$359.95**



PRO-43 • Portable

30-54, 118-174, 220-512, 800-1000MHz*; 200 mems; Covers 225-390MHz Gov't. Airband. **\$299.95**



PRO-46 • Portable

30-54, 108-174, 406-512, 806-1126MHz; 100 mems; 10 banks; WX. **\$189.95**

PRO-2026 \$209.95; PRO-2030 \$189.98; PRO-2032 \$269.95

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ICF-2010 • Our Largest Seller!

AM, SW, FM Airband; 32 mems; SSB; AM synchro. **\$349.95**



ICF-SW55 • Super Performer!

.15-30MHz; AM, SW, FM; 125 stations; Name preset. **\$349.95**



ICF-SW77 • Top Of The Line!

.15-30MHz; AM, SW, FM; 162 stations; Name memory; AM synchro. **\$469.95**



ICF-SW7600 • Many Features!

.15-30MHz; FM/SSB compact; 10 memories. **\$219.95**



ICF-SW33 • NEW Sub-Compact

30kHz-30MHz; 99 mems; Keyboard entry; 100, 120, 240 AC; 12VDC. **\$179.95**



ICF-SW30 • NEW Sub-Compact

A step down from the SW-33; 15 memories. **\$CALL**

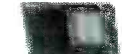
ICF-SW15 • Analog

AM, FM; 11 SW bands; 3" speakers; 6.25"W x 3.6"H x 1.25"D; 14 oz. **\$99.95**



ICF-SW7601 •

BEST BUY Analog
AM, FM; 10 SW bands. **SPECIAL \$89.95**



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RFB-65 •

.155-30MHz; AM, FM, SW; 36 mems; SSB; 1kHz tuning steps; Keyboard. **\$219.95**



GRUNDIG

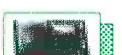
Satellite-700 • SPECIAL DEAL

Top of the line with super audio. .15-30MHz; AM, FM, SW; AM synchro. detect.; SSB. Usually \$499.95 **SPECIAL PRICE \$449.95**



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SANGEAN

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ATS-803A • Best Seller!

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ATS-808 • Compact

AM, SW, FM; 16 bands; 45 memories; Keyboard. **NEW LOW PRICE \$169.95**



ATS-818/

ATS-818CS •

.1-30MHz; AM, FM, SW; 45 mems; SSB.



ATS-818 \$193.95

ATS-818CS has cassette. \$223.95

ATS-606/

ATS-606P •

AM, FM, All SW bands; 45 memories; Auto-tuning; Scan; Keyboard; Picks up 9 most powerful stations (AM, FM) & puts them into memory. **ATS-606 \$153.95**



ATS-606P with Reel, Antenna & World Power Adapter; 110/220VAC. \$173.95

Scanner Accessories

JIM GaAs FET Pre-Amps

M-50 •

Gain 20dB; 24-2150MHz; 2 AA power. **\$74.95**

M-75 •

Gain -6 to +20dB; 108-185, 225-1500MHz; 2 band pass filters; 9V battery; External 12VDC. **\$99.95**



M-100 • Same as M-75, plus Auto Switch for 5W transceiver. **\$119.95**

SSE

PSU-101 •

Desk Charger/Power Supply
Use with most Bearcat, Realistic, AOR-1000XLT and other held units. Solid for view, audio and operation. **\$59.95**



BHA-3 •

Scanner stand like PSU-101 without charger/power supply. **\$19.95**

POPULAR COMMUNICATIONS

December 1993

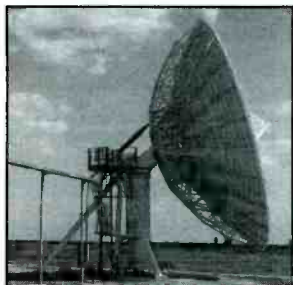
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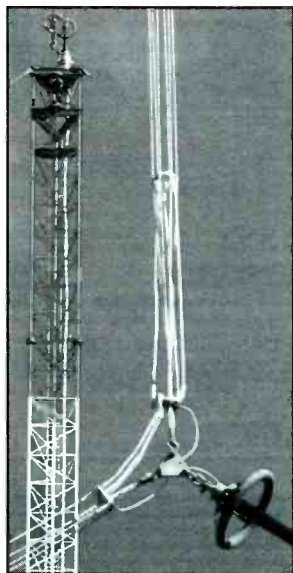
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By Gerry L. Dexter

Tuning In On Yesterday 10

As we send you on a one-way ride back to early radio, experience the events that helped to develop radio!

By Alice Brannigan

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By POP'COMM Staff

Those Low-Band Time Tickers 16

Get the lowdown on station WWV's two mysterious sister-stations and their transmissions.

By Karl T. Thurber, Jr., D.P.A., W8FX

Books You'll Like 20

This month: a guide to packet communications, "Heath Nostalgia," a programming manual for program directors and operations managers, and a volume about the basics of the DX monitoring hobby.

By R. L. Slattery

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This month's cover: A 50 kW transmitter and associated gear that broadcasts shortwave station KCBI is located in a corn field along US highway 380, 11 miles east of Denton, Texas and 35 miles north of Dallas. Photo by Larry Mulvehill, WB2ZPI.

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MONITOR MORE WITH ADVANCED EQUIPMENT FROM UNIVERSAL!

COMMUNICATIONS RECEIVERS

- Japan Radlo NRD-535D



The deluxe "D" version with BWC, ECSS and three filters included. \$1699.00 (+\$18)
NRD-535 standard version ... \$1199.00 (+\$16)

● **Watkins-Johnson HF-1000**
Military-grade with DSP technology, 58 bandwidths. Call for details. **Under \$4000 call.**

● **Drake R-8**
A state-of-the-art receiver for the 90's. Five bandwidths, Syncro, etc. \$959.95 (+\$11)

● **Kenwood R-5000**
A powerful receiver for the serious DXer. An exceptional value. \$979.95 (+\$12)

● **Lowe HF-150 NEW! Made In England.**
Finally ... a true portable communications receiver. Write for brochure. \$599.95 (+\$7)

PORTABLE RECEIVERS

- Panasonic RFB-45



Keypad, 18 memories, scan and search functions, S.S.B., fine tuning knob, clock-timer, S-METER, etc. \$169.95 (+\$5)

● **Sony ICF-SW77**
Sony's finest! 94 alpha memories, dual clocks, sync. detection. \$489.95 (+\$6)

● **Sangean ATS-818CS**
Finally, a quality digital receiver with cassette, 45 mems., SSB. \$249.95 (+\$7)

● **Grundig Satellit 700**
Hi-tech with beautiful fidelity and style. Synchronous tuning. \$479.95 (+\$6)
Note: Radios listed above are all LW-MW-SW-FM digital. Contact us for other models.

COMMUNICATIONS BOOKS

● **Passport To Worldband Radio**
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. \$8.95

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

● **Complete SWL's Handbook - 4th Edition**
By Bennett, Helms, Hardy, Yoder. Over 350 pages on all aspects of SWL'ing. \$19.95

● **Guide To Utility Stations**
By J. Klingenfuss. The definitive guide to utility stations- CW, SSB, FAX and RTTY. \$36.95

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

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

● **Discover DXing!**
By J. Zondlo. An excellent introduction to DXing the AM, FM and TV bands. \$4.95
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- ◆ Unclass. Military Tfc.
- ◆ Diplomatic Traffic
- ◆ Ham Messages
- ◆ Weather Reports
- ◆ Research Traffic
- ◆ Packet Messages
- ◆ Radio Bulletins

If you are only listening to your shortwave radio you are missing half the fun. With the addition of a Universal decoder and monitor you can see the world. The shortwave spectrum is filled with interesting text messages and photos that you can intercept and display. If this sounds interesting to you, request our two free pamphlets: *Listening to Radioteletype* and *Receiving FAX on Your Shortwave Radio*. Shown above is the Universal M-900 (\$499.95) which decodes: Morse code, Baudot RTTY, Sitor A/B, FEC-A and FAX. Contact us today for information on the full line of Universal decoders.



- Universal M-900

DATA AND TONE READER

- Universal M-400



Forget the limitations you have come to expect from most "readers". The self-contained Universal M-400 is a sophisticated decoder and tone reader offering exceptional capabilities. The SWL can decode: Baudot, SITOR A&B, FEC-A, ASCII and SWED-ARQ. Weather FAX can also be decoded to the printer port. The VHF-UHF listener will be able to copy the ACARS VHF aviation teletype mode plus GOLAY and POCSAG digital pager modes. Off-the-air decoding of DTMF, CTCSS and DCS is also supported. Big two-line 24 character LCD. The M-400 can even be programmed to pass only the audio you want to hear based on CTCSS, DCS or DTMF codes of your choosing. The M-400 runs from 12 VDC or with supplied AC adapter. The American-made Universal M-400 is the affordable accessory for every shortwave or scanner enthusiast. Specification sheet available. Only \$399.95 (+\$6).

- Universal M-8000

The M-8000 offers tremendous intercept power to let you listen to the exciting world of radioteletype and FAX on shortwave, VHF and satellite! It includes capabilities not available in other decoders. The VGA color output permits the presentation of more information than ever before. A double status line indicates all current demodulator and decoder settings. The lower left corner displays five bar-graph type tuning bars. A horizontal window at the bottom of the screen shows a continuously updated, spectral display. A square window in the lower right corner features a simulated X-Y tuning scope. The M-8000 decodes all the "standard modes" plus ARQ-M2/4 (TDM), FEC-A, FEC-S, ARQ-E, ARQ-E3, ARQ-S, SWED-ARQ and Piccolo used by diplomatic, military and aeronautical concerns worldwide. The M-8000 itself is automated, utilizing a microprocessor to control shift tune and selection. Manual tuning is facilitated by on-screen bargraph tuning indicators for level, mark and space plus a simulated tuning scope. Instructive LEDs for: Mark, Space, Buffer, CW Lock, Squelch, Idle, Sync., Sel-Cal, Data, Tuning Error and Data Error. Other refinements include: ATC, UOS, built-in diagnostics, bit inversion (Baudot), speed readout, external scope output plus serial and parallel printer ports. Can be 19 inch rack mounted with optional mounting kit. 9 Lbs. (15 Lbs. ship). 115/230 VAC, 50/60 Hz. Requires a VGA analog color monitor. \$1299.00 (+\$10)



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- Prices and specifications are subject to change.
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Universal offers a new communications catalog covering shortwave, amateur and scanner equipment. There are also antennas, books, parts and accessories. This informative 100 page reference covers everything for the radio enthusiast. With prices, photos and full descriptions.

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Just Kitting, Folks!



During my youth, this time of the year meant the traditional sentiments and accouterments of the joyous season. In my particular case, and for many years, it also meant something extra. This is because, from the time I entered my teens, I was hailed by my family as its official and acknowledged electronics genius.

I earned this honor by virtue of the fact that in 1947, when I began hobbying in earnest, I started out using a Hallicrafters S-38. This radio was Hallicrafters bottom-of-the-line set set, the cheapest, dinkiest, beginner's 5-tube communications receiver they made. This radio could pick up some stations sending CW. On days when the wind was blowing signals in from the east, sometimes it could pick up the North American programs of the *BBC* and *Radio Sweden*. Therefore, it seemed impressive to all of my relatives. My radio room wall displayed was a fancy green and white certificate from *Radio News Magazine's* SWL Editor, Ken Boord, identifying me as one of the magazine's official shortwave reporters.

What really guaranteed my place as the next Marconi was that my S-38 receiver had at least two more knobs and three more switches than the *Philco* and *GE* table radios owned by any other members of my family. These good people were awestruck by this machine. They proclaimed that any mere teenager who could figure out how to operate such a complex marvel of modern technology was obviously brilliant. I was deemed well qualified and deserving to carry forth the honored family name. They were content that their genes would be well represented in the next generation.

Everyone particularly liked the fact that I had a "diploma" from a national electronics magazine hanging on my wall. It served as a second opinion confirming my abilities. My proud grandmother kept telling me how her sister's son went to Yale for four years to earn a diploma that wasn't nearly as nice looking or colorful as the one I received from *Radio News* while I was still in junior high school.

A few months prior to my owning the magical S-38 receiving machine, I was hardly considered a genius. "Genius" had been a word very sparingly tossed around in our family. Therefore, when I was suddenly touched by the hand of fate, I basked in the adulation. Yet, problems arose.

I quickly discovered that everybody was eager to encourage and nourish their future Einstein to achieve greater heights. For myself, I was simply interested in being a short-

(Continued on page 72)

The Television Market

The truth about cable theft! \$23.75

Exactly what you guessed about piracy of cable and satellite programming. Yes, YOU pay for those who steal services! This 160-page bestseller includes details about TV's underground businesses, chips and test devices, bootleg converters, and industry countermeasures. If cable bills bother you, this book is a MUST!

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Steve Crum, President, Ace Communications

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Bill Cheek, Editor, *World Scanner Report*

"...must reading..."

Brian Fenton, *Electronics Now*

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“ The R8 is a highly sophisticated receiver. We'd call it professional grade, or about as close to it as receivers get these days. **”**

*Staff review
Popular Communications*

“ The R8 is like a breath of fresh air, with its ground-up engineering and up-to-date digital control from the front panel. I am very pleased to see a quality HF receiver of American manufacture that should successfully compete on the world market. **”**

*Bill Clarke
73 Amateur Radio Today*



“ Overall, the Drake R8 is simply the best radio we have ever tested for quality listening to programs...

There's nothing else quite like it. ”

*Lawrence Magne
Monitoring Times*

“ The best of the best for high-quality listening to news, music and entertainment from afar.

Superb for reception of faint, tough signals, too. ”

*Editor's Choice
Passport to World Band Radio
Tabletop Receivers for 1992*

The ears have it!

When we introduced the American-made R8 Worldband Communications Receiver, we knew it would be judged by some very discerning ears, experts accustomed to the finest in short-wave listening equipment from around the world. After listening to the world on the Drake R8 loud and clear, they have delivered a decisive verdict.

They appreciated the R8's sensitivity, clarity, simplicity, and all-around versatility so much that many of them declared the R8 simply the best of its class. High praise, indeed, from very well-traveled ears.

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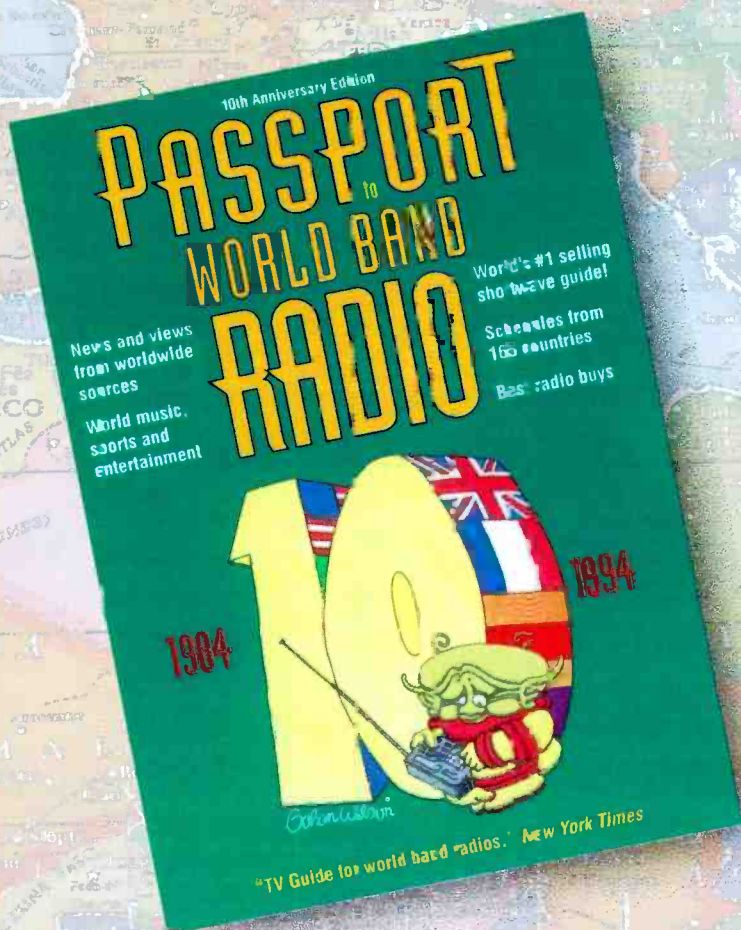
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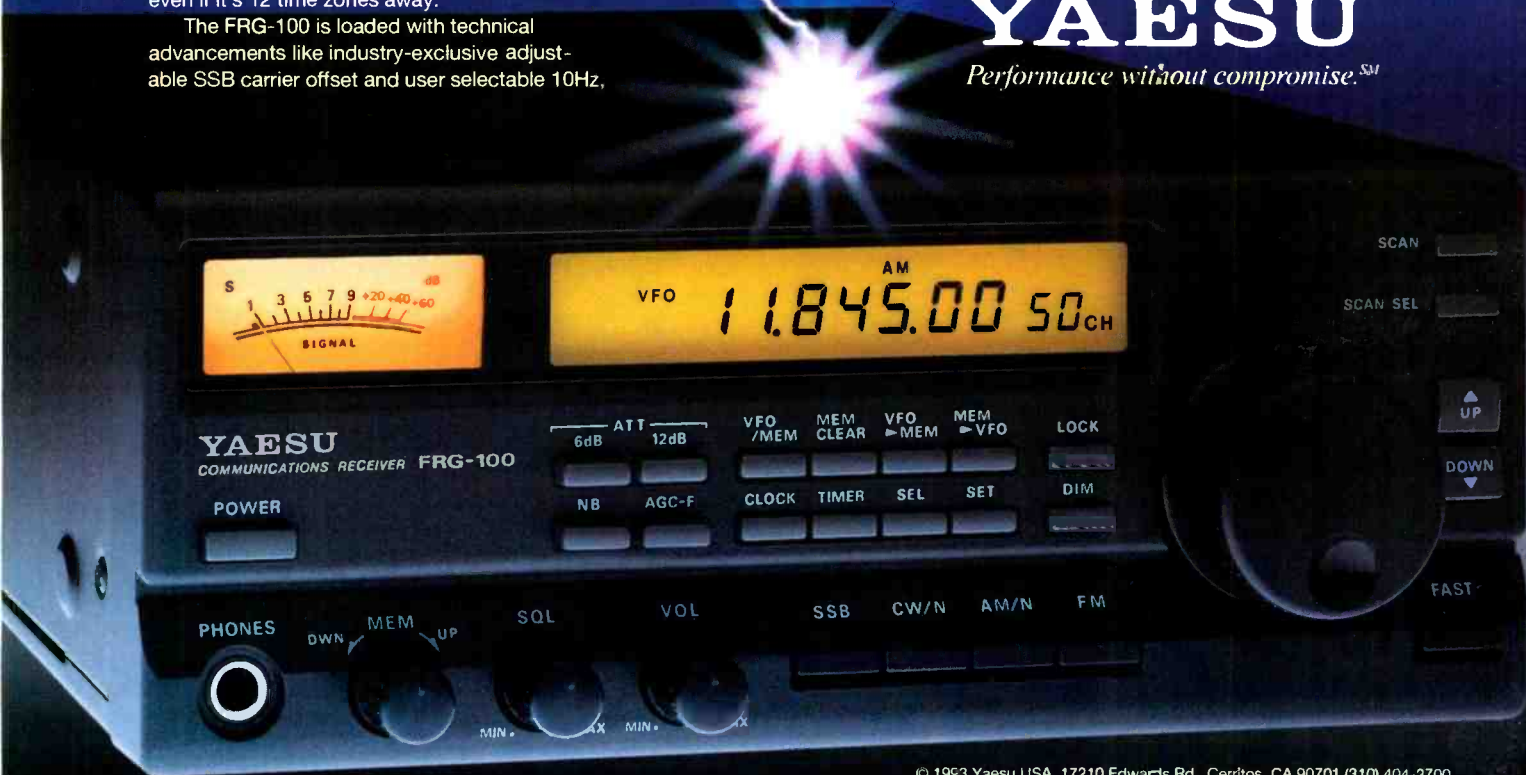
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The Two Lives Of KCBI

Still Trying After All These Years!

BY GERRY L. DEXTER

Almost a decade ago SWL's were watching and listening to a phenomenon not seen in this country in fifty or sixty years. Suddenly it seemed that everybody and his Aunt Millie had discovered shortwave radio broadcasting. Nothing like this had happened since the early days when all the stations used funny call letters. WRNO had really started something! The rush was on to file applications with the FCC, buy land, buy transmitters, string antennas, get that license and start "reaching the world via shortwave radio."

One in this rush of newcomers was a KCBI in Dallas, Texas, owned by the Criswell Bible Institute—a Baptist group said to operate one of the largest churches in Dallas, in addition to its local mission work and other activities.

The Criswell group also operated an FM station—KCBI-FM on 89.3 MHz. At one time KCBI-FM was reportedly one of the top rated FM stations in the Dallas-Ft. Worth area, even though it didn't play rock or country. The Criswell group and KCBI were featured on a PBS TV documentary on evangelists.

Like its contemporary, WMLK in Pennsylvania, KCBI shortwave decided to take a 50 kW medium wave transmitter and convert it for use on shortwave. The transmitter and associated gear were housed in a small building, out in the country about 11 miles east of Denton, Texas and about 35 miles north of Dallas, along US highway 380. The two antennas, oddly designed for something intended for shortwave broadcasting, were actually corner reflectors built by station engineers. One antenna beamed northeast, the other southeast.

KCBI's programs were supposed to focus on Texas news, history, music and culture, but the program schedule didn't seem to include much devoted to celebrating Texas. Slogans reflecting this program included "From Texas To The World" and "The National Radio Of Texas." The interval signal was—what else—"The Eyes Of Texas Are Upon You." The station carried a relay of its FM station's "Today In Dallas" call-in show, as well as gospel music and programming. KCBI also aired its own DX program, "The DX Connection" which, for a time, was on the air for a couple of minutes every hour. Programming was recorded in Dallas and then aired from the

transmitter site. At one point the station had plans to air live broadcasts of what was said to be one of the largest country and western stage shows in the state but its uncertain whether it ever happened.

KCBI's original test broadcasts were first noted around Christmas of 1984 but these apparently lasted no more than two or three days. More tests were noted around January 10, 1985. But it was another six months before the station was heard from again, with the next set of tests being heard on June 25, 1985 on 11790. Finally, on July 28, KCBI aired its first regular programming—a live service from the first Baptist Church in Dallas.

The station's initial schedule ran in three segments totaling something over 10 hours a day, using 11790, 118970 and 11905 at various times of the day.

But KCBI wasn't destined to make a go of it in the tough as nails world of commercial shortwave broadcasting. It hung on for slightly more than two years, bravely expanding its schedule in the summer of 1986. But the downhill slide was unpreventable. Only a month or so after the schedule had been increased, it was cut back to just Saturdays and Sundays. And, a short time later—around August, 1987—the station went off the air. Rumors were that KCBI was unable to generate the necessary operating funds to keep going.

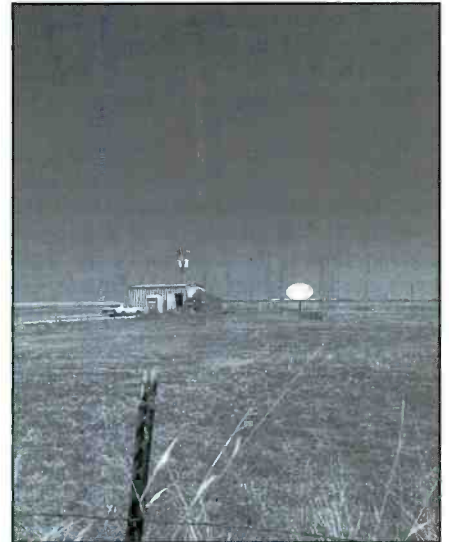
For over five years the KCBI building, antennas and transmitters just sat there, silent in the Texas countryside.

Shortly before Thanksgiving, 1992, KCBI came back to life and returned to the air under a new ownership—the Two If By Sea Broadcasting Corporation, headed by Mike Parker, who, personally, has other broadcast interests, including TV Channel 51 in Reading, PA. Two If By Sea is currently involved in acquiring its own TV properties.

Currently, almost all of the airtime is rented to Gene Scott's University Network, though Parker says that, eventually, there will be other programs added.

A staff of six engineers keep watch over the transmitter, which still seems to have its temperamental moments. There are plans to add a new transmitter, probably of high power, to increase the station's reach and provide more salable airtime.

KCBI's present schedule, as arranged by the shortwave engineering consultant



Shortwave station KCBI is located in a corn field, 16 miles east of Denton, TX. It runs a 50 kW transmitter on four frequencies.

firm George Jacobs and Associates, shows operations beamed to North America and the Caribbean at 0200 to 1400 on 9815, 2300 to 0200 on 13740 and 1400 to 2400 on 15725. Note the overlap between 2300 and 2400, something that's a good trick using just one transmitter.

KCBI's mailing address for reception reports is 22720 Southeast 410th Street, Enumclaw, WA 98002. ■

Tuning In On Yesterday

Time Travel on The Way to Early Radio

BY ALICE BRANNIGAN

Station WSY was the callsign issued to the 500 watt broadcasting station opened in Birmingham on 833 kHz in the spring of 1922 by the Alabama Power Company. This was a "Sunday only" station, which shifted over to 1200 kHz in 1924.

By early 1925, the station had been donated to the Alabama Polytechnic Institute. They dismantled the equipment and moved it to Auburn, where the station was combined with the facilities of the Institute's existing station, WMAV. By late February, the consolidation was completed under the call letters WSY.

In September of 1925, the call letters WAPI were put into use, signifying the initials of the Institute. Also, the frequency was shifted to 1210 kHz, and a 1 kW transmitter was installed. This was the start of major frequency hopping. The 1 kW power level was put into use in August, 1926 when WAPI moved to 700 kHz.

A month later, WAPI selected 650 kHz

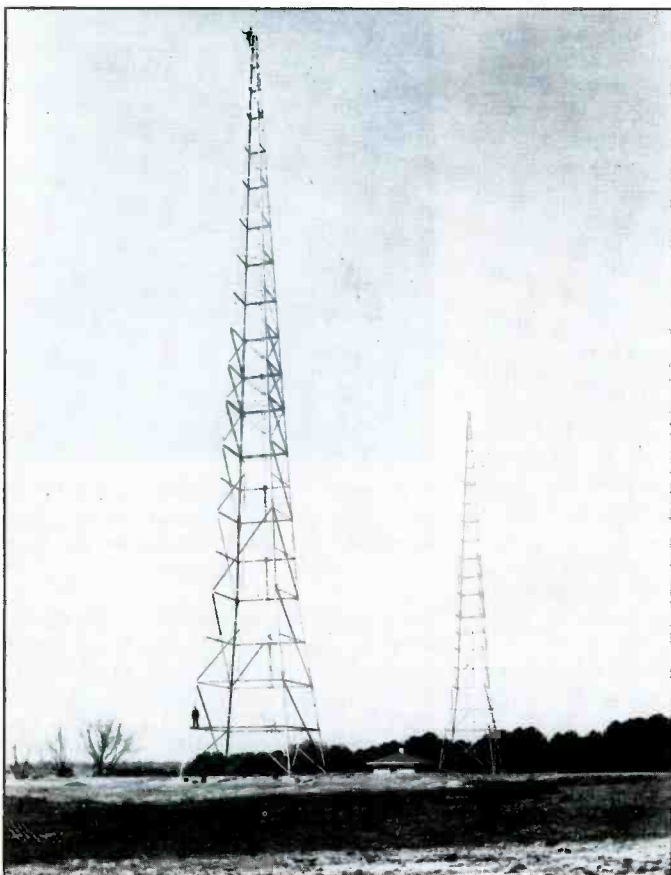
as its new frequency, and in June of the following year the Federal Radio Commission changed this to 910 kHz, authorizing WAPI for daytime-only operation. Three weeks later, WAPI was operating with unlimited hours on 920 kHz! Further frequency changes followed due to various federal allocation plans tried. Between September of 1927 and November of 1928, WAPI was forced to bounce from 940 kHz to 880 kHz and then to 1140 kHz.

In late 1928, WAPI moved to Birmingham, increased its power to 5 kW, and came under the joint ownership of API, the University of Alabama, and the Alabama College of Women. By 1930, the transmitter was moved to Sandusky Mountain, in Sandusky, Alabama. WAPI was operating in the NBC Network, and known as "The Voice of Alabama."

Feeling that broadcasting should be conducted as a business enterprise, which isn't the primary activity of educational institu-

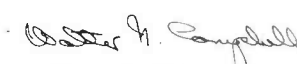


Frank Wilburn, shown here in an early photo, built KCRJ several years after Jerome, Arizona, had started its decline.



← Photo of the WAPI towers on Sandusky Mountain, about 1929. Note the man standing on the first level of the near tower, and the other man at the top. (Photo courtesy Jan D. Lowry, Castaic, Calif.)

This 1930 veri is a form letter requesting additional reception reports. (Courtesy the late Joe Hueter.) ↓

| | | |
|--|--|---|
| Owned by the Alabama Polytechnic Institute, Auburn, The University of Alabama, University, and The Alabama College of Women | <h2 style="margin: 0;">WAPI</h2> <p style="margin: 0;">"The Voice of Alabama"</p> <p style="margin: 0;">Birmingham, Alabama</p> <p style="margin: 0;">April 14, 1930</p> | Operated by the Owners in Cooperation with the City of Birmingham, Alabama Station and Main Switch in Birmingham |
| 547... | | |
| Mr. Joe Hueter, 1610 N. 18th St., Philadelphia, Pa. | | |
| Dear Radio Friend: | | |
| Your message of recent date commenting on programs from this station is greatly appreciated. It is a pleasure to know that you enjoy our present broadcasts and it is our hope that you continue to tune in on WAPI. | | |
| The aim of WAPI is to present all such programs as will be both entertaining and educational. Frequent reports from you and your friends will be appreciated. | | |
| Yours very truly,  Walter N. Campbell, Manager. | | |
| We are glad to verify your reception of WAPI on Tuesday evening, April 8th when you heard the Thomas Jefferson Orchestra broadcast direct from that hotel. | | |

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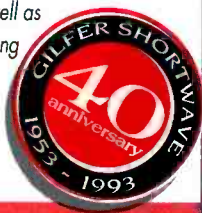
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tions, WAPI was leased out in May of 1932. The schools retained physical control of the property, but W.O. Pape's WAPI Broadcasting Company had a five year lease to program the station. The schools were permitted a few hours of air time per week for their own purposes under the terms of the lease. A year later, Pape bailed out to buy station WODX, in Mobile. He sold his WAPI lease to Bascomb Hopson. By August of 1937, Hopson was history, and Ed Norton, a real estate operator, had signed up for a 15 year lease. His company was The Voice of Alabama, Inc.

As of 1938, WAPI was granted full time operation on 1140 kHz, and had become a CBS affiliate. Although operating on 1140 kHz, in 1940 the FCC granted WAPI special authority to operate on 1070 kHz to continue full time operation. In 1941, during a major North American frequency realignment, the WAPI frequency was officially changed to 1170 kHz, with 5 kW days, 1 kW nights. The station was still actually using 1070 kHz, and in 1944 started using 5 kW there.

In 1952, the FCC allowed WAPI to up its daytime power to 10 kW, nights remained at 5 kW. In 1953, The Birmingham News Company, owned by the Newhouse newspaper interests, obtained the lease for WAPI, and a year later switched it back to the NBC Network in 1954. As of 1958, day power went up to 50 kW, with nights staying a 5 kW.

Newhouse Broadcasting Corp., in 1960 made an outright purchase of WAPI, ending the era of leasing from the educational institutions. In 1982, WAPI was sold for \$4-million to new owners, WAPI, Inc.

Today, WAPI operates on 1070 kHz. It is Alabama's oldest continuously licensed AM broadcast station. It is an NBC affiliate, and runs the SMN "Stardust" format.

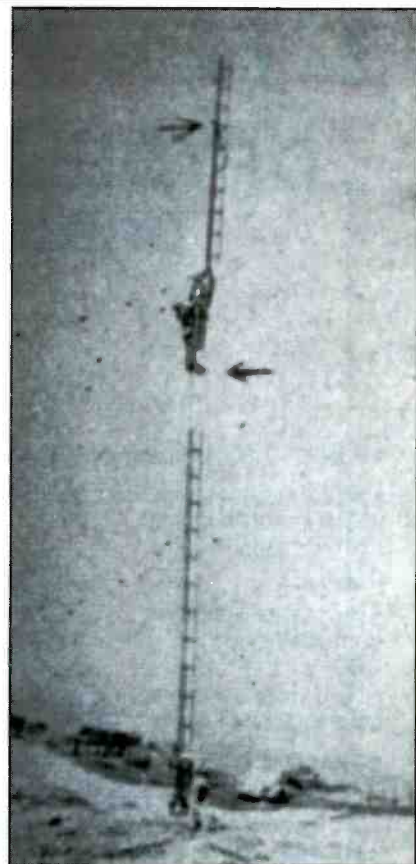
This is a synopsis of a much longer and highly detailed profile of WAPI prepared and submitted to us by Broadcast Pro-File, P.O. Box 982, Hollywood, CA 90078-0982. This company produces well-researched and authoritative histories of past and present AM and FM broadcasters, both large and small. For \$1, they'll send you their interesting catalog of services.

The Amazing Man From Arizona

Last month we mentioned Frank Wilburn, the inventor of the Gibson Girl emergency radio transmitter used to locate pilots and sailors from lifeboats and inflatables during WWII.

We listed several of the broadcasting stations that Wilburn had started in various Arizona cities and towns during the 1920's and 1930's. Indeed, Wilburn's efforts brought broadcasting to many of them for the first time.

Undoubtedly one of the most unusual of these, when viewed from a late-1993 perspective, is Wilburn's station KCRJ. This is



KCRJ's 147-ft. tower was erected in late 1937. It was a three-legged, uniform cross-section, guyed mast, made of 20 ft. sections. It had been manufactured for Windcharger use. W6OFU also used it for ham operation.

because it may well be the only American broadcasting station built and operated in what is presently certified as a genuine western "ghost town," Jerome, Arizona. Naturally, it wasn't a ghost town when Wilburn put the KCRJ on the air there.

Jerome, when it was thriving, was home to 15,000 souls. The town was located on the side of a rich mountain of copper that, since 1893, had been mined mainly by the United Verde Copper Co., later (1935) purchased by the Phelps Dodge Corp. Most of Jerome's residents were part of the mining operation, or were selling goods or services to the miners and their families. There were saloons, jewelry stores, elegant mansions, movie houses, hotels, banks, jail, plus many other things that made Jerome more of a permanent city than a mining camp.

Jerome was at its peak in 1925, but there were problems ahead. Copper prices had started to drop, and some of the smaller mining companies had folded. The copper in the mountain seemed to be getting harder to find, and the mountain was crisscrossed with mine shafts and tunnels. A gigantic dynamite blast in 1925 in connection with the mining operations served to collapse many of the mine shafts and tunnels, which had been weakened by pre-



Samuel Morse claimed credit for inventing the code that bears his name. There is reason to believe it may have been devised by his associate, Alfred Vail. Morse got glory. Vail got gyped.

vious blasts. In addition, Mingus mountain lies on a fault line. These factors made the surface of the mountain unstable. The result was that the entire town began to slowly slide down the side of the mountain. People had started to leave.

Therefore, it was odd that in the late 1920's when Frank Wilburn appeared in Jerome, with his family. He began constructing KCRJ. The station was ready to go in 1929, and by 1930 it was on the air with 100 watts on 1310 kHz.

In 1937, the Chief Engineer was B. T. Sampson, W6OFU. This was after KCRJ had been bought by Della Stuart, who moved the station and made it larger. It was placed in a house across the street from the Mingus High School, and a 147-ft vertical antenna, consisting of a single steel tower, was erected between the station and the old cemetery. In a 1938 interview, W6OFU observed that he liked to use the KCRJ antenna for his own 160 meter ham activity. The concrete base of the old KCRJ tower still exists.

KCRJ didn't survive the World War II years, going dark in 1943. Phelps Dodge kept the mine open until 1953, but after the last mine shut down, Jerome was abandoned and officially became a ghost town. There are now about 400 people living Jerome, mostly engaged in selling souvenirs, crafts, and handiwork to the many tourists who pass through on Route 89. A post office still operates, but Jerome has now slid more than 100 yards down the mountain from its original site. Some buildings have collapsed, and most others are structurally unsound even though they generally look intact to the casual observer.

We don't know why Frank Wilburn decided to build a station in Jerome several

years after the dynamite blast of 1925 that shook the town to its foundations. By the time KCRJ was first put on the air, Jerome had been declining in more ways than one. Jerome is the state's largest ghost town, and is listed in all books about Arizona ghost towns. KCRJ is one of Jerome's more haunting memories.

Someone Who Got The Code Shoulder

In 1917, Camp Alfred Vail was the name of the US Army Signal Corps facility in New Jersey. In 1925, that name was dropped and the facility became known as Fort Monmouth. Looks like Alfred Vail is someone of value who fell between the pages of history. We think he deserves a second look, and a position of esteem with communications people. Who was Vail?

In 1837, New Jersey amateur inventor Alfred Vail teamed up with Samuel Morse in a business partnership. The purpose of this arrangement was for Vail to assist Morse in developing a working telegraph system such as Morse had first conceived in 1832. A very crude, impractical, system had been jury-rigged by Morse by the time Vail came on the scene.

Morse's idea for the manner in which messages were to be sent was by establishing certain arrangements of spaced dots that represented the numerals from 1 to 0. Each word in the language would then be assigned a certain code number. Then messages could be encoded and decoded using a special coding dictionary that Morse was preparing. Morse had the notion of selling

this book to users of his system.

Although this dots-mean-numbers idea was the pet project on which Morse had long been worked, in 1838, a year after Vail had joined forces with Morse, a totally different approach suddenly appeared. Morse claimed he had devised a new code using an alphabet made up of dots and dashes. Bill Baxter, a Morse employee, later revealed that, despite Morse's claims, the dot/dash alphabet code had actually been devised by Alfred Vail.

It was Vail who even invented the telegraphy equipment to send this code.

Nevertheless, Morse, claimed the rights to and owned all of the patents for Vail's inventions relating to the telegraphic equipment used to send the—ah, "Morse" code.

Morse got to pose for photos wearing a bunch of medals on his chest. More than 120 years after his death, he is still known to every communications user as the creator of the Morse code.

Vail became a virtual unknown. His name couldn't even stick to an Army Signal Corps facility for more than eight years, and that was about 70 years ago. *Sic transit gloria mundi.*

That brings us to the end of the year, and also the end of this month's ramblings. So much more to get to, but we are up against the bottom of our allotted space. Thank you for the wonderful support throughout 1993 with your old time radio picture postcards, QSL's, station listings, news stories, and other material.

Best wishes for a happy holiday season to all. ■

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POP'COMM Looks At:

The Cobra Radar/ Laser Detectors

Cobra Electronics Corp. offers an interesting dual radar/laser speed-monitoring detection system, covering the whole enchilada of most speed measuring devices in general use these days. Compact little thing, too.

The radar and laser units are separate from one another, but connected, with the radar unit mounted on top of the laser. The receiving sensors or antennas are internal, and the units can be mounted right on top of the dashboard with a strip of velcro (supplied). They may also be mounted on the windshield.

Cobra's radar unit used here is the wide-band *Trapshooter Stealth* Model RD-306, which detects signals in the X, K and Ka bands. The RD-306 sweeps a full 1 GHz of the Ka band. Therefore this unit includes the operating bands of all known radar speed-monitoring systems now in operation, including "Stalker" radar guns and the "Photo Cop" system. Cobra has developed a frequency-scanning circuit for an instantaneous sweep across the Ka band to detect active signals.

There are three different warning tones used to distinguish between signals coming through in the X, K, and Ka bands. A distinctive alarm tone sounds instantly upon signal access. A full five-segment, three-color LED signal strength meter provides visual indication of the intensity of the signals.

Cobra has paired the RD-306 its LD-200 laser detector, which is fully adaptable to working with all other existing radar detectors. The LD-200 can also be used by itself, without a radar detector. When connected to a good three-band radar detector, it forms into as complete a mobile speed-clocking detection system as it's possible to attain.

The LD-200 has an effective detection range of more than 1.5 miles (day or night), which exceeds the half-mile range of all known laser speed-measuring systems. This provides an excellent advance warning margin when laser clocking devices are in use.

There are audible and visual alarms, including a three-segment acquisition meter. An auxiliary jack allows the use of an optional rear-window sensor for monitoring laser beams aimed from behind the vehicle.

The two units, when interconnected, are operated from one power cable that



The Cobra Trapshooter Stealth RD-306 3-band radar detector.

may be plugged into the vehicle's cigarette lighter. As soon as each is turned on they light up and sound off to let you know that they are operational. There are also test buttons to double check their operational status at any other time.

We have tried these units and they do what they say they'll do, and they do it well. They're attractive, well designed, and well-made. The laser detector offered a certain exotic mystique that never ceased to im-

press and intrigue every passenger who saw it on the dashboard. Everybody wanted one.

The *Trapshooter Stealth* RD-306 Radar Detector and the LD-200 laser detector are available either separately or as a pair. They are from Cobra Electronics Corp., 6500 West Cortland Street, Chicago, IL 60635. You can call Cobra toll-free at 1-800-COBRA-22.

Reviewed by POP'COMM Staff



Cobra's LD-200 radar detector shown mounted beneath the RD-306 radar detector. A good working combination.

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Those Low-Band Time Tickers

Most everyone's familiar with time-and-frequency station WWV. Here's the lowdown on two sister stations you may not have known about.

BY KARL T. THURBER, JR., D.P.A., W8FX

Station WWV took to the air in May, 1923, and today most listeners are familiar with its outstanding time, frequency, and propagation forecasting services. In fact, almost anyone with a shortwave receiver has tuned to WWV's signals on 2.5, 5, 10, 15, and 20 MHz. It's well-known in most parts of the world, and especially in the United States where at least one of the frequencies can almost always be received clearly 24 hours a day.

Lesser-known are stations WWVB and WWVL, also near Fort Collins, CO. Both used low frequencies—60 KHZ (LF) for WWVB, and 20 KHZ (VLF) for WWVL. Today, only WWVB is on the air. WWVL's transmissions went dark in 1972, although its antennas still are there. This article looks at these fascinating two government-operated stations and their very unusual antenna systems.

Low-Band Background

As long ago as 1956, the old National Bureau of Standards (NBS) at Boulder, CO experimented with 60 KHZ LF transmissions. They used the experimental callsign KK2XEI and the relatively low power of

two kilowatts. The NBS primary frequency standard at Boulder was used to derive the station's 60 KHZ frequency.

In 1960, the now well-established WWVB on 60 kHz was joined by WWVL on a much-lower frequency—20 kHz—which lies at the top of the audio range. The station initially was located in a high mountain valley at Sunset, CO, 10 miles from the labs.

In the meantime, WWV was broadcasting from Beltsville and—since 1943—from Greenbelt, MD. In 1966, WWV moved to Fort Collins, CO to increase the accuracy of transmissions (it would be closer to the Boulder standards) and to more uniformly cover the U.S. The move also allowed all three stations to be controlled from the same facilities, WWVL having been relocated from the Sunset site in 1963. Today, the NBS's successor, the National Institute of Standards and Technology (NIST), part of the U.S. Department of Commerce, operates all of the stations.

Why the Rock-Bottom Frequencies?

Why are such low frequencies used by time-and-frequency stations? They're so

favored because of the improvement in received signal accuracy that's possible. At such low frequencies, reception doesn't suffer the slight time delays and unpredictable atmospheric variations that distort the reception of HF time-and-frequency stations like WWV.

While most radio amateurs and SWLs aren't concerned with these problems, the errors make some lab applications impossible when the labs are located far from the transmitter—especially when reception is via skywave. LF and VLF waves travel almost completely by groundwave, making reception rock-steady and almost totally eliminating such reception problems.

WWVL: Former 20 KHZ Rock-Crusher

WWVL probably was capable of producing the best quality of any NBS station because of the very low frequency used. But there were some problems in working at such long wavelengths. For example, the station's phase (referring to time interval relationships between current and voltage in an AC or RF circuit) had to be controlled carefully to prevent transmission errors.

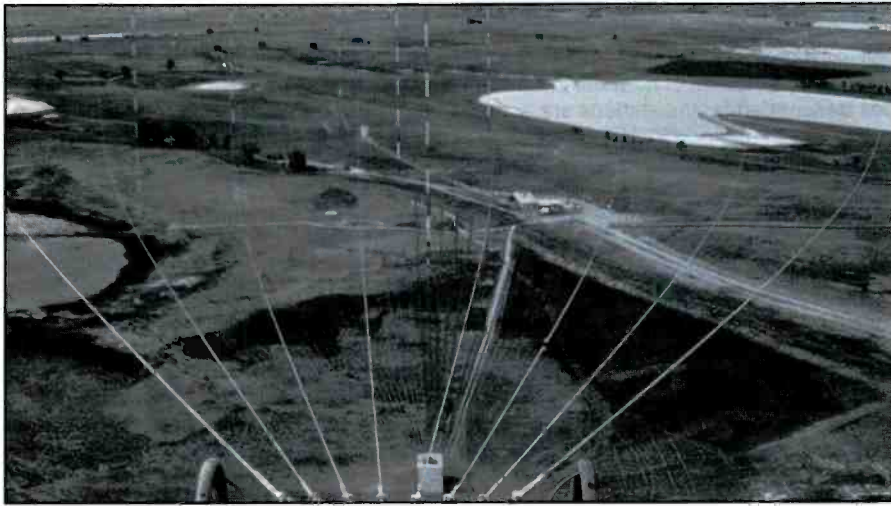
Quartz crystal oscillators and so-called

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WWVB QSL CARD. Shown is the QSL card issued by NIST station WWVB for reception of its LF 60 KHZ time-and-frequency signal. It presently broadcasts 24 hours a day from Ft. Collins, CO, with an ERP of 13 KW. You can hear it easily in most parts of the U.S.

| | |
|---|--------------------------|
| Department of Commerce NATIONAL BUREAU OF STANDARDS RADIO STATION WWVL FORT COLLINS, COLORADO (40° 40' 51.3" N — 105° 03' 00.0" W) | |
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WWVL QSL CARD. You won't likely receive one of these classic QSLs in your mail: WWVL ceased operations on its super-low VLF 20 KHZ frequency 21 years ago. Only the WWVL antenna system remains, and it's been retuned to 60 KHZ as a backup for WWVB.



VIEW ACROSS THE WWVB ANTENNA SYSTEM. Here's looking across the WWVB antenna system, taken from atop one of the 400-foot end towers. Each antenna is a top-loaded vertical supported by four guyed towers arranged in a diamond. The old WWVL antenna also is in view; its "helix house" is under the four-tower system in the rear. (Photo courtesy NIST.)



PART OF THE WWVB ANTENNA SYSTEM. Here's part of the WWVB antenna system—the connection point between the antenna downlead cage and the counterbalance insulator. The cage consists of six aluminum conductors mounted around rings approximately six inches in diameter. One of the support towers also is shown. While the WWVB and WWVL antenna systems are separate, they're identical. (Photo courtesy NIST.)

"drift correctors" were used in the WWVL transmitter to generate the carrier frequencies. One, two, or three operating frequencies could be selected (19.9, 20.0, or 20.9 KHZ), and the station could simultaneously transmit on all three frequencies if so desired.

Antenna dimensions at such low frequencies are very large, and are the reason why full-size antennas normally are not used at VLF and LF. The short antenna (by VLF standards) was heavily loaded to make it electrically correct and work properly, making it susceptible to small phase changes. Consequently, WWVL had a complex servo system to sense any phase shifts detected at the antenna loading coil. It would then send a correction command to a phase-shifting compensation system within the transmitter.

On July 1, 1972, NBS ended WWVL transmissions, though WWVB carried on. The WWVL antennas are still in place, but the frequency generation equipment has been scrapped. The old WWVL coils and the "helix house" housing them were modified to tune the antenna to 60 KHZ. The system is used as a standby antenna for WWVB and has been used on 60 KHZ several times when maintenance work was being performed on the main WWVB antenna.

WWVB: Contemporary 60 KHZ Powerhouse

WWVB's 60 KHZ transmitter, still on the air, today has an effective radiated power (ERP) of 13 KW. Because it uses a higher frequency than WWVL, the antenna behaves better, so that the complex phase-control circuitry used in WWVL isn't needed.

WWVB also uses a highly stable crystal oscillator as its frequency generator, referenced to the primary NIST frequency stan-

dard. The station is so accurate that it's used by many foreign time-and-frequency stations as a crosscheck on their own transmissions. WWVB transmits continuously, broadcasting various time information, time intervals, and special "UT1 corrections" related to the earth's rotation. WWVB does not voice ID as does WWV, but you can ID it with its unique time code pulse format.

While you're unlikely ever to hear WWVL again, you should be able to hear WWVB quite well anywhere in the country as a result of its central location. To receive WWVB, you can use a surplus LF receiver, a communications receiver covering low frequencies, or a commercially available VLF/LF converter that you just hook to your regular radio receiver's antenna connection.

Those Unusual Low-Band Antennas

When you go really low in frequency, a full-size quarter-wave vertical antenna is monstrous. A 60 kHz quarter-wave vertical would be 1250 meters high, while a 20 kHz vertical would be 3750 meters, or over 12,000 feet high! These are impractical, so shortening the antennas using loading coils is required.

Both the WWVB and WWVL antennas are top-loaded and identical, even though used on widely differing frequencies. The antenna system for each of the stations is made up of four heavily-guyed steel towers, arranged in a diamond shape 1900 feet long and 750 feet wide. Counterbalances on the inside and base of each tower help maintain the proper tension at the tops of the towers. This arrangement compensates for the high winds that swoop down from the nearby Rocky Mountains. Each antenna is free-floating and completely insulated from the tower system.

Electronically, the series-tuned antennas are actually like high-Q capacitors tuned to the operating frequency with very large coils. The antenna "Q" (quality factor) can be very high; the lower the frequency, the higher the Q. WWVL's antenna has a Q of about 530, while the WWVB antenna's Q is lower, around 100. The very high antenna Q makes the bandwidth very narrow: the bandwidth for the WWVB system is only 600 HZ, while the bandwidth of the WWVL antenna is a mere 20 HZ!

Too, since the antennas are extremely short with respect to wavelength, they're not very efficient. WWVB's 60 KHZ antenna is about 35 percent efficient, while the much shorter (electrically speaking) WWVL antenna is only 5 percent efficient at 20 KHZ.

The WWVB antenna is capable of antenna currents of 300 amperes, but the transmitter can only generate 180 antenna amps. The WWVL antenna current was limited to about 200 amps because of its higher tuning inductance. At about 180 amperes, the beehive insulator, rated at 100 KV and installed on top of the helix house that houses the tuning coils, would

LET'S TALK ABOUT TIME

Accurate time and frequency information is needed by many users: radio and TV stations, power and telephone companies, air traffic control systems, computer networks, ship and aircraft crews, radio amateurs and shortwave listeners, and scientists of all kinds. They need to compare their own equipment with a reliable and internationally recognized standard. The National Institute of Standards and Technology (NIST) provides the benchmark for most users in the United States.

NIST and its predecessor, the old National Bureau of Standards, initially set up shop in 1923 with radio station WWV in Beltsville, MD. Since then, the time and frequency services have been expanded to meet the needs of a growing and increasingly technological society. NIST's broadcast services include the radio signals from WWV, WWVB, and WWVB—what we're most interested in here. But the services also include the geostationary GOES satellites, Loran-C radionavigation, telephone (both voice and modem), and a frequency measurement service.

Time and frequency control of all the NIST stations, including WWVB and WWVL, is provided by very accurate

cesium atomic time clocks and primary frequency standards. The radio frequencies transmitted by the stations are accurate to within one part in 100 billion at all times, being tied directly to the nearby NIST frequency standard. Likewise, time information sent out by the stations is almost perfectly accurate, being based on the NIST's atomic clocks.

To prevent undetected clock or time code generator failures, continuous comparisons are made between the transmitted WWV and WWVB signals and even, on occasion, with portable atomic clocks. WWVH (the NIST station in Hawaii) monitors the LF signals broadcast by WWVB as a crosscheck on its own accuracy.

The time information is broadcast in the Coordinated Universal Time (UTC) format, what we used to call Greenwich Mean Time, or GMT. The NIST stations also broadcast a special UTC adjustment factor, known as UT1, which some users need for their work. This is because in some navigation applications what's actually needed is a less-stable and accurate atomic-derived time scale, one that varies with the rotation rate of the earth. UT1 is derived by astronomers who monitor the earth's rotation speed.

flash over. If you happened to be in the helix house at the time of flashover, you likely wouldn't survive to describe the resultant pyrotechnics!

Parting Thoughts

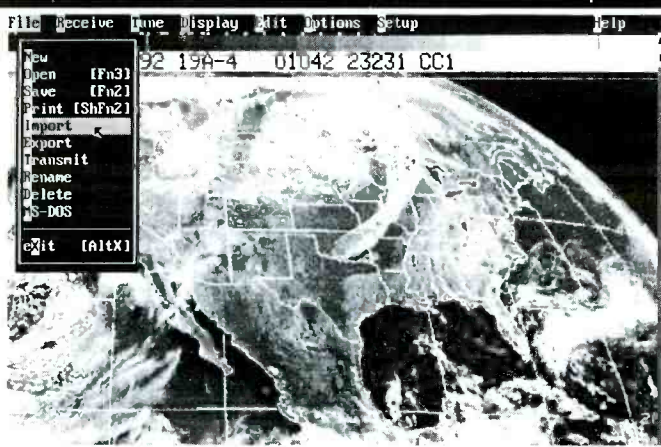
The public can visit the WWV/WWVB site and take pictures of the antennas, but the buildings normally are closed to casual touring since the staff is minimal. Reception reports and questions about the stations may be sent to the Engineer-in-Charge, NIST Radio Stations WWV and WWVB, 2000 East County Road 58, Fort Collins, CO 80524; (303) 484-2372.

Guided tours of the NIST Labs in Boulder are available and offer visitors the opportunity to see the NIST atomic clock that provides the basis for the time-and-frequency services. Interested? Contact the Tour Program Office, Division 360.06, NIST, 325 Broadway, Boulder, CO 80303-3328; (303) 497-5507.

For information about WWVB, WWV, and WWVH (located in Hawaii), write NIST Time and Frequency Services, 847.40, NIST, 325 Broadway, Boulder, CO 80303-3326. NIST Special Publication 432, NIST Time and Frequency Services, tells the whole story.

Finally, even if you don't own a shortwave radio, you can still get the correct time-of-day straight from NIST. How? Give the Boulder labs a call at (303) 499-7111.

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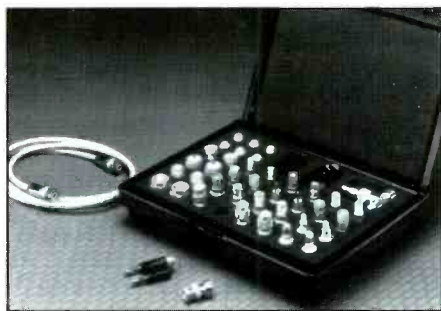
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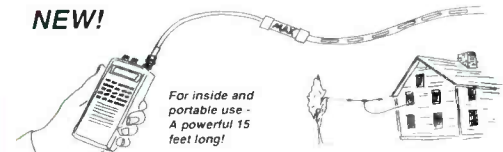
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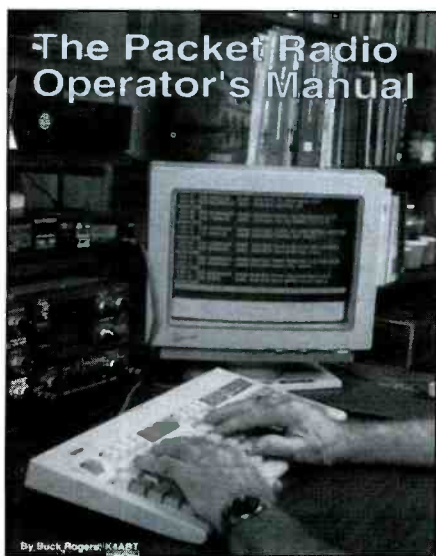
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The Heath Story

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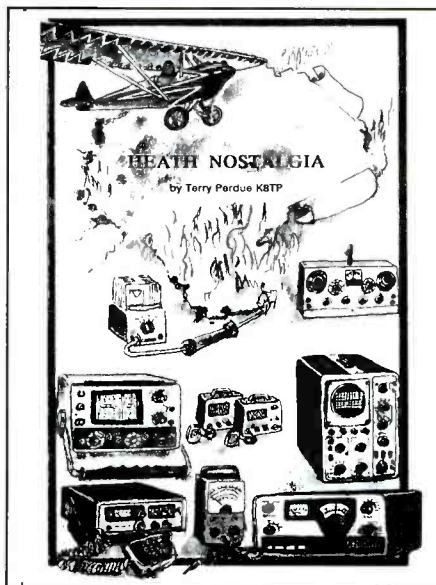
Heathkits started out as popular priced test instruments intended to be used by hobbyists, service shops, schools, and industries. As the company's reputation grew, so did its product expand into amateur and CB radio, hi-fi and stereo, FM and TV, and a variety of other areas.

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Interest in kit building declined over the past decade. There are a number of factors that combined to cause this. Heath, itself, went through a number of changes, having been sold and resold several times over the years, perhaps not always for the best. While there are still kit builders around, as the 1990's rolled in, Heath's current owners determined that the market was insufficient to make it worthwhile for their company to continue producing kits. Heath then discontinued its kit line.

Many will miss Heath. Terry Perdue's book is a fond memory of this company. It tells of its history, hopes, products, owners, personalities, as well as its rise to international fame in the kit industry, followed by its decline. This is a 123-page book, containing photos of Heath executives, products, ads, scenes at the factory, and many great anecdotes.

We liked *Heath Nostalgia*. It was written from the heart by someone who enjoyed his subject.

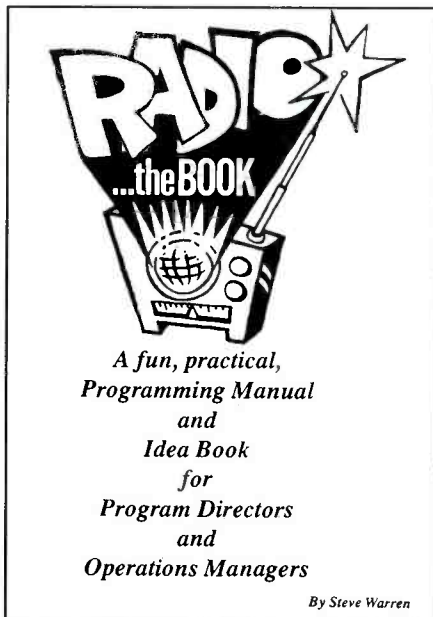


Heath Nostalgia is \$9.95 (postpaid) from Heath Nostalgia, 4320 196th S.W., Suite B-111, Lynnwood, WA 98036.

Radio, The Book!

Clever title, cleverly written book. It's called *Radio: The Book*, by Steve Warren. This is a fun, practical programming manual and idea book for broadcast station program directors and operations managers.

Written by a broadcast consultant, *Radio: The Book* reflects his more than 30



years of industry experience. This includes stints at some of the most successful stations (WOR, WNEW, WNBC, WHN, WPAT, WDAE, WIRE, KNBR, KYW, WPEN, KTSA, others) and in a variety of music formats. Steve has racked up an enormous amount of experience that he freely, skillfully, and most entertainingly shares with his readers in this 198-page book.

You learn things like how to get hired as a station Program Director, the importance of establishing a distinctive station identity, the vital role of research, common errors in selecting a program format, and determining the listening patterns of a station's audience.

Steve then goes on to discuss how to use public service announcements, station breaks, getting free station publicity, the use of syndicated programs, advertising policies.

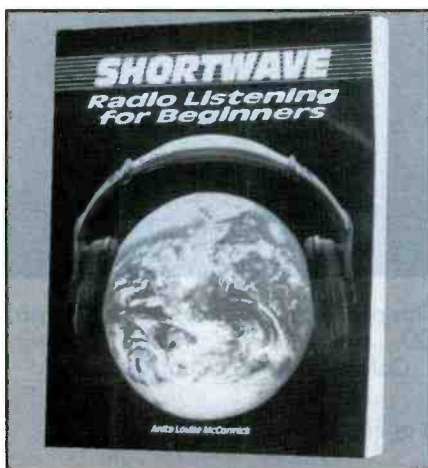
There's so much more in this dynamite book that it's not possible to list everything here. The book is easy to read, informative, and very insightful. Anybody working in broadcasting, or hoping to at some time in the future should find *Radio: The Book* to be right in tune with their careers.

Radio: The Book, by Steve Warren, is available for \$39.95 (postpaid) from MOR

Media, 21-54 44th Drive, Long Island City, NY 11101-4710. They accept checks, also VISA/MC/AMEX. Orders may be phoned to: (718) 786-3703; or FAX'ed to (718) 786-3870.

Shortwave Information

Shortwave Radio Listening for Beginners, by Anita Louise McCormick, KA8KGI, is an illustrated 191-page guide that is perfect for explaining the DX monitoring hobby to anyone wishing to know as much as possible about the basics. It's a crash course in getting results right away without having to first wade through a lot of unnecessary tech information that not needed by beginners. This was a valid approach, and it works.



Anita has spent 20 years behind the dials and is very knowledgeable about the hobby. Her book explains how to select equipment and buy, and install equipment, then she goes on to discuss in considerable detail the many aspects of operating that equipment in order to get the most from it.

She tells of the numerous types of stations that can be tuned in on the different bands, and when the best times are to listen for them. There are listening tips galore, and close-up stories about the world's most well-known shortwave stations.

There's a lengthy listing of magazines, clubs, catalogs, and dealers, plus a dictionary of commonly used hobby jargon. It's a huge amount of information, complete with numerous photos and illustrations. We would call this a highly useful reference book for any shortwave monitor, but particularly for the beginner. This thorough book is even suitable for someone just thinking about getting into the hobby in the future.

Anita McCormick also provides valuable advice about how to get started in ham radio, which many listeners also enjoy.

Shortwave Radio Listening For Beginners is \$18.95, plus \$4 shipping (\$5 to Canada) from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. Residents of NY State, please add \$1.95 tax. VISA/MC welcomed. Phone orders: (516) 543-9169; 24-hour FAX order line: (516) 543-7486. ■

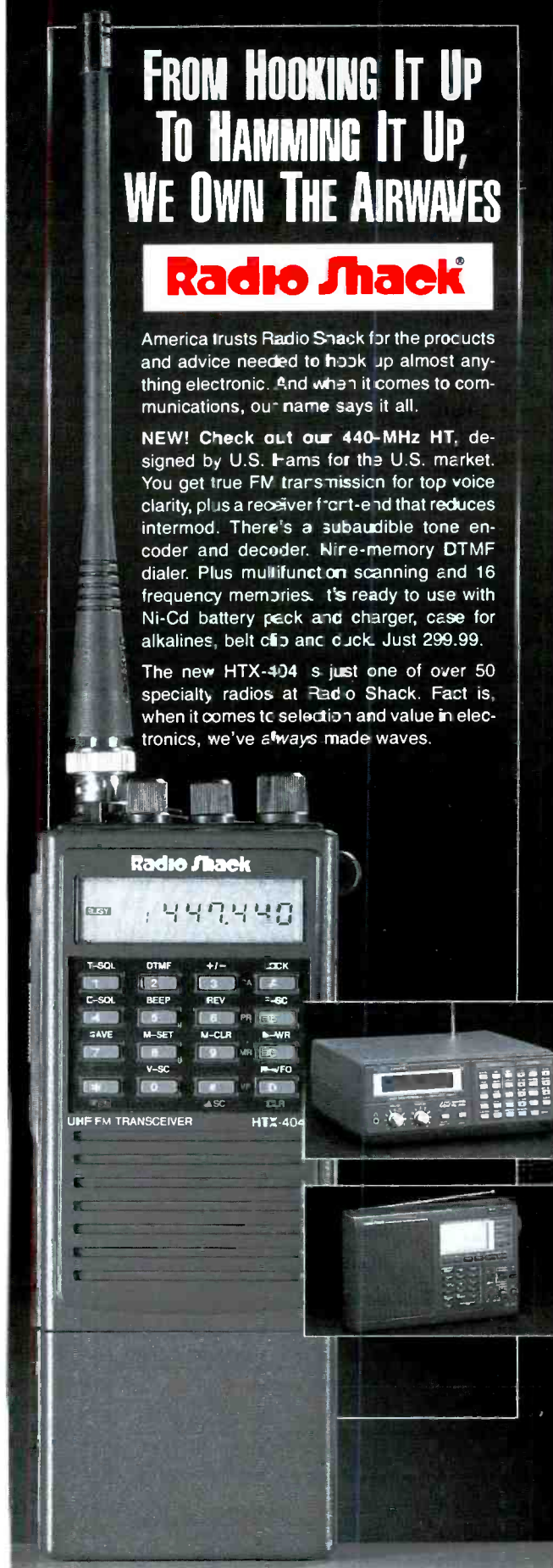
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December 1993 / POPULAR COMMUNICATIONS / 21

COMMUNICATIONS CONFIDENTIAL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

First I want to wish readers a most happy holiday season and thank all contributors for their loggings, comments, QSL's, photos, etc. All of the material is very much appreciated.

Tom Severt, APO England, reported hearing a large number of scrambled communications. He noted scrambled speech on 2010 kHz in USB at 1937. Also on 2276, 2288, 2291, 2301, 2346, 2755, 3290, 3391, 3410, 3420, 3440, 3740, 3880, 3912, and 3940 kHz on various days, at various times.

Ed Rausch, NJ, gave us back ground information in a note and indicated he is 37 years of age and has been DXing for two and a half years. Receivers are a Kenwood R5000 and a Sony 2010 with long-wire antennas going in every direction imaginable. MFJ 959 antenna tuners are also in use. He plans to acquire a PC and RTTY decoder in the near future. Most often he targets the Asia-Pacific region, and to date he has QSL'ed 29 countries utility comms and 50 countries SW broadcast stations.

He also has QSL'ed 19 cruise ships, 16 USCG Cutters, four USN ships, two Canadian CG Cutters, five Canadian CG COMMSTAS and 18 USCG COMMSTAS Stations and Groups.

A query was received from Tom Crooks, MO, regarding a maritime shore station identifying itself as Morgan City in SSB at 0400 on 8298 kHz. Tom, the station you heard was probably one of the Limited Coastal stations located in Morgan City, LA. These stations are somewhat like the LDOC (Long Distance Operational Control) stations in the aeronautical service. The Limited Coastal stations are operated by steamship companies, oil-drilling firms, oceanographic institutes, pilot organizations, etc. The facilities provide a means of communication between the company offices on shore and their vessels. By the way, one of my references shows some 40 Limited Coastal stations, located in Morgan City, LA.

Richard Baker, OH, forwarded some US Navy items. He reports two revisions



This photo, provided by Patrick Griffith, CO, shows the Jefferson County, Colorado Air Control Tower.

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Laupenstrasse 18
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Azimuthal World Map
Centre Bern Radio HEB

MOBILE HF RADIO SERVICES -
Coaststation BERN RADIO and
Aeronautical Groundstation BERNA

To *Hiroshi Saito*

Dear YL/OM

We thank you for your report of *1st of Nov. 1990* on *8714* kHz

at *1907* UTC and confirm it as coming from our services.

The frequency used was *8714.0* cis *HEC 281* *8714.0* kHz

Thanking you for your interest by listening incidentally our services, but we draw your attention to the RR 23 - 1 (Radio Regulations Art 23 - 1) and the general wording of radio amateur licences that prohibit the watch of commercial services.

Yours truly
BERN RADIO HEB
RADIOCOMMUNICATION OPERATIONS DIVISION
Operations Management Branch
Mobile HF Radio Services

←QSL from collection of Hiroshi, Japan.

Dutch Military callsigns, sent by Ary Boender, Netherlands.

DUTCH MILITARY CALLSIGNS

SUBMITTED BY ARY BOENDER, NETHERLANDS

PBA & PBA 3 : Navy, Amsterdam

PBB, PBB 3, PBH & PBI : Navy, Den Helder

PBC & PBC 3, 5, 22, 24, 26, 28, 32, 92,
PBC 94, 96, 98, 222, 911 : Navy, Gceree

PBD 3 : Navy, Vlissingen

PBE 3 : Navy, Ymuiden

PBF 3 : Navy, Rotterdam

PBK : Dutch Coast Guard (Ymuiden Rescue)

PBU 3 : Navy, Hoek van Holland

PFC : Naval Air Support, de Kooy

PBV & PBV 4 : Air Force, Valkenburg

PEF 2 : Air Force, Volkel

PEL 2 : Air Force, Leeuwarden

PES : Air Force, Soesterberg



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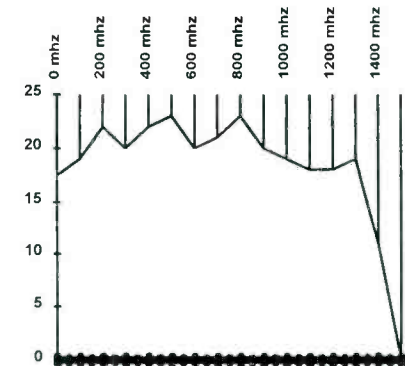
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NKIA

USS MOINESTER
(FF-1097)

THIS WILL VERIFY RECEPTION OF:
U.S. NAVY FRIGATE USS MOINESTER (FF-1097)
ON 7535 KHZ USB AT 1908Z ON 10 DECEMBER 1992

*TRANSMITTER/POWER: URT-23 / 300 WATTS

*ANTENNA: 35 ft whip

*LOCATION: Virginia Capes OPAREA

VERIFYING OFFICIAL AND STAMP:

A. Thurman
LT USN
COMMUNICATIONS OFFICER
*IF CLASSIFIED MARK N/A

COMMUNICATIONS OFFICER
USS MOINESTER (FF-1097)
10 DEC 1992

PFC sent in by Joe Galante, NY.

in MARS callsigns. NNN0CCL was listed as USS Affray (MSO-511) and NNN0CQX was listed as USS Canisteo (A0-99). Both ships have been decommissioned.

Guided missile cruiser Cape St. George (CG 71) was commissioned June 12, at the Norfolk, Virginia Naval base.

The Department of the Navy christened the Avenger-class mine countermeasures ship Chief (MCM 14) on June 12, at Peterson Builders, Sturgeon Bay, Wisconsin.

Richard also provided the QSL address for the NASA Solid Booster Recovery Vessels; R/V Freedom Star (KRFB), M/V Liberty Star (WRPH) and Independence (no other details). The address is: (ship name), ThaiKol Corp., THI-705 Hanger "AF," Kennedy Space Center, FL 32899.

Another letter from Richard Baker indicated the new 1993 ITU ship callsign book, *List of Ship Stations—List V, 33rd Edition*, plus supplements, has been released. The cost is \$85 and can be ordered from the International Telecommunication Union, Place des Nations, CH-1211 Geneva 20, Switzerland. Payments should be made out to the General Secretariat of the ITU. Bank info is: Swiss Bank Corporation, 2 Rue de la Confederation, CH 1204, Geneva, Switzerland. account number, C8-765.656.0. This would be used for a Chemical Bank International check. For a postal check use account number 12-50-3 Geneva.

Richard made an ID for an activity he heard on 6227 kHz. USAV LTG William B. Bunker (LSV-4) a Landing Ship Vehicle from the 10th Transportation Battalion at Fort Eustis, VA, used a callsign of AAEF. Another callsign, AEIL, was not identified. A third callsign, AAC2, is listed in the International Callsign Directory as "USAV Bunker." However it is listed in the eighth edition of the *Confidential Frequency List* as Pentagon (Ft. Ritchie, MD), VA???

The Blackbird SR-71 aircraft are in service again. NASA has three of them as follows: Tail #64-17956, SR-71B trainer

with FAA callsign N831NA; tail #64-17971, SR-71A at Dryden Flight Research Facility, Edward AFB; and tail #64-17980, also to be at DFRF, as N844NA.

Some of you utility monitors may have run across one or more of the following activities and wondered what they were.

BALTOPS 93—Exercise in the Baltic Sea consisting of two phases. The first phase involved the integration of new forces from the former Soviet Bloc countries and from non-aligned countries. It includes ships or observers from Russia, Poland, Latvia, Lithuania, Estonia, Sweden and Finland. This phase focused on non-warfare maritime interactions at sea. The second phase concentrated on more traditional exercise in anti-air, anti-mine, anti-surface, and anti-submarine operations.

OCEAN VENTURE 93—A joint logistics exercise conducted at the Marine Corp Base Camp at Lejeune, NC and included personnel participation from the U.S. Army, Navy, Air Force Marines, and Coast Guard. An earlier exercise was held in the Puerto Rico area.

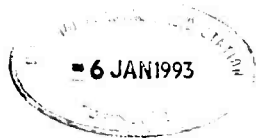
EAGER MACE 93-2—This exercise demonstrated a continuing U.S. commitment to the security and stability of the Arabian Gulf region. Participants included

Abbreviations Used For Intercepts


| | |
|-----|------------------------------------|
| AM | Amplitude Modulation mode |
| BC | Broadcast |
| CW | Morse Code mode |
| EE | English |
| GG | German |
| ID | Identification/led/location |
| 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) |

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

DATE AND TIME: 29-11-92 1233/4UTC
SERVICE: MARITIME WEATHER S/CAS
FREQUENCY: 4426 KHZ
CALL SIGN: VIT
EMISSION: USB
TRANSMITTER POWER: 800 WATTS
ANTENNA TYPE: W1DX Beam Delta
ANTENNA BEARING:



TO: EDWARD RAUSCH
17 HANDBERG PLACE
CEDAR GROVE
NEW JERSEY 07009
U.S.A.


Signed for OTC Australia
Wm. Rombo, Manager
OTC Maritime Townsville
19-23 Wackett Street
Pallarenda 4810 Qld

Here is a QSL received by Ed Rausch, NJ.

800 Kuwaiti troops and 120 Royal Marines from the United Kingdom along with 4,200 marines and sailors of the USS Wasp (LHD 1) Amphibious Ready Group. Other vessels of the ARG were the USS Nashville (LPD 13), USS El Paso (LKA 117), and the tank landing ships USS Barnstable County (LST 1197).

SHARP GUARD—Operation involving the combined North Atlantic Treaty Organization (NATO) and Western European Union (WEU) units in the Adriatic Sea where some 20 western surface ships were available for implementation of the UN Security Council resolutions against former Yugoslavia. The forces operated as Combined task Force 440 and included maritime patrol aircraft.

Thanks to Richard Baker for information pertaining to the above exercises and operations.

Readers may recall that Ary Boender in the Netherlands had available a list of stations in the 0-900 kHz spectrum. Well, Ary has now combined his utility guide with call signs, Selcals, and Nato routing indicators and put them all on a three and a half inch disk. For those interested, the cost is \$25 (US dollars) and can be ordered from Ary Boender, Lobeliastraat 33B, 3202 HR Spijkenisse, Netherlands. Ask for DX-MASTER 7.

UTE Intercepts. (All times UTC.)

- 23.4: DHO38. German Navy, W. Rhaderfehn w/msgs in CW at 2030. (Boender, Netherlands)
- 93.9: F.UO. French Navy, Toulon. W/VVV DE FUO mkr in CW at 2055. (Boender, Netherlands)
- 201: Beacon X, Edmonton, Alberta, Canada. (Forsman, CA)
- 222: Beacon MY, Marysville, CA. (Forsman, CA)
- 223: Beacon YKA, Kamloops, BC, Canada. (Forsman, CA)
- 237: Beacon DYL, Doylestown, PA at 1531. (Crabill, VA)
- 244: Beacon DDA, Jefferson, GA at 1143. New. (Crabill, VA)
- 263: Beacon MRT, Marysville, OH, at 0441. (Vylasek, OH)
- 271: Beacon SC, Stockton, CA. (Forsman, CA)
- 272: Beacon CB, Columbus, OH at 0443. (Vylasek, OH)

- sek. OH)
- 278: Beacon GOS, Lakeview, OR. (Forsman, CA)
- 314: Beacon F, Farallon Islands, CA. (Forsman, CA)
- 318: Beacon HFY, Francesville, IN at 1542. (Petersen, IN)
- 325: Beacon BO, Bodega Head, CA. (Forsman, CA)
- 335: Beacon RWN, Francesville, IN at 1539. (Petersen, IN)
- 397: Beacon LLJ, Challis, ID; Beacon SB, San Bernardino, CA. (Forsman, CA)
- 442: FFB, Boulogne, France in CW at 1918 w/nav wrng. (Boender, Netherlands)
- 444.5: PCH, Scheveningen, Holland in CW at 2020 w/nav wrng. (Boender, Netherlands)
- 1797: SDJ, Stockholm, Sweden in CW at 2133 w/callsign mkr. (Boender, Netherlands)
- 2103.5: VCP, Canadian CG, St. Lawrence wkg CGAS, Ann Harvey, Canadian CG ship (Icebreaker/Nav Aids Tender) w/wx after hailing ship on 2182 kHz. Hrd 0610 in USB. Ship replied to my QSL request saying that most of their comms now on VHF. However, 2103.5 kHz is dedicated Canadian CG freq & used mostly for ship/ship comms at night. Many voice xmsns now routed via satellite and encoded data HF freqs. (Baker, OH)
- 2182: GKZ, Humber, England in USB at 0533 advises that tfc list on 1707 kHz. (Boender, Netherlands): VCS, Canadian CG, Halifax. w/two level alert tone. Then announces "MAYDAY relay" for F/V Luan, 45' F/V w/5 POB taking on water at position East of Maine. Requests any vessel in vicinity to assist. Hrd 0602 in USB. (Baker, OH)
- 2390: PCMS, MV Alstern in USB at 1932 w/MV Heemskerckgracht: PCTG, MV Archangelgracht in USB at 2035 w/MB Aalsmeergracht. (Boender, Netherlands)
- 2628: Ship/shore pp's here in USB at 2144 w/ship on duplex freq 2009 kHz w/slight QRM from scrambled speech stn on 2010 kHz. (Sevart, England)
- 2932: Tokyo Aeradio Selcalls Korean Air-072, then advises ATC cleared acft to maintain mach 0.85 USB at 1324. (Sabo, S. Korea)
- 3130: L1M & S61, both u/i in USB at 0319 w/talk re grics & tracking. (Margolis, IL)
- 3775: 5F CW msg w/unusual characters at 2006. (Sevart, England)
- 4125: WRW2305, Tug Algonquin, said to be at Fire Island inlet, wkg WBN3428, Tug Viking testing new radio. Then w/Tug Scandia. Hrd 0614, USB. (Baker, OH)
- 4230: UFB, Odessa, former USSR, in CW w/tfc list at 2204. (Sevart, England)
- 4369: WLC, Rogers City, MI in USB at 0235 w/coded MAYFOR best for Great Lakes. (Baker, OH)
- 4395: Every Wed. at 2200, YL/GG rptng 255 x 3, 81915 033 foll by 5 slow tones and into 5F grps at 2205. (Mason, England)
- 4476: SLHFM "P" here at 2247. Yes, there are



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For more information on Bearcat radio scanners or to join the Bearcat Radio Club, call Mr. Scanner at 1-800-423-1331. To order any Bearcat radio product from Communications Electronics Inc. call 1-800-USA-SCAN.

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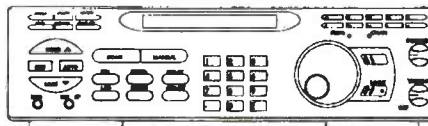
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10820: YL rpts KPA2 (Mossad str) in phonetics. USB at 1431. (Sabo, S. Korea); YL sending Mike India Whiskey 2 at 1917. Also on 5230 & 8641 kHz. (Mason, England)

10970: YL w/VLB-India 12 rptng at 2010. Also on 7605/4665 kHz. (Mason, England)

11125: YL/SS in USB at 0205 rpts "Atencion, Cinco dos uno, Cero ocho" w/o 1-0 count. At 0209 rpts "Cero ocho, tres dos." At 0210 into 5F grps w/no 10 beeps preceding grps. "Final final" at 0212 & then rpt from beginning. (Margolis, IL)

11176: Cody 01 w/office at 1413. Requested w for Kelly AFB for 1500 eta. Cody 01 was in a C-130 a/c. (Low, TX). King-23 to Yokota w/request for state-side Autovon pp to Minuteman (air National Guard at Andrews AFB). A/c enroute from Osan AB, Korea passed mission status report to Minuteman, then requested patch to Misawa Metro, for Misawa landing forecast for 0600. USB from 0326-0333. (Sabo, S. Korea). Offut w/ several Skyking msgs at 2356 in USB. (Gentry, IL)

11200: OM/EE in AM at 1534 rpts 135 x3 & 1-0 count. 10 beeps at 1539, count 61 x2 & into 3/2 grps. Hrd on a Saturday. (Margolis, IL)

11243: USAF Incirlik in USB at 2005 w/Skyking msgs. (Boender, Netherlands)

11260: OM/EE (RR accent) at 2005 w/897 callup. Vy powerful carrier foll by 106 x2 49 x2 & into 5F grps. Ended w/00000. Rptd at 2100 on 8660 kHz. (Mason, England)

11309: Avianca 014 w/NY. Enroute Bogota-Paris. Oceanic clearance. Hrd 0027. Air France 596 w/NY also for Oceanic clearance. Hrd 0039. Both USB. (Boender, Netherlands)

11384: Northwest 95 wkg Honolulu LDOC w/pos report & Selcal ck in USB at 1110.

11396: Singapore Aeradio wkg United Nations 299 in USB at 1334. Singapore asked a/c to confirm ?Masdabas? at 33 and estimate ?Alcol? at 1343. then advised contact Bangkok on 5655 kHz for guard change. (Sabo, S. Korea)

11470: Warble jammer here at 1246. (Sevart,

England)

12203: OM/EE at 1920 rptng 821 until 1925 when he said 697 x2 40 x2 & into 5F grps. Rptd next day on 12210 kHz at same time. Sig so powerful it was booming out of AOR hand held scanner as I waked around the house. (Mason, England)

12242: YL/EE w/1-0 count and 187 fm 2100-2110. After 10 tones Count 184 & into 3/2F grps. (Mason, England)

12420: At 1900 powerful carrier tuning up on this freq until 1930 when OM/RR sent 618 for 5 mins. At 1935 537 x2, 2 x2, 11111 x2. 00055 x2, 537 x2, 2 x2. 00000 then off. This msg consisted of two grps only (11111 & 00055). (Mason, England)

13089/12242: At 1704 NBPG, USCGC Escape (WMEC-6) w/NMF, CommSta Boston re HFDDL (High Freq Data Link) freq. Hrd in USB. (Baker, OH)

13101: ZSC27, Capetown. South Africa w/voice mirror id & freq allocations in USB at 0830. This is the International Radioteletype Service of Capetown Radio. (Rausch, NJ)

13204: Andrews AFB, w/comms re mission numbers at 2045. (Low, TX)

13225: Jordania 262 w/Amman LDOC in USB at 1154. (Boender, Netherlands)

13518: YL/EE in USB at 1733 w/3-2F grps. (Margolis, IL)

13775: YL/GG rptng Whisky Lima fm 1900-05 then 5F grps for 026 and 522. (Mason, England)

13815: KRH50. US Embassy, London, England in CW w/QRA mkr at 1934. (Low, TX)

14390.5: US Army MARS pp's at 2145. (Low, TX)

15015: Reach 7033 wkg MacDill GHFS, relaying flight info, alpha (Maintenance) status. Hrd 1536 in USB. (Baker, OH); MacDill AFB w/Raide 24 at 2142 w/pp to Raider base. Raider 24 having problems with fuel gauge. (Low, TX)

15046: Bem Radio LDOC wrkd a/c 905 and 21-alpha in USB between 1356 & 1400. Recd nice reply to reception report incl station card & info brochures. (Sabo, S. Korea)

16086: YL/EE w/3-2F grps in AM at 1611. (Sabo, S. Korea)

16280: OM/RR w/5F grps, each x2. AM at 1308. (Sabo, S. Korea)

16434: At 1330 every day 20 dashes foll by 4F grps w/2 or 3 grps per msg. On this occasion YL/EE rptng 3975/2846/0622 over and over until 1340. Also on 13423 kHz and both freqs troubled by warble jammers. (Mason, England)

17245/16363: GCDG, Royal Navy carrier Ark Royal (R-07) wkg Portishead, England at 1745 for R/T t/c. USB mode. (Baker, OH)

17398: XSQ, Guangzhou Radio, PRC in USB at 0715 w/rptng tape of YL/EE & CC passing list of operating times & freqs. Announced Channel 604 (6510-6209) from 0900-0900; Channel 822 (8782-8258) from 2200-1500; Channel 1225 (13149-12302) from 1000-2200; Channel 1211 (13107-12260) from 0000-0900; and channel 1653 (17398-16516) from 2200-1000. Was //13107 kHz. (Sabo, S. Korea)

17485: YL/EE in USB w/601 x3, 1-0 count (rptd) at 2105. (Low, TX)

17975: Yokota Airways w/Foxtrot t/c in USB at 0603 //13201 kHz.

18237.4: 4-note music mkr in USB at 2346 w/carillon-type sound. Mkr ended at 0002 then a fluttering sound began. (Margolis, IL)

18565.5: 16-note music mkr in USB 1341-1345. (Margolis, IL)

18982: 7CB, Belawan Navrad, Indonesia in CW at 1400 w/rpts of 5L grps msg. S/off w/id at 1407. (Margolis, IL)

19490: U/i CW strn at 1819 w/5F grps. T=0. Foll by msgs in SS. Went to RTTY w/encryption 1825-1829, returning to CW at 1830 w/more 5F grps. Down at 1837. (Margolis, IL)

20152: U/i CW strn at 1532 sending "QRA A1L II CC II PM II PB II VZ II IMI" rptd until 1534. (Margolis, IL)

20350: YL/GG rptng Charlie Delta fm 1100-1105 foll by a 47 group msg of 5F grps for 707. (Mason, England)

21956: 2-note music mkr in USB at 1750. Hrd for very long period of time. (Margolis, IL)

28220: KB9DJA/BCN Indiana USA. CW propagation beacon at 1503. (Low, TX)

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CIRCLE 99 ON READER SERVICE CARD

HOW I GOT STARTED

Popular Communications invites readers to submit, in approximately 150 words (more or less), how they got started in the communications hobby. They should preferably be typewritten, or otherwise easily readable. If possible, a photo of the submitter should be included.

Each month we will select one entry and run it here. You need submit your entry only once, we'll keep it on file. All submissions become the property of *Popular Communications*, and none can be acknowledged or returned. Entries will be selected for use taking into consideration if the story they relate is especially interesting, unusual, or even humorous. We reserve the right to edit all material for length and grammar, and to improve style.

The person whose entry is selected will receive a one-year gift subscription (or one-year subscription extension) to *Popular Communications*.

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



Yuri Dzyuba, VE2XLT, is formerly UB 5LT. He lives in Montreal.

Our December Winner

This month our winner is Yuri Dzyuba, VE2XLT, of Montreal, Quebec, Canada. Yuri told us:

"It was 1960, and at the age of 10, I was in the Ukrainian SSR. My father bought a 5-tube shortwave radio to listen to the news on the VOA and BBC, which was different than different from the Radio

Moscow cable speaker. After school, I spent hours tuning the 4 to 12 MHz bands. Higher bands were prohibited by the Soviets in order to save on jamming all Russian language broadcasts from overseas.

"Finally, I heard some AM ham operators on the 40 meter band. Shouting back into the radio's loudspeaker to speak to them did not work. When I was 14, I joined a radio club and became an authorized SWL, UB5-077-5, then later ham ham UB5LT.

"At age 23, while a radio-electronics student, I was playing the VOA and Radio Svoboda for some other students. That caused me to be arrested by the KGB and put in prison for five years on charges of spreading anti-party propaganda.

"In 1988, just before the collapse of the Soviet regime, I moved to Canada. After a 20 year interruption, I was able to resume my ham radio career as VE2XLT. Two years later, I earned the DXCC award. At age 43, I am finding life stable and comfortable." ■

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CIRCLE 61 ON READER SERVICE CARD

Morse Code At 30 Words Per Minute?

Are you finding it difficult to increase your code speed? Instead of merely practicing positive thinking, banging your head against a hard surface or sleeping with a code key under your pillow, why not try the following techniques to go as fast as 30 words per minute—or beyond!

They're straight (a key pun—get it?) from veteran code slinger Lee Aurick, WISE. During World War II, Lee was an Army Signal Corps High-Speed Operator and Communications Chief. He taught lots of guys to become Top Gun Code Jockeys. He can help you, too! Here he goes:

I qualified for an ARRL 30 word-per-minute code proficiency certificate in 1954. In the nearly 40 years that have passed since then, it's been my pleasure to help more than a thousand people pass their code tests. After so many years of teaching, I've managed to accumulate a small collection of helpful tips. I've also observed a few things that, in my opinion, you should avoid.

Let's start by abolishing the notion it's only necessary to practice 15 or 20 minutes at a time, a couple of times a week. I have one word for that idea: nonsense! By the time you get around to your next practice session, you may also slip back to where you were before. At this pace, progress is slow—tantalizingly slow.

Code instructors should be honest with their students. They should tell them that it's going to require some effort and dedication. A coach doesn't tell his basketball hopefuls that the road to the NBA is lined with velvet. He tells them that there are tough times ahead. Why be less truthful with aspiring hams?

The Farnsworth Method

Should a code student begin at five words per minute and work upward from there? How about starting at 50 words per minute instead? (I can hear the gasps now!) No, I am not suggesting that we bombard them with CW conversations at that speed—just characters!

This technique is to put to good use in what is known as the "Farnsworth Method." The Morse code letters are formed at 15 to 18 words per minute, but are sent with 5-wpm spacing. It may seem like an unusual method, but it's effective.

You begin by learning each character. As soon as you're confident that you know each letter, number and punctuation mark, start decreasing the spacing between them. The sounds of the characters remain the same, only the spacing changes. Within a short time, you'll reduce the spacing from the 5-wpm level to 18 wpm.

During the process you don't need to relearn the characters—you already know them

at 18 wpm! They're the same characters you learned the first time around. They're just coming at you faster.

Why don't we take this idea further? Why not start by forming the letters at 20 words per minute? Moving from 5 to 20 words per minute would be a snap.

As an experiment, I taught my nine year old grandson the code in less than a day with the letters formed at 20 words per minute. Upon returning to his home in Wisconsin, he entered a class and qualified for his Novice license before the class was half over. He is now KA9SNP. It works!

Code Practice Tapes

Some of the worst tapes are those which purport to send code as though as though you are listening to two stations having an on-the-air conversation. Many use poor operating procedures—and that's reason enough not to use them. On the other hand, tapes that use the Farnsworth Method are fine learning tools for new hams and I encourage you to use them. (ARRL practice tapes employ the Farnsworth Method.)

Tapes not withstanding, if you already have a Novice or Technician ticket, I have four very important words for you: GET ON THE AIR. Seek out stations working just a bit faster than you can copy. Who cares if you have to ask the other station to repeat his or her name?

The code practice available from ARRL bulletin station W1AW is an excellent way in which to determine just how fast you're capable of copying. Use W1AW to measure your progress as you practice. See any recent issue of QST for a code practice schedule.

When you copy at slow speeds, there is a great deal of lost time available. The sending operator must observe the proper spacing between words. A space equal to a dit is required between character components. A space equal to a dah is required between each character and a space equal to three dahs is required between each word. Now that's a lot of time that you can use to your advantage.

At speeds above 15 words per minute, you can watch the receiving operator write down the text in a very jerky fashion. Why? He's trying to follow the sending operator exactly as he is sending. This makes for erratic copy and a lot of stop-and-go writing.

Instead of trying to maintain such a frantic pace, slow down and relax a little. At 15 words per minute, let the first letter go by. Don't write it down the instant you hear it. Jot the first letter as the operator starts to send the second. Don't rush it! You have all the time in the world.

At 20 words per minute, you can afford to let two letters slip by before putting pen to

paper. Why did I say pen? You should copy with some variation of a ball-point or fiber pen. The best pencils have a habit of breaking, especially when you're a little nervous! Try to master long-hand writing rather than printing. It may seem strange at first, but you can copy code much faster in long-hand than you can by printing each individual letter.

At 30 words per minute, experienced operators can copy at least three or four letters behind; many copy a full-word behind. This, however, requires some practice. If you want to reach the 30 word per minute goal, you must learn to copy behind. There's no way you can keep up with the operator letter-for-letter at that speed.

Many years ago, I had the privilege of standing at the side of the legendary T.R. McElroy as he was typing code at 55 words per minute. He was talking to me at the same time. I could hear snatches of words coming from the headphones. I soon realized that he was copying a full sentence behind! Ted, though he is no longer with us, still holds the world record of 78.5 words per minute.

A few years ago I met a young man at the Dayton HamVention who came there with a vowed intention of breaking Ted's record. He claimed to be able to copy at 80 words per minute. I learned later that he didn't make it, but people are out there trying.

After you get your ticket, use anything you wish to copy code, including vibrating rubber bands (whatever it takes). I strongly recommend headphones for any CW enthusiast. The degree of concentration you can achieve with headphones is perhaps 10 times that of copying from a speaker. In addition, when copying from a speaker, the reverberation from walls can make it difficult to hear the code accurately.

Some Final Advice

Here are 10 valuable tips for learning copy code at any speed you wish:

- 1) Relax.
- 2) Learn to copy behind.
- 3) Use long-hand (don't print).
- 4) Use a ball-point pen.
- 5) Write slowly.
- 6) Get on the air.
- 7) Use headphones.
- 8) Practice.
- 9) Practice.
- 10) Practice.

So there you have it—sage advice from a Master Code Slinger! Even though I learned the hard way, and I'm only good to about 30 words per minute, I can vouch for Lee's advice.

Take heed, and keep your cards, photos and letters coming to me at ARRL, Department PCN, 225 Main Street, Newington, CT 06111. ■

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BROADCAST DX'ING

BY ROGER STERCKX, KVT1JH

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

Out In The Cold?: The FCC has started to come to the conclusion that there is an overabundance of FM stations. No doubt the agency has seen the stats showing that well over half the radio broadcasters in this country are operating at a loss.

An FCC license to operate one thing that all American stations need to possess, at least that the government can control. That means, if the agency decided to suspend issuing new broadcast station licenses, no new stations could enter the existing market. This is commonly known as a "license freeze." One already exists in the AM service. Of late, the FCC has been hinting that this might be the time for some sort of freeze in the FM service, too.

In the FM service, specific channels (frequencies) are allocated for use in particular local areas. If a community, for instance, has two FM channels allocated for use there, that is the the maximum number of FM stations that the FCC will allow in that town. If someone wishes to operate another station there, they can try to get the FCC to allocate an additional channel for that community. Some communities don't have their own FM channel allocations because they are served by FM stations in adjacent communities. Sometimes, first allocations are requested for communities that have none.

So, an FM freeze could mean no new station licenses, or it could mean no new frequency allocations. It might mean other things, but these are two possibilities, just in case anything ever comes of this concept.

The National Association of Broadcasters (NAB) suggested that the FCC check deeper into the economic viability (we assume that means honesty, reliability, past



Photo of the KJQI, San Fernando, Calif. (former KGIL) transmitter building, which double as studios for FM'er KMGX, Mission Hills. Photo taken last January. On AM, the station uses the double ID of: "K-Joy AM 540 and 1260." (Photo courtesy Broadcast Pro-File, Hollywood, Calif.)

business dealings, resources, status, and stability) of station applicants before issuing licenses. They would also like to see unused FM channel allocations cancelled, and opportunities offered to existing FM stations to improve their operations. All good ideas.

It's Back!: Thought you had heard the last of *TV Marti*? The USAF balloon that supported the TVM antenna crashed last March. In August they got it back up again. This was no big deal because every time

TVM has operated, Cuba has jammed the station and it seems that it can hardly be seen in Cuba.

During the five months while the TV antenna was out of service, someone in Washington got the idea of beaming the TVM signals into Cuba by satellite. Quite a brainstorm. Don't tell anybody, but it's illegal for Cubans to own satellite dishes.

TVM continues to operate with its new balloon-mounted antenna. Although its antenna deflated, and its signal is jammed,



The old KABC building in Los Angeles, built around 1960. Photo taken last March on the day it was torn down to make more parking space for the new KABC/KLOS facility, nearby. (Photo courtesy Broadcast Pro-File, Hollywood, Calif.)



KABC, Los Angeles: Original core transmitter building, constructed in 1936. The 1960 KABC building enclosed this small cement structure, which caused it to remain hidden until they started taking the newer building down last March. (Photo courtesy Broadcast Pro-File, Hollywood, Calif.)

TVM's funding managed to survive the Washington budget scalpel, unscathed.

Austrian News: In Austria, parliament voted to privatize all of that nation's broadcasting stations. This will allow commercial radio stations to operate there, shortly followed by commercial TV stations.

Children's Satellite Radio: Radio AAHS is the name of a full-time commercial syndicated network aimed at the youth audience. This service is now being broadcast in twelve AM markets. Programming includes talk shows, quiz shows, and educational material—with children as the hosts. Programming is wholesome and non-violent, and is supported by a number of large national corporate advertisers (such as Disney Records, General Mills, Keebler, etc.).

Radio AAHS owns two of the stations running its programs, WWTC, Minneapolis, and KNRB, Dallas.

Swaperoo: Group W and Viacom, two huge companies owning groups of stations, made an interesting swap. Group



WMVY/92.7, Vineyard Haven, Mass., is located on an offshore island. It sends out a big signal that has attracted many loyal listeners scattered over a wide area of the mainland. (Courtesy Jim O'Connell, Worcester, Mass.)

W's two stations in the District of Columbia (WCPT and WCXR-FM), were horse traded for Viacom's two stations in Houston (KIKK-FM/AM). Viacom also got some cash in this arrangement.

By removing formidable competitors from the scene, the new acquisitions will help owners of existing stations in those markets protect their formats and ratings.

Very Jazzy: San Francisco's KJAZ-FM began a national jazz network. KJAZ-FM

has long had a round-the-clock jazz format, and is now making their programs available by satellite. A number of cable TV systems have begun carrying these programs, as is KRML-FM, Carmel, Calif.

Frog In The Throat: Last September a 3 kW station in Erie, Penna. went on the air as WJET, 94.7 MHz. Listeners got to know the station as *Froggy 95*, and the station is thinking of trying to obtain the call letters WFGO, to make a better match with

Applied For New FM Stations

| | | | |
|----|-----------------|-----------|-----------|
| AL | Brewton | 90.9 MHz | 40 kW |
| AR | Mountain Pine | 101.9 MHz | 6 kW |
| CA | Arvin | 92.5 MHz | |
| CA | Cusseta | 103.7 MHz | |
| FL | Flagler Beach | 90.3 MHz | 2 kW |
| FL | Palatka | 91.9 MHz | 3 kW |
| IL | Springfield | 89.7 MHz | 500 watts |
| MD | Leonardtown | 91.7 MHz | 50 kW |
| MI | Oakland | 88.3 MHz | 126 watts |
| MN | Starbuck | 97.3 MHz | 50 kW |
| MN | Starbuck | 106.7 MHz | 50 kW |
| MT | Great Falls | 88.9 MHz | 6 kW |
| OK | Stillwater | 105.5 MHz | 8 kW |
| PR | Guanica | 88.7 MHz | 300 watts |
| TN | Mt. Pleasant | 88.3 MHz | 20 kW |
| TX | Amarillo | 88.3 MHz | 20 kW |
| TX | Big Spring | 94.3 MHz | 20 kW |
| WI | Allouez | 106.7 MHz | 25 kW |
| WI | Iron River | 107.3 MHz | |
| WI | Sheboygan Falls | 106.5 MHz | 6 kW |

Permits Issued To Construct New FM Stations

| | | | |
|----|---------------|-----------|-----------|
| AR | Hardy | 104.7 MHz | 6 kW |
| AS | Fagaitua | 103.1 | 30 kW |
| CA | Columbia | 98.9 MHz | 30 kW |
| CA | Shafter | 90.9 MHz | 50 kW |
| CA | Tulelake | 96.5 MHz | 1.8 kW |
| CO | Silverton | 103.7 MHz | 26 kW |
| KS | Arkansas City | 102.5 MHz | 6 kW |
| KS | Downs | 94.1 MHz | 28 kW |
| MI | Mio | 93.9 MHz | 50 kW |
| MN | St. Joseph | 92.9 MHz | 25 kW |
| MN | Slayton | 103.2 MHz | 3 kW |
| MS | Water Valley | 105.5 MHz | 6 kW |
| NC | St. Pauls | 106.9 MHz | 3 kW |
| OK | Stillwater | 98.1 MHz | 6 kW |
| OR | Rogue River | 94.7 MHz | 130 watts |
| SC | Ladson | 106.3 MHz | 3 kW |
| TN | Dyer | 94.3 MHz | 6 kW |
| TX | Three Rivers | 94.5 MHz | 50 kW |
| VA | New Market | 103.3 MHz | 2.1 kW |
| WA | Castle Rock | 107.1 MHz | 720 watts |
| WI | Birnamwood | 92.9 MHz | 8 kW |
| WI | Wautoma | 92.3 MHz | 3 kW |

Changed FM Call Letters

| New | Was | |
|---------|---------|--------------------|
| KADO | KEZK | New Sharon, IA |
| KAKQ-FM | KAKQ | Fairbanks, AK |
| KAZR | KQEZ-FM | Coolidge, AZ |
| KBCN-FM | KSNE | Marshall, AR |
| KBYB | KBLT | El Dorado, AR |
| KCFN | KZZB | Wickita, KS |
| KCKR | KNFO | Waco, TX |
| KCWN | KADO | New Sharon, IA |
| KKBK | KMXI | Lake Oswego, OR |
| KKDM | KACX | Des Moines, IA |
| KKOT | KWGM | Columbus, NE |
| KKRF | KAGD | Stuart, IA |
| KLKX | KPXD | Rosamond, CA |
| KMKZ | KACL | Lahoma, OK |
| KNFL-FM | KGSC | Tremonton, UT |
| KRNQ | KARP | Hampton, IA |
| KSEK-FM | KYPG | Girard, KS |
| KSGI-FM | KFMD | St. George, UT |
| KUTZ | KLTD | Lampasas, TX |
| KWIC | KESC | Topeka, KS |
| KXTN-FM | KXTN | San Antonio, TX |
| KZAP | KFXS | Red Bluff, CA |
| KZCD | KQLI | Lawton, OK |
| KZZK-FM | KAVE | Creswell, OR |
| WCGX | WGZM | Bassett, VA |
| WDOT | WVZM | Essex, NY |
| WFGE | WSSW | Mackinaw City, MI |
| WFRN-FM | WFRN | Elkhart, IN |
| WGEE-FM | WHET | Sturgeon Bay, WI |
| WGRL | WAJC | Indianapolis, IN |
| WHST | WDBI-FM | Tawas City, MI |
| WJZE | WFUA | Oak Harbor, OH |
| WKGf-FM | WOKD-FM | Arcadia, FL |
| WKQK | WMLL | Wilmington, NC |
| WMGZ | WSKS | Sparta, GA |
| WMTZ | WKQS-FM | Johnstown, PA |
| WOOX | WRAX | Bedford, PA |
| WPBC | WFOV | Pittsfield, ME |
| WSGC-FM | WSGC | Ringgold, GA |
| WTAK-FM | WYAM | Hartselle, AL |
| WTBJ | WADP | Oxford, AL |
| WTPX | WJQY | Ft. Lauderdale, FL |
| WWEE | WJZP | Spencer, TN |
| WYCD | WOWF | Detroit, MI |
| WYFW | WMPS | Winder, GA |
| WZGO | WKXU | Portage, PA |

Applied For New AM Station

| | | | |
|----|--------|----------|----------|
| WA | Blaine | 1600 kHz | 50/10 kW |
|----|--------|----------|----------|

Canceled

| | | | |
|------|-------------------|-----------|-----------|
| KBVC | Buena Vista, CO | 104.1 MHz | 6 kW |
| KMJO | Lewiston, ID | 90.3 MHz | 600 watts |
| WISQ | Neillsville, WI | 92.7 MHz | 3 kW |
| WSRU | Slippery Rock, PA | 90.1 MHz | 109 watts |
| WVPV | Beaver Dam, KY | 102.7 MHz | 2 kW |

Applied To Change AM Facilities

| | | | |
|------|----------------|----------|------------------------------|
| KDQR | Wishek, ND | 1330 kHz | Seeks drop to 253/108 watts. |
| WHOT | Youngstown, OH | 1390 kHz | Seeks increase to 95 kW. |
| WHRT | Hartselle, AL | 860 kHz | Seeks move to 890 kHz, 5 kW. |

Changed AM Facilities

| | | | |
|------|------------------|----------|----------------------------------|
| KAAB | Batesville, AP | 1130 kHz | Added nights, 20 watts. |
| KFFA | Helena, MT | 1360 kHz | Dropped night power to 90 watts. |
| KLTT | Brighton, CO | 800 kHz | Added nights, 200 watts. |
| KQLO | Reno, NV | 920 kHz | Dropped day power to 4.6 kW. |
| KSTB | Breckenridge, TX | 1430 kHz | Operating with 1 kW. |
| WAYC | Bedford, PA | 1310 kHz | Dropped to 2.5 kW. |
| WEXS | Patillas, PR | 610 kHz | Dropped to 250 watts. |
| WJDM | Elizabeth, NJ | 1530 kHz | Increased days to 1 kW. |
| WKKQ | Naswauk, MN | 650 kHz | Increased nights to 1 kW. |
| WVNE | Leicester, MA | 760 kHz | Increased days to 25 kW. |

Applied To Change FM Facilities

| | | | |
|------|-----------------|------------|----------------------------|
| KQEX | Rohnerville, CA | 100.3 MHz | Seeks move to Fortuna, CA. |
| | KZNM | Grants, NM | 97.9 MHz |
| | WERB | Berlin, CT | 103.5 MHz |
| | | | Seeks 94.5 MHz. |
| WPLH | Tifton, GA | 90.5 MHz | Seeks 102.9 MHz. |

Changed FM Facilities

| | | | |
|---------|-----------------|-----------|---------------------|
| KCFS | Sioux Falls, SD | 100.1 MHz | Moved to 94.5 MHz. |
| KTDI | Huntsville, MO | 92.5 MHz | Moved to 103.5 MHz. |
| KZTA-FM | Yakima, WA | 99.3 MHz | Moved to 99.7 MHz. |

Requested Changed AM Call Letters

| Now | Seeks | |
|------|-------|-----------------|
| KJIA | KCGN | Sioux Falls, SD |
| KVAR | KENS | San Antonio, TX |
| WYNX | WAZX | Smyrna, GA |

Requested Changed FM Call Letters

| Now | Seeks | |
|------|---------|-----------------|
| KSXM | KUMA-FM | Pendleton, OR |
| KXMX | KZFO | Madera, CA |
| KZMK | KWCD | Bisbee, AZ |
| WJHT | WBBY | Cedar Bluff, VA |

New FM Call Letters Issued

| | |
|---------|------------------|
| KADO | New Sharon, IA |
| KADU | Hibbing, MN |
| KADX | Houston, AK |
| KAEA | Felton, CA |
| KBTS | Big Spring, TX |
| KFLS-FM | Tulelake, CA |
| KJRT | Amarillo, TX |
| KKJM | St. Joseph, MN |
| KLOD | Shafter, CA |
| KOAS | Andover, KS |
| KWYY | Epworth, IA |
| WADY | Jupiter, FL |
| WAED | Harkers Isl., NC |
| WAEF | Westhampton, NY |
| WAEH | Delhi Hills, OH |
| WAEI | Wautomi, WI |
| WAEJ | Corydon, IN |
| WAEK | Oakland, MN |
| WAEM | Lake Geneva, WI |
| WAEZ | Union Park, FL |
| WNFR | Sandusky, MI |
| WOTC | Edinburg, VA |
| WTRK | Bay City, MI |

Changed AM Call Letters

| New | Was | |
|------|------|----------------------------|
| KBKQ | KBCN | Fairbanks, AK |
| KCPL | KQEU | Olympia, WA |
| KFNS | KEZK | Wood River, IL |
| KGLF | KROB | Robstown, TX |
| KJBO | KMBA | Ranchos de Albuquerque, NM |
| KJMC | KMOO | Mineola, TX |
| KJOE | KJQN | Ogden, UT |
| KNFL | KUFA | Tremonton, UT |
| KOVO | KFMY | Provo, UT |
| KPHN | KSEK | Pittsburg, KS |
| KRBE | KCRR | Houston, TX |
| WCBX | WODY | Bassett, VA |
| WFRN | WCMR | Elkhart, IN |
| WGHT | WKER | Pompton Lakes, NJ |
| WKDV | WPRW | Manassas, VA |
| WMRB | WQZZ | Columbia, TN |
| WMXH | WWAX | Olyphant, PA |
| WNED | WEBR | Buffalo, NY |
| WNTW | WUSQ | Winchester, VA |
| WODX | WMIB | Marco Island, FL |
| WSGC | WQWM | Kaukauna, WI |
| WVNF | WAZK | Alpharetta, GA |
| WWLT | WWXL | Manchester, KY |
| WZOU | WKZN | Lewiston, ME |

Call Letters Rescinded

| | |
|------|-------------------|
| KADT | Crystal Beach, TX |
|------|-------------------|

this name. *Froggy* is a trademarked name used by a dozen or so stations around the nation. These stations all play oldies or country music, and the use of the name in Erie was by arrangement with its owners.

Thanks to Don Brown, of Albion, Penna., for this item.

Hot Time in The Old Town: Memphis AM'er WNWZ had more excitement than it needed. In August '92, the station claims it entered into an arrangement with radio minister Rev. Thaddeus Mathews. For \$7,500 per month, WNWZ agreed to allow Mathews the use of its facilities and its signals. Although Mathews fronted \$5,000 on the arrangement, the station com-

plained that by the start of 1993, he was \$19,000 behind in his payments.

On behalf of WNWZ's licensees, the station manager disabled the transmitter by removing its crystal. Mathews said he would pay the monies by the end of January, so the transmitter was put back in service.

When the scheduled payment was not made, the manager went back to pull the transmitter crystal. This time there were new locks on the station doors, and armed guards. The manager was nevertheless able to slog through a swamp one night in order to short circuit the antenna transmission cable to again take WNWZ off the air.

Soon enough, WNWZ had been jury

rigged back on the air. Mathews, in addition, had gone bankrupt. This meant that all of his assets were beyond being attached. He was physically entrenched in the studios, and there wasn't going to be any legal way of getting him out for months.

Eventually, a court order was obtained that demanded Mathews leave the WNWZ facilities. More than 100 of his friends and followers showed up to help him move from the station. The police SWAT team also showed up, since the crowd was large and angry. It had taken until June for WNWZ's licensee to regain control and possession of his station and facilities.

Fine With Them: The FCC fined

WTMM (ex-WANT, ex-WTMZ). Richmond, Va., \$12,000 for "willful and repeated violation of the Commission's Rules relating to the Marking and Lighting of Antenna Structures."

KKIS/KKIS-FM, Pittsburg, Calif., received a \$25,000 fine and a short-term renewal for "Equal Employment Opportunities (EEO) violations."

Additionally, in the KKIS/KKIS-FM matter, the FCC "imposed reporting conditions to ensure better record-keeping and to encourage more meaningful self-assessment by the stations."

Two For One: George Munsch, W5VPQ, of San Antonio, notes that San Antonio's WOAI is one of those rare western stations having a "W" callsign. For many years it was clear channel on 1200 kHz, but now it is doubly unusual because it has a second channel, 760 kHz. He wonders about how this came about, and if it is unique.

We assume that WOAI purchased the facilities of 50 kW station KSJL/760. This would have been possible under the FCC's recently changed rules allowing several AM and FM stations per market to be owned by a single licensee, with FCC authority to use one callsign on several frequencies. This is used in several cities now and isn't unique to WOAI.

Calling for Calls: The FCC's Reference Center has assumed the responsibility for responding to all general information inquiries on broadcast callsign availability. The phone number for this is (202) 634-1923.

The Mass Media Bureau continues to respond to status inquiries and requests for information on callsign assignments requirements and procedures. Their new phone number for information on the status of pending requests is (202) 634-1513. Persons visiting the FCC in person to obtain callsign information should see Dianne Beverly, Room 230. *Changes Made Easier:* The FCC changed its rules to allow FM licensees and permittees to request by application upgrades on adjacent and co-channels, modifications to adjacent channels of the same class, and downgrades to adjacent channels. This has been a two-step process, but has now been simplified so that only an application needs to be filed. The previous "petition for rulemaking" step has been dropped. Stations needing further information on this, contact Victoria M. McCauley, FCC Mass Media Bureau, at (202) 634-6530.

Employment Line: The FCC's 1988-1992 minority and female employment trend reports for the broadcast (and cable) industries is available. The data is compiled from material submitted by broadcasters and cable operators, showing composition of their staffs by gender, race, and/or national origin. Copies may be purchased from International Transcript Services, (202) 857-3800. Complete reports may be inspected at the FCC Library in Washington, DC. For more information, call the

FCC's EEO Branch at (202) 632-7069.

Lookee: Broadcast Pro-File, P.O. Box 982, Hollywood, Calif. 90078-0982, provided us with several photos of broadcast-related subjects that dramatically show the changing face of broadcasting. This material is greatly appreciated, and of significant interest.

Broadcast Pro-File offered comments on remarks made here about how some broadcasters change callsigns each time they switch program formats. They cited the example of an FM station in Hanford, Calif. that went on the air in September,

1976 as KKYS with an Adult MOR format. The one station subsequently evolved into: KLTK (Lite Rock); KCLQ (Classic Rock); KZZF (Z-Rock); KMMA (Soft Rock); KCML (Country Camel); and presently KMPH-FM (All News). The KMMA identity lasted only from April to October of 1991!

Looks like Santa is getting ready to climb down the antenna tower and into the studio here. That means it's time to shut down the power for now. While we're at it, we'll can the chatter until next time. Hope you can be with us then. Pass along what you have. ■



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Aug. 21, 1987

Wilson Antenna Company Inc.
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Henderson, Nevada 89015

Subject: Comparative Gain Testing of Citizen's Band Antennas
Ref: Rye Canyon Antenna Lab File #870529

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| FREQUENCY (MHZ) | RELATIVE GAIN (dB) | RELATIVE POWER GAIN (%) |
|-----------------|--------------------|-------------------------|
| 26.965 | 1.30 | 35 |
| 27.015 | 1.30 | 35 |
| 27.065 | 1.45 | 40 |
| 27.115 | 1.60 | 45 |
| 27.165 | 1.50 | 41 |
| 27.215 | 1.60 | 45 |
| 27.265 | 1.75 | 50 |
| 27.315 | 1.95 | 57 |
| 27.365 | 2.00 | 58 |
| 27.405 | 2.00 | 58 |

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What Makes A Good Shortwave Broadcaster Good? And Who Is The Best?

Every so often, an obscure SWL club will make a bid for recognition by sponsoring a "listeners' poll" to determine the "popularity" of various international shortwave broadcasters. A couple of international broadcasters hungry for any sort of recognition will publicize the poll (and the club) through their DX or mailbag programs, and soon both the stations and the club will be "winners" of a sort—the stations get to be winners in the popularity poll and the SWL club gets some terrific free publicity.

As you might expect, I don't think a lot of such listeners' polls. It seems ridiculous that anyone would consider a couple of hundred responses indicative of how popular different stations are around the world. But such polls aren't entirely worthless, for they did get me thinking about just what makes a station popular—in other words, what makes a good shortwave broadcaster good?

Somebody has to answer that question. I volunteer. I'll look at some of the factors that I think are important in making a good shortwave broadcaster, and—in one of the periodic fits of hubris I'm prone to—I'll hand out my own awards, the "Harries," for those stations that meet my criteria.

This should be interesting—hold on! (Just remember that I'm talking about shortwave broadcasters people listen to on a regular basis, like the BBC, instead of DX targets.)

Technical Stuff

If a station expects people to listen on a regular basis, a good signal is a necessity. Straining to pull a weak signal out of the noise is part of the fun of DXing, but it's a drag when you're listening to a station for entertainment or information. But a good signal involves more than just a powerful transmitter.

It helps if a station is within "single hop" propagation of its intended listening audience (for most POP COMM readers, that's North America). Each time a signal is refracted by the ionosphere, fading and distortion increase. A signal that needs only one refraction to reach its target will be more steady and less prone to distortion because of fading. That's why Radio Nederland uses a relay site on Bonaire for most of its North American programs, and why the BBC and Deutsche Welle share a relay facility on the island of Antigua. Other na-



Radio Nederland sweeps the "Harries" by acquiring honors for technical excellence programming and listener relations.

tions are doing the same; for example, Spanish National Radio is in the process of readying a major facility in Costa Rica.

Just having a relay site isn't enough. The link between the station's studio and the relay site must be clean and reliable. Back when Radio Beijing first put its Mali relay on the air in 1987, the link between Beijing and Mali was a real horror show even though it was via satellite. The downlink receiver at Mali was apparently subject to drift. As a result, sometimes the Radio Beijing signal faded into the noise in the middle of a program while the carrier remained strong and steady; you could even listen to the downlink signal float in and out of the receiver's bandpass. Things have improved since then in Mali, and fortunately most major international broadcasters have quiet, solid links between their studios and relay sites. A handful, however, still use the util-

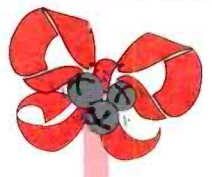
ity bands to send their signals, usually in SSB, to their relay sites. Such on-the-air relays are subject to fading and interference like all other shortwave signals, meaning the relay site also retransmits the fading and interference!

Signals also need to be well modulated and free of the hum, noise, and other crud caused by transmitter defects and design shortcomings. Radio Moscow has long been mandatory listening for anyone seriously interested in international affairs, but most of their transmitters have been plagued by what is known among SWLs as "Moscow modulation." Radio Moscow often sounds "muddy" and many of their transmitters have an annoying AC hum in the background. Radio Moscow's problems can be excused as just another example of how Russia is still struggling to overcome the damage left by the Soviet economy.



TUCKER

ELECTRONICS & COMPUTERS



Tired of Silent Nights? Listen to the bells of Christmas around the world!

Sony ICF-SW77 World Band Receiver \$369

Sony's premiere shortwave radio eliminates the biggest problems of shortwave listening: fading and distortion. Its revolutionary synchronous detection circuitry compensates for the characteristic fading of the SWL bands and leaves the most pleasant audio quality of any radio on the market. The PLL-controlled 10-key direct access tuning covers 1 to 30 MHz as well as FM stereo. Programming your favorite stations is easy with 162 station memory preset tuning. Other features include built-in dual time clock with alarm and sleep function, programmable timer with tape record-out jack and backlit LCD readout with contrast adjustment plus more. Accessories include: AC power adapter, stereo headphones, carrying belt, compact shortwave antenna, external antenna connector and complete shortwave guides.



Icom R-71A \$1059 Communications Receiver

This receiver covers the entire spectrum from 100 kHz to 30 MHz and is as professional in performance as they come. The latest Icom receiver performance features such as passband tuning and that excellent Icom clean receiver feel. That receiver performance is what separates this radio from its competitors. 96 dB dynamic range and 60 dB image rejection are just examples of its excellent performance in this area. Features are too numerous to list but include 32 memories, 2 VFOs, optional computer interface and 3 selectable filters.



Sony ICF-SW30 World Band Receiver \$99

This new compact receiver from Sony features coverage of 10 shortwave bands as well as AM broadcast and FM stereo. You get expensive features such as digital tuning, 15 memory presets and 1 kHz tuning steps for a low price. A dual-function (world and local time display) alarm clock and sleep timers are also included. This one is great as a travel radio or as an introduction to shortwave listening. Measures 6 3/4" x 4 3/8" x 1 7/16". Uses 3 "AA" batteries or optional AC adapter.



Sony ICF-2010 \$347 World Band Receiver

The 2010 is the world's best-selling shortwave radio, and for good reason. This radio introduced the synchronous-detector circuit that revolutionized shortwave-listening. Full-band AM/FM/aircraft band coverage with 32 memory presets. Includes the world's most accurate tuning system with direct-entry as well as tuning knob convenience. Also includes a 24 hour alarm clock with sleep timer and programmable turn-on. This radio is regarded by all leading authorities as the best portable on the market. Includes earphone, AC adapter and external antenna adapter.

Sony ICF-SW55 World Band Receiver \$339

Travel the world with Sony's ICF-SW-55 World Band radio. It's the ideal radio for business travelers, hobbyists or anyone living a long way from their homeland. It comes factory-programmed with 20 worldwide broadcasting stations covering 60 frequencies, tuning them in is about as simple as pressing a button. Plus, you can program in your own favorite stations. The built-in clock lets you check the time around the world, functions as an alarm and sleep timer and even turns on automatically at a preset hour and station. Handsomely packed in a hard carrying case, the ICF-SW55 comes with all necessary accessories plus information-packed shortwave reference guides.



MFJ-1020A SWL Indoor Antenna \$74 With free AC adapter!

Now you'll rival or exceed the reception of outside long wires with this tuned indoor active antenna. WORLD RADIO TV HANDBOOK says it is "the best offering to date... performs very well indeed". Tuned circuitry minimizes intermod. Improves selectivity, reduces noise outside the tuned band. Use as preselector with external antenna. 0.3 to 30 MHz. Tune, Band, Gain. On-Off/Bypass Controls. Use 9V battery or AC adapter. 5" X 2" X 6". Telescoping whip.



Bearcat 8500 XLT 500 Channel Scanner-With 800 MHz! \$375

Without a doubt, this is the premier scanner on the market today. It features coverage from 25 MHz to 1.3 GHz* in 500 channels. 20 banks store these channels and your 20 most important channels can be designated as priority channels. The exclusive dot matrix-alpha numeric illuminated display allows you to program in the name of the station (Dallas Police for example) on the screen for easy identification of each channel. All of the great features of the 890 XLT are also included such as a VFO knob, weather search, turbo scan, weather alert, selectable scan delay, reception counter and step select. If you want the best, get an 8500 XLT today! * Cellular blocked-modify-able.

Bearcat BC 890 XLT 200 Channel Scanner-With 800 MHz! \$275

This new item from Bearcat has continuous frequency coverage through 956 MHz* with 200 channels of action in 10 banks! The turbo scan feature lets you zip through the channels in lightning speed. 10 priority channels let you scan important frequencies every 2 seconds. It even includes a VFO knob for up-down frequency control. Other features include weather search, auxiliary tape output, weather alert, illuminated LCD display, reception counter, and step select. Frequency Range of 25 to 956 MHz. * Cellular blocked-modify-able.



Sony AN-1 \$99 LW/SW/MW Wide-Range Antenna

For those that want a larger antenna, the AN-1 provides a low noise/wide dynamic range FET RF amplifier and compact AC/DC operation. It is waterproof for outdoor use and covers 150 kHz to 30 MHz. Sony's best active antenna.

Bearcat 200 XLT 200 Channel Portable Scanner-With 800 MHz! \$237

The 200 XLT 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 bands of coverage including aircraft and 800 MHz. It also includes Weather Search, 10 Priority channels, squelch, lockout and delay. It features automatic and manual band search to find new active frequencies. Requires 6-AA size NiCad Batteries, 7.2 VDC or 13.8 VDC external or 120 VAC adapter, 30 minute internal capacitor memory back-up. Frequency Range of 29.0 to 54 MHz, 118 to 174 MHz, 406 to 512 MHz, 806 to 954 MHz.



Icom R100 All-Band Mobile Communications Receiver \$639

If you want the best in a mobile communications receiver, the Icom-R100 fits the bill! It covers 500 kHz to 1800 MHz continuously (no gaps) with AM, FM and wide-FM modes. You can directly enter any frequency from the keyboard, tune frequencies from the VFO knob, or let your R100 search any range of frequencies you specify. Store up to 100 of your favorite frequencies into the IC-R100's memory channels with receive mode, RF attenuator and preamplifier settings. Scanning is just as simple, with 7 different scan modes to choose from! Other great features include a 24 hour system clock, 15 dB pre-amplifier, multiple selectable tuning steps, automatic noise limiter and even an optional AC adapter for fixed-station use! Comes complete with mobile mounting bracket, DC power cable, wire antenna and telescopic antenna.



Icom R-1 \$479

The R-1 is the ultimate hand-held communications receiver! It covers 100 kHz to 1300 MHz continuously with AM, FM and wide FM modes. Features include: 100 memory channels, several scanning modes, sleep timer, low battery indicator, and several battery power options. Comes complete with wall charger, flexible antenna and belt clip. Measures only 1.9" x 4" x 1.4" and weighs only 9.9 oz.



AEA-FAX II Multi-Mode Receiving System \$99

With the new AEA-FAX II, receiving WEFAX images and wire photos, Morse code, RTTY and NAVTEX transmissions couldn't be easier. Simply plug in the supplied interface to your PC compatible computer's serial port, connect the other end to any HF receiver's headphone or speaker output and go! The supplied software will display up to 16 levels of gray with a VGA monitor and even allow you to keep a fax-station database to keep a log of stations heard. It supports COM ports 1-4 and will even allow you to use a serial device on the same port! Start seeing what you've been missing - order an AEA-FAX II today!



Icom IC-R7100 \$1309 VHF/UHF Communications Receiver

This is our best communications receiver for the 25 to 2000 kHz spectrum. It features continuous coverage in this spectrum with all-mode (SSB, AM, FM, and WFM) capability and receiver specs that no "scanner" can touch. This is truly the receiver for professional monitoring. 900 memory channels store frequency, mode and tuning steps and can be scanned in 7 different ways including the Icom-exclusive window scan which allows you to scan 2 frequency ranges at once! Other features include selectable tuning steps, noise blanker, computer control option, easy-to-read S-meter, 2 Squelch modes, a TV broadcast reception option and much, much more! Step up to the best with an Icom R7100!

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POP'COMM's World Band

Tuning Tips

December—1993

| Freq. | Station/Country | UTC | Notes | Freq. | Station/Country | UTC | Notes |
|-------|------------------------------------|------|--------------|-------|--------------------------------|--------------|--------------|
| 2410 | R. Enga, Papua New Guinea | 1100 | Pidgin | 6060 | R. Uhnverso, Brazil | 0700 | PP |
| 3200 | R. 9 de Abril, Bolivia | 0100 | SS | 6075 | R. Super, Colombia | 1000 | SS |
| 3215 | R. Oranje, South Africa | 0300 | EE/Afk | 6075 | Deutsche Welle, Germany | 0030 | |
| 3220 | HCJB, Ecuador | 0400 | SS | 6080 | R. Australia | 0830 | |
| 3250 | R. Luz y Vida, Honduras | 0200 | | 6100 | Deutsche Welle, Germany | 0400 | GG |
| 3255 | BBC Lesotho Relay | 0300 | | 6120 | R. Japan | 1130 | via Canada |
| 3270 | Namibian Bc Corporation | 0300 | | 6130 | CHNX, Canada | 0900 | |
| 3275 | R. So. Highlands, Papua New Guinea | 1100 | | 6135 | Swiss Radio Int'l | 0230 | |
| 3280 | LV del Napo, Ecuador | 0305 | SS, close | 6150 | AWR, Costa Rica | 1000 | |
| 3300 | R. Cultural, Guatemala | 0200 | | 6160 | R. Malargue, Argentina | 1000 | SS |
| 3316 | SLBS, Sierra Leone | 0600 | | 6165 | Swiss R. Int'l | 0600 | |
| 3320 | R. Suid Afrika, S. Africa | 0400 | | 6180 | Radio Havana Cuba | 0130 | SS |
| 3335 | R. E. Sepik, Papua New Guinea | 1000 | | 6185 | R. Educacion, Mexico | 1000 | |
| 3356 | R. Botswana | 0300 | | 6205 | R. Quisqueya, Dominican Rep. | 0230 | SS |
| 3365 | R. Rebelde, Cuba | 0300 | SS | 6220 | R. Bulgaria | 0430 | s/on |
| 3366 | GBC, Ghana | 0600 | | 6245 | Vatican Radio | 0640 | |
| 3375 | R. Nacional, Brazil | 0930 | PP | 6280 | King of Hope, Lebanon | 0500 | |
| 3477 | R. Padilla, Bolivia | 0130 | SS | 6571 | R. Tacna, Peru | 0030 | SS |
| 3925 | R. Tanpa, Japan | 0930 | JJ | 7105 | REE, Spain | 0430 | SS |
| 4000 | R. Cameroon, Bafoussam | 0430 | FF | 7125 | RTV Guinea | 0700 | FF |
| 4450 | R. Frontera, Bolivia | 1100 | SS | 7125 | Italian R. Relay Service | 0630 | |
| 4474 | R. Movima, Bolivia | 0000 | SS | 7150 | R. Vilnius, Lithuania | 0000 | |
| 4485 | R. Tikhii Okean, Russia | 1200 | RR | 7170 | Voice of America | 0500 | |
| 4552 | Rdf. Tropico, Bolivia | 1000 | SS | 7185 | ORTS, Senegal | 0100 | s/off, vern. |
| 4753 | RRI, Ujang Pandang, Indonesia | 1100 | II | 7195 | R. Ukraine Int'l | 0100 | |
| 4755 | Educadora Rural, Brazil | 0230 | PP | 7210 | AWR, Italy | 0800 | |
| 4759 | R. Tingo Maria, Peru | 1030 | SS | 7215 | R. Norway | 0500 | NN |
| 4765 | RTVC, Congo | 0355 | s/on, FF | 7225 | R. Bulgaria | 0100 | |
| 4770 | R. Centinela del Sur, Ecuador | 0230 | SS | 7240 | Radio Ukraine Int'l | 0000 | |
| 4770 | Mundial Bolivar, Venezuela | 0230 | SS | 7250 | Vatican Radio | 0600, //6245 | |
| 4785 | Ecos del Combeima, Colombia | 1000 | SS | 7255 | V of Nigeria | 0500 | |
| 4800 | R. Popular, Ecuador | 0200 | SS | 7260 | R. Netherlands via Russia | 1327 | s/on, Dutch |
| 4805 | Rdf. Amazonas, Brazil | 1000 | PP | 7265 | Sudwestfunk, Germany | 2200 | GG |
| 4825 | R. Cancao Nova, Brazil | 0500 | PP | 7285 | RT Malienne, Mali | 0700 | FF |
| 4830 | R. Tachira, Venezuela | 0200 | SS | 7290 | TWR, Swaziland | 0255 | s/on |
| 4835 | R. Tezulutlan, Guatemala | 100 | SS | 7315 | R. Free Croatia, via WHRI | 0100v | |
| 4845 | R. K'ekchi, Guatemala | 0100 | vern. | 7375 | R. For Peace Int'l, Costa Rica | 0000, (USB) | |
| 4855 | R. Aruana, Brazil | 0000 | PP | 7395 | WRNO | 0330 | |
| 4865 | Gansu PBS, China | 1200 | CC | 7415 | Voice of America, Morocco | 0430 | |
| 4870 | ORTB, Benin | 0500 | FF | 7475 | RTT Tunisienne, Tunisia | 0500 | AA |
| 4875 | Super R. Roraima, Brazil | 0000 | PP | 7580 | R. Pyongyang, N. Korea | 0900 | JJ |
| 4885 | R. Clube do Para, Brazil | 0100 | PP | 9022 | VOIRI, Iran | 0030 | EE |
| 4890 | NBC, Papua New Guinea | 1100 | EE/pidgin | 9165 | R. Omdurman, Sudan | 0255 | sign on, AA |
| 4915 | R. Cora, Peru | 1030 | SS | 9275 | Icelandic State BC | 2300 | Icelandic |
| 4915 | Armonias del Caqueta, Colombia | 0100 | SS | 9420 | Voice of Greece | 0130 | GG/EE |
| 4920 | R. Quito, Ecuador | 0200 | SS | 9425 | Monitor Radio, Saipan | 1300 | |
| 4932 | RRI Surabaya, Indonesia | 1200 | II | 9445 | Voice of Turkey | 2330 | TT |
| 4935 | R. Tropical, Peru | 1000 | SS | 9475 | R. Cairo, Egypt | 0200 | |
| 4940 | R. Ukraine | 0500 | Ukrainian | 9480 | TWR, Monaco | 0730 | |
| 4970 | R. Rumbos, Venezuela | 0200 | SS | 9485 | R. Prague, Czech Republic | 0000 | |
| 4980 | Ecos del Torbes, Venezuela | 0300 | ss | 9495 | Radio France Int'l | 2030 | FF |
| 4985 | R. Brazil Central | 0100 | PP | 9510 | R. New Zealand | 0930 | |
| 4996 | R. Andina, Peru | 1030 | SS | 9510 | R. Havana Cuba | 0600 | |
| 5010 | R. Garoua, Cameroon | 0600 | FF | 9525 | R. Marti, USA | 2300 | SS |
| 5015 | R. Brazil Tropical, Brazil | 0700 | PP | 9535 | Swiss Radio Int'l | 0700 | |
| 5020 | Solomon Is. Bc. Corp. | 0730 | | 9540 | R. Educadora Bahia, Brazil | 0900 | PP |
| 5025 | R. Rebelde, Cuba | 0100 | SS | 9545 | Solomon Is. Bc Corp. | 0700 | |
| 5030 | R. Continente, Venezuela | 0330 | SS | 9560 | Radio Finland | 0300 | |
| 5035 | R. Aparecida, Brazil | 0200 | PP | 9560 | V of Ethiopia | 1300 | Amharic |
| 5045 | R. Cultura do Para | 0800 | PP | 9570 | R. Portugal | 0230 | |
| 5047 | RTV Togolaise | 0524 | s/on, FF | 9570 | R. Romania Int'l | 0230 | |
| 5055 | TIFC, Costa Rica | 0300 | | 9575 | Radio Medi Un, Morocco | 0730 | FF |
| 5075 | Caracol Bogota, Colombia | 0400 | SS | 9575 | RAI, Italy | 0100 | |
| 5260 | Kazakh Radio, Kazakhstan | 0030 | unknown lang | 9580 | R. Tirana, Albania | 0230 | |
| 5882 | Vatican Radio | 0030 | Italian | 9600 | HCJB, Ecuador | 0600 | GG |
| 5920 | Croatian Radio | 0030 | | 9605 | UAE Radio, Abu Dhabi | 2200 | s/on |
| 5930 | Slovak Radio | 0100 | | 9615 | KNLS, Alaska | 0800, | s/on, CC |
| 5955 | R. Cultural, Guatemala | 0900 | SS | 9615 | R. Veritas Asia, Philippines | 1500 | CC |
| 5960 | R. Japan, via Canada | 0100 | | 9625 | CBC Northern Service, Canada | 0300 | |
| 5975 | BBC via Antigua | 0200 | | 9630 | R. Aparecida, Brazil | 2300 | PP |
| 5980 | R. Ropa Info, Czech Rep. | 0300 | s/on, GG | 9640 | Ecos del Torbes, Venezuela | 1100 | SS |
| 6010 | R. Mil, Mexico | 1100 | SS | 9645 | R. Bandeirantes, Brazil | 0000 | PP |
| 6020 | R. Australia | 1030 | Pidgin | 9650 | Swiss Radio Int'l | 0000 | |
| 6045 | R. Melodia, Colombia | 1000 | SS | 9655 | R. Norway Int'l | 2300 | Sun/EE |
| 6050 | HCJB, Ecuador | 0700 | pp | 9660 | R. Rumbos, Venezuela | 0230 | SS |

| Freq. | Station/Country | UTC | Notes | Freq. | Station/Country | UTC | Notes |
|-------|-------------------------------|--------|------------|--------|--------------------------------|------|------------|
| 9690 | China Radio Int'l, via Spain | 0300 | | 13685 | Swiss R. Int'l | 0700 | |
| 9695 | R. Sweden | 0200 | | 13700 | R. Netherlands via Kazakhstan | 0130 | |
| 9700 | R. New Zealand | 1030 | | 13750 | AWR Latin America, Costa Rica | 1200 | s/on |
| 9705 | R. Portugal | 0230 | | 13755 | R. Australia | 1200 | |
| 9715 | Radio France Int'l | 0130 | FF | 13785 | R. Pyongyang, N. Korea | 1500 | |
| 9725 | AWR, Costa Rica | 1100 | | 13830 | Croatian Radio | 2100 | |
| 9740 | BBC via Singapore | 1400 | | 15090 | Vatican Radio | 2245 | s/ori |
| 9745 | HCJB, Ecuador | 0730 | | 15095 | R. Damascus, Syria | 2100 | |
| 9750 | R. Korea, So. Korea | 1200 | | 15100 | FEBC, Philippines | 1400 | EE, others |
| 9750 | R. Canada Int'l | 0530 | | 15110 | REE, Spain, via Costa Rica | 1900 | |
| 9765 | R. Moscow | 0530 | | 15120 | R. New Zealand Int'l | 0200 | |
| 9770 | China Radio Int'l, via Mali | 0000 | | 15140 | R. Nacional, Chile | 0100 | SS |
| 9785 | KTWR, Guam | 1330 | CC | 15165 | R. Tashkent, Uzbekistan | 1300 | local |
| 9790 | R. France Int'l | 0130 | FF | 15175v | Radio Tahiti | 0500 | FF/TT |
| 9815 | Radio Havana Cuba | 0200 | USB | 15185 | R. Finland Int'l | 2300 | |
| 9830 | Croatian Radio | 0700 | Croatian | 15185 | R. Str Centre, Russia | 1530 | EE/RR |
| 9835 | R. Budapest, Hungary | 0200 | | 15210 | China Radio Int'l | 1200 | |
| 9840 | R. Kuwait | 2100 | AA | 15240 | Voice of Azerbaijan | 1700 | |
| 9845 | FEBC, Philippines | 1600 | | 15250 | VOA via Sri Lanka | 0200 | |
| 9870 | BSKSA, Saudi Arabia | 2030 | AA | 15260 | VOIRI, Iran | 0030 | |
| 9880 | China Radio Int'l | 2200 | via Russia | 15270 | HCJB, Ecuador | 0730 | |
| 9885 | Swiss Radio Int'l | 0200 | | 15305 | UAE Radio, Abu Dhabi | 2200 | |
| 9930 | R. Vlianderen Int'l, Belgium | 0030 | | 15320 | UAE Radio, Dubai | 1630 | |
| 9955 | R. Miami Int'l | due on | | 15325 | R. Japan via Fr. Guiana | 0300 | EE |
| 9977 | R. Pyongyang, N. Korea | 1100 | | 15345 | RAE, Argentina | 0200 | SS |
| 10030 | R. Cario, Egypt | 2130 | AA | 15345 | RTM, Morocco | 1400 | Berber |
| 10234 | RAI, Italy, feeder | 0100 | II | 15385 | R. Yerevan, Armenia | 2245 | |
| 10330 | All India Radio, Bombay | 1330 | | 15360 | BBC via Singapore | 1230 | CC |
| 11430 | Spanish National Radio | 2330 | SS, USB | 15365 | R. Australia | 0100 | |
| 11587 | Kol Israel | 2030 | FF | 15410 | VOA, Morocco relay | 2200 | close |
| 11620 | All India Radio | 2000 | | 15415 | Libyan Jamahiriya Broadcasting | 1500 | AA |
| 11625 | Vatican Radio | 0630 | | 15425 | Sri Lanka Bc Corp | 0130 | |
| 11645 | Voice of Greece | 1600 | Greek | 15425 | ABC, Perth, Australia | 0400 | |
| 11650 | KFBS, Saipan | 1000 | RR | 15445 | Radio Nacional, Brazil | 1245 | EE |
| 11690 | FEBC, Philippines | 0900 | | 15470 | R. Tashkent, Uzbekistan | 1200 | |
| 11705 | VOA, Thailand | 1400 | | 15475 | Africa Number One, Gabon | 2100 | FF |
| 11705 | R. Sweden | 2330 | | 15505 | Swiss Radio Int'l | 1500 | |
| 11710 | RAE, Argentina | 0100 | | 15505 | R. Kuwait | 2245 | AA |
| 11715 | KJES, New Mexico | 1300 | s/on | 15555 | R. Pakistan | 1600 | |
| 11720 | R. Bulgaria | 0400 | | 15570 | R. Ukraine Int'l | 1500 | |
| 11725 | R. Korea, S. Korea | 1000 | SS | 15575 | R. Korea, S. Korea | 0030 | |
| 11740 | Vatican Radio | 0700 | | 15635 | V of Greece | 1230 | |
| 11740 | R. Moscow | 0800 | | 15640 | Kol Israel | 1400 | |
| 11745 | Channel Africa, S. Africa | 0200 | | 15770 | INBS, Iceland | 1430 | Icelandic |
| 11750 | R. Vilnius, Lithuania | 2300 | | 17440 | R. Kiribati | 0600 | |
| 11755 | R. Finland Int'l | 0130 | | 17500 | RTT Tunisienne, Tunisia | 1400 | AA |
| 11790 | R. Yerevan, Armenia | 0245 | | 17515 | R. Vlianderen Int'l, Belgium | 1600 | |
| 11795 | UAE Radio, Dubai | 1600 | | 17550 | Vatican Radio | 1230 | RR |
| 11795 | Deutsche Welle via Rwanda | 0200 | GG | 17575 | Kol Israel | 1700 | |
| 11800 | SLBC, Sri Lanka | 0045 | | 17595 | R. Cairo, Egypt | 1200 | |
| 11805 | Iraqi Radio | 2100 | EE | 17575 | R. France Int'l | 1230 | EE |
| 11805 | R. Globo, Brazil | 0830 | PP | 17630 | Africa No. One, Gabon | 1430 | FF |
| 11815 | Polish Radio Warsaw | 1245 | GG | 17605 | R. Alma Ata, Kazakhstan | 1830 | |
| 11820 | R. Sweden | 0100 | | 17655 | R. Netherlands via Bonaire | 1730 | s/on |
| 11827 | R. Tahiti | 0300 | FF/TT | 17670 | R. Cairo | 1700 | Urd |
| 11835 | HCJB, Ecuador | 0700 | | 17690 | R. Ukraine Int'l | 0100 | |
| 11835 | R. El Espectador, Uruguay | 2330 | SS | 17705 | R. Havana Cuba | 2130 | SS |
| 11840 | R. Japan | 1100 | JJ | 17720 | R. Romania Int'l | 1430 | |
| 11870 | R. Yugoslavia | 0040 | | 17740 | R. Yugoslavia | 1200 | |
| 11880 | R. Galaxy, Russia | 2100 | | 17745 | R. Algiers, Algeria | 1930 | |
| 11880 | R. Australia | 1600 | | 17750 | Voice of Free China, Taiwan | 2200 | |
| 11885 | UAE Radio, Abu Dhabi | 2330 | | 17760 | R. Havana Cuba | 2030 | FF |
| 11890 | R. Oman | 2100 | AA | 17770 | R. New Zealand Int'l | 0300 | |
| 11905 | R. Universo, Brazil | 0700 | PP | 17790 | Radio Norway Int'l | 1900 | |
| 11920 | RT Marocaine, Morocco | 2000 | FF | 17810 | Deutsche Welle via Antigua | 2000 | GG |
| 11925 | R. Canada Int'l | 0400 | | 17840 | Radio Australia | 0500 | |
| 11940 | R. Encarnacion, Paraguay | 0830 | SS | 17850 | R. France Int'l | 1600 | |
| 11960 | RTV Malienne, Mali | 0900 | FF | 17870 | R. Sweden | 1500 | |
| 11970 | R. Havana Cuba | 0130 | | 17875 | R. Canada Int'l | 2030 | |
| 11980 | AWR/KSDA, Guam | 1600 | | 17880 | R. Finland Int'l | 1300 | |
| 11985 | UAE Radio, Dubai | 2100 | AA | 17890 | Spanish National Radio | 2130 | SS |
| 11995 | R. Sweden | 2200 | | 17900 | R. Portugal | 2000 | PP |
| 12005 | R. Netherlands | 1210 | unid lang | 17940 | R. Iraq Int'l | 2330 | |
| 12035 | Spanish National Radio | 1130 | SS | 21455 | R. Canada Int'l | 1345 | |
| 12050 | R. Cairo, Egypt | 0300 | AA | 21500 | BSKSA, Saudi Arabia | 1600 | AA |
| 12065 | R. Netherlands via Bonaire | 1100 | | 21520 | R. Pakistan | 1100 | |
| 12070 | Australian Armed Forces Radio | 1230 | | 21545 | R. Canada Int'l | 1500 | |
| 12984 | VNG, Australia | 1100 | time sigs | 21550 | R. Finland Int'l | 1430 | |
| 13605 | Radio Australia | 1200 | | 21605 | R. Yugoslavia | 1230 | |
| 13620 | R. Kuwait | 2000 | | 21625 | Radio Sweden | 1330 | |
| 13625 | KHBI, Saipan | 1200 | | 21655 | R. Portugal | 1830 | PP |
| 13635 | Swiss Radio Int'l | 2130 | | 21675 | R. Kuwait | 1500 | AA |
| 13650 | R. Canada Int'l | 2030 | | 21700 | Radio Japan, via Gabon | 1600 | JJ |
| 13655 | R. Vlianderen Int'l, Belgium | 2300 | Dutch | 21820 | Swiss Radio Int'l | 1500 | |
| 13660 | R. Havana Cuba | 0200 | USB, EE | 25740 | Deutsche Welle, Germany | 1300 | GG |
| 13675 | UAE Radio, Dubai | 1630 | | | | | |

However, there's no excuse for the spurious radiations and broadband noise been produced by some stations, particularly in the 41-meter band at night. (Listeners who tune for pirates around 7415 kHz have been especially bothered by this.) Such noise and crud is not the result of crude, antiquated transmitters, but is instead produced by the digital frequency synthesis circuitry of modern transmitters. Some of the newer American shortwave broadcasters are among the worst offenders in this regard.

Timing It Right

I'm always surprised when an international service refuses to schedule its programs at a time when most people in its target area are able to listen. Israel has long been bad about this. At the time this column was written, Kol Israel had broadcasts for North America scheduled at such times as 1700 and 1900 UTC. At those times during the week, most potential North American listeners will either be at work or in school and thus unable to listen. Other nations, like Greece and Italy, often fall into this trap for listeners not located in the eastern part of North America.

Content Counts!

In my *Shortwave Listening Guide-*

book, I wrote that I often got the feeling that many international shortwave broadcasters were directing their programming more toward the funding authorities in their country instead of foreign audiences. The result is that a lot of what you hear on shortwave is just not that interesting unless you already have some interest in or connection to the broadcasting country.

By making this criticism, I am not saying that shortwave broadcasters should be imitations of domestic AM and FM broadcasters in the United States and Canada. However, shortwave broadcasters should provide context and background so that foreign listeners can better understand the programs. It's annoying to listen to endless recitations of economic statistics or reports on strangely-named political parties *and not have any idea what it all means*. For example, suppose cobalt production is down 5% in a country. Too many shortwave stations will report that fact and move on to the next news item. I'm always curious about the "why" behind statistics and facts. Was cobalt production down because of a strike? Weakened world demand? Because the country is running out of cobalt? Is cobalt production expected to go up or down next year? What effect will this have on the country? Maybe everybody in the country where cobalt production is down

5% knows the answers to such questions, but that's not true of listeners on the other side of the world. But too many international broadcasters don't offer that sort of background and context so foreign listeners can better understand the country and why certain things are important to it. Without that, it's difficult to give a damn about a country's cobalt production.

It's also helpful if an international broadcaster knows enough about its target countries to draw useful analogies for its intended listeners. In the United States and Canada, everybody knows what the Super Bowl, World Series, and Stanley Cup are and recognizes them as symbols of excellence and achievement. Drawing parallels between them and events in the broadcaster's country would really help American and Canadian listeners understand the significance and impact of such events.

Most SWLs will tell you that content is the most important factor in whether they are regular listeners to a station. Listeners will put up with almost anything but lousy programs. If a station has something interesting to say, listeners will seek that station out no matter how weak its signal or if it ignores all listener correspondence. If the content is lousy (like that of the old Radio Tirana), then the station will have a tough time attracting listeners no matter how

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many QSL cards it sends out or how strong its signal is.

Listeners???

Who Needs Listeners???

I get the feeling that some international broadcasters consider listeners to be a big pain. Listeners write letters, they expect answers, they want to drop in the studio when they visit the country....

Some broadcasters, like Radio Finland, have discontinued sending QSL cards because, as they put it, the practice takes time and money away from the task of producing programs—yet these people do take the time and money to send a letter explaining how they don't QSL! Others have moved in the direction of issuing QSLs only once or twice a year. There are even some SWLs who agree with these moves, on the theory we should be listening to stations for their programming and not just to get a QSL.

Count me as a curmudgeon on this point—I think how well a station responds to reception reports and other listener mail is important. Sure, it's a pain for a major international broadcaster to have to respond to reception reports they don't need—something tells me the BBC or Deutsche Welle don't need another report from Chicago or Seattle to let them know they're heard well throughout North America! Yet the BBC and Deutsche Welle manage to find the time to send at least an "acknowledgment card," if not a *bona fide* QSL with all data, to everyone who sends in a reception report. Sometimes the BBC and Deutsche Welle send out full data QSLs (this is especially true for special occasions or reports directly to relay transmitter sites, like the BBC station in Hong Kong). Other goodies, like station pennants, are also sent out from time to time by the BBC and Deutsche Welle. The BBC and Deutsche Welle are world-class broadcasters by any standard, and their efforts to maintain relations with listeners haven't hampered their programs one bit.

When stations like the BBC and Deutsche Welle take the time to respond to reception reports and other listener mail, they're making it clear that they care about their listeners and those that take the time and trouble to write, even if it's just to get another QSL card for their collection. By contrast, stations like Radio Finland seem downright churlish when they can take the time to send a letter explaining they no longer verify reception reports instead of sending out a no-data QSL card—both actions, after all, take the same amount of time and money. And I think the sort of intellectual vanity and smugness stations like Radio Finland exhibit in their QSL policies shows up in their programs, turning off listeners. Both the BBC and Deutsche Welle are favorites around the world; many of you are fans of one or both stations. But how many fans of Radio Finland do you know? And

if Radio Finland left the air tonight, would you care? Or would you even notice until POP'COMM reported the news?

And The Winners Are...

The first (and probably last) "Harry" winners for technical excellence go to Radio Nederland, the BBC, Deutsche Welle, and the Voice of America. The "Harry" winners for programming are the BBC, Radio Nederland, Deutsche Welle, and Radio

Moscow. And the "Harries" for listener relations go to the BBC, Deutsche Welle, Radio Nederland, Radio Sweden, and Radio Japan.

And the "Harry" award for best all-around international broadcaster goes to...the BBC, with Deutsche Welle a close second.

You say you don't agree with my selections? Hey, just keep one thing in mind...*he's just some doofus who writes for a magazine—what does he know?* ■



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The Realistic TRC-437 (Cat. 21-1553) is a rather low-priced mobile CB radio that is worth keeping in mind. At \$59.95, it offers a fine opportunity to pick up a reliable stand-by or back-up radio. Think about its gift possibilities as a great starter CB radio for someone who would enjoy a decent radio, and much more than one without all the bells and whistles.

The TRC-437 is far from skimpy or barebones. It has an ANL, an LED channel indicator, T/R lights, and a remote speaker jack. It's only about 1" by 4" by 6" (HWD), and that makes it suitable for installation anywhere from the basket of a bike to the visor of a 'Vette, and all points between.

A Bomb

Sets like Brownings and Trams may be considered *great* only by virtue of being compared with other CB radios of the same era. Many CB radios were good, some were just adequate. A couple were real bombs. Every set couldn't be a winner, and this month we will take a brief look at one of those losers.

That CB radio was the Burstein-Applebee BA-23. It was produced in the mid-1960's for sale by the Burstein-Applebee Co., of Kansas City, Missouri, who sold it through their catalog.

The radio was a big, ugly, rectangular box having sharp corners. The cheapest stock knobs available were used. Hard to believe that the set itself could actually be worse than its tacky exterior. But it was.

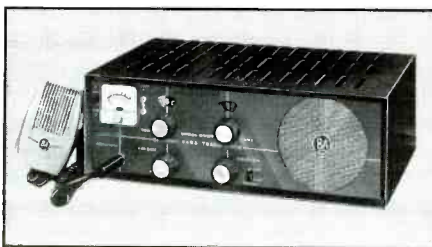
The panel meter had a plastic faceplate people claimed would fall off even if they looked at it. There were internal crystals to provide for three transmit channels, plus a front-panel socket to plug in one external transmit crystal. The single conversion receiver was tunable. It had push-to-talk, and a squelch. A crystal spotter feature (common on many sets) put a low level signal into the set's tunable receiver to indicate the exact location of the set's transmitting frequency.

To be concise, the BA-23 didn't put out such a good signal into the airwaves, either. Also, it had feeble modulation, and a tinny sounding speaker. What was worse, the receiver simultaneously picked up signals from three channels.

People who turned up on the channels using these didn't have to tell what they were. The sets were said to be instantly recognizable because of their distinctively lousy signal and sound. Good for a couple of laughs at the expense of the poor soul who had just put one on the air.

Helping Out

A clipping from *The Western Star*, of



You might think that there couldn't be anything more awful than the BA-23's looks. There was! The set's performance was much worse.



Realistic TRC-437 is a inexpensive mobile CB that offers basic features.

Corner Brook, Newfoundland, Canada, was passed along to us by John J. Dawe, SSB Network member SSB-53L, of Pasadena, Nfld.

This tells how the Road Alert group has merged with an emergency task force in an effort to increase monitoring efficiency for road emergencies on the Trans-Canada Highway. The highway is heavily used by truckers.

Road Alert is an independent, not-for-profit organization. The head of the organization is Larry Bennett, of Stephenville.

The Road Alert group monitors CB Channel 1, which is in use on the TCH.

Looking For Something

One of our readers is trying to locate and buy old portable power packs for CB radios. He describes what he wants as a case, battery pack, and telescoping whip (with

loading coil). You could place a small mobile CB radio in it. Radio Shack used to sell one for its Mini-23, but many models were made for different radios.

If you have anything like this kicking around, please contact Dave Strom, 12419 Benfield Ave., Norwalk, CA 90650.

Taking a Wrath

The Honolulu, Hawaii FCC office sent a Notice of Apparent Liability (NAL), which means a fine, for \$2,000 to David Ching, of Honolulu. This was because done because the FCC claimed that Ching was operating on CB Channel 11 with non-type accepted equipment, and running too much power.

The Denver, Colorado FCC office sent an NAL for \$3,500 to Mike L. Gouze, Albuquerque, New Mexico for being what the FCC termed an "out of band CB opera-

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Grupo Internacional "Os Amigos" (GIA), of Neuilly-Sur-Marine, France, has this attractive QSL. It was sent to us by "Dakota," 14-GIA-321.

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tor," for claiming he had been operating an unauthorized radio station, and for failure to allow an inspection.

CB Harmonics

Too bad that some TV channels bear a harmonic relationship to the CB band. TV channels particularly related in this manner are 2, 5, and 9. The second and third CB harmonics fall into the lower TV channels (54-60 MHz; 76-82 MHz; and 82-88 MHz). The 7th CB harmonic plops down smack into the higher TV channels (186 to 192 MHz).

The possible effect of this relationship and the interference it might cause to TV reception depends upon several factors. These include:

1. The intensity of the harmonic radiation. Generally speaking, the higher the harmonic, the weaker it will most likely be.

2. The distance between the CB and TV antennas, the directional heading of either/both antennas, and the strength of the TV channel being received.

Radiation of harmonics is against FCC regulations. A properly operating modern CB radio should not normally produce harmonics. Yet, it does happen. TV interference from CB transmissions that appears only on certain TV channels, such as 2, 5, and, 9, can be guessed at with some certainty as resulting from the unwanted radiation of harmonics from the CB set.

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The strength of the harmonic radiation can be greatly attenuated (that is, reduced) by placing a low pass filter between the transceiver's antenna connection and the antenna.

Specialized units are made that do not attenuate the 27 MHz CB signals, but greatly attenuates and harmonics of 27 MHz. A typical low pass CB filter might attenuate the second harmonic by 80 dB, which should be sufficient to end virtually every problem.

The best way to install the low pass filter is to connect one side of it to the CB

rig directly by using a double male coaxial barrel. An SWR meter, antenna matcher, switches, etc., should be between the filter and the antenna. If it isn't possible to connect the filter directly to the CB with a barrel, then use a short piece of coax (4" or less). Ground the low pass filter with heavy copper wire, as short a length as possible. A ground to a cold water pipe or radiator should suffice.

These steps should end any harmonics coming out of the antenna, Chassis radiation could still be a factor with which to contend, but that would only be noticed if the



This QSL from the Lebanon DX Group (LBN), of Beirut, was submitted by Norm, of Calgary, Alberta, Canada.

CB radio and the TV receiver are being operated at the same time very close to one another, which isn't too likely.

Many CB, ham, and communications specialty suppliers carry low pass filters designed for CB use. They are inexpensive.

TV interference from CB transmissions that appears on all TV channels is most likely caused by front end overload. This means that because the CB radio is so close to the TV set, the 27 MHz CB signals are nevertheless relatively strong enough to saturate the front end of the TV receiver, even though it's tuned above 54 MHz. A low pass filter probably can't help in this instance. But then, it surely couldn't hurt, either.


Question of the Month

P.B.W., of Tennessee, came up with the question of the month. This reader said that by using a CB radio and a communications receiver at each end of the contact, full duplex CB has been tried utilizing two channels. P.B.W. asked if we knew if this was within the FCC regulations.

To be quite candid, P.B., after quickly flipping through the CB regulations, I didn't see any specific prohibition against either full duplex operation or the use of two channels at a time for an exchange of a series of communications. This isn't to say that something isn't buried away in an obscure corner, or covered by some broadly general regulation that prohibits everything

DIVISION: 33 TO RADIO

| MHZ | DAY | MONTH | YEAR | MODE | RST | GMT |
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QSL.....

Brian, 33-AT-110, of Chuathgaiuk, Alaska, submitted this interesting Gruppo Radio Italia (AT) QSL.

not actually mentioned as being allowed.

That's beside the point. I would estimate this to easily be the most awful scheme submitted here in many years, even though some real doozies have come across this desk. If this idea isn't against any FCC regulation, then it should be. On CB, it's pointless, needless, and a total waste of our limited channel space.

Didn't have the heart to run P.B.W.'s full name or hometown. We shared his brainstorm with you this month in the spirit of the season, since it's as nutty as the very best holiday fruitcake.

With that, we will hope your holiday is the best ever. May you deck your halls with CB stations, and make DX friends in many nations!

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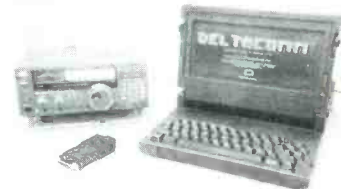
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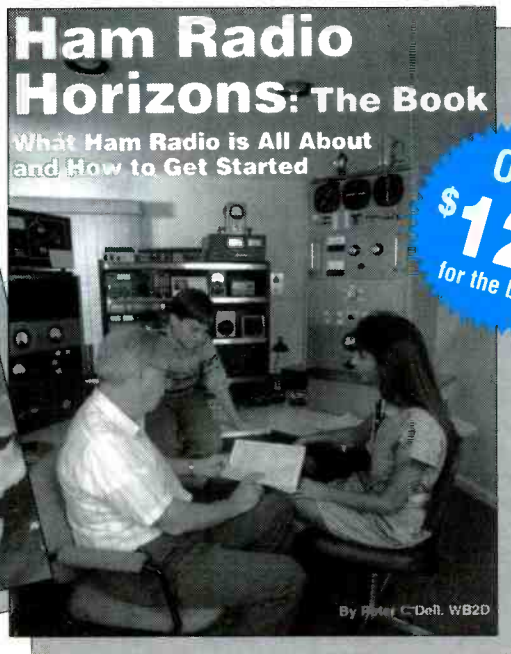
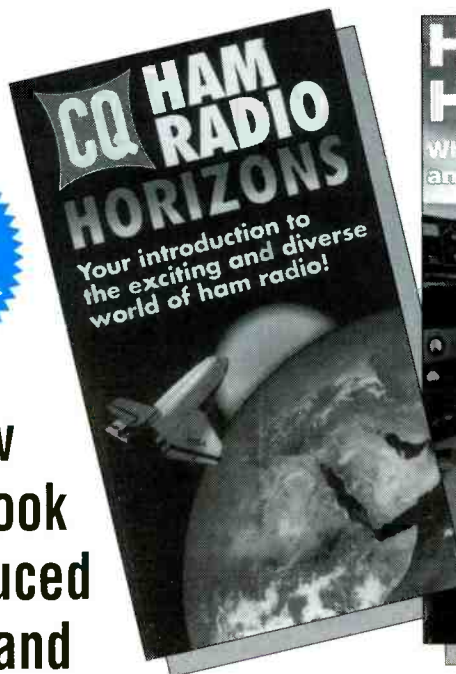
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The winter months turn our interests toward winter monitoring, and if the weather cooperates (or doesn't), there will be plenty to hear. Be sure you have lined up all the frequencies you need to monitor in the event of a winter weather emergency. You'll want to be able to hear not only snowplows, but perhaps also tow trucks, auto clubs, traffic reporters, as well as private plow operators that use business band frequencies. Typically, these plow operators are construction firms or towing outfits that equip their biggest trucks with plows for winter weather and go out and clean out contracted parking lots and drives, as well as highways in some states, when the snow starts falling.

Manfred Vives of Trumbull, Connecticut, says that he lives in the busiest section of Connecticut, the southwest. He says that the monitoring is never the same from one day to the next and that almost all bands are used for routine communications. Manfred, registered monitor KCT1EH, uses a Realistic Pro-2006 and Uniden Bearcat 205XLT for his monitoring. Here is a list of frequencies active in his area: 154.725, Bridgeport police dispatch; 155.430, Bridgeport police info; 154.100, Bridgeport police detectives; 153.770, Bridgeport fire; 463.575, Bridgeport EMS; 857.2625, Trumbull police; 33.56, Trumbull fire; 155.805, Trumbull EMS.

Some other frequencies of note in Connecticut, Manfred says are the four frequencies the 12 state police troops share for coordination: 42.04, 42.36, 42.48, 42.52. In addition, 45.86 is a county hotline channel that troops use to contact area towns.

Medical control throughout Connecticut uses 462.950 and 462.975. The state's Lifestar medical helicopter uses 155.385 while in the air. Lastly, Manfred says the tower at Bridgeport Airport uses 120.900 and 121.900. Thanks for sharing a great list of frequencies, Manfred.

Klaus Spies of Niles, Illinois, notes that WWV's transmissions on shortwave and the National Weather Service's broadcasts on the 162-MHz band are perhaps the two most-often heard stations. Klaus says that he occasionally hears weather stations from other states when there is a band opening on VHF high band. He says that he'd like to get addresses for those other weather stations so he could perhaps obtain QSLs for his monitoring efforts, but doesn't know where to turn for the information. The first place you should check is your local library. The library might have a copy of a directory of government offices. Lacking that, you could easily check telephone directories for the city you are looking and examine the government listings for the National Weather Service. If you are lucky, there will be a street address shown. For what it's



This is the comfortable monitoring post of Dave Richter of Burlington, Ontario. His scanning equipment includes a Realistic Pro-2009. A tape recorder and shortwave receiver round out his shack.

worth, most weather service offices seem to be located at larger airports. Don't try to get a listing from the National Weather Service's headquarters, though: I spent the better part of a morning being transferred from one office to another, and not a soul was willing to help me. You also might try calling the local federal government information number in most larger cities. If anyone has a better idea, please let us know here at POP'COMM.

Jeff E. Howell, an EMT and employee of the Sheriff's Department in Floyd County, Indiana, sends in a list of frequencies for his area: 155.610, Floyd County Sheriff's Department dispatch; 155.850, Floyd County sheriff tactical; 464.525, Floyd County Jail; 462.050, Floyd County/City Building Authority; 155.010, New Albany police dispatch; 159.210, New Albany police tactical; 155.370, police point-to-point; 155.475, Indiana Law Enforcement Emergency Network (ILEEN); 42.42, Indiana State Police base to car; 42.26, Indiana State Police car to base; 42.12, Indiana State Police car to car; 42.160, Indiana State Police tactical/special operations; 159.240, Indiana Department of Natural Resources system common; 159.465, Indiana Department of Natural Resources law enforcement; 155.220 and 155.160, Special Medical Agencies Response Teams (SMART); 155.340, Indiana Hospital Emergency Radio Network (IHERN).

Jeff is also seeking additional information on the radio system used by the Indiana Department of Natural Resources. He says that the agency only seems to use two of seven licensed frequencies. He's curious as to what frequency might be used for what, where repeater sites are located, etc. If you have any information, please forward it to this column.

Jerry Horne of Franklin, Tennessee, says

he enjoys this column and likes to listen to his modified Uniden Bearcat 200XLT handheld. Jerry says Franklin police use 460.175 for dispatch and 460.400 for mutual aid. He also reports hearing under-cover operations and bugs on 460.0125. That's a good place to look for surveillance activities if police in your area use UHF: Check the "splinter" frequencies between normal channels on UHF. For instance, check frequencies such as 460.0125, 460.0375, 460.0625, 460.0875, etc. Power on these channels is restricted to 2 watts, so handheld radios typically will be used—probably in your own neighborhood!

Sid Scholes of Evanston, Illinois, says that he is waiting for a book on railroad frequencies to be delivered from a retailer, but was curious as to what frequencies might be used by railroads. He's heard that railroads have both short-distance and long-distance communications, and that is correct. Railroads usually use remote transmitters along rail lines to keep in touch with trains while they are traveling in certain areas. These remote transmitters usually operate on designated road channels and can be activated by dispatchers either by microwave or telephone lines. This allows rail crews to have constant contact with their dispatchers no matter where they are. Some railroad communications, such as those in a rail yard, are short distance by their very nature, and don't need to transmit over a wide area. In many areas of the United States, railroads will operate private telephone systems on dedicated frequencies so rail crews can make telephone calls over their radios. If you want to know where to look for railroad communications, all you have to do is search in 15-kHz steps in the following range: 160.215 to 161.565. There also are some 12.5-kHz channels on UHF from 452.3125 to 452.4875 and

452.7625 to 452.9625. Likewise, the accompanying "input" frequencies 5 MHz higher also may be used for inputs or mobile communications. In fact, on UHF you'll probably find data tones as trains pass by. These tones are transmitted by radio boxes installed on the last car of a train to send signals to the crew in the locomotive. The rear-end detectors have replaced the caoose of the past.

Dave Richter of Burlington, Ontario, writes with some updates from his city: Burlington transit has moved off 462.7375 onto a new 800 MHz trunked system. The Burlington Fire Department is issuing the new trunked system on the following frequencies: 861.2625, 861.525, 861.7625, 862.0125 and 862.2625. Fire paging is on 154.205, while the ambulance service in Ontario for Burlington and Oakville uses 143.370.

Dave also passes along a couple of stinky frequencies: Skunks are being studied for the spread of rabies in the Scarborough, Ontario, area. The skunks have been outfitted with low-power collar transmitters that operate on these frequencies? 151.025, 151.145, 151.155, 151.165 and 151.175. I'm not sure I would want to catch any action on these frequencies, especially if one of those animals decided to approach my listening post! Dave says that the signal from the skunks can be heard better if your scanner has a BFO switch. For the record, Dave monitors with the following: Realistic

Pro-2009 scanner, Pro-36 and a Venturer multiband for shortwave listening.

Paul Toth of Tuscola, Illinois, says that he completed two and a half weeks of training for the Illinois Army National Guard earlier this year at Camp Grayling in Michigan. As a squad leader in a mortar platoon, he was responsible for monitoring many different radio nets. He notes that these frequencies don't seem to change from year to year, so he's passing them along in the hopes that others might catch some of the action.

Paul says that his platoon's fire direction center spoke with the forward observers on the following frequencies: 36.35, 34.60, 33.75, 31.40, 31.00, 30.40 and 30.20. The following frequencies were used at the company, battalion and brigade level: 34.00, 35.45, 34.25, 30.60, 34.60, 36.35, 31.65, 34.45, 41.50, 40.65, 38.85, 41.40, 40.40 and 38.65.

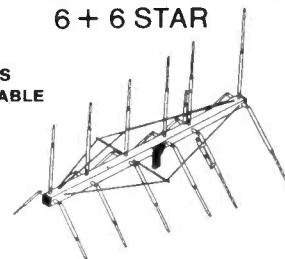
He adds that his battalion also is capable of operating on HF frequencies: 2.2565, 4.8685 and 16.3385 MHz. Additionally, Camp Grayling uses 42.00 and 41.80 for range control, fire detection and medevac procedures. Thanks for the great report on National Guard frequencies.

What questions do you have? Would you mind sharing some of your favorite frequencies with our readers? How about a photo of your monitoring post? Write to: Chuck Gysi, N2DUP, Scanning VHF/UHF, Popular Communications, 76 N. Broadway, Hicksville, N.Y. 11801-2909. ■

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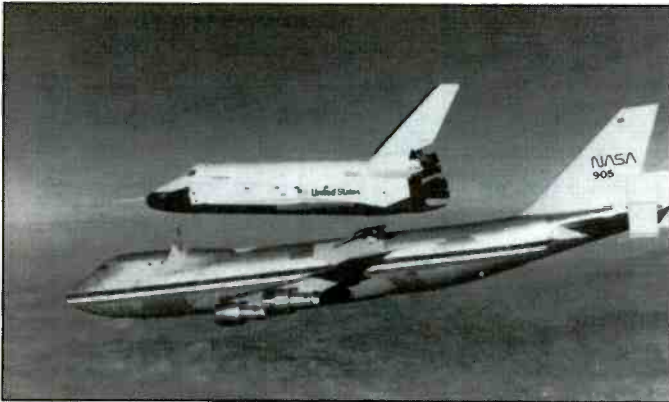
SATELLITE VIEW

BY DONALD E. DICKERSON, N9CUE

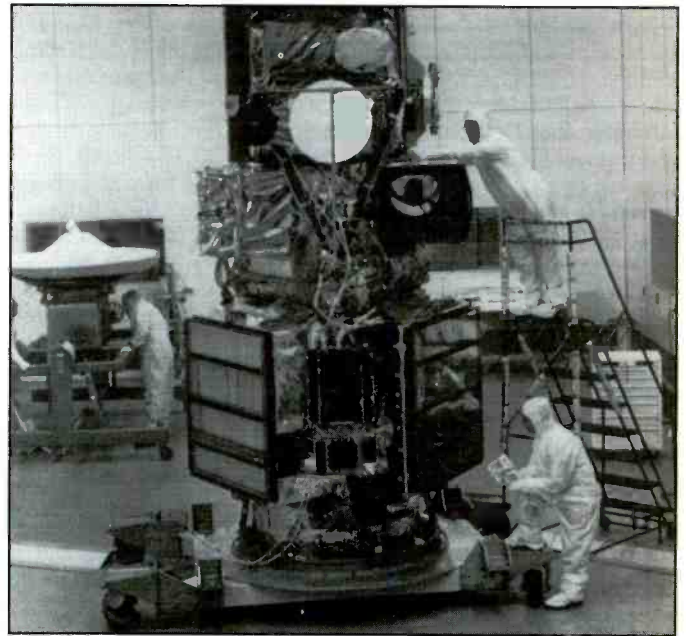
INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

Space Log

There are times when the satellite sleuth needs a handy reference for specific satellite frequencies. That is why I have put together this month's space log. A list of operational satellites listed by frequency. You will also find what I hope will be useful information on each satellite. It's name, orbit, location, use, etc. Who knows, this could become an end-of-the-year tradition here at Satellite View



The \$55 million plus shuttle carrier by Boeing. (Courtesy of NASA.)



The Landsat remote imaging spacecraft. (Courtesy of NASA.)

| FREQ | SAT | TYPE | ORBIT/LOC | INCL | MODE |
|-----------------|-------------|-------------|-----------------|-------|------------|
| 29.357 MHz | RS-10 | AMATEUR | POLAR | 83° | CW |
| 29.360-400 MHz | RS-10 | AMATEUR | POLAR | 83° | SSB/CW |
| 29.403 MHz | RS-10 | AMATEUR | POLAR | 83° | CW |
| 29.407 MHz | RS-11 | AMATEUR | POLAR | 83° | CW |
| 29.408 MHz | RS-12 | AMATEUR | POLAR | 83° | CW |
| 29.410-450 MHz | RS-11/12 | AMATEUR | POLAR | 83° | SSB/CW |
| 29.453 MHz | RS-11 | AMATEUR | POLAR | 83° | CW |
| 29.454 MHz | RS-12 | AMATEUR | POLAR | 83° | CW |
| 29.458 MHz | RS-13 | AMATEUR | POLAR | 83° | CW |
| 29.460-500 MHz | RS-13 | AMATEUR | POLAR | 83° | CW |
| 29.504 MHz | RS-13 | AMATEUR | POLAR | 83° | CW |
| 121.750 MHz | SOYUZ-TM | MANNED | ECCENTRIC | | FM/VOICE |
| 136.110 MHz | MOS-1/2 | WxSat | SUN-SYNC | 99° | FAX |
| 136.370 MHz | ATS-3 | NASA-EXP | GEO 105 W | 12° | VARIOUS |
| 136.380 MHz | GOES 1/2/3 | WxSat | GEO 81/68/175 W | | APT |
| 136.650 MHz | TRANSIT | NAVSAT | POLAR | 89.7° | DATA |
| 136.770 MHz | NOAA-11 | WxSat | SUN-SUNC | 99° | APT |
| 136.860 MHz | IUE | EXP | LEO | 33° | |
| 137.050 MHz | METEOSAT 1 | WxSat | SUN-SUNC | 72° | APT |
| 137.076 MHz | METEOSAT 2 | WxSat | SUN-SUNC | 72.5° | APT |
| 137.080 MHz | METEOSAT 3 | WxSat | SUN-SUNC | 72.8° | APT |
| 137.170 MHz | MARECS A/B | COMSAT | GEO 228 | 5.7° | VOICE/DATA |
| 137.300 MHz | METEOR3-4 | WxSat | POLAR | 82° | APT |
| 137.400 | OKEAN | OBSERVATION | | 82° | |
| 137.450 MHz | INTERCOSMOS | | | | |
| 137.500 MHz | NOAA 10/12 | WxSat | SUN-SYNC | 98.5° | APT |
| 137.626 MHz | NOAA 9/11 | WxSat | SUN-SYNC | 99.5° | APT |
| 137.795 MHz | FENGYUN | | POLAR | 99° | APT |
| 137.850 MHz | METEOR2-10 | WxSat | SUN-SYNC | 82° | APT |
| 142.417 MHz | SOYUZ | MANNED | ECCENTRIC | | FM/VOICE |
| 143.625 MHz | MIR | MANNED | LEO | 51° | FM/VOICE |
| 145.550 MHz | SHUTTLE/MIR | MANNED | LEO | | FM/VOICE |
| 145.825 MHz | OSCAR13 | AMATEUR | ELLIPTICAL | 56.8° | CW |
| 145.825 MHz | UOSAT11 | AMATEUR | POLAR | 97° | DATA |
| 145.825-975 MHz | OSCAR13 | AMATEUR | POLAR | 97° | DATA |
| 145.852-932 MHz | RS-14 | AMATEUR | POLAR | 82° | FM/PACSAT |
| 145.857 MHz | RS-10 | AMATEUR | POLAR | 82° | CW |
| 145.860-900 MHz | RS-10 | AMATEUR | POLAR | 82° | SSB/CW |
| 145.862 MHz | OSCAR13 | AMATEUR | POLAR | 56.8° | CW |

| FREQ | SAT | TYPE | ORBIT/LOC | INCL | MODE |
|---------------------|------------|------------|-------------|------|------------|
| 145.866-946 MHz | RS-14 | AMATEUR | POLAR | 82° | PACKET |
| 145.903 MHz | RS-10 | AMATEUR | POLAR | 82° | CW |
| 145.907 MHz | RS-11 | AMATEUR | POLAR | 82° | CW |
| 145.908 MHz | RS-13 | AMATEUR | POLAR | 82° | CW |
| 145.910-950 MHz | RS-10/12 | AMATEUR | POLAR | 82° | SSB/CW |
| 145.912 MHz | RS-12/13 | AMATEUR | POLAR | 82° | CW |
| 145.953 MHz | RS-11 | AMATEUR | POLAR | 82° | CW |
| 145.958 MHz | RS-12 | AMATEUR | POLAR | 82° | CW |
| 145.960-999 MHz | RS-13 | AMATEUR | POLAR | 82° | CW |
| 145.987 MHz | RS-14 | AMATEUR | POLAR | 82° | FM/VOICE |
| 149.900-150.000 MHz | NAVSATS | US/RUSSIAN | LEO | | |
| 153.4-.7 MHz | SPYSATS | RUSSIAN | LEO | | CW |
| 166.000 MHz | PROGRESS | SUPPLYSHIP | ECCENTRIC | | TLM |
| 180.000 MHz | KOSMOS1870 | SCIENCE | | | TLM |
| 231.500 MHz | RESURS | SCIENCE | | | TLM |
| 243.1-.9 MHz | SDS | SPYSAT | ELLIPTICAL | | RELAY |
| 243-244.0 MHz | FLTSAT | NAVY/AF | GEO VARIOUS | | FM & DATA |
| 248-250.0 MHz | LESAT | MILITARY | GEO VARIOUS | | FM & DATA |
| 259.700 MHz | SHUTTLE | NASA | ECCENTRIC | | VOICE/FM |
| 251-269.0 MHz | FLTSAT | NAVY/AF | GEO | | FM & DATA |
| 279.000 MHz | SHUTTLE | NASA | ECCENTRIC | | VOICE/FM |
| 292-317.0 MHz | FLTSAT | NAVY/AF | GEO | | UPLINK |
| 296.800 MHz | SHUTTLE | NASA | ECCENTRIC | | VOICE/FM |
| 324-345.0 MHz | NAVY | EXP | VARIOUS | | VARIOUS |
| 360-370.0 MHz | NASA | EXP | VARIOUS | | VARIOUS |
| 370-375.0 MHz | AF | EW | VARIOUS | | |
| 375-400.0 MHz | SKYNET | NATO | GEO | | VOICE/DATA |
| 400.000 MHz | NAVSAT | US/RUSSIAN | POLAR | 90° | TLM |
| 400-401.0 MHz | VARIOUS | EXP | | | |
| 401-401.5 MHz | DOD | WxSat | POLAR | 90° | DATA |
| 401.5-403 MHz | DCS | COMSAT | GEO | | |
| 406-425 MHz | VARIOUS | DOD/EXP | | | |
| 428.010 MHz | UO-22 | COMM/AMA | POLAR | 90° | DATA |
| 429.985 MHz | UO-22 | COMM/AMA | POLAR | 90° | DATA |
| 435.022-102 MHz | RS-14 | AMATEUR | POLAR | 90° | CW/PACKET |
| 435.025 MHz | UO-11 | MEDICAL | POLAR | 90° | DATA |
| 435.070 MHz | UO-14 | MEDICAL | POLAR | 90° | DATA |
| 435.175 MHz | KO-23 | AMATEUR | POLAR | 90° | DATA |
| 435.651 | OSCAR13 | AMATEUR | ELLIPTICAL | 56° | CW/PACKET |

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| FREQ | SAT | TYPE | ORBIT/LOC | INCL | MODE |
|-------------------|----------|-------------------|------------|------|------------|
| 435.675 MHz | RS-14 | AMATEUR | POLAR | 82° | |
| 435.677 MHz | RS-14 | AMATEUR | POLAR | 82° | RUDAK |
| 435.715-999 MHz | OSCAR13 | AMATEUR | ELLIPTICAL | 56° | CW/SSB |
| 435.795 MHz | FO-20 | AMATEUR | POLAR | | CW |
| 435.800-900 MHz | FO-20 | AMATEUR | POLAR | | CW/SSB |
| 435.940-990 MHz | OSCAR13 | AMATEUR | ELLIPTICAL | 56° | CW/SSB/PAC |
| 437.025 MHz | OSCAR 16 | AMATEUR | POLAR | | PSK/SSB |
| 437.075 MHz | OSCAR 18 | AMATEUR | POLAR | | PSK/SSB |
| 437.153 MHz | OSCAR19 | AMATEUR | POLAR | | PSK/SSB |
| 468-469 MHz | VARIOUS | WxSat | GEO | | FAX/APT |
| 480.015 MHz | FENGYUN | | GEO | | DATA |
| 702-726 MHz | EKRAN | TV/RUSSIAN | GEO | | TV/TELECOM |
| 800-1,000 MHz | MOLNIYA | MIL/RUSSIAN | ELLIPTICAL | | VOICE DATA |
| | | | | | VOICE DATA |
| 920-975 MHz | VARIOUS | DEEP SPACE PROBES | ECCENTRIC | | DATA |
| 1.225-1.270 GHz | GLONASS | NAVSAT | ECCENTRIC | | DATA |
| 1225.0-1270.0 MHz | GLONASS | NAVSAT | | | DATA |
| 1227.6 MHz | GPS | NAVSAT | | | DATA |
| 1575.4 MHz | GPS | NAVSAT | | | DATA |
| 1544.5 MHz | SARSAT | SEARCH & RESCUE | | | DATA |
| 1535-1542 MHz | INTELSAT | MARINE | GEO | | VOICE/DATA |
| 1545-1559 MHz | MSAT | MOBILE | GEO | | VOICE/DATA |
| 1603-1636 MHz | GLONASS | NAVSAT | | | DATA |
| 1614 MHz | GOES | WxSat | GEO | | TLM |
| 1675.92 MHz | METEOR | WxSat | GEO | | FAX |
| 1691.0 MHz | GOES | WxSat | GEO | | FAX |
| 1694.0 MHz | METEOSAT | WxSat | GEO | | FAX |
| 1698.0 MHz | NOAA8 | WxSat | SUN-SUNC | | APT |
| 1695.5 MHz | FENGYUN | | | | |
| 1702.5 MHz | NOAA9 | WxSat | SYN-SYNC | | APT |
| 2035.9 MHz | SHUTTLE | MANNED | LEO | | TDRS |
| 2060.3 MHz | SHUTTLE | MANNED | LEO | | TLM |
| 2201.4 MHz | SHUTTLE | MANNED | LEO | | TLM |
| 2205.0 MHz | SHUTTLE | MANNED | LEO | | |
| 2206.0 MHz | SPOT | RECON | LEO | | FAX |
| 2209.0 MHz | GOES | WxSat | SUN-SYNC | | |
| 2211.0 MHz | TRDS | RELAY | GEO | | |

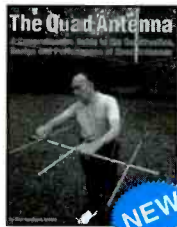


Books and Videos



The Quad Antenna

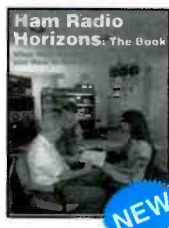
Hams love antenna books and this book is no exception. Written by world renowned author Bob Haviland, W4MB, *The Quad Antenna* is the authoritative technical book on the design, construction, characteristics and applications of Quad Antennas. Discover how to easily build a quad antenna for your station that will help you fill your logbook with rare DX that you have only dreamed about before.



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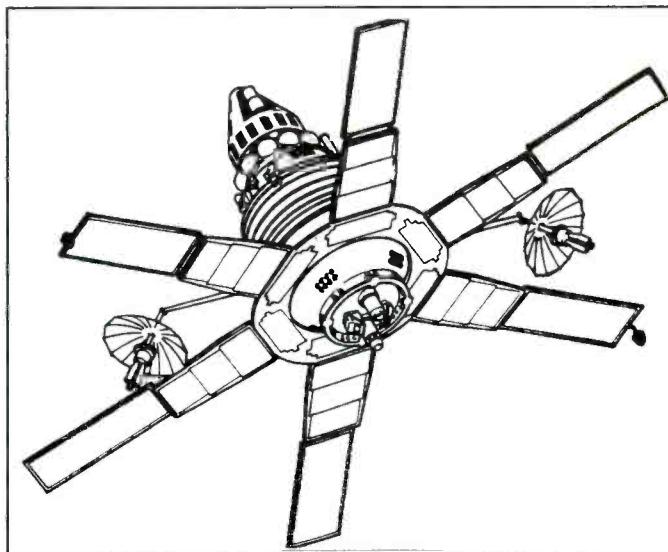
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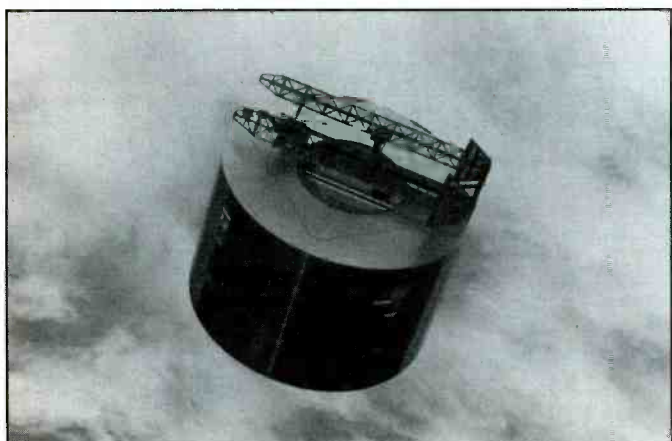
| FREQ | SAT | TYPE | ORBIT/LOC | INCL | MODE |
|-------------------|------------------------------|-----------------|-----------|------|--------------|
| 2214.0 MHz | SHUTTLE | MANNED | LEO | | TV |
| 2215.5 MHz | SHUTTLE | MANNED | LEO | | |
| 2217.5 MHz | SHUTTLE | MANNED | LEO | | FM |
| 2232.5 MHz | SHUTTLE | MANNED | LEO | | TV |
| 2250.0 MHz | SHUTTLE | MANNED | LEO | | |
| 2272 MHz | SHUTTLE | MANNED | LEO | | TDRS |
| 2287.5 MHz | SHUTTLE | MANNED | LEO | | |
| 2280.0-2304.0 MHz | EARLY WARNING | RUSSIAN | | | |
| 2204.0-2400.0 MHz | DEEP SPACE PROBES | | | | |
| 2560-3700 MHz | EUROPEAN/RUSSIAN TELEVISION | | | | TV |
| 3700-4195 MHz | NATO III | C-BAND MILITARY | GEO | | TV |
| 7200-7500.0 MHz | DSCS III | MILITARY | GEO | | VOICE/DATA |
| 7.2-7.7 GHz | SKYNET | UK/MILITARY | GEO | | VOICE/DATA |
| 7.2-7.9 GHz | RAGUDA | RUSSIAN/MIL | GEO | | VOICE DATA |
| 7.250-7.750 GHz | SPOT | RECON | LEO | | VOICE/DATA |
| 8.400 GHz | JERS | WxSat | LEO | | FAX |
| 8.430 GHz | SDRN | RELAY | GEO | | FAX |
| 11.000-11.500 MHz | DBS | | GEO | | RUSSIAN TDRS |
| 12.2-12.7 GHz | DEEP SPACE PROBES | | GEO | | TV |
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| 17.3-21.2 GHz | BROADCASTING ALLOCATIONS | | | | |
| 22.5-23.0 GHz | INTER-SATELLITE/CROSSLINK | | | | |
| 23.0-23.55 GHz | AMATEUR ALLOCATION/SATELLITE | | | | |
| 24.0-24.5 GHz | RADIONAVIGATION | | | | |
| 31.0-33.0 GHz | | | | | |



The Apollo 9 in orbit!



Molniya—Russian military.



(PHOTO) LEASAT, also known as SYNCOM, is a military satellite that uses the 240 to 300 MHz band.

Well, I hope this abbreviated list of frequencies meets with your approval and provides you with some interesting listening. Be sure to forward me any additions you might like to make to the next edition of Space Log.

I will close with some good news and some bad news. The bad news first. On August 4th, the United States lost a billion dollar Spysat. It was a signal intelligence spacecraft that has the misfortune of being the only passenger on an ill-fated Titan-4 launch vehicle. Both were lost.

Now the good news. President Clinton and Russian President Boris Yeltsen signed a Space Cooperation agreement in July. The first joint manned mission since the 1975 Apollo/Soyuz mission is planned for 1995. The shuttle Atlantis is being fitted with the proper docking unit. In the short term, a Russian Cosmonaut was scheduled to fly on the U.S. shuttle in December....See you next month!

TELEPHONES ENROUTE

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

Some very novel product information releases come our way. One of the most unusual products we have seen of late offers a product based on the public's overreaction to the alleged possible health hazards of EMF radiation from handheld cellphones. The information sheet asks, "Why risk your health? Given a way to reduce this exposure now, you should."

EMF radiation is the scientific, and therefore, I believe the most intimidating, way of saying "signals." In my opinion, to the public, the word "radiation," itself, summons up unpleasant images of nuclear disasters, X-rays, holes in the ozone layer, science fiction movies, and other things that frighten the public.

At this point, concerns about cellphones being a risk to health are controversial, unproven, questionable, and might be unwarranted. Some authorities feel that, at worst, if a health risk could be shown to exist, it would most likely be less of a threat than common hazards, such as smoking, breathing in polluted or smoke-filled air, eating a diet high in fried and fatty foods, as well as alcohol or substance usage and abuse.

The new product is called the *Antenna Guard*. Its manufacturer claims, "this lightweight, easy-to-install shield is lab proven to block up to 85% of the users exposure to EMF radiation."

What is this thing? It's a radiation shield made from unspecified "space age alloys," constructed of "only the best of high-tech materials carefully assembled under strict quality control guidelines to last a lifetime." There is a pattern of small holes punched out across the surface of the shield. The literature explains the way the radiation shield works. The size of the holes is determined by a scientific formula to assure that "cellular radiation could never pass through the tiny openings."

The gizmo is slipped right over lower portion of the antenna to block (they claim) as much as 85% of the EMF radiations, thus reducing the users exposure to any of the possibly harmful by-products of cellphone use. Two models are available, a long one and a short one. Each sells for \$29.95.

Other than the literature's vague general statement that a user gets "maximum performance," no explanation is provided regarding how this is possible after substantially cutting down a handheld's output power. Cellphone handhelds are allowed to put out a maximum of only 6/10th of a watt. This low power, after being reduced by 85%, it seems to us, would leave a cellphone with an extremely feeble signal. Therefore, we think more information should have been given to explain how maximum performance is maintained.



Ronald McDonald and an inflatable NYNEX cellphone. They are shown here promoting the Ronald McDonald's Children's Charities.



The entire Honda In-Dash cellphone system consists of a small antenna, the transceiver, and a handset.



The Honda In-Dash mounted cellphone is available as an option on some '94 models.



If you slip the shield over the cellphone antenna, EMF radiation is reduced up to 85%. But wait! Doesn't that mean your set's signal gets cut to only 15% of its original 6/10 of a watt?

The manufacturer claims *Antenna Guard* is "the best product for today's cellular user." Perhaps so; this remains to be seen. Knowing how the public reacts to commercial products that appeal to its penchant for becoming panicky over imagined threats while simultaneously ignoring the genuine hazards, this item should be a certain sales sensation. *Antenna Guard* is from Nuovo Accessories, 390 Fifth Avenue, New York, NY 10018.

Bring In The Clones

Did you know that the street price for a cloned pager is \$50? Drug dealers piggyback their messages right on legit users' pager numbers. This prevents law enforcement agencies from eavesdropping on their activities. Cloned legitimate users don't quite understand why they've suddenly started receiving annoying pages with weird codes, reversed phone numbers, etc. They figure it's just a glitch in the system. But now you know what's really going on!

This tidbit to mull over came from our friends at Murray Associates, counterespionage consultants to business and government. They are at Box 5004, Clinton, NJ 08809. Phone: (908) 730-8733.

Mac The Nice

NYNEX Mobile Communications and McDonald's restaurants in the NY metro tri-state area combined in a fund-raiding effort to benefit the worthy Ronald McDonald Children's Charities (RMCC).

RMCC, which was started in 1984, helps young people lead healthier, happier, and more productive lives. It funds programs in the areas of health care, medical research, education, the arts, as well as social and economic concerns.

While the fund-raiser operated for one month last summer, 300 McDonald's restaurants provided customers with the opportunity to receive a free cellphone (courtesy of NYNEX Mobile) in return for a \$29.95 donation to RMCC.

The companies promoted the event with Ronald McDonald and a gigantic inflated cellphone, offering customers the chance to make a free cellular phone call.

Good idea, and a fine promo.

Ride 'em Cab Boy!

Some 200 yellow medallion taxicabs in New York City embarked on a 90-day pilot program to test the feasibility of cellular payphones located in the passenger sections of cabs. Passengers would be able to use these phones for calls, and a button would provide drivers with instant access to 9-1-1.

The specially designed phones will initially operate through the NYNEX system and allow for only outgoing local and long distance calls. Calls will cost \$1.75 per minute, and are paid for by passing a major credit card through a slot. The phone service program is expected to also be offered by Cellular One.

Looking A Gift Phone in The Mouth

The Better Business Bureau (BBB) cautions consumers that some cellular companies have certain fees and charges that subscribers either don't know about or don't sufficiently understand. The BBB especially noted ads that offer service packages containing a "free" cellphone, inasmuch as the small print may result in the customer being deceived.

What about people who think they'll sign up for one of these service packages, get the free phone, and then cancel out. They come out with a great cellphone for free. Ha! Ha! Too bad these companies thought of that first.

In the event the service subscriber decides to cancel cellular service after two months, a bill is going to arrive demanding maybe \$250 for that free cellphone. Add

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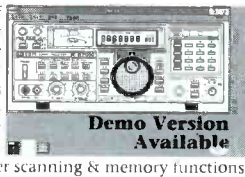
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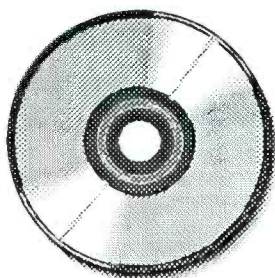
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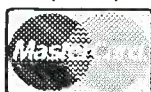
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to that a service termination fee of possibly \$120. Even if service is cancelled before two months, and the free phone is returned, the company will still demand a termination fee that may be about \$50.

Problems arise when the retailers and cellular companies don't make this clear, or mention it at all, right from the start. They attract new customers this way, including many who think they have figured out how to get a free phone by dialing a cellular company. Sadly, they find that instead of being the diddler, they have become the diddlee.

BBB complains of the practice as deceptive, and we agree.

Honda Dashes Out A New Option

American Honda Motor Co., Inc. is offering something new in cellphones, a hands-free, in-dash unit. This is available as dealer-installed optional on the Honda Accord, Honda Prelude, and Acura Integra.

The in-dash unit is designed for, and integrated right into the vehicle's dash/console area. The unit is installed above the vehicle's AM/FM radio for best driver visibility, convenience, and easy touch-dialing.

A Honda rep told me that, "Most cellular phone manufacturers have copied designs from common household phones. But our engineers have taken into consideration the space available in the car as well as the needs of the driver in the design of our new In-Dash Phone."

Honda's dash-mounted cellphone features a large, easy-to-read vacuum fluorescent display that doesn't wash out in daylight or direct sunlight. There's a built-in microphone. When a call is received, the vehicle's stereo system is automatically muted and the phone can be set to answer automatically. The caller's voice is played through the stereo system. When privacy is desired, a handset (which is provided) may be used.

There is one-touch speed-dialing that can be pre-programmed with nine often-called phone numbers. Another 21 often-called phone numbers can be pre-programmed and accessed with just a few keystrokes. There are other features, too, such as last number redial, automatic redialing, scratchpad dialing, postscripting, call timer, dual NAM's, and more.

The unit's quarter-wave antenna is mounted on the upper right-hand corner of the windshield.

Although factory-installed cellphones have been available as options in some Ford Co. vehicles, Honda's is the first in-dash type unit we have seen offered as an optional accessory by a car manufacturer. We like Honda's in-dash approach.

Dial us up again next month. Please send along any news clippings, comments, press or product releases relating to cellphones, pagers, or other personal comms.

THE EXCITING WORLD OF RADIOTELETYPE MONITORING

Most POP*COMM readers avidly listen to scanner radio public service comms or shortwave radio international broadcast stations, or DX the AM and FM radio bands. But, in a recent poll, a lot of them said they don't read this column because monitoring radioteletype (RTTY) and radiofacsimile (FAX) stations has no appeal for them.

Perhaps they perceive RTTY monitoring as a mystical land of mumbo-jumbo, where the terminology and equipment is as quaint as personal computers were to the average person just 10 years ago. Through the years computers have become easier for people to use as windowing system software came on the market and pushed operating system commands into the background. RTTY decoders have traveled a similar route and are very easy to use today. Some have menuing systems, can automatically tell what RTTY mode is being heard, and can be used with a mouse (the same device that's used with personal computers), which relieves the user from the chore of pressing buttons, turning knobs, and flicking switches.

Ease of use is a major factor in drawing new adherents to RTTY monitoring. The radio listener also must be made aware of what this aspect of radio communications is all about, not only by those of us who've become involved in the hobby, but by dealers in RTTY decoding equipment.

Ten years ago, I was a regular listener of shortwave radio broadcasters. I went to a shop that sold amateur radio equipment looking to buy a shortwave radio that was better at DXing than the pocket portable I was then using. A RTTY decoder and video monitor was set up on the front counter, and a shortwave radio was tuned to one of the frequencies then used by the Associated Press for transmitting written news around the world. I became immediately excited with reading the news items on the video monitor, and I must've asked a hundred questions of the besieged salesperson. A short time later I left the store with a pretty decent shortwave radio—and also a RTTY decoder and video monitor!

I'm sure my attitude would've been a lot different had I seen amateur radio operators' chit-chat on the video monitor instead of world news. If that store owner didn't have the foresight to display such an interesting RTTY broadcast, I would be listening to Swiss Radio International today instead of reading news dispatches from the Foreign Affairs Ministry in Bern, Switzerland.

RTTY monitoring is fun and challenging. Those who solely listen to scanner or shortwave radios will find that RTTY mon-



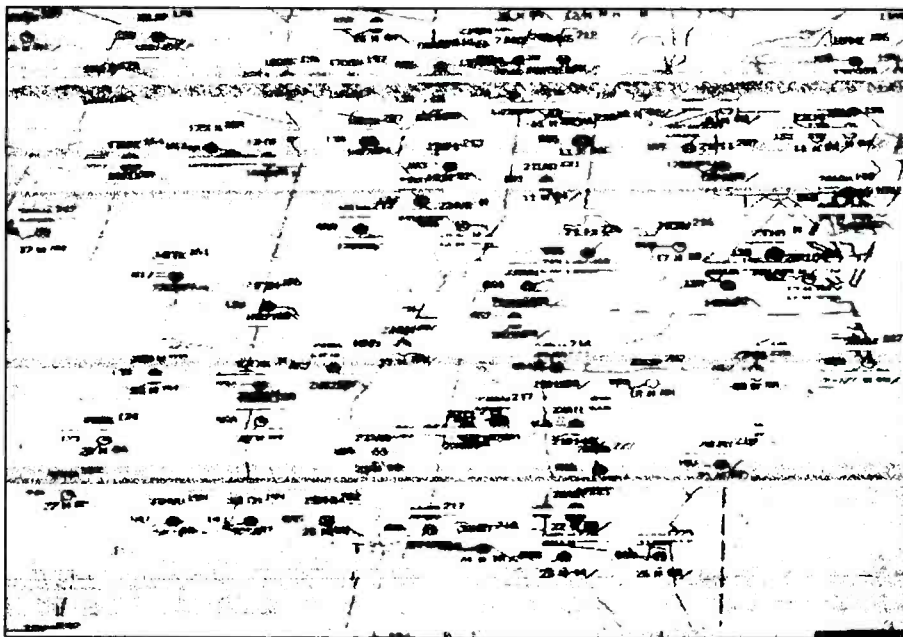
Universal M-400 decoder deciphers messages to and from commercial aircraft in flight.

itoring opening up a whole new world to them and enhancing their listening pleasure.

There's nothing really mysterious about RTTY stations. Using Teletype machines or personal computers, they send written messages (or graphical material in the case of FAX transmissions) over the airwaves in the same way landlines are used by news agencies to send their products to newspaper offices, or police departments to send information on criminals between district and precinct stations. The only difference is that the listening public can readily intercept and read what's sent over the air, which they cannot do with telephone line connections. RTTY monitoring is perfect-

ly legal in the United States as long as the contents of messages aren't divulged to anyone or used for personal benefit. The Federal Communications Act of 1934 and Electronic Communications Privacy Act of 1986 explain the rights and restrictions the public has when listening to private communications, which most RTTY transmissions are.

RTTY and FAX stations are found all over the radio spectrum, from frequencies way below the AM radio band up to those on orbiting satellites. They're heard on shortwave and scanner radios, and satellite receivers. RTTY and FAX transmissions are also on military satellites that can be



Weather chart from unidentified U.S. station on 14835.5 kHz.

| STATION | FREQ | TYPE | LOCATION |
|---------|-------|-------------|----------|
| 24FOK | 2387 | CONT INLUDS | ICELAND |
| 10000 | 10000 | CONT INLUDS | |
| 10000 | 10000 | ON CALL VIA | |
| 10000 | 10000 | CONFSPRT | |
| 10000 | 10000 | ON CALL VIA | |
| 10000 | 10000 | CONFSPRT | |



Newly designed weatherfax schedule of Norfolk Naval Base.

Violinist and violist. (Newsfax photo from Telam, Buenos Aires, Argentina, was monitored on 9241.5 kHz by Robert Margolis.)

heard on many scanner radios. One can read news, diplomatic messages, weather reports, ship-to-shore telegrams, and military directives, simply by connecting an audio cable between the line output of a shortwave radio with single sideband capability and the line input of a RTTY decoder. The decoder is a device that changes the tweedle-tweedle and chirp-chirp sounds heard on shortwave radio into text that can be viewed on a video monitor or printer. Using a similar device, called a FAX decoder or converter, one can view weather charts from around the world, or news agency photos, on shortwave radio. Weather maps are also sent by polar orbiting American and Russian satellites easily heard on scanners, and by broadcasters using TV satellites. The satellite weather maps can be viewed by connecting a satellite receiver to the antenna input of a shortwave radio and tuning the radio to certain audio frequencies. The usual connection between radio and FAX decoder is made. RTTY and FAX equipment are available from ham radio stores throughout the country as well as from firms that advertise in POP'COMM. Are you an aviation buff who listens to pilots and control tower operators on scanner radio? Well, RTTY listening can also supplement your listening pleasure. Uni-

versal Radio, Inc., of Reynoldsburg, Ohio, has two items for you. One is the Universal M-400 stand-alone reader (Figure 1) that decodes Aircraft Communications Addressing and Reporting System (ACARS) messages heard on the VHF aircraft band, primarily 131.550 MHz in the United States and Canada, and 131.725 MHz in Europe. The other is the Universal M-1200, an interface card for personal computer that also decodes ACARS messages. Both offer other RTTY modes and FAX as well. The M-400 costs \$399.95 plus \$6.00 shipping, handling and insurance. The M-1200 is the same price, but with a \$5.00 sending fee. Order them from Universal Radio, Inc., 6830 Americana Pkwy., Reynoldsburg, Ohio, 43068 (1-800-431-3939). Don't know how to read ACARS messages? Universal publishes *Understanding ACARS*, a book by Ed Flynn that explains how to decipher the many different alphanumeric messages that are transmitted between commercial aircraft and airport ground stations. These messages relate information regarding arrivals and departures, fuel spent and remaining on board, weather data, flight engineer reports on aircraft functions, and other important statistics. The 53-page book costs \$4.95 plus \$1.00 bookrate shipping (\$2.00 via UPS) from Universal. The Wavecom W-4100 data analyzer I

ordered several months ago cleared U.S. Customs and is now in operation at The RTTY Ranch. It took over the space formerly occupied by several other RTTY and FAX decoders and is now my chief decoder. It offers a feature that other decoders don't—allowing printouts of text in Arabic, Cyrillic, or Greek. Figure 2 shows text in Arabic from 5AQ70, Jana, Tripoli, Libya, monitored on 14573.0 kHz, 400/50. I mentioned ease of use earlier in this article and the W-4100 best exemplifies what that's all about. The menuing system is tops, and so is its method of analyzing RTTY signals and telling the listener what mode is being heard over the radio. It's operated with a trackball, which looks like a computer mouse turned upside down (the thumb moves a ball-like object instead of the hand pushing a mouse around the tabletop), or it can be operated by pushing just six of 10 buttons on the front panel. ID Learned Dept.: In the August column I discussed an intercept of mine that I saw on 11147.5 kHz with an ident that always appeared garbled. The 50-baud transmission consisted of a test tape followed by garbled messages in English. Now I know why I saw so much garbling—the transmission came from the opposite side of the world—from India. Murray Lehman of West Australia tells me that I monitored 8WD17, MFA, New Delhi, India, on its cir-

Abbreviations Used In The RTTY Column

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

w/nx in SC, 75 baud at 2345. (Kuroda, Japan)

16312.2: "C37A" w/encryption, ARQ-E/288 at 1732. (Ed.)

16588.4: Un-ID w/RYRY & crypto, 838/75 at 1645. (Hall, RSA)

16684.0: J4VE, ship Rokos Vergottis, w/Telex t/c, ARQ at 1654. (Navary, Va.) Greek cargo ship—Ed.

16685.5: Ship Grobnik w/Telex t/c to Croatia in ARQ at 2238; & WGWA, Omi Willamette, w/Telex t/c via WLO in ARQ at 1525. (Navary, Va.) Grobnik is a Yugoslav cargo ship, c/s YTKV, & Omi Willamette is an American tanker—Ed.

16694.7: WECEB, ship Melville, wkg WWD in FEC at 2127. (Navary, Va.) American research vessel—Ed.

16805.3: CLP44, Cuban Emb., Harare, Zimbabwe, relaying msgs to CLP1 from Asian embs at 1530, 480/50. Went to CW at 1630 & asked CLP1 to QSX

22127 kHz, then to 23125 kHz, when CLP1 could hardly be heard on 22127. (Hetherington, Fla.)

16806.5: NRV, USCG, Guam, w/wx report, ARQ at 0930. (Kuroda, Japan)

16847.0: Buenaventura R., Colombia, w/nx in SS, ARQ at 2010. (Hetherington, Fla.)

16881.0: TAH, Ankara R., Turkey, signing off at 1315 in ARQ. (Hetherington, Fla.)

16927.0: UJY, Kaliningrad R., Russia, w/RYRY, 170/50 at 1720. (Hall, RSA)

16930.4: 9MR, Johor Baharu R., Malaysia, w/RYRY at 1500, 850/75. (Hetherington, Fla.)

16960.0: CKN, Canadian Forces R., Vancouver, BC, Canada, w/NAWS msgs at 1400, 850/75. (Hetherington, Fla.)

16965.0: ZRQ6, Cape Town R., RSA, w/cricket results, NAWS msgs & wx report at 1430, 170/75. (Hetherington, Fla.)

16987.0: GYU, Royal Navy, Gibraltar, w/available channels list, 170/75 at 0000. (Hetherington, Fla.)

17432.0: DFZG, MFA, Belgrade, Yugoslavia, w/nx in SC, 425/75 at 1015. (Hetherington, Fla.)

17442.0: 5YE, Nairobi Meteor, Kenya, w/coded wx, 100 baud at 2200. (Kuroda, Japan)

17456.8: Un-ID Egyptian Embassy w/t/c in AA at 1707, ARQ. (Hall, RSA)

17996.7: LOR, Puerto Belgrano Navrad, Argentina, w/notices to mariners in SS & EE at 2045, FEC. (Hetherington, Fla.)

18014.0: Un-ID relaying 5L grps from "RFFUDM," ARQ-M2-342/200, ch. A, at 1341, foll by msg in FF, w/DET circuit ID, at 1403. Usually see Paris on FDX circuit. (Ed.)

18021.7: Un-ID Egyptian diplo w/KMEU selcalling, ARQ at 1351. (Ed.)

18036.8: HDN, Quito Navrad, Ecuador, w/"exer/oceanic vii" msg to CCS at 2120, 831/75. (Ed.)

18038.0: CLP55, Cuban Emb., Georgetown, Guyana, w/5F grps at 2029, 476/50. (Ed.)

18040.5: HGX21, MFA, Budapest, Hungary, w/text in Hungarian to HGX28, London, England, DUP-ARQ at 1412, and w/5L msg at 1500 to HGX38, Vientiane, Laos. (Ed.)

18041.2: HGX21 w/5L msg to HGX20, Hanoi, Vietnam, DUP-ARQ at 1528. (Ed.)

18041.6: RFVI, French Forces, Le Port, Reunion, w/"controle de voie" to Noumea, New Caledonia, at 0820, ARQ-E3/100. (Lehman, AUS)

18042.0: Un-ID Hungarian diplo heard at 1625, DUP-ARQ. (Kuroda, Japan)

18061.3: MTO, Royal Navy, Rosyth, Scotland, w/"DE MTO LF STATE A2/8 BL," 835/75 at 1655. (Hall, RSA)

18173.5: STK, Khartoum Air, Sudan, w/RYRY, 390/50 at 2019. (Ed.)

18190.1: FSB59, Interpol, Lyon, France, w/5L grps, ARQ at 1141. (Hall, RSA)

18221.0: CNM76, MAP, Tanger, Morocco, w/nx in FF, 382/50 at 1626. (Ed.)

18284.5: HBD73, Swiss Emb., Lima, Peru, w/msgs in FF at 1323, ARQ. HBD20, MFA, Bern, Switzerland, heard a couple of days later w/nx in FF & GG at 1327. (Ed.)

18296.7: RFQP, French Forces, Djibouti, w/"controle de voie" at 2126, ARQ-E3/100. (Kuroda, Japan)

18342.0: Un-ID w/5L msgs, 474/75 at 1341. Headers begin w/11177. . . (Ed.)

18356.0: Un-ID w/5L msgs, 1650-1702, 474/75. (Ed.)

18366.7: RFFI, French Forces, Paris, France, w/msgs & 5L grps to RFHJ, Papeete, Tahiti, ARQ-E3/100 at 1724. (Ed.)

18388.5: "HLLTYF," Tripoli Air, Libya, w/RYRY at 1610, 318/50. (Ed.)

18408.5: MFA, Jakarta, Indonesia, w/text in Indonesian, 1347-1420, 369/50. (Ed.)

18425.0: DFZG, MFA, Belgrade, Yugoslavia, w/nx in EE, 75 baud at 1440. (Kuroda, Japan)

18495.0: RFLI, French Navy, Fort de France, Martinique, idling, 1426-1600, ARQ-E3/100. (Ed.)

18579.0: CXR, Montevideo Navrad, Uruguay, w/RYRY, SSGS, w/"cinta de prueba int qsz/grx kkkkk..." Was to 5KM, Bogota, at 1504, 300/75. (Ed.)

18593.0: CLP12, Cuban Emb., Lima, Peru, w/5F msgs & lists of visa applications, 465/75 at 1617. (Ed.)

18597.5: Un-ID Spanish diplo w/2L grps + crypto at 1756 & 2106. ARQ. (Ed.)

18598.0: Spanish Emb., Havana, Cuba, w/5L grps & Telex in SS, ARQ at 1845. (Ed.)

18621.0: CLP65, Cuban Emb., Managua, Nicaragua, w/t/c to CLP1, 470/50 at 1521. (Ed.)

18639.5: CLP1, MFA, Havana, Cuba, w/RYRY w/o ID, foll by 5F grps to Guyana, 500/75 at 2006. (Ed.)

18642.0: CLP45, Cuban Emb., Luanda, Angola, w/Angolan nx in SS, 2133-2140, 472/75. (Ed.)

18697.6: DGS70L3, PIAB, Elmshorn, Germany, w/nx in GG, FEC-A/96 at 2100. Was // DGP92H3 on 15922.4. (Hetherington, Fla.)

18702.4: DGS70H3, PIAB, Elmshorn, Germany, w/nx in GG, FEC-A/96 at 1900. Was // DGQ-21L1 on 16017.4. (Hetherington, Fla.) Heard same sta. at 2021. (Kuroda, Japan)

18741.0: "KAC" w/RYRY + 25L msgs, 475/75 at 2051. Headers begin "11177. . ." S/off at 2054 w/"qru qru sk sk." (Ed.)

18790.0: KCNA, Pyongyang, North Korea, w/nx in FF at 2145, 50 baud. (Kuroda, Japan)

18793.0: Un-ID w/encryption, 390/96 at 1900. (Ed.)

18807.5: MFA, Jakarta, Indonesia, w/msg to Helsinki, 50 baud at 1240. (Kuroda, Japan)

18846.0: "SPK" w/RYRY + "SPK SPK SPK 1/94" rptd at 1600, foll by a 5L msg. S/off 1609 w/QRU SK. (Hetherington, Fla.)

18884.0: Ships w/telegrams in RR to Kerch R., Ukraine, 170/50 at 1631. (Ed.)

18895.0: Telegrams in RR from ships to UFN, Novorossisk R., Russia, 170/50 at 1647. (Ed.)

18966.6: RFHJESS, Papeete, Tahiti, w/"message d'essais liaison HF TOR" + RYRY, SSGS, & 10 counts. Was ARQ-E3/192 at 1720. (Ed.)

18986.7: RFHJ, Papeete, Tahiti, w/5L grps at 2024, ARQ-E3/100. (Ed.)

19048.7: RFFA, Mindefence, Paris, France, heard at 2036, ARQ-E3/192. (Kuroda, Japan)

19089.2: CLP45, Cuban Emb., Luanda, Angola, w/crypto after ZZZZZ, 463/75 at 1824. (Ed.)

19103.0: Italian Emb., Teheran, Iran, w/t/c report to MFA, Rome, at 0930, ARQ-E/96. (Lehman, AUS)

19180.0: CLP1, MFA, Havana, Cuba, w/text of speech by Cuban Pres. Fidel Castro, 500/50 at 2104. (Don Schimmel, W. Va.)

19183.2: CLP1 w/prensaminrex at 2101, 500/75. (Schimmel, W. Va.)

19240.2: Un-ID idling, ARQ-E/96, 1844-2000. (Ed.)

19498.7: RFHI, French Navy, Noumea, New Caledonia, w/"controle de voie," & unclas t/c in FF, ARQ-E3/100 at 2036. (Ed.) RFHJ, French Forces, Papeete, Tahiti, w/"controle de voie" at 2100, ARQ-E3/100. (Kuroda, Japan)

19712.0: URD, St. Petersburg R., Russia, w/nx in RR, 170/50 at 1415. (Hetherington, Fla.)

19732.0: UQB, Kholmisk R., Russia, heard at 2315, 50 baud. (Kuroda, Japan)

19746.3: 6VU79, Dakar Meteor, Senegal, w/RYRY, 425/50 at 1549. (Schimmel, W. Va.)

19756.5: MFA, Jakarta, Indonesia, w/nx in EE, FEC-S/96 at 0950. (Kuroda, Japan)

19802.0: CLP1, MFA, Havana, Cuba, w/t/c at 1542, 500/50. (Schimmel, W. Va.)

19836.7: RFQP, French Forces, Djibouti, w/"controle de voie," ARQ-M2/200 at 1557. (Kuroda, Japan)

20060.6: DMK, MFA, Bonn, Germany, w/encrypted t/c to Teheran, Iran, ARQ-E/96 at ??? (Lehman, AUS)

20065.0: German Emb., Manila, PHL, w/encryption, ARQ-E/96 at 0500. (Kuroda, Japan)

20411.5: Indonesian Embassy, Lagos, Nigeria, w/ARQ t/c to Jakarta at 1150. (Hetherington, Fla.)

20422.4: Un-ID German diplo heard at 1300, ARQ-E/96. (Hetherington, Fla.)

20550.0: "KWIT," French Emb., Kuwait City, Kuwait, w/5L grps at 0950, FEC-A/192. (Lehman, AUS)

20832.6: Un-ID Cuban diplo w/notes to Embacuba Congo, 500/75 at 2100. (Schimmel, W. Va.)

22863.0: CLP44, Cuban Emb., Harare, Zimbabwe, w/crypto at 1653, 529/50. (Hall, RSA)

23125.0: CLP1, MFA, Havana, Cuba, w/msgs to CLP44 on 16805.3 kHz, 500/50 at ???. (Hetherington, Fla.)

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PIRATES DEN

BY EDWARD TEACH

FOCUS ON FREE RADIO BROADCASTING

Radio South Anarctica (I wonder if they intentionally misspell that word?) has sent me some info about the station. They say they are located in the western half of the US and air a "techno" format. I know what the word means but not as when used to describe a program format. The operation uses Cobra 20 and Cobra 142 GTL transmitters and two others which operate in the VHF/UHF ranges. Among the shortwave frequencies used are 10.240 and 26.700. The station says it has the following "secondary" stations: V.O. 46, Voice of 1946, XTSE (Ecstasy Radio), Radio South Transylvania (RST). Operating power for all station ranges from 5 watts to 3.5 kw. I don't think any of these stations have ever been reported to this column, although it may be the stations are just getting going.

Radio Fusion Radio was heard on 7414 at 0250 by George Roberts in Pennsylvania with mostly rap type music to sign off at 0304. Included interviews with supposed homeless people and some rather profane comments. Roberts says he didn't catch any mention of an address for reports.

Radio Azteca was also logged by Roberts —on 7415 at 0001 running a mailbag show which seemed to include real letters from real listeners hosted by a "Dr. Radio." Also included a bit of the Bullwinkle TV show theme. Also fake commercials for various sexual and personal products. Announces the Wellsville address—P.O. Box 452, Wellsville, NY 14895.

Scott Gentry of Illinois had WEED radio on 7465 USB from 0343 to 0431. They featured a disc jockey playing such as Creedence Clearwater Revival, Charlie Daniels, Grateful Dead and gave an address of P.O. Box 605, Huntsville, AL 35804. They played "Wildwood Flower" at sign off.

Jack Samuels in Georgia had Radio USA on 7415LSB at 0040 with a parody of the now defunct "Signals" DX program, and fake commercials. Hosted by Mr. Blue Sky and Joe King and giving the Wellsville address to get a color Radio USA QSL card. Claimed to be broadcasting from a leaky tub somewhere off the North American coast.

Bill Matthieu in Massachusetts had the long active Voice of Laryngitis at 0210 to 0232 closing. The broadcast included a bit on pirate busters with someone parodying J. Edgar Hoover. Old standby Billy Bob Huxley was also heard, also Ghengis Huxley, along with a couple of fake commercials and interval signal by Arty the Seal. Announces the Wellsville drop for reports.

Radio Stella was heard by Gentry in Illinois on 7413 at 0208 to 0220. Several station identifications and a lot of rock numbers. Very weak signal, which was badly QRM'd.

Samuels in Georgia had WORK at 0330 on 7414 playing a number of Vietnam war era songs, talks about work and workers and a contest with main prize to be a trip to army boot camp or a hobo vacation in Pennsylvania. Also mention of their slogan "Workers Operating Radio Knobs? Another pirate using the Wellsville address.

Wireline Radio was bagged by Gentry on 7450 at 0230 to 0252 with several IDs, lots of rock songs, music by Dire Straits and mention of Box 109, Blue Ridge Summit, PA 17214 address for QSL reports.

A test transmission from WQSL was logged by Matthieu on 7417 from 2305 to 2312 sign off. They announced "This is WQSL, the verification station" and gave the Wellsville address between playing two or three songs and then went off the air.

Hit Parade Radio was heard by Roberts on 7416 at 0210 to 0227 sign off. They offered a special QSL card if you send three stamps or a \$1 bill and also a tape of the broadcast will be sent for another \$1. Several old, almost pre-rock era hit songs were played. ID, "You're listening to Hit Parade Radio" and announcement of the Wellsville mail drop.

QSL



RADIO STELLA INTERNATIONAL

Date: 1-5-93

Time: 2300 - 2330 U.T.C.

Freq.: 7413 KHZ VIA NAPRS

Watts: 50

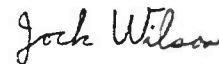
Correct reception report from

MICHAEL LECLERC

SOMERS, CT.

U.S.A.

Verified by



Jock Wilson

Station Manager



Scottish Free Radio on shortwave.

Scottish pirate Radio Stella International sent their nicely done QSL to Michael Leclerc of Connecticut.

Matthieu had Pirate Radio Boston, also known as WREC, on 7418 from 2225 to 2247 sign off. Hosts were called P.J. Fox and Charlie Loudinboomer reading letters and playing various tunes. They also mentioned several other pirate stations. They gave the Wellsville address and Bill thinks, also the Blue Ridge Summit address.

Jack Samuels had reception of KMRZ on 7415 at 2205 to 2238 close with music by Peter Frampton, among several others. They seemed to be having some problems with the transmitter or the feed to same on occasion. Also caught a mention of Voice of the Western Prairies at one point. Gave the Wellsville address for reports

Keep those cards and letters coming my way folks! Everyone is interested in what you are picking up. Nice to get some station info to pass along this month. How about you other operators out there? It's hard to find a better way to get the word out to your potential listeners about your facilities and future plans. Want to hear from you!

That's it for now, see you next month!

LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

After a wait that seemed forever Radio Copan International has taken the air (and caught early in the game by "Post" reporter Ed Rausch in New Jersey). Radio Copan International is located in Tegucigalpa and, at least to begin with, was running just 100 watts, 900 short of the intended power. See the log reports for the mailing address and early operating schedule.

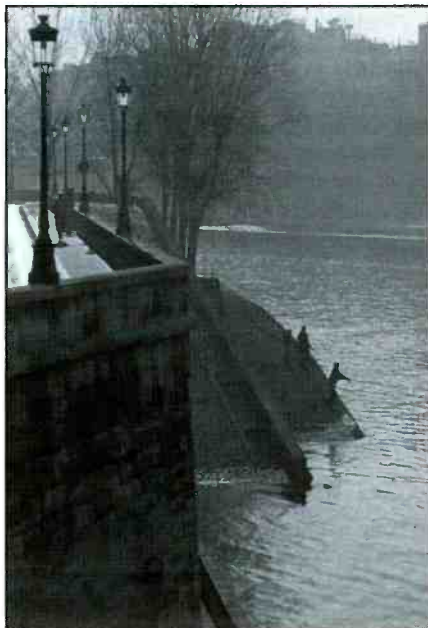
Radio Copan (which takes its name from the Mayan ruins at Copan, Honduras) is affiliated with the also long-awaited Radio Miami International, which, we are assured, is to become active most anytime now. It will broadcast to Latin America and the Caribbean, probably carrying mostly sponsored "block" programming from various political and religious organizations. It will use the call letters WRMI, on 9955 kHz, initially between 2200 and 1200, increasing to a non-stop schedule later on. Reports can be sent to 8500 SW 8th St., Suite 252, Miami, FL 33144.

The Voice of Free China has gotten a reprieve. The government in Taiwan has funded the operation for at least one more year. Some sort of exchange agreement is also being worked between VOFC and Deutsche Welle, although it will probably be sometime before this bears any on-the-air fruit.

Speaking of Deutsche Welle, it has now taken over the portion foreign service programming formerly produced by Deutschlandfunk, which were aired on shortwave via DW. Deutschlandfunk and RIAS (Radio in American Sector) Berlin have merged and RIAS continues to operate on shortwave.

High Adventure Ministries, operators of KVOH in California and stations in Palau and Lebanon, has issued a statement denying rumors it is involved in any kind of a ship-based radio station planned to operate in international waters, calling such talk "untrue and even ridiculous." The rumor claimed the ship would broadcast Voice of Hope programming from a ship in the Caribbean. High Adventure says if they should ever need to expand their broadcast reach they have any number of less expensive options.

DOMINICAN UPDATE—There was a period of a decade or so when shortwave broadcasting from the Dominican Republic was next to non-existent, although it had been a quite active spot earlier. Now it looks like there's new life here. Dr. Adrian Peterson of Indiana spent some time in the Dominican Republic recently and says a couple of the old timers are due to be back. Radio Norte at Santiago should be using 4800 with 1 kw. We can count on QRM searching for this one! Sometimes it seems this is the most popular Latin watering hole



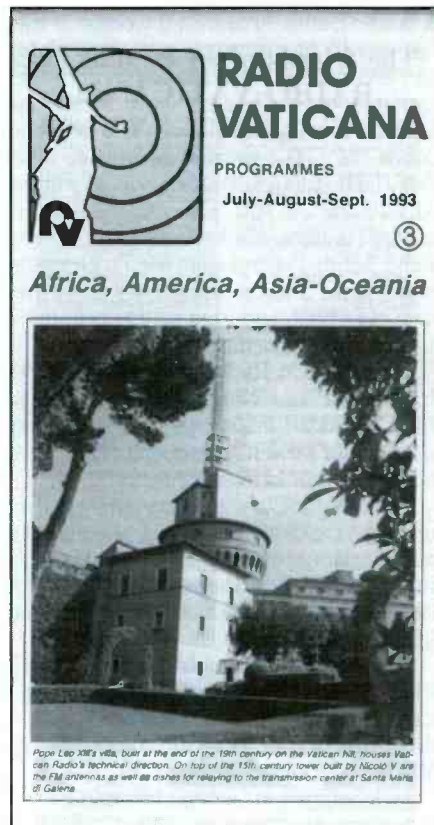
A black and white photo doesn't do justice to this lovely view of the Seine sent to Larry Blisarc from Radio France International.

on the band! The government station Radio Dominicana (La Voz Dominicana in earlier days) is supposed to be on the air soon with a 20 kw transmitter on 5980. Two stations are described as spasmodically active and indeed they are. But they were well worth checking for because they seem to be active relatively often—Radio Cima Ciento on 4960 (see the log report this month) and Radio Quisqueya 6205. Radio Santiago, which Dr. Peterson indicated wasn't on the air when he was there, has returned and is included in our log reports this month. Regularly active is Radio Amanecer, 6025. Radio Clarin is gone and unlikely to return. As you probably know, its transmitter was purchased by Radio Miami International.

JORDAN'S WHAT?—Kuwait claims that Jordan's 500 kw transmitters are being leased by Radio Iraq International for at least three hours a day. No times or frequencies are known for this set-up, assuming it is, in fact, true. If you're looking for Iraq in English try between 0100 and 0400 on 15180 and 17940. It's an English and Arabic mix.

SOME OTHER CHANGES—The former Brazilian Radio Aruana, 4855 has been sold to an evangelical group and is now known as Radio Tropical de Barra do Garcas, with an address of C.P. 23, Barra do Garcas 78601-970.

Radio France International is now using



Vatican Radio's recent program schedule shows the villa of Pope Leo XIII. Built at the end of the 19th century it now houses the station's technical department.

the transmitters of Radio Albania as an additional relay! But it's not quite what you'd call a major part of the RFI transmitter line up. It's currently being used for a mere 10 minutes a day, 1840 to 1850 in Albanian on 7135.

China's domestic shortwave services—CPBS—Chinese People's Broadcasting Station—have been given a new name: China National Radio. The international service, formerly Radio Beijing, was changed to China Radio International earlier this year.

SOMETHING DIFFERENT—Here's one of those neat shortwave listening possibilities that so often seem to be over by the time you learn about it. Let's hope it's not the case this time. Seems a military station in the Canary Islands has been relaying local medium wave (Radio Uno, Las Palmas on 621 kHz) using 11410 and 11430. No indication of what time of day, though, and chances are the activity is periodic.

CZECH RADIO—Larry Blisard of Brookhaven, Pennsylvania forwards some notes about this station. The station went

QSL



Estimado oyente:

Tenemos el gusto de confirmar su control

de nuestra emisión en 5770 KHZ

de fecha 3 de Aboyl, 1993

hora 5:25 a 6:10PM UTC

Le saludamos atentamente

Signature of Evaristo Mercado Pehez, Director de Radio Miskit, Pto. Cabezas R.A.A.N.

Sr. D. Gracias por el reposte de sintonia. Esperamos mantener siempre el contacto. Gracias.



Apologies to the fellow fortunate enough to have received this QSL card from Radio Miskit in Nicaragua. We misplaced your name.

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through some difficult days after the changeover from communism. The staff size was greatly reduced from what it had been. But the existing staff is now stabilized and all are on one year contracts. Not long ago the government supposedly was talking about taking over the shortwave in order to broadcast "directly to the people" but that didn't happen. The English service on shortwave is also being rebroadcast on some local medium wave and FM channels.

Czech Radio's mailbag show has been renamed "Calling All Listeners" and is hosted by Bill Bathurst (an American) and Peter Caspar, and incorporates the "DX Special" feature, hosted by Libor Kubik, who replaced Jan Valeska as Editor-in-Chief of the English service. Thanks for the info, Larry!

Prolific and steadfast reporter Marie Lamb of New York advises that her area has a Shortwave Listener's Net which is audible through most of central New York state and some other areas as well. The net operates on two meters Friday at 8pm Eastern on 147.000 and 146.670. Hams can call in directly, non-hams can listen in on their scanner radios and call in info to Jack, K2JDD at (315) 656-2480 or write to net control at P.O. Box 201, Clay, NY 13041. In addition to shortwave broadcast it covers utilities and scanning. They also relay the ANARC Shortwave Listener's net Sundays at 10am eastern on 441.100.

Marie also passes along some info that'll help if you're having trouble getting a reply out of Radio Tahiti. Write to M. Leon Siguin at RFO Tahiti, B.P. 125, Papeete, Tahiti. Marie says he speaks English and is very good about replying. Include three IRCs.

We welcome your shortwave logs. All we ask is that you list them by country, include some cutting space between each one and include your last name and state

abbreviation after each. Also wanted are program schedules, spare QSL cards you don't need to have returned, shack photos (please?), station pictures and information about changes in stations and facilities. We look forward to hearing from you often!

Here are this month's logs. Language broadcast is assumed to be English (EE) unless noted otherwise, using one of our standard language abbreviations, i.e. SS= Spanish, GG=German, AA=Arabic, FF= French, etc. All times are in UTC, which is five hours ahead of Eastern Standard Time, i.e. 0000 UTC=7pm EST.

ALGERIA—Radio Algiers, 17745 at 1700 with news in English read by a woman. (Dybka, TN)

ANTIGUA—BBC relay, 5975 at 0425. (Land, TN)
ARMENIA—Radio Yerevan, 9450//11920//15385 at 2143. Also 11790 at 0245, then Radio Moscow World Service at 0300; also 11920//11945//15385 at 2248. (Lamb, NY)

ASCENSION ISLAND—BBC relay at 0124 on 11750. (Land, TN)

AUSTRALIA—Radio Australia, 11800 at 1353, 13715 at 0215, 15365 at 0523. (Jensen, IA) 15365 and 17795 at 0514. (Land, TN) 17795 at 0400 with news. (Dybka, TN) 21740 at 0410 with play by play sports. (Low, TX); ABC, Perth, 15425 at 0752 with interview, ID, Australian weather. (Dybka, TN); VNG time station, 16000 at 0622 with time pips. (Dybka, TN)

AUSTRIA—Radio Austria International, 6015 (via Canada) at 0547. (Jensen, IA)

BELARUS—Radio Belarus, 12040 at 2341 in Belorussian with news, IDs., folk music and address announcement. (Lamb, NY)

BELGIUM—Radio Vlaanderen International, 9925 at 0629 going into English with ID and "Brussels Calling." 13685//15540 at 1819 with "Brussels Calling." (Lamb, NY)

BOLIVIA—Radio Metropolitana, 6195 at 0100 to 0130 in SS with pop music, commercials, IDs, people talking about lost documents. Clear after co-channel BBC goes off. ID "Radio Metropolitana, la radio popular en 930 kHz." Also noted at 1000. (Poulet, Brazil)

BOTSWANA—VOA Botswana relay, 7280 at 0457. (Land, TN) New 7415//15205 to ID, IS and close at 2200. To Africa on 7415 at 0400 to 0500 in PP and Hausa. (Rausch, NJ) 9775//15375 in FF with African music, ID, news. (Lamb, NY)

BULGARIA—Radio Bulgaria at 2150 on 11720.

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(Jensen, IA) 17825 at 2108 with news in SS. (Land, TN)

CANADA—Radio Canada International, 6150 at 0526. (Land, TN) CHNX relay CHNS, 6130 at 0823. (Dybka, TN); CFRX, relay CFRB, 6070 at 1910. (Seefeldt, WI) 1025. (Dybka, TN); CKZN, relay CBN St. John's, 6160 at 0849. Overtaken by DW-Antigua at 0855. (Lamb, NY); CHU time station, 3330 at 0620. Time pips and man with EE/FF time announcements. (Dybka, TN)

CHINA—China Radio International, 9690 via Spain at 0300. (Seefeldt, WI) 11680//11840 at 0447 with language lesson. (Jensen, IA) 11755 at 1043 with news. (Dybka, TN)

COLOMBIA—La Voz de la Selva, Villavicencio, 6170 at 0908 in SS with IDs and "Buenos Noches Colombia" program. (Lamb, NY)

CONGO—RTV Congolaise, 15190 at 1150 in FF with commercials for Air Afrique and others, IDs at 1202 and 1302, followed by news. (Poulet, Brazil)

COSTA RICA—Radio For Peace International, 7385 at 0506 with news. (Jensen, IA) 0420. (Seefeldt, WI) Women's rights at 0920. (Dybka, TN); Faro del Caribe, 9645 at 0354 with music. (Land, TN)

CROATIA—Croatian Radio, Zagreb, 9830//13830 at 1900 in Croatian and EE. Time pips, IS and ID at the top of each hour, program of UK rock news, coverage of the regional conflict.; EE news scheduled at 0705, 0905, 1305 and 2205 but one hour earlier in the summer. News times can vary by as much as 15 minutes. (Rausch, NJ) 13830 in Croatian at 0427. (Low, TN); Croatian Radio via WHRI on 7315 at 0502. (Jensen, IA)

CUBA—Radio Havana Cuba, 6010 at 0400 with mailbag. (Dybka, TN) 6180 at 0422. (Land, TN) 9510 at 0556 and ID. Service to North American Pacific Coast. (Jensen, IA) New 11970 at 0238 in SS. (Lamb, NY) 16330USB in SS at 2137 and 13700 at 0415. (Low, TX)

CYPRUS—BBC relay, 15575 at 0503. (Lamb, NY)

CZECH REPUBLIC—Radio Prague, 11990 at 0001 with news. (Dybka, TN) 0217 in SS with IDs, letters, address, IS. (Lamb, NY)

DOMINICAN REPUBLIC—Radio Santiago, 9880 in SS at 0054. (Low, TX); Radio Cima Ciento, 4960 in SS at 0708 with merengues. (Lamb, NY)

ECUADOR—HCJB, 9745 at 0138. (Jensen, IA) 0315 with DX Party Line. (Dybka, TN) 0400. (Land, TN) 11925 at 0510 with "Studio 9." (Gentry, IL) 17490 USB at 2130 with jazz. (Low, TX); 15155 at 0100. (Seefeldt, WI); HD2IOA time station, 3810 with time pips at 0842. (Dybka, TN)

EGYPT—Radio Cairo, 9745 at 0205 with "Holy Koran and It's Meaning." (Dybka, TN) 9900 in AA at 0155. (Land, TN)

ENGLAND—BBC, World Service to Africa on unlisted 6065 at 0614 to close at 0659, parallel the Ascension relay on 6005. (Lamb, NY) 9580 with sports at 2250. (Dybka, TN) 9590 at 2106, 9640 at 0610. (Jensen, IA) 15260 at 1600. (Gentry, IL) 15400 at 0245 with sign on and into English/Swahili special "business English" language lesson. (Dybka, TN); VOA via Woolferton, 7200 at 0506. (Land, TN)

FINLAND—Radio Finland International, 11755 at 0155. (Jensen, IA) Here and parallel 15185 at 0147. (Dybka, TN)

FRANCE—Radio France International, 9800 at 0447. (Land, TN)

FRENCH GUIANA—RFI relay, 11670 at 0457 in FF. (Jensen, IA); China Radio Int'l relay, 11680 at 0408. (Land, TN)

GABON—Radio Japan relay, 15355 at 0606 in GG with news, ID, cultural feature. (Lamb, NY)

GERMANY—Deutsche Welle, 7285 at 0237, 9640 at 2141 and 9670 at 0520. (Jensen, IA) 9640 at 0350 with IS and sign off. (Land, TN) 13780 in GG at 0435 and 17715 in GG at 1334. (Low, TX); Sud-

Abbreviations Used in Listening Post

Table with 2 columns: Abbreviation and Meaning. Includes 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

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westfunk, 7265 in GG at 0517 with pops, IDs, time checks. (Lamb, NY)

GREECE—Voice of Greece, 17525 with news and music at 1532. (Jensen, IA)

GUAM—Trans World Radio, 15200 at 0825 with ID, time check and religious program. (Rausch, NJ); KSDA, Adventist World Radio, 0800 on 13720 with ID, address, into Chinese program. (Lamb, NY)

HAWAII—WWVH time station, 1000 at 0445; 0454; 0600. (Land, TN; Jensen, IA; Seefeldt, WI)

HONDURAS—New station Radio Copan International, Tegucigalpa, 15675 at 2100 in SS with national anthem, ID, location, address and Latin music. Said 100 watts into a five element beam. Scheduled Monday through Saturday at 1400-1500, 1745 to 1900 and 2100 to 2230. (Rausch, NJ)

HONG KONG—BBC relay, 15280 at 0945 with news in slow EE, repeated in CC at 1000. (Rausch, NJ)

HUNGARY—Radio Budapest, 9835//11910 at 2100 sign on and into EE program. (Lamb, NY) 11910 at 0202. (Jensen, IA)

IRAN—VOIRI, 9022//15260 at 0123 with EE talk, local music, address, ID, IS. Into SS at 0130. (Lamb, NY)

IRAQ—Radio Iraq International, 11810 at 2210 with news and commentary, regional music to 2300, then into AA. Also 15180//17940 in AA with news and commentary to 2345, then into EE to 0000. 15180 jammed ineffectively, 17940 clear. (Rausch, NJ)

ISRAEL—Kol Israel, 15615 at 0453 in Hebrew with news, "Rashuth Hashidur" ID, ads for Levi's and IBM Jerusalem. 15640 at 1700 with "News Report at 8." 17545 at 1023 with sports, news, weather, ID and into FF at 1030. (Lamb, NY) 15640 at 2104. (Land, TN) 2155. (Low, TX)

ITALY—RAI, 11800 at 2024 with IS, into EE news, Italian pops. (Lamb, NY) 0119 going into FF at 0120. (Low, TX)

JAPAN—Radio Japan, 5960 via Canada at 0117; 0142; 0300. (Land, TN; Jensen, IA; Seefeldt, WI) 17810 at 0515 to Southeast Asia. (Low, TX)

KUWAIT—Radio Kuwait, 9880 at 2023 in AA with talks, Islamic prayers, IDs, local music and news. (Lamb, NY) 13620 at 1920, ID 2000 with pop music and humorous sketches. (Poulet, Brazil)

LEBANON—Wings of Hope, 11530 at 0531 with Gene Scott. (Dybka, TN)

LIBYA—Radio Jamahiriya, 15415 in AA at 0100. (Low, TX)

LITHUANIA—Radio Vilnius, 12040 at 2300 sign on, into EE with IS, ID, news and Letterbox. This is weekdays only. (Lamb, NY)

MADAGASCAR—Radio Netherlands relay, 9890 at 1452 to South Asia. (Low, TX) 11655 at 1917 in FF with Miles Davis, ID, address. (Lamb, NY)

MALTA—Deutsche Welle relay, 15105 at 0105 with news and "European Journal," site ID. (Lamb, NY)

MEXICO—Radio Educacion, 6185 at 0645 with ID in EE and SS, negative comments about UN involvement in Somalia in EE, local guitar selections. (Rausch, NJ) In SS at 1404. (Low, TX); Radio Mil, 6010 at 0720 in SS with ID, whistle effects, pops, frequency announcements. (Lamb, NY)

MONACO—Trans World Radio, Monte Carlo, 9480 at 0635 with IS, ID, religious program. On an hour earlier than listed. (Rausch, NJ) 0637 with sign on and into "Arise" religious program. (Lamb, NY) 0751 with religious programs. (Dybka, TN)

MONGOLIA—Radio Ulan Bator, tentative, 12015 at 0911, female talks. Very weak. (Dybka, TN)

MOROCCO—VOA relay, new 15410 at 1719 and new 17785 at 2009 in FF with African and US pops, ID, address. (Lamb, NY)

NETHERLANDS—Radio Netherlands, 6020 at 0043 with jazz. (Jensen, IA)

NETHERLANDS ANTILLES—Radio Netherlands relay, 6165 at 0043. (Jensen, IA) Here and 9590 at 0354. (Gentry, IL)

NEW ZEALAND—Radio New Zealand International, 15120 at 0430 with mailbox program. (Gentry, IL) 17770 at 0340. (Seefeldt, WI)

NIGERIA—Voice of Nigeria, 7255 with EE sign on at 0500. (Land, TX) 0525 with music, news. (Jensen, IA)

NORTHERN MARIANAS—KHBI, Monitor World Service, 17555 with IS, Monitor News and religious program. (Rausch, NJ)

PAKISTAN—Radio Pakistan, 15550 at 1717



Transmitting towers at VOA, Delano. Courtesy: Dr. Adrian Peterson, IN.

with IDs, Koran, news, Pakistani music. Into Urdu at 1759. (Lamb, NY)

PALAU—KHBH on 9830 at 0855, ID and music. (Dybka, TN)

PAPUA NEW GUINEA—NBC Port Moresby, 4890 at 0920 with ID, time check, community announcements, reggae. (Rausch, NJ)

PERU—Radio Oriente, 6190 at 0900 in SS with rooster crows, time checks, IDs, "Musica de la Muerto" (music for the dead). Just what I wanted to hear at 5am! (Rausch, NJ); Radio Mundo, 5082.65 at 0930 with IDs, time checks, jingles, community announcements, Andean flute music. (Rausch, NJ)

PHILIPPINES—FEBC at 0900 on 11690 with IS, ID, blues and gospel music. (Rausch, NJ)

VOA relay, 9760//15160//15425 with "This Is America," Willis Conover. (Lamb, NY) 9760 at 1437 and 17820 in Special English at 2240. (Low, TX)

POLAND—Polish Radio Warsaw, 9525 at 1943 in EE with rock, ID. (Lamb, NY) 11840 at 1639. (Dybka, TN)

PORTUGAL—Radio Canada International via Sines relay on 11905 at 0413 with news. Heavy interference. (Land, TN)

ROMANIA—Radio Romania International, 11810//11940 at 1900 sign on and into EE program. (Lamb, NY)

RUSSIA—Radio Rossi, 13430 at 0201 in RR with theme music, ID, news, pops. (Lamb, NY); Radio Aum Shinrikiyo, 9685 at 0430 with woman in EE with address, ID, Buddhist song and interpretation by man in EE. (Dybka, TN); Radio Moscow International, 11790 at 0458 with ID, news. (Jensen, IA) 15180 at 0404 and 17675 at 0455. (Low, TX); Radio Centre, 15185 at 1530 with IS, ID, frequencies, inviting letters. Also audible at 0530 on 12010 but very weak. Schedule 1530-1600 on 15185 and 0530 to 0600 on 12010. Address: Radio Station Centre, Nikolskaya Street Building 7, Moscow 103012. Attention: Andrei Nekrasov. (Rausch, NJ)

SAUDI ARABIA—BSKSA, 15430 at 0424 in Somali, with AA music, IDs, news. (Lamb, NY)

SEYCHELLES—FEBA, 17750 at 0500 with IS, ID, religious program "Saturday Nighe Alive." To the middle east at this time on Fridays only. (Rausch, NJ)

SLOVAKIA—Radio Slovakia International, 9810 at 0122 with Slovak/EE language lesson including "please" and "thank you". (Dybka, TN)

SOUTH AFRICA—Channel Africa, 7230 at 0449 with ID, chart show. 15220 at 1600 with sign on with IS, ID, African news. (Lamb, NY) 15220 at 0608 with news of Liberian war. (Dybka, TN)

SOUTH KOREA—Radio Korea, 11715 with news of Buddha's birthday celebration, off at 1100.

(Dybka, TN)

SPAIN—Spanish National Radio, 9530 in SS at 0342. (Land, TN) 0508 with news. (Jensen, IA) 0528 with weather in Spain (rain—mostly on the plains) (Dybka, TN)

SYRIA—Damascus Radio, 12085 at 2019 with news. (Dybka, TN) 2130. (Seefeldt, WI) And //15095 at 2007 sign on and into EE. Now calling themselves Damascus Radio. (Lamb, NY)

TAIWAN—Voice of Free China, via WYFR, 5950 at 0220. (Seefeldt, WI) 9680 with EE/Chinese language program at 0358. (Land, TN)

UKRAINE—Radio Ukraine International, 7240//15195//17725 at 2101 with news, ID, "Ukrainian Profile." (Lamb, NY) 11790 at 0118. (Low, TX)

UNITED ARAB EMIRATES—UAE Radio, Dubai, 13675//new 15395//21605 at 1555 in AA. Into EE at 1600. (Lamb, NY)

UNITED STATES—Croatian Radio/Radio Zagreb via WHRI on 7315 at 0500 in EE. Into Croatian at 0506. (Low, TX); VOA to Caribbean on 11695 at 0030 to 0130 close. (Poulet, Brazil)

VATICAN—Vatican Radio, 7305 at 0250. (Seefeldt, WI)

9605 at 0252 with radio play. (Jensen, IA) 11625 //15090 at 0633 with church news. (Lamb, NY) 17730 to east Africa at 0507. (Low, TX)

VENEZUELA—Radio Tachira, 4830 at 1003 sign on in SS with anthem, opening announcements, IDs, pops, slogans. (Lamb, NY); Radio Rumbos, 4970//9660 at 0721 in SS with Latin pops, IDs. (Lamb, NY)

YUGOSLAVIA—Radio Yugoslavia, 9505 at 2124 to 2128 closing. (Jensen, IA) 9580 at 0053 with program of Yugoslavian pops. (Dybka, TN) 17710 at 1841 in EE with news, ID, guitars, IS. Heavy QRM. (Lamb, NY)

And that covers things for this month. Time for all of us to lift our glasses in thanks and tribute to the following who did the good deeds this month: Jill Dybka, Nashville, TN; Scott Gentry, Matteson, IL; Tim Land, Kingsport, TN; Ed Rausch, Cedar Grove, NJ; Marina Pappas, Huron, SD; Brad Low, Jacksonville, TX; Rodolphe Poulet, Rio de Janeiro, Brazil; Marie Lamb, Brewerton, NY; Paul Jensen, Mason City, IA and Jeff Seefeldt, Wausau, WI. Thanks to each of you!

Until next month, good listening! ■

“Quick HF Antenna System”

Major disasters like tornados, floods, and hurricanes may devastate an area so badly that emergency teams must leave their vehicle and command posts behind, and go in on foot or helicopter. VHF and UHF portable radio systems may easily be moved from one location to another, and quickly set up to re-establish short-range comm channels. Even “suitcase” repeaters might easily be deployed, separating input and output antenna systems by about 100 feet to minimize the necessity of duplexers.

But for worldwide, getting back on the air could present a problem if there is nothing standing to string a dipole in between.

If you had a mobile high-frequency antenna system, it would need some sort of a mount to a good ground plane to get you back on the air quickly. Many rescue teams go in with dipoles and long wires, only to find out they should have brought some sort of a mobile whip. And since mobile whips for high frequency operation are long, they are many times ruled out as a field-deployable set-up.

Not true. At \$17 a band, fiberglass, helical-loaded, mobile whips are no taller than 4 feet when you remove the stainless steel whip tip, and this is certainly small enough to take aboard an airplane to get into the disaster area. The popular “Outbacker” ham/commercial/marine multi-band whip is now available in international orange for



High frequency antenna coupler and whip on a Department of Forestry fire vehicle.



Author West shows off the tiny Kenwood TS-50—almost small enough for an in dash mount..

rescue squads, specifically breaking down into 3 sections that are no longer than 2 feet. This allows you to store it in a suitcase, and carry it onboard. At the scene, screw the sections in together, tap into the band of your choice, and you are ready to screw it into an antenna mount.

But what type of antenna mount do you bring along for emergency HF communications? There are many possibilities. The simple CB-type vice-grip antenna mount is an utterly simple way to grab some ground plane counterpoise, and get your whip on

the air. Welded to the vice-grips is an L-bracket that accepts a PL-259 on the bottom side, and offers your whip a 3/8th x 24 female thread connection on the top side. As long as you put your whip over anything that has a lot of metal below it, you are on the air.

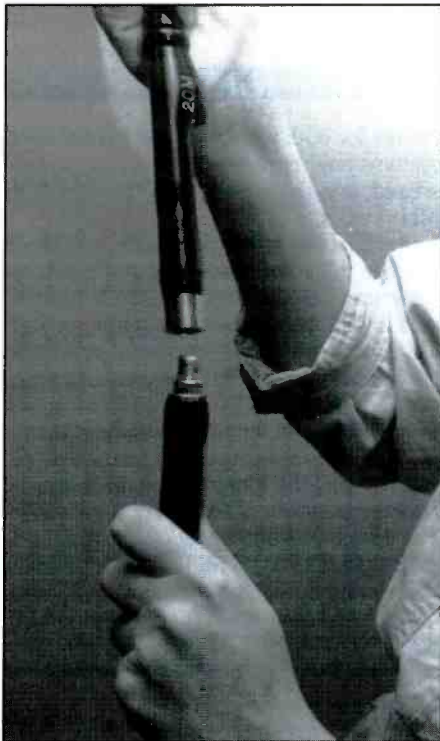
Mobile mounts work swell—but most mobile mounts won't take a big high-frequency whip at highway speeds. A powerful 4-magnet, high-frequency mobile mount was recently put through its paces on several emergency vehicles, and the alu-



Installing the SSB automatic antenna coupler in three minutes flat!



Remote and tuner.



The outbacker emergency whip can break down into three two-foot sections.



This will screw into any 3/8 x 24 threaded base for emergency use.



The Alinco DR-599 with the Multi-Mode Super Repeater Controller.

grounding the mobile unit to the same frame that the antenna is on to minimize stray RF.

For details on the construction of this 4-magnet mount featured on Pages 40 and 41 of the December, 1992 issue of QST Magazine, write Ed Karsin, 9241 Ravenna Road, Unit C-10, Twinsburg, OH 44087; 216/425-8455.

Another quick mounting method is a fully automatic antenna tuner and a non-resonant tall fiberglass whip, part of the SGC high-frequency antenna tuner system. You literally strap the automatic tuner and tall antenna on any metal surface, and you are on the air on any frequency without having to go back and readjust the whip. This could allow you to put the tall antenna high up on a metal structure to improve range, and never need to worry about what your antenna is doing on a particular band. As soon as you transmit with any high-frequency transceiver, the remote-mounted tuner automatically selects the proper amount of inductance and capacitance, and resonates the antenna that is sticking out of the top of the remote mobile mount. We found the performance of the SGC "QMC" system almost identical to the performance of individual whips that needed to be manually changed or adjusted when we changed to different wavelength bands.

For powering your high frequency transceiver, a small gel cell and a solar panel might be all you need until you can tap into the electrical system of anything else around that has a good battery in it. Years ago, an overturned vehicle at the disaster site was usually fresh-out of battery fluids, and could not be used. Now with sealed batteries, you can many times rob the power out of devastated vehicles and have plenty of power to keep you on the air until generators arrive.

So if you regularly handle widespread emergencies, and routinely use high-frequency bands for staying in touch with other emergency groups, do consider the options of some quick mobile mounting schemes that get you back on the air on high frequency in a hurry. ■

minimum frame 4-magnet mount held on like you wouldn't believe. The frame is constructed of brushed 6061-T6 aluminum, and all hardware is stainless steel. The SO-239 connector is made by Amphenol, so the whole set-up sticks to automobile metal to the point you need a couple of people to pry it off.

We were concerned that a capacitive

ground might not resonate different types of mobile whips at specific frequency bands. After all, automobile paint provides no direct contact to the metal below. Under repeated testing, we found absolutely no problems in working high frequency mobile off of a 4-magnet mount on a variety of vehicles with a variety of different paint jobs. But we always recommend well



The SGC high frequency SSB remote head up at eye level in the lifeguard jeep.

WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS

Notices of Apparent Liability For Failure to Comply With Rules Regarding Painting of Antenna Towers

The Chicago, IL, and San Diego, CA Field Offices issued Notices of Apparent Liability to the following entities for willful violation of Section 17.50 of the Commission's Rules. Violations included failure to paint and illuminate radio antenna towers.

| <u>Recipient</u> | <u>Issuing Office</u> | <u>Amount</u> |
|---|-----------------------|---------------|
| City of Oceanside Oceanside, CA | San Diego | \$8,000 |
| TCI of Illinois, Inc. Carbondale, IL | Chicago | \$8,000 |

FCC Issues Ruling Concerning Preemption Of State And Local Laws Affecting Transceivers That Are Used By Amateur Operators

The Commission granted, in part, a motion by the American Radio Relay League, Incorporated, (ARRL), for a declaratory ruling requesting the Commission preempt certain state statutes and local ordinances affecting transceivers used by Amateur Radio Service licensees.

The laws referenced by the ARRL prohibit the procession of such transceivers if they are capable of the reception of communications on certain frequencies other than amateur service frequencies.

In support of its request, ARRL stated that amateur service transceivers typically allow for incidental reception of adjacent frequencies in order to, *inter alia*, ensure the adequate reception of the entire amateur radio service band. ARRL contended that amateur operators have special needs for out-of-band reception, and that the marketplace has long recognized this by offering transceivers that accommodate these needs.

The Commission held that state and local laws that preclude the possession in vehicles or elsewhere of amateur radio service transceivers by amateur operators merely on the basis that the transceivers are capable of the reception of public safety, special emergency, or other radio service frequencies, the reception of which is not prohibited by federal law, are inconsistent with the federal objectives of facilitating and promoting the amateur radio service and, more fundamentally, with the federal interest in amateur operators' being

able to transmit and receive on authorized amateur service frequencies. Therefore, the Commission held that such state and local laws are preempted by federal law.

Unlicensed Unicom Stations

The Commission's field offices inspected 168 unicom stations throughout the country. Inspections were performed to determine compliance with FCC licensing requirements and to initiate aeronautical advisory stations that provide information to private aircraft, such as availability of fuel, parking, landing fees, etc. As part of the Commission's compliance improvement project earlier in the year, the Field Operations Bureau sent information letters to known unicom entities reminding them of the Commission's station licensing requirements.

Of 168 stations inspected, 43% (72 stations) were found to be unlicensed. Unlicensed stations will receive Notices of Apparent Liability (fines) or letters warning about the unlicensed status of their stations. Because of the high number of stations found to be unlicensed, more inspections will be conducted in the coming months. Stations found to be operating without a license will receive fines. The Commission regards unlicensed station operation as a serious matter. First offense fines may reach \$10,000.

Unicom stations users who need information about the status of their license should contact the Public Affairs Specialist at their local FCC office. Information about licensing procedures is also available at the Commission's Consumer Assistance Branch in Gettysburg, Pennsylvania, at (717) 337-1212.

Deny Pleadings Of North American Teletrac & Location Technologies, Inc.

The Commission denied an Application for Freeze, Petition to Stay, and Application for Review filed by North American Teletrac and Location Technologies, Inc., through their joint venture PacTel Teletrac.

In March 1993, the Commission adopted a Notice of Proposed Rulemaking proposing to replace the existing interim rules governing the licensing and operation of Automatic Vehicle Monitoring (AVM) systems with new permanent provisions, and to rename the service the Location and Monitoring Service (LMS). This proposal included a rule change that would separate narrowband and wideband LMS systems. Under the Commission's current rules and practices, in effect for nearly 20 years, li-

censes for both wideband and narrowband systems have consistently been issued on a shared, non-exclusive basis in the 904-926 MHz bands.

In response to the rulemaking proposal to alter the rules governing AVM, North American Teletrac and Location Technologies, Inc., through their joint venture, PacTel Teletrac (PacTel) filed an Application for Freeze, Petition for Stay, and Application for Review. In its Application for Freeze, Petition for Stay, and Application for Review. In its Application for Freeze, PacTel asks the Commission to freeze all additional awards of AVM licenses and special temporary authorizations in the 904-912 and 918-926 MHz bands pending proposed rulemaking modifications. Similarly, in its Application for Review and Petition for Stay, PacTel asks the Commission to review the grant of several specific AVM licenses and to stay the grant thereof until its Application for Review has been ruled on.

In each of its pleadings, PacTel premises its request for relief on the assertion that only one wideband pulse-ranging AVM system may be licensed in the 904-912 and 918-926 MHz bands. On this basis, PacTel challenges the Private Radio Bureau's decision to license narrowband operators and more than two wideband systems per market on these frequencies. PacTel also contends that the Private Radio Bureau transgressed its due process rights by issuing the challenged licenses without first ruling on the petitions to deny filed by PacTel.

As discussed at length in the Notice of Proposed Rulemaking in PR Docket No. 93-61, the Commission disagrees with PacTel's assertion that only one wideband system per segment was intended to be accommodated in the 904-912 and 918-926 MHz bands. In the Notice, the Commission rejected PacTel's contention, stating that the interim rule was written in a manner intended to promote technological and marketplace development of AVM systems, a goal that would be undermined by restrictive licensing methods. The Commission remains convinced of the unlawfulness of this interpretation. In addition, the Commission found that PacTel's requests are inappropriate because the grant thereof would prejudice the Bureau's outstanding rulemaking.

In short, the Commission concluded PacTel has not demonstrated that a freeze is necessary to prevent it from suffering irreparable harm or to preserve regulatory flexibility, nor has it shown that grant of the license at issue was improper, or that the circumstances at hand warrant issuance of a stay. Finally, the Commission stated that PacTel's due process rights had not been violated, as the rules governing private radio applications and proceedings do not

contemplate the filing of Petitions to Deny. Accordingly, the Commission denied the Application for Freeze, Application for Review, and Petition for Stay.

FCC Policy On Private Printing Of Forms

The Federal Communications Commission established a policy regarding the printing of blank FCC forms by private companies if they elect to do so as a matter of expediency and convenience to their clients or consumers. This information is also referenced in 47 CFR 0.409. The policy is:

(A) Blank FCC forms may be reproduced by private companies at their own expense provided the following conditions are met:

(1) Use a printing process resulting in a product that is at least comparable in quality to the original document, without change to the paper size, image size, configuration of pages, folds or perforations, and matching as closely as possible the paper weight, paper color and ink color.

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(6) Assure that the form being reproduced is an edition currently acceptable by the Commission, which will endeavor to keep the public advised of revisions to its forms, but cannot assume responsibility to the extent of eliminating any element of risk against the use of obsolete forms.

(B) These guidelines do not apply to forms which respondents may wish to reproduce as completed facsimiles on automated equipment to satisfy application or report requirements. Requests for permission to submit such forms to the Commission should be addressed to the Records Management Division, AMD-PIRS, 1919 M Street, N.W., Washington, DC 20554.

For further information on computer-generating FCC forms, contact Judy Boley, telephone (202) 632-7513.

Operator Service Access And Pay Telephone Rules Affirmed

The Commission affirmed its rules and policies concerning operator service access and pay telephone compensation, with certain modifications.

On April 9, 1992, the Commission pre-

scribed a mechanism by which competitive payphone owners (PPOs) may collect compensation from certain interexchange carriers (IXCs) for originating interstate access code calls from their payphones.

In response to eight petitions for reconsideration, the Commission has affirmed its holding that IXCs must pay PPOs compensation in the amount of \$6 per month by payphone.

The Commission modifies its rules to allow IXCs to avoid the obligation to pay compensation if they certify that they do not receive access code calls from payphones to which they are not presubscribed.

The Commission affirmed its decision that each individual IXC's compensation obligation should be apportioned in accordance with its relative share of toll revenues among IXCs required to pay compensation.

It clarified its requirements pertaining to the customer-owned coin-operated telephone lists provided by local exchange carriers to IXCs and denied Allnet Communications Services, Inc.'s application for review of a staff decision relating to the list of IXCs required to pay compensation.

Notices of Apparent Liability For Operating Without Proper Authorization

The San Diego, CA; Denver, CO; Vero Beach, FL; Honolulu, HI; Boston, MA; and Detroit, MI, Field Offices issued Notices of Apparent Liability to the following entities for willful violations of Section 301 of the Communications Act. The violations included operating unauthorized radio stations on the frequencies 6.619 kHz, 33.3998 MHz, 156.8 MHz, 156.075 MHz, and 156.600; operating an aviation

ground station on the frequency 91.7 MHz; and operating a radio station on a frequency outside the Citizens Band Radio Service.

| Recipient | Issuing Office | Amount |
|---|----------------|---------|
| William J. Hamm Monroe, MI | Detroit | \$2,000 |
| Jet Aviation Bedford, MA | Boston | \$8,000 |
| Honolulu Agency Honolulu, HI | Honolulu | \$8,000 |
| Ms. Bonnie Joan Nish El Cajon, CA | San Diego | \$2,000 |
| Wendy's Restaurant Pikeville, KY | Detroit | \$4,000 |

Notices of Apparent Liability For Failure To Maintain Transmitter Control

The Los Angeles, CA Field Office issued a Notice of Apparent Liability to the following entity for willful violation of Section 90.427(a) of the Commission's rules regarding failure to maintain transmitter control. The repeater operating on frequency 808.4375/853.4375 MHz was installed with more private line (PL) tones than actual number of licensed users on the repeater, which resulted in harmful interference to other licensees when they transmitted.

| Recipient | Issuing Office | Amount |
|---|----------------|--------|
| Universal Courier, Ltd. Culver City, CA | Los Angeles | \$750 |

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December 1993 / POPULAR COMMUNICATIONS / 71

Beaming In (from page 4)

wave listener. This was a challenge, considering the cheesy little receiver I was using.

The encouragement that so many relatives offered quickly managed to become a matter of well-meaning overkill, and it took years to taper off. Holiday season was the time when they struck. Electronic kits were their weapons of choice.

Aside from the fact that I wasn't particularly interested in building anything, I was also aware that any talents I might have in the area of electronics construction had not yet shown even the slightest flicker of appearing. A junior high school electrical shop project that required each student to assemble a simple Meissner regenerative receiver kit was a disaster. Mine absolutely refused to work until totally rebuilt by the shop teacher.

Yet, the parade of presents consisting of electronic kits began at the first holiday gift-giving opportunity after the family acknowledged my potentials in the field of electronics. Furthermore, it continued, unabated, for many years thereafter. As word of my prodigy spread from relative to relative, this began to snowball. By Thanksgiving, they were asking my father which kits I wanted most. By the week before Christmas, there was a Kneitel family electronics kit-purchasing frenzy. Relatives were fighting over who was going to have the pleasure of giving the VTVM and who would present me with the tube tester.

Years ago, hundreds of electronics kits were available from Heath, Allied Knightkits, EICO, TeleMatic, J. W. Miller, PACO, and many others. There was no shortage of stuff to build. I suspect that eventually I must have had duplicates of half the items produced by the majority of those companies, and singles of virtually everything else.

For decades, thousands of people have built electronics kits, enjoyed themselves, and the kits have worked straightaway without any problems. Not me. Sure, you could make a long list speculating why none of

them ever worked after I built them. I felt the instruction manuals had the construction steps shown in the wrong order, so I worked from my own set of construction steps. I also figured out how to improve the circuits of most of the devices to make them work better. Sometimes the kit companies included a few spare capacitors or resistors, so I designed places in the circuits to use them rather than let them go to waste.

Most of the time, nothing at all happened when the completed kits were turned on. If I could get a kit at least light up for a second or two before smoke appeared, and before the household fuse blew, then I felt that I had scored pretty high on that one. But I don't recall any kit I built ever really worked the way it was supposed to, or for very long.

Personally, I think the only possible problem was my soldering. I hadn't mastered the technique. For years, my solder connections looked like large blobs of Double-O buckshot with long spikes protruding from them. However, in those years, I believed that I had a more important meditative agenda to deal with than soldering. This included my immediate concern for the people of China whom I was assured would go to bed hungry if I didn't finish the food on my plate. Nobody in China ever starved on my account.

My studies in the area of radio and electronics had also left my head spinning with philosophical matters to ponder that nobody could explain. For instance, I knew that the word *replay* meant a radio station was playing a program over again, and the word *realign* meant that a radio's internal adjustments needed to be aligned again. Yet when a radio blows its fuse, why don't we say it needs to be *refused*? If you get shocked more than once, shouldn't that be a *revolt*? And if radios must have *resistors*, isn't it logical that they should also need components called *sistors*? My electrical shop teacher would shake his head and frankly admit that no other eighth grade student had ever asked him these genius-level questions. He could offer no answers,

but strongly suggested I definitely learn to solder without further delay.

I did the best I could with the kits, which isn't saying much. My usual practice was to do what I could inside, then finish off all of the exteriors of the failed kits to at least look as good as possible. Then I'd arrange them on shelves in my room for display to visiting relatives. Luckily, nobody ever wanted to see a demonstration of anything in actual operation. When people showed up, I pointed out the kit they had given me, tell them how much fun I had building it, and the many new things I had learned during the construction process.

My display shelves were also useful for letting the family see which kits I already owned. I always hoped this would begin giving them some message. I wanted to get across the idea that after several Christmases worth of test equipment, tuners, amplifiers, loudspeakers, receivers, transmitters, and other kits that I couldn't make work, it was enough with the kits. I would have preferred new headphones, or a log book. A pair of sneakers or a yo-yo would have done the trick.

The parade of electronics kits in my Christmas stocking continued. After many years, however, the kits given to me began to slowly diminish in number. Eventually, at some point in the early 1960's, the kit gifts had mostly stopped. Guess folks realized I wasn't destined to win the Nobel Prize, so there was no further point in wasting a Heathkit on the likes of me.

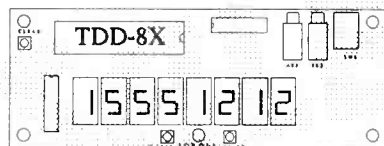
Still, I can't help but think that it was the failure of these good people to continue purchasing Heathkits that eventually led to that company's decision, last year, to stop producing electronic kits. I suspect Heathkit was providing a grace period to see if any more of my family members were still wondering about what to get me for Christmas. After they were certain the Kneitel family electronic kit-buying spree had finally and definitely ended, Heathkit simply saw no further reason to stay in business.

Of course, these days there are new companies producing electronic kits. As fate would have it, last year my grandchildren gave me a couple of these kits for Christmas. These were a cinch to construct! I didn't even have to redesign them, furthermore the step-by-step instructions made a lot more sense than ever before. And, for a change, I didn't need to use my big 100-watt soldering iron, nor the acid-core solder that I had depended upon in my youth.

A miracle! I was amazed to find that the kits I recently received worked perfectly the first time I tried them. Obviously, with the passage of the years, electronic kits have finally gotten a lot more intelligent.

Hopefully, I'll receive more electronics kits for gifts this Christmas. Folks, don't go away. If I can circulate hints about my interest in kits to enough of my relatives, that might give Heathkit enough of a reason to go back into the electronic kit business!

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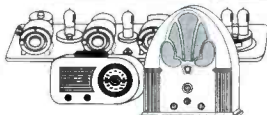
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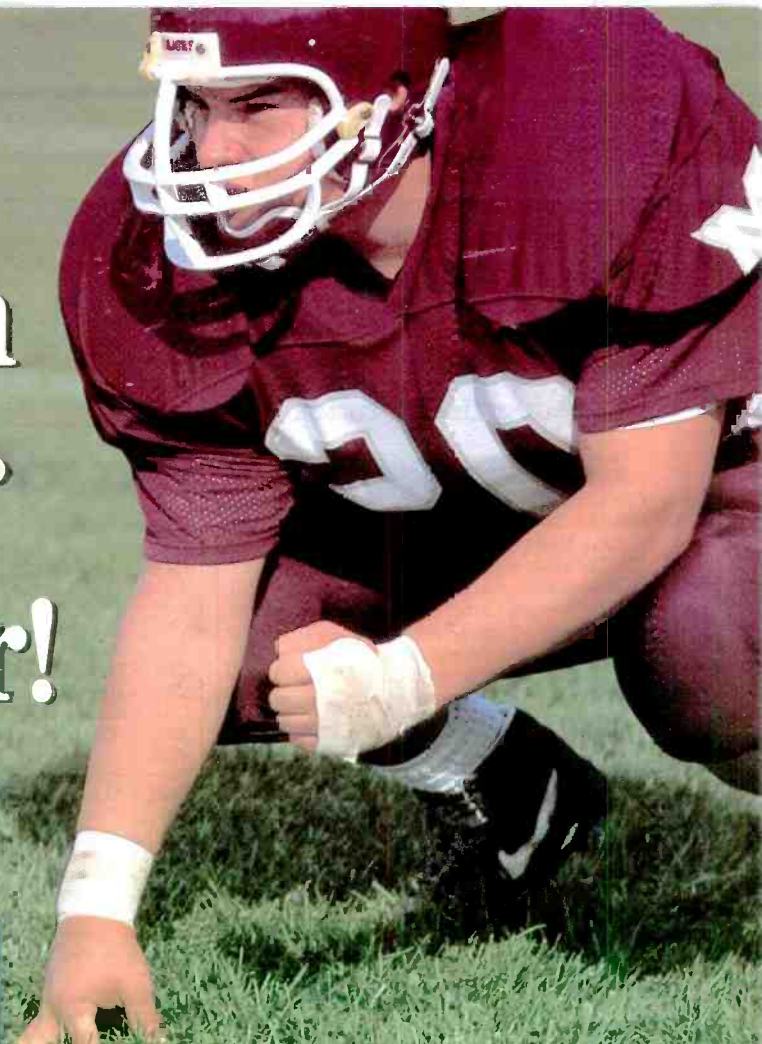
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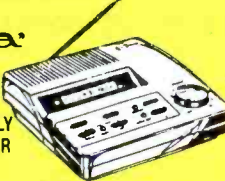
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Total Coverage Radios



AOR AR1000XLT

AM Broadcast to Microwave
1000 Channels

500KHz to 1300MHz coverage in a programmable hand held. Ten scan banks, ten search banks. Lockout on search and scan. AM plus narrow and broadcast FM. Priority, hold, delay and selectable search increment of 5 to 995 KHz. Permanent memory. 4 AA ni-cads and wall plus cig charger included along with belt clip, case, ant. & earphone.

Size: 6 7/8 x 1 3/4 x 2 1/2. Wt 12 oz.

Fax fact document # 205

\$389.00

AR2500

2016 Channels

1 to 1300MHz

Patented Computer Control

62 Scan Banks, 16 Search Banks, 35 Channels per second. Patented Computer control for logging and spectrum display. AM, NFM, WFM, & BFO for CW/SSB. Priority bank, delay/hold and selectable search increments. Permanent memory. DC or AC with adapters. Mtng Brkt & Antenna included.

Size: 2 1/4H x 5 5/8W x 6 1/2D. Wt. 1lb.

Fax fact #305

\$499.00



AR3000

400 Channels

100KHz to 2036MHz Patented computer control. Top rated receiver in its class, offers AM, NFM Wide FM, LSB, USB, CW modes. 400 scan memories. 4 priority channels. Delay & hold & Freescan. AC/DC pwr cord and whip ant.

Size: 3 1/7H x 5 2/5W x 7 7/8D. Wt 2lbs., 10oz.

Fax fact document #105

\$1195.00

AR2800

1000 Channels

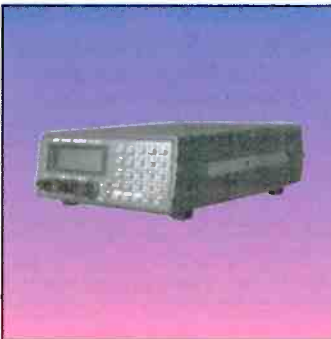
.5 to 1300MHz

AM Broadcast to Microwave 1000 Channels 500KHz to 1300MHz coverage in a programmable mobile. Ten scan banks, ten search banks. Lockout on search and scan. AM plus narrow and broadcast FM. Priority, hold, delay and selectable search increment of 5 to 995 KHz. Permanent memory. DC or AC with adapters. Mtng Brkt & Antenna included.

Size: 2 1/4H x 5 5/8W x 6 1/2D. Wt. 1lb.

Fax fact #350

\$449.00



AOR AR1500

Full Coverage with SSB
and 1000 Channels.

500KHz to 1300MHz. Ten scan banks, ten search banks. Search lock and store. BFO. 2 Antennas. AM/NFM/WFM. Selectable increments. Tons of features.

small size:
5 7/8 x 1 1/2 x 2.
Wt 14 oz.

Fax fact document # 250

\$449.00

Scanners with Shortwave



New Bearcat mobile/ desktop offer continuous coverage of VHF/UHF/800 bands! The Bearcat 890XLTB covers 29-956 MHz with 200 channels, Turbo scan, WX search, VFO tuning, 10 priority channels and more! The Bearcat 8500XLTG covers 25-1300MHz in AM/NFM/WFM modes with 500 channels, turbo scan, 10 priorities, VFO tuning, and more. Fax fact documents 477 & 475.

Fax fact document #420

Bearcat 8500XLTG\$389.00

Bearcat 890XLTB\$259.00

Mobile Scanners

\$209.95

Bearcat 760XLTM



100 Channel 800 MHz

Five banks of 20 channels each. Covers 29-54, 118-174, 406-512 and 806-954MHz (with cell lock). Features scan, search, delay, priority, CTCSS option, lockout, service search, & keylock. Includes AC/DC cords, mounting bracket, BNC antenna. Size: 4 3/8 x 6 15/16 x 1 5/8. Weight: 4.5lbs.

Fax fact document #550

Other Mobile Scanners

BC590\$159.95

BC560XLTZ\$99.95

Fax fact on above: #560

Scan/CB/Highway Patrol/WX. X,K,Ka,Wide & Laser

\$399.00

Scans police pre-programmed by state channel plus full radar and laser alerts in one small unit. Weather, CB receive & mobile relay.

Size: 5 5/8 x 4 7/8 x 1 3/4. Wt: 1.5lbs.

Fax fact #580



Trident TR-33WL

Other Pre-Programmed Scanning Receivers

BC350AS\$129.00

BCT2\$149.00

BC700AS\$169.00

Fax fact on all above: #580

Hand Held Scanners



Bearcat BC2500XLTA **\$349.00**

400 Channels 25-1300MHz
Hand held digital programmable receives in AM/NFM/WFM modes. Features turbo scan, WX search, VFO tuning, search, 10 priorities, mem backup, lockout, WX search, & keylock. Includes NiCad & Chrgr.

Bearcat 200XLTN **\$229.95**

200 Channels 800 MHz
Ten scan banks plus search. Covers 29-54, 118-174, 406-512 and 806 956MHz (with cell lock). Features scan, search, delay, 10 priorities, mem backup, lockout, WX search, & keylock. Includes NiCad & Chrgr.

Size: 1 3/8 x 2 11/16 x 7 1/2. Wt. 32 oz.

Fax Facts # 450

Other hand held scanners

Bearcat 100XLTN 100Ch H/L/U\$159.95

Bearcat 70XLTP 20Ch H/L/U\$139.95

Bearcat 55XLTR 10 Ch H/L/U\$99.95

Fax facts on all above: #475



Table Top Scanners



Bearcat 800XLX

12 bands and 40 channels with 800MHz and nothing cut out. AC or DC.

Fax facts #690



Other Table Top Scanners

Bearcat 855XLTE 50Ch w/800\$159.95

Bearcat 142XLM 10Ch H/L/U\$84.95

Bearcat 147XLJ 16 Ch H/L/U\$89.95

Bearcat 172XM 20Ch H/L/U/Air.....\$99.95

Bearcat 210 16Ch H/L/U/Air\$129.95

Fax facts on all above: #675

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Shortwave Receivers



ATTS-818CS **\$224.95**

16 Band digital receiver with programmable cassette recorder, BFO for SSB, AM/FM Stereo, 45 preset memories LCD display with dual time. Signal & Btt. strength indicator. Sleep timer & tone control.

Fax Fact #505

ATTS-818\$194.95

Same as 818CS but without cassette.

Fax Fact #506

ATTS-803A\$174.95

The perennial best buy receiver. 16 band digital receiver with Am/FM/FM Stereo modes. 9 memory presets. Auto/Manual and Scan modes. BFO RF Gain and Dual Filter controls. Complete with adaptors and headphones.

Fax Fact #507

ATTS-808\$184.95

Compact size, great performance in a 16 band digital receiver. AM/FM/Stereo with 45 memory presets. LCD display with dual time clock. Complete with adaptors and headphones.

Fax Fact #508

ATTS-606 **\$154.95**

16 band ultra compact digital receiver with auto tuning and scan system. 45 memory presets cover AM/FM/Stereo. Dual time display, alarm timer, adjustable sleep timer.

Fax Fact #509.

ATTS-606P\$174.95

SG-621\$79.95

Compact 10 band receiver with AM/FM/Stereo. Analog tuning with a digital display.

Fax Fact #513.

ATTS-800\$94.95

SG-631\$99.95

10 band analog tuning with digital display which shows time and day for 260 cities throughout the world.

Fax Fact #511

SG-789\$54.95

10 band analog tuning. Super compact and very economical.

Fax Fact #512

SG-700L\$49.95

12 band AM/FM compact portage analog receiver.

Fax Fact #514



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The smallest wideband handheld available today, the IC-R1 continuously covers 100kHz-1300MHz with AM, FM and wide-band FM modes. This tiny receiver goes anywhere you go, measuring just 1.9"W x 4.0"H x 1.4"D.

Easy operation is a snap with the IC-R1's Dual Frequency Selection (direct keyboard and rotary tuning). 100 memories and a 24-hour clock complete the world's smallest full-featured handheld receiver.



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Whether you're at home or in your car, the IC-R100 gives you continuous coverage from 100kHz-1856MHz in AM, FM and wide-band FM modes. Monitor VHF air and marine bands, emergency services, government and amateur stations. 121 fully programmable memory channels, multiple scanning systems and a built-in backup lithium battery.



IC-R72 BASE RECEIVER

The IC-R72 continuously receives 100kHz-30MHz in SSB, AM and CW modes with exceptionally high sensitivity. An optional UI-8 provides FM reception. The IC-R72 incorporates a noise blanker, five scanning systems, internal backup battery and built-in clock with Icom's DDS System. The IC-R72 boasts a 100dB wide dynamic range while an easy to access keyboard provides convenient programming versatility... superb for shortwave listeners!



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