Volume 14, Number 8 • August 1995

U.S. $3.95
Can. $6.25

Monitoring Times®

A Publication of Grove Enterprises, Inc.
Printed in the United States

In This Issue:

- Shortwave Broadcasting In Latin America
- How to Hawk Anything With a Low-Power Radio!
- Safety at Sea Goes Hi-Tech

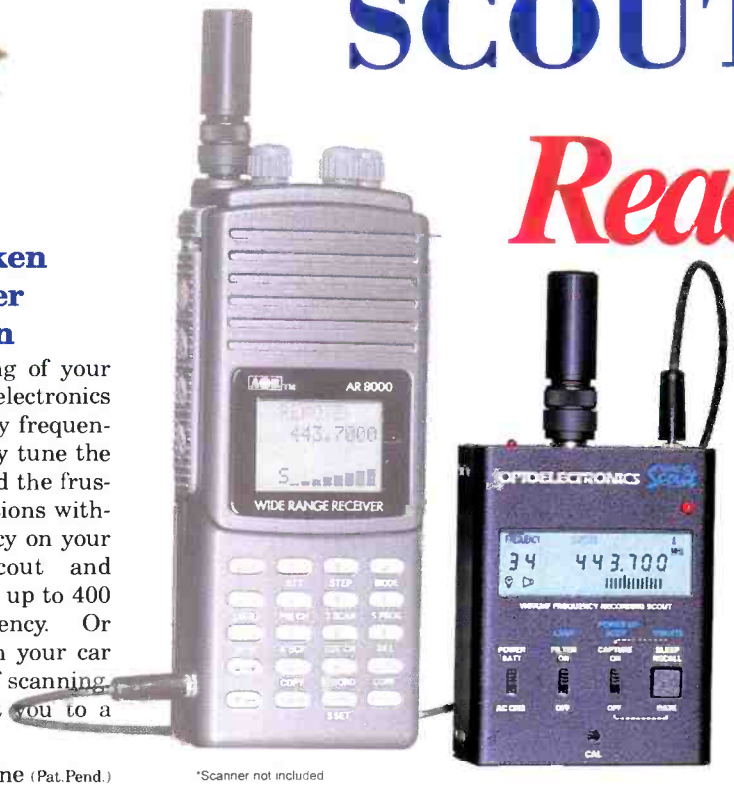
Scanning Kilauea

The World's Most Active Volcano

0 33932 74654 8 08

www.americanradiohistory.com

You Won't Miss a Thing With SCOUT™ Reaction Tune



*Scanner not included

The SCOUT™ Has Taken Tuning Your Receiver To a New Dimension

Featuring Automatic Tuning of your AR8000 and AR2700 with the Optoelectronics Exclusive, Reaction Tune (Pat.Pend). Any frequency captured by the Scout will instantly tune the receiver. Imagine the possibilities! End the frustration of seeing two-way communications without being able to pick up the frequency on your portable scanner. Attach the Scout and AR8000/2700 to your belt and capture up to 400 frequencies and 255 hits per frequency. Or mount the Scout and AR8000/2700 in your car and cruise your way into the future of scanning. A simple interface cable will connect you to a whole new dimension of scanning.

The Scout's unique Memory Tune (Pat.Pend.) feature allows you to capture frequencies, log into memory and tune your AR8000/2700 at a later time. A distinctive double beep will inform you when the Scout has captured a new frequency, while a single beep indicates a frequency that has already been recorded. For discreet monitoring, a pager style vibrator will inform you of any hits the Scout captures.

The Scout will also Reaction Tune and Memory Tune Icom CI-V receivers: (R7000, R7100, and R9000) and (Pro 2005/6 equipped with OS456, Pro 2035 equipped with OS535). Download the Scout frequencies to a PC with the Scout Utility Disk and CX-12AR (optional), then compare them to the Spectum CD-ROM/PerCon FCC Database (optional).

Act Now!! Let the Scout Reaction Tune you into The World of Scanning

SCOUT™ $449

Features

- Automatically tunes these receivers with Reaction Tune (Pat Pend.) CI-V receivers (ICOM's R7000, R7100, and R9000), (Pro 2005/2006 equipped with OS456, Pro 2035 equipped with OS535) or AOR models (AR2700 and AR8000).
- Records and saves 400 unique frequencies
- Records 255 hits on each frequency in memory
- Digital Filter and AutoCapture (Pat.Pend.)
- 10MHz-1.4GHz single frequency range
- View frequencies in RECALL mode
- 10 digit LCD with EL Backlight
- 16 Segment RF signal strength bargraph
- CX-12AR Computer Interface (optional)
- PC Utility Disk for downloading memory to PC
- Rapid charge NiCads with 10 hour discharge time
- Scout Spectrum CD-ROM/PerCon FCC database (optional)
- AC Adaptor/Charger
- DB 32 VHF/UHF mini-antenna shown with Scout (optional)
- Distinctive Beeper/Vibrator indicate frequency hits

At right: Scout shown with CLIPMATE™. A handy windshield mount for Scout, for quick access and visibility.

CLIPMATE™ $25.00

OPTOELECTRONICS®

ORDER LINE
800•327•5912
Tel:305/ 771-2050
Fax:305/ 771-2052

5821 NE 14th Avenue • Ft. Lauderdale, FL 33334

Contact Factory for shipping prices. Visa, Master Card, & C.O.D.(cash or money order only)

All prices and specifications are subject to change without notice or obligation

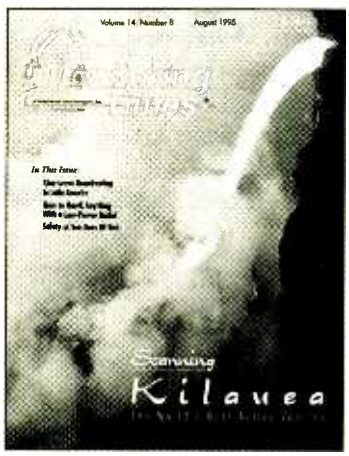
MADE IN THE U.S.A.

www.americanradiohistory.com

Monitoring Times™

Vol. 14, No.8 August 1995

CONTENTS



Cover Story

Kilauea: Scanning the World's Most Active Volcano

By Chuck Penson

Sitting on top of a cauldron of geologic activity is Hawaii's Big Island. To keep tabs on the numerous daily tremors and the swelling of the earth from molten forces underground, the island is literally wired for sound. Telemetry signals can be found everywhere on your scanner as automatic stations report in to the Hawaii Volcano Observatory. Here is a tour of Hawaii you probably haven't seen before.

Pictured on the cover is Pu'u 'O'o, an active vent which has been pouring molten lava into the sea for ten years. Photo by J.D. Griggs, U.S. Geological Survey. Story on page 9.

www.americanradiohistory.com

Reviews:

How does the new Radio Shack PRO-26 top-line portable scanner stack up against the BC3000XLT—Uniden's top of the line? (See p.100) Has Grundig taken the lead with its worldband Yacht Boy 305? (See p. 102) How has Scan Manager Pro improved on greatness? (See p.104) What has our reviewer so excited about the JPS ANC-4 noise canceller? (See p. 98) Why does Tandy rate a "10" for its HTX-212 2-meter mobile rig? (See p.90 for this and the Ramsey SX-20 20-meter kit.) Answers to these questions and more inside the pages of *MT*!

DEPARTMENTS

MONITORING TIMES (ISSN: 0889-5341) is published monthly by Grove Enterprises, Inc., Brasstown, North Carolina, USA.

Copyright © 1995. Second class postage paid at Brasstown, NC, and additional mailing offices. Short excerpts may be reprinted with appropriate credit. Complete articles may not be reproduced without permission.

Address: P.O. Box 98, 300 S. Highway 64 West, Brasstown, NC 28902-0098
Telephone: (704) 837-9200
Fax: (704) 837-2216 (24 hours)
BBS: (704) 837-9200, -7081, -5957, -5183 (M-F 5:30 pm-8 am; 24 hours on weekends)
Internet Address: www.grove.net

Subscription Rates: $23.95 in US; $34.95 Canada; and $53.95 elsewhere, US funds. Label indicates last issue of subscription

Postmaster:
Send address changes to *Monitoring Times*, P.O. Box 98, Brasstown, NC 28902-0098.

Disclaimer:
While *Monitoring Times* makes an effort to ensure the information it publishes is accurate, it cannot be held liable for the contents. The reader assumes any risk for performing modification or construction projects published in *Monitoring Times*. Opinion or conclusions expressed are not necessarily the view of *Monitoring Times* or Grove Enterprises. Unsolicited manuscripts are accepted. SASE if material is to be returned.

Owners
Bob and Judy Grove

Publisher
Bob Grove, WA4PYQ

Editor
Rachel Baughn, KE4OPD

Art Director
John Bailey

Design Assistant
Melody Adams

Advertising Svcs.
Beth Leinbach
(704) 389-4007

Business Manager
Kelly Davis, KE4TAM

Editorial Staff

Frequency Manager ... Gayle Van Horn
Frequency Monitors ... David Datko, Jeff Demers
Program Manager ... Jim Frimmel
Beginner's Corner ... T.J. Arey, WB2GHA
Plane Talk ... Jean Baker, KIN9DD
Computers and Radio ... John Catalano
Below 500 kHz ... Kevin Carey, WB2QMY
Experimenter's Wkshp ... Bill Cheek
DeMaw's Workbench ... Doug DeMaw, W1FB
Federal File ... John Fulford, WA4VPY
Digital Digest ... Bob Evans
Ham DX Tips ... Rob Gerardi, N9LAG
SW Broadcasting ... Glenn Hauser
High Seas ... James R. Hay
Scanning Report ... Bob Kay
On the Ham Bands ... Ike Kerschner, N3IK
Propagation ... Jacques d'Avignon
Magne Tests ... Lawrence Magne

Communications ... Larry Miller
What's New? ... Larry Miller
Scanning Equipment ... Bob Parnass, AJ9S
Satellite TV ... Ken Reitz, KC4GQA
Antenna Topics ... W. Clem Small, KR6A
American Bandscan ... Doug Smith, W9WI
SW Broadcast Logs ... Gayle Van Horn
QSL Corner ... Gayle Van Horn
Utility World ... Larry Van Horn, N5FPW
Outer Limits ... George Zeller

Correspondence to columnists should be mailed c/o Monitoring Times. Any request for a personal reply should be accompanied by an SASE.

www.americanradiohistory.com

AR 8000

The New Concept - AR8000 shocks the market. AOR made every effort to incorporate the latest technology in to this new scanner.

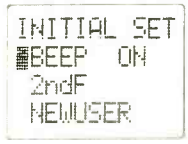
• SPECIFICATIONS •

- **Range:** .5 - 1900MHz usable to 100kHz
- **Modes:** AM/NFM/WFM/USB/LSB/CW
- **Stepsize:** 50Mz to 999.995kHz
- **Sensitivity(μV):** 30 to 1000MHz **SSB** .2 **AM** 1.0 **NFM** .35 **WFM** 1.0
- **Filters:** (kHz) **SSB** 4 **AM/NFM** 12 **WFM** 180
- **Memories:** 50 ch. x 20 banks=1000 total
- **Size/Wt.:** 6.1 x 2.8 x 1.6 inch. 20 oz. batt. incl.

* Cell blocked for all, but Approved agencies.

- Covers .5-1900MHz*
- Ferrite Rod antenna below 2MHz
- Only portable scanner on U.S. market to have true SSB, both LSB & USB. Others attempt SSB using a BFO, but are difficult to tune and produce poor SSB audio.
- 4 level alpha numeric LCD read out frequency, mode, signal strength, band scope spectral display, battery low, remote and more
- Computer control up/down load data, will add a new dimension to the world of scanning.
- Clone your memory banks with a friend, load 1000 memory channels in seconds

.1 - 1900MHz*

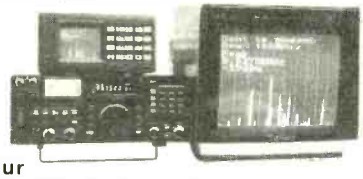


The Latest From AOR Products

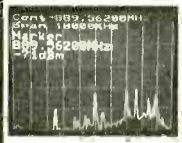
Available at a Dealer Near You!

SDU 5000

NEW



The Spectral Display Unit adds a new dimension to the signal interception hobby. Imagine seeing stations above and below your receiving frequency. Usually the transmissions are short, perhaps 1 or 2 seconds. What are the chances of you being tuned to the exact frequency at the instant of transmission? Very slim. With an SDU you can watch for stations to pop up over a 10MHz window, then zero in. The SDU 5000 offers features unheard of only a year ago.



Δ Frequency coverage up to 10MHz Δ **Display** - 3.1" HQM Simple matrix color LCD Δ **Resolution:** 5 or 30kHz selectable Δ **Input:** 10.7MHz Δ 50dB Dynamic range Δ Screen refresh 2/s Δ Composite video out Δ Full computer control Δ Video output NTSC or Pal display, on TV or record on VCR Δ RS232 9600bps Δ Instant receiver set from cursor via RS232 Δ Store image on disc or your video recorder Δ Menu driven system makes SDU5000 simple to operate Δ SDU5000 is designed to work with the AR3000A (modified with a 10.7MHz output) using RS232 link with or without a computer. Other receivers with 10.7MHz IF output but digital linking may not be straight forward.

AR8000 Interface

Computer Interface for the AR8000

- Δ Low Power, powered by your serial port
- Δ No Drain on the batteries in the radio
- Δ Light weight, perfect for Laptop use
- Δ As small as a DB-25 Connector
- Δ Hi-Tech Surface mount design for reliability
- Δ 100% Shielded cable to receiver for reduced interference
- Δ PC Software included for Windows and DOS
- Δ Manual included
- Δ Detailed Programers documentation available
- Δ Designed and Manufactured in the USA
- Δ Optional 100% shield computer cable from AR8000INF to computer for reduced interference

Unlike some of the European devices sold today, this unit is smaller, lighter, and makes no power demands on your receiver. With the extra shielding and smaller size there is less chance of additional interference leaking into your radio. The AR8000INF is also the only interface that is upgradeable for use with the optional Tape recorder controller due first quarter '95.

AOR

AOR

Electronic Distributors Co.
325 Mill Street, N.E.
Vienna, VA. 22180
Phone: 703 938 8105 FAX: 703 938 4525

EDCO

EDCO

Exclusive North and South American Distributors.

www.americanradiohistory.com

My Shortwave Education

Joseph Gibson, Little Rock, Arkansas: "Your article 'A Radical Thought' in the 'Letters' section was, in my opinion, the best I have ever found describing shortwave listening as a hobby, but a hobby with a distinctive purpose and potential to increase one's knowledge of the world around the listener.

"I have been pursuing the hobby of shortwave listening since June 1938. That was when one evening I found out that a switch in the lower left hand corner of the family's Atwater Kent console radio changed the set from a normal AM radio into a shortwave receiver.

"All during my time in the US Air Force, I took every opportunity to listen on whatever shortwave receiver I could find. I soon learned I had one of the best learning tools at my beck and call—learning about governments, races, their cultures, religion, music, and their countries."

O Canada

• Howard Box, Oak Ridge, Tennessee: "Greatly enjoy your coverage of vintage SW, as well as contemporary, and especially the article on Canadian domestics. It cleared up the mystery of VED, which I had logged, but never heard anything about. On the other hand, the figure for CFRX's initiation must be a misprint. I have a clear log for it in the late '40's.

"I have one remaining mystery. Can any reader tell more about a very early CNN station that broadcast to the moving trains for passengers' listening?"

• Joel Rubin, San Francisco, California: "In Table 7 of the May installment on the Canadian domestics, you had CKZU as 'inactive.' It was heard today 1000 UTC, better than its parallel 690. (690 suffered from XETRA which beams English sports talk from Tijuana to San Diego/LA.)"

• John Diefenbach, Placentia, California: "Article on Canadian Broadcasting brought back fond memories that began many years ago in my home town of Tenafly, New Jersey. My dad had an old Philco broadcast-band radio that included a portion of shortwave. I used this radio to log many countries including Israel, Australia, Hungary, and, of course, Radio Moscow."

Who's on First?

As you can tell from the competing claims for oldest radio station (see p. 80) or as inventor of radio, the course of radio history has been a rocky one. Al Gross, W8PAL, is himself a significant player in that history, and he writes us from Youngtown, Arizona. "My compliments to you and in particular to Clem Small for the superb job of compressing so much important history, '100 Years of Radio,' onto *two pages* of the May issue.

"Let me add another element to Clem's references. Not to be forgotten is Reginald Audrey Fessenden and his patents in wireless signaling systems." Al Gross also recommended two books on Marconi: *My Father Marconi* by Marconi's oldest daughter Degna, and *Marconi* by W.P. Jolly.

Radio history is marked by the many legal battles that have helped determine who received the credit (and the money-making patents) for pivotal discoveries. One battle involved Al Gross himself.

"In 1954-55 Sarnoff and company (RCA) tried, desperately, to knock out my patent in the US Patent Court for the radio transceiver and found he had 'grabbed the wrong wire.' A subsequent suit in civil court, by my attorneys, cost Sarnoff and RCA big bucks. It provided education for my grandkids."

The Wild West pioneers didn't have anything on the "rough and tumble" pioneers of radio!

Editor's Apology

An apology is due to William Cooper, whose program "The Hour of the Time," is aired on WWCR, Mon-Fri at 0400 UTC. An editing change I made to Glenn Hauser's article on page 26 of the July issue was entirely in error. Although Mr. Cooper's views are controversial, white supremacy is definitely not among the principles he promotes. My rewording made an assumption that should not have made. I wish to thank the reader who graciously called it to my attention, and apologize to both William Cooper and to Glenn Hauser for my mistake.

We'll print more of your letters next month, as our readers write in to share thoughts and experiences about these interesting monitoring times!

— Rachel Baughn, Editor

Is the FCC Abandoning Us?

A rebuttal by Harry Helms

Let me suggest the reverse of the May "Closing Comments" title, and ask instead: "Is it time for us to abandon the FCC?

The number and placement of FCC field offices never had anything to do with enforcement and serving the public; they were established to facilitate maritime communications. With privatized license exams, end of station inspections, etc., the reasons for the number and placement of FCC field offices are no longer valid. If their existence cannot be justified on the basis of current needs and realities, they should be closed.

Actually, quite a few functions once performed by the FCC are now performed very well by private groups. The volunteer exam systems for ham and commercial licenses are clear successes. Private groups handle frequency coordination and selection for land mobile radio services, including repeater siting and coverage.

Similar private groups have done outstanding "regulatory" work in other fields, such as Underwriters' Laboratories, a private outfit funded by insurance companies.

While the FCC can't get entirely out of the enforcement business, a good part of their paperwork (licensing, call sign assignments, etc.) and regulatory efforts could—and should—be offloaded to industry and private organizations. Fees should be charged to the beneficiaries of such services rather than coming out of general taxes.

I think a lot of interference problems could be resolved locally instead of being constantly referred upwards to the FCC. Harassment is harassment, whether by radio or telephone, and something tells me a booking at the local jail might have more of an impact than a notice of apparent liability. Why should a dispute between two hams in the same town be kicked all the way up to Washington for resolution?

Instead of pleading for a renewed FCC presence to make us behave, those of us involved as professionals, hobbyists, or both in electronic communications need to take responsibility for ourselves and our activities. And rather than waiting for the FCC, ARRL, NAB, etc., to come up with innovative ideas, we—the rank and file—need to provide them.

Here are three ideas I think are terrific: (1) Legalize current 'outbander' operation between CB and 10-meters and let the various freebander organizations 'police' it to whatever extent they can. (2) Drop the CW requirement for all ham licenses to 5 wpm now and order the FCC to seek total removal of it from international requirements at the next WARC. (3) File an exception with the ITU authorizing amateur stations in the U.S. to use the 25.6 to 26.1 MHz international broadcasting band on a secondary, non-interference basis for noncommercial, one-way experimental transmissions; i.e., a legal outlet for many (but not all) pirates.

www.americanradiohistory.com

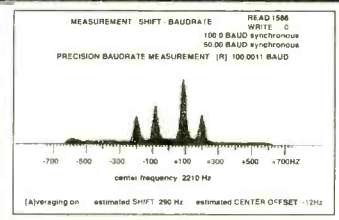
FINALLY - NOW AVAILABLE IN THE USA
The Decoder that is the STANDARD of the European Continent.

HOKA CODE-3 USA Version

Many radio amateurs and SWLs are puzzled! Just what are all those strange signals you can hear but not identify on the Short Wave Bands? A few of them such as CW, RTTY, Packet and Amtor you'll know - but what about the many other signals?

There are some well known CW/RTTY Decoders but then there is CODE-3. It's up to you to make the choice, but it will be easy once you see CODE-3. CODE-3 has an exclusive auto-classification module that tells YOU what you're listening to AND automatically sets you up to start decoding. No other decoder can do this on ALL the modes listed below - and most more expensive decoders have no means of identifying ANY received signals! Why spend more money for other decoders with FEWER features? CODE-3 works on any IBM-compatible computer with MS-DOS with at least 640kb of RAM, and a CGA monitor. CODE-3 includes software, a complete audio to digital FSK converter with built-in 115V ac power supply, and a RS-232 cable, ready to use.

CODE-3 is the most sophisticated decoder available for ANY amount of money, and the best news of all, is that it is available from a United States dealer.



Simulated Speed Measurement Module

26 Modes included in standard package include:

- Morse
- RTTY/Baudot/Murray
- Sitor CCIR 625/476-4
- ARQ - Navtex
- AX25 Packet
- Facsimile all RPM (up to 16 gray shades at 1024 x 768 pixels
- Autospec - Mk's I and II
- DUP-ARQ Artrac
- Twinplex
- ASCII
- ARQ6-90/98
- SI-ARQ/ARQ-S
- SWED-ARQ-ARQ-SWE
- ARQ-E/ARQ1000 Duplex
- ARQ-N-ARQ1000 Duplex Variant
- ARQ-E3-CCIR519 Variant
- POL-ARQ 100 Baud Duplex ARQ
- TDM242/ARQ-M2/4-242
- TDM342/ARQ-M2/4
- FEC-A FEC100A/FEC101
- FEC-S • FEC1000 Simplex
- Sports info 300 baud ASCII
- Hellschreiber-Synch/Asynch
- Sitor • RAW (Normal Sitor but without Synch
- ARQ6-70
- Baudot F788N
- Pactor
- WEFAX

Available as extra options

Option 3 Piccolo $85.00
Option 4 Coquelet....$85.00
Option 5 4 special ARQ & FEC systems TORG-10/11, ROU-FEC/ RUM-FEC, HC-ARQ (ICRC) and HNG-FEC.....$115.00
Option 8 SYNOP decoder $85.00

- All modes in typical baud rates with possibility of changing to any desired value of speed and shift.
- All options are available from the main menu, saving or loading to and from hard/floppy drive in bit form, means no loss of unknown signals!
- HURRY! For a limited time the Standard CODE-3 package includes FOUR options:

1. OSCILLOSCOPE 2. ASCII STORAGE 6. AUTO CLASSIFY 7. PACTOR

Live Support after the sale. Computer Aided Technologies is dedicated to customer support!

STANDARD CODE-3 PACKAGE $595.00
ALL FOUR EXTRA OPTIONS - $199.95

NOW AVAILABLE — CODE-30 DSP-Based Decoder with all above options. SCALL (318) 687-2555
(SHIPPING & HANDLING $10.00) *DEMO (SLIDE) DISK ONLY $5.00* DEALER INQUIRIES INVITED

COMPUTER AIDED TECHNOLOGIES
P.O. BOX 18285 - SHREVEPORT, LA 71138
ORDERS ONLY - (318) 636-1234 FAX (318) 686-0449 (24 Hrs)
Live Tech Support (318) 687-2555 - (9 a.m. to 1 p.m. Central M-F)
Nitetime BBS (SCANCAT File Area) (318) 631-3082 (7 p.m. - 6 a.m. Central)
Online support available on GEnie. • E-mail - j.springer7@geis.com
Order direct or contact your favorite dealer

UNLOCK FULL 800 MHz

$40

FREE CELLULAR FREQUENCY CHARTS

CLASSIC SCANNERS

PRO 34,37,39,43,46,2004,5,6
2022,26,27,30,32
BC 200,205,2500,700,760
855,890,950

Over 1500 Satisfied Customers

Same Day Service...

FREE Insured
UPS Return

FOR DETAILS CALL:
508-281-8892

SHIP TO:
Cellular Security Group
37 Causeway Street
Gloucester, MA 01930

Note: Certain modifications may be in violation of F.C.C. rules and regulations. Cellular Security Group assumes no further responsibilities beyond those stated in this ad.

Note: ONLY the "classic scanners" listed above can be unlocked and some are restricted by the date of manufacture.

Travel the World with Grundig!

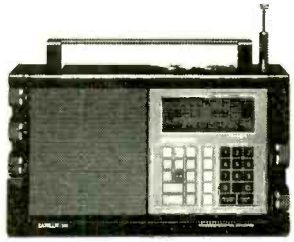
Three great digital models to choose from...

Yacht Boy 305

ALL NEW FROM GRUNDIG!
A low-cost, high-quality SW portable with 30 memory presets, continuous tuning from 2.3—21.85 MHz, plus AM/FM, direct entry keypad, large cavity speaker, more.
List $149.95
Gilfer Price: $129.95 *(+$6 s/h)*

Yacht Boy 400

Our best-selling compact portable! Full SW coverage plus AM/FM/LW, 40 memories, dual bandwidths for fighting interference, SSB reception, great sound, carrying case, and more. *List $249.95*
Gilfer Price: $199.95 *(+$6 s/h)*
Optional AC adapter: $10.95



Satellit 700

Grundig's flagship SW receiver, with advanced microprocessor functions, synchronous AM detection, USB/LSB, alphanumeric memory channels, 512 presets (expandable to 2048!), AC power supply. *List $699.95*
Gilfer Price: $ CALL!

NEW HOURS:
M-F 10am—8pm EST
Sat. 10am—5pm EST

GILFER SHORTWAVE

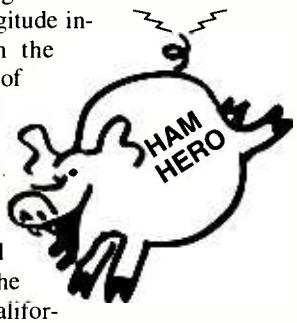
52 Park Avenue
Park Ridge, NJ
07656

TOLL FREE ORDER LINE: (800) GILFER-1
NJ & Technical: (201) 391-7887 • Fax: (201) 391-7433
E-Mail: GilferSW@aol.com • WWW Home Page: http://www.pics.com/gilfer

www.americanradiohistory.com

Ham Saves the Day

■ Doug Burrows heard the mayday call faintly, but managed to hear the latitude and longitude information from the static. Burrows, of Edmonton, Alberta, called the US Coast Guard rescue center in San Francisco and told them about the yacht off the California coast that had lost its rudder and was drifting in 24-foot waves. A C-130 Hercules and a Coast Guard cutter with helicopter were dispatched.



Because of the difficult in receiving the yacht's call, Burrows phoned a friend with a 120-foot antenna. Ben Poitras, manning a ham station at the Edmonton Space and Science Center, made contact with the yacht *Grenadier* and relayed messages between them and the Coast Guard. The sailors aboard the *Grenadier* were lucky. They had a crew member aboard who had just become a ham operator.

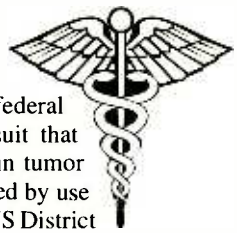
Senior Radio Makes History...Again

■ WMKV-FM is the nation's first radio station to be owned by a retirement community, but now the station has reached another milestone: it's the first FM educational station to target people over the age of sixty as the primary audience. WMKV broadcasts on 89.3 FM from studios at Maple Knoll Village in Cincinnati, Ohio.

Station Manager Connie Langhorst said, "we've purchased an automated music system and a music library that includes standards from 1915 to 1955, and a large part of our airtime will be devoted to health and wellness information for older adults."

The 1,000 watt, non-commercial station covering the entire Cincinnati area and part of northern Kentucky will be on the air 24-hours per day.

Not From a Cell Phone, You Didn't



■ A Tampa, Florida, federal judge dismissed a lawsuit that claimed a woman's brain tumor was caused or encouraged by use of a cellular telephone. US District Judge Ralph Nimmons, Jr., said the burden of proof to show cause and effect was on David Reynard, husband of Susan Reynard, who died in 1992. "The mere possibility of such causation is not enough," Nimmons said. Scientists are still unable to say if cellular radio waves are harmful.

Tower Topples

■ When the 370-foot radio tower toppled, it wasn't from high winds or a structural weakness; it was vandalism. A 17-year-old Burton, Michigan, man was arrested for cutting the guy wires to WCRZ-FM's antenna tower. The station is the top-rated FM station in Flint, Michigan. Broadcasts were hastily shifted to a makeshift studio at a soybean farm. A new antenna, costing the station $150,000 was shipped within days to get the station back on the air.

Legally Cloned "Extension" Phones Under Fire

■ Say you've got your cell phone mounted in your Lexus, but sometimes you drive the Dodge to work, or maybe even (heaven forbid) the Ford. You really need another phone in each car, but you don't need the hassle of paying for and remembering two additional numbers. So, you get a couple of cloned "extension" phones from a dealer. It's legal, because you're paying for airtime on one number—you just have three phones.

Or is it legal? Maybe not, says Massachusetts State Police Trooper Kevin Hogaboom, a cellular fraud specialist. He claims the extension phones violate a Massachusetts law. Law enforcement hasn't yet moved to apprehend violators, but that could change. Cellular companies are beginning to object to the practice.

Tap, Tap

■ In the wake of the bombing of the Oklahoma City federal building, Congress is moving forward on a request from FBI Director Louis J. Freeh for more agents, improved wiretap technology, easier access to credit records, roving telephone taps, and other surveillance techniques. The administration is asking for $1.25 billion to fund the Digital Telephony Act. The Act, which requires communications companies to upgrade their digital systems so federal agents can tap them, was passed last year but not paid for. In addition, the money would help develop the Clipper Chip.

The bill would also allow FBI agents engaged in foreign counterterrorism investigations to obtain personal information from credit agencies, airlines, and related companies without a grand jury subpoena; ease the use of pen registers and trap and trace devices in foreign counterterrorism investigations; expand the list of felonies used to get a court's approval for phone taps and electronic surveillance; give foreign governments limited approval to conduct wiretaps in the US; and ease restrictions on the use of roving cellular phone wiretaps.

Police Radios Fail

■ The San Rafael Police Department's radio system was having a bad day...unfortunately it was Memorial Day, traditionally a hectic time for law enforcement. For five hours, the system was down, forcing officers and dispatchers to communicate via cellular phones and on an alternate car-to-car frequency.

This isn't the first time the $521,000 radio system has hiccuped; it has failed at least one other time since its 1990 installation. Technicians are attempting to diagnose the problem.

Monster Gets Stomped

■ Local residents of Latvia called it "The Monster." The monster was a 230-foot radar tower, reinforced with 41,000 concrete blocks and 8,000 tons of steel. The structure was designed to withstand attack from enemy sources, like the US. Last month, the Monster was indeed demolished by forces from the U.S.—a demolition team hired by the Latvian government.

Within seconds the great tower that had been a reminder of Soviet occupation was a twisted heap. *Skrunda*, as the tower was called, was a key part of the Soviet defense system, searching the skies for incoming American bombers and missiles.

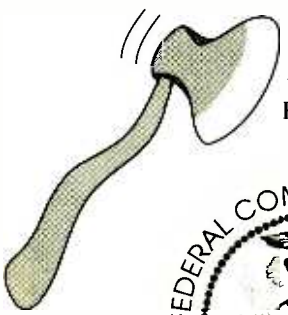
Low Power Radio Service

■ The FCC is looking to combine several uses of radio into the Low Power Radio Service in the 216-217 MHz band. Presently, the band is allocated to the maritime services' Automated Maritime Telecommunications System. The band has four groups of frequen-

www.americanradiohistory.com

cies, two of which were reallocated and only use one side of the duplex frequencies. The remaining freqs would be used for auditory assistance systems, AMTS network control, and the law enforcement tracking system.

No More FCC?



■ Newt Gingrich is at it again. This time the Georgia Republican has proposed axing the FCC in favor of a new executive branch known as the Office of Communications Policy. Staffing would be cut from 2,200 to 250 people who would oversee frequency allocations, supervise telephone companies, settle disputes and more. Under the plan, broadcasters and other current holders of FCC licenses would be granted permanent claim to their licenses at no charge, while future licenses would be auctioned.

FCC Commissioner Jim Quello says the proposal is "too drastic and impractical." FCC Chairman Reed Hundt says, "private interests should not own 100% of the action." One thing the FCC *would* like to see eliminated is the over 200,000 separate license applications for the operation of ship, aircraft, and personal radio equipment they process per year.

Rape Suspects Caught By Scanner

■ Stafford County, Virginia, Deputy Sheriff Robin Perkins knew something was wrong when she offered a ride home to a girl she found walking alone at 1am. The teenager seemed upset, but wouldn't reveal the problem to the deputy.

After dropping the girl off at home, Perkins drove away to resume patrol when the scanner in her patrol unit picked up a cellular phone conversation between the girl and her alleged attacker. Perkins recognized the girl's voice and returned to the home to question her. The girl told the deputy about the assault and arrests were subsequently made.

Stafford County Detective Jeff DeBord said that if Deputy Perkins hadn't heard the call, "odds are that we would never have known about the assault."

In Memorium

■ The radio world lost three leaders recently. Art Fleming, the original host of television's "Jeopardy," an actor in 48 movies and radio host at KMOX-St. Louis, died April 25th of pancreatic cancer. He was 70.

In Florida, A.B. "Bill" Hartman, a veteran radio executive for Westinghouse Broadcasting, died after a long fight with cancer. The 66-year-old had served as general manager at KDKA in Pittsburgh until 1978 and then as general manager at Boston's WBZ-AM from 1978-1988.

William McCormick, former president and general manager of WNAC-TV in Boston and former general manager of WOR radio in New York, died from pulmonary fibrosis in Boston. He joined WOR in 1946, became GM, and then moved to WNAC-TV, where he was GM and president until 1972. In that year he formed McCormick Communications, which acquired radio stations in five states. McCormick was 73.

KCMO System Idea Revised

■ Bowing to the uproar over the Kansas City, Missouri, Police Department's new encrypted radio system, a compromise has been reached which will make unencrypted communications available to certain community groups, including the news media, private security companies, and neighborhood watch groups. Chief Steven Bishop specified guidelines for limited public access, saying, "This is a reasonable comprise that offers continued access to the public but protects the officers on the street."

A draft set of guidelines has been approved, and a 90-day test period will begin after the full system is on line, sometime in August. KCMO's proposed system would have been the most restrictive in the nation. Even so, the compromise still leaves conventional scanner listeners out in the cold, since approved groups gain access only by buying programmed radios at cost.

Saved by a Cell Phone

■ Darrell Gene Devier was only twenty minutes away from death in a Georgia electric chair when a storm knocked the power out. The 39-year-old Devier, who had been waiting on death row since his 1979 conviction for the kidnapping, rape, and beating of a 12-year-old girl, was due to be put to death at 7pm sharp.

The electric chair that was to help carry out the sentence had its own power source and backup generator and was not affected by the outage. The prison phone system, however, went out at the same time as the lights.

Georgia Attorney General Michael Bowers had been on the phone talking to his office, awaiting word of a reprieve for Devier. With the phones out, Bowers was forced to jump in his car, pick up his cell phone and drive a half-mile up the highway to find a good signal. He did, and learned that Devier had been given a stay of execution. Racing back to the prison minutes before 7pm, Bowers delivered the news to prison officials.

The Corrections Department was quick to point out that, if the phones had remained out of commission and Bowers hadn't had a cell phone, the execution would have been delayed.

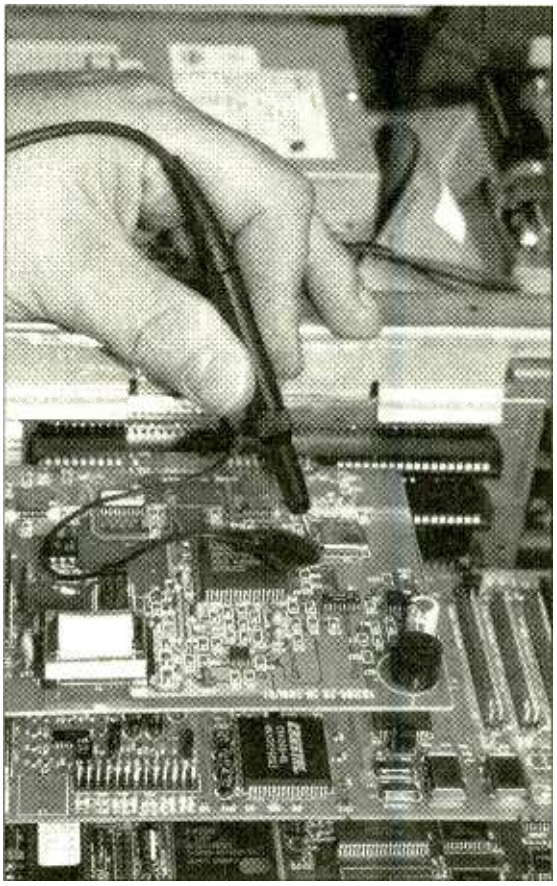
"Communications" is written by Larry Miller with help from Laura (She's sorry) Quarantiello, Rachel Baughn, and the following readers who are members of the Communications Media Monitoring Team; Dave Alpert, New York, NY; Ron Bruckman, Hampstead, MD; Eric F. Cutler, San Rafael, CA; Bob Fraser, Cohasset, MA; Bruce Frederick, Burlington, MA; Scott Glicker, Sunrise, FL; Eva Kabago, Ventura, CA; Maryanne Kehoe, Atlanta, GA; Jack McCartan, Newark, DE; Paul McDonough, Somerville, MA; Ira Paul, Royal Oak, MI; Brian Rodgers, Allen Park, MI; Larry Salisbury, Overland Park, KS and Richard Sklar, Seattle, WA. We also consulted the following publications and we list their names in appreciation: BBC World Broadcast Information, National Scanning, Radio World and W5YI Report.

www.americanradiohistory.com

When Your Equipment is Ailing or Needs a Mod

Send It Now to 'Dr. Bob'

Grove Enterprises is a company with a reputation that you can trust. Our **certified and licensed technicians** are dedicated to providing fast, efficient and affordable repairs and modifications for the communications industry.



REPAIRS:

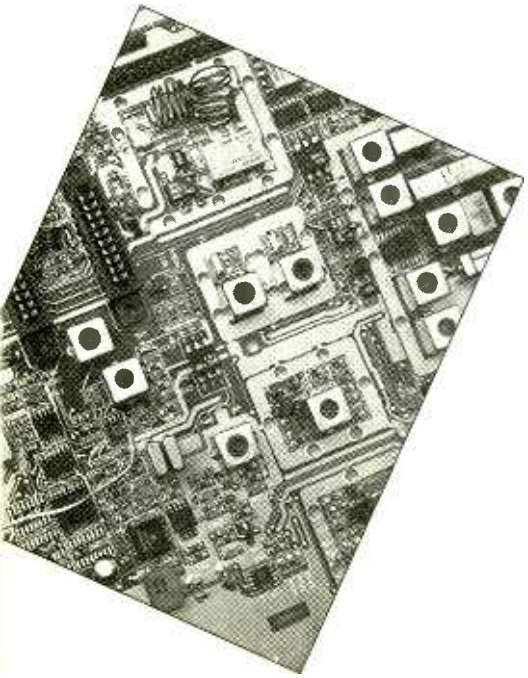
- **Repair for receivers, scanners and transceivers.**
- **We specialize in equipment less than five years old from Radio Shack, Uniden, Santec, ICOM, Kenwood, Yaesu, Sony and Ten-Tec.**
- **All equipment serviced by Grove Enterprises is warranted for a period of 90 days.**

MODIFICATIONS:

- **Frequency expansion**
- **Cellular restoration**
- **S meter addition**
- **Scan/search speed increase**
- **Accessory installation**
- **Memory channel expansion**
- **Squelch and audio improvement**

... *and many other modifications available*

The Grove Assurance of Quality applies to all products that we sell and now service!



Here's All You Need to Do:

1. **Call the Grove Technical line at 704-837-7081 to discuss your request.**
2. **Grove will issue you a service order (SO) number and shipping instructions which include sending your check for $39 diagnostic/repair fee plus return shipping. After our expert assessment, we will notify you if there will be any additional labor and/or parts charge.**

We LOVE trade-ins at Grove Enterprises!

Call 704-837-7081

Grove Enterprises, 300 S. Highway 64 W., Brasstown, NC 28902

www.americanradiohistory.com

Kilauea

Scanning the World's Most Active Volcano

Pu'u 'O'o, an active vent on Kilauea's East Rift has been continuously active for more than ten years, pouring red hot molten lava into the sea.

"I feel the earth move under my feet" —Carol King

By Chuck Penson

Even when you can't feel the earth move, you can sure hear it with your scanner. The Big Island of Hawaii is more geologically active and experiences more earthquakes than the state of California. Add to this that an earthquake may foretell or even trigger an eruption of the island's Kilauea volcano—the world's most active volcano—and it's easy to understand why keeping close tabs on the island's geologic condition would be of significant interest. And radio, I discovered, plays a major role.

On a recent visit to the Big Island I stopped by the Hawaii Volcano Observatory, operated by the U.S. Geologic Survey and located on the rim of Kilauea's summit crater in Hawaii Volcanoes National Park. The observatory has an impressive visitor's center with exhibits explaining how volcanoes work, but of interest to me was the number of operating seismographs monitoring stability in various locations in the park.

Outside the observatory one can't help but notice a large assortment of VHF and UHF yagis mounted on a short tower. Pulling my Pro 43 out of my back pack, I began searching for signals; it didn't take long to find numerous telemetry tones and buzzes.

Taking a chance, I went around the back of the building, found the general offices, and politely inquired if there was someone with whom I could discuss the observatory's radio systems. I was introduced to Ken Honma, one of the facility's electronics technicians, who kindly took 20 minutes out of his busy schedule to give me a behind-the-scenes tour.

www.americanradiohistory.com

Wired for Sound

Our first stop was the radio room, a small outbuilding near the antenna tower across the parking lot. Ken told me that the Big Island is quite literally wired for sound. Twenty-four hours a day, dozens of remote monitoring stations radio seismic data back to the observatory. These remote stations are solar powered and typically run about 100 milliwatts into 5- or 7-element, horizontally polarized yagis. Each transmitter can send up to eight channels of data depending on how many conditions are being monitored at a particular site. Additionally, many sites act as repeaters for other more remote stations.

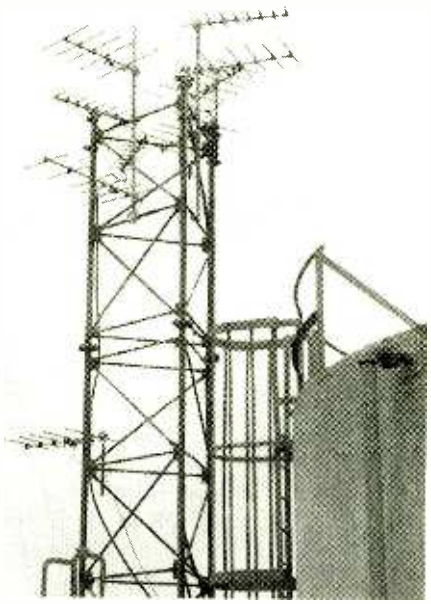
All the seismic stations use an analog data system with FM modulation. About a dozen, small, wall-mounted receiver modules feed audio signals to an electronics package that splits the multiplexed data into discrete channels. These channels are sent to the computer room in the main building where the analog information is digitized, time coded, and stored on digital audio tape cassettes. Once safely digitized and stored, the data can be analyzed using a variety of computer systems.

Tilt! Game's Over.

In addition to seismic data, the observatory also collects tilt data. Tilt meters measure the swelling of land surfaces due to the intrusion of volcanic magma from deep underground. Since tilt information must be of extremely high accuracy to be of any value, analog data systems can not be used. Instead, the information from tilt meters is digitized in the field and sent back as data bursts.

Every ten minutes a computer located at the observatory polls each remote tilt sensor via radio by means of four-digit Touch-Tone

Above: The U.S. Geologic Survey's volcano observatory is perched on the rim of Kilauea's summit crater. Seismic radio receiver antennas shown at left foreground. The radio room is below and between the two tanks. Below is a closer view of the seismic radio receiver antennas which keep the center in touch with the many rumblings underground.



sequences. When a remote station hears its four-digit address, it answers with a data burst containing tilt information. Since the system operates on a simplex channel, you can often hear both sides of this computer conversation.

Table 1 shows a small sampling of seismic station frequencies—there are dozens more. Note that only one tilt meter frequency is used for the entire park. As you drive and hike around the park, set your scanner to search between 163 and 174 MHz, and between 405 and 420 MHz. With just a simple rubber duck antenna you will hear dozens of signals, depending on your location and elevation. I logged over 30 stations in a few days of casual scanning.

The actual sound of the signals will vary depending on how many channels of information are being transmitted. Single channel stations sound like a pure note, while multichannel units have a whining tone. Listen carefully to a single channel station and you will hear that the tone warbles almost continuously by a few Hertz—the earth under Hawaii Volcanoes National Park is in constant motion. If you listen long enough you may even be able to hear an earthquake—everyday there are more than a dozen small quakes in the park.

Although the park's many seismic stations are not intentionally hidden, most are located out of view and are not easily discovered. With a bit of hiking and a little luck (or some radio direction finding gear) you may be able to find a few sites. If you do, be very careful not to disturb the units. They are vital research tools quietly keeping a constant vigil to ensure the safety of everyone on the island.

Other frequencies of interest in the park include 168.550 MHz (repeater output), the primary park ranger and general operations channel. The U.S.G.S. uses 167.950 MHz (simplex) for its various field activities and for talking to the helicopters that fly them around the area. Several companies offer helicopter tours of the park and use 122.900 MHz to coordinate their activities when flying near the active volcanic areas. The chopper comms often yield valuable information about weather conditions and current volcanic activity.

A special thanks to Ken Honma and the U.S. Geologic Survey for adding an unexpected dimension to my Hawaiian tour—and now perhaps to yours, too.

TABLE 1

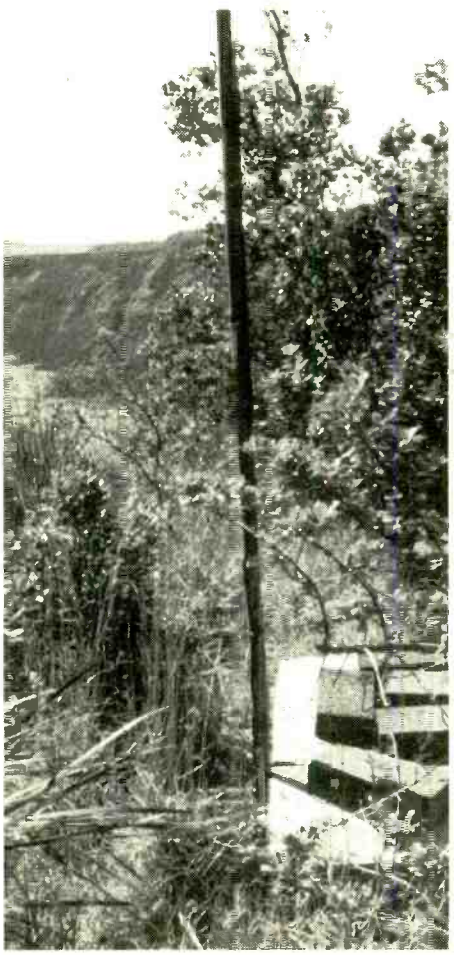
Selected seismic stations

163.275	164.845	165.810
166.420	167.810	170.200
173.210	407.4625	408.5125
416.8000	416.8125	418.1000
419.6250		

Tilt data 171.220

www.americanradiohistory.com

The author with a seismic station, located just above the 13,000 foot level on the slops of Hawaii's Mauna Kea, home of the famous Keck telescope. This station is also a repeater. In addition to sending data from this site, it relays signals from two other remote locations. Scanning from this altitude was very interesting, but the lack of oxygen made it difficult to remember how to use my Pro 43. (No joke!) Below is a remote seismic station on the crater rim (note crater in background). The sensor is in the box weighted down with bricks. The antenna mast is also visible.



SMART BATTERY CONTROLLERS
FOR LEAD-ACID OR GELL-CELLS

WILL NOT OVERCHARGE. SWITCHABLE CURRENT, PTC FUSE, REVERSE BATTERY PROTECTION, TRICKLE START-UP, DBL SIDED PCB.

BASIC KIT 6 TO 14V 1/2 - 1A....$54.95; 24 TO 28V 1/2A....$ 64.95
OPTIONS: TRANSFORMER.....$ 18.95
AUTO LOW VOLT DISCONNECT W ALARM OUTPUT.....$ 18.00
COMPLETE KIT: W/ OPTIONS, ALL METAL ENCLOSURE, & METER
6 TO 14V; 1 AMP.....$126.95; 24 -28 V, 1/2 AMP.....$136.95
SOLAR CONTROLLER: BASIC 6 -14V....$ 54.95; 24-28V $ 64.95
COMPLETE 6 TO 14 V.....$109.95; 24-28V.....$119.95
5 AMP CONTROLLER W AMMETER & ENCLOSURE.....$199.95

CURTIS KEYER KIT $39.95
INCL. AUDIO AMPLIFIER, IAMBIC KEYING, ADJUST SPEED.

ANTENNAS: TWIN-LEAD LADDER-LINE
MARCONI: 80 M -.....$37.95; 160 M -.....$ 44.95
J-POLES: (2M, 6M, 220, 440 MHZ).....$8.95 TO $ 42.95
WINDOM: WITH 1:4 BALUN & 50' FEED LINE-.....$ 89.95
USA SHIP COST $5.00 1ST $100 + $1.00 / EA. ADD'L $100

1-800-JADE PRO (523-3776) FAX: 603-329-4490
VISA, MASTERCARD, CHECK OR M.O. PRICES & SPEC SUBJECT TO CHANGE
JADE PRODUCTS, INC E. HAMPSTEAD NH 03826-0368

Magic Tuning Eye

It's back...and with new features!

The *classic* Tuning Eye was popular in receivers back in the 30's and 40's to indicate signal strength. Kiwa is proud to bring it back with state of the art electronics to create a superb analog signal level display.

Compatible with any receiver tube or solid state! Features include:

• Receiver IF signal level display • AGC signal level display • Snapshot display mode • Peak indicator • 12 VDC operation • Response: 20 kHz to 20 mHz

Kiwa Electronics
612 South 14th Ave., Yakima WA 98902
509-453-KIWA or 1-800-398-1146
kiwa@wolfe.net (Internet/full catalog)
http://www.wolfe.net/~kiwa

DALLAS REMOTE IMAGING GROUP

BBS On-Line Satellite Directory

10 Lines with USR V.34 28.8K Modems

1 Year Membership - Full Downloading - No Ratios $35.00
1 Year Membership - Full Downloading - Internet UUCP $65.00
2 Year Membership - Full Downloading - Internet UUCP $95.00

USE VISA/MASTERCARD/AMEX or Send Check for Subscription
P.O. Box 117088 Carrollton Texas
75011 - 7088
(214) 394 - 7438
(214) 492 - 7747 Fax
Internet - info@drig.com
Fidonet - 1:124/6509

The DRIG BBS is the premier source of information on Satellite Tracking, Satellite Imagery, NASA, Astronomy, Space Programs, AMAST Satellite Communications, Amateur Radio AND MORE!

Over 7 Gigabytes of files related to Satellites, Remote Sensing, Amateur Radio, Digital Signal/Image Processing, INTERNET NewsGroups, FidoMail, Weather Satellite Imagery, Direct Ku Band Satellite Downlink from Planet Connect and PageSat for Internet and FidoMail ! Weather DOOR for National Weather, Radar Summaries, Weather Maps!

ON-LINE SINCE 1985

www.americanradiohistory.com

Earthquake Monitoring for the Experimenter

by Ken Cornell

The U.S. Geologic Survey monitors earthquake activity in Hawaii (as mentioned in the preceding feature article), and across the U.S., as described in the *Monitoring Times* July 1994 article entitled "After the Shock."

Considering the millions of dollars worth of equipment for monitoring earthquake activity shown in that article, an amateur seismologist might feel that there is no room in the field for the average wage earner or retiree, right?

Wrong! ...If you own a respectable radio receiver, you are 90% there.

Normally, prior to earthquake activity, faults regularly produce anomalies and precursors in the form of electromagnetic (radio) and magnetic power changes. There have been many reports from experimenters that have noted broadcast stations and low frequency beacons that show frequency shifts prior to earthquake activity. Ray Cole of Cape Girardeau, MO (near the New Madrid fault) has recorded these shifts for years. In the August 1993 issue of *Geo-Monitor*[1], Allen Mattis and a group near Houston, TX, reported frequency shifts of up to 2 kHz on numerous LF beacons.

It appears that the closer the transmitter or receiver is to a fault, the greater the frequency shift will be. As things stand to date, there is no explanation for this effect.

A Homebrew Magnetic Field Sensor

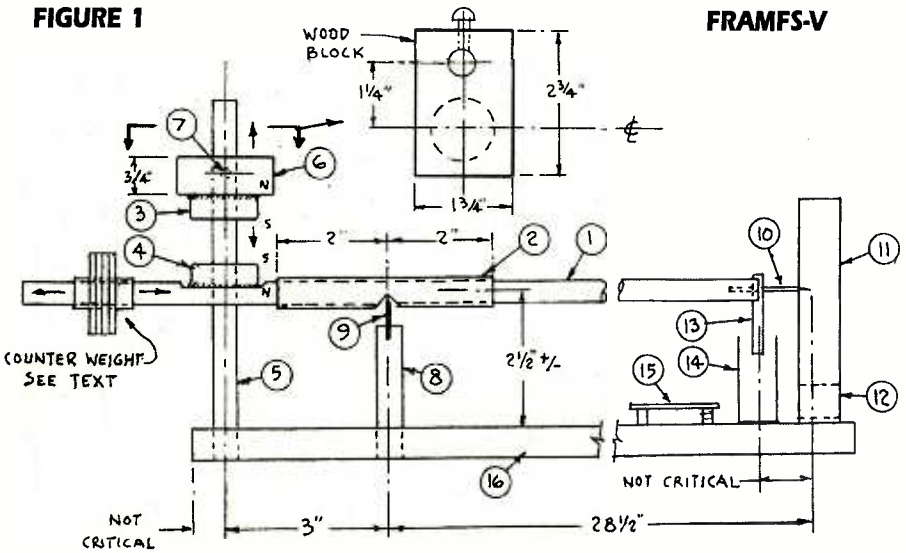
The reports of magnetic power changes prior to an earthquake are too numerous to list.

Figure 1 illustrates a device based on magnetic field changes. This project is based on proven designs which have successfully recorded precursors to a quake. The design is rugged, yet extremely sensitive, and can be constructed with parts available at your local hardware store, lumber yard, or Radio Shack. In the event of any magnetic field or gravity changes, it will indicate the same by both visual and electronic means.

I call this device a Ferrite Rod Activated Magnetic Field Sensor, Vertical (FRAMFS-V for short). The Vertical is added to indicate that the magnets' axes are vertical. The sketch in Figure 2 indicates the principle of the device.

The heart of the device is a sensor arm that acts like a balanced beam that is supported by a knife edge. I used a 3/8" diameter, 36" long, hardwood dowel as the arm, and slipped a short length of 1/2" O.D. aluminum tube over it. A "V" notch will be cut in this that will ride on the knife edge. A few wraps of tape are

FIGURE 1 **FRAMFS-V**

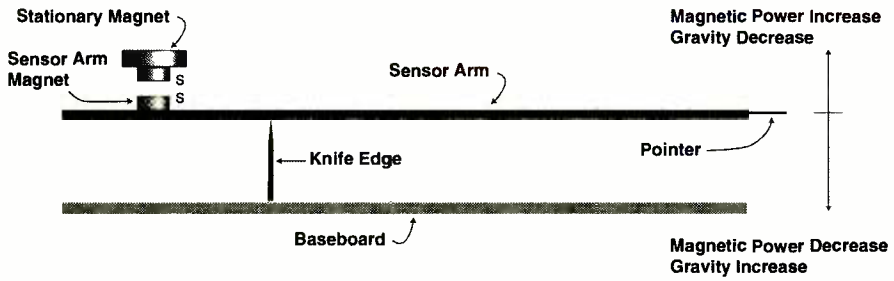


Parts Description

ItemNo	Part
1	3/8" dia. dowel, 36" long
2	1/2" O.D. aluminum tube
3	RS #64-1885 magnet
4	RS #64-1885 magnet, stationary
5	1/2" dowel
6	Stationary magnet support
7	#6 or #8-32 set screw
8	1/2" dowel
9	Knife edge (see text)
10	Pointer (see text)
11	Scale (ruler, see text)
12	Scale support
13	Ferrite rod (see text)
14	Oscillator coil
15	Oscillator circuit board
16	6"x1" pine board 36" long

www.americanradiohistory.com

FIGURE 2



Simplified diagram reveals the operating principle behind the Ferrite Rod Activated Magnetic Field Sensor, Vertical.

wound on the dowel at each end of the tube to make up for the difference in diameters, and then is cemented.

On the left side of the knife edge, a flat surface is filed in the dowel for mounting a Radio Shack #64-1885 magnet, South side up. Another #64-1885 magnet is supported directly above, with the South pole down.

On the right-hand side of the knife edge, a pointer is cemented to the dowel; it rides alongside of a length of ruler that creates the scale. 1/2" is close to one degree. The tip of the pointer is 28-1/2" from the knife edge.

Audio Feedback

I used a rat-tailed file and cut a groove in the end of the dowel and cemented a short length of 1/4" ferrite rod therein. This rod will ride within the field of a self-excited oscillator coil. Any movement of this rod will change the oscillator's frequency, which can be monitored on a receiver with the BFO on.

Due to the weight of the long arm on the right side, a counter balance is used to permit proper balance and positioning of the ferrite rod in the coil, as well as setting the pointer (if desired). I used a 1-1/2" piece of the aluminum tube and cemented four 1/2" brass fender washers to same. This assembly can be slid along the dowel to obtain the desired balance.

Any type of self-excited oscillator can be used, but I suggest that a range from the broadcast band down to around 7 MHz be considered. If you have a good receiver that lacks a BFO, you could used the BC band and heterodyne the oscillator's frequency against a strong station.

For the knife edge, I tried a single edge razor blade, but found that they were too thin and not stable. I have finally made my own by using a piece of tempered aluminum or brass 1" x 3/4" and filing a sharp edge on the 1" length. I sawed a vertical slot in the knife edge support dowel and cemented the knife edge thereto.

Some experimenters may not have the ferrite rod. Short lengths can be found in many adjustable RF Coils, and several could be cemented together for proper length. Also, many mail order houses offer ferrite rods. A reliable source is Amidon Associates, 12033 Otsego St., N. Hollywood, CA 91607. A permeability of 800 or higher is desirable for the rod.

I suggest coating the sensor arm dowel with a spar varnish. I also used epoxy cement (Duro Quick-Gel) for cementing the magnets and ferrite rod.

How Firm is Your Foundation?

It is most important that the finished device be placed on a solid support, free from vibrations and drafts. If an On-Off switch is used for the oscillator, be sure it is remote, and not structurally connected to the device. This will prevent you from jarring the sensor.

When monitoring the oscillator's frequency, you will note that there is a consistent "yen-yen-yen" indicating a slight frequency shift, due to the fact that the ferrite rod on the end of the sensor arm never seems to come to a complete rest. For want of a better name, I call this phenomena, "gravity waves."

For the oscillator coil, I used a 3/4" diameter plastic pill bottle that can be obtained from your friendly druggist.

Using the Sensor

So, you decide to become an amateur seismologist and start to monitor some BC stations or LF beacons for frequency shifts. Maybe you even build the Magnetic Field Sensor from this article. What next?

At the moment, all I can say is: keep records. Note the time, frequency, station ID, and apparent frequency shifts, and note changes in the sensor arm scale. Check with the media periodically for reports of earthquake activity.

With the growing interest in this field, sooner or later, I am sure that a network will be forthcoming, no doubt using computer technology. Then your reports can be correlated with those of monitors across the country. Eventually we should know if there is a useful pattern to our information or not.

References:

The Geo-Monitor, 65 Washington Street #400, Santa Clara, CA 95050. A monthly publication concerning earthquake activities. It is as nontechnical as possible and dedicated to the experimenter and professional alike. $22.00/year 1st class mail. $30.00 overseas mail. $2.00 single copies.

The Longwave Club of America, 45 Wildflower Road, Levittown, PA 19057. Publishes a monthly called the *Lowdown*. Contains MEDFER and LOWFER activities (medium and low frequency experimenters). Also an excellent source for location and frequency of active low frequency beacons. Subscription is $18.00/year, 1st class mail and $19.00 Canada and $26.00 overseas Air.

JAVIATION

Carlton Works, Carlton Street, Bradford. BD7 1DA. U.K.
Telephone: 011 44 1274 732146 FAX: 011 44 1274 722627
CompuServe: 100117,535 Internet: info@javiaton.demon.co.uk

"ON LINE" CATALOGUE AVAILABLE VIA THE INTERNET WWW.

If you have Internet access (which is now available via CompuServe) together with a World Wide Web (WWW) Browser you can view & retrieve information, images and other details on many of the receivers available. Just point your browser to URL:

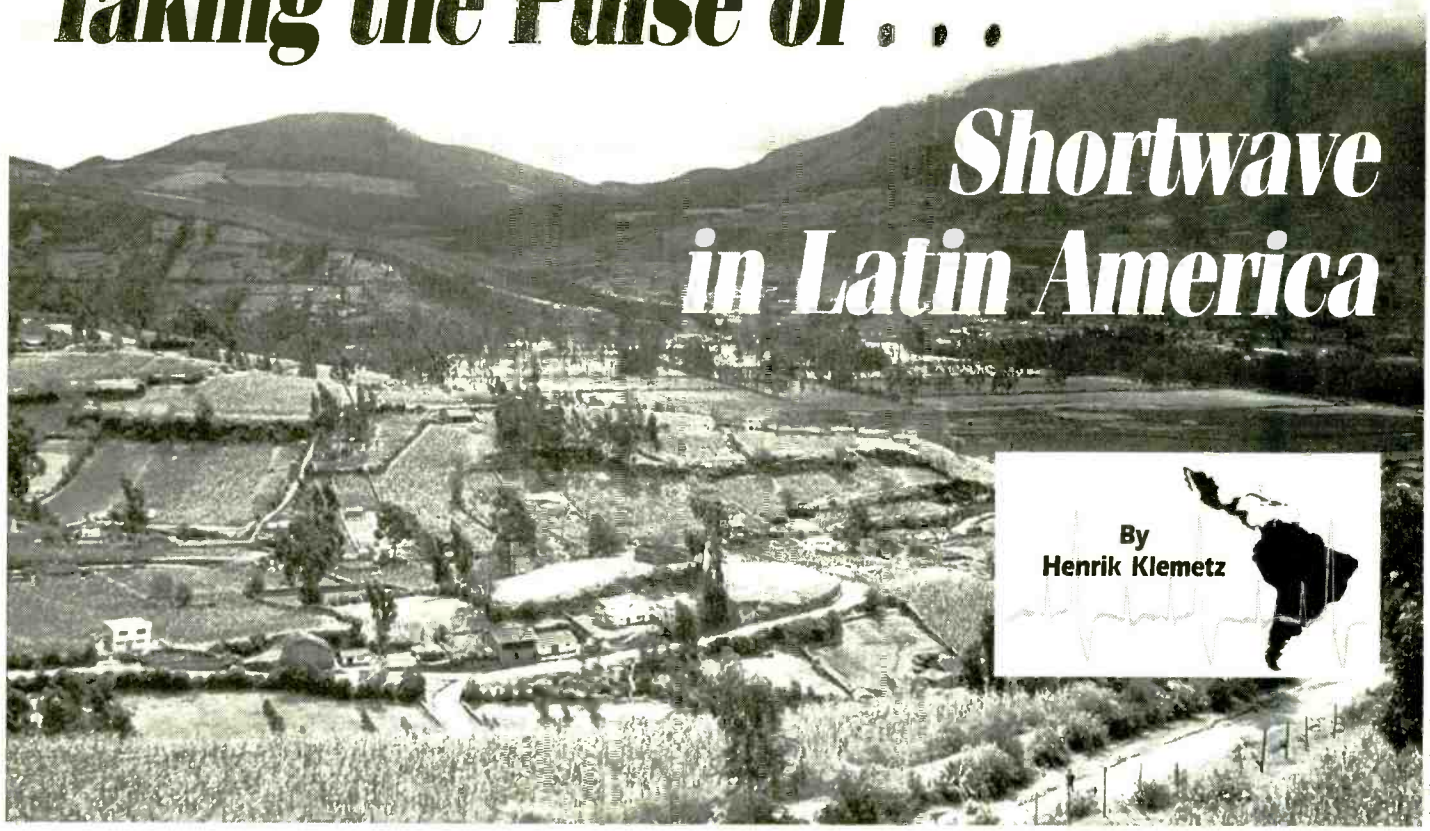
http://www.demon.co.uk/javiation

HF, VHF & UHF RECEIVERS AND ACCESSORIES FROM
ALINCO • AOR • ICOM • LOWE • RADIO SHACK / REALISTIC • SIGNAL • SONY • UNIDEN • YUPITERU

www.americanradiohistory.com

Taking the Pulse of . . .

Shortwave in Latin America



By
Henrik Klemetz

Photo by John Bailey

Shortwave as a means of broadcasting into the countryside is still alive and well south of the border—such as in this rural area of northern Ecuador.

In certain parts of Latin America, shortwave is still an attractive means of communication. During 1994 alone, *fifteen* new Peruvian stations appeared on shortwave. Additionally, in Perú, eight shortwave stations were reactivated or have changed their transmitting frequency. New shortwave stations have also appeared in Bolivia, Ecuador, Guatemala, and Honduras.

"Shortwave doesn't yield any profit," declares Fernando Molina Soto, Sales Manager of Colombia's *RCN* network.

This view is probably shared by many of his colleagues in the main Latin American capitals. However, in the countryside, in areas far away from the glittering neon lights of the Latin American mega-cities, there is still need for shortwave.

Shortwave is used for more than just broadcasting. East of the Andean cordillera—especially in Colombia, Ecuador, Perú, and Bolivia—in the absence of reliable telephone lines, radio is frequently used as a means of communication.

Photo by John Bailey

In Colombia, there are numerous mobile telephone networks operating on shortwave, usually around 5800 and 6400 kHz. From your car or from your *finca* you contact the network HQ from which phone patch communications can be arranged.

In message programs on Peruvian stations, the addressee is often asked to report back via a particular broadcasting station instead of by phone (as there probably is none), and not by mail, which would be too slow in most cases.

In Bolivian message slots, schedules for two-way communication by radio are commonplace. "Please report back tomorrow morning, at 8 o'clock, on 4285 USB." This kind of message is common on stations such as *R. Santa Ana,* 4649 kHz, and *R. Eco,* 4409.3 kHz. In Bolivia, there are numerous *haciendas* in the Bolivian outback which rely

www.americanradiohistory.com

LOOK

AND SEE WHY

U.S. SCANNER NEWS

Is the *ONLY* national monthly magazine devoted entirely to the hobby of VHF-UHF monitoring. *NO* Shortwave Broadcast!!

Each Month You Get:

AVERAGE 50+ PAGES PER MONTH

- ➤FCC Monthly Updates For ALL States
- ➤Outstanding Feature Articles
- ➤In-depth, unbiased reviews
- ➤Accurate frequency information
- ➤The latest FCC actions
- ➤Helpful scanning and technical hints
- ➤Plus regular monthly columns

REGULAR MAGAZINE FORMAT

1-800-890-6999

Call Now With Your Credit Card Or Send a Check or Money Order To:

U.S. Scanner Publications
PO Box 14923
Portland, OR 97214-4923


- ❑ One Year for only $20.00. (Other Countries $34.00 US funds)
- ❑ Two Years for only $35.00. (Other Countries $64.00 US funds)
- ❑ Three Years for only $49.00. (Other Countries $92.00 US funds)
- ❑ Sample Copy $3.00 1ST Class. (Other Countries $5.00 US funds)

Name _____

Address _____

City, State, Zip _____

MC/Visa/Discover # _____ Expires _____

www.americanradiohistory.com

on radio for communication with the rest of the country.

A Risky Business

The economy of many of these tiny shortwave operations is rather precarious. So when the equipment breaks down for one reason or another, the period of inactivity may extend for months or even years.

In 1994, a Peruvian, unreported for over 10 years, suddenly came back to shortwave. *R. Jaén "La Voz de la Frontera,"* on 5005.6 kHz, returned to the air in mid-November, announcing shortwave and medium wave, with FM soon to come.

Another Peruvian, *R. Horizonte,* in Chachapoyas, also made it back to SW after two years of silence. In their case, the reason was technical, rather than economic. Their initial frequency, 5008.8 back in 1992, had to be changed in order to avoid interference from the Ecuadorian *Escuelas Radiofónicas* on 5010.3 kHz. While making this change, the owners of this station, which is the Catholic Church, asked their sponsors in Spain to replace their SW transmitter with another one, and also to throw in an extra FM transmitter for local coverage.

In other cases, a change of ownership may also entail the reactivation of a shortwave transmitter. Such is the case of *R. América,* in Lima, Perú, whose 49 meter band outlet was reactivated in March 1994,

R. La Oroya, a friendly Peruvian station, just picked up shortwave in 1994.

having been silent since the beginning of 1989. In this case, however, the SW outlet just relays the FM program from 94.1 MHz.

Many shortwave transmitters in Latin America seem to be off the air more frequently than they are on the air. Economically, running shortwave is a risky venture. And technically, there are also quite a number of problems. Electric power spikes and similar events may put a transmitter out of order in no time. Spare parts, like tubes, usually have to be imported from abroad, which in times of inflation may become a costly affair. Facing such trouble, some stations may choose to leave shortwave altogether.

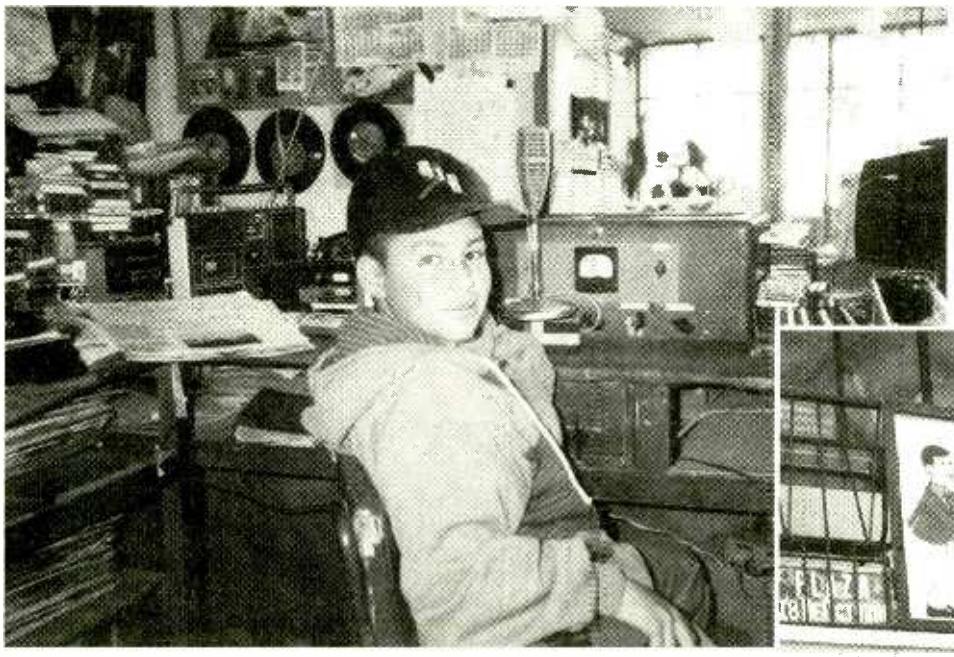
The case of Ecuadorian *R. Popular Independiente* in Cuenca, which used to be regularly heard on 4800 kHz, is one case in point. Neighboring residents complained that the station was producing television interference, so, one morning, a huge eucalyptus tree was felled by a couple of enraged neighbors in order to destroy the transmitter and studio building.

The tree missed its target, but the owner of the station was warned. Mrs. Manena de Villavicencio had recently lost her husband, and later suffered a stroke herself. So, when the SW transmitter started to run havoc in March 1993, FMing and jumping to frequencies around 4945, time was out for this shortwave outlet.

While visiting with Mrs. de Villavicencio in January 1994, I realized that the future prospects for the station seemed very grim. Medium wave was still in operation, but in order to fix the shortwave transmitter various tubes were needed. However, the investment seemed just a bit too much for the owner, especially in view of her slow recovery and "the steep and unjustified rise" of the station's electricity bill.

Another Ecuadorian, *La Voz de Saquisilí-Libertador,* 4899.8 kHz, celebrated its 30th anniversary during the first week of February 1994. As the anniversary coincided with Saquisilí's local *fiesta,* the station was on not only in the local morning, but all day long. As a result, after this spree the old shortwave transmitter broke down, and it has been off the air for the remainder of 1994.

Station owner Arturo Mena said in January 1995 that he has not given up his hopes of reactivating the SW transmitter. It is under-



Above: La Voz de Saquisilí-Libertador, Ecuador. Owner's grandson is quite capable of running the station. He likes pop and rock music. At right is a signboard for the station.

www.americanradiohistory.com

Many shortwave transmitters in Latin America seem to be off the air more frequently than they are on the air. Economically, running shortwave is a risky venture. And technically, there are also quite a number of problems. Electric power spikes and similar events may put a transmitter out of order in no time. Spare parts, like tubes, usually have to be imported from abroad, which in times of inflation may become a costly affair.

Father Luis Florencio León, R. Paz y Bien, Ecuador, also closed down the shortwave of La Voz de Galápagos.

going repair at this moment, he says.

An Ecuadorian which seems to have definitely left shortwave is *R. Paz y Bien* in Ambato, 4819.7 kHz. With the advent of FM, this station, which is owned by the Catholic Church, has all but lost its interest in AM broadcasting.

"FM is so inexpensive to run," says station manager Father Luis Florencio León, who, before taking over *R. Paz y Bien,* was for a while at *La Voz de Galápagos,* where he had time to close down their shortwave outlet on 4810 kHz.

R. Paz y Bien relies heavily on donations from Catholic organizations in Europe and North America.. When a transmitter breaks down, there is always someone to pay for the damage or to replace the faulty equipment.

Luis Ramiro Vela, owner of an AM station in the same town, complains bitterly.

"*R. Paz y Bien* is ruining the business for the rest of us. They can sell their airtime for nothing, whereas we have to fight it out for every single *sucre*."

In Latin America there are quite a number of areas where electricity isn't available at all hours. Such is the case of the towns of Celendín and Bambamarca, in Northern Perú, where there are about seven local shortwave

Continued on p. 20

GREAT SWBC SOFTWARE!

NEW! SWBC Database and Logging Utility

Contains thousands of changeable records for SWBC radio stations with their frequencies, schedules, languages, countries. This program prints logging reports for submission to your favorite clubs. With the data entered only once, logging reports can be printed in different formats with only a keystroke. *Specify IBM compatible 3.5 or 5.25 disks.* Only $29.95

SWBC Station Database

Contains thousands of changeable radio station records. Sorts by station, frequency, schedule, language, country or continent. Only $19.95

DX-SWL Program Database

Radio station schedules and frequencies for all SWL programs on shortwave. Don't miss your favorite shows! Only $9.95

Working demo disks available (3-1/2" only) $3.00 Each. Specify program(s) when ordering.

Orchid City Software
P.O. Box 18402
West Palm Beach, FL 33416
All payments in US funds only.

Timestep

The Weather Satellite System

Images available as often as every 4 minutes.

Full screen color animation of up to 1000 frames.

Direct temperature readout.

Latitude / Longitude and political boundaries.

Easy to use mouse operation.

3D Cloud images.

Automatic operation.

HRPT Image of southern Hudson Bay

If you want to see the world's weather right now from anywhere in the world, including the Americas, Europe, the Middle East, Japan and Australia, then we have a system for you. Watch local weather systems or track hurricanes and tropical storms. We can supply simple systems for beginners or advanced HRPT systems for enthusiasts. All component parts are available separately. Systems and satellites available include HRPT, WEFAX, APT, NOAA, Meteor, Okean, GOES, Meteosat and GMS. Color brochures available.

Spectrum International Inc. PO Box 1084 Concord Mass. 01742 USA
Tel. (508) 263-2145 Fax. (508) 263-7008

Manufactured by: Timestep PO Box 2001 Newmarket CB8 8XB England
Tel. 01440 820040 Fax. 01440 820281

www.americanradiohistory.com

GROVE COMMUNICATIONS

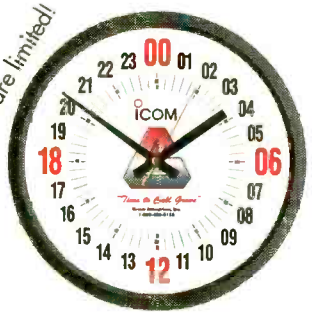
EXPO '95

Formerly known as the Monitoring Times Convention

Register Now

to receive this FREE Seth Thomas radio room clock! This 13", 24-hour quartz movement studio clock has a $24.95 retail value!

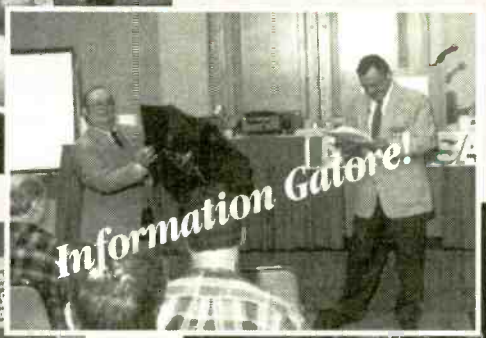
Hurry—Supplies are limited!



Don't Miss The Top U.S.

New expanded program includes satellite communications! Outstanding seminars now cover shortwave, scanning and satellite communications—the entire listening spectrum. Come and enjoy the company of friendly hobbyists in a relaxed atmosphere of learning and sharing!

Here are just a few of the reasons why you need to attend this year's Grove Communications Expo!



Look for exhibits and prizes from: *Amsat, Bearcat Radio Club, Computer Aided Technologies, ICOM, JPS, MFJ, Optoelectronics, R.L. Drake & Co., Sony, Swagur, Universal, Worldcom, and many more top companies!*

www.americanradiohistory.com

Communications Event!

Special programs this year include scanning Atlanta during the Olympics, Atlanta-area tours (see August Monitoring Times for details!), an all-new "Listening Post," sales and demos by top manufacturers, a fabulous banquet, International Broadcasters Forum—and much more!

Call 1-800-Hiltons to reserve your room. Mention Grove Communications Expo and receive a big discount—only $73 per night (regular room rates are $117)! Airport shuttle is free!

Preliminary Schedule (Abbreviated)

Friday, October 13, 1995

All Day	*Tours—something for everyone!*
10am-5pm	*Exhibits and Listening Post*
12-4 pm	*Special interest groups*
1-2 pm	*Scanning Atlanta - Roger Cravens*
2 - 4 pm	*International Broadcaster's Forum*
7-7-:30pm	*Opening ceremony*
7:30-8:30pm	*MT Expert panel/ Rachel Baughn, host*
8:45-9:45pm	*ST Expert Panel / Larry Van Horn, host*

Saturday, October 14, 1995

9-11:15am	Seminars
9am	*Exhibits Open*
11:15am-1pm	*Lunch*
3pm	*Exhibits Close*
1-4:15pm	*Seminars*
4:30pm	*Bug Hunt (outdoors)*
5:15pm	*Prize drawing*
7pm	*Banquet, followed by Post-Banquet Bug Hunt*

Sunday, October 15, 1995

9am-1:45 pm	*Seminars*

Send pre-registration form to:

Grove Enterprises
300 S. Hwy. 64 W.
Brasstown, NC 28902
or call
(800) 438-8155 (US & Canada);
(704) 837-9200
(704) 837-2216(FAX)

Pre-Registration Form

❒ Enclosed is my $55 registration fee
❒ Enclosed is my $23.95 Banquet fee

Name _____
Address _____
City _____ State _____ Zip _____
Phone _____
Card# _____ Exp. date _____

Please reserve my Seth Thomas professional studio clock! ❒

www.americanradiohistory.com

transmitters in service. These stations all come alive after 2300 UTC, 6 p.m. local time.

Generally, and for propagational reasons, the stations operating on the tropical bands limit their airtime to the hours of local darkness, even when electric power is available round the clock.

However, there are also numerous stations known to be on the air continuously all day. Such is the case of Peruvians *R. Oriente*, 6190 kHz, and *R. Horizonte*. The latter one shares its frequency with the Colombian *Ecos del Atrato*. Both of them are active during the local daylight hours on approximately 5020 kHz.

As logic is not always to be reckoned with in Latin America, some stations will operate their tropical bands frequency only during the daylight hours. This is the case of Colombian *Ondas del Orteguaza*, on 4975 kHz.

In 1994, while many stations have cut back on their schedules, at least one minor Latin American station extended its shortwave transmissions to 24 hours a day, viz. *R. Ancash*, in Perú, on 4991 kHz.

NEW STATIONS IN 1994*

Bolivia	
4508.7	R. San Joaquin
4632.4	Guayaramerín FM 97.4
Ecuador	
3260	R. Estéreo Carrizal
Guatemala	
4779.8	R. Coatán
Honduras	
4930.6	R. Internacional
4960.3	R. HRET
Perú	
4300	La Voz de Naranjos
4319.3	R. Condorcanqui
4662	R. Soledad
4904.7	R. La Oroya
5049.7	R. Tayacaja
5116.4	R. Diez
5179	R. Oriental
5235.4	R. Apurímac
5305.2	R. Municipal de Paruro
5521.5	R. Sudamérica
5894.7	R. Paucartambo
6090	R. Luz Universal
6472	R. Luz y Sonido
6544.7	R. Centinela
8324.1	R. Emisora Alfa
New Frequencies	
4549.4	R. Naylamp, Perú (ex-4300.4)
4732.8	R. La Palabra, Bolivia (ex-4903.9)
4886.6	R. Villa Rica, Perú (ex-4804.5)
5040.1	La Voz de Yopal, Colombia (ex-5050)
6238	Estación Yurimaguas, Perú (ex-5046.4)
9660.4	R. Municipal Nor Perúana, Perú (ex9655)
Reactivations	
5005.6	R. Jaén, Perú
5019.9	R. Horizonte, Perú (ex-5008.8)
5054.6	Faro del Caribe, Costa Rica
5980	R. Federación, Ecuador
5994.7	R. Loyola, Bolivia
6010.6	R. América, Perú
6018.3	R. Victoria
6190	R. Oriente

* For further details please refer to the *World Radio TV Handbook 1995*

Making Ends Meet

An ever-increasing number of stations seem to be selling airtime to independent producers. As a result, the station management does not seem to care very much about listener response. That's something for the program producers, they appear to think.

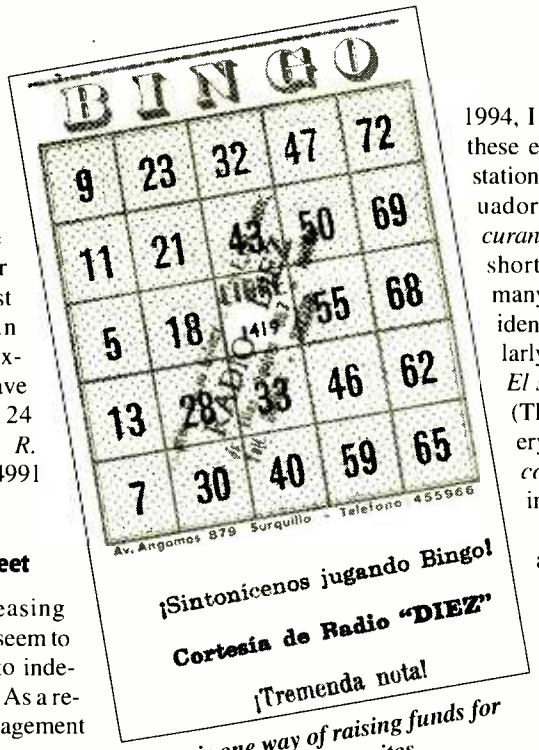
To obtain a QSL from these "franchising" stations is therefore next to impossible. There is, however, a way around the problem, and that is to write directly to the program producer, asking him to greet you on the air on a predetermined hour and day, as well as to reply by mail.

Using this procedure, I've been able to collect replies from three stations that apparently have not answered anyone else: Peruvians *R. Diez* (5116.4 kHz), *R. Paucartambo* (5894.7 kHz) and *Estación Yurimaguas* (6238 kHz).

When business is slow, some stations look for alternative methods of financing. The Ecuadorian *Estéreo Carrizal*, 3260 kHz, has a mobile discotheque to lease. And the Peruvian *R. Diez*, 5116.4 kHz, was successfully selling bingo cards in November and December last year. Two balls were played at regular intervals during the day, and on each Saturday morning, winners would show up at the station to collect their prizes.

In most Latin American countries, especially in Guatemala, Ecuador, and Perú, many stations seem to be keen on selling airtime to roaming quacks *(curanderos)* and astrologers, who read listeners' letters on the air, subsequently inviting them to come and see them at their HQ, which usually is in a *hostel* in the center of the "educated and illustrious" town which they happen to be visiting at the time.

In 1993, and to a slightly lesser extent in 1994, I logged a number of these esoteric programs on stations from Perú and Ecuador. Incidentally, the *curanderos* seem to be avid shortwave listeners, as many of the shows carry identical names. Particularly popular names are *El sol brilla para todos* (The Sun Shines for Everyone) and *Encuentro con la felicidad* (Meeting Happiness).



Bingo is one way of raising funds for Peruvian R. Diaz, in Iquitos.

Last year in Perú, a large number of broadcasters were selling airtime to a Brazilian-run evangelical church, called *Dios es amor* (God is Love). I have monitored their program *"la Voz de la Liberacion"* on more than a dozen different stations in Perú. All of these programs are locally produced and presented by Brazilian pastors who work miracles by means of prayer.

R. Victoria, in Lima, reactivated in 1994 on 6018.3 kHz, seems to be broadcasting this program during most of the evening and night.

Satellite Sourcing

Satellite broadcasting has developed quite rapidly in certain countries of Latin America. In some countries nationwide networks are linked by satellite. Not much of this is being heard on shortwave, though, excepting perhaps the Colombian *Caracol* and *RCN* networks.

In many areas, satellite programs seem to be received and rebroadcast with or without permission. In Perú, newsfeeds from *R. Programas del Perú* are often to be heard from unlicensed stations out in the Peruvian jungle, alternating with satellite feeds from stations such as *Once Sesenta*, specializing in rock and pop.

Cadena Solar is an international, satellite-fed newscast to be heard weekdays at 1300. Participating stations are *R. Programas del Perú, R. Panamericana (Bolivia), R. Mitre* (Argentina), *R. Caracas Radio* (Venezuela), *R. Quito* (Ecuador), and *RCN* (Colombia).

The Cadena Solar newscast can be heard on shortwave on *R. Panamericana* (6105.2 kHz), *R. Quito* (4919.9 kHz), and *La Voz del Guaviare* (6035.1 kHz). For the major part of 1994, however, *R. Quito* has been inactive on shortwave.

www.americanradiohistory.com

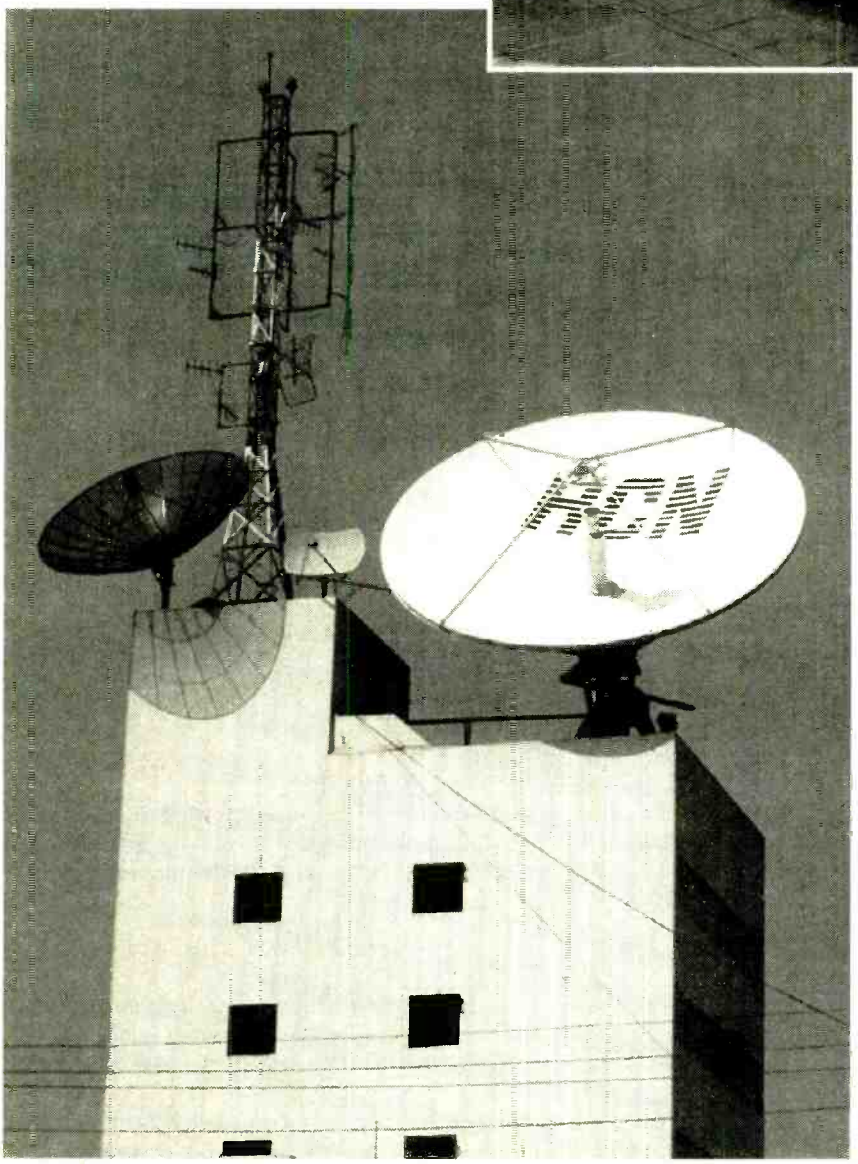
The Sales Manager of *R. Quito*, Iván Oña, was taken aback when I asked him why the shortwave channel was off the air.

"Why, I thought it was on the air as usual," he said. "And if it isn't, I'll surely tell the Chief Engineer to get it going."

His answer clearly shows that shortwave has, in many ways, lost its importance among some of the bigger broadcasters.

However, there are still many small towns and places, out on the immense savannahs or tucked away between the mountain ridges of the Andes, where there is no FM or TV, and where no AM signal will make it during the local daytime hours.

That is where shortwave is a clearly relevant proposition.



Only a few major stations like RCN's headquarters in Bogotá, Colombia, can afford satellite technology for broader coverage.

It's time you found out...

What over 185,000 people already know.

NOW YOU'RE TALKING!

was written with you, the reader, in mind.

There's never been a more exciting time to get your Ham license. You can use Amateur Radio as a fun, friendly method of local communication, an invaluable tool in emergencies, or even experience the thrill of talking to Astronauts and Cosmonauts in orbit.

Whether you want to enter Amateur Radio as a Technician and choose to skip the code, or as a Novice licensee, *Now You're Talking* will provide you with the information you need in bite-size, easy-to-understand diagrams, photos and sketches, you'll be familiar with all the questions used to make up the FCC test...and you'll be ready for it.

In addition to study material that won't let you down, you'll find invaluable operating hints and tips you'll use once you pass your test. *Now You're Talking: All You Need to Get Your First Ham License* is the book you'll use even after you've passed your exam.

You can shop around for bargains, or you can join the thousands of licensed amateurs who have used *Now You're Talking* to pass their exam. Order your copy today:

Enclosed is $19 plus $4 for shipping (a total of $23) or charge $23 to my
( ) VISA ( ) Mastercard
( ) Discover ( ) American Express

For more Information Call 1-800-326-3942

Signature _____

Acct. No. _____

Expiration Date _____

Name _____

Address _____

_____

_____

City State Zip

MT

THE AMERICAN RADIO RELAY LEAGUE
225 MAIN STREET
NEWINGTON, CT 06111

www.americanradiohistory.com

Low-Power AM's Hawk Home Sales

By B. W. Battin

Sign in front on an Albuquerque house tells prospective buyers where to tune it to learn more about the home. (Photo by B. W. Battin)

How'd you like to have your own AM radio station? And how'd you like to do it for a cost of $20 a month, with no FCC license required, and the freedom to use any frequency on the AM broadcast band?

Absurd?

Not at all. You can do just that.

There are, however, a couple of catches. One is that your AM radio station can run a program no longer than 90 seconds—after which it repeats itself. The other is that your station will have a range of only 250 feet.

What's It Used For?

"This home has a large master bedroom with a bath," says the woman's voice on the car radio. She goes on to tout things like the carpeting in the bedrooms and the extra insulation in the ceilings and walls.

There's some static, but the woman's words are easily understood. The signal's coming from inside the large southwestern style house in the Sandia Heights section of Albuquerque. Two signs protrude from the natural vegetation that covers the front yard. One is a typical real

www.americanradiohistory.com

estate agency sign. The other reads: "Tune car radio to 1430 AM for more information on this property."

The sign and transmitter are owned by Phill and Nancy Ingram of Albuquerque, who call their operation Curbside Communications. The business is a franchise, which the Ingrams purchased from America's Radio Transmitter in Boca Raton, Florida.

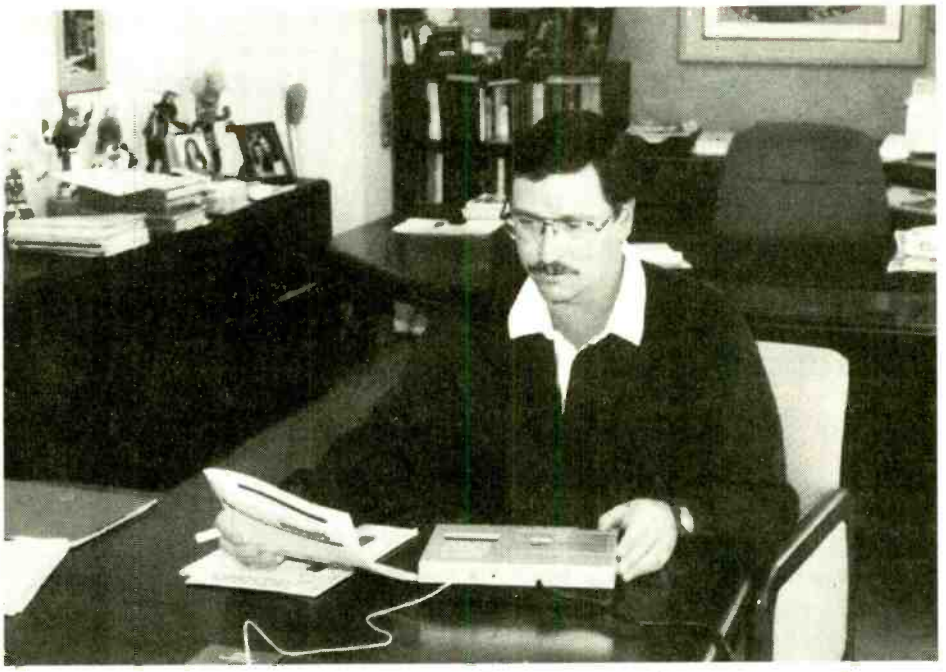
"We started in January," Phill Ingram explained. "We're hoping to have at least a hundred units out by mid summer." Looking farther into the future, he sees a market for as many as five hundred of the transmitters in metropolitan Albuquerque.

He rents the equipment for $20 a month. Customers create their own messages.

Although all the Ingrams' current clients are real estate people, they see a number of other uses for the transmitters. Movie theaters could use them to announce features and show times, Phill suggested. And people waiting in line at drive-up banks are "a captive audience."

"I got a call from a pharmaceutical rep interested in using it (to advertise) optical products at Wal-Mart," he said.

"It can be used anywhere people have to stop in their cars," he explained. But they do have to stop. Drivers in moving traffic wouldn't be in the transmitter's range long enough to catch the message.

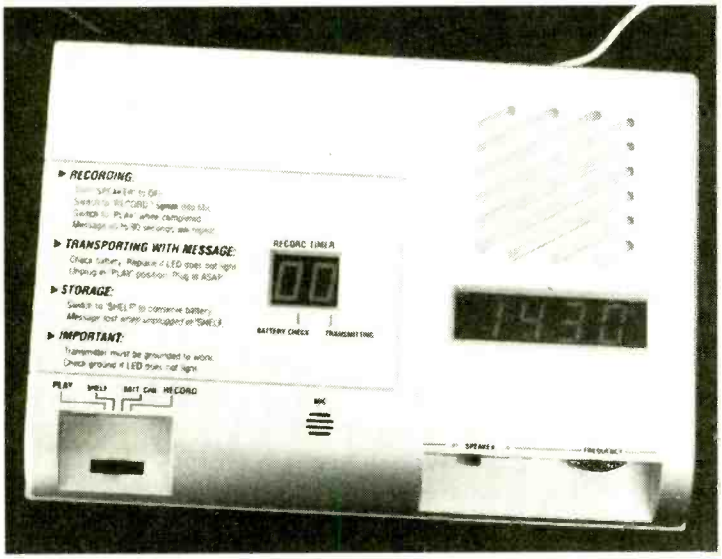


Phill Ingram of Curbside Communications in Albuquerque records a message onto the memory chip of a small AM transmitter. The message can be up to a minute and a half long. (Photo by B. W. Battin)

How They Operate

The transmitters are small and light, measuring about 9-1/2x6-3/4x2-1/2 inches. They run on 110 volts AC. The message is recorded on a computer chip, using the transmitter's built-in microphone—a procedure much like recording the outgoing message on a telephone answering machine.

Once the message is recorded, you put the device in the appropriate location, switch it on, and forget about it. It continually broadcasts whatever's been stored in its chip. There's even a back-up battery to prevent the message from being lost during a power failure.



Manufactured in Taiwan, the low power AM transmitter is about the size of a telephone answering machine. It puts out a tenth of a watt and has a range of about 250 feet. (Photo by B. W. Battin)

Technical and Not-So-Technical Stuff

The units transmit with a power of one-tenth of a watt—no FCC license necessary. A digital readout displays the operating frequency in glowing red numerals. It can be set anywhere between 528 and 1638 kHz.

How do the Ingrams decide on a frequency? "We just look for a clear spot," Phill explained. Around

Toll Free
1-800-666-0908
Pricing and Orders Only

Shortwave Radios

Sony	Sangean	Others
ICF-SW30	ATS606P	Drake R8
ICF-SW35	ATS803	Drake SW8
ICF-SW55	ATS808	ICOM, JRC
ICF-SW77	ATS818	Panasonic
ICF-SW100	ATS818CS	Lowe, Kenwood
ICF-SW7600C		AOR 3030
ICF-2010		Yaesu FRG-100

Yacht Boy 400 — Call For Special Pricing — Satellit 700
GRUNDIG

Scanners

Bearcat	AOR	ICOM
SC150	AR1000XLT	R1
BC200XLT	AR3000A	R100
BC890XLT	AR8000A	R7000
BC2500XLT		R7100
BC8500XLT		R9000

Call For Other Models of AOR, Bearcat, ICOM

We are also factory authorized amateur dealers for Alinco, ICOM, Kenwood, Yaesu, Standard, MFJ Comet, Cushcraft, Diamond, Etc.
Call For Our Low Discount Prices
For info and tech help call (203) 666-6227
Out-of-state sales call 1-800-666-0908
Conn sales call (203) 667-9479
Hours: M-F 10 am - 6 pm Sat 10 am - 4 pm

LENTINI COMMUNICATIONS, INC.
21 Garfield St. Newington, CT 06111
C.O.D.'s OK — SAME DAY SHIPPING

www.americanradiohistory.com

Although the transmitters usually work pretty well, the Ingrams have experienced some of the vagaries of AM radio. For instance, the signal sometimes deteriorates inexplicably when the transmitter is placed near the Sandia mountains, which rise from the city's eastern edge. The Ingrams' solution is the sort of thing any old AM radio buff might have come up with: add another 18 inches of wire to the antenna.

Albuquerque, they've found that 1430 kHz usually works well. Locating transmitters close together poses no problem. Each is simply set to a different frequency.

The antenna is a three-meter length of wire that connects to a set screw on the rear of the transmitter. "We usually tape it to a window edge," Nancy Ingram explained.

Although the transmitters usually work pretty well, the Ingrams have experienced some of the vagaries of AM radio. For instance, the signal sometimes deteriorates inexplicably when the transmitter is placed near the Sandia mountains, which rise from the city's eastern edge. The Ingrams' solution is the sort of thing any old AM radio buff might have come up with: add another 18 inches of wire to the antenna.

"That solved the problem," Nancy Ingram declared.

Future models will come with a telescoping antenna. Also, the capacity of the message chip may be expanded from 90 seconds to three minutes.

It Started with a Trip to Disney World

America's Radio Transmitter is the brainchild of Rich Kayne of Boca Raton, Florida, who describes himself as a sales and marketing type. He got the idea while visiting Disney World.

"There was this sign saying to tune in on your radio to find out what was happening at the theme park that day," Kayne explained. He immediately saw other possibilities for such a device, especially for selling real estate.

He and a partner started the business last October, at first calling it America's Real Estate Transmitter. "That name was too narrow," Kayne explained. "I didn't want to be limited to just real estate, so I changed it to America's Radio Transmitter."

Kayne says selling the transmitters nationwide was simply "too vast to do by ourselves." The solution was to offer franchises.

As of late March, Kayne said he'd sold about fifty of the franchises and that "thousands" of the transmitters were in use nationally.

Wanna Go Into Business?

Franchises cover a single county and cost about $10,000, plus the price of the transmitters, which sell for $100 apiece. Kayne estimates that, including things like office equipment, a franchisee needs about $20,000 to get started.

Interested? Call America's Radio Transmitter at 1-800-720-7780. They can also tell you whom to contact if you'd just like to rent one of their mini AM radio stations.

The NXL-250A: PICKS UP STATIONS LIKE AN OUTDOOR ANTENNA AND SOLVES YOUR NOISE PROBLEMS TOO!

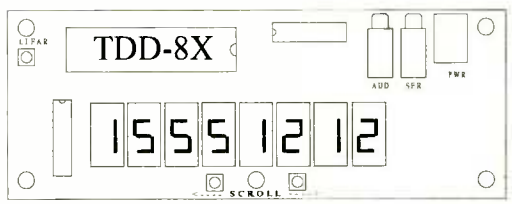
The NXL-250A uses a special shielded noise-cancelling loop which cuts local noise interference such as power-line buzz, computer and TV hash, etc. Its internal high-gain amplifier and sharp tuning combine with the loop to give you high signal-pulling sensitivity across the entire shortwave spectrum! It's only $114.90 ppd! **Special this month only:** Free output adapter w/order. Specify your radio model. Available options: Automatic internal antenna switch: $20.00. High sens. medium-wave loop (500-1700 kHz): $79.95. AC adapter: $9.95. Order an NXL-250A today! To get our catalog, send a 29 cent stamp.

WORLDCOM TECHNOLOGY
P.O. Box 3364, Ft. Pierce, FL 34948
Call (407) 466-4640

Motron Electronics 310 Garfield St Suite 4, PO Box 2748, Eugene, Oregon 97402

New Low Price! $59.00

DTMF Decoder



The TDD-8X features a large 8-digit LED display and decodes all 16 DTMF digits. The 104 character memory is viewed, without loss of data, by scrolling either left right. Although a computer is not required, the serial ASCII output allows for automatic logging of decoded number groups. ToneLog™, our IBM/Compatible logging software, is included with each TDD-8X.

TDD-8X Assembled & Tested PCB $59.00 **PMK-1** Plastic Mounting Kit $15.00
CAB-1 Audio & Computer Cables 20.00 **PS-12** 12VDC AC Power Adaptor 10.00

Visa, MasterCard, American Express, Discover and Government Purchase Orders accepted.
COD on Cash or Money Order basis only.
Minimum Government Purchase Order: $99.
S/H: $6 USA/Canada; $15 Foreign COD: $5.
Premium Shipping available at additional charge

Info: (503) 687-2118 Orders: (800) 338-9058 Fax: (503) 687-2492

www.americanradiohistory.com

Scanners/CB/Weather Stations

New Scanner Products Available

Now it's easy to purchase communications, emergency management supplies, weather forecasting equipment and more directly from Communications Electronics Inc. Your **free fax-on-demand catalog** including unadvertised specials is instantly available by calling 313-663-8888 from your fax machine.

Bearcat Scanners

Monitor police, fire, marine, aircraft, emergency medical transmissions and more with a Bearcat scanner.

Bearcat 9000XLT-R base/mobile $374.95
Bearcat 3000XLT-R handheld $344.95
Bearcat 890XLT-R base/mobile/weather alert $228.95
Bearcat 860XLT-R base $154.95
Bearcat 760XLT-R base/mobile $189.95
Bearcat 700A-R information mobile $148.95
Bearcat 560XLA-R base/mobile $76.95
Bearcat 220XLT-R handheld/SPECIAL $208.95
Bearcat 178XLT-R base with weather alert $128.95
Sportcat 150-R handheld with 800 MHz. $159.95
Bearcat 148XLT-R base with weather alert $83.95
Bearcat 120XLT-R handheld $124.95
Bearcat 80XLT-R handheld with 800 MHz. $159.95
Bearcat BCT7-R information mobile $168.95

Weather Stations

Now you can be your own weather reporter with the Davis Weather Monitor II. Our top-of-the-line weather station combines the most advanced weather monitoring technologies available into one incredible package. Glance at the display, and see wind direction and wind speed on the compass rose. Check the barometric trend arrow to see if the pressure is rising or falling. Push a button, and read indoor and outdoor temperature, wind chill, humidity and barometric pressure. Our package deal includes the new ultra high resolution 1/100 inch rain collector part #**7852-R**, and the external temperature/humidity sensor, part #**7859-R**. The package deal is order #**DAV1-R** for $479.95 plus $15.00 shipping. If you have a personal computer, when you order the optional Weatherlink computer software for $139.95, you'll have a powerful computerized weather station at an incredible price. For the IBM PC or equivalent order part #**7862-R**. Apple Mac Plus or higher including PowerBook, order part number **7866-R**.

The Weather Monitor II (7440) comes complete with anemometer with 40 feet of cable, external temperature sensor with 25 feet of cable, junction box with 8 feet of cable, AC-power adapter, detailed instruction booklet and one year limited factory warranty.

Davis Weather Monitor II 7440-R $334.95
Davis Weather Wizard III 7425-R $154.95
Davis Perception II Indoor stand-alone weather monitor 7400-R .. $124.95
Davis Remote Display Unit 7815-R $84.95
Davis Rain Collector II 0.01" 7852-R $59.95
Davis Rain Collector II 0.2 mm 7852METRIC-R $59.95
Davis Rain Gauge Stand-alone 0.01" 7520-R $79.95
External Temperature/Humidity Sensor 7859-R $99.95
Davis Anemometer Mast Mount 7890-R $15.95
Weatherlink Software for IBM PC-Version 3.0 7862-R $139.95
Weatherlink Software for Apple-Version 3.0 7866-R $139.95
4-Conductor 40' (12.2 m) extension cable 7876-R $17.95
6-Conductor 40' (12.2 m) extension cable 7878-R $21.95
8-Conductor 25' (7.6 m) junction box cable 7880-R $14.95
8-Conductor 50' (15.2 m) junction box cable 7881-R $24.95
8-Conductor 100' (30.5 m) junction box cable 7882-R $44.95
Modem Adaptor 25-Rin for communications port 7870-R $9.95
Car/Boat/RV Lighter Power Cord 7873-R $9.95
2400 baud modem for Weatherlink MEXT-R $39.95
Talking weather card - Call 313-994-9000 for demo IT1-R $474.95
Weatherlink language disks: Française, Deutsche, Italiana, Española 7863-R $24.95
Barometer, Indoor Hygrometer & Thermometer, Clock/Calendar BA888-R .. $99.95
Indoor-Outdoor Thermometer/Barometer & Hygrometer by OSI BA213-R .. $79.95
Thermometer with transparent calender & clock display by OSI TC188-R .. $19.95
Thermometer with AM/FM clock radio by Oregon Scientific CR388-R $39.95
Indoor/Outdoor Thermometer with Jumbo Display by OSI JB880EX-R $24.95

Bearcat® 9000XLT-R Radio Scanner

Mfg. suggested list price $769.95/CE Special $374.95
500 Channels · 20 banks · Alpha numeric display
Turbo Scan · VFO Control · 10 Priority channels
Auto Store · Auto Recording · Reception counter
Frequency step resolution 5, 12.5 & 25 KHz.
Size: 10-1/2" Wide x 7-1/2" Deep x 3-3/8" High

Frequency Coverage:
25.000-549.995 MHz., 760.000-823.995 MHz., 849.0125-868.995 MHz., 894.0125-1,300.000 MHz.

The Bearcat 9000XLT gives you pure scanning satisfaction with amazing features like TurboSearch™ to search VHF channels at 300 steps per second. This base and moble scanner is ideal for surveillance professionals because it has a selectable attenuator to help eliminate annoying intermodulation from adjacent frequencies in highly populated areas and selectable AM, Wide FM and Narrow FM modes that allow you to change the default receiving mode of the BC9000XLT. Other features include ***Auto Store*** - Automatically stores all active frequencies within the specified bank(s). ***Auto Recording*** - This feature lets you record channel activity from the scanner onto a tape recorder. **Hi-Cut filter** to help eliminate unwanted static noise. You can even get an optional ***CTCSS Tone Board*** (Continuous Tone Control Squelch System) which allows the squelch to be broken during scanning only when a correct CTCSS tone is received. For maximum scanning enjoyment, order the following optional accessories: **PS001** Cigarette lighter power cord for temporary operation from your vehicle's cigarette lighter $14.95; **PS002** DC power cord - enables permanent operation from your vehicle's fuse box $14.95; **MB001** Mobile mounting bracket $14.95; **BC005** CTCSS Tone Board $54.95; **EX711** External speaker with mounting bracket & 10 feet of cable with plug attached $19.95. The BC9000XLT comes with AC adapter, telescopic antenna, owner's manual and one year limited warranty from Uniden.

CB/GMRS Radios

The Maxon GMRS 210+3 transceiver is a PLL synthesized 10 channel radio on General Mobile Radio Service frequencies. It's the ideal radio for long range communications. Two repeater channels are programmable and one channel (462.675 MHz.) is set aside for emergency and safety communications. The seven remaining interstitial frequencies 462.5625, 462.5875, 462.6125, 462.6375, 462.6875 & 462.7125 MHz are all-purpose GMRS radio channels. 2 watts of RF power for exceptional transmitting range. Up to 5 watts when used with the supplied 12 volt vehicular DC power cord. CTCSS built-in. Includes 450mAh Ni-cad rechargeable battery pack, AC/DC wall battery charger, owner's manual, FCC license application, belt clip, antenna. Call 1-800-USA-SCAN to order.

Maxon GMRS210+3-R1 GMRS transceiver $188.95
SPECIAL Buy 2 or more GMR210+3 at $174.95 each
WTA3DT-R1 Ni-cad battery charger for WTA6GN4 & WTA6GN2 $69.95
WTA6GN4-R1 Ni-cad pack gives 4 watts power with 210+3 ..... $69.95
WTA6GN2-R1 Ni-cad pack gives 2 watts power with 210+3 ..... $29.95
WTA6GA-R1 Alkaline battery case - requires 6 AA batteries $9.95
WTA8GA-R1 Carrying case for Maxon GMRS210+3 ..... $29.95
WTA10G-R1 Speaker/microphone for Maxon GMRS210+3 ..... $18.95
WTA13G-R1 Push-to-talk mini-VOX headset for GMRS210+3 ..... $47.95
WTA14-R1 Antenna adaptor/screw-in male to BNC connector $9.95
ANT4GM-R1 1/4 wave UHF magnetic mount mobile antenna $29.95
Cobra 2010GTLWX-R SSB base with weather alert† $379.95
Cobra 148FGTL-R CB with frequency counter $209.95
Cobra 29LTDWX-R CB with weather alert $114.95
Cobra HH40-R CB 40 channel handheld transceiver $99.95
Ranger RCI2950-R 25 watt 10 meter transceiver $239.95
Uniden GMR100-R GMRS handheld transceiver $144.95
Uniden WASHINGTON-R SSB CB Base († $25.00 shipping) $199.95
Uniden GRANTXL-R SSB CB Mobile $139.95
Uniden PRO538W-R CB & Weather $59.95

VHF Transceiver

RELM® WHS150-R Transceiver/SPECIAL

Mfg. suggested list price $481.67/CE price $299.95

Police and fire departments depend on the RELM WHS150 transceiver for direct two-way communications with their police, fire department, civil defense agency or ham radio repeater. The WHS150 is our most popular programmable five watt, 16 channel handheld transceiver that has built-in CTCSS, which may be programmed for any 39 standard EIA tones. Frequency range 148.000 to 174.000 MHz. Will also work 144.000-148.000 with slightly reduced performance. The full function, DTMF compatible keypad also allows for DTMF Encode/Decode and programmable ANI. Weighing only 15.5 oz., it features dealer programmable synthesized frequencies either simplex or half duplex in both 5.0 and 6.25 KHz. increments. Other features include scan list, priority channel, selectable scan delay, selectable 5 watt/1 watt power levels, liquid crystal display, time-out timer and much more. When you order the WHS150 from Communications Electronics Inc., you'll get a complete package deal including antenna, battery, belt clip and user operating instructions. Other accessories are available. A leather carrying case with swivel belt loop part #**LCWHS** is $49.95; rapid charge battery charger, part #**BCWHS** is $69.95; speaker/microphone, part #**SMWHS** is $54.95; extra ni-cad battery pack, part #**BP007** is $59.95. The radio technician maintaining your radio system must order programming instructions part #**PI150** for $18.00 to activate this radio. FCC license required for United States operation.

Other neat stuff

WX70-R weather radio with National Weather Service storm alert $39.95
WB-R USA Today The Weather Book, Guide to USA weather by Jack Williams$15.95
PSUN-R Partly Sunny, Weather Junkie's Guide to Weather by Alan Fields $11.95
Grundig Satellit 700-R digital portable shortwave with 512 memory $459.95
Grundig Yacht Boy 400-R digital portable shortwave - 40 memory $179.95
Grundig Yacht Boy 230-R portable shortwave receiver $109.95
Sangean ATS800-R portable 20 memory shortwave receiver $69.95
Sangean ATS803A-R portable shortwave w/AC adapter - 9 memory $129.95
Sangean ATS808-R1 portable 45 memory shortwave receiver $129.95
Uniden EXP9200-R 900 MHz. 1 or 2 line spread spectrum cordless phone . $289.95
Uniden EXP9100-R 900 MHz. 1 line cordless spread spectrum telephone ... $229.95
Bogen FR3110-R Digital FAX Friday Fax-on-Demand & answering system ... $399.95
Bogen FR3020-R memory module for Fax Friday/up to 36 minutes $99.95
Bogen FR2000-R Digital two-line voice mail & answering machine $279.95
Bogen FR0018-R memory module, doubles recording time to 36 minutes $79.95
FANS P161P-R 60 name/number caller ID, unwanted call blocker, paging .. $149.95
SNI ID200-R Bouncer name/number caller ID, call reject, forward $89.95
ICOM GP22-R handheld global positioning system (GPS) $494.95
RELM WHS150-R VHF handheld 5 watt, 16 channel transceiver $299.95
RELM RH256NB-R VHF 25 watt, 16 channel synthesized transceiver $289.95
Ranger RCI2950-R 25 watt 10 meter ham radio transceiver $239.95
Cobra RDL712SW-R Safety Alert & Super Wideband Laser/Radar receiver .. $159.95
Uniden LRD9900SW-R Super Wideband Laser/Radar receiver $139.95
ANTK-R VHF scanner/VHF transmitting antenna PL259 connector $29.95
ANTMMBNC-R magnet mount scanner antenna w/ BNC connector $29.95
ANTMMMOT-R magnet mount scan antenna w/Motorola plug $29.95
ANTMMPL-R magnet mount scan antenna with PL259 connector $29.95
ANTSGBNC-R glass mount scanner antenna with BNC connector $29.95
ANTSGMOT-R glass mount scanner antenna with Motorola jack $29.95

Buy with confidence

It's easy to order from us. **Mail orders to:** Communications Electronics Inc., P.O. Box 1045, Ann Arbor, Michigan 48106 U.S.A. Add $15.00 per radio product or weather station for U.P.S. ground shipping and handling in the continental U.S.A unless otherwise stated. Add $10.00 shipping for all accessories and publications. Add $10.00 shipping per antenna. For Canada, Puerto Rico, Hawaii, Alaska, Guam, P.O. Box, or APO/FPO delivery, shipping charges are two times continental U.S. rates. Michigan residents add state sales tax. No COD's. Satisfaction guaranteed or return item in 31 days for refund, less shipping. 10% surcharge for net 10 billing to qualified accounts. All sales are subject to availability, acceptance and verification. Prices, terms and specifications are subject to change without notice. We welcome your Discover, Visa, American Express or MasterCard. Call anytime 1-800-USA-SCAN or 800-872-7226 to order toll-free. Call 313-996-8888 if outside the U.S.A. FAX anytime, dial 313-663-8888. For technical assistance, call our technical support hotline for $2.00 per minute at 1-900-555-SCAN. Dealer and international inquiries invited. Dial 313-663-8888 for fax-on-demand info.

Price schedule effective 8/2/95 AD #080195GEN Copyright © 1995 Communications Electronics Inc.

For credit card orders call

1-800-USA-SCAN

COMMUNICATIONS ELECTRONICS INC.

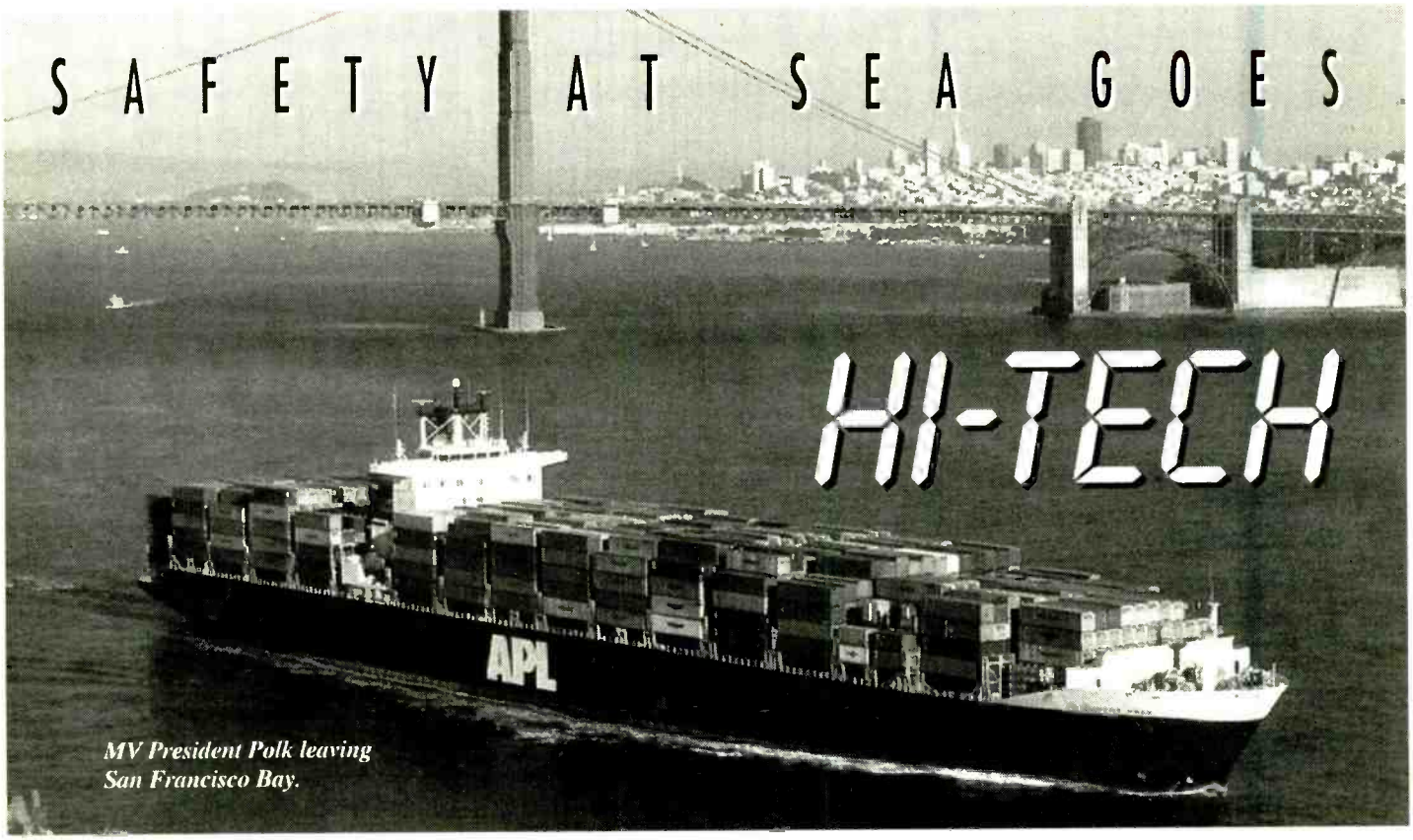
Emergency Operations Center

P.O. Box 1045, Ann Arbor, Michigan 48106-1045 U.S.A.

For information call 313-996-8888 or FAX 313-663-8888

www.americanradiohistory.com

SAFETY AT SEA GOES HI-TECH



MV President Polk leaving San Francisco Bay.

By Jon Van Allen

One of the acronyms maritime monitors have heard a lot lately is GMDSS. But what exactly is it, and what does it mean for maritime communications?

GMDSS is the *Global Maritime Distress and Safety System*. It is intended to automate and improve emergency communications for the world's shipping industry and to provide an effective Search and Rescue System on a global basis.

From the point of view of the listener, GMDSS will mean adding new frequencies and modes in order to keep track of high seas activity. From the perspective of the maritime industry, GMDSS will be a standardized protocol and means of improving response to an emergency. In theory, this use of modern technology should be more reliable and faster than older modes and equipment. Only time will prove or disprove this. Undoubtedly there will be some trial and error involved in fine tuning the entire system.

This article is a general over-view of fundamental information useful to the listener. Much of the information presented is taken from the *GMDSS Radio Office Handbook* prepared by the American Radio Association in Scottsdale, AZ.

Some Background

Over ten years ago, the International Maritime Organization (IMO), an agency of the United Nations, began work revising the Safety of Life At Sea (SOLAS) Convention to improve maritime safety.

Together with the IMO, the International Telecommunications Union (ITU) began updating the International Radio Regulations to accommodate the new requirements of GMDSS.

Ships subject to the SOLAS Convention are required to carry certain radio equipment onboard for safety purposes and are termed "Compulsory Ships," whereas other ships fitted with the same equipment are termed "Voluntary Ships." Compulsory Ships include all passenger ships that carry more than twelve passengers, and all cargo ships of 300 gross tons and over, engaged in international voyages.

The basic concept of GMDSS is that search and rescue (SAR) authorities ashore, and shipping in the immediate vicinity of a ship in distress, can be rapidly alerted to a distress incident. The quality of communications is greatly improved through the use of satellites and digital data transmissions.

GMDSS calls for the SAR to be coordinated from shore by a Rescue Coordination Center (RCC). The RCC will provide the communication network to establish a coordinated search and rescue.

GMDSS is based on providing a distress signal to shore facilities. The specific type of equipment used to accomplish this varies and is determined by the area in which the ship operates. These areas are defined as:

SEA AREA "A1": An area within the radiotelephone coverage of at least one VHF Coast station in which continuous Digital Selective Calling (DSC) alerting is available. This will extend 20-30 miles from shore.

SEA AREA "A2": An area, excluding area A1, within the radio-telephone coverage of at least one Medium Frequency (MF) Coast station in which continuous DSC alerting is available. 75-150 miles from shore.

SEA AREA "A3": An area, excluding areas A1 and A2, within coverage of an Inmarsat maritime satellite in which continuous alerting is available. Alternatively, within coverage of at least one High Frequency (HF)/MF Coast station in which continuous DSC alerting is available. This would cover an area between 70 N and 70 S latitude, which is the footprint of the Inmarsat system.

SEA AREA "A4": An area outside areas A1, A2, and A3. This would essentially be the polar regions. Additional sea areas may be incorporated into the GMDSS master plan as

www.americanradiohistory.com

various shore based stations are upgraded.

GMDSS consists of several systems, some of which are new, but many of which have been in operation for several years. These include satellite and new terrestrial data systems, as well as existing systems that will be combined into one, overall program.

Satellite Communications

Inmarsat provides a means of sending an alert from ships using Ship's Earth Stations (SES) or satellite Emergency Position Indicating Radio Beacons (EPIRBs), plus it can be used for two-way communications using radiotelex and radiotelephone. Broadcast of Marine Safety Information (MSI) to ships using radiotelex will also be provided through the Inmarsat system.

Another important feature of the Inmarsat service is Enhanced Group Calling (EGC). The dedicated message processor and printer can be added to a Standard A or C receiver, or it can be a stand-alone system with a separate antenna.

The purpose of EGC is to enable messages to be sent to a group of ships rather than to call all ships within range. Messages can be sent, for example, to ships within a geographical area. Messages can be sent to one ship or to all ships. The ability of EGC to be selectively addressed has considerable advantages as far as safety is concerned. It enables messages to be sent to ships in the area nearest to a ship in distress, or it would enable the RCC to select the fastest or nearest ships to respond to a distress call.

EPIRB

A near polar-orbiting satellite EPIRB service (the joint US-Russian COSPAS-SARSAT system) operates in the 406 MHz band and provides a main means of distress alerting and determining the location of the beacon that has been activated. EPIRBs are capable of being turned on manually or can be automatically activated by floating free from a sinking ship. Also, 121.5 MHz, along with a strobe light, is built-in for both radio and visual locating.

Terrestrial Communications

Within GMDSS, Digital Selective Calling is being introduced to improve terrestrial communications. Distress alerting on MF, HF, and VHF will be effected by entering the position, time, and a code for the type of distress encountered by the ship. For distress and safety, these frequencies have been assigned for DSC:

2187.5 kHz (MF)
4207.5, 6312.0, 8414.5, 12577.0 and 16804.5 kHz (HF)
156.525 MHz (Channel 70 VHF)

Since HF propagation varies, the choice of frequency will depend on where the distress occurs. Ships equipped with HF radio telephone will keep watch on 8414.5 kHz and also on the HF frequency most suited to the area in which they are sailing.

Key to Abbreviations

ARQ	Automatic request for repetition
CES	Coast Earth Station
COSPAS-SARSAT	Joint US-Russian SAR satellite aided tracking system
DSC	Digital Selective Calling
EGC	Enhanced Group Calling
INMARSAT	International Maritime Satellite
EPIRB	Emergency Position Indicating Radio Beacon
FEC	Forward Error Correction mode
GMDSS	Global Maritime Distress and Safety System
IMO	International Maritime Organization
ITU	International Telecommunications Union
MMSI	Maritime Mobile Service Identity
MSI	Marine Safety Information
NAVTEX	Navigational warning message system
NBDP	Narrow Band Direct Printing
RCC	Rescue Coordination Center
R/T	Radiotelephone
SAR	Search and Rescue
SART	Search and Rescue Transponder
SELFEC	Selective FEC
SES	Ship's Earth Stations
SOLAS	Safety Of Life At Sea

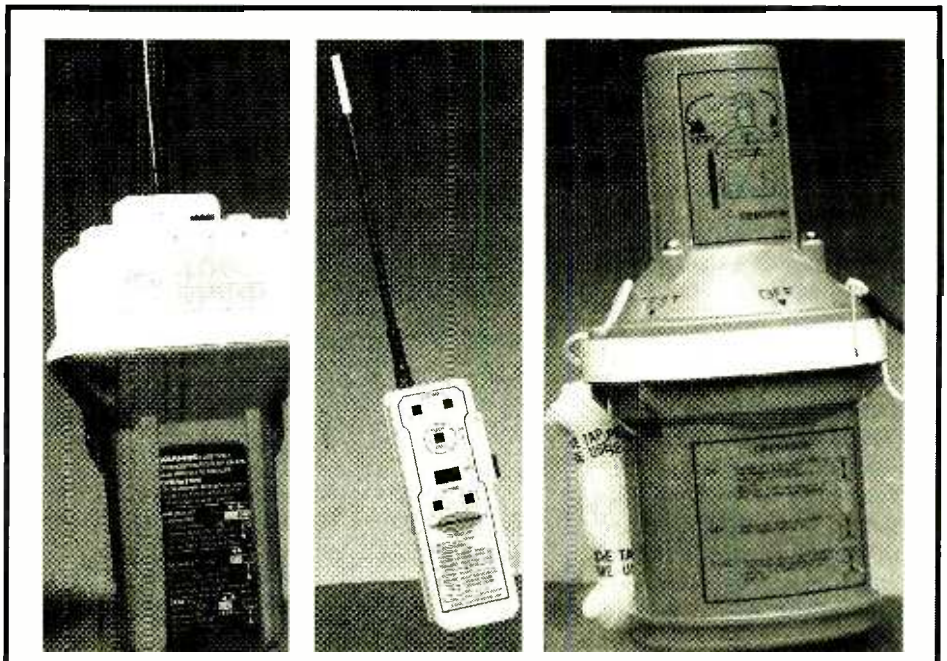
Radar Transponders and Survival Craft Radio Equipment

A search and rescue transponder (SART) assists rescue units to locate ships and survival craft night or day, in all weather conditions. Activated by receiving a radar pulse, it automatically sends out a series of pulses which are displayed on the radar screen of the interrogating ship (or aircraft). At the same time, the SART gives a loud signal and visual indication giving the survivors an indication of the approach of assistance. This clearly identifies the SART's position making it much easier for SAR units to reach the scene quickly. SARTs operating in the 9 GHz range are mandatory under GMDSS. Ships over 500 gross tons must carry two SARTs.

The survival craft must have three or more two-way VHF radios, each operating on 156.8 MHz (Ch 16) and one other channel, 156.3 MHz (Ch 6) is recommended. These radios must be rugged and water-tight with an output power of at least 1/4 watt. These are typically sealed units with long shelf life lithium batteries.

Navtex

A global network for the promulgation of safety information is envisioned through the use of three systems: The Navtex system, the group calling feature of the Inmarsat system (SAFETYNET), and the terrestrial HF services (MSI).



Emergency Position Indicating Radio Beacons, Search and Rescue Transponders, and two-way VHF radios are all required equipment under GMDSS. (Courtesy ACR Electronics)

www.americanradiohistory.com

Navtex distributes marine navigational warnings, weather forecasts/warnings, SAR notices, and other safety and urgent information to mariners. The printing Navtex receiver has the ability to select messages depending on preset codes, which eliminates duplicate messages to ensure that ships always receive important information. Certain messages cannot be rejected. These are: Navigational warnings, meteorological warnings, and SAR.

Navtex is transmitted on 518 kHz in accordance with a coordinated schedule. The mode for Navtex is FEC.

SAFETYNET

To augment Navtex, Inmarsat is developing a similar service to provide safety information in mid-ocean areas outside Navtex coverage. By using the EGC feature of Inmarsat, it is possible to direct messages such as local storm warnings to specific geographical areas. These messages could be broadcast to the appropriate ocean region via a Coastal Earth Station (CES) according to their priority (distress, urgency, safety, routine and commercial). The message format will enable the receiver to print only those messages pertaining to its requirements.

Marine Safety Information (MSI)

Several frequencies have been allocated for MSI. 490 kHz has been allocated for national transmissions, such as non-English programming, plus eight HF frequencies (see Table 1), which provide additional maritime safety information. These are an alternative to Inmarsat.

DSC Communications

Each coast and ship station using Digital Selective Calling will be allocated a unique, nine-digit, maritime mobile service identity (MMSI) for use on DSC frequencies. Communications on these frequencies will be transmitting distress alerts, transmitting the associated acknowledgment from ship and coast stations, relaying distress alerts, or an announcement that an urgency or safety message will follow on a corresponding radiotelephone (R/T) or radiotelex narrow band direct printing (NBDP) frequency.

The components of a DSC distress alert are:

Format specifier:	Distress (Automatically included)
Self Identifier:	9 digit number
Nature of distress:	1 of 9 from the following:Fire or explosion, Flooding, Collision, Grounding, Listing, Sinking, Disabled, Abandoning ship, Undesignated distress
Distress coordinates:	Position in Lat/Long.
Time:	Time of ship's position
Telecommand:	Indicates whether the subsequent communications will be R/T or telex

To increase the probability of a DSC alert being received, it is repeated automatically several times. Two types of distress calls may be used on MF or HF frequencies: a single call consisting of five consecutive calls on a single DSC frequency, or, a multi-frequency call attempt consisting of six consecutive calls dispersed over the one MF and five HF frequencies. Since there is only one VHF DSC frequency, only a single call attempt can be made in this band. A DSC alert takes about 36 seconds; there is then a delay of 4 minutes after which the alert will be repeated unless it has been acknowledged.

There are three modes of DSC: Forward Error Correction (FEC), Selective FEC (SELFEC), and Automatic Request for Repetition (ARQ).

TABLE 1: Frequencies for use in GMDSS

DSC Distress & Safety Calling	R/T Distress & Safety Traffic	NBDP Telex Distress & Safety Traffic
2187.5 kHz	2182.0 kHz	2174.5 kHz
4207.5	4125.0	4177.5
6312.0	6215.0	6268.0
8414.5	8291.0	8376.5
12577.0	12290.0	12520.0
16804.5	16420.0	16695.0
VHF CH.70 (156.525 MHz)	VHF CH. 16 (156.8 MHz)	

Frequencies for MSI NBDP Broadcasts by coast stations:

490.0 kHz *	518.0 kHz
4209.5 **	4210.0
6314.0	8416.5
12579.0	16806.5
19680.5	22376.0
26100.5	

* For use after full implementation of GMDSS Feb. 1999
** HF Navtex service (coastal MSI)

Frequencies for On-Scene Search and Rescue - R/T

2182.0 kHz	Radiotelephone
3023.0	Aeronautical
4125.0	Radiotelephone
5680.0	Aeronautical
123.1 MHz	Aeronautical
156.8 MHz	VHF CH 16
156.3 MHz	VHF CH 6

Author J. Van Allen in his radio room at sea.

Where is the Radio Officer?

While developing GMDSS, the role of the Radio Officer has been under consideration by IMO and ITU. The phase-in of GMDSS will result in the gradual phasing-out of Morse Code in favor of NBDP telex. As a result, some governments insist there will be no need to have a radio officer, since it requires no special skills to use the R/T or operate the other emergency equipment that will be required. However, other governments maintain that although a radio officer may not be required, a radio specialist will still be needed to carry out onboard maintenance and repairs.

A compromise between these two positions was achieved during GMDSS Conference. Ships operating in areas A1 and A2 must ensure the availability of equipment by either duplication of equipment, shore-based maintenance, or at-sea maintenance, or a combination of these. In areas A3 and A4 a combination of at least two of these methods must be used.

A Gradual Adjustment

The timetable for implementation of GMDSS is as follows:

- Navtex and satellite EPIRBs (406 MHz) should apply to all ships not later than August 1, 1993.
- Between February 1, 1992, and February 1, 1999, existing ships can comply either with the GMDSS or the existing Chapter of SOLAS.
- After February 1, 1999, all ships must comply with GMDSS.

DSC signalling on HF is 100 baud ASCII. On VHF, 600 baud ASCII. Whether or not it can be copied on a TNC remains to be seen; the ASCII may be a modified format. This should make an interesting project to challenge monitors in the next few years.

On VHF, Channel 70 DSC is now the only allowable mode. No voice or any other mode may be used. The interesting thing about DSC is that a vessel monitoring any channel can be called over Ch 70 by another vessel or coast station (such as the Coast Guard) using DSC and the radio will automatically switch to the channel being used by the calling station.

www.americanradiohistory.com

For instance, a fishing vessel wishes to contact another fishing vessel. The operator does not know which channel the other vessel is on. By calling the other vessel's 9-digit number using DSC, the receiving vessel's radio will beep indicating a call has been received. The calling vessel's ID will show up on the display (or printer) and the radio will switch to the desired channel. The call will be made even if the operator is transmitting; the radios operate duplex when receiving DSC calling information.

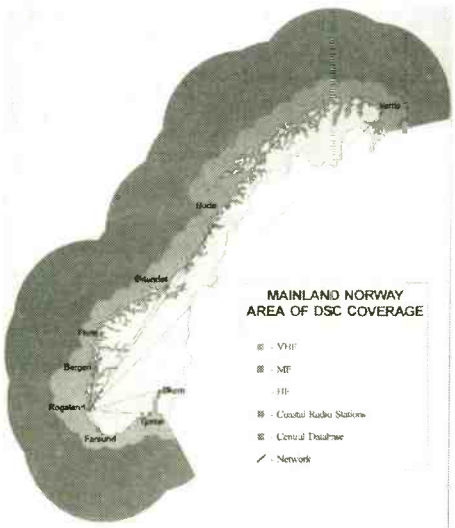
The other obvious benefit to this scenario is that the Coast Guard or other coast station can call all ships in the area to broadcast a distress or warning, and all DSC-equipped radios will tune to the proper frequency. The DSC info on Ch 70 can be likened to the data channel used in trunked radio systems inasmuch as it controls the radio's functions.

The FCC is now authorizing testing for GMDSS operator and GMDSS maintainer, which can be done separately or combined on a single license. The tests are multiple choice exams with element 7 for the GMDSS operator license and element 9 for the maintainer license. All questions and answers are available in a pool which is available from several sources.

Currently, the FCC fee for the license is $35.00 for a license term of five years. There is also an examiner fee which varies with administering facilities. Holders of the GROL, or the 1st or 2nd class Radio-telegraph license, will be issued credit for elements 1 & 2 as well as any endorsements, such as ship radar.

As with all other industries, the Maritime Industry is making changes to accommodate new technology in every department onboard and ashore. Keeping up with the changes is a challenge for every monitoring enthusiast. I'm confident those of us who monitor maritime communications will keep the pace!

Jon Van Allen is a Master Radio Electronics Officer, American Radio Association



Norway is installing one of the world's largest DSC-based coastal radio systems, the Garex 220. The eight coastal radio stations along the Norwegian coastline are to be integrated in a network. All stations can handle all calls, regardless of the location of vessel or land-based caller.

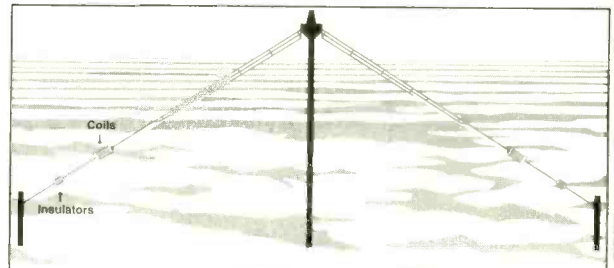
*The **MODEL 930** is a cost effective instrument that can detect, decode, display, and store all of the signaling formats used in the telephony industry. When detected, the signal is identified as **DTMF, MF or DP**, and tagged as to mode on the display and in the memory. This unit is PC compatible such that data can be transferred to disk or hard drive when on board storage is not large enough. At $118.45 for the DTMF/DP unit or $308.40 for the DTMF/MF/DP version, put one or more in each service location!*

AIE CORP. 1-800-397-9256
(FAX 1-803-532-9258)

Imagine . . .

A shortwave antenna so good you won't need or want any other type of antenna system!

With the ALPHA DELTA Model DX-ULTRA Full Spectrum Dipole you don't have to imagine anymore! We designed it for "knock-your-socks-off" performance with an absolutely no-compromise attitude — with full frequency access from AM Broadcast through 30MHz!



Model DX-ULTRA Dipole Antenna

- Absolutely remarkable performance for Medium Wave, Tropical, International Shortwave, Government, Military, Embassy, Maritime, Aircraft, Commercial and all other Utility communication frequency ranges.
- The DX-ULTRA design provides extremely low-noise performance for maximum sensitivity to weak DX signals.
- The wire elements' "Tapered Wing" design allows broadband operation on 1/2 wavelength and 3/4 wavelength multiples of various frequency ranges.
- The DX-ULTRA is designed with a pair of ISO-RES inductors and parallel wire elements for maximum broadband, efficient performance - no lossy narrowband traps. The difference on your S-meter can be phenomenal!
- Our exclusive Model DELTA-C Center Insulator with the built-in Model SEP ARC-PLUG® Static Electricity Protector provides effective protection for your sensitive receiver components. Connectors accept either coax or balanced line.
- Overall length of the DX-ULTRA is only 80 feet with dipole, inverted-vee, or full sloper configurations possible!
- Fully assembled - no cutting or soldering required. All components are rated for 2kW of power with all stainless-steel hardware. Can be used with a wide-range antenna tuner for commercial, military, or embassy operation.
- The DX-ULTRA is designed specifically for full spectrum shortwave performance, not just for the narrower amateur or international shortwave bands.

Alpha Delta Model DX-ULTRA, 80 ft. in length $119.95

If your space does not permit the full 80 ft. length of the DX-ULTRA, we suggest our Model DX-SWL 1/4 wave sloper (60 ft.) or our DX-SWL-S 1/4 wave sloper (40 ft.). These antennas have similar design philosophies.

At your Alpha Delta dealer or add $5.00 for shipping and handling in the continental United States. Export orders - please call for quote.

ALPHA DELTA COMMUNICATIONS, INC. AA

P.O. Box 620, Manchester, KY 40962 • 606-598-2029 • FAX 606-598-4413

current solutions to current problems

www.americanradiohistory.com

When Rescue Fails

"The chopper is down. The TPD chopper is down in the water on the south side of the bridge."

By John T. Ward

It's the kind of message every scanner listener hopes, but also dreads to hear—a message filled with drama and excitement, but also signaling a tragedy in the making.

I was at home on the evening of January 18, looking forward to a quiet night of watching television and monitoring my radios. Using a Yaesu FRG-100, a Radio Shack PRO-43, a Radio Shack PRO-2039, and a Radio Shack PRO-2032 which is mounted in my car, I regularly monitor the U.S. Coast Guard, military comms at nearby MacDill Air Force Base, arrivals at Tampa International Airport, local police, fire and EMS activities, and the frequencies local TV and radio reporters use to talk to their stations.

It was Stephen Barrett, a videographer with WTVT Channel 13, the local Fox Network affiliate, who first came on the air with the word that a Tampa Police Department helicopter—a Hughes 500E—had crashed into the waters of Tampa Bay several hundred yards south of the Howard Frankland Bridge which carries Interstate 275 from Tampa to St. Petersburg.

The two-man crew of the helicopter had been searching for the body of an Orlando firefighter, whose boat had capsized in the bay two days earlier while he and two other off-duty firefighters were fishing. The others in the boat made it to shore safely, but John E. Thompson, 42, had not been rescued.

Barrett, the TV photographer, was covering the search for the missing firefighter.

"It (the helicopter) had made a couple of passes at high speed, then it went over again low behind us and then we heard a loud 'bang' and right away we knew what it had to be," he said.

It was Barrett's first call to his station that alerted me to the unfolding drama.

"The chopper is down. The TPD chopper is down in the water on the south side of the bridge. Get me a live truck out here right away," he radioed, using the station frequency of 450.350 MHz.

Quickly punching up the Tampa Police tactical frequency of 453.850 MHz, I found the channel buzzing with calls for help from officers who had witnessed the crash. The police dispatchers were trying to sort through the confusion while asking for help from the Coast Guard, the Florida Marine Patrol, the Hillsborough County Sheriff's Office, the Florida Game and Freshwater Fish Commission, the Florida Highway Patrol, the Pinellas County Sheriff's Office, and the Tampa and Hillsborough County fire departments. Eventually all of those agencies and others sent personnel, including divers, to aid in the rescue effort. Several provided helicopters and boats as well.

The pilot of the downed helicopter, Dan Gilligan, 34, was rescued in minutes by Tampa police officer Ed Boudin, who used the foam-filled back seat of his police car as flotation and paddled out to where the helicopter crashed.

But rescuers could find no sign of observer Norris Epps Jr.

Epps had volunteered for observer duty while waiting for assignment to the department's K-9 squad. His wife, Wendy, is a Tampa Police dispatcher, and was on duty at the time of the crash.

The helicopter that crashed was a Hughes 500E, similar to this former military helicopter now operated by the Tampa Police Department.

www.americanradiohistory.com

Knowing that the Coast Guard would be launching helicopters from Air Station Clearwater, only a few miles west of where the police chopper went down, I programmed 157.05 MHz and 381.8 MHz into an empty scanner bank I keep open for emergency use. I knew the Coast Guard had used those frequencies in the past for local search operations and it was only a few minutes before I began hearing Group St. Petersburg directing the helos to the rescue area.

Officers from the Tampa Police Department search the waters of Tampa Bay for their fellow officer, Norris Epps, Jr., who was lost after a department helicopter crashed into the bay.

I also entered the marine VHF emergency frequency, 156.800 MHz, since I knew all the rescue activity would attract civilian boaters to the area, and who knows; one might just get lucky and find the missing officer.

I also moved the Tampa Police frequency being used for the rescue operations into my emergency bank and with one radio scanning those channels I began using a second radio to search the published frequencies for each agency involved. As I identified the frequency each was using for rescue operations I programmed it into my emergency bank. In a short time I had a single bank loaded with frequencies being used in the search for the missing officer.

From the radio traffic I was hearing, coordination of the search was definitely a problem, since for the most part rescuers from different agencies couldn't use their radios to communicate with one another. On-scene officials frequently had to pass messages to their dispatchers who in turn communicated with the dispatchers of other agencies by telephone who then relayed the information to their units back at the scene. Obviously, this took time and increased the likelihood of errors.

Two days after the crash, and while the search for Officer Epps and the firefighter continued, I visited the crash scene and spoke with Tampa Police Sgt. George McNamara.

"That's why you need to get a command post established right away," Sgt. McNamara said, referring to the early confusion.

To understand the scope of the problem you have to know that Tampa Police use UHF, Tampa Fire and Hillsborough County Fire and Sheriff use VHF-High, the Florida Marine Patrol uses VHF-Low, the Pinellas County Sheriff's Office is on an 800 MHz trunk system, while the Coast Guard was using marine VHF channels.

Florida has established statewide mutual aid frequencies, but most radios used by rank-and-file officers and rescuers don't include those frequencies.

McNamara said Tampa Police called on the Hillsborough County Sheriff's Office to bring its mobile command post to the crash site. Once the command post arrived and officers from each agency took their positions inside, the coordination became much easier, he said.

Capt. Roger Dixon of the Sheriff's Office is in charge of the mobile command post. Because the helicopter went down off the side of a bridge, there wasn't room to park the main mobile command post, which is built on an 18-wheel tractor-trailer chassis, on the scene, Dixon said. Instead, one of the department's stepvans, normally used for DUI intervention, was brought in.

"Basically, what we did, was get a representative from each agency in our command post, and place one of our people with a radio in TPD's command post. That way, instead of having to talk to a dispatcher and have them relay the information we were able to talk to the guy sitting next us, and they could pass the info on to their own people," he said.

Unfortunately, this story doesn't have a happy ending. Despite one of the most massive search efforts in Florida history, involving nearly a dozen public safety agencies and hundreds of volunteers, officer Norris Epps Jr. and firefighter John E. Thompson both drowned in the waters of Tampa Bay. Thompson's body was found eight days after his boat capsized. Epps' body was found eight days after his helicopter crashed.

The author's listening post, where he monitors the U.S. Coast Guard, military and civilian air traffic, and local police, fire, and EMS activities.

VIDEO SYNC GENERATOR

Restores Horizontal and Vertical Sync Lines from Distorted Analogue Video Formats

For Free Information Package on Completed Units and Pricing

• Call 219-236-5776 •

R.C. Distributing · PO Box 552 · South Bend, IN 46624

www.americanradiohistory.com

Larry Van Horn, N5FPW

Staying Informed During Hurricane Season

Each year from June through November, residents along the U.S. coastline cast a wary eye seaward, watching for the development of the most powerful storms on earth—hurricanes.

The job of forecasting and tracking these monster storms is the responsibility of the National Hurricane Center (NHC) in Florida. The center's building was severely damaged in 1992 during hurricane Andrew. Since that time a new building has been constructed to house the NBC and it became operational in June of this year.

From their new building (nicknamed Bob's Bunker after former NHC director Bob Sheets), in Coral Gables, NHC personnel now work with the latest in technology to investigate and forecast these giants of the weather world.

The new building has a large array of satellite antennas bristling from the roof. These include: two giant 1.7 GHz dishes for GOES weather satellite products, NOAA APT/HRPT antennas, a transmit dish to send weather information via the Galaxy 3 satellite, a Ku-band satellite dish for the U.S. Air Force weather network, and an antenna for the new military satellite weather link to the hurricane hunters.

But even with weather satellites, complex radio communications systems, and sophisticated computer technology, one thing has not changed over the many years that NHC has been in business—the need for observations from within these storms. This is the job of the NOAA research aircraft and U.S. Air Force Reserve hurricane hunters.

Scouting Out the Storm

NOAA operates two of the world's premier research aircraft, the renowned NOAA WP-3D Orion (a variation of the U.S. Navy P-3 Orion). On the average, each research aircraft logs about 400 hours a year, aiding scientists in better understanding hurricanes, studying the ocean currents, and investigating the structures of severe storms.

During hurricane season, the aircraft—callsigns NOAA 42 and NOAA 43—assume an operational role to help support the hurricane center in monitoring and forecasting hurricane and severe storm movements. When a hurricane appears to be heading for landfall in the Atlantic Ocean of the Gulf of Mexico, the P-3s begin storm penetration flights, flying into the eye of the storm. Through direct satellite communications, the aircraft transmit important storm data to the NHC for use by forecasters in their storm prediction and warning activities.

The P-3s normally fly into hurricanes performing a research mission only. They fly recon missions only if the hurricane is over Cuba, for example, or if the USAF reservists based at Biloxi cannot.

These P-3s are among the world's most heavily-instrumented research aircraft. Automated instruments carried on board the P-3s collect basic meteorological information such as temperature, pressure, dewpoint, wind speed and direction, and cloud information such as water droplet and ice particle information. Other collected information includes sea surface temperature and dust.

The information collected is correlated with data from the aircraft's navigation systems to record specific conditions at various locations. Data are displayed on board the aircraft for instant analysis and are recorded for later study.

These aircraft are based at the NOAA Aircraft Operations Center at MacDill Air Force Base near Tampa, Florida. They have been in service since 1975. A complete list of NOAA aircraft is presented in Table One.

You will frequently hear NOAA 42 and 43 working the NHC (callsign KJY74-Miami Monitor) in the shortwave spectrum. Look for the Miami Monitor working these aircraft on the following frequencies using USB:

3407 (Alpha) 5562 (Bravo) 5610 (Charlie) 6673 (Delta)
8876 (Echo) 10015 (Foxtrot) 13267 (Golf) 17901 (Hotel)
21937 (India)
122.925 MHz 123.050 MHz 134.100 MHz 304.800 MHz
(VHF/UHF air to ground and air to air)

Hurricanes aren't the only mission for NOAA 42/43. At other times of the year you might find these aircraft studying winter storms along the east coast of the U.S. or flying around severe spring thunderstorms and tornadoes. Look for them on the following frequencies working Boulder, Colorado, and Norman, Oklahoma:

3416 5610 6682 8882 10093
13267 17901 21937 123.050 MHz

TABLE 1: NOAA Aircraft Based at MacDill AFB

Tail No.	Aircraft Type	Radio Callsign	Mission
N42RF	Lockheed WP-3D Orion	NOAA 42	Advanced airborne environmental research platform
N43RF	Lockheed WP-3D Orion	NOAA 43	Advanced airborne environmental research platform
N47RF	AC-500S Aero Commander	NOAA 47	Flight check aero charts for obstructions
N48RF	Dehavilland DHC-6 Twin Otter	NOAA 48	Various missions
N485RF	Dehavilland DHC-6 Twin Otter	NOAA 485	Various missions
N49RF	Gulfstream G-IV SP	NOAA 49	Hurricane surveillance, weather research, global climate studies, air chemistry, satellite validation, and remote sensor development. (In service July 1996)
N51RF	AC-500S Aero Commander	NOAA 51	Gamma radiation measurements
N52RF	Cessna Citation II	NOAA 52	Aerial photography
N53RF	AC690A Turbo Commander	NOAA 53	Aerial photography
N59RF	McDonnell-Douglas MD-500D	NOAA 59	Various missions (ship based)
N60RF	Bell 212 Helicopter	NOAA 60	Various missions (Anchorage, AK)
N61RF	Bell 212 Helicopter	NOAA 61	Various missions (Anchorage, AK)
N64RF	Lake Renegade Seawolf	NOAA 64	Various missions
N65RF	Lake Renegade Seawolf	NOAA 65	Various missions

www.americanradiohistory.com

■ Military Stormtroopers

The flying folks at NOAA aren't the only ones that tackle these destructive storms. The U.S. Air Force has been flying into them for years. It used to be the active duty Air Force that flew hurricane hunting missions, but that all changed when the Air Force Reserve took over the mission. On November 1, 1993, the 53rd Weather Reconnaissance Squadron (WRS) designation was activated and assigned to the 403rd Airlift Wing based out of Keesler Air Force Base near Biloxi, Mississippi. When the 53rd squadron was activated, their old squadron designation, the 815th Weather Squadron, was decommissioned.

These Air Force reservists track hurricanes and tropical storms over the Atlantic, Gulf of Mexico, and the eastern Pacific. During one hurricane—Emily, in 1993—they flew over 230 hours to support data gathering for the National Hurricane Center.

The aircraft flown for these hurricane tracking missions are modified C-130 air frames (WC-130E and WC-130H aircraft). They use the callsign "Teal" followed by two numbers.

While most of the routine tracking information is now passed via military satellites using data modes, some voice traffic from these aircraft can still be monitored. Normally when flying their recon missions, the aircraft can be heard on the U.S. Air Force Global High Frequency System (GHFS). Aircraft flying in the Atlantic and Gulf can be heard working MacDill Global in Florida. Aircraft flying out in the eastern Pacific have been heard working both MacDill and McClellan. Listen for these "Teal" flights on the following GHFS frequencies:

4724 6712 6739 8968 8992 11175 13200 15016 17976

Sometimes due to extensive traffic or workloads, MacDill or McClellan will move these flights off primary channels to discrete frequencies for the phone patch traffic to Miami Monitor. Be sure to watch the following discretes during the season for hurricane hunter communications:

MacDill Global Discrete Frequencies:
3071 3116 3143 3163 4727 745 4855 4987 5711 6730 6750 6904 9016 11181 11214 11244 11226 11229 11246 13215 13242 15046 15094 18021 18024 23217 23265

McClellan Global Discrete Frequencies:
2326 3068 3134 3137 3143 3394 4453 4745 4897 5711 6683 6730 7398 8989 9016 10267 10575 10665 10997 11226 11235 11238 11510 11622 12203 13215 13763 15046 15094 18003 18021 23217 23265

Several frequencies in the HF spectrum have been set aside by the military for weather recon and rescue. Keesler AFB has been heard on quite a few of these frequencies working various aircraft throughout the U.S. and in the adjacent coastal waters.

4721 4860 6712 6714 7813 9018 11214 11440 (backup to air force satcom system) 13207 15011 18027 (backup frequency to air force satcom system) 23214 23271 27559

■ Other Help in a Hurricane

Here are a few other sources for hurricane information that you might want to check out. The National Weather Service has two frequencies they use for emergency nets that should be watched. Those frequencies are 6977.5 and 9947.5 kHz. When a hurricane threatens the Gulf Coast, be sure to put 6870 kHz in your receiver's memories. This is the southwest FAA hurricane net. When these big winds rumble around the Caribbean and U.S. coastlines, you might want to keep an ear on the U.S. Navy/Coast Guard hurricane nets on 7507 and 9380 kHz.

The Air Force also has some interesting voice weather frequencies during hurricane season. Keep a radio watch on the following USB frequencies: 2547, 3249, 4457, 7938 and 14832 kHz. You might be surprised at some of the communications on these frequencies even at other times of the year.

Monitors will find a wealth of information in the maritime bands as well. Most U.S. coastal stations and U.S. Coast Guard stations have voice, fax, and SITOR traffic relating to the storm that can be monitored in the HF spectrum. The list would be far too extensive to publish in this column, but is available in the 8th edition of Bob Grove's *Shortwave Directory* published by Grove Enterprises.

Digital enthusiasts should also keep an eye on the U.S. Air Force Air Weather Service (AWS) radioteletype and facsimile channels. These are independent sideband (ISB) transmissions with RTTY carried on the upper sideband and fax on the lower.

Elmendorf AFB, Alaska
2280 3394 5096 7398 10665 15805 19332

Offutt AFB, NE (Elkhorn)
3231 5096 6904 10576 11120 15681 19326

Homestead AFB, FL (Closed after Hurricane Andrew)
3394 4855 7398 7870 10997 11622 15781 19363

Andersen AFB, Guam
4943 6919 7708.5 9045 10614 13385 14397 17526 20380 22851

If you want more information on the U.S. Air Force Air Weather Service, consult the Utility World columns published in July 1989, October 1990, and June 1992.

This year's hurricane season has been predicted to be very active by all the experts, and if it is, tune into some of the frequencies listed above for some exciting Utility World action.

■ UW Pot Luck

- Don't discard the old U.S. Navy HICOM frequencies; some Navy traffic is still being heard on these frequencies: 3036 6697 8976 9002 9032 11186 11263 11267 15027 15054 17985 23287
- A nifty, little known U.S Air Force frequency you might want to put in your receiver's memories is 6826 kHz. You will find some airborne command posts gather there from time to time for training and real world events.
- An interesting set of USAF frequencies to listen in on is the Pacific Air Force Commando Escort network. The net is used as a command and control network with the net control station located in Punamano AFS, Hawaii. The net's USB communications can be found on the following frequencies:

3032 3137 3781 4520 6712 (Alpha 2) 6944 (Sierra) 7415 (Hotel) 9129 (Golf) 10452 (Oscar) 10510 (Charlie) 11697 (Foxtrot) 14755 17414 (November) 17464 (Papa) 18005 (Tango) 20737 (Lima) 21754 (Uniform) 23441 (Victor) 23689 (Whiskey) 26515

Other stations in the net include: Kadena, Japan; Owada, Japan; Osan, Korea; Kunsan, Korea; and Kwangju, Korea. If we ever have any more problems from North Korea, keep an eye on these frequencies.

Well, that is it for this month, and now it is time to see what you have been hearing in the Utility World.

www.americanradiohistory.com

Utility Loggings

Larry Van Horn

UTILITY WORLD

Abbreviations used in this column

AFTN	Aeronautical Fixed Telecommunications Network	Inmarsat	International Maritime Satellite Organization
AM	Amplitude Modulation	MARS	Military Affiliate Radio System
AMVER	Automated mutual assistance vessel rescue system	Meteo	Meteorological
ARQ	Synchronous transmission and automatic repetition teleprinter system	MFA	Ministry of Foreign Affairs
ARQ-E	Single channel ARQ teleprinter system	MOD	Ministry of Defense
ARQ-E3	Single channel ARQ teleprinter system	MOI	Ministry of Information
ARQ-M2	Multiplex ARQ teleprinter system with two channels	M/V	Motor Vessel
Buno	Bureau Number (Navy aircraft ID number)	NAS	Naval Air Station
CW	Continuous Wave (Morse code)	NATO	North Atlantic Treaty Organization
DCS	Defense Communications System	NCS	Net Control Station
EAM	Emergency Action Message	PACTOR	Teleprinter system combining certain characteristics of packet radio and SITOR
EPA	Environmental Protection Agency	POL-ARQ	Polish diplomatic ARQ teleprinter system
Fax	Facsimile	RAF	Royal Air Force
FEC	Forward Error Correction	RTTY	Radioteletype
FEC-A	One-way traffic FEC teleprinter system	SITOR-A	Simplex teleprinting over radio system, mode A (two-way)
FF	French Forces	SITOR-B	Simplex teleprinting over radio system, mode B (one-way)
FHWA	Federal Highway Administration	SWED-ARQ	Adaptive Swedish diplomatic simplex ARQ teleprinter system
GHFS	Global HF Station	TS	Time Station
HF	High Frequency	Unid	Unidentified
ID	Identification	US	United States
		USAF	U.S. Air Force
		USB	Upper sideband
		USCG	U.S. Coast Guard
		USN	U.S. Navy
		USMC	U.S. Marine Corps
		UTC	Coordinated Universal Time

All frequencies in kilohertz (kHz), all times in UTC. All voice transmissions in English unless otherwise noted.

3196.0 Prague Meteo, Czech Republic, with 50 baud Synops RTTY weather reports at 2022. (Ary Boender-Netherlands)

3450.0 FUO-French Navy Toulon, France, calling FWF2 using 100 baud RTTY at 0006. (Boender-Neth)

4178.0 9GYS-M/V *Volta River* at 0020 in SITOR-A with telex for vessel arrangements in Tampa, FL (Rich Baker-Austintown, OH)

4470.0 English female 3/2-digit number station in AM at 0120 noted parallel to 5046 (Fri UTC). (John Bellovich-Macclenny, FL)

4495.0 Parchesi working Nightwatch 01, entering the net on S-304 in USB at 0027. Also on 5700 (P-381) and 11244 (S-393). (Jeff Haverlah-Houston, TX)

4742.0 SAM 203 (C-20B, tail 86-0203) at 0304 in USB working Andrews (Mystic Star). (Baker-OH)

4873.2 AFA2NF-USAF MARS with 75 baud RTTY chit chat, apparently attempting to keep a net open at 1420. (Bill Mussen-Annandale, VA)

5154.0 USN/USMC MARS stations in PACTOR mode at 0134 UTC. Message concerned the use of Internet for MARS messages. (J.L. Metcalfe-KY)

5211.0 USCG 1st District communications center, Boston, MA, working WGY 912 at 0438. KC2XKG (Rockwell Collins-Cedar Rapids, IA) working WGY912 (FEMA Mt. Weather) at 0035. When WGY 912 asked KC2XKG for their agency and zip code, they were told that the information was classified. That really cracked me up. All in USB. (Mike Schulsinger-Springfield, OH)

5431.5 Oscar Sierra, NCS for NATO tracking net, at 0431 in USB working U1V. Deny Flight frequency. (Baker-OH)

5690.0 W9H calling unid station for radio check, strange accent in USB at 1050. (Harry Riddell-Rochester, NY) *Military I show here is Canforce at Lahr, but that has been sometime ago-Larry.*

5775.0 URO-Unid station with 75 baud RTTY at 1630. KUL type station. (KUL-UK)

5790.0 German female 3/2-digit number station in AM at 0345 (Fri UTC). (Bellovich-FL)

6265.5 WZJD-SS *Sea-Land Discovery* at 0340 with AMVER position report. At 1750, WMLG-M/V *Tyson Lykes* with voyage 42 company report. Both using SITOR-A. (Baker-OH)

6272.0 UIGU-Tanker M/T *Ashkhabad* at 0244 using SITOR-A with English telex to Russochart Hamburg, Novoship Novorossiysk. (Baker-OH)

6272.5 WSNB-SS *Kenai* at 0608 using SITOR-A, U.S. flag crude oil tanker with BBXX weather observation telex. (Baker-OH)

6344.0 WLO-Mobile Radio, AL, with SITOR-B traffic list and Atlantic seas forecast at 0640. (Sue Wilden-IN)

6604.0 New York Volmet with aviation weather in USB at 0048. (Wilden-IN)

6691.0 Golfball, U.S. military, concluding an USB transmission to an unid station. Stayed on this frequency a long time, but nothing further heard. (Metcalfe-KY) *This is a USN frequency, I've heard word tactical calls here before, possible DCS or naval aircraft air-to-ground-Larry.*

6697.0 Unid station passing a 26 character EAM in USB at 0343. The same EAM LVH heard earlier on frequency from Bush Pilot. (Haverlah-TX) *This was one of the more unusual days to monitor the GHFS, we heard a 515 character EAM broadcast earlier in the day, lots of variable character EAMs on this day-Larry.*

6712.0 Andrews GHFS with two 26 character EAMs in USB at 0506. Suspect via Croughton site. (Haverlah-TX)

6730.0 Nightwatch 01 calling WAR46 (Site R, Alternate National Military Command Post in Maryland) in USB at 0349 on X-903. (Haverlah-TX)

6735.0 Active Fox Tango net in USB at 0410. (Haverlah-TX)

6737.0 Station that sounded like Air Force 2 calling McClellan GHFS for a test in USB at 0541. (Haverlah-TX)

6739.0 Architect with English weather broadcast in USB at 0300. Moved here from 6738. Stick 58 calling Skybird and raising Andrews in USB at 0128. Told to moved to 11244 or 15015. (Haverlah-TX) Architect at 0100 in USB, finally moved. (Baker-OH)

6761.0 SAM 973 (C-137C, tail 85-6973) working Andrews (Mystic Star) in USB with signal checks at 0525. (Baker-OH)

6830.0 4 Romeo calling 3 Sierra concerning a data transmission. Said, since this was a Day 3 time period, they would return the next day at 0800 local. USB at 0122. (Metcalfe-KY) *The only thing I show here in the past has been Mystic Star activity-Larry.*

6835.5 Link 11 transmissions noted here in USB at 0429. (Haverlah-TX) *Probably Atlantic ASW aircraft Link 11-Larry.*

6862.0 VNB-Unid station with 75 baud RTTY at 1615 with CW ID. KUL type station. (KUL-UK)

6978.0 KUL-Unid station with 75 baud RTTY at 1840. (KUL-UK)

7445.0 KPA2-Israeli Mossad with AM marker at 0456 (Fri UTC). (Bellovich-FL)

7793.5 Per phone tip from Todd Dokey, EOD support craft working CTF and CTE regarding the USS *Cleveland* in USB at 0158. (Haverlah-TX)

8052.3 RFQP-FF Djibouti, at 0254 in ARQ-M2 mode idling. (Baker-OH)

8062.0 URO-Unid station with 75 baud RTTY at 1620. KUL type station. (KUL-UK)

8125.0 KUL-Unid station with 75 baud RTTY at 0725. (KUL-UK)

8142.0 OLX-MOI Prague, Czech Republic, with 5-digit groups in Czech using USB at various times. (Boender-Neth)

8165.0 KUL-Unid station with 75 baud RTTY at 0725 and 0730. (KUL-UK)

8026.0 Andrews (Mystic Star) running phone patch for SAM 200 to Crossbow in USB. (Metcalfe-KY)

8157.0 MKD-RAF Akrotiri, Cyprus, with 50 baud RTTY at 2349. (Mussen-VA)

8234.0 NYKN-USS *Yorktown* (CG-48) at 2216 in USB working WOM-AT&T station with phone patch traffic. (Baker-OH)

8335.5 DRDO-FGS U-21 (S-170) German attack submarine at 2239 in USB working DHJ59-Wilhelmshaven naval radio with three RTTY messages. (Baker-OH)

8336.0 URJA-TH *Stepan Artemenko* at 0023 in CW calling UII-Odessa Radio, no joy. At 0025, 3FDP-M/N *Presidente Frei* in CW calling CBA, no joy. (Baker-OH)

8370.0 UHCO-cargo ship TH *Pioner Severodvinska* at 0725 in SITOR-B with administrative messages to Arkhangelsk Radio. (Baker-OH)

8376.0 UYRK-TH *Viktor Talaliykhin* at 0127 in SITOR-A DISP-1 reports to Mariopol. (Baker-OH)

8378.0 IBAR-M/V *Arno* working Rome Radio with a DIFMAR (Amver) message using SITOR-A at 1005. (Robin Hood-UK)

8380.5 YLBW-tanker TK *Mayori* at 2235 with RDO+ traffic to Riga Radio. At 2235, YLDE-MK *Akademikis Chelomeyes* with SVC+ traffic to same, both using SITOR-A. (Baker-OH)

8398.5 UBRJ-TH *Ul'banskiy Zaliv* at 2359 with 50 baud RTTY telegrams to Vladivostok. (Baker-OH)

8401.5 UWDQ-TH *Kapitan Anistratenko* using 50 baud RTTY to UUI-Odessa Radio. (Baker-OH)

8407.0 UGMS-RTMS *Kapitan Smelov*, factory fishing trawler, at 0222 sending 50 baud RTTY administrative messages, note change to RTMS from BMRT. (Baker-OH)

8415.0 URFV-TH *Novol'ovsk* at 0231 using SITOR-A with DISP-1 report to St. Petersburg Radio. (Baker-OH)

8435.0 4XZ-Haifa Naval Radio, Israel, with V CW marker at 0300. (Mussen-VA)

8454.0 UJY-Kaliningrad Radio, Russia, with 50 baud RTTY weather at 1008. (Boender-Neth)

8475.0 UMV-Murmansk Radio, Russia, with 50 baud RTTY RYs at 1510. (Boender-Neth)

www.americanradiohistory.com

8658.0 WLO-Mobile Radio, AL, with CW announcement of frequencies and modes at 0435. (Wilden-IN)

8680.0 EAD2/3/44-Madrid Radio, Spain, with CQ CW marker at 0000. (Mussen-VA)

8700.0 9AR-Rijeka Radio, Croatia, with CW traffic list at 1002. (Boender-Neth

8701.0 LYK-Klaipeda Radio, Latvia, with CW traffic list at 1002. (Boender-Neth)

8930.3 Unid Egyptian Embassy traffic at 2327 in SITOR-A. Immediate traffic in Arabic, 4/5/6-letter groups then off 2344 same type traffic was on 8900.3. (Baker-OH)

8967.0 Fox Tango working Steeljaw 02 and Golf in USB at 0051. Note the frequency, no change. (Haverlah-TX)

8968.0 Nightwatch 01 working Thule GHFS with phone patch request for a "communications test call" in USB at 0251. (Haverlah-TX) Hickam GHFS, HI, at 0515 in USB working Reach 67944 (C-141) with phone patch to Hickam metro for weather at Salt Lake City. (Baker-OH)

8971.0 Pelican 08 working Bluestar in USB at 1331 regarding 101 nets. (Haverlah-TX)

8989.0 CHR-Trenton military, Canada, working unid one word callsign with morale traffic. At 0305, Rurbo 15, possible F/EF-111 from Cannon AFB, NM, calling unid aircraft. Both in USB mode. (Baker-OH)

9014.0 Guano 1 and 2 periodically calling Raymond 7 (Cannon AFB) in USB at 0408 with no reply. Presumed EF-111s. (Haverlah-TX) Raymond 7 at 0227 working Turbo 32 with status. At 0233 Bobby 2 working Bobby 1, advised orbiting and waiting with Texaco for them to come off range. At 0257, Bobby 2 working Fox 1 advising his pod was stuck down. At 0315, Zigger 2 working Zigger 3 and at 0331 Outlaw 1 calling Outlaw 2, no reply. All in USB. (Baker-OH)

9016.0 MacDill GHFS working McClellan GHFS in voice and data at 0345. (Haverlah-TX) Hickam GHFS at 0430 working McClellan GHFS with USB radio checks and into radio traffic. (Baker-OH)

9017.0 Deermeat working Nightwatch 01 in USB at 2037 on X-904. Also on 11229 (X-210) and 13211 (S-312). (Haverlah-TX)

9023.0 Northern Lights (NORAD station) at 1844 working Dragnet Yankee in USB. (Baker-OH)

9050.0 Two USN stations, one with a strong signal and the other weak, in USB at 2057. Returned to this frequency at 2300, but both stations barely heard. Call signs were given, but both operators need work on enunciation! (Metcalfe-KY)

9145.0 Acrobat (Andrews AFB), haven't heard them for a while, telling W4P that the callsign format for their data transmission was wrong. Callsign, with an extra A, was relayed as ARAT UZ YUW. LSB at 1335. (Metcalfe-KY) *Probably setting up a DCS circuit with the U.S. Army-Larry.* Noted same at 1100, said moving back to data side. (Riddell-NY)

9197.0 WWJ40-FHWA Washington, D.C., and WWJ82-FHWA Grand Island, NE, discussing the possible use of satellite communications for emergencies. WWJ40 operator told of problems (long waits for dial tones) with Inmarsat during the Gulf War. Said FHWA was looking at a new Westinghouse satellite. In USB at 1635. (Metcalfe-KY)

9250.8 English female 5-digit Lincolnshire Poacher number station in AM at 2106 (Fri UTC). (Bellovich-FL)

9337.0 Unid station sending five 4-digit groups in CW at 2333. (Jack Dix-Yonkers, NY)

9994.0 CSY-AFTN Santa Maria, Azores, with 50 baud RTTY aero info at 0750. (Mussen-VA)

10410.0 KUL-Unid station using 75 baud RTTY at 0715. (KUL-UK)

10493.0 Nightwatch 03 working WGY911-Washington, DC, with message, "HFUSB151415" at 1416. USCG Air Station Traverse City, MI, working WGY 912 at 1409. USCG callsign was not used. Sierra 4 Lima-U.S. Army (?), Ft. Gillem, GA, working WGY 912 at 1514. *(Boy, the Army isn't going to like them giving locations with tri-graphs-Larry)* WGY918 working WGY912 at 1520. I suspect that WGY 913, 916, 917, 918 and 919 may be communication vans. KCI615-Red Cross Eastern District Headquarters, Falls Church, VA, working WGY912 at 1525. NMC-USCG San Francisco, CA, working WGY912 at 1535. KCQ314-EPA, Las Vegas, NV, working WGY908-Denver, CO, in LSB at 1749. EPA on HF?? USCG District 8, New Orleans, LA, working Halloween which relayed check in to WGY912 at 1853. All modes were USB unless otherwise indicated. (Schulsinger-OH)

10584.0 KUL-Unid station using 75 baud RTTY at 1415/1520/1605. (KUL-UK)

10893.0 WWJ82-FHWA Grand Island, NE, running SITOR-B and PACTOR data modes from 1830-1856. (Metcalfe-KY)

10942.0 CFH-Canadian Forces Halifax, NS Canada, with 75 baud RTTY NAWS broadcast at 2040. (Tim Bowling-Chattaron, WV) *Tim, NAWS is a generai callsign used for broadcast to All Allied Warships-Larry.*

10953.0 CLP65-Cuban Embassy Managua, Nicaragua, with 75 baud RTTY messages to CLP1-Havana at 1435. (Fred Hetherington-Ormond Beach, FL)

11175.0 Elmendorf monitored with a Foxtrot broadcast in USB at 0552. (Haverlah-TX) Navy 442 (NP-3D, buno 153442) working MacDill GHFS with phone patch traffic in USB at 0511. This modified P-3 is assigned to Fleet Support Detachment at the Naval Research Lab (NRL), NAS Patuxent River, MD. (Baker-OH) ADMP-U.S. Army vessel requesting a morale phone patch at 2153 in USB. Told to move to MARS frequency 14408.0, also in USB. (Metcalfe-KY)

11178.0 MVU-RAF Volmet West Drayton, England, at 2342 in USB with weather. ID as "This is Royal Air Force Volmet." Frequency change from 11200, bet the Dutch Navy in the Caribbean area is thrilled. (Baker-OH) *This is the last frequency I expected to see them on; interesting-Larry.*

11220.0 SNN299-MFA Warsaw, Poland, with Polish news using POL-ARQ at 0955. (Boender-Neth)

11244.0 Andrews with a Foxtrot broadcast to Fairly in USB at 0449. Offutt with a 20 character EAM for Reward in USB at 1229 and a 35 character J4 variable EAM at 1015. (Haverlah-TX)

11247.0 Architect (RAF) working various Ascot flights in USB. (Boender-Neth)

11545.0 English female 5-digit Lincolnshire Poacher number station in AM at 1500 (Thu UTC). (Boender-Neth)

11569.0 English male 5-digit number station in USB at 1710. (Frank Geluso-NJ)

11733.5 RFGW-MFA Paris, France, with FEC-A message to G8T at 0844. (Boender-Neth)

12134.2 DOR-MFA Sofia, Bulgaria, with pages of 5-letter groups using 75 baud RTTY at 1606. (Robert Hall-Capetown, RSA)

12180.0 RAU-Unid station using 75 baud RTTY at 1420. KUL type station. (KUL-UK)

12193.0 KUL-Unid station using 75 baud RTTY at 1410. (KUL-UK)

12562.0 UPXB-TH *Dmitriy Donskoy* at 1933 using 50 baud RTTY with traffic for Murmansk Radio. (Baker-OH)

12565.5 UKOS-Oceanographic research vessel *Akademik Sergey Vavilov* working Kaliningrad Radio with hydrographic info (addressed to Kalingrad meteor) using 50 baud RTTY at 2115. (Hood-UK)

12612.5 WNU-Slidell Radio, LA, with SITOR-A transmission on new clear channel, switched to SITOR-B at 1753. (Hetherington-FL)

12691.5 FUX-FF Le Port, Reunion, with 75 baud RTTY RYs at 1305. (Hetherington-FL)

13211.0 Nightwatch 01 on frequency with a 20/20/26 character EAM set, later rebroadcast by GHFS at 1953 in USB. (Haverlah-TX)

13347.7 Possible MFA Cairo, Egypt, with SITOR-A in untransliterated Arabic at 1640. Larry, help me on this one. (Mussen-VA) *Based on the text Bill, looks like Cairo to me-Larry.*

13425.0 URO-Unid station using 75 baud RTTY between 0825-0855. KUL type station. (KUL-UK)

13440.0 Air Force 2 working Andrews (Mystic Star) with phone patch traffic at 0330 in USB. Watchguard with a briefing for the Vice President on armed intruder incident on White House lawn. (Johnston-PA)

13450.0 English female 3/2-digit number station in AM at 1812 (Fri UTC). (Dix-NY)

13777.5 Per a tip from Brian Scott, Tiger 11 working Tiger 15, moving here from 6761. Brian associates this frequency with McConnell AFB. (Haverlah-TX) *Nice place to hide right in the middle of the 22 meter shortwave broadcast band-Larry.*

13920.0 AXM35-Canberra Meteo with 50 baud RTTY to 0030 then fax. (Hetherington-FL)

14352.9 SAM-MFA Stockholm, Sweden, with SWED-ARQ messages to ambassador in Mexico/Managua at 1746/1733. (Hetherington-FL)

14481.0 RFFXIA-FF Bangui, Central African Republic, with ARQ-E3 5-letter groups at 1747. (Mussen-VA)

14492.0 USN Link 11 net noted in USB at 1848. (Boender-Neth)

14860.0 Russian male numbers station in AM at 0810 (Thu UTC). (Boender-Neth)

14977.0 OLX-MOI Prague, Czech Republic, with V CW marker at 0800 then 5-digit numbers message in Czech. (Boender-Neth)

14980.0 RAU-Unid station with 75 baud RTTY at 1330, 1400 and 1410. KUL type station (KUL-UK)

15000.0 WWVH-TS Kauai, Hawaii, with time ticks and voice announcements (Aloha and address) in AM at 0300. (Sue Wilden-IN)

15016.0 Navy 442 (over the Caribbean) working Global stations (MacDill and Ascension) on this frequency and 11175 every 30 minutes, with phone patches to probably RCC in USB at 1955. (Haverlah-TX)

15860.1 RFFX-MOD Paris, France, with ARQ-E idling at 1650. (Hall-RSA)

16098.0 HBD48-Swiss Embassy with SITOR-A to HBD20-Berne, off at 1530. (Hetherington-FL)

16153.0 DKR-Unid station using 75 baud RTTY at 0825. KUL type station. (KUL-UK)

16165.4 RFFTD-MOD Paris, France, with ARQ-M2 French traffic at 1214. (Hall-RSA)

16760.0 Irish Naval "37" calling "Zero" for radio check in USB at 1309. (Hood-UK)

17045.6 LPD46-General Pachecho Radio, Argentina, working UZKJ-M/V Novomirgorod in CW at 1426. (Hood-UK)

17146.5 NRV-USCG Apra Harbor, Guam with CQ marker at 2140. (Dix-NY) *USCG didn't entirely quit using CW-Larry.*

17410.0 English female 5-letter number station in AM at 1438. Previously noted EZI2 on this frequency. (Hood-UK)

18585.0 CAZ-Unid station using 75 baud RTTY at 1000 and 1020. KUL type station. (KUL-UK)

19621.7 OZU25-MFA Copenhagen, Denmark, with Twinplex mode, unable to decode at 1234. (Hall-RSA)

20700.0 SAM-MFA Stockholm, Sweden, with SWED-ARQ 5-letter groups at 1058. (Hall-RSA)

www.americanradiohistory.com

Bob Kay, c/o MT, P.O. Box 98, Brasstown, N.C. 28902

August Scanning

November is the typical month that most scanner buffs begin to monitor the **shopping mall** frequencies. The day after Thanksgiving—traditionally known as Black Friday—is a national event that draws millions of Americans to area shopping malls. Few people realize, however, that the month of August is also a popular shopping month.

August is the last month to prepare for the start of school in September. Parents with school-aged children will be shopping in malls and department stores for school clothes and other supplies. The best time to monitor the action is during the last two weeks of August. It's also the perfect time to check and confirm your shopping mall scanning frequencies. To help you get started, check out the list of national shopping mall frequencies in Table One. In addition to the mall and armored car frequencies, I've also included a few business frequency ranges that you can search.

Monitoring the mall frequencies in August can prepare you for those non-stop monitoring sessions during the months of November and December. Use this month to prune your mall frequency lists and to verify the active mall and business frequencies in your area. When the Christmas shopping season hits, you'll be ready to scan those red hot frequencies.

The month of August also has a few additional treats that scanning buffs can enjoy. The **Perseid Meteor** show usually begins around August 10 and lasts through August 12. When the Earth passes through the orbit of the constellation Persei, the night sky will be showered with visible meteorites. If you plan to watch this yearly light show, don't forget to take along your scanner radio.

Since you're already under the stars, here are a few **satellite frequencies** to monitor. The frequency of 145.825 belongs to an orbiting satellite that was lunched by a Brazilian amateur satellite group. When the Dove (Digital Orbiting Voice Encoder), passes over your location you will hear bursts of packet radio noise. You should also hear a synthesized voice. The space shuttle frequencies are: 259.70 (AM), 296.80 (AM) and 279.0. Other space frequencies that may be active include: 145.840, 145.55, 121.75/130.167—Russian FM voice, 121.75/121.125—Russian FM voice.

To receive signals from space you need sensitive equipment and multi-element antennas. Because of their distant location, satellite signals are relatively weak. You probably won't be able to receive them with a rubber ducky antenna. However, with a little imagination, you could bring along a multi-element antenna and temporarily mount it in an open field.

Since we're speaking about antennas and capturing weak signals, August is also an excellent month to check and **winterize your rooftop antenna system**. While it is still warm weather outside, you should check the following:

1) Look for cracks and abrasions on your coax cable. Replace your coax cable if it is five or more years old.

2) Weatherproof your antenna connection points. A good, low cost tape sealant is available at Radio Shack.

3) Examine your antenna elements and check the riveted connections for rust and corrosion. If the antenna is several years old, you may want to drill out the rivets and replace them with brass hardware. Also remember to clean the area on the element that contacts the hardware.

If monitoring your local shopping malls and preparing your antenna system for cold weather during the month of August seems somewhat premature, you couldn't be more wrong. August is the last month of summer. The days are also growing shorter. By the end of August a full month of daylight will be lost. So get outside while you still can, get under the stars, or get on the roof. Monitor the malls or listen to the space shuttle. You can do it all during the last days of summer.

BUCKEYE STATE SHERIFF'S ASSOCIATION STANDARD RADIO CALLS

SIGNALS

1	Contact Chief
3	Contact Assistant To Chief
5	Contact Headquarters
7	License Registration (Requested)
7A	Stolen File Check (Requested)
9	Investigate Complaint
11	Arrest Record Check (Requested)
13	Special Detail
15	Civil Process Warrant
15F	Felony Warrant
15M	Misdemeanor Warrant
17	Contact Party In Person
19	Contact Party By Phone
21	Prisoner
23	Off Air To Eat (Give Location)
25	Return To Headquarters
27	Emergency Run
29	Emergency Squad
29A	Air Ambulance
29B	Funeral Home
31	Wrecker Required
33	Car In Service
35	On Patrol
37	Car Out Of Service (Off Air)
39	Give Location
41	One Unit In Radio Contact (Give Location)
43	Home
45	Contact News Media
47	Get Report
49	Radio Repair
51	Cannot Answer
55	Civil Defense Alert
57	Escort Or Parade
57A	Money Escort
59	Computer Down
61	Pick Up Another Unit
63	Investigation Or Follow Up
65	Request Detective At Scene
65B	Hostage Negotiation
65C	SWAT
65D	K-9 Unit
65E	Victim Advocate
65F	Coroner
65G	Prosecutor
67	Rush Call But No Emergency
69	Narcotics
71	Change Channel
77	Building Checks
85	Fuel Stop
91	911 Hang Up / Contact In Person
99	Emergency Traffic (All Standby)

REVISED: 01-09-95

CODES

2	Accident (Property Damage)
2A	Hit Skip
4	Accident (Injury)
4A	Hit Skip
6	Aircraft Crash
8	Assault
10	Assist Other Unit
12	Burglary
12A	Burglary In Progress
14	Bad Checks / Forgery
16	Dead On Arrival
18	Dog Bite
18A	Animal Call
20	Domestic Trouble
20A	Neighbor Trouble
22	Drowning
24	Drunk
26	Fight
28	Fire
28A	Vehicle
28B	Structural
28C	Person Possibly Inside
28D	Explosion
30	Gambling
32	Homicide
34	Juveniles
34A	Runaway Or Unruly
36	Larceny
36A	Larceny In Progress
38	Missing Person
40	Man With A Gun
40A	Man With A Knife
42	Nature Unknown
44	Officer In Trouble
46	Prowler
48	Rape
48A	Sex Offense
48B	Someone Exposing Themselves
50	Robbery
50A	Robbery In Progress
52	Shooting
54	Stabbing Or Cutting
56	Stolen Car
56A	Wanted Vehicle
58	Suicide
60	Suspicious Person
60A	Suspicious Car
62	Traffic Detail
64	Vandalism
66	Escape Or Jail Break
68	Livestock On Roadway
70	Emergency Notification
72	Threats Or Harassment
74	Hazardous Spill
76	Mental
78	Alarm Drop
80	Traffic Jam Or Road Blocked
82	Disabled Vehicle
84	Open Door
84A	Open Window
86	Traffic Offense
86A	Motorcycle/ATV/Mini Bike Complaint
88	Bomb Threat
90	Train Derailment

The new Buckeye State Sheriff's Association standard radio codes for Ohio were sent in by A.R. Zabrecky.

www.americanradiohistory.com

Treasure Hunt

This is your last chance to win a full-frequency, omnidirectional scanner antenna from Antennacraft. Most of you already know that the Scantenna will equal or outperform any antenna that is currently on your roof. To add the Scantenna to your antenna farm, simply answer the following clues:

1) Spell out the abbreviation CD-ROM.
2) Hard drives are typically labeled as "A" or "B". True or false?
3) The FRG-9600, NRD-535, and MR 8100 are scanner radios. True or false?
4) Name the Uniden Scanner Radio with a dial.
5) I ordered catalog #ACC 74 from Grove. What did I get?

The Scantenna's dipole-cluster design provides continuous coverage between 25 and 1300 MHz. If you have a continuous coverage receiver, this is the antenna that belongs on your roof. For more information, check out the Scantenna in Grove's *Catalog and Buyer's Guide.*

Frequency Exchange

Our first stop for this month is **Maui, Hawaii.** When you're tired of listening to the data signals and worrying about earthquakes and volcanoes (see cover feature) we'll hang out on the beach and listen to these frequencies provided by our anonymous host.

154.725 ..... Lahaina Police
154.77 ..... Hana Police
154.965 ..... State road crews
155.55 ..... Car to car
155.625 ..... Vice squad
155.67 ..... Police
155.73 ..... Lahaina Police
155.79 ..... Hana Police
155.955 ..... Fire
156.45 ..... Matson tugs
156.60 ..... Kahului harbor tugs
156.85 ..... State Marine Patrol
169.55 ..... Haleakala Rangers
453.25 ..... Ambulance
453.30 ..... Sheriff
453.325 ..... Airport security
460.725 ..... United Air Lines
462.05 ..... Robert's tours
463.85 ..... Robert's school buses
464.65 ..... Grayline Tours

Our first mainland stop is the home of Bob Brandon, in **Danville, IL.** When Bob turns on his scanner radio, here are the frequencies that he monitors.

155.43 ..... Sheriff
39.38 ..... Sheriff car to car
154.52 ..... Sheriff
154.74 ..... Danville PD
154.83 ..... Danville PD
155.0125 ... Danville Dispatch
158.97 ..... Danville PD
159.03 ..... Danville PD
159.79 ..... Danville PD
465.20 ..... Sheriff

Our next invitation is from Marvine Corteway. Marvine lives in **Oklahoma City, Oklahoma**, and here are a few more frequencies from that area to add to those run in the past couple of issues.

37.12 ..... Sheriff
151.235 ..... Red Cross
155.55 ..... Lake Thunderbird Rangers
156.015 ..... Lake Thunderbird Rangers
158.73 ..... Police
165.375 ..... Federal agents
453.60 ..... Fire
453.45 ..... Fire
460.1875 ... County jail
460.2375 ... County jail
460.35 ..... Sheriff
460.3875 ... County jail
460.40 ..... OKU Campus Police
460.475 ..... Sheriff
462.95 ..... Medi-Flight
463.05 ..... EMSA ambulance
465.40 ..... OKU Campus Police

Traveling to the East Coast, we'll visit with John Sill. Here are John's favorite frequencies for **Lynn, Massachusetts.**

TABLE 1 - Nationwide Mall Frequencies

151.715	154.515	461.40	464.325	464.575	464.875
151.835	154.60	463.2125	464.425	464.675	467.1375
151.865	157.56	463.7875	464.50	464.775	855.5625
151.955	157.62	463.875	464.5125	464.825	

Business Frequency Ranges	*Armored Cars*
151.625 to 151.985	159.495
152.30 to 152.48	159.765
460.65 to 460.975	159.81
461.00 to 461.975	464.85
462.0 to 462.925	
464.00 to 464.975	

153.53 ..... Boslin Gas Co.
158.13 ..... Boston Gas Co.
452.975 ..... Boston Herald
453.60 ..... Boston Hospital Security
455.6125 ... WCVB News team
461.00 ..... Wayne Alarm Co.
462.975 ..... Boston EMS
464.925 ..... Salem Hosp. Security
471.5125 ... Peabody Police
471.6375 ... Salin Police
472.4125 ... Lynn Police

An anonymous reader from **Harrisburg, Pennsylvania,** has sent in a list that is called, "George's Top 40."

33.46 ..... Fire police
33.56 ..... Fireground North
33.60 ..... Countywide Ambulance
33.64 ..... Fireground Central
33.72 ..... Fireground South
33.76 ..... County Fire Overflow
33.82 ..... City Fire
33.90 ..... County Fire Dispatch
37.46 ..... Penna. Power & Light
47.30 ..... PennDot
120.90 ..... Lancaster Airport Tower
121.80 ..... Lancaster Airport Ground
124.10 ..... Harrisburg Approach
124.80 ..... Harrisburg Tower
154.755 ..... State Police car to car
154.80 ..... Lancaster City Police "B"
154.875 ..... Lancaster City Police "A"
154.895 ..... State Police car to car
155.43 ..... County Police Metro
155.475 ..... Co. Police car to car
155.535 ..... Co.y Police "D" N.E.
155.58 ..... State Police
155.61 ..... Countywide Emerg.
155.64 ..... Co. Police "A" N.W.
155.505 ..... State Police
155.51 ..... State Police
155.62 ..... State Police
155.655 ..... Manheim Twp. T.A.C.
155.685 ..... County Police "B"
155.73 ..... Lebanon Co. Dispatch
155.79 ..... State Police car to car
159.03 ..... City Police overflow
159.045 ..... State Police turnp. w.
159.075 ..... State Police
160.92 ..... Amtrak
160.98 ..... Amtrak & Conrail
453.975 ..... Red Rose Transit
463.00 ..... Medic (S.J.H.)
463.025 ..... Medic (L.G.H.)
463.175 ..... Lancaster Gen. Hosp.

Chris Reeves, lives near **Burlington, Vermont**, and he has provided a list of his favorite monitoring targets:

37.64 ..... Gas Co.
47.90 ..... Green Mtn. Pwr.
151.925 ..... Gulf towing
152.30 ..... Taxi
157.60 ..... Taxi
451.1375 ... Electric Co.
451.525 ..... Telephone Co.
461.05 ..... Bratt Leboro hosp.
461.125 ..... Burlington Towing
462.875 ..... Burlington pvt. security
463.525 ..... S. Burlington school buses
463.55 ..... Univ.of Vermont Admin
464.15 ..... Bus service
464.375 ..... Univ. of Vermont Security
464.475 ..... South Burlington school
464.75 ..... Burlington Country Club
464.775 ..... Univ. of Vermont Security

America's #1 Scanning Magazine is

National Scanning Report

1-800-423-1331

P.O. Box 360,
Wagontown, PA
19376

But don't take our word for it. Check it out yourself. $3.00 cash will get you a sample copy rushed to you by First Class Mail. Or subscribe for just $19.90 and you'll get a free custom frequency print-out for your county.

www.americanradiohistory.com

During the month of August, back to school sales will lure thousands of shoppers to area malls.

The last stop on our August trip is **Fairfax, Virginia.** An anonymous contributor has sent in the following:

150.85 ..... Bill's towing	464.05 ..... George Mason Univ.
151.655 ..... School Buses	464.375 ..... Holiday Inn
151.685 ..... School Admin	464.475 ..... Fairoaks Mall
151.805 ..... School district	464.525 Hospital
154.515 ..... Virginian News Paper	464.5375 George Mason Univ.

■ New York TV/Radio

The Federal Communications Commission has waived parts 2 & 90 of its rules. In doing so, it has allowed the state of New York City to utilize the 482-488 television band (channel 16), for public safety communications.

The conditional waiver will provide some relief to the congested New York City public safety radio frequencies. Readers living in or near New York City are invited to monitor the new frequency range and to report your findings to the Scanning Report, P.O. Box 98, Brasstown, NC 28902.

■ Cellular Patrol

The Chicago police department has distributed more than 250 cellular phones to town-watch groups to help fight crime. The equipment and air time are donated by "Ameritech Corp."

Law enforcement officials said the new technology will improve communications and public relations between police and the community. With the push of a button, crime fighters have immediate access to police-9-1-1.

According to the police, cellular phones are discreet and safer than utilizing a CB radio. In order to participate in the program, citizen groups must be screened and trained by the police. (News clipping from Chicago *Tribune*.)

■ Cellular Confusion

Is it cellular restorable? How many times have you looked at a scanner radio and asked yourself that question? Thomas Bernie, President of Cellular Security Group, has published a list of scanners that can be unlocked to receive cellular frequencies. Here's the breakdown:

Realistic Pro:	34,37,39,2004,2005,2006,2022,2027...(Any) 43,46,2026,2030,2032...(Pre 3/94--3A4 date code)
Bearcat:	200,205,760...(Any) 700A,855,890,2500...(Pre2/94--OBID date code)

■ Scanner Tips

• In Sonoma, California, a Loomis Armored Car Service Truck was robbed as guards were unloading bags of money. When the robbery ended, more than 19 shots were fired between the suspects and the guards.

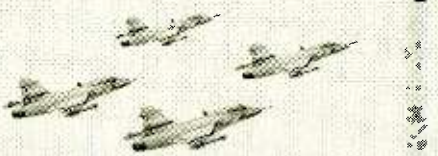
Witnesses to the daring, mid-afternoon robbery reported a woman in a blonde wig running from the scene. The woman was later confronted and identified by a citizen who had heard her description over a scanner radio. (News clipping from John Shafer.)

• In Virginia Beach, Virginia, two teenagers stole a stranger's identity and charged more than $11,000 dollars of merchandise on credit cards. The scheme was discovered when a citizen, listening to a scanner radio overheard the two bragging about the scheme on a cellular phone. (News clipping from *Virginian Pilot*.)

■ Next Month

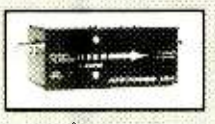
It's back to school and back to spending more time listening to your favorite frequencies.

Ride in the Cockpit!



Now hear **225-400 MHZ military aircraft communications on your scanner's 118-136 MHz band!** Listen in on 216-225 MHz land mobile and hams as well! Ideal for monitoring Thunderbirds and Blue Angels air show stunt coordination, military flight training, strategic communications, air-to-ground flight service stations, air-to-air comms, midair refueling and more!

The CVR-4 Scanverter comes with a universal adaptor kit so that it can be connected directly to a handheld scanner for portability, or to the rear of a base or mobile scanner (BNC and Motorola adaptors included). Operates from standard 9-volt alkaline battery (not included).



Military Aircraft Scanverter

Order CVR 4 Only $99.95

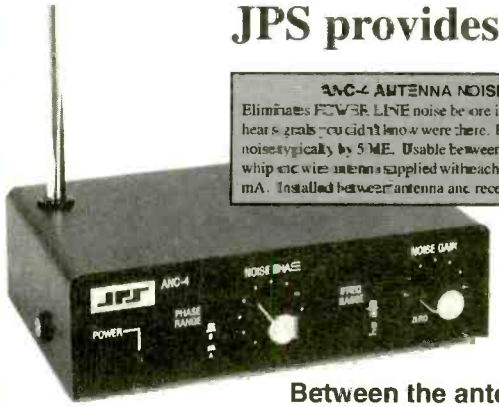
Grove Enterprises
300 S. Hwy. 64 W., Brasstown, NC 28902
(800) 438-8155 (US & Canada); (704) 837-9200; (704) 837-2216 (FAX)

www.americanradiohistory.com

POWER LINE NOISE, IGNITION NOISE, ATMOSPHERIC NOISE, ETC. ?

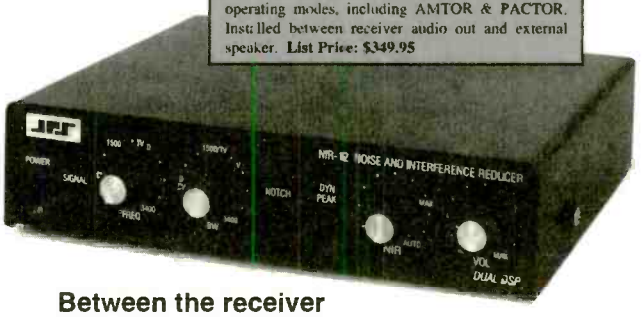
JPS provides help at both ends of the receiver

ANC-4 ANTENNA NOISE CANCELLER
Eliminates POWER LINE noise before it enters the receiver. Lets you hear signals you didn't know were there. Reduces any locally-generated noise typically by 5 dB. Usable between 100 kHz and 80 MHz. Noise whip antenna supplied with each unit. Requires 12 VDC @ 300 mA. Installed between antenna and receiver. **List Price: $175.00.**



Between the antenna and the receiver

NIR-12 DUAL DSP NOISE REDUCER AND FILTER UNIT
The most advanced DSP noise reduction unit available. Unparalleled performance: super-selective FIR filters, fully adjustable center frequency and bandwidth; both Dynamic Peaking AND Spectral Subtraction Noise Reduction; spectral multi-tone NOTCH filter. All NIR-12 modes usable simultaneously. Use on all operating modes, including AMTOR & PACTOR. Installed between receiver audio out and external speaker. **List Price: $349.95**



Between the receiver and the speaker

Other fine JPS Amateur Radio products include:
NIR-10 Noise/Interference Reducer, NRF-7 General Purpose Noise Reducer & Filter, NTR-1 Wideband Noise and Tone Remover, SSTV-1 DSP Filter for SSTV, NF-60 DSP Notch Filter, 115VAC/12VDC, 1A adapter (all units require 12V, 1A)

When you want the best, get JPS.

JPS Communications, Inc.

"First and Finest in Noise Reduction"

TOLL FREE ORDER LINE: 800-533-3819
We accept MC, VISA, Money Order, or Check ($US)
P.O. Box 97757, Raleigh, NC 27624
FAX: (919)790-1456 Tech. Line: (919)790-1048
Compuserve: 74777,3575 Internet: jps@nando.net

NOW HEAR THIS!

FINALLY!
High-Powered Sound from your HT.

NEW

- 12 DB of Audio Gain
- 3.5 inch Oval Speaker
- Automatic Shut-Off
- Internal NiCad Charger
- External Power 5-15 VDC

NEW FEATURES
- Tape Trigger (automatic logging)
- Auto Polarity Switch
- Input Level Adjustment
- Even Lower Battery Drain
- Heavy Magnet
- Cigar Plug and Power Cord

$34.95 + shipping & handling

Model HTS-3

Naval electronics inc.
5417 Jet View Circle, Tampa, Florida 33634
Phone: (813) 885-6091 Telex: 289-257 (NAVL UR)
Fax: (813) 885-3789 Internet: navale@aol.com

DELTACOMM™ DSS
Digital Signal Strength Option For Your ICOM™ R7000

DELTACOMM™ I-7000 and your MS-DOS computer integrated with the Delta Research custom CI-V interface and optimized software will not just control but will maximize the potential of your ICOM™ IC-R7000's monitoring capability.

- CYBERSCAN function allows scan file tracking control of systems employing frequency hopping techniques.
- Spectrum log at speeds in excess of 1300 channels a minute, generate a real time histogram of activity and create scan database file automatically.
- Birdie log during frequency search automatically characterizes your R7000, then locks out those frequencies.

- Activity log function continuously monitors and logs all frequencies of a scan database while displaying active, was active and never active channels.

Optional DELTACOMM™ DSS (Digital Signal Strength) upgrade for your DELTACOMM™ I-7000 communication manager.

- Innovative interface design allows digitizing and storing the R7000 signal level information with 8-bit accuracy via your computer's game/joy stick port.
- DSS allows user programmable upper and/or lower signal level detection limits during DELTACOMM™ I-7000's spectrum log, scan and search functions.
- Log signal strength information to printer or delimited log file while DELTACOMM™ I-7000 is scanning or activity logging the selected database file.

DELTACOMM™ I-7000 communication manager program includes all cabling, manual, UL listed power supply and Delta Research custom CI-V interface for $299.00 + $8.00 (U.S.) or $25.00 (foreign) S&H. The DELTACOMM™ DSS interface upgrade comes complete with easy to follow NO SOLDER installation instructions, all cabling and 8-bit DSS A/D converter module (game port required) for $99.00 + $8.00 (U.S.) or $25.00 (foreign) S&H and is available as an upgrade option to registered I-7000 users. Contact us for additional information on DELTACOMM™ communication managers for ICOM™ R7100, R71A, R72 and IC735.

MasterCard **Delta Research** AMERICAN EXPRESS
Box 13677 • Wauwatosa, WI 53213 • FAX/Phone (414) 353-4567

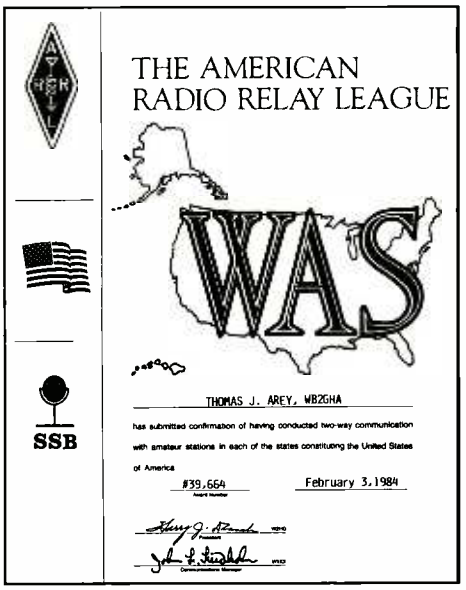
www.americanradiohistory.com

Skip Arey, WB2GHA
TJAREY@AOL.COM

Hanging Ham Wallpaper

As you probably have figured out by now, Old Uncle Skip will not rest until everyone who reads his column gets an Amateur Radio license. I hope that the information I have published in columns past has served to "Elmer" more than a few of you into the ham radio ranks. But in the event that a few of you still haven't joined the fold, periodically I feel the need to do a column that lets you in on the fun you're missing.

One of the things that holds a lot of attraction for beginners is the many ham radio award programs. You can cover your walls with proof of your amateur accomplishments, courtesy of several fine ham radio organizations. If you have ever had the opportunity to see a serious amateur operator's personal QSL card, you probably noticed a few groups of letters such as WAS, WAC, DXCC, and others. These letter groups have a lot of meaning in the ham community. For many folks they show the various operating milestones in a ham's hobby career. Earning these awards is even more fun than the bragging rights that are associated with them, because they represent all the folks you have talked to around the country and around the world.



The Worked All States Award is usually one of the first pieces of wallpaper a beginning ham goes after.

Let's take a look at some of the more well known awards that even a beginning ham can acquire with modest equipment and a bit of tenacity.

■ Worked All States (WAS)

Worked All States is the first award most hams try for. To apply for this award you need to verify contacts with fellow hams in all fifty states. Going for this award is one of the best learning tools for a ham just starting out. As you make contact with hams across the country, you will develop and improve your operating skills. You will begin to understand the properties of propagation on the amateur radio bands and how to make them work toward your goal of contacting every state in the union.

You will discover the strengths and weaknesses of your station and equipment and learn to make improvements. Often this education will come from the very hams you contact in the quest for WAS. You will encounter individuals, round tables, and net operations. But mainly, you will make some great friends.

WAS is possible to achieve even though you may only have Novice or Technician Plus status. As a matter of fact you can get a special endorsement for succeeding using only Novice frequencies and power levels. You can get additional endorsements for CW, SSB, and RTTY, as well as other modes. Many folks find achieving their first WAS certificate so much fun that they go on to prove their skills further by going for 5 Band Worked All States. To get 5BWAS you have to contact all 50 states on the 10, 15, 20, 40, and 80 meter ham bands.

The key to success at WAS is to simply get on the air and start talking to folks. You'll be surprised how fast the totals add up. Photocopy a map of the United States out of your favorite atlas and tack it up at your operating position. You'll find yourself checking off states left and right. Soon you'll be down to maybe ten states that you'll have to seriously hunt for. Keep an eye out in ham magazines for US-based contests and individual state QSO parties. You'll grab those last ten states with no trouble at all. Contests such as the Novice Roundup in January and operating events such as Field Day in June offer beginning hams a contact-rich environment that can fill in those gaps in a WAS log. With a little help from the propagation gods, you can even work WAS during a single domestic contest weekend.

The job's not over until the paperwork is done. You'll need to swap QSL cards with each station you contact so you have proof when applying for your award. But QSL collecting is all part of the ham radio experience. QSLs not only are fun to display as remembrances of your contacts, they are a means to an end when going after awards.

To obtain an official WAS application form and further information, send an SASE to the American Radio Relay League, attn: Special Requests, 225 Main Street, Newington, CT 06111. You will soon have a beautiful award hanging in your shack for all to see and you, too, will be able to include the letters WAS on your QSL cards.

■ Worked All Continents (WAC)

In the midst of chasing after those folks for your

www.americanradiohistory.com

Worked All States award, you may even run across a foreign station or two. Old Uncle Skip has just two words for this. WORK IT! Making contact with folks in other parts of the world is a big part of amateur radio. It also leads to some other great awards. Your next award goal should be Worked All Continents (WAC) This award is given for making contact with stations in each of the six continents: North America, South America, Europe, Asia, Africa and Oceania.

This award can be achieved with just Novice or Tech Plus privileges, but you'll need to depend on a lot of listening and a few major contest events to grab this award, given the limited frequencies you have to operate with. If you've been looking for a reason to upgrade, I have two more words for you . . . TWENTY METERS.

The 20 meter ham band comes to you when you qualify for your General Class license. Twenty meters is where you are going to head to work the majority of your overseas radio contacts throughout your ham radio career. During favorable propagation conditions, 20 meters is open to someplace just about all the time. In addition to getting 20 meters, you get the 160, 30, and 12 meters bands, as well as increased frequencies on 80, 40, 15, and 10 meters. The enthusiasm and experience surrounding the path to Worked All States is likely to get you fired up enough to upgrade to General Class. So get on board and go after that DX, Compadre!

The first continent for WAC is as easy as having a chat with a friend nearby and swapping QSL cards. It's like getting North America for free. The experience of sending out for the other five cards from your contacts in other countries will give you a notion of how playing the award game means honing your postal skills along with your operating skills. Remember, Bunkey, the whole time you are communicating with folks on the ham bands you are going to be learning. Don't be afraid to ask questions. There is a ton of experience out there ready to help you increase the quantity of wallpaper hanging in your shack.

The Worked All Continents award is sponsored by the International Telecommunications Union (ITU). Information on getting your WAC certificate can also be had from the ARRL as stated above for the Worked All States award. Don't forget the SASE.

■ Rag Chewers Club

One of the things that can happen on your path to chasing awards is you forget where you are. Ham radio is about getting to know folks. So before we push on to the next major award, I want to tell you about another fun award that should hang in every operator's shack.

To become a member of the Rag Chewers Club you must produce proof of any single contact of 1/2 hour or longer. This award serves to demonstrate that you know how to have a conversation that consists of more than an exchange of signal reports and the weather. Take some time to get to know the person on the other end of your transceiver. Again, information on this most prestigious of amateur awards can be had by sending an SASE to the ARRL.

■ The DX Century Club (DXCC)

This is the award that every ham tries for at some point in his or her amateur career. It serves as a demonstration of a person's mastery of the ham radio environment. Simply put, you must contact hams in 100 countries and be able to verify communication with 100 valid QSL cards. There are currently 326 valid countries for DXCC. The complete list and rules can be had by sending $2.00 to the ARRL.

Becoming a member of the DX Century Club is not as hard as it sounds. The main ingredient to the formula for most folks is time. You just need to get on the air enough and put your signal in the way of enough folks in enough places around the world. One of the first things you will discover when you peruse the DXCC countries list is that there are countries, and there are "countries." For instance, if you have succeeded in earning the Worked All States award mentioned earlier, you already have three countries toward DXCC. You see, the DXCC countries list counts the 48 contiguous United States as one country and Alaska and Hawaii are additional "countries." Various island groupings and governmental entities also serve to increase the DXCC country list.

Nothing substitutes for time at the dials searching out the various countries. You can push the process along a bit by making yourself available on major contest weekends. The ARRL DX contest in February and March, the IARU HF World Championships in July, and the CQ World-Wide DX Contest in October and November, along with a few others, can run your totals up nicely.

As you travel around the bands you will run across several DX "nets" that specialize in helping people make contact with rare DX. If you hear a station on these nets that you need, stick around. However, you are likely to find that the time spent waiting in line to make that Net contact can be better spent listening around the bands for other DX, especially when you are searching for your first 100 countries. Chances are, you will find waiting by the mailbox for those QSL cards more difficult than catching 100 countries. But when the cards finally do come in, you will be able to qualify for membership in a club that every ham wants to belong to. Who knows, you may even be one of the select few who go on to achieve 5 Band DXCC.

So there you have the big three awards for a beginning ham to aspire to (and my personal favorite, The Rag Chewers Club). This just touched the surface. There's Worked All Zones, Worked All Counties, the DXCC Honor Roll. You've got to work 'em to earn 'em, so get cracking and have fun! I'll see you on the bands. I ain't rare DX, but I'll be happy to help you get into the Rag Chewers Club.

Isn't It Time to Subscribe?

Monitoring Times — Satellite Times

Clip and mail this ad along with your payment or call us to subscribe or renew!

P.O. Box 98, Brasstown, NC 28902
1-800-438-8155

	MT-One Year	*ST*-One Year
US Rates	❒ $23.95	❒ $19.95
US 1st Class	❒ $49.95	❒ $32.95
Canada	❒ $34.95	❒ $26.95
Foreign Air Mail	❒ $53.95	❒ $44.95

Name_____ Address _____
City_____ State___ Zip _____
CC#_____ Exp. Date _____
Signature _____

www.americanradiohistory.com

SHORTWAVE BROADCASTING

The Global Forum

Glenn Hauser, P.O. Box 1684-MT, Enid, OK 73702
fax: (405) 233-2948 ATT: Hauser

ALBANIA Major personnel reduction at R. Tirana: abolished correspondence section and English service has only two staff members (R. Japan *Media Roundup* via BBCM)

ARMENIA Since May 6, external broadcasts ID as Voice of Armenia, sometimes adding Radio Agency but no longer mentioning Araks; in Armenian before English and others says "Yerevann e Khosum" ("Yerevan calling"). At sign-off, "Hayastani Dzayni Radiogortsakalutyuni" Fax # +7-8852-551513 (BBC Monitoring)

BELGIUM This summer's open house at RVI is the Wavre transmitter site, Sat. Aug. 19, for its 50th anniversary; sign up in advance (RVI mailbag)

BOSNIA-HERCEGOVINA R. B-H, Sarajevo, added new 10kW AM 7105, but also kept using USB on 7108, both on air most of the day (BBCM) 7108.08 USB fair at 0158-0230+ (Alexander, PA)

BOUGAINVILLE Rebels fighting for independence must often resort to coconut oil to run generator powering pirate Radio Free Bougainville. Oil of 40 coconuts powers station for one hour. But the price is heavy. A station supporter says four of his friends harvesting coconuts were executed by the PNG army (*La Lettre*, Reporters sans frontières via IFEX, via Bruce Girard, USENET, via Pete Costello via George Thurman) RFB on 3850 at 0900-1100 when coconut power available, less than 100 watts (Sam Voron, IARN via John Norfolk)

RÁDIO NIKKEY

Central de Produção
R. Grumixamas 843
04349 Jabaquara São Paulo SP
Tel/Fax (011) 581 2905
Estúdio
FM TRC 104,7 MHZ
R. Dr. Deodato Wertheimer 1413 S. 16
08710 Mogi das Cruzes SP
Tel (011) 468 1300 Fax (011) 469 8077 Telex 11 34391
FM 104,7 MHZ Diariamente das 6:00 às 8:00h

BRAZIL R. Mundial, 4974.97, carries a Japanese music program, *Radio Nikkey*, Mon-Sat 0800-1000 (Yuji Omiya via Takayuki Inoue, *Relámpago DX* via *Radio Nuevo Mundo*)

BULGARIA R. Varna heard Friday 2200-2400 on 9775, mostly music, Bulgarian announcements. Normally on AM & FM only (BBCM) Also 24 hours on 15175, including English, French, German news at 0815-1130 [or -0830?], and maritime show 2200-2400 (source unknown, REE *Amigos de la Onda Corta*, may be outdated)

CANADA RCI is on borrowed time and may disappear altogether due to severe CBC budget cuts (Shawn Axelrod, IRCA *DX Monitor*) In late May, André Courey announced on RCI *Mailbag* that RCI's budget had been extended at the present level, but for only one year (Diane Mauer, WI) Still waiting to see if CBC budget cuts affect RCI; things may happen later in 1995 at RCI (Allan Familiant, RCI, RN *Media Network*) RCI added a Sackville frequency, 17870 for English at 2000-2100; Skelton for Europe 2200-2359 on 5995, 7195 (William Westenhaver, PQ, *World of Radio*)

CHINA CRI on new 9560 at 0400 (Brian Alexander, PA) Must be "missing" Canada relay, supposed to be on 11840 this summer, previously and still announced as 9595 (gh)

COLOMBIA R. Comunal, Nariño, Antioquia, 2679.64 = 2 x 1340-, heard 0050-0102:20* (Rich McVicar, Ecuador, *Fine Tuning*) New name for HJZI 15-50, Bogotá, heard on 3100 is MCI Radio, meaning both Medio de comunicación internacional, and Misión Carismática Internacional (Henrik Klemetz, *ibid.*, Dateline Bogotá via RNM)

COSTA RICA R. Alajuela, 5119.68 = 4 x 1280 heard at 0400-0500 (Rich McVicar, HCJB *TLC*) RFPI US address changed zip code so it's Box 20728, Portland, OR 97294. Two *University of the Air* courses for 3rd quarter are Global Spirituality; and repeat of History of the UN—a personal perspective (RFPI *Mailbag*) Tue-Fri 2230 and 2300 plus repeats.

CROATIA CRZ English news on hour every hour 2200 through 0400 on 13830, 7370, 5895 (BBCM)

CUBA RHC's Spanish DX program introduced a new English announcer, sounded like Ed Lindell, who used to work for KKFI, Kansas City (*W.O.R.*) Despite numerous false starts, *Para los Diexistas* has never been on the air on R. Rebelde. I continue struggling to convince the authorities of the value of our hobby (Manolo de la Rosa, La Habana, late May) RHC SSB on 11960 at 2200-2300 in English is 20 kW, with 1.25 kW residual carrier (Arnie Coro, RHC *DXUL*)

CZECH REPUBLIC In late May, R. Prague had very poor, distorted audio on 11640 at 1800, 5930 at 0000, also 7345 (Brian Alexander, PA) Testing new compressor until June 7, special QSL for this only; was to go into permanent use July 1 for improved modulation and reception (Nora Mikes, R. Prague, via Pete Costello) Compressor made things worse, loud hum on 7345 at *0258 in early June (Diane Mauer, WI)

RFE/RL made their last broadcasts from Munich June 3, as move to Prague completed by remaining staff of 400, cut from 1500 (Reuters via Boston *Globe* via Malcolm Kaufman) It's 300 ex-1100 (AP via New York *Times* via Chet Copeland) 300 ex-1200. Vladimir Matusovich, former director of Russian service, wrote Congress that programming quality has deteriorated seriously in last two years to become practically indistinguishable from Russian radio; news is slanted, sometimes outright anti-American though we are still paying for it (Washington *Times* editorial via Copeland) William Marsh, former RFE/RL director described transfer to Prague as an expensive fiasco leading to poor quality of broadcasting, "catastrophic" (CTK via BBCM) A well-informed source in Munich tells me that some RFE people took $100,000 severance pay and the next day were rehired by BIB/VOA (John Vodenik, MD)

ECUADOR At their request HCJB is no longer carrying programs from TWR Brazil, which were in Portuguese and German. March/April antenna experiment on 9745 at 0300-0500 was the steerable aimed due north, better on eastern seaboard but signals dropped in Oklahoma because of its very narrow lobe; then went to curtain slewed toward Kansas City, but will probably move it farther east to cover Boston and New York, hopefully not affecting Enid as it has a much wider pattern. As of June 1 we were switching at 0500 from 344 to 324° (Rich McVicar, HCJB)

New R. Buen Pastor, Saraguro, first heard June 16 at 2110 on 4830.23, mostly Quichua but Spanish ID 2117, strong signal but terrible QRM from Táchira 4830 (Rich McVicar, HCJB *The Latest Catch*)

R. Alianza, 5848.79 heard only on weekend afternoons around 1937 with Otavaleño folk music (McVicar, HCJB *TLC*) Henrik Klemetz has resigned as monthly reporter to *DXPL* since certain DX publications have quoted his info without credit (*DXPL*) If I had resigned for being plagiarized, I would be long gone (gh)

EQUATORIAL GUINEA R. Africa, 15186.5 before closing at 2300 announces a Listener's Club at 140201 Parin Ave., Suite 230, Cupertino, CA 95010-2132 (Jim Frimmel, TX) Resembles broker Pan American Broadcasting address in *WRTH* (gh)

ETHIOPIA R. Ethiopia, 9705 at 0358-0445+ //7110.05 and 9560 mixed with China; so 9560 no longer used by V. of Peace (Brian Alexander, PA) [non] V. of Oromo Liberation was last heard on WHRI 13760, April 28 at 1500-1600; had been Tue & Fri (BBCM)

GABON R. Pakistan reports it has been invited to be relayed over Moyabi with Islamic programming (BBCM)

*All times UTC; All frequencies kHz; * before hr = sign on, after hr = sign off; // = parallel programming; + = continuing but not monitored; 2 x freq = 2nd harmonic; Z-95 = summer season*

www.americanradiohistory.com

GEORGIA R. Georgia is difficult in Europe, English at 0530-0600 on 11805, 0700-0730 & 1600-1630 on 11910 (BDXC via RVI *Radio World* via Büschel) Maybe Mon-Fri only? (Büschel)

GERMANY DW has a new 800 number for comments, mailing list requests: 203-9862 (Will Martin, MO) Will cease all SW broadcasts to N/W/S Europe, replacing ASTRA satellite, local stations, contracts signed with 350 in Europe (RVI via Büschel)

HONDURAS HRJA, 15675, greatly reduced sked in June for reorganization, but will likely expand soon; was Mon 2200-2400, Tue & Wed 2300-2400, Fri 2000-2400, Sat 1900-2400, Sun 2100-0100 (WRMI via Diana Mauer)

IRAN [non] V. of Human Rights and Freedom for Iran writes that they are run by the Organization of Human Rights and Freedom for Iran with affiliated members being Flag of Freedom Organization of Iran, the Iranian Youth Solidarity, and League of Iranian Women, the Association for the Advancement of Education in Iran and the Iranian Students' Association; and says on the air only at 1430-1625 on 9270, 9380, 11470 (Finn Krone, AWR Slovakia via BBCM) Believed via Egypt, but still heard at 0340 on 9380, 11470 (BBCM) And three weeks later at 0250-0442* on 9380 // 11469.67, and with badly distorted audio on 9270. Later confirmed with English opening at 0227 (Brian Alexander, PA, *W.O.R.*)

IRAQ [non] We too thought July p. 47 item on 15133 was Baghdad, but further checks confirm this at 1600 is the Iraqi *opposition* station mimicking government radio with same ID "Republic of Iraq Radio from Baghdad," but adding "Voice of the Iraqi People." Has also been heard on frequency used at other times by UAE Radio, Dubai, apparently by mistake, for three days in May 13675 //15133 and 9570 at 1530-1730, subsequently carrying Dubai program at this time. V. of Rebellious Iraq, with addresses in Iran and Syria, and believed from Iran, monitored at 1200-1430 in Arabic, Kurdish on 6030-6070v. contrary to announced schedule on other frequencies and times (BBCM) Developments continue to fool us—subsequently, both Iraqi opposition on 13676 and UAE on 13675 heard simultaneously (Chris Greenway, BBCM)

ITALY Through *Play-DX*, R. Mariquita became aware of the censored version of their nude mascot in *MT*, Jan. p. 43. Pedrito el Drito responded, translated from Spanish: "Evidently those gentlemen think two breasts could scandalize readers. But are the Yankees without shame? They send people to die in the electric chair or gas chamber, send their soldiers to fire on the world, and they're afraid of two naked breasts? Breasts are pacifist, they don't ever kill anybody, and furthermore promote feelings of peace, not war. Breasts are life! Long live life!" Often on 3925 at 1800-2300, relaying Marabu (R. Pavanello, Italy, and S. Gómez, Catalunya, *Play-DX*) Edit was made by female in whom the graphic did not promote feelings of peace! (rb)

Ours is the Voice of the Silenced.
Ours is the Radio for Liberty.

Voice of Burma

JAPAN R. Japan no longer has a mailing list; it's too much trouble. No E-mail address yet, but may be on Internet with program info soon (*Hello from Tokyo*, R. Japan)

JORDAN R. Jordan external service in Arabic: 0730-1030 As/Au on 11810; 2100-2400 Eu/Am on 11935, 11805 (BBCM)

LIBERIA ELBC, 7275, weak *0653-0705+ with anthem, English, prayer (Brian Alexander, PA)

MOLDOVA [non] RMI via Bacau, Romania, English besides 1400 and 1930 on 11580 is at 0100 on 9540, 1230 on 15315, now without former noise accompanying, Mon-Sat (Edwin Southwell, DSWCI)

MONGOLIA Answering last month's question: I tried six or seven times to hear the "NAm" service of RUB at 0300-0330 on 12000, 9960 with an R-8 and a 400 ft-long outdoor horizontal closed loop, but was unable to detect more than a weak het; nor was the 1445-1515 on 9950, 7293 any better (B. Cooley, Victoria, BC, *W.O.R.*)

MYANMAR [non] Democratic V. of Burma via Kvitsøy, Norway, from National Coalition Govt. of Union of Burma, is on 11850 at 1430-1455, unconfirmed freq [7315?] at 0300-0055; address: P.O. Box 6720, St. Olavs Plas, N-0130 Oslo, Norway; tel. +47-22-200021, fax +47-22-114988 (Mon Aung in charge of DVOB, via W. Büschel)

NETHERLANDS RN Wed documentaries, repeated Fri on alternate broadcasts: Aug 23 & 30, Guatemalan refugees; Aug 24, survivors of the Bomb—50 years later in Japan (RN *On Target* via Diana Mauer, rb) But Aug 24 is a Thursday; wrong date? See also June *MT*, p 43

NEW ZEALAND RRS, Levin extended to 1130* M-F; *Wonderful World of Radio*, Mon 0800, 1100, 2200 includes *WaveScan*, my DX news and ham news (Arthur T. Cushen, MBE, RNZI Mailbox) No freqs, presumably at least 1602, 3935 (gh)RNZI E-mail addr changed to: rnzi@actrix.gen.nz. Also posts skeds on USENET's rec.radio.sw and rec.radio.info; and started WWW page: http://www,actrux,gen.nz/users/rnzi (Adrian Sainsbury, RNZI *Mailbox*)

PALAU KHBN expanded sked on 9965 to *0800-1830*, still only one transmitter as of June (Arthur Cushen, RNZI *Mailbox*)

PERU unID on 5556.26 until 0337* tape heard by Jeff White who thinks it's R. La Inmaculada, the name of a parish (HCJB *TLC*)

ROMANIA RRI fax & phone: 401-223-2613; also gives separate telephone 401-617-2856. (via Ed Kusalik)

Give them desktop publishing and out comes this.

RUSSIA of the 250 transmitters belonging to the V. of Russia radio company, which broadcasts to foreign countries, only 50 are now operating (Moscow 2x2 TV via BBCM) In Dec 1994, VOR told us they used 82 SW and 16 MW. Revising the figures last month, now that info direct from VOR is received, rather than based solely on monitoring, VOR program hours per week total 574, although they announced in April it would be 546 (BBCM)

Seemingly in connection with the Vietnam relay rescheduling, [q.v.], VOR made unexpected changes in June, perhaps because the same transmitter is involved: 9530 with VOR English 2130-2300, Vilnius 2300-2330, Minsk 2330-2400*; and VOR on 9665 at 0300-0500. Also moved 15105 to 15400 at ??1500-2000, to conflict with BBC/Africa rather than WHRI (Kevin Hecht, PA, *W.O.R.*) Dr Gene Scott University Net: 0300-0700 on Krasnodar 17655, 0700-1600 on Samara 15500 (W. Büschel)

SA'UDI ARABIA Fax for BSKSA frequency management in Riyadh is 4041692 (via Ed Kusalik) 15705 item in July may have been error or experiment as not in BSKSA summer schedule (via Randy Stewart) and never heard here (gh)

SIERRA LEONE R. El Koran dropped from *WRTH* years ago as unconfirmed, but French DXer Bernard Chenal reports in COCQ bulletin he visited Freetown, and it is active with 250 kW on 9630 1500-1900 in Arabic, English, French, 7 African languages; maybe omni antenna explains why it's so seldom reported outside Africa; address is P.M.B. 668 (Andy Sennit, RN*MN*)

SOMALIA R. Free Somalia increased to 800 watts AM, including 13820 1225-1300 to Australia, depending on donations of diesel fuel (Sam Voron, IARN via John Norfolk)

DX Listening Digest

More broadcasting information by country compiled by Glenn Hauser

Review of International Broadcasting

SW Programming, opinion, equipment, satellite monitoring.

Samples $2.50 each (outside North America US $3 or 7IRCs)
10 issue subscriptions $26 in USA, or both for $49
Glenn Hauser, Box 1684-MT, Enid, OK 73702

www.americanradiohistory.com

SUDAN [non] The Eritrean president has asked Sudanese opposition elements to set up a radio station in Asmera (SUNA via BBCM)

SWITZERLAND UN Radio on 10461, 17520 reports may be sent to Geneva or to Room 850, UN, NY 10017, they announce (BBCM)

THAILAND BBC SW relay mentioned last month will be in Tambon Ban Kaeng, Muang District, Nakhon Sawan Province, on an area of 300 rai, or about 48 hectares, with a budget of 1.115 gigabaht, Thai radio reports (BBCM)

[non?] Mystery on 15470 at 1330-1400 discovered by Ruman Pankov, Bulgaria, very professional radio play and well-performed music; Victor Goonetilleke identified the language as Bangla, address in Bangkok but no definite ID or IS for R. Thailand (Wolfgang Büschel) Daily with Islamic religious programs, seems from a CIS facility, address given is Muktaprabaha, GPO Box 1605, Bangkok 10510 (Alok Das Gupta, West Bengal, *Australian DX News*)

[non] 15470 is registered for Russia, and runs typical test tones before 1330; program is *Discussion Session on the Words of God* (Chris Greenway, BBCM)

UNITED ARAB EMIRATES UAE Radio, Dubai, in English monitored: 1329-1355 on 15394.94 and 13674.95. 1600-1640 on 21604.9, 15394.94, had been also on 15435 but VOA replaced it; 0329-0355 on 11945, 13675, 15400, also announced 21485 (Brian Alexander, PA)

UKoGBaNI Want to get the BBCWS streamed (ugh!) schedules on the 'Web? Try: http://www.bbcnc.org.uk.worldservice/ (Joel Rubin, CA) Dilys Powell, 93, film critic 1939-1976 and since then TV reviewer, died June 5 (AP London via NY *Times* via Larry Nebron) She was best known to us as a longtime panelist on BBC's *My Word!* (Nebron & gh)

URUGUAY Correcting one item last month: R. Maldonado does *not* use SW feeder currently, and when it did it was 4900, not 4970 (Takayuki Inoue N., *Relámpago DX* via *Radio Nuevo Mundo*)

USA Your columnist's *World of Radio*, always subject to change without notice, latest known sked: first airing Fri 2115 on WWCR 9475 in Aug & Sept after June & July on 15685; Fri 2229 WHRI 13760; Sat 0501 WHRI 5745; 0600 WWCR 5065; 1629 WHRI 15105, KWHR 6120; Sun 0930 WWCR 5065; Mon 0330 KWHR 17510; Tue 1230 WWCR 15685. On World Radio Network, Galaxy 5, 125° W, ch. 6, 3.820 GHz, Vertical, 6.8 MHz audio. Sun 1900. Local relays of WRN believed to be on at that time are WUEV, 91.5 FM, Evansville, IN; and WWHS, 92.1 FM, Hampden-Sydney, VA. Cable systems carrying WRN on FM or TV audio or SAP full or part time include: Washington DC, Vancouver BC, NJ, Omaha, CalState Polytech, Denver, Austin TX, Amherst MA, Northfield MN, S. Portland ME, Burlington and Shelburn VT, Palo Alto CA, Minneapolis MN (WRN) My Part 15 FM station, "WBHI" on 89.5, Bath, NY, carries *W.O.R.* Sundays at 2:00 pm EDT, followed by *Wavescan* (Jake Longwell)

Further two-way complaints led WWCR to leave 5075 before you could read about it last month, moved to 7435 for Bro. Stair only at 1100-1400. WWCR continues actively seeking a 90-mb frequency to replace 7435 at least by winter late at night with lowest MUFs. *Truth Radio Network* bought 0500-0800 M-F on 7435, so previous occupants bumped later: at 0800 Mon *Spectrum* repeat; Tue *Sound Currents of the Spirit*; Thu *Rock the Universe*; at 0900 on 7435, Mon *Ham Radio & More*; Tue *Sound Currents of the Spirit;* Thu *Rock the Universe;* 1000 on 15685 Mon *Spectrum* repeat; Tue *Tempered Steel*. But all these could shift into the 0700-1000 period on 5065 instead (WWCR)

Since *Scriptures for America* landed WHRI in the "Far Right" lists in national publicity following the Oklahoma City bombing, WHRI has been re-evaluating Pastor Pete Peters, monitoring him carefully (gh) PPP mentioned in early June that he might be leaving WHRI, while claiming he is not a hate-monger (Don Thornton, NJ) Was weekdays 2100-2200 on 13760, 0100-0200 on 5745; indeed missing following week at 2100, replaced by ubiquitous WHR music (gh) and 0100 replaced by equally political *Prophecy Club* (Don Thornton) Then Peters showed up on WJCR, 7490 at 2300 (Jim Moats, OH)

Lacking Bethany, and with Delano and Greenville inadequate, VOA bought time on WHRI, not too far from Bethany, for R. Martí (John Vodenik, MD) Tue-Sat 0100-0400 on 9495, conveniently already jammed by Cuba as previously ran La Voz de la Fundación, another Mas Canosa station (gh) R. Martí then added 7365 from *0100 (Kevin Hecht, PA) Site unknown, but VOA behavior with carrier on as early as 0047, no ID, straight into programming at exactly 0100. WWCR had also been approached by R. Martí but no deal as anti-Castro station slow in paying bills (gh) Richard Lobo, head of RTV Martí, resigned May 26 amid mounting turmoil at the stations. It took even close associates by surprise. USIA inspector general was carrying out wide-ranging probe. Associate said "It's a pressure cooker...one of the worst jobs in town." Joseph Sullivan, chief of U.S. Interests Section in Cuba, had protested to State Dept. that RM had placed an employee at risk by broadcasting allegations he was a security agent for the Cuban government (Christopher Marquis & Don Bohning, Miami *Herald* via Aaron Pilchick) RFE/RL, see CZECH REPUBLIC

After more than a month without its Saturday Night Nazi and far-right lineup, WRNO had resumed by June 10 *American Dissident Voices* on 7355 at 0100, *Herald of Truth* at 0130, but still no Zundel at 0200, nor the following week (gh) Holocaust denier Zundel's "Bunker" home in Cabbagetown, Toronto, was hit by arson on VE Day, with more than $100,000 damage while Zundel was away speaking in B.C. (Toronto *Star* via R.J. Fliegl) Zundel and other purveyors of hatred are clearly misguided, but this vigilante act was wrong and must also be condemned! (Fliegl) Someone in Toronto keeps sending me Nazi literature; they needn't bother (gh)

WVHA's *DXtra* was missing from scheduled June broadcast, UT Tue June 6th at 0230 on 7465, before which they turned off the transmitter without explanation or apology (gh & Diane Mauer, WI) Nor was it on Tue 1800 on 13720 (gh) Called P.C. in Florida and they found out someone forgot to play the tape so it did run one week late(Diane Mauer) Started early, already at 0227 (gh) Residents of Greenbush, Maine, are suspicious of what's going on at WVHA, which Prophecy Countdown is trying to have designated a "church" to avoid paying property taxes. $115-$120K per year amounted to 18% of town's tax take, and Greenbush had come to depend on it during Christian Science years. But P.C. said it would pay if exemption not granted, and help the town in other ways if it was (Tom Weber, Bangor *Daily News* via Wes Linscott, NI1Y)

Besides 7425 the 24 hours, WEWN has "alternates" for central and western N. America, 11875 at 1300-1600 and 13615 at 1600-2400 (*Gabriel's Horn* via Gigi Lytle)

Contrary to June printed schedule, WRMI, 9955 was running two *Wavescans* in a row, last week's and this week's, Sats 2200 & 2215; also scheduled UT Tue-Sat 0030-0045, presumably old repeats (Diane Mauer, WI) Beginning in late August, *Viva Miami!* will present travel reports on Texas, Mexico, Canadian Rockies, Glacier and Yellowstone. Weekday times 2300 & 2400 subject to change (Jeff White, WRMI via Mauer)

International postal rates from U.S. finally went up July 9, including: half-ounce airmail letters to Mexico 40¢, Canada 46¢, all other countries 60¢; one ounce respectively, 46¢, 52¢, $1.00; airmail postcards 35¢, 40¢, 50¢; aerogrammes to all countries 50¢. International Reply Coupons cost $1.05, redeem for 60¢ (*Postal Bulletin*)

VIETNAM [non] In early June, VOV relay via Russia shifted time and frequency unexpectedly, 0400-0600 on 7360 replaced by 0100-0300 on 7250 (Kevin Hecht, PA. *W.O.R.*) Finally realized that had been too late for listeners in East and summer propagation. Some are confused by VOV announcements; they give all frequencies and times without specifying which ones are at which times; and keep plugging their 50th anniversary contest (gh) Spanish 0300-0400 also on 7250, sometimes starting at 0230 (BBCM) Since March 26, VOV via Petropavlovsk-Kamchatka in Vietnamese to W. N. Am. (?) at 0700-0800 moved to 12010 (Wolfgang Büschel, Germany) VOV fax given as 255765, country code unknown; no direct dial from US? (Hecht)

www.americanradiohistory.com

Broadcast Loggings

Gayle Van Horn

SHORTWAVE BROADCASTING

0040 UTC on 7108 USB
BOSNIA HERCEGOVINA: Radio Bosnia Hercegovina. Serbian. Operatic vocals to lady's ballad. Station ID at 0100, 0140, 0200 as "Radio Bosnia Hercegovina." English country tunes and pop music from 0102-0140. (Ed Rausch, Cedar Grove, NJ)

0240 UTC on 5065
UNITED STATES: WWCR. Tom Valentine's *Radio Free America* show, discussing mysterious black helicopter sightings throughout the U.S. (Fr. John Bellovich, Macclenny, FL)

0258 UTC on 9615
GERMANY: Deutsche Welle. English/German. Interval signal to program promo and time tips at 0300. German announcement and English world newscast. (Susan J. Wilden, Columbus, IN)

0300 UTC on 3300
GUATEMALA: Radio Cultural. Station sign-on ID, call letter ID into religious text and music. (Bellovich, FL)

0314 UTC on 9820
CUBA: Radio Havana. *Mailbag* program to ID. (Wilden, IN) Arnie Coro's *DXer's Unlimited* program, suffering interference at 0443 on 6000 //12000. (Bellovich, FL)

0315 UTC on 9445
TURKEY: Voice of Turkey. Program on terrorists, and how they finance their activities. Turkish pop music program. (Bellovich, FL) Audible on 9445 at 2220, with feature on teachers of religious tolerance in the Middle Ages. (Bob Fraser, Cohasset, MA)

0440 UTC on 9905
SWITZERLAND: Swiss Radio Int'l. Discussion on Swiss exports to China, and news of consulate general's office reopening after being closed since 1962. (Bellovich, FL)

0512 UTC on 7360
VIETNAM (NON): Voice of Vietnam via Tbilisskaya, Russia. International news, IDs and feature on the various provinces of Vietnam. Focus on successful Vietnamese painter. Great reception for 0527*. (Bellovich, FL)

0532 UTC on 6015
CANADA: Radio Austria Int'l relay. News, national weather, and focus on sexual abuse charges against an Austrian archbishop. (Bellovich, FL; Wilden, IN) **Radio Austria Int'l** heard on 15540 at 2300. (Jerry Witham, Keaau, HI)

0606 UTC on 7255
NIGERIA: Voice of Nigeria. Station ID to promotional for *African Hour* and *African Writers* programs. *Listener's Letter's* show at 0615. (Bellovich, FL)

0630 UTC on 9640
ANTIGUA: BBC relay. Very interesting program on the United Nations entitled *The Scourge of War*. The program covered action in Palestine, Korea, and Kuwait. (Bellovich, FL)

0631 UTC on 9860
AUSTRALIA: Radio Australia. News on reoccurring problems within the Rwandan refugee camps. (Bellovich, FL) Oklahoma City bombing discussion on 9860 at 0700. (Wilden, IN) *Report From Australia* heard on 9580//9860 at 1040. (Fraser, MA)

0742 UTC on 9570
NEW ZEALAND: Radio New Zealand Int'l. Interesting talk about their national role in world conflicts. Station sign-off at 0758. (Bellovich, FL; Stanley D. Mayo, Winslow, ME)

1045 UTC on 6190
GERMANY: Radio Bremen. German. Pop music tunes to program announcement and station ID. (Giovanni Serra, Rome, Italy)

1100 UTC on 17780
GABON: Japan Radio relay. Swedish and Italian announcement. News and forecast to ID. Musical pause and featured programming in Swedish. Japanese song into Italian program at 1115. Station ID, frequency quote and schedules. Feature *Appuntamento Domenicale* by Michele Camandona, into Italian service at 1130. (Serra, Italy)

1226 UTC on 15775
ICELAND: Rikisutvarpid/NBC. Icelandic. News format to interval signal. Topical chat on Iceland, interval signal repeat, to closing ID at 1259. Sign-off at 1300. (Serra, Italy)

1242 UTC on 13625
FRANCE: Radio France Int'l. News briefs, science quiz promotional, and feature on major cleanup in the Baltic Sea. Discussion on human genetic engineering at 1250. (Larry Zamora, Alamogordo, NM)

1356 UTC on 12005
ECUADOR: HCJB. Station ID and Quito address. Time tips at the hour to *Hope For the Heart* program, discussing discipleship ministry. (Zamora, NM) *Studio 9* show heard on 15490 at 1725. (Wilden, IN; Larry Van Horn, Brasstown, NC)

1435 UTC on 9435
JAPAN: Radio Japan. Listener's letter segment of *Radio Japan's Magazine* show. Commentary on subway gas attacks at 1450. *Tokyo Pop-In* program at to 1500 ID. (Zamora, NM)

1548 UTC on 6030
GERMANY: Suddeutscher Rundfunk. German. Talk about election in Bremen from male/female announcer duo. Pop music, time pips at 1600, station ID into newscast. (Serra, Italy)

1610 UTC on 2754
CHINA: Voice of the Strait. Presumed Chinese with lady announcer. Additional Chinese loggings noted as; **Xinjiang PBS-Urumqi** on 4330 at 1635, in Kazaki with male's monologue. **CPBS-Beijing** on 3815 at 1645, in Chinese with announcer's text and regional music. **Guangxi BC Station** on 5050 at 1655, in Chinese with music, lady announcer, time pips and 1700*, **CPBS-Beijing** on 4460 at 1705, and **Radio China Int'l** on 2330 at 12055. (Witham, HI)

1645 UTC on 4400
NORTH KOREA: Voice of National Salvation. Korean. Heard under jamming signal. The jammers for 4450 and 4557 were slightly off frequency, causing heterodyning. North Korea's **Chagong Provincial** heard in Korean at 1655 on 3959.7 //3970,3980 with talk and Korean music. (Witham, HI)

1737 UTC on 9825
UNITED STATES: Radio Marti. Spanish programming of news and IDs. (Wilden, IN) Audible on 13820 at 2200, with rock music focus on Led Zeppelin. (Zamora, NM) Heard on 15330, 2350-000*. (Witham, HI)

1755 UTC on 10461 USB
SWITZERLAND: United Nations Radio. Interval signal and UN hymn. News of international UN activities. Commentary on Palestinian economic advance. History of the United Nations segment, to QSL addresses for New York City and Geneva. Audible at 0600 on 10461. (Rausch, NJ)

1830 UTC on 11675
RUSSIA: Voice of Russia. *Moscow Yesterday and Today*, on the 14th century Battle of Kolykovo. Memories of Russian soldiers from the Battle of Berlin discussed at 2215 on 9530. (Fraser, MA) Additional VOR monitored as; 1605 on 11675, 1824 on 11675, 1959 on 15105. (Wilden, IN)

1914 UTC on 4005
VATICAN CITY STATE: Vatican Radio. Italian. Newscast with correspondent's reports. Announcements to interval signal at 1930, //5885. AM &FM frequencies 527, 1530 kHz and 105.0 MHz in FM audible. (Serra, Italy)

1915 UTC on 15440
FINLAND: YLE/Radio Finland. Closing bits of *Finnish Press Review*. Station programming updates to ID. *Media Roundup* program heard on // 6120, 9730. (John Shelby, Boise, IA)

1925 UTC on 9746
BAHRAIN: Radio Bahrain. Arabic. Regional vocals and program announcements. Time pips and ID at 2000. (Witham, HI)

1935 UTC on 15315
NETHERLANDS ANTILLES: Radio Netherland Bonaire relay. *Happy Station* show featuring *Sounds of the Occupation*, a focus on old news broadcast and music. (Fraser, MA)

1936 UTC on 5015
TURKMENISTAN: Turkmen Radio. Turkmen. Regional chant with instrumental music. Station ID by female, and possible news format from male/female duo, followed by a repeat of regional chants. (Serra, Italy)

2010 UTC on 15095
SYRIA: Radio Damascus. Closing world news topics to station ID. Arabic music to *News and Views* magazine show. (Tommy Patterson, Mobile, AL; Tom Bank, Dallas, TX)

2030 UTC on 11750
MOLDOVA: Radio Dniester. Station ID and schedules quote. News magazine show to rock music promos. Numerous IDs and interview for *Press Review* program. Co-channel interference and signal splatter. (Serra, Italy)

2055 UTC on 15135
RWANDA: Deutsche Welle relay. English ID to French transmitter site ID. Interval signal. Station schedule quote and international newscast. *European Journal* program. Audible on 9735 at 1930. (Rausch, NJ; Patterson, AL)

2125 UTC on 15050
COSTA RICA: Radio For Peace Int'l. Feature on the progress after Mount St. Helen's volcanic incident. Greenpeace public service announcements from the Australian rock group Midnight Oil, about proper waste disposal. (Zamora, NM)

2125 UTC on 13650
CANADA. Radio Canada Int'l. Discussion on the roll of Canadian women during World War II. Station ID to French service at 2130. (Bellovich) *Health and Science* show heard on 5960 at 239. (Wilden, IN)

2310 UTC on 9700
BULGARIA: Radio Bulgaria. National anniversary celebrations of the 1876 uprising against the Ottoman Empire. (Fraser, MA; Don Taylor, Green Cove Springs, FL)

Thanks to our contributors — Have you sent in YOUR logs?
Send to ***Gayle Van Horn,*** *c/o Monitoring Times.*
English broadcast unless otherwise noted.

www.americanradiohistory.com

It's Greek to Me!

Recognizing and identifying languages on shortwave can be an exasperating task! Do you recognize the Romance dialects of French, Italian, Romanian, Portuguese, and Spanish? What are the seven Germanic languages? Did you know that China's Mandarin and Cantonese languages have distinctive characteristics?

If your linguistic skills are lacking, perhaps Canada's Ontario DX Association has the answer. *Foreign Language Recognition Course* on cassette is narrated by Dr. Richard Wood, an expert linguist, author, and DXer. This course was originally aired in 1983 by Radio Canada as a fund-raising venture for the Handicapped Aid Program; however, it is once again available and it is still an invaluable aid to shortwave listeners. For additional information on this excellent, 90-minute cassette, contact ODXA, Box 161, Station A, Willowdale, Ontario M2N558 Canada.

"But," I hear you say, "now that I have recognized a French broadcast, how do I write a French reception report?!"

I have the answer to that frustrating problem, too. *Language Lab* gives you everything you need in phrases, sentences, salutations, and words, plus an exhaustive listing of program details. Find what you want to write in English, and the foreign language equivalent is right there! Gerry Dexter takes you through signal reports, taped reports, prepared form cards, and tentative reports. Each book is comb bound to lie flat as you work at your typewriter or computer keyboard.

Language Lab is available in Spanish, French, Portuguese, and Indonesian, and is considered *The* foreign language reporting guide! For additional details write, Tiare Publications, P.O. Box 493, Lake Geneva, WI 53147.

CZECH REPUBLIC
Radio Prague, 7345 kHz. Full data "storks" card unsigned. Program schedule enclosed. Received in 23 days for an English report. Station address: Vinohradska 12, 120 99 Prague 2, Czech Republic. (Charlie Washburn, North Perry, ME)

MEDIUM WAVE
KNZR, 1560 AM kHz. Full data QSL on station letterhead, signed by Randy Warwick-General Manager. Coverage map enclosed. Received in 60 days for an AM reception report. Station address: P.O. Box 80658, Bakersfield, CA 93380. (Mark Redfox, Seattle, WA)

WNJC, 1360 AM kHz. Original reception report returned and signed by Augustine M. Cawley-Notary Public of NJ, stamped with NJ seal. Received in 10 days for an English AM report, address label (used on reply) and mint stamps (used on reply). Station address: Box 5500 Deptford, Vineland, NJ 08096. (Walter Szczepaniak, PA)

WBCB, 1490 AM kHz. Note on station letterhead, signed by Dan Rosenthal. Received in 13 days for a taped English AM report, address label (used on reply), and mint stamps (used on reply). Station address: 200 Magnolia Dr., Levittown Fairless Hills, PA 19054. (Szczepaniak, PA)

Radio Democracy, 1035 AM kHz. Airborne radio station over Haiti. Partial data QSL handwritten on 8.5"x11" full-color laser-printed photo of the EC-130E plane from which broadcasts originated. Verification signed by Lt. Col. Jim Zambo. Received in 4 months for taped AM report. Station address: 193rd Special Operations Group/DOOW, Pennsylvania Air National Guard, Middletown, PA 17057-5086. (Randy Stewart, Springfield, MO)

BSKSA, 1521 AM kHz. Full data QSL card signed by Suliman A. Al Samnan-Director, Frequency Management. Letter and SW frequency schedule enclosed. Received via registered mail in 6 months after follow-up AM report, and one U.S. dollar (returned with reply). Total time almost 15 months! Station address: Ministry of Information, Engineering Affairs, Riyadh, Saudi Arabia. (Stewart, MO)

NETHERLANDS
Radio Netherlands, 6020 kHz. Full data *Solar Eclipse* card, unsigned. Received in 60 days for an English report. Station address: P.O. Box 222, 1200-JG Hilversum, The Netherlands. (Washburn, ME)

NETHERLANDS ANTILLES
Radio Netherlands via Bonaire relay, 6165 kHz. Full data "floral scenery" card, unsigned. Received in 44 days for an English report. Station address:(please refer to Radio Netherlands address) (Gerry LeStrange, East Brunswick, NJ)

NON-DIRECTIONAL BEACONS
EY, 233 kHz Chesapeake, Virginia. Full data prepared QSL card signed by Heather Snyder. Received in 52 days for an English utility report and mint stamps. Station address: Chesapeake Municipal Airport, Chesapeake, VA. 23320 (Hank Holbrook, Dunkirk, MD)

F7, 353 kHz Perry Sound, Ontario. Full data prepared QSL card signed by Jack Wallace. Received in 42 days for an English utility report and mint stamps. Station address: Georgian Bay Airport, Parry Sound, ONT Canada.

HFY, 318 kHz Indianapolis, Indiana. Full data prepared QSL card signed by Rachel Olson, plus business card. Received in 13 days for an English utility report and mint stamps. Station address: Greenwood Aviation Inc., Green Municipal Airport, Greenwood, IN 46143. (Holbrook, MD)

TOX, 371 kHz Siler City, North Carolina. Full data prepared QSL card with illegible signature. Received in 24 days for an English utility report and mint stamps. Station address: Siler City Municipal Airport, Siler City, NC 27344. (Holbrook, MD)

2R, 373 kHz Tyendinaga Indian Reserve, Ontario. Full data QSL letter plus map of Indian Reserve. Technical sheets on transmitter and antenna info enclosed. Received in 60 days for an English utility report and mint stamps. Station address: c/o First Nations Technical Institute Aviation, RR #1, Airport Road, Deseronto, ONT, KOK 1XO Canada. (Holbrook, MD)

SHIP TRAFFIC
Biscay Bay 3SH2, 16384 kHz USB (Bulk Carrier). Full data prepared QSL card signed by Paraiso Ernesto-Radio Officer. QSL stamped with ship's seal. Received for an English utility report, one IRC, one U.S. dollar, and mint stamps. Ship address: c/o Saint Navigation, 12th Floor, 7-9 Atki Maouli, 185 35 Piraeus, Greece. (Russ Hill, Oak Park, MI)

HMS Broadsword GUSS, 8240 kHz USB (Frigate). Full data prepared QSL card signed by Lt. Lees. QSL stamped with ship's seal and ship fact sheet enclosed. Received in 23 days for an English utility report, one IRC, one U.S. dollar, and mint stamps. Ship address: c/o BFPO Ships, London, United Kingdom. (Hill, MI)

Chemical Symphony 3EJG2, 4077 kHz USB (Chemical Tanker). Full data prepared QSL stamped with ship's seal. Received in 128 days for an English utility report, one IRC, one U.S. dollar, and mint stamps. Ship address: c/o Yamaato Kisen K.K., 750-2 Kuranukiura, Nishi-uwa-gun, Ehime Perfecture 796-05, Japan. (Hill, MI)

Hyde Park C6CP6, 16390 kHz USB (General Cargo). Full data prepared QSL stamped with ship's seal. Received in 31 days for an English utility report, one IRC, one U.S. dollar, and mint stamps. Ship address: c/o Rederient Otto Danielsen, Kongevejen 40, 2840 Holte, Denmark. (Hill, MI)

Canadian Highway 3EXH4, 500 kHz USB. (Pure Car Carrier). Full data QSL letter verified. Received in 35 days for an English utility report and one U.S. dollar. Ship QSL address: Kawasaki Kisen K.K. ('K'), Hibiya Central Bldg. 2-9, 1 chome-Nishi-Shinbashi, Minato-ku, Tokyo 105, Japan. (Holbrook, MD)

www.americanradiohistory.com

How to Use the Shortwave Guide

1: Convert your time to UTC.

Eastern and Pacific Times are already converted to Coordinated Universal Time (UTC) at the top of each page. The rule is: convert your local time to 24-hour format; add (during Daylight Savings Time) 4, 5, 6 or 7 hours for Eastern, Central, Mountain or Pacific Time, respectively.

Note that all dates, as well as times, are in UTC; for example, the BBC's "John Dunn Show" (0030 UTC Sunday) will be heard on Saturday evening (8:30 pm Eastern, 5:30 PM Pacific) in North America, not on Sunday.

2: Choose a program or station you want to hear.

Some selected programs appear on the lower half of the page for prime listening hours—space does not permit 24-hour listings except for the "Newsline" listing, which begins on the next page.

Occasionally program listings will be followed by "See X 0000." This information indicates that the program is a rerun, and refers to a previous summary of the program's content. The letter stands for a day of the week, as indicated below, and the four digits represent a time in UTC.

S: Sunday T: Tuesday H: Thursday A: Saturday
M: Monday W: Wednesday F: Friday

3: Find the frequencies for the program or station you want to hear.

Look at the page which corresponds to the time you will be listening. Comprehensive frequency information for English broadcasts can be found at the top half of the page. All frequencies are in kHz.

The frequency listing uses the same day codes as the program listings; if a broadcast is not daily, those day codes will appear before the station name. Irregular broadcasts are indicated "tent" and programming which includes languages besides English are coded "vl" (various languages).

4: Choose the most promising frequencies for the time, location and conditions.

Not all stations can be heard and none all the time on all frequencies. To help you find the most promising frequency, we've included information on the target area of each broadcast. Frequencies beamed toward your area will generally be easier to hear than those beamed elsewhere, even though the latter will often still be audible. Every frequency is followed by one of these target codes:

am: The Americas
na: North America
ca: Central America
sa: South America
eu: Europe
af: Africa
me: Middle East
as: Asia
au: Australia
pa: Pacific
va: various
do: domestic broadcast
om: omnidirectional

Consult the propagation charts. To further help you find the right frequency, we've included charts at the back of this section which take into account conditions affecting the audibility of shortwave broadcasts. Simply pick out the region in which you live and find the chart for the region in which the station you want to hear is located. The chart indicates the optimum frequencies for a given time in UTC.

Radio Programs

Sundays

0024 Radio Exterior de Espana: "Dist.Unkn"
0030 VOA (ca): "Communications World"
0109 HCJB (am): "DX Partyline"
0124 Radio Exterior de Espana: "Dist Unkno"
0125 Radio Budapest Int'l: "DX World"
0200 Radio For Peace Int'l: "World of Radio"
0200 WWCR #1: "Spectrum"
0200 WWCR #3: "Spectrum"
0234 Radio Havana Cuba: "DXers Unlimited"
0245 Radio Romania Int'l: "DX Mailbag"
0258 Vatican Radio: "On-the-Air"
0315 Voice of Turkey: "DX Corner (biweekly)"
0350 BBC (eu): "Waveguide"
0410 Radio Australia: "Feedback"
0434 Radio Havana Cuba: "DXers Unlimited"
0507 Vatican Radio: "On-the-Air"
0509 HCJB (am): "DX Partyline"
0524 Radio Exterior de Espana: "Dist.Unkn"
0525 Radio Japan: "Media Roundup"
0610 Radio Australia: "Feedback"
0634 Radio Havana Cuba: "DXers Unlimited"
0635 Radio Vlaanderen Int'l: "Radio World"
0725 Radio Japan: "Media Roundup"
0810 Radio Australia: "Feedback"
0835 Radio Korea: "Shortwave Feedback"
0915 AWR-Europe (Slovakia): "Wavescan"
0930 WWCR #3: "World of Radio"
0940 FEBC (Philippines): "DX Report"
1000 Radio For Peace Int'l: "World of Radio"
1100 AWR Latin America: "Wavescan"
1130 WRMI: "Wavescan"
1137 Radio Korea: "Shortwave Feedback"
1235 Radio Korea: "Shortwave Feedback"
1235 Radio Vlaanderen Int'l: "Radio World"
1352 Vatican Radio: "On-the-Air"
1425 Radio Japan: "Media Roundup"
1436 Radio Korea: "Shortwave Feedback"
1635 Radio Korea: "Shortwave Feedback"
1645 BBC (af): "Waveguide"
1725 Radio Japan: "Media Roundup"
1805 Radio Vlaanderen Int'l: "Radio World"
1920 AWR-Europe (Slovakia): "Wavescan"
1935 Radio Korea: "Shortwave Feedback"
2005 BBC (eu): "Waveguide"
2105 Radio Vlaanderen Int'l: "Radio World"
2115 AWR-Europe (Slovakia): "Wavescan"
2125 Radio Japan: "Media Roundup"
2145 Radio Bulgaria: "Radio Bulgaria Calling"
2215 AWR-Europe (Slovakia): "Wavescan"
2235 Radio Korea: "Shortwave Feedback"
2252 Vatican Radio: "On-the-Air"
2300 AWR Latin America: "Wavescan"
2300 KSDA (Guam): "Wavescan"
2300 Radio For Peace Int'l: "World of Radio"
2300 WWCR #1: "World of Radio"
2325 Radio Japan: "Media Roundup"
2335 Radio Vlaanderen Int'l: "Radio World"

Mondays

0000 WRMI: "Wavescan"
0108 Deutsche Welle: "DXers World Meeting"
0125 Radio Japan: "Media Roundup"
0134 Radio Korea: "Shortwave Feedback"
0330 KWHR (Hawaii): "World of Radio"
0430 Radio New Zealand Int'l: "Mailbox (bwkly)"
0445 Radio Bulgaria: "Radio Bulgaria Calling"
0604 WWCR #1: "Spectrum"
0620 Voice of Med. (Malta): "VOM DX Corner"
0640 Radio Korea: "Shortwave Feedback"
0700 Radio For Peace Int'l: "World of Radio"
0720 Voice of Med. (Malta): "VOM DX Corner"
0800 WWCR #1: "Spectrum"
1040 All India Radio: "DX-ers Corner (2/4)"
1215 Radio Bulgaria: "Radio Bulgaria Calling"
1420 Voice of Med. (Malta): "VOM DX Corner"
1435 All India Radio: "DX-ers Corner (2/4)"
1520 Voice of Med. (Malta): "VOM DX Corner"
1840 All India Radio: "DX-ers Corner (2/4)"
1915 Radio Tallinn: "Radio Estonia DX Program"
2130 All India Radio: "DX-ers Corner (2/4)"
2155 Radio Budapest Int'l: "DX News"
2239 Radio Exterior de Espana: "Dist.Unkn."

Tuesdays

0030 WRMI: "Wavescan"
0255 Radio Budapest Int'l: "DX News"
1147 Radio Sweden: "Media Scan"
1230 WWCR #1: "World of Radio"
1249 Radio Sweden: "Media Scan"
1349 Radio Romania Int'l: "For Radio Amatures"
1349 Radio Sweden: "Media Scan"
1749 Radio Sweden: "Media Scan"
1900 Radio For Peace Int'l: "World of Radio"
1950 Polish Radio: "Polish Radio DX Club"
2049 Radio Sweden: "Media Scan"
2139 Radio Havana Cuba: "DXers Unlimited"
2149 Radio Sweden: "Media Scan"
2155 Radio Budapest Int'l: "DX Tips"
2239 Radio Havana Cuba: "DXers Unlimited"
2340 All India Radio: "DX-ers Corner (2/4)"

Wednesdays

0030 WRMI: "Wavescan"
0049 Radio Sweden: "Media Scan"
0135 Radio Havana Cuba: "DXers Unlimited"
0149 Radio Sweden: "Media Scan"
0220 RAE Argentina: "DX'ers Special"
0249 Radio Sweden: "Media Scan"
0255 Radio Budapest Int'l: "DX Tips"
0300 Radio For Peace Int'l: "World of Radio"
0335 Radio Havana Cuba: "DXers Unlimited"
0349 Radio Sweden: "Media Scan"
0535 Radio Havana Cuba: "DXers Unlimited"
0700 HCJB (eu): "The Latest Catch"
0800 HCJB (eu): "Ham Radio Today"
0930 HCJB (pac): "Ham Radio Today"
1030 HCJB (pac): "The Latest Catch"
1044 Radio Prague: "Calling All Listeners"
1100 Radio For Peace Int'l: "World of Radio"
1315 FEBC (Philippines): "DX Report"
1530 BBC (south as): "Waveguide"
1611 Radio Prague: "Calling All Listeners"
1711 Radio Prague: "Calling All Listeners"
1720 Polish Radio: "Polish Radio DX Club"
1730 HCJB (eu): "Ham Radio Today"
1800 HCJB (eu): "The Latest Catch"
1920 RAE Argentina: "DX'ers Special"
2010 Radio Prague: "Calling All Listeners"
2155 Radio Budapest Int'l: "DX World"

Thursdays

0014 Radio Prague: "Calling All Listeners"
0030 WRMI: "Wavescan"
0114 Radio Prague: "Calling All Listeners"
0130 HCJB (am): "Ham Radio Today"
0152 Radio Netherlands Int'l: "Media Network"
0200 HCJB (am): "The Latest Catch"
0235 RAE Argentina: "DX'ers Special"
0255 Radio Budapest Int'l: "DX World"
0314 Radio Prague: "Calling All Listeners"
0344 Radio Prague: "Calling All Listeners"
0530 HCJB (am): "Ham Radio Today"
0600 HCJB (am): "The Latest Catch"
0752 Radio Netherlands Int'l: "Media Network"
0830 Radio New Zealand Int'l: "Mailbox (bwkly)"
0930 HCJB (pac): "Ham Radio Today"
0953 Radio Netherlands Int'l: "Media Network"
1053 Radio Netherlands Int'l: "Media Network"
1124 Deutsche Welle: "DXers World Meeting"
1220 Polish Radio: "Polish Radio DX Club"
1353 Radio Netherlands Int'l: "Media Network"
1553 Radio Netherlands Int'l: "Media Network"
1753 Radio Netherlands Int'l: "Media Network"
1920 Radio Budapest Int'l: "DX News"
1942 Radio Finland: "YLE Media Roundup"
1952 Radio Netherlands Int'l: "Media Network"

Fridays

0030 WRMI: "Wavescan"
0053 Radio Netherlands Int'l: "Media Network"
0053 Radio Netherlands Int'l: "Media Network"
0120 Radio Budapest Int'l: "DX News"
0252 Radio Netherlands Int'l: "Media Network"
0430 BBC (as pac): "Waveguide"
0453 Radio Netherlands Int'l: "Media Network"
1145 Radio Finland: "YLE Media Roundup"
1235 BBC (am): "Waveguide"
1245 Radio Finland: "YLE Media Roundup"
1345 Radio Finland: "YLE Media Roundup"
1346 Radio Portugal Int'l: "Radio Portugal DX (triweekly)"
1545 Radio Finland: "YLE Media Roundup"
1916 Radio Portugal Int'l: "Radio Portugal DX (triweekly)"
1925 Radio Budapest Int'l: "DX Tips"
1930 Radio New Zealand Int'l: "Mailbox (bwkly)"
1945 Radio Bulgaria: "Radio Bulgaria Calling"
2000 Radio For Peace Int'l: "World of Radio"
2115 WWCR #1: "World of Radio"
2210 Radio Australia: "Feedback"
2229 WHRI: "World of Radio"
2345 Radio Bulgaria: "Radio Bulgaria Calling"

Saturdays

0010 Radio Australia: "Feedback"
0030 WRMI: "Wavescan"
0125 Radio Budapest Int'l: "DX Tips"
0146 Radio Portugal Int'l: "Radio Portugal DX (triweekly)"
0210 Radio Australia: "Feedback"
0235 RAE Argentina: "DX'ers Special"
0400 Radio For Peace Int'l: "World of Radio"
0500 WHRI: "World of Radio"
0600 WWCR #3: "World of Radio"
0715 BBC (as pac): "Waveguide"
0715 BBC (south as): "Waveguide"
0739 HCJB (eu): "DX Partyline"
0910 HCJB (pac): "DX Partyline"
0940 FEBC (Philippines): "DX Dial"
1000 BBC (south as): "Waveguide"
1030 VVOA (as pac): "Comm.World"
1200 Radio For Peace Int'l: "World of Radio"
1215 Radio Bulgaria: "Radio Bulgaria Calling"
1230 VOAa (as pac): "Comm.World"
1245 Voice of Turkey: "DX Corner (biweekly)"
1342 Radio Tashkent: "DX Program"
1347 Radio Romania Int'l: "DX Mailbag"
1629 KWHR (Hawaii): "World of Radio"
1629 WHRI: "World of Radio"
1709 HCJB (eu): "DX Partyline"
1730 VOA (af): "Communications World"
1730 VOA (as pac): "Communications World"
1730 VOA (me): "Communications World"
1730 VOA (south as): "Comm.World"
1800 Radio For Peace Int'l: "World of Radio"
1925 Radio Budapest Int'l: "DX World"
1945 Radio Romania Int'l: "DX Mailbag"
2045 Voice of Turkey: "DX Corner (biweekly)"
2130 VOA(me): "Communications World"
2136 Radio Havana Cuba: "DXers Unlimited"
2200 WRMI: "Wavescan"
2215 Voice of Turkey: "DX Corner (biweekly)"
2236 Radio Havana Cuba: "DXers Unlimited"
2245 BBC (as pac): "Waveguide"
2300 HRJA Honduras: "Wavescan"
2300 KSDA (Guam): "Wavescan"
2345 WRMI: "Wavescan"

Send SASE to "DX Program Alpha List" to receive this list sorted in program order.

www.americanradiohistory.com

MT Monitoring Team

Gayle Van Horn, Frequency Manager
North Carolina

Next Reporting Deadline
August 19, 1995

Jim Frimmel, Program Manager
Texas

Dave Datko
California

Jeff Demers
New Hampshire

Jacques d'Avignon
Propagation Forecasts
Ontario, Canada

newsline

"Newsline" is your guide to news broadcasts on the air. • All broadcasts are world news reports unless followed by an asterisk, which means the broadcast is primarily national news. • All broadcasts are daily unless otherwise noted by the day codes.

0000 UTC
(8:00 PM EDT, 5:00 PM PDT)
BBC (am) (Newsdesk)
BBC (as pac) (Newsdesk)
BBC (south as)
Canada (North-Quebec)
China Radio Int'l
Croatian Radio
Monitor Radio Int'l [T-A]
Radio Australia
Radio New Zealand Int'l
Radio Prague
Radio Thailand
Radio Ukraine Int'l
Radio Yugoslavia
Spanish National Radio
Voice of America (am)
Voice of America (as)
Voice of America (ca)
Voice of Russia
0003
Radio Pyongyang
0010
China Radio Int'l*
Voice of America (ca) [T-A]*
0015
Radio Cairo
0030
All India
Nacional de Venezuela [T-S]
Radio Netherlands Int'l
Radio New Zealand Int'l [M-F]
Radio Sweden [T-A]
Radio Thailand [T-S]
Voice of America (am) [T-S] (Special English)
Voice of America (as) (Special English)
Voice of Russia
0045
BBC (am)*
BBC (south as)*
0050
RAI Italy

0100 UTC
(9:00 PM EDT, 6:00 PM PDT)
BBC (am) (Newsdesk)
BBC (as pac)
BBC (south as) (Newsdesk)
Canada (North-Quebec) [S]
Croatian Radio
Deutsche Welle
FEBC (Philippines)
HCJB
KVOH [W]
Monitor Radio Int'l [T-A]
R Slovakia Int'l [A]*
R Slovakia Int'l [S/T-F]
Radio Australia
Radio Budapest
Radio Canada Int'l
Radio Havana Cuba [T-S]
Radio Japan
Radio Korea
Radio New Zealand Int'l
Radio Norway Int'l [M]
Radio Prague
Spanish National Radio
Swiss Radio Int'l
Voice of America (am)
Voice of America (as)
Voice of America (ca)
Voice of Indonesia
Voice of Russia
Voice of Vietnam
0110
Radio Australia [M-F]*
0113
Radio Havana Cuba [T-S]*
0130
Radio Austria Int'l
Radio Havana Cuba [T-S]
Radio Netherlands Int'l
Radio Portugal Int'l [T-A]
Radio Sweden [T-A]
Voice of Greece
Voice of Russia [T-A]
0145
Radio Tirana
0152
Vatican Radio [S]
0155
Radio Canada Int'l [T-A]
Vatican Radio [W/F]
Voice of Indonesia

0200 UTC
(10:00 PM EDT, 7:00 PM PDT)
BBC (am) (Newsday)
BBC (as pac) (Newsday)
BBC (eu) (Newsday)
BBC (south as) (Newsday)
Canada (North-Quebec)
Croatian Radio
Deutsche Welle
Monitor Radio Int'l [T-A]
Radio Australia
Radio Canada Int'l
Radio Havana Cuba [T-S]
Radio New Zealand Int'l [M-A]
Radio Romania Int'l
RAE Argentina [T-A]
Voice of America (as)
Voice of Myanmar (Burma)
Voice of Russia
Voice of Vietnam
WINB [T-A]
WWCR #3 [T-A]
0203
Voice of Free China
0212
Radio Havana Cuba [T-S]*
0215
Radio Cairo
Radio Nepal
0228
Radio Havana Cuba [S]
0230
Radio Austria Int'l
Radio Budapest
Radio Havana Cuba [T-A]
Radio Netherlands Int'l
Radio Pakistan
Radio Sweden [T-A]
Radio Tirana
Voice of Russia

0300 UTC
(11:00 PM EDT, 8:00 PM PDT)
BBC (af)
BBC (am)
BBC (as pac)
BBC (eu) [S-F]
BBC (south as)
Canada (North-Quebec)
Channel Africa
China Radio Int'l
Croatian Radio
Deutsche Welle
KVOH [T/W/H]
Monitor Radio Int'l [T-A]
Radio Australia
Radio Havana Cuba [T-S]
Radio Japan
Radio New Zealand Int'l [M-A]
Radio Prague
Radio Thailand
Radio Ukraine Int'l
Voice of America (af) [A-S]
Voice of Russia
Voice of Turkey
WHRI [T-A]
WINB [T-A]
WWCR #1 [S]
WWCR #3 [T-A]
0301
Voice of America (af) [M-F]*
0303
Voice of Free China
0310
China Radio Int'l*
0313
Radio Havana Cuba [T-S]*
0315
Radio Cairo
Voice of Greece [S/H]
0320
Radio Philipinas [M-A]
Vatican Radio
0330
BBC (eu) [A]
Radio Dubai
Radio Havana Cuba [T-S]
Radio Nacional de Venezuela [T-S]
Radio Prague
Radio Sweden [T-A]
Voice of America (af) [M-F] (Special English)
Voice of Russia
0340
BBC (af)*
Voice of Greece
0355
Radio Japan [W-M]

0400 UTC
(12:00 AM EDT, 9:00 PM PDT)
BBC (af) (Newsdesk)
BBC (am) (Newsdesk)
BBC (as pac)
BBC (eu) [S-F] (Newsdesk)
BBC (south as) (Newsdesk)
Canada (North-Quebec)
Channel Africa
China Radio Int'l
Croatian Radio
Deutsche Welle
Monitor Radio Int'l [T-F]
Radio Australia
Radio Bulgaria
Radio Canada Int'l
Radio Havana Cuba [T-S]
Radio New Zealand Int'l [A]
Radio New Zealand Int'l [M-F]*
Radio Norway Int'l [M]
Radio Romania Int'l
Radio Tanzania
Swiss Radio Int'l
Voice of America (af)
Voice of America (me)
Voice of Israel
Voice of Russia
WWCR #1 [T-A]
WYFR (Satellite Network) [A]
ZBC Zimbabwe
0403
Radio Pyongyang
0410
China Radio Int'l*
0412
Radio Havana Cuba [T-S]*
0425
RAI Italy
0430
BBC (af)*
BBC (eu) [A]
Radio Finland
Radio Havana Cuba [T-A]
Radio Netherlands Int'l
Radio Yugoslavia
Voice of Russia
0431
Voice of America (af) [M-F]*

0500 UTC
(1:00 AM EDT, 10:00 PM PDT)
BBC (af) (Newsday)
BBC (am) (Newsday)
BBC (as pac) (Newsday)
BBC (eu) (Newsday)
BBC (south as)
Canada (North-Quebec)
Channel Africa
China Radio Int'l
Deutsche Welle
HCJB
Monitor Radio Int'l [T-F]
Radio Australia
Radio Cameroon
Radio Canada Int'l [M-F]
Radio Havana Cuba [T-S]
Radio Japan
Radio New Zealand Int'l [S-F]
Spanish National Radio
Swiss Radio Int'l (eu)
Vatican Radio [T/F]
Voice of America (af)
Voice of America (me)
Voice of Russia
WWCR #1 [M-F]
0510
China Radio Int'l*
Radio Australia [M-F]*
0513
Radio Havana Cuba [T-S]*
0530
BBC (af)*
Radio Austria Int'l
Radio Havana Cuba [T-A]
Radio Romania Int'l
Voice of Nigeria
Voice of Russia
0555
Radio Japan [A]

0600 UTC
(2:00 AM EDT, 11:00 PM PDT)
BBC (af)
BBC (am)
BBC (as pac)
BBC (eu)
BBC (south as)
Deutsche Welle
Monitor Radio Int'l [T-F]
Radio Australia
Radio Havana Cuba [T-S]
Radio Japan
Radio Korea
Radio New Zealand Int'l [M-A]
Radio Norway Int'l [S]
Radio Prague
Radio Yemen
Swiss Radio Int'l
Swiss Radio Int'l (eu)
Voice of America (af) [A-S]
Voice of America (me)
Voice of Kenya
Voice of Malaysia
Voice of Russia
WWCR #1 [W-F/T]
WWCR #3 [S]
0601
Voice of America (af) [M-F]*

www.americanradiohistory.com

0603
Radio Pyongyang
0612
Radio Havana Cuba [T-S]*
0628
Radio Havana Cuba [S]
0630
BBC (af)*
Radio Austria Int'l [T-S]
Radio Havana Cuba [T-A]
Radio Vlaanderen Int'l
Radio Yemen
Vatican Radio [H]
Voice of Nigeria [M-F]
Voice of Russia
0632
Radio Romania Int'l
0645
Radio Finland
Radio Romania Int'l
Voice of Nigeria [M-F]*
0655
Radio Japan [W-M]
Voice of Med. (Malta) [M-F]

0700 UTC
(3:00 AM EDT, 12:00 AM PDT)
BBC (af)
BBC (am)
BBC (as pac)
BBC (eu)
BBC (south as)
KWHR (Hawaii) [M-F]
Monitor Radio Int'l [T-F]
Papua New Guinea
Radio Australia
Radio Japan
Radio New Zealand Int'l [A]
Radio New Zealand Int'l [M-F]*
Voice of Myanmar (Burma)
Voice of Russia
WWCR #1 [M-F]
0703
Radio Pyongyang
Voice of Free China
0710
Radio Australia [M-F]*
0730
HCJB
Radio Austria Int'l [T-S]
Radio Netherlands Int'l
Radio Pakistan
Radio Prague
Vatican Radio [M-F]
Voice of Greece [S/H]
Voice of Russia [M-A]
0750
Radio New Zealand Int'l [M-F]*
Russia (Radio Pacific Ocean) [A]
0755
Radio Japan
Voice of Med. (Malta) [M-F]

0800 UTC
(4:00 AM EDT, 1:00 AM PDT)
BBC (af)
BBC (am)
BBC (as pac)
BBC (eu)
BBC (south as)
KNLS
Monitor Radio Int'l [M-A]
Radio Australia
Radio Finland
Radio Korea
Radio New Zealand Int'l
Radio Pakistan
Voice of Indonesia [A-H]
Voice of Malaysia
Voice of Russia
WWCR #1 [H-F]
0803
Radio Pyongyang
0810
Radio New Zealand Int'l [M-F]*
0830
R Slovakia Int'l
Radio Netherlands Int'l
Voice of Armenia [S]
Voice of Russia
0855
Voice of Indonesia [A-H]

0900 UTC
(5:00 AM EDT, 2:00 AM PDT)
BBC (af)
BBC (am)
BBC (as pac)
BBC (eu)
BBC (south as)
China Radio Int'l
Deutsche Welle
HCJB
Monitor Radio Int'l [M-A]
Papua New Guinea [M]*
Radio Australia
Radio Japan
Radio New Zealand Int'l [M-A]
Radio Vlaanderen Int'l [M-A]
Swiss Radio Int'l
Voice of Russia
WWCR #1 [H-F]
WWCR #3 [A]
0910
China Radio Int'l*
Radio Australia [M-F]*
0920
Voice of Greece [S/H]
0930
[S]
FEBC (Philippines)
Radio Austria Int'l [M-A]
Radio Netherlands Int'l
Voice of Russia
0940
Voice of Greece
0945
Deutsche Welle [M-F]*
0955
Radio Japan

1000 UTC
(6:00 AM EDT, 3:00 AM PDT)
All India Radio
BBC (af) (Newsdesk)
BBC (am) (Newsdesk)
BBC (as pac) (Newsdesk)
BBC (eu) (Newsdesk)
China Radio Int'l
FEBC (Philippines) [M-F]*
Monitor Radio Int'l
Papua New Guinea
Radio Australia
Radio New Zealand Int'l [S-F]
Radio Tanzania
Swiss Radio Int'l (eu)
Voice of America (as)
Voice of America (ca)
Voice of Israel
Voice of Kenya
Voice of Russia
Voice of Vietnam
WWCR #1 [M-F]
WYFR (Satellite Network) [M-A]
1010
China Radio Int'l*
Radio New Zealand Int'l [M-F]*
1020
Radio New Zealand Int'l [H]*
Vatican Radio [M-A]
1030
Radio Dubai
Radio Netherlands Int'l
Radio Prague
Voice of Nigeria
Voice of Russia
WYFR (Satellite Network) [M-F]
1045
Voice of Nigeria [A-S]*

1100 UTC
(7:00 AM EDT, 4:00 AM PDT)
BBC (af) (Newsdesk)
BBC (am) (Newsdesk)
BBC (as pac) (Newsdesk)
BBC (eu) (Newsdesk)
BBC (south as) [H-T] (Newsdesk)
Canada (North-Quebec) [A-S]
Deutsche Welle
Monitor Radio Int'l [M-A]
Papua New Guinea
Radio Australia
Radio Ghana [A-S]
Radio Japan
Radio Jordan
Radio Mozambique
Radio New Zealand Int'l (Newsdesk)
Radio Pakistan
Radio Singapore Int'l
Swiss Radio Int'l
Swiss Radio Int'l (eu)
Voice of America (as)
Voice of America (ca)
Voice of Russia
WHRI [A]
WWCR #1 [M-A]
WYFR (Satellite Network) [M-A]
1103
Radio Pyongyang
1110
Radio Australia*
1130
Radio Austria Int'l
Radio Bulgaria
Radio Finland [M-F]
Radio Korea
Radio Nacional de Venezuela [M-A]
Radio Netherlands Int'l
Radio Singapore Int'l
Radio Sweden [M-F]
Voice of Asia
Voice of Russia
WYFR (Satellite Network) [M-A]
1145
Deutsche Welle [M-F]*
1155
Radio Japan [S-F]

1200 UTC
(8:00 AM EDT, 5:00 AM PDT)
BBC (af) [M-A]
BBC (am)
BBC (as pac) [M-A]
BBC (eu)
BBC (south as)
Canada (North-Quebec) [A-S]
China Radio Int'l
Monitor Radio Int'l [M-A]
Papua New Guinea
Polish Radio [A]
Polish Radio [M-F]*
Radio Australia
Radio Canada Int'l [M-F]
Radio France Int'l
Radio New Zealand Int'l [H-T]
Radio Norway Int'l [S]
Radio Singapore Int'l
Radio Tashkent
Voice of America (as)
Voice of Russia
WYFR (Satellite Network) [M-F]
1203
Radio Korea
Voice of Free China
1204
HCJB [M-F]
1210
China Radio Int'l*
1215
BBC (af) [M-A]*
BBC (eu)*
BBC (south as) [M-A]*
1230
HCJB [M-F]*
Radio Austria Int'l
Radio Bangladesh [S-M]
Radio Cairo
Radio Canada Int'l
Radio Finland [M-A]
Radio Netherlands Int'l
Radio Singapore Int'l
Radio Sweden [M-F]
Radio Vlaanderen Int'l [S]
Voice of Russia [M-A]
Voice of Turkey
Voice of Vietnam
WYFR (Satellite Network) [M-F]
1231
Radio France Int'l [T]*
1240
Voice of Greece

1300 UTC
(9:00 AM EDT, 6:00 AM PDT)
BBC (af) (Newshour)
BBC (am) (Newshour)
BBC (as pac) (Newshour)
BBC (eu) (Newshour)
BBC (south as) (Newshour)
Canada (North-Quebec) [S]
China Radio Int'l
KNLS
Monitor Radio Int'l [M-A]
Papua New Guinea
Radio Australia
Radio Canada Int'l [S]
Radio Ghana
Radio Norway Int'l [S]
Radio Romania Int'l [M-A]
Radio Singapore Int'l
Radio Tanzania [A-S]
Radio Vlaanderen Int'l [M-A]
Swiss Radio Int'l
Voice of America (as)
Voice of Kenya
Voice of Russia
WWCR #1 [A]
WYFR (Satellite Network) [M-F]
1301
Radio Romania Int'l [S]
1303
Radio Pyongyang
1307
Radiobrçs [M-F]
1310
China Radio Int'l*
1324
HCJB [M-F]
1328
Radio Cairo
1330
All India Radio
FEBC (Philippines)
Radio Austria Int'l
Radio Canada Int'l
Radio Dubai
Radio Finland
Radio Netherlands Int'l
Radio Portugal Int'l [M-F]
Radio Singapore Int'l
Radio Sweden [M-F]
Radio Tashkent
Voice of America (as) (Special English)
Voice of Russia
Voice of Vietnam
1355
Radio Singapore Int'l

1400 UTC
(10:00 AM EDT, 7:00 AM PDT)
BBC (af)
BBC (am)
BBC (as pac)
BBC (eu)
BBC (south as)
Canada (North-Quebec) [A-S]
China Radio Int'l
Monitor Radio Int'l [M-A]
Radio Australia
Radio Cameroon
Radio Canada Int'l [S]
Radio France Int'l
Radio Ghana
Radio Japan
Radio Korea [M-A]
Voice of America (as)
Voice of Russia
WINB [M-F]
WWCR #1 [M-F]
1410
China Radio Int'l*
1415
Radio Nepal
1424
HCJB [M-F]
1430
FEBC (Philippines)
Nacional de Venezuela [M-A]
Radio Netherlands Int'l
Radio Romania Int'l [T-S]
RTM Morocco [S]
Voice of Myanmar (Burma)
Voice of Russia
WYFR (Satellite Network) [M-F]
1431
Radio France Int'l [T]*
Radio Romania Int'l [M]
1440
FEBC (Philippines) [M-F]*
1445
All India Radio
Voice of Myanmar (Burma)
1455
Radio Japan [A]
Voice of Med. (Malta) [M-F]

1500 UTC
(11:00 AM EDT, 8:00 AM PDT)
BBC (af)
BBC (am)
BBC (as pac) [A-S]
BBC (eu)
BBC (south as)
Canada (North-Quebec) [A-S]
Channel Africa
China Radio Int'l
Monitor Radio Int'l [M-A]
Radio Australia
Radio Canada Int'l [S]
Radio Japan
Radio Jordan
Radio Omdurman
Radio Tallinn [M-F]
Swiss Radio Int'l
Swiss Radio Int'l (eu)
Voice of America (as)
Voice of America (me)
Voice of Russia
WINB [M-W/F]
WWCR #1 [M-F]

www.americanradiohistory.com

WYFR (Satellite Network) [A]
1503
Radio Pyongyang
1510
China Radio Int'l*
1525
Radio Veritas [T-F]
1528
BBC (af) [M]*
1530
All India Radio*
FEBA (Seychelles)
FEBC (Philippines)
Radio Austria Int'l
Radio Finland
Radio Netherlands Int'l
Voice of Nigeria [M-H]
Voice of Russia
1540
Radio Veritas [A-M]
1550
Voice of Med. (Malta) [F]
1555
Radio Japan [A]
Radio Veritas [A-M]
Voice of Med. (Malta) [M-H]

1600 UTC
(12:00 PM EDT, 9:00 AM PDT)
BBC (af)
BBC (am)
BBC (as pac)
BBC (eu)
BBC (south as)
Canada (North-Quebec) [A]
Channel Africa
China Radio Int'l
Deutsche Welle
Monitor Radio Int'l [M-A]
Radio Australia
Radio France Int'l
Radio Jordan
Radio Korea
Radio Norway Int'l [S]
Radio Pakistan
Radio Prague
Radio Tanzania
Radio Tirana
Voice of America (af) [A-S]
Voice of America (as)
Voice of America (me)
Voice of Ethiopia
Voice of Kenya
Voice of Russia
Voice of Vietnam
WINB [M-F]
WRNO [M-F]
WYFR (Satellite Network) [M-A]
1604
HCJB [M-F]
1610
China Radio Int'l*
1612
Vatican Radio
1615
Radio Sweden
Vatican Radio
1630
Channel Africa [F]*
HCJB [M-F]*
Radio Canada Int'l
Radio Dubai
Voice of America (af) [M-F]*
√OA (as) (Special English)
VOA (me)(Special English)
Voice of Ethiopia
Voice of Russia [S-F]
1638
Deutsche Welle [M-F]*
1645
BBC (am) [S-F]*
Radio Canada Int'l [M-F]

1700 UTC
(1:00 PM EDT, 10:00 AM PDT)
BBC (af)
BBC (am)
BBC (as pac)
BBC (eu)
BBC (south as)
Canada (North-Quebec) [A]
China Radio Int'l
HCJB
Monitor Radio Int'l [M-A]
Polish Radio [A]
Polish Radio [M-F]*
Radio Australia
Radio France Int'l
Radio Japan
Radio New Zealand Int'l [M-F]*
Radio Pakistan
Radio Prague
Swiss Radio Int'l
Voice of America (af)
Voice of America (as)
Voice of America (me)
Voice of Russia
WINB [M-F]
WWCR #3 [A]
1703
Radio Pyongyang
1710
China Radio Int'l*
Radio Australia*
1725
Radio New Zealand Int'l [F]*
1730
Radio Austria Int'l
Radio Netherlands Int'l
Radio Romania Int'l
Radio Sweden [M-F]
Vatican Radio [F]
Voice of Russia
1740
BBC (af) [W-M]*
1755
Radio New Zealand Int'l [M-W]*
1758
BBC (af) [W]*

1800 UTC
(2:00 PM EDT, 11:00 AM PDT)
All India Radio
BBC (af) (Newsdesk)
BBC (as pac) (Newsdesk)
BBC (eu) (Newsdesk)
BBC (south as) (Newsdesk)
Monitor Radio Int'l [M-A]
Radio Australia
Radio Cameroon
Radio Mozambique
Radio New Zealand Int'l [M-F]*
Radio Norway Int'l [S]
Radio Omdurman
Radio Tanzania
Radio Vlaanderen Int'l
Radio Yemen
Voice of America (af) [A-S]
Voice of America (af) [M-F]*
Voice of America (me)
Voice of Kenya
Voice of Russia
Voice of Vietnam
WHRI [M-F]
WINB [M-F]
WWCR #1 [S-F]
WWCR #3 [M-A]
1830
BBC (af) [A-S]*
R Slovakia Int'l
Radio Bangladesh
Radio Kuwait
Radio Nacional de Venezuela [M-A]
Radio Netherlands Int'l
Radio Tirana
Radio Yemen
Radio Yugoslavia
VOA (af) [A-S] (Special English)
VOA (me) (Special English)
Voice of Russia
1840
Voice of Greece [M-A]
1855
Radio New Zealand Int'l [M-H]*
1858
BBC (af) [M-F]*

1900 UTC
(3:00 PM EDT, 12:00 PM PDT)
All India Radio
BBC (af)
BBC (as pac) (Newshour)
BBC (eu) (Newshour)
China Radio Int'l
Deutsche Welle
Monitor Radio Int'l [M-A]
Radio Australia
Radio Budapest
Radio Bulgaria
Radio Japan
Radio Korea
Radio New Zealand Int'l
Radio Portugal Int'l [M-F]
Radio Romania Int'l [T-S]
Radio Tallinn [M/H]
Swiss Radio Int'l (eu)
Voice of America (af)
Voice of America (as)
Voice of America (me)
Voice of Israel
Voice of Russia
Voice of Vietnam
WHRI [M-F]
WINB [M-F]
WWCR #3 [S-H]
1901
Radio Romania Int'l [M]
1910
China Radio Int'l*
Radio Australia [M-F]*
1925
Deutsche Welle [M]*
1930
Deutsche Welle [T-F]*
Polish Radio [A-S]
Polish Radio [M-F]*
Radio Austria Int'l
Radio Finland
Radio Netherlands Int'l
1935
RAI Italy

2000 UTC
(4:00 PM EDT, 1:00 PM PDT)
BBC (af) (Newshour)
BBC (am)
BBC (as pac) [A]
BBC (eu)
BBC (eu) [S-F]*
China Radio Int'l
Deutsche Welle
KVOH [A-S]
Monitor Radio Int'l [M-A]
Radio Australia
Radio Canada Int'l
Radio New Zealand Int'l
Radio Prague
Swiss Radio Int'l
Voice of America (af) [A-S]
Voice of America (af) [M-F]*
Voice of America (me)
Voice of Greece [M-A]
Voice of Indonesia
Voice of Nigeria [M-F]
Voice of Russia
Voice of Turkey
WHRI [M-F]
WINB [M-F]
WWCR #3 [S]
2003
Radio Pyongyang
2007
Radio Damascus [M-F]
2010
China Radio Int'l*
Radio New Zealand Int'l [S-H]*
2025
RAI Italy
2030
Radio Netherlands Int'l
Radio Riga Int'l [M-F]
Radio Sweden [M-F]
Radio Thailand
Voice of Russia
Voice of Vietnam
2055
Radio Canada Int'l [M-F]
Voice of Indonesia [M]
2057
Radio Kuwait

2100 UTC
(5:00 PM EDT, 5:00 PM PDT)
All India Radio
BBC (af)
BBC (am)
BBC (as pac)
BBC (eu)
Canada (North-Quebec) [A-S]
China Radio Int'l
Deutsche Welle
KVOH [S]
Monitor Radio Int'l [M-A]
Radio Australia
Radio Budapest
Radio Bulgaria
Radio Cameroon
Radio Canada Int'l
Radio Damascus [F]
Radio Havana Cuba [M-A]
Radio Japan
Radio New Zealand Int'l [A-H]
Radio Romania Int'l
Radio Ukraine Int'l
Radio Vlaanderen Int'l [S-F]
Radio Yugoslavia
Spanish National Radio
Voice of America (af)
Voice of America (as)
Voice of America (me)
Voice of Russia
WWCR #1 [M-F]
WWCR #3 [M-A]
2110
China Radio Int'l*
Radio Damascus [S-M]
Radio New Zealand Int'l [M-H]*
2112
Radio Damascus [F]
2115
BBC (af)*
BBC (eu)*
Radio Damascus [T]
2120
Radio Cairo
2130
Radio Cairo
Radio Finland
Radio Havana Cuba [M-A]*
Radio Nacional de Venezuela [M-A]
Radio Sweden [M-F]
Voice of Russia [M-F]
2140
Voice of Greece [S-F]
2145
Radio Damascus [W]
Radio Korea

2200 UTC
(6:00 PM EDT, 3:00 PM PDT)
All India Radio
BBC (af) (Newsdesk)
BBC (am) (Newsdesk)
BBC (as pac) (Newsdesk)
BBC (eu) (Newsdesk)
Canada (North-Quebec) [S]
China Radio Int'l
Croatian Radio
Monitor Radio Int'l [M-A]
Radio Australia
Radio Canada Int'l
Radio Havana Cuba [M-A]
Radio Korea
Radio New Zealand Int'l [A-H]
RAI Italy
Spanish National Radio
Voice of America (as)
Voice of Armenia
Voice of Russia
Voice of Turkey
WHRI [M-F]
2203
Voice of Free China
2210
China Radio Int'l*
2215
Radio Cairo
2230
Radio Canada Int'l [A]
Radio Finland
VOA (as) (Special English)
Voice of Russia
2240
Radio Cairo
Voice of Greece [S-F]
2245
Org. of American States [M-F]*

2300 UTC
(7:00 PM EDT, 4:00 PM PDT)
All India Radio
AWR Latin America [H]*
BBC (af)
BBC (am) [S-F]
BBC (as pac)
BBC (eu)
Canada (North-Quebec) [A]
Croatian Radio
Deutsche Welle
KWHR (Hawaii) [M-F]
Monitor Radio Int'l [M-A]
Radio Australia
Radio Bulgaria
Radio Canada Int'l [A-S]
Radio Japan
Radio New Zealand Int'l [A-H]
Radio Vilnius
Voice of America (as)
Voice of Russia
WHRI [M-F]
WWCR #3 [S]
2303
Radio Pyongyang
2315
Radio Cairo
2330
Radio Netherlands Int'l
Radio Vlaanderen Int'l
Voice of Russia
Voice of Vietnam
2335
Voice of Greece [S-F]

www.americanradiohistory.com

OUT OF THIN AIR AND INTO THE THICK OF THINGS.

THE DRAKE R8A

The Drake R8A World Band Communications Receiver. Turn it on, tune it in, and as easy as that, you're hearing world events as they happen... uncensored and complete. And with the R8A's astounding clarity, it's almost as if you're there. In fact, no other communications receiver puts you closer to the action in even the most distant parts of the world.

If you're a hobbyist, you'll marvel at the R8A's simplicity of operation. If you're an expert, you'll admire the high-powered features. The Drake R8A offers superior performance in a complete package that includes built-in filters and other unique features that have made Drake the foremost name in world band communications. The R8A from Drake...you've got to hear it to believe it.

DRAKE. FOR A WORLD OF DIFFERENCE.

Order Now Risk-Free!

15-DAY MONEY BACK TRIAL

We are so confident you'll be impressed with the R8A's performance, we'll give you a full refund on your factory direct order, less shipping charges, if the R8A doesn't meet or exceed your expectations. Call for complete details.

Order Today, Factory Direct or call for the dealer nearest you **1-800-568-3795**

DRAKE

R.L. Drake Company, P.O. Box 3006, Miamisburg, Ohio 45343, U.S.A. ■ Sales Office: 513.866.2421 ■ Fax: 513.866.0806 ■ Service and Parts: 513.746.6990 ■ In Canada: 705.742.3122

© 1995 The R.L. Drake Company

DRAKE is a registered trademark of The R.L. Drake Company.

www.americanradiohistory.com

0000 UTC SHORTWAVE GUIDE 8:00 PM EDT 5:00 PM PDT

FREQUENCIES

0000-0030	Australia, Radio	9610as	13605pa	13745as	17750as
0000-0100 vl	Australia, VL8A Alice Spg	4835do			
0000-0100 vl	Australia, VL8K Katherine	5025do			
0000-0100 vl	Australia, VL8T Tent Crk	4910do			
0000-0015	Cambodia, Natl Voice of	11940as			
0000-0100	Canada, CBC N Quebec Svc	9625do			
0000-0100	Canada, CFCX Montreal	6005do			
0000-0100	Canada, CFRX Toronto	6070do			
0000-0100	Canada, CFVP Calgary	6030do			
0000-0100	Canada, CHNX Halifax	6130do			
0000-0100	Canada, CKZN St John's	6160do			
0000-0100	Canada, CKZU Vancouver	6160do			
0000-0100	China, China Radio Intl	9710na	11715na		
0000-0100	Costa Rica, AWR Alajuela	5030am	6150am	7375am	9725am
		13750am			
0000-0010	Croatia, Croatian Radio	5895eu	7370eu	13830eu	
0000-0027	Czech Rep, Radio Prague	5930na	7345na		
0000-0030	Egypt, Radio Cairo	9900na			
0000-0100	Ghana, Ghana Broadc Corp	3366do	4915do		
0000-0045	India, All India Radio	9705as	9950as	11745as	13750as
		15145as			
0000-0015 f/vl	Italy, IRRS Milan	7125va			
0000-0100	Lebanon, Voice of Hope	6280me			
0000-0100	Lebanon, Wings of Hope	9960va			
0000-0004	Lithuania, Radio Vilnius	7150na			
0000-0100	Malaysia, Radio	7295do			
0000-0100	Malaysia, RTM/Kota Kinab	5980do			
0000-0100	Malaysia, RTM/Kuching	7160do			
0000-0100	Netherlands, Radio	6020na	6165na	9845na	
0000-0100	New Zealand, R NZ Intl	15115pa			
0000-0050	North Korea, R Pyongyang	11335na	13760na	15130na	
0000-0100 vl	Papua New Guinea, NBC	4890do	9675do		
0000-0100	Philippines, FEBC/R Intl	15450as			
0000-0100	Russia, Voice of	7125na	7260na	9530na	9620na
		9720na	9750na	11730na	11750na
		11805na			
0000-0100	Spain, R Exterior Espana	9540na			
0000-0030	Thailand, Radio	9655as	9690af	11905af	
0000-0100	Ukraine, R Ukraine Intl	9685na	9750na	9835na	9860na
		11610na	11780na	11875na	11950na
0000-0030	Ukraine, R Ukraine Intl	4825na			

0000-0100	United Kingdom,BBC London	5965as	5970sa	5975va	6175na
		6195as	7325va	9410as	9590va
		9915sa	11750sa	11955as	
		15360as			
0000-0030	United Kingdom,BBC London	7110as	7180as	9580as	
		11945as			
0000-0100	USA, KAIJ Dallas TX	5810am			
0000-0100	USA, KTBN Salt Lk City UT	15590am			
0000-0100	USA, KVOH Los Angeles CA	9975am			
0000-0100	USA, KWHR Naalehu HI	17510au			
0000-0100	USA, Monitor Radio Intl	7535am	9430ca		
0000-0100	USA, VOA Washington DC	5995am	6130am	7215as	7405am
		9455am	9770as	9775am	1695am
		11760as	13740am	15185au	
		15205am			
		15290as	17735as	17820as	
0000-0100	USA, WEWN Birmingham AL	5825eu	7425na	15375eu	
0000-0100	USA, WHRI Noblesville IN	5745am			
0000-0100	USA, WJCR Upton KY	7490na	13595na		
0000-0100 m	USA, WRMI/R Miami Intl	9955am			
0000-0030 twhfa	USA, WRMI/R Miami Intl	9955am			
0000-0100	USA, WRNO New Orleans LA	7355am			
0000-0100	USA, WVHA Green Bush ME	9852eu			
0000-0100	USA, WWCR Nashville TN	5065am	9475am	13845am	
0000-0045	USA, WYFR Okeechobee FL	6085na			
0000-0030 mtwhfa	Yugoslavia, Radio	9580na	11870na		
0015-0030 sm	USA, VOA Washington DC	11835am	15155am		
0030-0100	Australia, Radio	9580pa	9660pa	11795as	13605pa
		13755as	15240pa	15365pa	15415as
		15510as	17795pa	17860pa	
0030-0100	Ecuador, HCJB Quito	9745am	15540am	21455am	
0030-0100	Iran, VOIRI Tehran	6175na	7180na	7260na	9022na
0030-0100	Netherlands, Radio	5905as	7305as		
0030-0100	Sri Lanka, SLBC Colombo	15425as			
0030-0100	Sweden, Radio	6065sa	9810sa		
0030-0100	Thailand, Radio	9655as	11905as	15370na	
0045-0100	USA, WYFR Okeechobee FL	6065na			
0050-0100	Italy, RAI Rome	9645na	11800na		

SELECTED PROGRAMS

Sundays

0000 KWHR (Hawaii): End Time Revival Network. Various speakers present an evangelical program.
0000 WHRI: Music (5.745). Contemporary christian music and inspiration.
0000 WWCR #1: What Does the Bible Say?. M. H. Reynolds exposes other religions.
0000 WWCR #3: World of Prophecy. Texe Marrs and a guest discuss the evils and pitfalls of today and the outlook for tomorrow.
0005 BBC (south as): Human Interest. The Rhythms of Life (6th,13th). See S 0350.
0005 Radio Thailand: News in Perspective. A current affairs program.
0030 KWHR (Hawaii): Rhema Radio Church. Kenneth Hagin, Jr. preaches from Tulsa, Oklahoma.
0030 WWCR #1: Constitutional Business (live). David Gossack.
0042 Radio Thailand: Business News. A recap of the day's financial activity.
0046 Radio Thailand: Social News. News about people and activities in Thailand.
0052 Radio Thailand: Sports News. A rundown of regional sports results.

Mondays

0000 KWHR (Hawaii): Music. See S 0230.
0000 WHRI: Music (5.745). See S 0000.
0000 WWCR #1: Truth House. Evangelistic teachings by E.C. Fultcher plus his global shortwave club.
0000 WWCR #3: Full Disclosure Live (live). Glen L. Roberts takes calls and discusses subjects dealing with privacy and surveillance technology.
0005 Radio Thailand: News in Perspective. See S 0005.
0030 BBC (af/eu/as pac): Popular Music. Ragga with David Rodigan (7th,14th). See S 0445.
0045 Radio Thailand: Business News. See S 0042.
0052 Radio Thailand: Social News. See S 0046.
0056 Radio Thailand: Sports News. See S 0052.

Tuesdays

0000 KWHR (Hawaii): Music. See S 0230.
0000 WHRI: Jack McLamb Show (live) (5.745). Jack McLamb.
0000 WWCR: Protecting Your Wealth (live). Financial commentary, investments, and politics dealing with money issues.
0000 WWCR: The Baker Report (Page 2) (live). Across the nation and around the world with Jeff Baker (2nd hour).
0005 Radio Thailand: News in Perspective. See S 0005.
0030 BBC (as pac): Background Current Affairs Feature. History Today. See T 0530.
0045 Radio Thailand: Business News. See S 0042.
0052 Radio Thailand: Social News. See S 0046.
0056 Radio Thailand: Sports News. See S 0052.

Wednesdays

0000 KWHR (Hawaii): Music. See S 0230.
0000 WHRI: Jack McLamb Show (live) (5.745). See T 0000.
0000 WWCR: The Baker Report (Page 2) (live). See T 0000.
0005 Radio Thailand: News in Perspective. See S 0005.
0030 BBC (af/am/eu): Background Current Affairs Feature. History Today. See T 0530.
0045 Radio Thailand: Business News. See S 0042.
0052 Radio Thailand: Social News. See S 0046.
0056 Radio Thailand: Sports News. See S 0052.

Thursdays

0000 KWHR (Hawaii): Music. See S 0230.
0000 WHRI: Jack McLamb Show (live) (5.745). See T 0000.
0000 WWCR: The Baker Report (Page 2) (live). See T 0000.
0005 Radio Thailand: News in Perspective. See S 0005.
0015 BBC (south as) General Feature. Pick of the World. See M 0630.
0045 Radio Thailand: Business News. See S 0042.
0052 Radio Thailand: Social News. See S 0046.
0056 Radio Thailand: Sports News. See S 0052.

Fridays

0000 KWHR (Hawaii): Music. See S 0230.
0000 WHRI: Jack McLamb Show (live) (5.745). See T 0000.
0000 WWCR: The Baker Report (Page 2) (live). See T 0000.
0005 Radio Thailand: News in Perspective. See S 0005.
0045 Radio Thailand: Business News. See S 0042.
0052 Radio Thailand: Social News. See S 0046.
0056 Radio Thailand: Sports News. See S 0052.

Saturdays

0000 KWHR (Hawaii): Music. See S 0230.
0000 WHRI: Jack McLamb Show (live) (5.745). See T 0000.
0000 WWCR: The Baker Report (Page 2) (live). See T 0000.
0005 Radio Thailand: News in Perspective. See S 0005.
0015 BBC (south as): Human Interest. From Nairobi to Beijing. See A 1245.
0040 Radio Thailand: News of the Week. Summary of the past week's major news events.
0045 Radio Thailand: Business News. See S 0042.
0048 Radio Thailand: Social News. See S 0046.
0053 Radio Thailand: Sports News. See S 0052.

Guide to Shortwave Programs 1994 Edition

Updated this year with over 20,000 program listings from more than 100 worldwide broadcasters, you can now enjoy a complete 24 hour-a-day listing of English-Language shortwave programs!

Only $16.95 plus $5 UPS

Grove Enterprises, Inc.
1-800-438-8155

www.americanradiohistory.com

FREQUENCIES

0100-0200	Australia, AF Radio	13535as			
0100-0200	Australia, Radio	9580pa	9660pa	13605pa	13745as
		13755as	15240pa	15245as	15365pa
		15415as	15510as	17715as	17750as
		17795pa	17860pa	17880as	
0100-0200 vl	Australia, VL8A Alice Spg	4835do			
0100-0200 vl	Australia, VL8K Katherine	5025do			
0100-0200 vl	Australia, VL8T Tent Crk	4910do			
0100-0200	Canada, CBC N Quebec Svc	9625do			
0100-0200	Canada, CFCX Montreal	6005do			
0100-0200	Canada, CFRX Toronto	6070do			
0100-0200	Canada, CFVP Calgary	6030do			
0100-0200	Canada, CHNX Halifax	6130do			
0100-0200	Canada, CKZN St John's	6160do			
0100-0200	Canada, CKZU Vancouver	6160do			
0100-0200	Canada, RCI Montreal	6120am	9535am	9755am	11940am
		13670am			
0100-0130	Costa Rica, AWR Alajuela	5030ca	6150sa	7375am	13750am
0100-0200	Costa Rica, R Peace Intl	7385am	9400am	15050am	
0100-0110	Croatia, Croatian Radio	5895eu	7370eu	13830eu	
0100-0200	Cuba, Radio Havana Cuba	6000na	9830na		
0100-0127	Czech Rep, Radio Prague	7345na	9405na		
0100-0200	Ecuador, HCJB Quito	9745am	15540am	21455am	
0100-0150	Germany, Deutsche Welle	6040na	6085na	6110na	6145na
		9555na	9640na	11740na	11865na
0100-0200	Guatemala, Radio Cultural	3300do			
0100-0130	Hungary, Radio Budapest	6000na	9835na	11910na	
0100-0130	Iran, VOIRI Tehran	6175na	7180na	7260na	9022na
0100-0115	Italy, RAI Rome	9645na	11800na		
0100-0200	Japan, NHK/Radio	5960na	9680as	11840as	11860as
		11900as	11910as	17810as	17845as
0100-0200	Lebanon, Wings of Hope	9960va			
0100-0200 smtwh	Malaysia, Radio	7295do			
0100-0130	Moldova, R Moldova Intl	9540na			
0100-0200	Netherlands, Radio	5905as	7305as		
0100-0125	Netherlands, Radio	6020na	6165na	9845na	
0100-0200	New Zealand, R NZ Intl	15115pa			
0100-0130 m	Norway, Radio Norway Intl	7480na	9560na		
0100-0200 vl	Papua New Guinea, NBC	4890do	9675do		
0100-0200	Philippines, FEBC/R Intl	15450as			
0100-0200	Russia, Voice of	9530na	9620na	11750na	12050na
		13645na	13665na	15180na	15425na
		15580as			
0100-0200	Slovakia, AWR	9465as			
0100-0127	Slovakia, R Slovakia Intl	5930na	7300na	9440sa	
0100-0200	South Korea, R Korea Intl	7550eu	11810na	15575sa	
0100-0200	Spain, R Exterior Espana	9540na			
0100-0200	Sri Lanka, SLBC Colombo	15425as			
0100-0130	Switzerland, Swiss R Intl	5890na	6135na	9885na	9905na
0100-0200	United Kingdom,BBC London	5970sa	5975va	6175na	6195as
		7325va	9410as	9590va	9605as
		9915sa	11750sa	11955as	15360as
0100-0200	USA, KAIJ Dallas TX	13740am	13815am		
0100-0200	USA, KTBN Salt Lk City UT	7510am			
0100-0200	USA, KVOH Los Angeles CA	9975am			
0100-0200	USA, KWHR Naalehu HI	17510au			
0100-0200	USA, Monitor Radio Intl	7535na	9430am		
0100-0200	USA, VOA Washington DC	5995am	6130am	7405am	9455am
		9775am	13740am	15170as	15205am
		15250as	17740as	21550as	
0100-0200	USA, WEWN Birmingham AL	5825eu	7425na		
0100-0200	USA, WHRI Noblesville IN	5745am			
0100-0200	USA, WJCR Upton KY	7490na	13595na		
0100-0200	USA, WRNO New Orleans LA	7355am			
0100-0200	USA, WVHA Green Bush ME	9852eu			
0100-0200	USA, WWCR Nashville TN	5065am	5935am	7435am	13845am
0100-0200	USA, WYFR Okeechobee FL	6065na	9505na		
0100-0200	Vietnam, Voice of	7250na	9840na	15010na	
0130-0200	Austria, R Austria Intl	9655na			
0130-0150	Greece, Voice of	9420na	9935na	11645na	
0130-0200	Netherlands, Radio	9860as			
0130-0200 twhfa	Portugal, Radio	6175na	9570na		
0130-0200	Sweden, Radio	9695au			
0140-0200	Vatican State, Vatican R	5980as	7335as		
0145-0200	Albania, R Tirana Intl	6145na	7160na		

SELECTED PROGRAMS

Sundays

0100 KWHR (Hawaii): The Water of Life Broadcast. Doyle Davidson preaches from Plano, Texas.
0100 Radio for Peace Int l: FIRE (Feminist Int'l Radio Endeavour). Featuring women's voices on every imaginable topic.
0100 WHRI: The Hour of Courage (5.745). Ron Wilson talks politics and the precious metals market.
0100 WWCR #1: The Old Record Shop. Thirty minutes of selections of music from the days of the 78 rpm record. Recommended.
0100 WWCR #3: The American Way. The rare coin market.
0105 RAI Italy: Tunes for Whistling.
0115 BBC (af/as pac/eu): Human Interest. From Nairobi to Beijing. See A 1245.
0130 WWCR #1: The Lights of Spiritual Guidance. Gospel and song with J. Harold Lowman.

Mondays

0100 KWHR (Hawaii): Remnant Church of God. Ruth Tetzlaff evangelizes from Wisconsin.
0100 Radio for Peace Int l: FIRE (Feminist Int'l Radio Endeavour). See S 0100.
0100 WWCR #1: World Wide Christian Center. No information available.
0100 WWCR #3: Free at Last. Mike Seymour with a half-hour of music and scripture.
0105 RAI Italy: No Parking.
0115 BBC (af/as pac/eu) Science and Technology. Medicine 2020 (7th,14th). The world's top medical experts predict the advances they see coming in the next 25 years.
0130 KWHR (Hawaii): Music. See S 0230.

Tuesdays

0100 KWHR (Hawaii): Music. See S 0230.
0100 Radio for Peace Int l: FIRE (Feminist Int'l Radio Endeavour). See S 0100.
0100 WHRI: Radio Marti (9.495). The Spanish language program beamed to Cuba by the US Government.
0100 WHRI: The Prophecy Club (5.745). A discussion of Bible prophecy from Topeka, Kansas.
0100 WWCR: Protecting Your Wealth (live). See T 0000.
0105 RAI Italy: Light Music.
0115 BBC (af/as pac/eu): Popular Music. Rock Salad. Return of this series of rock and heavy metal music with the emphasis on loud guitars.
0130 WHRI: The Hour of Courage (5.745). See S 0100.

Wednesdays

0100 KWHR (Hawaii): Music. See S 0230.
0100 Radio for Peace Int'l: FIRE (Feminist Int'l Radio Endeavour). See S 0100.
0100 WHRI: Radio Marti (9.495). See T 0100.
0100 WHRI: The Prophecy Club (5.745). See T 0100.
0100 WWCR: Protecting Your Wealth (live). See T 0000.
0105 RAI Italy: Window on the Bay.
0130 BBC (af/as pac/eu) Classical Music. Music of the Motherland (9th,16th). See M 1230.
0130 WHRI: The Hour of Courage (5.745). See S 0100.

Thursdays

0100 KWHR (Hawaii): Music. See S 0230.
0100 Radio for Peace Int'l: FIRE (Feminist Int'l Radio Endeavour). See S 0100.
0100 WHRI: Radio Marti (9.495). See T 0100.
0100 WHRI: The Prophecy Club (5.745). See T 0100.
0100 WWCR: Protecting Your Wealth (live). See T 0000.
0105 RAI Italy: Light Music.
0130 WHRI: The Hour of Courage (5.745). See S 0100.
0135 BBC (af/as pac/eu): Human Interest. The Rhythms of Life (3rd,10th,17th). See S 0350.

Fridays

0100 KWHR (Hawaii): Music. See S 0230.
0100 Radio for Peace Int l: FIRE (Feminist Int'l Radio Endeavour). See S 0100.
0100 WHRI: Radio Marti (9.495). See T 0100.
0100 WHRI: The Prophecy Club (5.745). See T 0100.
0100 WWCR: Protecting Your Wealth (live). See T 0000.
0105 RAI Italy: Light Music.
0130 WHRI: The Hour of Courage (5.745). See S 0100.

Saturdays

0100 KWHR (Hawaii): Music. See S 0230.
0100 Radio for Peace Int l: FIRE (Feminist Int'l Radio Endeavour). See S 0100.
0100 WHRI: Radio Marti (9.495). See T 0100.
0100 WHRI: The Prophecy Club (5.745). See T 0100.
0100 WWCR: Protecting Your Wealth (live). See T 0000.
0105 RAI Italy: Contrast in Music.
0130 WHRI: The Hour of Courage (5.745). See S 0100.

THANK YOU ...

Additional contributors to this month's Shortwave Guide: John Babbis, Silver Spring, MD; Carl Craig, Shelbyville, TN; Bob Fraser, Cohasset, MA; John L. Gomer, Sacramento, CA; Semon Hachikian, Upper Darby, PA; Kevin Hecht, Devon, PA; Frank Hillton, Charleston, SC; Stanley Mayo, Winslow, ME; Jim Moats, Ravenna, OH; Robert E. Thomas II, Robert G. Travers, Parkton, MD; Bridgeport, CT; Loyd Van Horn, Brasstown, NC; Hugh Waters, Singapore; NASWA *Journal; Fine Tuning*; BBCMS; *BBC Worldwide*; BBC *Summary of World Broadcasts*; World DX Club; Grove Enterprises BBS; Internet Shortwave Newsgroup via Larry Van Horn.

www.americanradiohistory.com

0200 UTC SHORTWAVE GUIDE 10:00 PM EDT 7:00 PM PDT

FREQUENCIES

0200-0300 twhfa	Argentina, RAE	11710am			
0200-0300	Australia, Radio	9580pa	9660pa	13605pa	15240pa
		15365pa	15415as	15510as	17715as
		17750as	17795pa	17860pa	
0200-0300 vl	Australia, VL8A Alice Spg	4835do			
0200-0300 vl	Australia, VL8K Katherine	5025do			
0200-0300 vl	Australia, VL8T Tent Crk	4910do			
0200-0300 vl	Canada, CBC N Quebec Svc	9625do			
0200-0300	Canada, CFCX Montreal	6005do			
0200-0300	Canada, CFRX Toronto	6070do			
0200-0300	Canada, CFVP Calgary	6030do			
0200-0300	Canada, CHNX Halifax	6130do			
0200-0300	Canada, CKZN St John's	6160do			
0200-0300	Canada, CKZU Vancouver	6160do			
0200-0300	Canada, RCI Montreal	6120na	9535am	9755am	11940am
		13670am			
0200-0300	Costa Rica, R Peace Intl	7385am	9400am	12150am	
0200-0210	Croatia, Croatian Radio	5895eu	7370eu	13830eu	
0200-0300	Cuba, Radio Havana Cuba	6000na	9820na	9830na	
0200-0300	Ecuador, HCJB Quito	9745am	15540am	21455am	
0200-0300	Egypt, Radio Cairo	9475na			
0200-0250	Germany, Deutsche Welle	7285as	9615as	9640as	9690as
		11945as	11965as	12045as	
0200-0300	Kenya, Kenya Broadc Corp	4885do	4935do		
0200-0300 smtwh	Malaysia, Radio	7295do			
0200-0230	Myanmar, Radio	5990do			
0200-0230	Netherlands, Radio	5905as	7305as	9860as	11655as
0200-0300	New Zealand, R NZ Intl	15115pa			
0200-0300 vl	Papua New Guinea, NBC	4890do	9675do		
0200-0300	Romania, R Romania Intl	5990na	6155na	9510na	9570na
		11940na			
0200-0300	Russia, Voice of	9530af	9620na	11750na	11805na
		12050na	13645as	13665na	13790na
		15180na	15425na	15580as	
0200-0230	Sri Lanka, SLBC Colombo	15425as			
0200-0300	Taiwan, VO Free China	5950na	9680na	11740ca	11825as
		15345as			
0200-0300	United Kingdom,BBC London	5970sa	5975va	6135af	6175na
		6195eu	7325va	9410va	9605as
		9760as	9915sa	11955as	15360as
0200-0300	USA, KAIJ Dallas TX	5810am			
0200-0300	USA, KTBN Salt Lk City UT	7510am			
0200-0300	USA, KVOH Los Angeles CA	9975am			
0200-0300	USA, KWHR Naalehu HI	17510au			
0200-0300	USA, Monitor Radio Intl	5850na	9430am		
0200-0300	USA, VOA Washington DC	6130sa	7115as	7205as	7215as
		9455sa	9740as	11705as	15250as
		17740as	21550as		
0200-0230 twhfa	USA, VOA Washington DC	5995am	7405am	9775am	11580am
		13740am	15120am	15205am	
0200-0300	USA, WEWN Birmingham AL	7425na			
0200-0300	USA, WHRI Noblesville IN	5745am			
0200-0300	USA, WJCR Upton KY	7490na	13595na		
0200-0300	USA, WRNO New Orleans LA	7355am			
0200-0300 thas	USA, WVHA Green Bush ME	7465eu			
0200-0300	USA, WWCR Nashville TN	5065am	5935am	7435am	
0200-0300	USA, WYFR Okeechobee FL	6065na	9505na		
0200-0230	Vietnam, Voice of	7250na	9840na	15010na	
0230-0300	Albania, R Tirana Intl	6145na	7160na		
0230-0300	Austria, R Austria Intl	9655na	9870sa	13730sa	
0230-0300	Hungary, Radio Budapest	6000na	9835na	11910na	
0230-0245	Pakistan, Radio	7290as	15190as	17705as	17725as
		21730as			
0230-0300	Philippines, R Pilipinas	17760me	17865me	21580me	
0230-0300	Sweden, Radio	7120na	9850na		
0250-0300	Vatican State, Vatican R	6095na	7305na	9605na	

SELECTED PROGRAMS

Sundays

0200 KWHR (Hawaii): Grace in Action. Paul Kamanu.
0200 Radio for Peace Int l: World of Radio. Glenn Hauser's essential program for the shortwave listener.
0200 WHRI: Music (9.495). See S 0000.
0200 WHRI: World of Prophecy (5.745). Texe Marrs and a guest discuss the evils and pitfalls of today and the outlook for tomorrow.
0200 WWCR: Spectrum (live). SWLs and Hams call 1-800-774-7435 with technical questions and comments.
0230 BBC (am) Classical Music. Music of the Motherland (6th,13th). See M 1230.
0230 KWHR (Hawaii): Music. Contemporary christian music and inspiration.
0230 Radio for Peace Int l: Amnesty International Reports. Human rights records of culpable countries are examined in this monthly program.
0245 KWHR (Hawaii): Israel Prayer Chain. B. Honeysucker.

Mondays

0200 KWHR (Hawaii): The Methodist Hour. No information available.
0200 Radio for Peace Int l: The Global Student Voice (biweekly). An international forum for students sponsored by the UN.
0200 Radio for Peace Int l: Working Together (biweekly). A program for both children and their families about the concerns expressed by youth.
0200 WHRI: Christ in Us Broadcast (9.495). Rudy de la Rosa evangelizes in English and Spanish.
0200 WHRI: Move of the Spirit (5.745). Talk about everyday Christian living from Heart Attitudes Ministry.
0200 WHRI: The America's Promise Broadcast (5.745). Dave Farley preaches.
0200 WHRI: The Water of Life Broadcast (9.495). Doyle Davidson evangelizes from Plano, Texas.
0200 WWCR #1: World of Prophecy. See S 0000.
0230 KWHR (Hawaii): A Study in God's Word. See S 0615.
0230 Radio for Peace Int l: My Green Earth. An environment program for children that explores the world of animals, plants, and cultures.
0230 WHRI: Truth for the World (5.745). Churches of Christ spokesman Jim Dearman examines Scripture.
0245 KWHR (Hawaii): Battle Line. A production of Indiana Christian University.

Tuesdays

0200 KWHR (Hawaii): Music. See S 0230.
0200 Radio for Peace Int l: Radio Democracy. Michael Parenti comments on the status of US Government agencies and institutions in this series.
0200 WHRI: Radio Marti (9.495). See T 0100.
0200 WWCR #1: Truth House. See M 0000.
0205 WWCR #3: Radio Free America (live). Tom Valentine hosts this talk/interview program.
0206 WHRI: For the People (repeat) (5.745). Chuck Harder talk radio.
0230 Radio for Peace Int l: RFPI Reports. See S 2345.
0245 Radio for Peace Int l: UNESCO. A feature program of the United Nations focusing on world educational, scientific, or cultural matters.

Wednesdays

0200 KWHR (Hawaii): Music. See S 0230.
0200 Radio for Peace Int l: The Far Right Radio Review. See M 0600.
0200 WHRI: Radio Marti (9.495). See T 0100.
0200 WWCR #1: Truth House. See M 0000.
0205 WWCR #3: Radio Free America (live). See T 0205.
0206 WHRI: For the People (repeat) (5.745). See T 0206.
0230 Radio for Peace Int l: RFPI Reports. See S 2345.
0254 Radio for Peace Int l: United Nations. See T 0500.

Thursdays

0200 KWHR (Hawaii): Music. See S 0230.
0200 Radio for Peace Int l: Second Opinion. Matthew Rothschild, editor of "the Progressive", talks to a wide variety of guests.
0200 WHRI: Radio Marti (9.495). See T 0100.
0200 WWCR #1: Truth House. See M 0000.
0205 WWCR #3: Radio Free America (live). See T 0205.
0206 WHRI: For the People (repeat) (5.745). See T 0206.
0230 Radio for Peace Int l: RFPI Reports. See S 2345.
0235 Radio for Peace Int l: UNESCO. See T 0245.
0240 Radio for Peace Int l: Along the Color Line. Commentaries relevant to contemporary African-American issues featuring Dr. Manning Marable.

Fridays

0200 KWHR (Hawaii): Music. See S 0230.
0200 Radio for Peace Int l: Living Enrichment Center. See M 0400.
0200 WHRI: Radio Marti (9.495). See T 0100.
0200 WWCR #1: Truth House. See M 0000.
0205 WWCR #3: Radio Free America (live). See T 0205.
0206 WHRI: For the People (repeat) (5.745). See T 0206.
0230 Radio for Peace Int l: RFPI Reports. See S 2345.
0235 Radio for Peace Int l: The Neumaier Report. Poughkeepsie NY columnist, Dr John Neumaier, comments on a wide variety of socially relevant issues.

Saturdays

0200 KWHR (Hawaii): Music. See S 0230.
0200 Radio for Peace Int l: Making Contact. See S 0400.
0200 WHRI: Radio Marti (9.495). See T 0100.
0200 WWCR #1: Truth House. See M 0000.
0205 WWCR #3: Radio Free America (live). See T 0205.
0206 WHRI: For the People (repeat) (5.745). See T 0206.
0230 Radio for Peace Int l: RFPI Reports. See S 2345.
0245 Radio for Peace Int l: United Nations. See T 0500.

RadioMap™

Transmitter sites in your area are researched and marked on a beautiful 8 1/2 x 11 full color plot. See FCC licensed sites from VLF through microwave including police, fire, cellular phone sites, business, industrial, broadcasters and selected FAA transmitter sites. Callsigns, frequency assignments, and names provided. Ham radio stations not included.

You choose the map center location–your neighborhood, near your office, around sports stadiums–anywhere within the United States. We adjust map coverage for best readability, depending on transmitter site density.

Invaluable to radio professionals and hobbyists for identifying towers, sources of radio interference etc. Send nearest street intersection and check for $25.95 payable to Robert Parnass.

Robert Parnass, M.S.
Radio Electronics Consulting
2350 Douglas Road, Oswego, IL 60543

www.americanradiohistory.com

FREQUENCIES

0300-0400	Australia, Radio	9580pa	9660pa	13605pa	15240pa
		15245as	15365pa	15510as	17750pa
		17795pa	17860pa		
0300-0400 vl	Australia, VL8A Alice Spg	4835do			
0300-0400 vl	Australia, VL8K Katherine	5025do			
0300-0400 vl	Australia, VL8T Tent Crk	4910do			
0300-0400	Bahrain, Radio	6010do			
0300-0400	Botswana, Radio	4830at	7255af		
0300-0400 vl	Canada, CBC N Quebec Svc	9625do			
0300-0400	Canada, CFCX Montreal	6005do			
0300-0400	Canada, CFRX Toronto	6070do			
0300-0400	Canada, CFVP Calgary	6030do			
0300-0400	Canada, CHNX Halifax	6130do			
0300-0400	Canada, CKZN St John's	6160do			
0300-0400	Canada, CKZU Vancouver	6160do			
0300-0400	China, China Radio Intl	9690na	9710na	11715na	
0300-0400	Costa Rica, R Peace Intl	7385am	9400am		
0300-0400 vl	Costa Rica,Faro del Carib	5055do			
0300-0310	Croatia, Croatian Radio	5895eu	7370eu	13830eu	
0300-0400	Cuba, Radio Havana Cuba	6000na	9820na	9830na	
0300-0327	Czech Rep, Radio Prague	5930na	7345na		
0300-0400	Ecuador, HCJB Quito	9745am	15540am	21455am	
0300-0330	Egypt, Radio Cairo	9475na			
0300-0330	Germany, Deutsche Welle	6085na	6185na	9535na	9615na
		9640na	11750na		
0300-0400	Guatemala, Radio Cultural	3300do			
0300-0400	Japan, NHK/Radio	9680na	11840as	17810as	
0300-0330	Japan, NHK/Radio	11885na	11895ca	15230na	
0300-0400	Kenya, Kenya Broadc Corp	4885do	4935do		
0300-0400 smtwh	Malaysia, Radio	7295do			
0300-0330 tw	Mongolia, R Ulan Bator	9960na	12000na		
0300-0325	Netherlands, Radio	9860as	11655as		
0300-0400	New Zealand, R NZ Intl	15115pa			
0300-0400 vl	Papua New Guinea, NBC	4890do	9675do		
0300-0330	Philippines, R Pilipinas	17760me	17865me	21580me	
0300-0400	Russia, Voice of	9620na	9665na	12050na	13605na
		13645na	13665na	15180na	15425na
		15580na			

0300-0400	S Africa, Channel Africa	3220af	5955af		
0300-0400	Taiwan, VO Free China	5950na	9680na	11745as	11825as
		15345as			
0300-0330	Thailand, Radio	9655as	11905na	15370na	
0300-0400	Turkey, Voice of	9445na			
0300-0400	Ukraine, R Ukraine Intl	7405na	9685na	9835na	9860na
		11875na			
0300-0330	United Kingdom,BBC London	5970sa	6135af	7325va	9760as
		9915sa	15360as	15380as	
0300-0400	United Kingdom,BBC London	3255af	5975va	6005af	6175na
		6180eu	6190af	6195eu	9410va
		9600af	9605as	11760me	12095af
		15310as			
0300-0400	USA, KAIJ Dallas TX	5810am			
0300-0400	USA, KTBN Salt Lk City UT	7510am			
0300-0400	USA, KVOH Los Angeles CA	9975am			
0300-0400	USA, KWHR Naalehu HI	17510au			
0300-0400	USA, Monitor Radio Intl	5850na	9455af		
0300-0400	USA, VOA Washington DC	6035af	7105af	7280af	7340af
		7405af	9575af	9885af	
0300-0400	USA, WEWN Birmingham AL	7425na			
0300-0400	USA, WHRI Noblesville IN	5745am			
0300-0400	USA, WJCR Upton KY	7490na	13595na		
0300-0400	USA, WRNO New Orleans LA	7395am			
0300-0400 tha	USA, WVHA Green Bush ME	7465eu			
0300-0400	USA, WWCR Nashville TN	5065am	5935am	7435am	
0300-0400	USA, WYFR Okeechobee FL	6065na	9505na		
0300-0315	Vatican State, Vatican R	6095na	7305na		
0300-0400	Zimbabwe, ZBC/Radio 3	3306do	3396do	4828do	
0315-0330 s	Greece, Voice of	9420na	9935na	11645na	
0320-0350	Vatican State, Vatican R	5865af	7360af	9725af	
0330-0357	Czech Rep, Radio Prague	9480as			
0330-0400 fas	Mongolia, R Ulan Bator	7290na	12000na		
0330-0400	Sweden, Radio	7120na	9850na		
0330-0400	Tanzania, Radio	5050af			
0330-0400	UAE, Radio Dubai	11945na	13675na	15400na	21485na
0330-0400	United Kingdom,BBC London	9610af	11730af	11955as	15280as
0340-0350	Greece, Voice of	9420na	9935na	11645na	
0345-0400	Tajikistan, Radio	7245as			

SELECTED PROGRAMS

Sundays

0300 KWHR (Hawaii): Truth House. Evangelistic teachings by E.C. Fultcher plus his global shortwave club.
0300 Radio for Peace Int l: CounterSpin. Fairness and Accuracy in Media (FAIR) examines how the media reports key stories.
0300 WHRI: Biblical Studies Institute (5.745). Bob Tref evangelizes from Rapid City, South Dakota.
0300 WHRI: Music (9.495). See S 0000.
0300 WWCR #3: Morning Watch Chapel. Terry Parker of California teaches from the Bible.
0305 WWCR #1: The View from Europe. Harvey Thomas presents the European point of view on current events.
0310 WWCR #1: The Spoken Word of God. Alexander Scourby with the King James version of The New Testament.
0315 WWCR #1: America's Promise Ministries. Dave Barley teaches the bible from Idaho.
0330 Radio for Peace Int l: RFPI's Mailbag. The latest news and happenings at RFPI and responses to listener letters.
0330 WHRI: The Big Beat! (5.745). NEW! The latest reissues of blues, R&B, doo-wop, rockabilly and other roots music.
0345 WWCR #1: A Study in God's Word. From North Carolina, Hezakiah Smith reads Scripture.
0350 BBC (am): Human Interest. The Rhythms of Life (6th,13th). It's everwhere; from the urban landscape to the natural world.

Mondays

0300 KWHR (Hawaii): The Sword of the Spirit. Mike Keyes evangelizes.
0300 Radio for Peace Int l: New Dimensions Radio. Conversations with innovative thinkers whose ideas are on the leading edge of change.
0300 WHRI: Lester Sumrall (5.745). The head of the Christian Center Church preaches.
0300 WHRI: Music (9.495). See S 0000.
0300 WWCR #1: The Antishyster. No information available.
0300 WWCR #3: The Extraordinary Science Radio Hour. J.W. McGinnis of the Tesla Society.
0330 BBC (am): Quiz. Brain of Britain. See A 1230.
0330 KWHR (Hawaii): World of Radio. Glenn Hauser's communications program for shortwave radio listeners.

Tuesdays

0300 KWHR (Hawaii): Music. See S 0230.
0300 Radio for Peace Int l: Steppin' Out of Babylon. Sue Supriano interviews people who speak out against injustice and stand up for freedom and liberty.
0300 WHRI: Radio Marti (9.495). See T 0100.
0300 WWCR #1: Focus on the Family. Psychologist James Dobson on everyday family matters.
0305 WWCR #3: Radio Free America (live). See T 0205.
0307 WHRI: For the People (repeat) (5.745). See T 0206.
0330 Radio for Peace Int l: Voices of Our World. Maryknoll missionary Steve De Mott hosts this social justice magazine program.
0330 WWCR #1: The Old Time Religion Hour. Brother Hogan will send you a Bible.
0345 WWCR #1: Bible Prophecy for Today. Tom Benvenutti analyzes the news and its application to Bible prophecy.

Wednesdays

0300 KWHR (Hawaii): Music. See S 0230.
0300 Radio for Peace Int l: World of Radio. See S 0200.
0300 WHRI: Radio Marti (9.495). See T 0100.
0300 WWCR #1: Focus on the Family. See T 0300.
0305 WWCR #3: Radio Free America (live). See T 0205.
0307 WHRI: For the People (repeat) (5.745). See T 0206.
0330 Radio for Peace Int l: RFPI's Mailbag. See S 0330.
0330 WWCR #1: The Old Time Religion Hour. See T 0330.
0345 BBC (am): Background Current Affairs Feature. History Today. See T 0530.
0345 WWCR #1: Bible Prophecy for Today. See T 0345.

Thursdays

0300 KWHR (Hawaii): Music. See S 0230.
0300 Radio for Peace Int l: This Way Out. A lesbian and gay radio magazine.
0300 WHRI: Radio Marti (9.495). See T 0100.
0300 WWCR #1: Focus on the Family. See T 0300.
0305 WWCR #3: Radio Free America (live). See T 0205.
0307 WHRI: For the People (repeat) (5.745). See T 0206.
0330 Radio for Peace Int l: New Dimensions Radio. See M 0300.
0330 WWCR #1: The Old Time Religion Hour. See T 0330.
0345 BBC (am) Science and Technology. Medicine 2020 (2nd,9th,16th). See T 0445.
0345 WWCR #1: Bible Prophecy for Today. See T 0345.

Fridays

0300 KWHR (Hawaii): Music. See S 0230.
0300 Radio for Peace Int l: Alternative Radio. Featured speakers critique on multiculturalism, environment, racism,US foreign policy, media, and indigenous rights.
0300 WHRI: Radio Marti (9.495). See T 0100.
0300 WWCR #1: Focus on the Family. See T 0300.
0305 WWCR #3: Radio Free America (live). See T 0205.
0307 WHRI: For the People (repeat) (5.745). See T 0206.
0330 WWCR #1: The Old Time Religion Hour. See T 0330.
0345 BBC (am): Human Interest. From Nairobi to Beijing. See A 1245.
0345 WWCR #1: Bible Prophecy for Today. See T 0345.

Saturdays

0300 KWHR (Hawaii): The Hour of Courage. Ron Wilson talks politics and the precious metals market.
0300 Radio for Peace Int l: New Dimensions Radio. See M 0300.
0300 WHRI: Radio Marti (9.495). See T 0100.
0300 WWCR #1: Focus on the Family. See T 0300.
0305 WWCR #3: Radio Free America (live). See T 0205.
0307 WHRI: For the People (repeat) (5.745). See T 0206.
0330 KWHR (Hawaii): Music. See S 0230.
0330 WWCR #1: The Old Time Religion Hour. See T 0330.
0345 WWCR #1: Bible Prophecy for Today. See T 0345.

www.americanradiohistory.com

0400 UTC SHORTWAVE GUIDE 12:00 PM EDT 9:00 PM PDT

FREQUENCIES

0400-0500	Australia, Radio	9580pa	9660pa	13605as	15240pa
		15365pa	15415pa	15510pa	17750as
		17795pa	17860pa		
0400-0500 vl	Australia, VL8A Alice Spg	4835do			
0400-0500 vl	Australia, VL8K Katherine	5025do			
0400-0500 vl	Australia, VL8T Tent Crk	4910do			
0400-0500	Bahrain, Radio	6010do			
0400-0500	Bulgaria, Radio	9700na	11720na		
0400-0500	Canada, CFCX Montreal	6005do			
0400-0500	Canada, CFRX Toronto	6070do			
0400-0500	Canada, CFVP Calgary	6030do			
0400-0500	Canada, CHNX Halifax	6130do			
0400-0500	Canada, CKZN St John's	6160do			
0400-0500	Canada, CKZU Vancouver	6160do			
0400-0430	Canada, RCI Montreal	9650me	11835me	11905me	15275me
0400-0500	China, China Radio Intl	9560na	9730na	11680na	
0400-0500	Costa Rica, R Peace Intl	7385am	9400am		
0400-0410	Croatia, Croatian Radio	5895eu	7370eu	13830eu	
0400-0500	Cuba, Radio Havana Cuba	6180na	9820na	9830na	
0400-0430	Ecuador, HCJB Quito	9745am	15540am	21455am	
0400-0450	Germany, Deutsche Welle	6015af	6120af	6185af	7150af
		7225af	9565af	9765af	11765af
0400-0500 twtfa	Guatemala, Radio Cultural	3300do			
0400-0415	Israel, Kol Israel	7465na	9435na		
0400-0500	Kenya, Kenya Broadc Corp	4885do	4935do		
0400-0500	Lebanon, Wings of Hope	9960va			
0400-0500 smtwh	Malaysia, Radio	7295do			
0400-0458	New Zealand, R NZ Intl	15115pa			
0400-0450	North Korea, R Pyongyang	15180as	15230as	17765as	
0400-0430 m	Norway, Radio Norway Intl	7480na			
0400-0500 vl	Papua New Guinea, NBC	4890do	9675do		
0400-0430	Romania, R Romania Intl	5990na	6155na	9510na	9570na
		11940na			
0400-0500	Russia, Voice of	9620eu	9665na	12010na	12050na
		13665na	15180na	15425na	15580as
0400-0500	S Africa, Channel Africa	3220af	5955af		
0400-0427	S Africa, Trans World R	7165af			
0400-0500	Slovakia, AWR	9455as	13715me		
0400-0430	Sri Lanka, SLBC Colombo	9720as	15425as		
0400-0500	Swaziland, Swazi Radio	6155af			
0400-0430	Switzerland, Swiss R Intl	6135na	9885na	9905na	
0400-0430	Tanzania, Radio	5050af			
0400-0415	Uganda, Radio	4976do	5026do		
0400-0500	United Kingdom,BBC London	3255af	5975va	6005af	6180eu
		6190af	6195va	7160af	9410va
		9600af	9610af	11730af	11760me
		11955as	12095va	15280as	15310as
		15575me	17640af		
0400-0500	USA, KAIJ Dallas TX	5810am	9815am		
0400-0500	USA, KTBN Salt Lk City UT	7510am			
0400-0500	USA, KVOH Los Angeles CA	9975am			
0400-0500	USA, KWHR Naalehu HI	17780as			
0400-0500	USA, Monitor Radio Intl	7535eu	9840af		
0400-0500	USA, VOA Washington DC	3985eu	5995eu	6010eu	6040eu
		6140af	6873af	7170me	7200eu
		7340af	9885af	11965me	15205me
0400-0500	USA, WEWN Birmingham AL	7425na			
0400-0500	USA, WHRI Noblesville IN	5745am			
0400-0500	USA, WJCR Upton KY	7490na	13595na		
0400-0500 smtwhf	USA, WMLK Bethel PA	9465eu			
0400-0500	USA, WRNO New Orleans LA	7395am			
0400-0500 s	USA, WVHA Green Bush ME	7465eu			
0400-0500	USA, WWCR Nashville TN	5065am	5935am	7435am	
0400-0445	USA, WYFR Okeechobee FL	6065na	9505na		
0400-0459	USA, WYFR Okeechobee FL	9370eu			
0400-0430	Yugoslavia, Radio	9580na	11870na		
0400-0500	Zimbabwe, ZBC/Radio 3	3306do	3396do		
0415-0440	Italy, RAI Rome	5990me	7275eu		
0425-0500	Nigeria, FRCN/Radio	3326do	4990do		
0430-0500	Australia, AF Radio	13535as			
0430-0500	Finland, YLE/Radio	15440af			
0430-0500	Netherlands, Radio	6165na	9590na		
0430-0500	Swaziland, Trans World R	3200af	5055af	6070af	
0430-0500	Switzerland, Swiss R Intl	9905na			
0430-0500	USA, VOA Washington DC	7265af	7280af	7405af	9575af
		15300af			
0430-0457	Yugoslavia, Radio	6100na	6185na	9580na	
0455-0500	Nigeria, FRCN/Voice of	7255af			
0459-0500	New Zealand, R NZ Intl	9570pa			

SELECTED PROGRAMS

Sundays

0400 KWHR (Hawaii): Gospel Crusade Ministries. Scripture teachings by Roger Hedrick and free bible correspondence courses.
0400 Radio for Peace Int l: Making Contact. Fresh perspectives on social and political dynamics in the US and around the world.
0400 WHRI: Turn Your Radio On. Bill Brasier plays southern gospel music.
0400 WWCR #1: The Old Land Mark Church. R. L. Mitchell presents the Holy Way Hour from Chicago.
0400 WWCR #3: Morning Watch Chapel. See S 0300.
0430 KWHR (Hawaii): Prophetic Voice Broadcast. A program from Gospel Truth Ministries of Cincinnati.
0430 Radio for Peace Int l: Peace Forum. A grab bag of individual programs and special short series received by RFPI.
0445 BBC (af/eu/south as): Popular Music. Ragga with David Rodigan (6th,13th). A selection of the latest ragga and reggae singles with a few great tracks from the past.

Mondays

0400 KWHR (Hawaii): Music. See S 0230.
0400 Radio for Peace Int l: Living Enrichment Center. Mary Mannin Morrissey lectures on practical suggestions for everyday living.
0400 WHRI: Music (5.745). See S 0000.
0400 WWCR #1: The Old Record Shop. See S 0100.
0400 WWCR #3: America First Radio (live). Patriot radio hosted by Don Wassall.
0430 Radio for Peace Int l: Sound Currents of the Spirit. James Bean provides music mixed with spiritual readings.
0430 WHRI: John Hagee Today (5.745). Evangelizing by John Hagee of the Cornerstone Church in San Antonio, TX.
0430 WWCR #1: Wolfe Calling. Roland Wolfe.
0445 BBC (af/eu) Science and Technology. Medicine 2020 (7th,14th). See T 0445.

Tuesdays

0400 KWHR (Hawaii): Music. See S 0230.
0400 WHRI: The Prophecy Club (5.745). See T 0100.
0400 WWCR #3: The Hour of the Time (live). William Cooper talk show.
0406 WWCR #1: Point of View. See M 1106.
0430 BBC (as pac): Human Interest. From Nairobi to Beijing. See A 1245.
0430 WHRI: Music (9.495). See S 0000.

Wednesdays

0400 KWHR (Hawaii): Music. See S 0230.
0400 Radio for Peace Int l: Peace Forum. See S 0430.
0400 WHRI: The Prophecy Club (5.745). See T 0100.
0400 WWCR #3: The Hour of the Time (live). See T 0400.
0406 WWCR #1: Point of View. See M 1106.
0430 BBC (as pac): Quiz. Brain of Britain. See A 1230.
0430 Radio for Peace Int l: Focus on Haiti. See S 0500.
0430 WHRI: Music (9.495). See S 0000.

Thursdays

0400 KWHR (Hawaii): Music. See S 0230.
0400 WHRI: Bob Enyart (live) (9.495). Bob takes listener phone calls about everyday Christian topics.
0400 WHRI: The Prophecy Club (5.745). See T 0100.
0400 WWCR #3: The Hour of the Time (live). See T 0400.
0406 WWCR #1: Point of View. See M 1106.
0430 Radio for Peace Int l: Voices of Our World. See T 0330.
0430 WHRI: Music (5.745). See S 0000.

Fridays

0400 KWHR (Hawaii): Music. See S 0230.
0400 Radio for Peace Int l: Micro-Power Radio in the U.S.. See T 0530.
0400 Radio for Peace Int l: The Food Not Bombs Radio Network (monthly). See T 0530.
0400 WHRI: Bob Enyart (live) (9.495). See H 0400.
0400 WHRI: The Prophecy Club (5.745). See T 0100.
0400 WWCR #3: The Hour of the Time (live). See T 0400.
0406 WWCR #1: Point of View. See M 1106.
0430 Radio for Peace Int l: WINGS. See W 0530.
0430 WHRI: John Hagee Today (5.745). See M 0430.

Saturdays

0400 KWHR (Hawaii): Music. See S 0230.
0400 Radio for Peace Int l: World of Radio. See S 0200.
0400 WHRI: Bob Enyart (live) (9.495). See H 0400.
0400 WHRI: The Prophecy Club (5.745). See T 0100.
0400 WWCR #3: The Hour of the Time (live). See T 0400.
0406 WWCR #1: Point of View. See M 1106.
0430 Radio for Peace Int l: RFPI's Mailbag. See S 0330.
0430 WHRI: Music (5.745). See S 0000.

Macintosh Software

• *Shortwave Navigator* •
• *Frequency Valet* •

Frequencies/Programs
Computer Control
(Drake/Kenwood/JRC)

Send $2 to demo disk to:
DX Computing
232 Squaw Creek Rd.
Willow Park, TX 76087

www.americanradiohistory.com

EEB NATIONS LARGEST RECEIVER OUTLET

SUMMER SUPER SALE!!!

AOR

AR2700[1-3]		$399.95
AR8000[1-3]		$599.95
AR3000A[1-3]		$1029
SDU5000A/I		$997.95

GRUNDIG

YB305	NEW	$137.95
YB400	HOT	$179.95
SAT700	Special	$388.95

LOWE

HF150	Compact	$579.95
HF225E	Europa	$999.95

SANGEAN

ATS202	$99.95
ATS606P w/Ant60	$169.95
ATS808	$137.95
ATS818	$147.95

REALISTIC

PRO62	(CALL)	$239.95
PRO2035	(CALL)	$359.95

Bearcat® SALE!!!

BC3000XLT 25-550/760-1300MHz[1]

• Scan 100ch/sec, search 300ch/sec, 400 memory channels, 20 x 20 banks.

LIST $499.95 **EEB $369.95**

BC9000XLT 25-550/760-1300MHz[1]

• Alpha numeric LCD on all 500 memory ch. Scan 100 ch/sec, search 300 ch/sec, data skip, attenuator 15dB, COR recorder control.

LIST $769.95 **EEB $389.95**

BCT-7 All Band 26-956MHz[1]

• A must for the frequent highway travellers. 7135 pre-programmed chs., search by state & service. Police, HP, DOT, Fire, News, WX, CB, plus 100 User memories, scan 100 ch/sec.

LIST $319.95 **EEB $169.95**

Other BEARCAT Scanners...

BC120XLT	$129.95	BC760XLT[1-2]	$199.95
SC150Y/B[1]	$169.95	BC860XLT[1]	$169.95
BC148XLT-1[1]	$99.95	BC890XLT[1-2]	$229.95
BC220XLT[1]	$224.95		

(1) Cellular Block (not restorable)
(2) Cellular Block, but can be restored
(3) Un-Blocked O.K. to qualified buyers (Govt., Export, etc.)

☛ *Check out EEB's NEW BBS!!!*
Dial us up, Check us out!
Tech Info, Used-Demo Specials, MORE!
1 - 703 - 938 - 3781

JOIN THE OPTO/AOR REVOLUTION!!!

• **OPTO Electronics and AOR are revolutionizing the scanner world.** **The new Scout 40 version 3.1 and the AOR AR2700/AR8000 scanners gives you the intercept power in your hands, that just a few years ago could only be a dream. Imagine having your scanner hop on a signal the instant someone presses the mic button. The Scout will reaction tune your AOR scanner in a blink of an eye to any locally generated signal.**

☛ **WHERE is the Scout most effective?** Sporting events, car races, air shows, NEWS gatherings, accident scenes, air ports, railroads, marinas, fast food drive-thrus, many more applications. Everywhere you turn today there's a walkie-talkie in use. Listen in, it's your world.

☛ **WHO needs the Scout/AOR System?** NEWS service, local TV/Radio stations, Police, DEA, Air ports, anyone that wants to know what is being transmitted in the immediate area, plus thousands of scanner listeners, FBI, Law enforcement, SWAT team, and surveillance.

☛ **WHAT do you need?** 1. Scout 40 version3.1
2. AOR AR2700/AR8000 3. Input jack, modification to scanner
4. Interconnect cable. 5. Scout 40 V3.0 requires CB-AR cable $49.00

SAVE up to **$300** OFF list price

EEB SPECIAL PACKAGE DEAL

• AR2700, Scout 40 version3.1, Mod to AR2700, cable, (regular discount price $899.90)...**Package Deal $839.95**
• AR8000, Scout 40 version3.1, Mod to AR8000, cable, (regular discount price $1090)...**Package Deal $1039.95**

EEB will install jack and wire in scanner, assure that your AOR warranty is good for one year and completely check out your system on our lab prior to shipping.
FREE with system purchase.

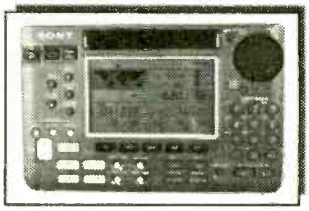
FREE AR2700/AR8000 Modification ($50 value)		
• AR2700	list $499.95	EEB $399.95
• AR8000	list $799.95	EEB $599.95
• MODS		EEB $50.00
• Cable CB RT		EEB $20.00
• SCOUT 40 v3.1	list $449.95	EEB $419.95

Special SONY Summer SALE!!!

• ICFSW55 •

"Among the best performers in compact portables, audio quality among the best, a superior performer in it's size class". (IBS Passport)

• 150kHz - 30MHz, 76 - 108MHz • AM, FM, CW, LSB, USB • 125 station memory preset • Factory preset name tuning provides easy access to popular SWL stations • Direct keyboard entry • World clock rotary tuning dial for roaming the dial • Power 6VDC, or 4 AA (not incl.) AC adaptor is included.



Other SONY's at Special Summer Prices

ICFSW7600G $179.95	• ICFSW100 $344.95
ICFSW77 $459.95	• ICFSW30 $104.95
ICF2010 $344.95	• ICFSW33 $159.95

Limited Time... **$319.95**

3 year Extended Warranty $39.95

WJ HF1000 World's Ultimate Receiver

$3799

Opt. Preselector HF1000D $649.00

GE SUPERADIO II

Puts the fun back into AM Radio!!!

Everyone needs a good AM/FM DX radio. Great audio, large ferrite antenna, 4 I.F. stages.

$59.95

DRAKE R8A

Improved and upgraded version of the world famous R8.

- Improved Ergonomics
- Dynamic range (+100dB)
- 3rd OIP +20dBm
- Increase memory to 440 ch.
- Scan 40 ch/sec

It's time to trade-in your R8, call for Quote.

R8A $1085.00

95 Catalog...FREE
96 Pages, SWL, Scanners, Antennas, Books, Lots more.

FREE in the U.S., 3rd class (4 weeks) $2 1st class (1 week), $2 Can/Mex., $5 elsewhere

ELECTRONIC EQUIPMENT BANK
323 MILL Street NE
Vienna, VA 22180
•We accept VISA/MasterCard/American Express/Discover

ORDERS: 800-368-3270
Local Tech: 703-938-3350
FAX: 703-938-6911
•We ship via UPS, Federal Express and Mail

- **Sorry, no COD's**
- **Free Catalog in USA**
- **Prices Subject to change**
- **Prices do not include freight**
- **Returns subject to restock fee up to 20%**

www.americanradiohistory.com

0500 UTC SHORTWAVE GUIDE 1:00 AM EDT 10:00 PM PDT

FREQUENCIES

0500-0530	Australia, AF Radio	13535as			
0500-0600	Australia, Radio	9580pa	9660pa	13605as	15240pa
		15245as	15365pa	15415as	17715pa
		17795pa	17860pa		
0500-0600 vl	Australia, VL8A Alice Spg	4835do			
0500-0600 vl	Australia, VL8K Katherine	5025do			
0500-0600 vl	Australia, VL8T Tent Crk	4910do			
0500-0600	Bahrain, Radio	6010do			
0500-0600	Canada, CFCX Montreal	6005do			
0500-0600	Canada, CFRX Toronto	6070do			
0500-0600	Canada, CFVP Calgary	6030do			
0500-0600	Canada, CHNX Halifax	6130do			
0500-0600	Canada, CKZU Vancouver	6160do			
0500-0530 mtwhf	Canada, RCI Montreal	6050eu	7295eu	15430af	17840af
0500-0600	Costa Rica, R Peace Intl	7385am	9400am		
0500-0510	Croatia, Croatian Radio	5895eu	7370eu	13830eu	
0500-0600	Cuba, Radio Havana Cuba	9820na			
0500-0600	Ecuador, HCJB Quito	9745am			
0500-0600 as	Eqt Guinea, R East Africa	9585af			
0500-0550	Germany, Deutsche Welle	5960na	6175na	6185na	9515na
		11705na			
0500-0600 mtwh/vl	Italy, IRRS Milan	7125va			
0500-0600	Japan, NHK/Radio	5975eu	6110na	7230eu	9680na
		11740as	11885na	11955as	17810as
0500-0600	Kenya, Kenya Broadc Corp	4885do	4935do		
0500-0600	Lebanon, Wings of Hope	9960va			
0500-0525	Netherlands, Radio	6165na	9590na		
0500-0600	New Zealand, R NZ Intl	9570pa			
0500-0505	Nigeria, FRCN/Radio	3326do	4990do		
0500-0600	Nigeria, FRCN/Voice of	7255af			
0500-0600 vl	Papua New Guinea, NBC	4890do	9675do		
0500-0600	Russia, AWR	9895me			
0500-0600	Russia, Voice of	12010na	12030na	12040na	12050na
		13370as	13645na	13665na	15425na
		15580na			
0500-0600	S Africa, Channel Africa	5955af	9695af		

0500-0545 f	Seychelles, FEBA Radio	15555me			
0500-0600	Spain, R Exterior Espana	9540na			
0500-0600	Swaziland, Swazi Radio	6155af			
0500-0515	Switzerland, Swiss R Intl	6165eu	9535eu		
0500-0502	Uganda, Radio	4976do			
0500-0600	United Kingdom,BBC London	3255af	5975va	6005af	6180eu
		6190af	6195va	7160af	9410va
		9600af	9640va	9740as	11760af
		11955as	12095va	15070me	15280as
		15310va	15360as	15420af	15575me
	17640af	17885af			
0500-0600	USA, KAIJ Dallas TX	5810am	9815am		
0500-0600	USA, KTBN Salt Lk City UT	7510am			
0500-0600	USA, KVOH Los Angeles CA	9975am			
0500-0600	USA, KWHR Naalehu HI	17780as			
0500-0600	USA, Monitor Radio Intl	7535eu			
0500-0600	USA, VOA Washington DC	5995eu	6035af	6040eu	6140af
		6873af	7170me	7285af	7405af
		9575af	9630af	11965af	12080af
		15205me	15600af		
0500-0600	USA, WEWN Birmingham AL	7425na			
0500-0600	USA, WHRI Noblesville IN	5745am	9495am		
0500-0600	USA, WJCR Upton KY	7490na	13595na		
0500-0600 mtwhfa	USA, WMLK Bethel PA	9465eu			
0500-0600	USA, WRNO New Orleans LA	7395am			
0500-0600	USA, WWCR Nashville TN	5065am	5935am	7435am	
0500-0600	USA, WYFR Okeechobee FL	5985na	9985eu	11580eu	
0500-0530	Vatican State, Vatican R	5865eu	7360af	9725af	11625af
0500-0520	Vatican State, Vatican R	4010eu			
0500-0600	Zimbabwe, ZBC/Radio 3	3306do	3396do		
0505-0600	Swaziland, Trans World R	3200af	5055af	6070af	9500af
0525-0600	Ghana, Ghana Broadc Corp	3366do	4915do		
0530-0600	Australia, Radio	15510as	15565as	17880as	
0530-0600	Austria, R Austria Intl	6015na			
0530-0600	Georgia, Georgian Radio	11805eu			
0530-0600	Romania, R Romania Intl	11810af	15250af	15340af	17745af
		17790af			

SELECTED PROGRAMS

Sundays

0500 KWHR (Hawaii): Breakthrough. Rod Parsley conducts services from the World Harvest Church in Columbus, OH.
0500 Radio for Peace Int l: Focus on Haiti. Interviews with leaders in the struggle for a return to democracy in Haiti.
0500 WHRI: The Joy of Living Broadcast. Hurst-Smith Evangelists, Inc.
0500 WWCR #1: These Last Days. Apparitions and prophecies of the Lady of the Roses.
0500 WWCR #3: Tempered Steel. Dale Early plays heavy metal.
0515 WHRI: A Study in God's Word. Hezakiah Smith reads Scripture from North Carolina.
0530 Radio for Peace Int l: Science and Spirit (biweekly). The findings of science and ancient wisdom teachings.
0530 Radio for Peace Int l: Wisdom School of the Air (biweekly). Lectures of the late Manly P. Hall, founder of the Philosophical Research Society.
0530 WHRI: The Mercies of God Radio Broadcast. Pastor Peter from Michigan preaches mercy for lost sinners.
0530 WWCR #1: The Lutheran Reformation Hour. Richard Shekner preaches from Chicago Heights, Illinois.

Mondays

0500 KWHR (Hawaii): Music. See S 0230.
0500 Radio for Peace Int l: Peace Forum (biweekly). See S 0430.
0500 Radio for Peace Int l: World Goodwill Forum (biweekly). Lectures on the needs of humanity.
0500 WHRI: Music. See S 0000.
0500 WWCR #1: The Dave Hinkson Show. Ozone and silver water treatment for everything that ails you from the Freedom Radio Network.
0500 WWCR #3: The Sower. Musical treat and spiritual tonic with Michael Guido.
0515 WWCR #3: 70th Week Magazine. Ben McKnight talks about survivalist subjects.
0530 WHRI: In Touch. See S 1200.
0530 WWCR #3: The Hour of Courage. Ron Wilson talks politics and the precious metals market.
0555 WHRI: In Search of Messiah. Teaching and commentary by Don Victor Bovey.

Tuesdays

0500 KWHR (Hawaii): Music. See S 0230.
0500 Radio for Peace Int l: United Nations. A variable UN Radio Service program which could be Caribbean Echo, Caribbean Magazine, Women, Scope, UN Daily News, or the World in Review.
0500 WHRI: Music. See S 0000.
0500 WWCR #1: The Dave Hinkson Show. See M 0500.
0500 WWCR #3: Herald of Truth. Bible-based solutions to personal and national problems.
0515 Radio for Peace Int l: RFPI Reports. See S 2345.
0515 WWCR #3: 70th Week Magazine. See M 0515.
0530 BBC (af/am/eu): Background Current Affairs Feature. History Today. Each week of the series (until 9/12) a program is devoted to an historical event relevant to the week's news.
0530 Radio for Peace Int l: Micro-Power Radio in the U.S.. The best programming of citizen-owned radio stations in the US.
0530 Radio for Peace Int l: The Food Not Bombs Radio Network (monthly). North America's homeless problems and government oppression at home and abroad.
0530 WHRI: In Touch. See S 1200.
0530 WWCR #3: The Hour of Courage. See M 0530.
0555 WHRI: In Search of Messiah. See M 0555.

Wednesdays

0500 KWHR (Hawaii): Music. See S 0230.
0500 Radio for Peace Int l: UNESCO. See T 0245.
0500 WHRI: Music. See S 0000.
0500 WWCR #1: The Dave Hinkson Show. See M 0500.
0500 WWCR #3: Herald of Truth. See T 0500.
0515 Radio for Peace Int l: RFPI Reports. See S 2345.
0515 WWCR #3: 70th Week Magazine. See M 0515.
0525 Radio for Peace Int l: Hightower Radio. A commentary by Jim Hightower, the provocative progressive voice from Texas, on national issues.
0530 Radio for Peace Int l: WINGS. Women's news and current affairs by the Women's International News Gathering Service.
0530 WHRI: In Touch. See S 1200.
0530 WWCR #3: The Hour of Courage. See M 0530.
0555 WHRI: In Search of Messiah. See M 0555.

Thursdays

0500 KWHR (Hawaii): Music. See S 0230.
0500 Radio for Peace Int l: United Nations. See T 0500.
0500 WHRI: Music. See S 0000.
0500 WWCR #1: The Dave Hinkson Show. See M 0500.
0500 WWCR #3: Herald of Truth. See T 0500.
0515 Radio for Peace Int l: RFPI Reports. See S 2345.
0515 WWCR #3: 70th Week Magazine. See M 0515.
0525 Radio for Peace Int l: Hightower Radio. See W 0525.
0530 Radio for Peace Int l: Vietnam Veterans Radio Network. See S 0630.
0530 WHRI: In Touch. See S 1200.
0530 WWCR #3: The Hour of Courage. See M 0530.
0555 WHRI: In Search of Messiah. See M 0555.

Fridays

0500 KWHR (Hawaii): Music. See S 0230.
0500 Radio for Peace Int l: UNESCO. See T 0245.
0500 WHRI: Music. See S 0000.
0500 WWCR #1: The Dave Hinkson Show. See M 0500.
0500 WWCR #3: Herald of Truth. See T 0500.
0515 Radio for Peace Int l: RFPI Reports. See S 2345.
0515 WWCR #3: 70th Week Magazine. See M 0515.
0525 Radio for Peace Int l: Hightower Radio. See W 0525.
0530 Radio for Peace Int l: Steppin' Out of Babylon. See T 0300.
0530 WHRI: In Touch. See S 1200.
0530 WWCR #3: The Hour of Courage. See M 0530.
0555 WHRI: In Search of Messiah. See M 0555.

Saturdays

0500 KWHR (Hawaii): End Time Revival Network. See S 0000.
0500 Radio for Peace Int l: United Nations. See T 0500.
0500 WHRI: World of Radio (5.745). Glenn Hauser's communications program for shortwave radio listeners.
0500 WWCR #1: First Hand. See S 1200.
0500 WWCR #3: Herald of Truth. See T 0500.
0510 BBC (south as): Quiz. Brain of Britain. See A 1230.
0515 Radio for Peace Int l: RFPI Reports. See S 2345.
0515 WWCR #1: Calvary Radio Hour. Franklin Zuill evangelizes.
0515 WWCR #3: Voice of Thunder Broadcast. See S 1115.
0525 Radio for Peace Int l: Hightower Radio. See W 0525.
0530 KWHR (Hawaii): Remnant Church of God. See M 0100.
0530 Radio for Peace Int l: Second Opinion. See H 0200.
0530 WHRI: Victorious Living. See S 1530.
0530 WWCR #1: The American Catholic. See M 0300.
0530 WWCR #3: Unshackled. Pacific Garden Mission's radio drama.
0540 BBC (south as): Human Interest. From Nairobi to Beijing. See A 1245.
0545 WWCR #1: Words of Hope. See S 1100.

www.americanradiohistory.com

FREQUENCIES

0600-0700	Australia, Radio	11910pa	13605as	13755pa	15240pa
		15365pa	15510as	17715as	17795pa
0600-0630	Australia, Radio	9580pa	9660pa	15415pa	
0600-0700 vl	Australia, VL8A Alice Spg	4835do			
0600-0700 vl	Australia, VL8K Katherine	5025do			
0600-0700 vl	Australia, VL8T Tent Crk	4910do			
0600-0700	Bahrain, Radio	6010do			
0600-0700	Canada, CFCX Montreal	6005do			
0600-0700	Canada, CFRX Toronto	6070do			
0600-0700	Canada, CFVP Calgary	6030do			
0600-0700	Canada, CHNX Halifax	6130do			
0600-0700	Canada, CKZU Vancouver	6160do			
0600-0700	Costa Rica, R Peace Intl	7385am	9400am		
0600-0700	Cuba, Radio Havana Cuba	9820na			
0600-0630	Czech Rep, Radio Prague	7345eu	15640eu		
0600-0700	Ecuador, HCJB Quito	9745am			
0600-0700 as	Eqt Guinea, R East Africa	9585af			
0600-0650	Germany, Deutsche Welle	11915af	11960af	13790af	15185af
		15225af	17820af	17875af	21680af
0600-0615	Ghana, Ghana Broadc Corp	3316do	4915do		
0600-0700 mtwh/vl	Italy, IRRS Milan	7125va			
0600-0700	Japan, NHK/Radio	11955as	17810as		
0600-0700	Kenya, Kenya Broadc Corp	4885do	4935do		
0600-0700 vl	Kiribati, Radio	9825do			
0600-0700	Lebanon, Wings of Hope	9960va			
0600-0700 vl	Liberia, Radio ELBC	7275do			
0600-0700	Liberia, Radio ELWA	4760do			
0600-0700 asmtwh	Malaysia, Radio	7295do			
0600-0700	Malaysia, Voice of	6175as	9750as	15295as	
0600-0700 mtwhfa	Malta, V of Mediterranean	9765me			
0600-0635 s	Malta, V of Mediterranean	9765me			
0600-0700	New Zealand, R NZ Intl	9570pa			
0600-0630	Nigeria, FRCN/Radio	3326do	4990do		
0600-0700	Nigeria, FRCN/Voice of	7255af			
0600-0630 m	Norway, Radio Norway Intl	7295pa			
0600-0700 vl	Papua New Guinea, NBC	4890do	9675do		
0600-0700	Russia, Voice of	12010na	12030na	12040na	12050na
		13370as	13645na	13665na	15425na
		15560as	15580as	17570as	
0600-0700	Slovakia, AWR	7215eu	13715af		
0600-0630 vl	Solomon Islands, SIBC	5020do	9545do		
0600-0700	South Korea, R Korea Intl	7205na	11945na		
0600-0700	Swaziland, Swazi Radio	6155af			
0600-0630	Switzerland, Swiss R Intl	6165eu	9535af	9885af	13635af
		15340af			
0600-0615 s	Uganda, Radio	4976do	7110do		
0600-0700	United Kingdom,BBC London	6005af	6180eu	6190af	6195va
		7160af	9410va	9600af	9640va
		9740as	11760me	11940af	11955as
		12095va	15070va	15280as	15310as
		15360va	15400af	15420af	15575va
	17640af	17790as	17885af		
0600-0700	USA, KAIJ Dallas TX	5810am	9815am		
0600-0700	USA, KTBN Salt Lk City UT	7510am			
0600-0700	USA, KVOH Los Angeles CA	9975am			
0600-0700	USA, KWHR Naalehu HI	17780as			
0600-0700	USA, Monitor Radio Intl	7535eu			
0600-0700	USA, VOA Washington DC	3985eu	5995eu	6035af	6040eu
		6060eu	6140af	6873eu	7170me
		7325me	7405af	9530af	11805af
		11965eu	12080af	15205me	15600af
0600-0630	USA, VOA Washington DC	6035af	7405af	9630af	9665af
		11950af	12035af	12080af	
0600-0700	USA, WEWN Birmingham AL	7425na			
0600-0700	USA, WHRI Noblesville IN	5745am	9495am		
0600-0700	USA, WJCR Upton KY	7490na	13595na		
0600-0700 smtwhf	USA, WMLK Bethel PA	9465eu			
0600-0700 a	USA, WVHA Green Bush ME	7455eu			
0600-0700	USA, WWCR Nashville TN	5065am	5935am	7435am	
0600-0700	USA, WYFR Okeechobee FL	5985na	7355eu	9985eu	
0600-0610 mtwhfa	Vatican State, Vatican R	4010eu	5865eu	7250eu	9645eu
		11740eu	15210eu		
0600-0700	Zimbabwe, ZBC/Radio 3	5975do	6045do		
0605-0700	Swaziland, Trans World R	5055af	6070af	9500af	9650af
0630-0700	Australia, Radio	5995as	6020pa	6080pa	9860pa
		15245as			
0630-0700	Austria, R Austria Intl	6015na			
0630-0655	Belgium, R Vlaanderen Int	6015eu	9925au		
0631-0640	Romania, R Romania Intl	7225eu	9550eu	9665eu	11810eu
0640-0700	Monaco, Trans World Radio	7115eu			
0640-0700	Vatican State, Vatican R	5865af	7360af	9660af	11625af
0645-0700	Finland, YLE/Radio	6120eu	9560eu	11755af	
0645-0700	Romania, R Romania Intl	15205pa	17720pa	17805pa	
0645-0700 s	Romania, R Romania Intl	11775pa	15335pa		

SELECTED PROGRAMS

Sundays

0600 KWHR (Hawaii): New Testament Studies. Joseph Sorrell.
0600 WHRI: The Call to Worship. Services from Holland, Michigan.
0605 WWCR #3: The Golden Age of Radio Theater. Relive the golden moments of radio's yesteryear.
0615 KWHR (Hawaii): A Study in God's Word. Hezakiah Smith reads Scripture from North Carolina.
0630 Radio for Peace Int l: Vietnam Veterans Radio Network. Bringing to light the real stories behind the Vietnam War.
0630 WHRI: The Banner of Truth Broadcast. Sponsored by the Free Reformed Churches of North America.
0645 WHRI: Neal Frisby. Neal Frisby evangelizes.

Mondays

0600 KWHR (Hawaii): Music. See S 0230.
0600 Radio for Peace Int l: The Far Right Radio Review. The program that analyzes the growing phenomenon of far right/hate programming on radio.
0600 WHRI: The Radio Bible Hour. Dr. J. Harold Smith has been preaching on the radio since 1935.
0604 WWCR #1: Spectrum (repeat). See S 0200.
0615 BBC (eu): Human Interest. From Nairobi to Beijing. See A 1245.
0615 WHRI: Faith Seminar of the Air. Kenneth Hagin evangelizes.
0630 BBC (af/am/as pac/eu/south as) General Feature. Pick of the World. Reviving past glories; the best of the BBC World Service.
0630 Radio for Peace Int l: Peace Forum. See S 0430.
0630 WHRI: Listen to Jesus. Clinton and Sarah Outerbach from The Redeeming Love Christian Center of Nanuet, NY.
0645 WHRI: The Voice of Praise. Pastor Kenneth Ivy teaches from the word of God.

Tuesdays

0600 KWHR (Hawaii): Music. See S 0230.
0600 Radio for Peace Int l: CounterSpin. See S 0300.
0600 WHRI: The Radio Bible Hour. See M 0600.
0600 WWCR #1: Sound Currents of the Spirit. James Bean with music mixed with spiritual readings.
0615 WHRI: Faith Seminar of the Air. See M 0615.
0630 BBC (af/as pac/eu/south as): Popular Music. Rock Salad. see S 0115.
0630 BBC (am) General Feature. Pick of the World. See M 0630.
0630 Radio for Peace Int l: New Dimensions Radio. See M 0300.
0630 WHRI: Listen to Jesus. See M 0630.
0645 WHRI: The Voice of Praise. See M 0645.

Wednesdays

0600 KWHR (Hawaii): Music. See S 0230.
0600 Radio for Peace Int l: Peace Forum. See S 0430.
0600 WHRI: The Radio Bible Hour. See M 0600.
0605 WWCR #1: Inspirations Across America. Bert Johnson.
0615 BBC (am): Popular Music. Ragga with David Rodigan (2nd,9th,16th). See S 0445.
0615 BBC (as pac): Background Current Affairs Feature. History Today. See T 0530.
0615 WHRI: Faith Seminar of the Air. See M 0615.
0630 Radio for Peace Int l: University of the Air. See T 2300.
0630 WHRI: Listen to Jesus. See M 0630.
0645 WHRI: The Voice of Praise. See M 0645.

Thursdays

0600 KWHR (Hawaii): Music. See S 0230.
0600 Radio for Peace Int l: The Global Student Voice (biweekly). See M 0200.
0600 Radio for Peace Int l: Working Together (biweekly). See M 0200.
0600 WHRI: The Radio Bible Hour. See M 0600.
0605 WWCR #1: Point of View. See M 1106.
0615 BBC (as pac) Science and Technology. Medicine 2020 (3rd,10th,17th). See T 0445.
0615 WHRI: Faith Seminar of the Air. See M 0615.
0630 Radio for Peace Int l: University of the Air. See T 2300.
0630 WHRI: Listen to Jesus. See M 0630.
0645 WHRI: The Voice of Praise. See M 0645.

Fridays

0600 KWHR (Hawaii): Music. See S 0230.
0600 Radio for Peace Int l: My Green Earth. See M 0230.
0600 WHRI: The Radio Bible Hour. See M 0600.
0605 WWCR #1: Point of View. See M 1106.
0615 WHRI: Faith Seminar of the Air. See M 0615.
0630 Radio for Peace Int l: University of the Air. See T 2300.
0630 WHRI: Listen to Jesus. See M 0630.
0645 WHRI: The Voice of Praise. See M 0645.

Saturdays

0600 KWHR (Hawaii): Faith Christian Church. Paul Shirek.
0600 Radio for Peace Int l: Peace Forum. See S 0430.
0600 WHRI: The Call to Worship (5.745). See S 0600.
0600 WHRI: Turn Your Radio On (9.495). See S 0400.
0600 WWCR #3: World of Radio. See T 1230.
0615 KWHR (Hawaii): Music. See S 0230.
0630 KWHR (Hawaii): The Word of God Broadcast. Sister Polly preaches from the Knoxville House of Faith in Tennessee.
0630 Radio for Peace Int l: University of the Air. See T 2300.
0630 WHRI: Music (5.745). See S 0000.
0630 WWCR #3: Live by Every Word. Lois Pierce preaches.
0645 WWCR #3: What Sayeth the Scriptures. Victor McGee teaches.

IF YOU USE A COMPUTER YOU *KNOW* THE PROBLEM

COMPUTER GENERATED INTERFERENCE

STOP LISTENING TO YOUR COMPUTER - *START* HEARING SIGNALS

RFI-822 A BRUSH-ON COATING MAKES PLASTIC SHIELD LIKE METAL
SEE DETAILED ARTICLE IN *FEB 95 MONITORING TIMES* pages 26-29

MATERIAL TO COAT MOST COMPUTERS or 14 to 16 INCH MONITORS, GROUNDING STRAPS, DETAILED INSTRUCTIONS AND POSTAGE $35.95

CHECKS TO: *RADIO ACCESSORIES*, P.O. 168, MELVIN VILLAGE, NH 03850

www.americanradiohistory.com

FREQUENCIES

0700-0800	Australia, Radio	5995pa	6020pa	6080pa	9580pa
		9710pa	9860pa	15240pa	15565as
		17695as			
0700-0730	Australia, Radio	13605as	15415as	17795as	
0700-0800 vl	Australia, VL8A Alice Spg	4835do			
0700-0800 vl	Australia, VL8K Katherine	5025do			
0700-0800 vl	Australia, VL8T Tent Crk	4910do			
0700-0800	Bahrain, Radio	6010do			
0700-0800	Canada, CFCX Montreal	6005do			
0700-0800	Canada, CFRX Toronto	6070do			
0700-0800	Canada, CFVP Calgary	6030do			
0700-0800	Canada, CHNX Halifax	6130do			
0700-0800	Canada, CKZU Vancouver	6160do			
0700-0800	Costa Rica, R Peace Intl	7385am	9400am		
0700-0800	Ecuador, HCJB Quito	6135pa	11615as		
0700-0800 as	Eqt Guinea, R East Africa	9585af			
0700-0730	Georgia, Georgian Radio	11805eu			
0700-0715	Ghana, Ghana Broadc Corp	3366do	4915do		
0700-0800 mtwh/vl	Italy, IRRS Milan	7125va			
0700-0800	Japan, NHK/Radio	5975eu	7230eu	11740as	11850as
		11955as	15335me	17810me	17815eu
		21610au			
0700-0800	Kenya, Kenya Broadc Corp	4885do	4935do		
0700-0800 vl	Kiribati, Radio	9825do			
0700-0800	Lebanon, Wings of Hope	9960va			
0700-0800 vl	Liberia, Radio ELBC	7275do			
0700-0800	Liberia, Radio ELWA	4760do			
0700-0800 asmtwh	Malaysia, Radio	7295do			
0700-0800	Malaysia, Voice of	6175as	9750as	15295as	
0700-0800	Monaco, Trans World Radio	7115eu			
0700-0730	Myanmar, Radio	5990do	9730do		
0700-0716 mtwhf	New Zealand, R NZ Intl	9570pa			
0700-0759 as	New Zealand, R NZ Intl	9570pa			
0700-0800 vl	Papua New Guinea, NBC	4890do	9675do		
0700-0715 s	Romania, R Romania Intl	11775pa	15335pa		
0700-0800	Russia, Voice of	13370as	15560as	17570as	17590as
		17695as	17870as		
0700-0715	Sierra Leone, SLBS	3316do			
0700-0800 vl	Solomon Islands, SIBC	5020do	9545do		
0700-0800	Swaziland, Swazi Radio	6155af			
0700-0800	Taiwan, VO Free China	5950na			
0700-0715 mtwtfa	Uganda, Radio	4976do	7110do		
0700-0800	United Kingdom,BBC London	6190af	9410va	9600af	9640va
		9740as	11760me	11940af	11955as
		12095va	15070va	15280as	15360va
		15400va	15575me	17640af	17790as
		17830af	17885af		
0700-0730	United Kingdom,BBC London	6005af	6180eu	6195eu	
0700-0715	United Kingdom,BBC London	7160af	11860af		
0700-0800	USA, KAIJ Dallas TX	5810am	9815am		
0700-0800	USA, KTBN Salt Lk City UT	7510am			
0700-0800	USA, KVOH Los Angeles CA	9785am			
0700-0800	USA, KWHR Naalehu HI	17780as			
0700-0800	USA, Monitor Radio Intl	7535eu			
0700-0800	USA, WEWN Birmingham AL	7425na			
0700-0800	USA, WHRI Noblesville IN	5745am	9495am		
0700-0800	USA, WJCR Upton KY	7490na	13595na		
0700-0800 smtwhf	USA, WMLK Bethel PA	9465eu			
0700-0800 a	USA, WVHA Green Bush ME	7455eu			
0700-0800	USA, WWCR Nashville TN	5065am	5935am	7435am	
0700-0745	USA, WYFR Okeechobee FL	5985na	7355eu	9985eu	
0700-0759	USA, WYFR Okeechobee FL	13695af			
0700-0800	Zimbabwe, ZBC/Radio 3	5975do	6045do		
0705-0800	Swaziland, Trans World R	5055af	6070af	9500af	9650af
0717-0800 mtwhf	New Zealand, R NZ Intl	6100pa			
0730-0800	Australia, Radio	9660pa	17880as		
0730-0800	Austria, R Austria Intl	6155eu	13730eu		
0730-0800 mtwhfa	Austria, R Austria Intl	15410me	17870me		
0730-0757	Czech Rep, Radio Prague	15640af			
0730-0745 s	Greece, Voice of	9375au	9425eu	11645eu	
0730-0800	Netherlands, Radio	9700pa	9720au		
0730-0745 mtwhf	Vatican State, Vatican R	4010eu	7250eu	9645eu	11740eu
		15210eu	15570eu		
0745-0800 s	Ghana, Ghana Broadc Corp	3366do	4915do		
0745-0755	Greece, Voice of	9375eu	9425eu	11645eu	
0755-0800	Guam, AWR/KTWR	15200as			

0800 UTC

0800-0900	Australia, AF Radio	15605af	18191af		
0800-0900	Australia, Radio	5995pa	6020pa	6080pa	9580pa
		9710pa	9860pa	17715as	21725as
0800-0830 vl	Australia, VL8A Alice Spg	4835do			
0800-0830 vl	Australia, VL8K Katherine	5025do			
0800-0830 vl	Australia, VL8T Tent Crk	4910do			
0800-0900	Bahrain, Radio	6010do			
0800-0900	Canada, CFCX Montreal	6005do			
0800-0900	Canada, CFRX Toronto	6070do			
0800-0900	Canada, CFVP Calgary	6030do			
0800-0900	Canada, CHNX Halifax	6130do			
0800-0900	Canada, CKZU Vancouver	6160do			
0800-0900	Costa Rica, R Peace Intl	7385am	9400am		
0800-0830	Ecuador, HCJB Quito	6135pa	11615eu		
0800-0900 as	Eqt Guinea, R East Africa	9585af			
0800-0830	Finland, YLE/Radio	15115au	17820as		
0800-0805 s	Ghana, Ghana Broadc Corp	3366do			
0800-0900	Guam, TWR/KTWR	15200as			
0800-0900 mtwh/vl	Italy, IRRS Milan	7125va			
0800-0900	Kenya, Kenya Broadc Corp	4885do	4935do		
0800-0900 vl	Kiribati, Radio	9825do			
0800-0900	Lebanon, Voice of Hope	6280me			
0800-0900	Lebanon, Wings of Hope	9960va			
0800-0900 vl	Liberia, Radio ELBC	7275do			
0800-0830	Liberia, Radio ELWA	4760do			
0800-0900	Malaysia, Radio	7295do			
0800-0830	Malaysia, Voice of	6175as	9750as	15295as	
0800-0805	Monaco, Trans World Radio	7115eu			
0800-0825	Netherlands, Radio	9700pa	9720au		
0800-0900	New Zealand, R NZ Intl	6100pa			
0800-0830 m	Norway, Radio Norway Intl	15220me			
0800-0850	Pakistan, Radio	15625eu	17900eu		
0800-0900	Palau, KHBN/Voice of Hope	9965as			
0800-0900 vl	Papua New Guinea, NBC	4890do	9675do		
0800-0900	Russia, Voice of	9835as	11800as	11900as	13370as
		15560as	17590as	17695as	17765as
		17870as			
0800-0815	Sierra Leone, SLBS	3316do			
0800-0900 vl	Solomon Islands, SIBC	5020do	9545do		
0800-0900	South Korea, R Korea Intl	7550eu	13670me		
0800-0900	United Kingdom,BBC London	6190af	9410va	9740as	11760me
		11940af	11955as	12095va	15070va
		15280as	15310as	15400va	15575me
		17640va	17830af	17885af	
0800-0815	United Kingdom,BBC London	9640va			
0800-0900	USA, KAIJ Dallas TX	5810am	9815am		
0800-0900	USA, KNLS Anchor Point AK	9615as			
0800-0900	USA, KTBN Salt Lk City UT	7510am			
0800-0900	USA, KWHR Naalehu HI	9930as			
0800-0900	USA, Monitor Radio Intl	7535eu	9425pa		
0800-0900	USA, WEWN Birmingham AL	7425na			
0800-0900	USA, WHRI Noblesville IN	5745am	9495am		
0800-0900	USA, WJCR Upton KY	7490na	13595na		
0800-0900 smtwhf	USA, WMLK Bethel PA	9465eu			
0800-0900	USA, WWCR Nashville TN	5065am	5935am	7435am	
0800-0900	Zimbabwe, ZBC/Radio 4	5975do	6045do	7285do	
0805-0820 smtwhf	Monaco, Trans World Radio	7115eu			
0805-0835	Swaziland, Trans World R	5055af	6070af	9500af	9650af
0815-0900 mtwtf	Nigeria, FRCN/Radio	3326do	4990do		
0830-0900 s	Armenia, Voice of	15170eu	15270eu		
0830-0900 vl	Australia, VL8A Alice Spg	2310do			
0830-0900 vl	Australia, VL8K Katherine	2485do			
0830-0900 vl	Australia, VL8T Tent Crk	2325do			
0830-0900	Netherlands, Radio	9720pa	12065pa	13700pa	
0830-0857	Slovakia, R Slovakia Intl	11990au	15640au	17485au	
0855-0900	Guam, TWR/KTWR	11830pa			

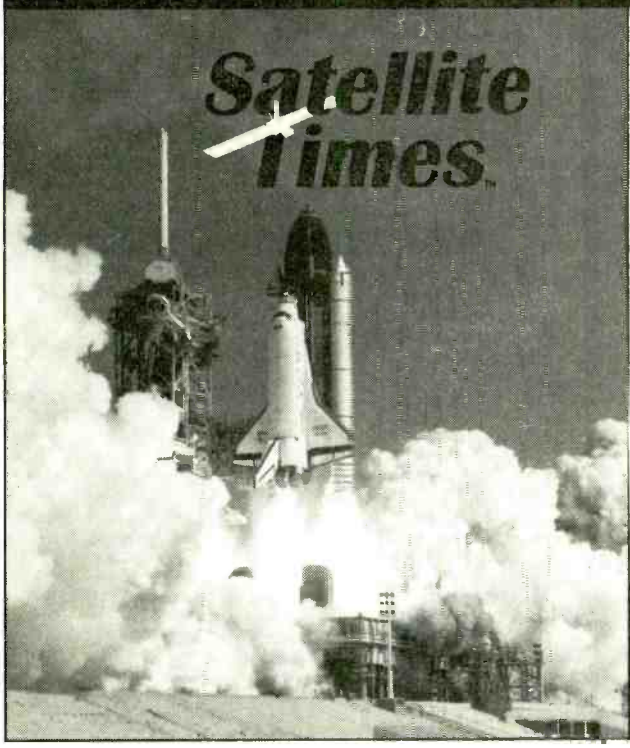
HAUSER'S HIGHLIGHTS

ALGERIA: RAI

Heard on new freq 15160 in English 2000-2100*
Also announcing, but unheard, on 9645, 15215, 17545, 7145, 9535, 11515, 15205; also at 1800-1900 only heard on 15160
(Brian Alexander, PA)
1800-1900 heard on 9535, 15160, strong but low modulation, also giving 9625, 11515, 15120, 15215, 17545
(Ed Rausch, NJ)
Inaudible on out-of-band 11515, 17545—suspect RAI's own typos for previously used 11715, 17745 (gh, OK)

www.americanradiohistory.com

A New Leader in Space Has Been Launched...



Are you looking for the best satellite news, information, and ideas? *Satellite Times* covers every aspect of space communications--from commercial, military and broadcasts, to amateur, scientific, government and even private satellites.

Every bimonthly issue is filled with the most up-to-date topics and will bring you into a new era of monitoring—satellite monitoring!

Satellite Times
300 S. Hwy. 64 W.
Brasstown, NC 28902
1-800-438-8155 (US & Canada)
(704) 837-9200
FAX: (704) 837-2216

Subscription:
1 year US, $19.95 (6 issues); US first class, $32.95; Canada, $26.95 (US funds); Elsewhere, $44.95 foreign air mail (US funds only drawn on a US bank)

NEW!! **SCANCAT GOLD** IMPROVED!

Since 1989, The Recognized Leader in Computer Control

Once you use SCANCAT with YOUR radio, you'll NEVER use your radio again WITHOUT SCANCAT!

SCANCAT supports most radios by:
AOR, DRAKE, KENWOOD, ICOM, YAESU and JRC (NRD)
Plus PRO-2005,6 & 2035/OS456, Lowe HF-150, and Watkins-Johnson HF-1000

SCANCAT 6.0 FEATURES

- Search between any 2 frequencies.
- Search by ANY increment.
- Create Disk files.
- Import from most text formats to a working SCANCAT file.
- Log found frequencies to files while scanning.
- Scan Disk Files Frequencies.
- Spectrum Analysis to Screen OR Printer.

SCANCAT - GOLD FEATURES

We simply don't have the space to tell you ALL the new GOLD features
SCANCAT-GOLD includes ALL ABOVE 6.0 FEATURES PLUS

- Link up to 15 frequency disk files.
- D-BASE IMPORT w/DUPLICATE filters.
- Scan HF & VHF Icom's simultaneously.
- PRINT to ANY printer, or Disk File.
- Automatic BIRDIE LOCKOUT.
- Link up to 15 search banks.
- IMPORT virtually any database.
- Search by CTCSS & DCS TONES with PRO2005,6/2035 (& ICOM/DC440).
- MULTIPLE search filters.

PLUS - POWERFUL COMMERCIAL FEATURES SUCH AS:

- Demographic search for frequency co-ordination and 2-way Usage Analysis.
- Detailed logging to ASCII type files with DATE, TIME, Sig Str, Air Time
- UNLIMITED file sizes with our exclusive SCANCAT filing method.
- Exclusive "MACRO" control by frequency of Dwell, Hang, Resume, Sig. Treshhold and even 5 separate programmable, audible alarms.
- Command line options for TIMED ON/OFF (Unattended) logging/searches.

Now Supports AOR AR8000

*****SCANCAT IS NOT COPY PROTECTED —USE ON AS MANY COMPUTERS AS YOU NEED *****
SCANCAT will run on virtually ANY 640K computer, EVEN HP-100XLT PALMTOP!

SCANCAT comes ready to run ALL supports radios within only ONE program. SCANCAT makes your listening hobby a breeze! Plus, the included SCANPORT allows you to convert your favorite BBS, D Base or Text Files to a running SCANCAT file. 100+ Page manual included. Requires a 640K MS-DOS computer w/RS-232C serial port - hard disk recommended. Manufacturer's Interface not included.

CALL or WRITE for FREE information or our $5.00 FULLY OPERATIONAL DEMO DISK (includes shipping/handling). ORDER NOW & RECEIVE as a BONUS, FOUR SCANCAT FREQUENCY FILES!

SCANCAT GOLD	$94.95	UPGRADE	$21.95
SCANCAT 6.0	$69.95	from any version	
SQUELCH DETECT CABLES	$24.95	PLUS $5.00 SHIPPING & HANDLING $7.50 FOREIGN	
OPTOScan456 kit $299 ($10 s/h)			

Order OS456 board & SCANCAT-GOLD combined and receive our 5" frequency disk **FREE!**
Order direct or contact your favorite dealer

COMPUTER AIDED TECHNOLOGIES
P.O. Box 18285 Shreveport, LA 71138
Orders Only (318) 636-1234 - FAX (318) 686-0449 (24 hrs)
Live Tech Support - (318) 687-2555 (9 a.m. - 1 p.m. Central M-F)
Nitetime BBS (SCANCAT File Area) (318) 631-3082 (7 p.m. - 6 a.m. Central)
Online support available on GEnie. • E-mail - j.springer7@geis.com
FREE DEMO ON BBS

Join the **FUN** on the
SATELLITES

YES! Anyone with a Technician Class license or higher can work the

Coming SOON
Phase 3D

More Modes
More Bands
Even MORE FUN

via the
OSCARs

Learn how: Join AMSAT today!
Until September 30: New members & renewals receive. **FREE:**

ORBITs - Satellite tracking software by W0SL
OR
Up/Down - Software listing all the amateur satellites with their modes and frequencies by KF0JT

Dues: $30 U.S. $36 Canada/Mexico, $45 elsewhere VISA/MC accepted

Write or call:

AMSAT

PO Box 27 Washington, DC 20044
Phone: 301-589-6062

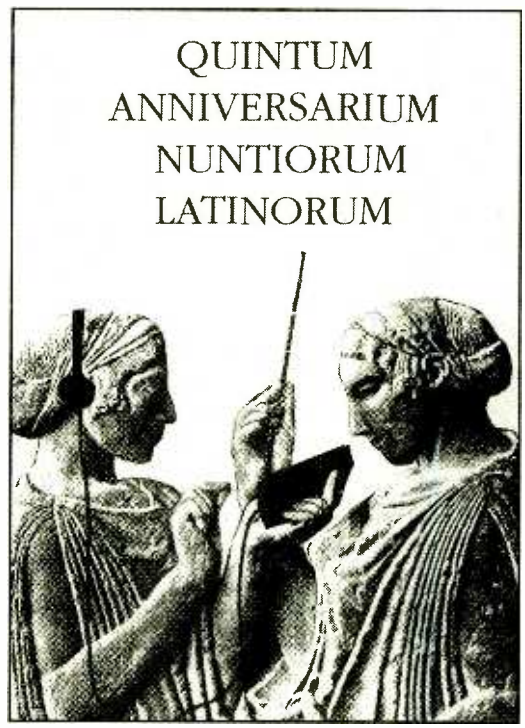
www.americanradiohistory.com

FREQUENCIES

0900-1000	Australia, AF Radio	15605af	18191af		
0900-1000	Australia, Radio	5995as	7240as	9510as	9580pa
		9860pa	13605as	15170as	21725as
0900-1000 vl	Australia, VL8A Alice Spg	2310do			
0900-1000 vl	Australia, VL8K Katherine	2485do			
0900-1000 vl	Australia, VL8T Tent Crk	2325do			
0900-1000	Bahrain, Radio	6010do			
0900-0925 mtwhfa	Belgium, R Vlaanderen Int	6035eu	15545af	17595af	
0900-1000	Canada, CFCX Montreal	6005do			
0900-1000	Canada, CFRX Toronto	6070do			
0900-1000	Canada, CFVP Calgary	6030do			
0900-1000	Canada, CHNX Halifax	6130do			
0900-1000	Canada, CKZU Vancouver	6160do			
0900-1000	China, China Radio Intl	11755pa	15440pa		
0900-1000	Costa Rica, R Peace Intl	7385am	9400am		
0900-1000	Ecuador, HCJB Quito	6135pa			
0900-1000 as	Eqt Guinea, R East Africa	9585af			
0900-0950	Germany, Deutsche Welle	6160as	9565af	11715as	12055as
		15410af	17715as	17780as	21600af
		21680as			
0900-0915 mtwtf	Ghana, Ghana Broadc Corp	3366do	4915do		
0900-1000	Guam, AWR/KSDA	9530as			
0900-0915	Guam, TWR/KTWR	15200as			
0900-1000	Guam, TWR/KTWR	11830pa			
0900-1000	Iraq, Radio Iraq Intl	13680as			
0900-1000 mtwh/vl	Italy, IRRS Milan	7125va			
0900-1000	Japan, NHK/Radio	9610as	11850au	15190as	
0900-0948 vl	Kiribati, Radio	9825do			
0900-1000	Lebanon, Voice of Hope	6280me			
0900-1000	Lebanon, Wings of Hope	9960va			
0900-1000 vl	Liberia, Radio ELBC	7275do			
0900-1000	Malaysia, Radio	7295do			
0900-0930	Netherlands, Radio	9720pa	13700pa		
0900-1000	New Zealand, R NZ Intl	6100pa			
0900-1000 mtwtf	Nigeria, FRCN/Radio	3326do	4990do		
0900-1000	Nigeria, FRCN/Voice of	7255af			
0900-1000	Palau, KHBN/Voice of Hope	9965as			
0900-1000 vl	Papua New Guinea, NBC	4890do	9675do		
0900-1000	Russia, Voice of	9835as	11800as	11900as	17590as
		17695as	17765as	17870as	
0900-1000	Slovakia, AWR	15620am			
0900-1000 vl	Solomon Islands, SIBC	5020do	9545do		
0900-0930	Switzerland, Swiss R Intl	9885au	13685au	17515au	
0900-1000	United Kingdom,BBC London	6190af	6195as	9740as	11750as
		11940af	12095va	15070va	15190sa
		15280va	15400va	15575me	17640va
		17705va	17830va	17885af	
0900-0915	United Kingdom,BBC London	9575as	11765as	11955as	15310as
		15360as			
0900-0930	United Kingdom,BBC London	9410me	11760me		
0900-1000	USA, KAIJ Dallas TX	5810am	9815am		
0900-1000	USA, KTBN Salt Lk City UT	7510am			
0900-1000	USA, KWHR Naalehu HI	9930as			
0900-1000	USA, Monitor Radio Intl	7395sa	7535eu	9430as	13615pa
0900-1000	USA, WEWN Birmingham AL	7425na			
0900-1000	USA, WHRI Noblesville IN	5745am	9495am		
0900-1000	USA, WJCR Upton KY	7490na	13595na		
0900-1000 smtwhf	USA, WMLK Bethel PA	9465eu			
0900-1000 a	USA, WVHA Green Bush ME	9870af			
0900-1000	USA, WWCR Nashville TN	5065am	5935am	7435am	
0900-1000	Zimbabwe, ZBC/Radio 4	5975do	6045do	7285do	
0910-0940	Mongolia, R Ulan Bator	9960as	12000na		
0915-1000	Ghana, Ghana Broadc Corp	6130do	7295do		
0930-1000 mtwhfa	Austria, R Austria Intl	6155eu	13730pa	17870pa	
0930-1000	Canada, CKZN St John's	6160do			
0930-1000	Netherlands, Radio	7260pa	9720pa	9810pa	21505pa
0930-1000	Philippines, FEBC/R Intl	11690as			

1000 UTC

1000-1100	Australia, Radio	5995as	7240as	9580pa	9860pa
		13605as	15170as	21725as	
1000-1100 vl	Australia, VL8A Alice Spg	2310do			
1000-1100 vl	Australia, VL8K Katherine	2485do			
1000-1100 vl	Australia, VL8T Tent Crk	2325do			
1000-1100	Bahrain, Radio	6010do			
1000-1100	Canada, CFCX Montreal	6005do			
1000-1100	Canada, CFRX Toronto	6070do			
1000-1100	Canada, CFVP Calgary	6030do			
1000-1100	Canada, CHNX Halifax	6130do			
1000-1100	Canada, CKZN St John's	6160do			
1000-1100	Canada, CKZU Vancouver	6160do			
1000-1100	China, China Radio Intl	11755pa	15440pa		
1000-1100	Costa Rica, R Peace Intl	7385am	9400am		
1000-1100	Ecuador, HCJB Quito	6135as			
1000-1100 as	Eqt Guinea, R East Africa	9585af			
1000-1040	Ghana, Ghana Broadc Corp	6130do	7295do		
1000-1100	India, All India Radio	15050as	15180as	17387au	17895as
1000-1100	Iraq, Radio Iraq Intl	13680eu			
1000-1030	Israel, Kol Israel	15640na	15650eu	17575eu	
1000-1100 mtwh/vl	Italy, IRRS Milan	7125va			
1000-1100	Lebanon, Voice of	6280me			
1000-1100	Lebanon, Wings of Hope	9960va			
1000-1100	Malaysia, Radio	7295do			
1000-1100	Malaysia, RTM/Kota Kinab	5980do			
1000-1030	Netherlands, Radio	7260pa	9720pa	9810pa	21505pa
1000-1100	New Zealand, R NZ Intl	6100pa			
1000-1100	Nigeria, FRCN/Radio	4990do	7285do		
1000-1100	Nigeria, FRCN/Voice of	7255af			
1000-1100	Palau, KHBN/Voice of Hope	9965as			
1000-1100 vl	Papua New Guinea, NBC	4890do	9675do		
1000-1100	Philippines, FEBC/R Intl	11690as			
1000-1100	Russia, Voice of	9835as	11800eu	11900as	13370as
		15110as	15405as	15510eu	17560as
		17590as	17765as	17870as	
1000-1100	Singapore, SBC Radio One	6155do			
1000-1030	Sweden, Radio	6160eu			
1000-1030	Switzerland, Swiss R Intl	6165eu	9535eu		
1000-1015	Uganda, Radio	4976do			
1000-1100	United Kingdom,BBC London	6190af	6195as	9410va	9740as
		11750as	11760me	11940af	12095va
		15070va	15190sa	15310as	15400eu
		15575me	17640va	17705va	17790as
		17885af			
1000-1030	United Kingdom,BBC London	15280as	17830as		
1000-1100	USA, KAIJ Dallas TX	9815am			
1000-1100	USA, KTBN Salt Lk City UT	7510am			
1000-1100	USA, Monitor Radio Intl	6095ca	7395sa	9430as	13625as
1000-1100	USA, VOA Washington DC	5985pa	6165am	7405am	9590am
		11720pa	11915am	15120am	15425pa
1000-1100	USA, WHRI Noblesville IN	6040am	9495am		
1000-1100	USA, WJCR Upton KY	7490na	13595na		
1000-1100	USA, WWCR Nashville TN	5065am	5935am		
1000-1100	USA, WYFR Okeechobee FL	5950na			
1000-1015 mtwhfa	Vatican State, Vatican R	6245eu	11740eu	17550eu	
1000-1030	Vietnam, Voice of	7250na	9840as	12020as	15010as
1020-1030 mtwtfa	Vatican State, Vatican R	11740af	15210af	17585me	
1030-1100	Austria, R Austria Intl	17870pa			
1030-1100	Czech Rep, Radio Prague	7345eu	9505eu		
1030-1100	Malaysia, RTM/Kuching	7160do			
1030-1100	Netherlands, Radio	7260pa	9810pa		
1030-1100	South Korea, R Korea Intl	11715na			
1030-1100	Sri Lanka, SLBC Colombo	11835as	15120as	17850au	
1030-1100	UAE, Radio Dubai	13675eu	15320eu	15395eu	21605me



This classic QSL, from the unique Latin broadcaast from Radio Finland ,was sent to MT from loyal listener Scott H. Sikes of Athens, Georgia.

www.americanradiohistory.com

FREQUENCIES

1100-1200	Australia, Radio	5995as	7240as	9510pa	9580pa
		9710pa	9860pa	13605as	15170as
		15530as	15565as		
1100-1200 vl	Australia, VL8A Alice Spg	2310do			
1100-1200 vl	Australia, VL8K Katherine	2485do			
1100-1200 vl	Australia, VL8T Tent Crk	2325do			
1100-1200	Bahrain, Radio	6010do			
1100-1200	Canada, CFCX Montreal	6005do			
1100-1200	Canada, CFRX Toronto	6070do			
1100-1200	Canada, CFVP Calgary	6030do			
1100-1200	Canada, CHNX Halifax	6130do			
1100-1200	Canada, CKZN St John's	6160do			
1100-1200	Canada, CKZU Vancouver	6160do			
1100-1200	Costa Rica, AWR Alajuela	5030am	7375am	9725am	13750am
1100-1200	Costa Rica, R Peace Intl	9400am			
1100-1130	Ecuador, HCJB Quito	6135pa			
1100-1200	Ecuador, HCJB Quito	12005am	15115am	15540am	21455am
1100-1200 as	Eqt Guinea, R East Africa	9585af			
1100-1150	Germany, Deutsche Welle	15370af	15410af	17715af	17765af
		17800af	17860af		
1100-1110 as	Ghana, Ghana Broadc Corp	3366do	4915do		
1100-1200	Iraq, Radio Iraq Intl	13680eu			
1100-1200 mtwh/vl	Italy, IRRS Milan	7125va			
1100-1200	Japan, NHK/Radio	6120na	9610as	15350as	
1100-1200	Jordan, Radio	15170eu			
1100-1200	Lebanon, Wings of Hope	9960va			
1100-1200	Malaysia, Radio	7295do			
1100-1200	Malaysia, RTM/Kota Kinab	5980do			
1100-1200	Malaysia, RTM/Kuching	7160do			
1100-1200	New Zealand, R NZ Intl	6100pa			
1100-1105	Nigeria, FRCN/Radio	4990do	7285do		
1100-1150	North Korea, R Pyongyang	6576na	9977na	11335na	
1100-1120	Pakistan, Radio	15625as	17900as		
1100-1200	Palau, KHBN/Voice of Hope	9965as			
1100-1200 vl	Papua New Guinea, NBC	4890do	9675do		
1100-1200	Russia, Voice of	4740as	9835as	11900as	11940as
	13370as 15110as	15405as	15510eu	17560as	17590as
	17675as 17685as	17755as	17765as	17775as	17795as
	17835as 17870as				
1100-1115	Rwanda, Radio	6055do			
1100-1200	Singapore, SBC Radio One	6155do			
1100-1200	Singapore,R Singapore Int	9530as			
1100-1130	Sri Lanka, SLBC Colombo	11835as	15120as	17850au	
1100-1130	Switzerland, Swiss R Intl	6165eu	9535eu	13635as	15545as
		17515as			
1100-1200	Taiwan, Voice of Asia	7445as			
1100-1102	Uganda, Radio	7110do	7195do		
1100-1200	United Kingdom,BBC London	5965na	6190af	6195va	9410va
	9515na 9575as	9740va	11750as	11760me	11765as
	11940af 11955as	12095va	15070va	15310as	15360as
	15575me 17640va	17705af	17830af		
1100-1130	United Kingdom,BBC London	6100au	15190sa	15400eu	17790va
1100-1200	USA, KAIJ Dallas TX	5810am	9815am		
1100-1200	USA, KTBN Salt Lk City UT	7510am			
1100-1200	USA, KWHR Naalehu HI	9930as			
1100-1200	USA, Monitor Radio Intl	6095na	7395ca	9355eu	9425au
1100-1200	USA, VOA Washington DC	5985as	6110as	6165am	7405am
		9590am	9615as	9645as	9760as
		11720as	11915am	15160as	15425as
1100-1200	USA, WEWN Birmingham AL	7425na			
1100-1200	USA, WHRI Noblesville IN	6040am	9495am		
1100-1200	USA, WJCR Upton KY	7490na	13595na		
1100-1200 s/vl	USA, WVHA Green Bush ME	13770af			
1100-1200	USA, WWCR Nashville TN	5065am	13845am	15685am	
1100-1200	USA, WYFR Okeechobee FL	5950na	11830na		
1100-1130	Vietnam, Voice of	7250as	9840as	15010as	
1130-1200	Austria, R Austria Intl	13730na			
1130-1200	Bulgaria, Radio	15635as	17625as		
1130-1200 vl	China, China Radio Intl	6995as	11445as	15135as	
1130-1200	Finland, YLE/Radio	11900na	15400na		
1130-1200	Iran, VOIRI Tehran	11745as	11790as	11875me	11930me
		15260af	17750me		
1130-1155 s	Monaco, Trans World Radio	7115eu			
1130-1200	Netherlands, Radio	6045eu	7130eu	7160eu	
1130-1200	Sweden, Radio	13740au	15120as	15240as	
1130-1200	USA, WRMI/R Miami Intl	9955am			
1145-1200	Rwanda, Radio	6055do			
1155-1200 a	Monaco, Trans World Radio	7115eu			

SELECTED PROGRAMS

Sundays

1100 KWHR (Hawaii): The Water of Life Broadcast. See S 0100.
1100 WHRI: Breakthrough. Rod Parsley conducts services from the World Harvest Church in Columbus, OH.
1100 WWCR #1: Words of Hope. Paul Bryson preaches from Georgia.
1100 WWCR #3: The Overcomer Broadcast (live) Brother R. G. Stair preaches about the last days.
1115 WWCR #1: Voice of Thunder Broadcast. Terry Steenburg teaches from scripture.
1130 WWCR #1: Staff of Life. Irene Armstrong.
1145 WWCR #1: Back to the Bible Baptist Church. Floyd Hendren.

Mondays

1100 WHRI: Music. See S 0000.
1100 WWCR #3: The Overcomer Broadcast (live) See S 1100.
1106 WWCR #1: Point of View. Marlin Maddoux interviewing on current events of interest to Christians.
1130 KWHR (Hawaii): Faith Seminar of the Air. Kenneth Hagin evangelizes.
1131 WWCR #1: Freedom Under Fire. Attorney and author John Whitehead defends life, liberty, and family freedom.
1145 KWHR (Hawaii): Listen to Jesus. Clinton and Sarah Outerbach from The Redeeming Love Christian Center of Nanuet, NY.
1155 WWCR #1: Bible Pathway. Rick Hash with five minutes of Bible readings.

Tuesdays

1100 KWHR (Hawaii): Modern Manna. Danny Vierra tells you how to evaluate your life and make changes for better health.
1100 WHRI: Music. See S 0000.
1100 WWCR #3: The Overcomer Broadcast (live) See S 1100.
1106 WWCR #1: Point of View. See M 1106.
1130 KWHR (Hawaii): Faith Seminar of the Air. See M 1130.
1131 WWCR #1: Freedom Under Fire. See M 1131.
1145 KWHR (Hawaii): Listen to Jesus. See M 1145.
1155 WWCR #1: Bible Pathway. See M 1155.

Wednesdays

1100 Radio for Peace Int l: World of Radio. See S 0200.
1100 WHRI: Music. See S 0000.
1100 WWCR #3: The Overcomer Broadcast (live). See S 1100.
1106 WWCR #1: Point of View. See M 1106.
1130 KWHR (Hawaii): Faith Seminar of the Air. See M 1130.
1131 WWCR #1: Freedom Under Fire. See M 1131.
1145 BBC (am): Human Interest. From Nairobi to Beijing. See A 1245.
1145 KWHR (Hawaii): Listen to Jesus. See M 1145.
1155 WWCR #1: Bible Pathway. See M 1155.

Thursdays

1100 KWHR (Hawaii): Modern Manna. See T 1100.
1100 WHRI: Music. See S 0000.
1100 WWCR #3: The Overcomer Broadcast (live). See S 1100.
1106 WWCR #1: Point of View. See M 1106.
1130 BBC (af/eu): Popular Music. Rock Salad. see S 0115.
1130 BBC (as pac) General Feature. Pick of the World. See M 0630.
1130 KWHR (Hawaii): Faith Seminar of the Air. See M 1130.
1131 WWCR #1: Freedom Under Fire. See M 1131.
1145 KWHR (Hawaii): Listen to Jesus. See M 1145.
1155 WWCR #1: Bible Pathway. See M 1155.

Fridays

1100 WHRI: Music. See S 0000.
1100 WWCR #3: The Overcomer Broadcast (live). See S 1100.
1106 WWCR #1: Point of View. See M 1106.
1130 KWHR (Hawaii): Faith Seminar of the Air. See M 1130.
1131 WWCR #1: Freedom Under Fire. See M 1131.
1145 KWHR (Hawaii): Music. See S 0230.
1155 WWCR #1: Bible Pathway. See M 1155.

Saturdays

1100 KWHR (Hawaii): Sounds of Praise. A LeSEA Production.
1100 WWCR #3: The Overcomer Broadcast (live). See S 1100.
1105 WWCR #1: The Spoken Word of God. See S 0310.
1106 WHRI: For the People (repeat) (6.040). See T 0206.
1115 WWCR #1: Rhema Radio Church. Kenneth Hagin, Jr. preaches from Tulsa, Oklahoma.
1145 WWCR #1: Brother Ed. Ed Skultety evangelizes from Oregon.

HAUSER'S HIGHLIGHTS

BANGLADESH: RB EXTERNAL SERVICE

To Asia:		
1230-1300	English	9650, 7185, 7105
1315-1345	Nepali	9650, 7185, 4880
1400-1430	Urdu	
1515-1545	Hindi	9650, 7185
To Mideast:		
1600-1630	Arabic	
1630-1730	Bengali	13615, 9650
To Europe:		
1745-1815	Voice of Islam in English,	
1815-1900	English	15520, 9560, 7190
1915-2000	Bengali	15520, 9650, 7190

All frequencies subject to variation (BBCM)
15520, slightly off channel, clashes with HCJB to Europe
(Wolfgang Büschel, Germany)

www.americanradiohistory.com

1200 UTC SHORTWAVE GUIDE 8:00 AM EDT 5:00 AM PDT

FREQUENCIES

1200-1300	Australia, Radio	5995pa	6060pa	6080pa	7260as
		9610as	11800pa	15565as	
1200-1300 vl	Australia, VL8A Alice Spg	2310do			
1200-1300 vl	Australia, VL8K Katherine	2485do			
1200-1300 vl	Australia, VL8T Tent Crk	2325do			
1200-1300	Bahrain, Radio	6010do			
1200-1300	Brazil, Radiobras	15445na			
1200-1230	Bulgaria, Radio	15635as	17625as		
1200-1215	Cambodia, Natl Voice of	11940as			
1200-1300 vl	Canada, CBC N Quebec Svc	9625do			
1200-1300	Canada, CFCX Montreal	6005do			
1200-1300	Canada, CFRX Toronto	6070do			
1200-1300	Canada, CFVP Calgary	6030do			
1200-1300	Canada, CHNX Halifax	6130do			
1200-1300	Canada, CKZN St John's	6160do			
1200-1300	Canada, CKZU Vancouver	6160do			
1200-1300 mtwhf	Canada, RCI Montreal	9635am	11855am	13650am	
1200-1300	China, China Radio Intl	8425na	9655as	9715as	11660as
		11795pa	15440pa		
1200-1230 vl	China, China Radio Intl	8660as	11445as	12110as	15135as
1200-1300	Costa Rica, AWR Alajuela	5030am	7375am	9725am	13750am
1200-1300	Costa Rica, R Peace Intl	6200am	9400am	15050am	
1200-1300	Ecuador, HCJB Quito	12005am	15115am	15440am	21455am
1200-1300 as	Eqt Guinea, R East Africa	9585af			
1200-1300	France, Radio France Intl	9805eu	11615au	13625na	15155eu
		15195eu	15325af	15530na	
1200-1230	Iran, VOIRI Tehran	11745as	11790as	11875me	11930me
		15260af	17750me		
1200-1300	Iraq, Radio Iraq Intl	13680eu			
1200-1300 mtwh/vl	Italy, IRRS Milan	7125va			
1200-1300	Jordan, Radio	15270eu			
1200-1300	Lebanon, Wings of Hope	9960va			
1200-1300 vl	Liberia, Radio ELBC	7275do			
1200-1300	Malaysia, Radio	7295do			
1200-1300	Malaysia, RTM/Kota Kinab	5980do			
1200-1230 mw	Mongolia, R Ulan Bator	7290na	12015na		
1200-1230 ha	Mongolia, R Ulan Bator	7290na	12000na		
1200-1300	Netherlands, Radio	6045eu	7130eu	7160eu	
1200-1206	New Zealand, R NZ Intl	6100pa			
1200-1230	Nigeria, FRCN/Radio	4990do	7285do		
1200-1230 s	Norway, Radio Norway Intl	13800as	15170as		
1200-1300 vl	Palau, KHBN/Voice of Hope	9965as			
1200-1300 vl	Papua New Guinea, NBC	4890do	9675do		
1200-1300	Poland, Polish R Warsaw	6135eu	7145eu	7270eu	9525eu
		11815eu			

1200-1300	Russia, Voice of		4740as	4975as	5960as	7150as
	9540na	9800pa	9895as	11820as	11880as	13370as
	15105as	15110as	15405as	15435as	15510eu	15560as
	15570as	17590as	17600as	17645as	17755as	17765as
	17775as	17780as	17795as	17835as	17870as	
1200-1300	Singapore, SBC Radio One		6155do			
1200-1300	Singapore,R Singapore Int		9530as			
1200-1300	South Korea, R Korea Intl		7285as			
1200-1300	Taiwan, VO Free China		7130au	9610as		
1200-1300	United Kingdom,BBC London		6190af	6195va	9410va	9515na
	9575as	9740va	11365am	11750as	11760me	11765as
	11865va	11940af	11955as	12095va	15070va	15310as
	15360as	15575me	17640va	17705va	17830af	17885af
	21660af					
1200-1300	USA, KAIJ Dallas TX		5810am	9815am		
1200-1300	USA, KTBN Salt Lk City UT		7510am			
1200-1300	USA, KWHR Naalehu HI		9930as			
1200-1300	USA, Monitor Radio Intl		6095na	9355as	9425au	9455na
1200-1300	USA, VOA Washington DC		6110as	9645as	9760as	11715as
			15160as	15425as		
1200-1300	USA, WEWN Birmingham AL		7425na	9540sa		
1200-1300	USA, WHRI Noblesville IN		6040am	9495am		
1200-1300	USA, WJCR Upton KY		7490na	13595na		
1200-1300 s	USA, WRMI/R Miami Intl		9955am			
1200-1300 a	USA, WVHA Green Bush ME		11695af			
1200-1300	USA, WWCR Nashville TN		5065am	13845am	15685am	
1200-1300	USA, WYFR Okeechobee FL		5950na	6015na	11830na	17750na
1200-1230	Uzbekistan, R Tashkent		7285eu	9715eu	15295eu	17815eu
1206-1300 occsnal	New Zealand, R NZ Intl		6100pa			
1215-1300	Egypt, Radio Cairo		17595as			
1220-1229 vl	Ghana, Ghana Broadc Corp		4915do			
1230-1300	Austria, R Austria Intl		15450as			
1230-1300	Bangladesh, Radio		7105as	7185as	9650as	
1230-1255 s	Belgium, R Vlaanderen Int		13670na			
1230-1300	Canada, RCI Montreal		9660as	11855na	15195as	
1230-1300	Finland, YLE/Radio		11900na	15400na		
1230-1300	Ghana, Ghana Broadc Corp		6130do	7295do		
1230-1300	Indonesia, RRI Sorong		4875do			
1230-1300	Moldova, R Moldova Intl		15315na			
1230-1300	South Korea, R Korea Intl		9570as	9640as	13670eu	
1230-1300	Sweden, Radio		11650na	15240na		
1230-1300	Switzerland, Swiss R Intl		6165eu	9535eu		
1230-1300	Turkey, Voice of		9675as			
1230-1300	Vietnam, Voice of		9840as	12020as	15010as	
1240-1250	Greece, Voice of		15650af			

SELECTED PROGRAMS

Sundays

1200 WHRI: In Touch (6.040). The teaching ministry of Charles Stanley.
1200 WWCR #1: First Hand. Rick Livingood with a world evangelism update.
1200 WWCR #3: The Overcomer Broadcast (live). See S 1100.
1215 WWCR #1: The Word of Life Broadcast. Jerry L. Maynard tells how to maximize your potential.
1230 WWCR #1: Words of Hope. See S 1100.
1245 WWCR #1: The Voice of Life. Evangelist C.C. Wells of Memphis, Tennessee.

Mondays

1200 WHRI: The Voice of Praise (6.040). See M 0645.
1200 WWCR #1: End Time Revival Network. Various speakers present an evangelical program.
1200 WWCR #3: The Overcomer Broadcast (live). See S 1100.
1215 WHRI: Reach Out. Pastor Jerry reaches out with Bible teaching.
1215 WWCR #1: Words of Truth. Bible teaching by Jim Whitfield of Raleigh, NC.
1230 BBC (eu) Classical Music. Music of the Motherland (7th,14th). Exploring the virtues and vices of music and musical life in Soviet Russia.
1230 WHRI: Faith Seminar of the Air. See M 0615.
1230 WWCR #1: Bread of Life Victory Hour (1). Brother Jack Meeks offers a free bible study correspondence course.
1230 WWCR #1: The Sower (3/5). See M 0500.
1230 WWCR #1: Victory Baptist Church (2/4). David Robinson preaches from Hildebrand, NC.
1245 WHRI: The Spiritual Warfare Broadcast. Mickey Bonner evangelizes.
1245 WWCR #1: Providence Baptist Church. Rick Kelly preaches from Kentucky.
1250 WHRI: Today's Family Life. Reaching out to families with hope and encouragement with Randy Carlson.

Tuesdays

1200 WHRI: The Voice of Praise (6.040). See M 0645.
1200 WWCR #1: End Time Revival Network. See M 1200.
1200 WWCR #3: The Overcomer Broadcast (live). See S 1100.
1215 WHRI: Reach Out. See M 1215.
1215 WWCR #1: Words of Truth. See M 1215.
1230 BBC (eu) General Feature. Pick of the World. See M 0630.
1230 WHRI: Faith Seminar of the Air. See M 0615.
1230 WWCR #1: World of Radio. Glenn Hauser's communications program for shortwave radio listeners.
1245 WHRI: The Spiritual Warfare Broadcast. See M 1245.
1250 WHRI: Today's Family Life. See M 1250.

Wednesdays

1200 WHRI: The Voice of Praise (6.040). See M 0645.
1200 WWCR #1: End Time Revival Network. See M 1200.
1200 WWCR #3: The Overcomer Broadcast (live). See S 1100.
1215 WHRI: Reach Out. See M 1215.
1215 WWCR #1: Words of Truth. See M 1215.
1230 WHRI: Faith Seminar of the Air. See M 0615.
1230 WWCR #1: The Chapel Hour. Otis Tillman evangelizes from Buffalo, New York.
1245 WHRI: The Spiritual Warfare Broadcast. See M 1245.
1250 WHRI: Today's Family Life. See M 1250.

Thursdays

1200 WHRI: The Voice of Praise (6.040). See M 0645.
1200 WWCR #1: End Time Revival Network. See M 1200.
1200 WWCR #3: The Overcomer Broadcast (live). See S 1100.
1215 BBC (am) Classical Music. Music of the Motherland (3rd,10th,17th). See M 1230.
1215 WHRI: Reach Out. See M 1215.
1215 WWCR #1: Words of Truth. See M 1215.
1230 WHRI: Faith Seminar of the Air. See M 0615.
1230 WWCR #1: Jesus is Coming. Jim Everette.
1245 WHRI: The Spiritual Warfare Broadcast. See M 1245.
1250 WHRI: Today's Family Life. See M 1250.

Fridays

1200 WHRI: The Voice of Praise (6.040). See M 0645.
1200 WWCR #1: End Time Revival Network. See M 1200.
1200 WWCR #3: The Overcomer Broadcast (live). See S 1100.
1215 WHRI: Reach Out. See M 1215.
1215 WWCR #1: Words of Truth. See M 1215.
1230 BBC (south as): Popular Music. Rock Salad. see S 0115.
1230 WHRI: Faith Seminar of the Air. See M 0615.
1230 WWCR #1: Battle Cry Sounding. Deborah Green evangelizes.
1245 BBC (as pac): Popular Music. Rock Salad. see S 0115.
1245 WHRI: The Spiritual Warfare Broadcast. See M 1245.
1250 WHRI: Today's Family Life. See M 1250.

Saturdays

1200 KWHR (Hawaii): Friends from Hawaii. No Information Available.
1200 Radio for Peace Int'l: World of Radio. See S 0200.
1200 WHRI: Music (6.040). See S 0000.
1200 WWCR #3: The Overcomer Broadcast (live). See S 1100.
1215 WWCR #1: First Hand. See S 1200.
1230 BBC (eu): Quiz. Brain of Britain. Robert Robinson has some more questions with which to tease the would-be Brains of Britain.
1230 WWCR #1: Battle Cry Sounding. See F 1230.
1245 BBC (af): Human Interest. From Nairobi to Beijing. A look at what has happened to women in the past decade.

www.americanradiohistory.com

FREQUENCIES

1300-1400	Australia, Radio	5995pa	7240as	9560pa	9610as
		11800pa			
1300-1330	Australia, Radio	6060pa	6080as	9510pa	
1300-1400 vl	Australia, VL8A Alice Spg	2310do			
1300-1400 vl	Australia, VL8K Katherine	2485do			
1300-1400 vl	Australia, VL8T Tent Crk	2325do			
1300-1400	Bahrain, Radio	6010do			
1300-1335 mtwhfa	Belgium, R Vlaanderen Int	13670na			
1300-1320	Brazil, Radiobras	15445na			
1300-1400 vl	Canada, CBC N Quebec Svc	9625do			
1300-1400	Canada, CFCX Montreal	6005do			
1300-1400	Canada, CFRX Toronto	6070do			
1300-1400	Canada, CFVP Calgary	6030do			
1300-1400	Canada, CHNX Halifax	6130do			
1300-1400	Canada, CKZN St John's	6160do			
1300-1400	Canada, CKZU Vancouver	6160do			
1300-1400 s	Canada, RCI Montreal	11955na	17820na		
1300-1400	China, China Radio Intl	7405na	9715as	11660pa	15440pa
1300-1400	Costa Rica, R Peace Intl	6200am	9400am	15050am	
1300-1400	Ecuador, HCJB Quito	12005am	15115am	21455eu	
1300-1330	Egypt, Radio Cairo	17595as			
1300-1400 as	Eqt Guinea, R East Africa	9585af			
1300-1330	Ghana, Ghana Broadc Corp	3366do	4915do		
1300-1400 mtwh/vl	Italy, IRRS Milan	7125va			
1300-1400	Lebanon, Wings of Hope	9960va			
1300-1400 vl	Liberia, Radio ELBC	7275do			
1300-1400	Malaysia, Radio	7295do			
1300-1400	Malaysia, RTM/Kota Kinab	5980do			
1300-1400	Malaysia, RTM/Kuching	7160do			
1300-1325	Netherlands, Radio	6045eu	7130eu	7160eu	
1300-1400 occsnal	New Zealand, R NZ Intl	6100pa			
1300-1350	North Korea, R Pyongyang	9345as	11740as		
1300-1330 s	Norway, Radio Norway Intl	9590eu	11850na		
1300-1400 vl	Palau, KHBN/Voice of Hope	9965as			
1300-1400 vl	Papua New Guinea, NBC	4890do	9675do		
1300-1400	Philippines, FEBC/R Intl	11995as			
1300-1400	Romania, R Romania Intl	11940eu	15365eu	17720eu	
1300-1400	Russia, Voice of	9540na	9800pa	9895as	11940as
		13370as	17675as	17685as	17725as
		17755as	17780as	17795as	17835as
1300-1400	Singapore, SBC Radio One	6155do			
1300-1400	Singapore,R Singapore Int	9530as			
1300-1330	Switzerland, Swiss R Intl	7230as	7480as	13635as	15545as
1300-1400	United Kingdom,BBC London	6190af	6195va	7180as	9410va
		9515na	9740va	11365am	11750as
		11760me	11860af	11865va	11940af
		12095va	15070va	15310as	15575me
		17640va	17705va	17830af	17885af
		21470af	21660af		
1300-1400	USA, KAIJ Dallas TX	5810am	9815am		
1300-1400	USA, KJES Mesquite NM	11715na			
1300-1400	USA, KNLS Anchor Point AK	7365as			
1300-1400	USA, KTBN Salt Lk City UT	7510am			
1300-1400	USA, Monitor Radio Intl	6095na	9355as	9455na	13625as
1300-1400	USA, VOA Washington DC	6110as	9645as	9760as	11715as
		15160as	15425as		
1300-1400	USA, WEWN Birmingham AL	7425na	11875na		
1300-1400	USA, WHRI Noblesville IN	6040am	15105am		
1300-1400	USA, WJCR Upton KY	7490na	13595na		
1300-1400 s	USA, WRMI/R Miami Intl	9955am			
1300-1400 a	USA, WVHA Green Bush ME	11695af			
1300-1400	USA, WWCR Nashville TN	5065am	13845am	15685am	
1300-1400	USA, WYFR Okeechobee FL	5950na	6015na	11830na	13695na
		17750na			
1300-1400	Zambia, Christian Voice	6065af			
1330-1400	Austria, R Austria Intl	6155eu	13730eu	15450as	
1330-1357	Canada, RCI Montreal	9535as	11795as		
1330-1400	Canada, RCI Montreal	15315eu	15325eu	17820eu	17895eu
		21455eu			
1330-1400	Costa Rica, R Peace Intl	9400am			
1330-1400	Finland, YLE/Radio	11900na	15400na		
1330-1400 tw	Ghana, Ghana Broadc Corp	4915do			
1330-1400	India, All India Radio	13732as	15120as		
1330-1400	Moldova, R Moldova Intl	15315eu			
1330-1400	Netherlands, Radio	9895as	13700as	15150as	
1330-1400	Sweden, Radio	11650na	15240na		
1330-1400	UAE, Radio Dubai	13675eu	15320eu	15395eu	21605me
1330-1400	Uzbekistan, R Tashkent	7285eu	9715eu	15295eu	17815eu
1330-1400	Vietnam, Voice of	9840as	12020as	15010as	
1335-1345	Greece, Voice of	15630na	17525na		
1345-1400	Vatican State, Vatican R	11625as	12050as	15585pa	

SELECTED PROGRAMS

Sundays

1300 Radio for Peace Int'l: Focus on Haiti. See S 0500.
1300 WHRI: Gospel Crusade Ministries. Scripture teachings by Roger Hedrick and free bible correspondence courses.
1300 WWCR #1: Wings of Healing. Evelyn Wyatt directs this international broadcast from Los Angeles.
1330 Radio for Peace Int'l: Science and Spirit (biweekly). See S 0530.
1330 Radio for Peace Int'l: Wisdom School of the Air (biweekly). See S 0530.
1330 WHRI: The Gospel Blessings Broadcast (15.105). Glenn McHatten evangelizes.
1330 WHRI: The Manna of Truth Broadcast (6.040). See S 0630.
1330 WWCR #1: Wayne Avenue Church of God. J.C. Wilber preaches from Columbus, Ohio.
1345 WHRI: Bible Pathway. Rick Hash with five minutes of Bible readings.

Mondays

1300 Radio for Peace Int l: Peace Forum (biweekly). See S 0430.
1300 Radio for Peace Int l: World Goodwill Forum (biweekly). See M 0500.
1300 WHRI: Music. See S 0000.
1300 WWCR #1: Hurricane. Ann Whitman evangelizes from West Virginia.
1315 WWCR #1: The Sower. See M 0500.
1330 WWCR #1: The Spiritual Warfare Broadcast. Five minutes of evangelizing by Mickey Bonner.
1335 WWCR #1: The Bright Spot Hour. Music and meditation by Harold Sightler of Greenville, South Carolina.

Tuesdays

1300 Radio for Peace Int l: United Nations. See T 0500.
1300 WHRI: Music. See S 0000.
1300 WWCR #1: Hurricane. See M 1300.
1315 Radio for Peace Int l: RFPI Reports. See S 2345.
1315 WWCR #1: The Sower. See M 0500.
1330 Radio for Peace Int l: Micro-Power Radio in the U.S.. See T 0530.
1330 Radio for Peace Int l: The Food Not Bombs Radio Network (monthly). See T 0530.
1330 WWCR #1: The Spiritual Warfare Broadcast. See M 1330.
1335 WWCR #1: The Bright Spot Hour. See M 1335.

Wednesdays

1300 Radio for Peace Int l: UNESCO. See T 0245.
1300 WHRI: Music. See S 0000.
1300 WWCR #1: Hurricane. See M 1300.
1315 Radio for Peace Int l: RFPI Reports. See S 2345.
1315 WWCR #1: The Sower. See M 0500.
1325 Radio for Peace Int l: Hightower Radio. See W 0525.
1330 Radio for Peace Int l: WINGS. See W 0530.
1330 WWCR #1: The Spiritual Warfare Broadcast. See M 1330.
1335 WWCR #1: The Bright Spot Hour. See M 1335.

Thursdays

1300 Radio for Peace Int l: United Nations. See T 0500.
1300 WHRI: Music. See S 0000.
1300 WWCR #1: Hurricane. See M 1300.
1315 Radio for Peace Int l: RFPI Reports. See S 2345.
1315 WWCR #1: The Sower. See M 0500.
1325 Radio for Peace Int l: Hightower Radio. See W 0525.
1330 Radio for Peace Int l: Vietnam Veterans Radio Network. See S 0630.
1330 WWCR #1: The Spiritual Warfare Broadcast. See M 1330.
1335 WWCR #1: The Bright Spot Hour. See M 1335.

Fridays

1300 Radio for Peace Int l: UNESCO. See T 0245.
1300 WHRI: Music. See S 0000.
1300 WWCR #1: Hurricane. See M 1300.
1315 Radio for Peace Int l: RFPI Reports. See S 2345.
1315 WWCR #1: The Sower. See M 0500.
1325 Radio for Peace Int l: Hightower Radio. See W 0525.
1330 Radio for Peace Int l: Steppin' Out of Babylon. See T 0300.
1330 WWCR #1: The Spiritual Warfare Broadcast. See M 1330.
1335 WWCR #1: The Bright Spot Hour. See M 1335.

Saturdays

1300 KWHR (Hawaii): Spirit of Truth. Don Young.
1300 Radio for Peace Int l: United Nations. See T 0500.
1300 WHRI: Listen to Jesus (15.105). See M 0630.
1300 WHRI: Modern Manna (6.040). Danny Vierra tells you how to evaluate your life and make changes for better health.
1303 WWCR #1: Focus on the Family (Weekend Edition). See T 0300.
1315 KWHR (Hawaii): River of Life. Paul Roberts evangelizes.
1315 Radio for Peace Int l: RFPI Reports. See S 2345.
1325 KWHR (Hawaii): Faith in Action. Betty Potterbaum.
1325 Radio for Peace Int l: Hightower Radio. See W 0525.
1330 KWHR (Hawaii): The Showers of Blessings Broadcast. Ed McAbee sermonizes before a live congregation.
1330 Radio for Peace Int l: Second Opinion. See H 0200.
1330 WHRI: Biblical Studies Institute (6.040). See S 0300.
1330 WHRI: Eternal Good News (15.105). Brother Lockwood evangelizes.
1330 WWCR #1: Hour of Reasoning. P. Mobley preaches to his congregation in Oakland, California.
1345 KWHR (Hawaii): The Bread of Life Victory Hour. Brother Jack Meeks with music and teaching.
1345 WHRI: Word of Faith (15.105). Aaron Collins preaches from Racine, Wisconsin.

Glen Miller on WWCR:

An outstanding WWII broadcast will be aired Saturday, August 5th, 1995, at 0600 UTC (1:00 AM-Central) 7.435 MHz, 1400 UTC (9:00 AM-Central) on 15.685 MHz and 2200 UtC (5:00 PM-Central on 12.160 MHz.

www.americanradiohistory.com

1400 UTC SHORTWAVE GUIDE 10:00 AM EDT 7:00 AM PDT

FREQUENCIES

1400-1500	Australia, AF Radio	8743af	10621af		
1400-1430	Australia, Radio	5995pa	7240pa	9560as	9610pa
		11695pa	11800pa		
1400-1500 vl	Australia, VL8A Alice Spg	2310do			
1400-1500 vl	Australia, VL8K Katherine	2485do			
1400-1500 vl	Australia, VL8T Tent Crk	2325do			
1400-1500	Bahrain, Radio	6010do			
1400-1500 vl	Canada, CBC N Quebec Svc	9625do			
1400-1500	Canada, CFCX Montreal	6005do			
1400-1500	Canada, CFRX Toronto	6070do			
1400-1500	Canada, CFVP Calgary	6030do			
1400-1500	Canada, CHNX Halifax	6130do			
1400-1500	Canada, CKZN St John's	6160do			
1400-1500	Canada, CKZU Vancouver	6160do			
1400-1500 s	Canada, RCI Montreal	11955na	17820na		
1400-1500	China, China Radio Intl	7405na	11815as		
1400-1500	Costa Rica, R Peace Intl	6200am	9400am	15050am	
1400-1500 as	Eqt Guinea, R East Africa	9585af			
1400-1500	France, Radio France Intl	7110as	15405as	17560as	
1400-1420	Ghana, Ghana Broadc Corp	3366do	4915do		
1400-1500	India, All India Radio	13732as	15120as		
1400-1500 mtwh/vl	Italy, IRRS Milan	7125va			
1400-1500	Japan, NHK/Radio	9535na	11705na	11895as	11915as
1400-1500	Jordan, Radio	15270na			
1400-1500	Lebanon, Wings of Hope	9960va			
1400-1500 vl	Liberia, Radio ELBC	7275do			
1400-1500	Malaysia, Radio	7295do			
1400-1500	Malaysia, RTM/Kota Kinab	5980do			
1400-1500	Malaysia, RTM/Kuching	7160do			
1400-1500 mtwhfa	Malta, V of Mediterranean	11925me			
1400-1435 s	Malta, V of Mediterranean	11925me			
1400-1425 mtwhfa	Moldova, R Moldova Intl	11580eu			
1400-1500 s	Morocco, RTV Marocaine	17575af			
1400-1500	Netherlands, Radio	9890as	13700as	15150as	
1400-1500 occsnal	New Zealand, R NZ Intl	6100pa			
1400-1405	Nigeria, FRCN/Radio	4990do	7285do		
1400-1500 vl	Palau, KHBN/Voice of Hope	9965as			
1400-1500	Philippines, FEBC/R Intl	11995as			
1400-1500	Russia, Voice of	9595as	11835as	11910as	11935as
		11945sa	11985me	12025as	13770as
		15320me	15425me	15540me	17570af
		17710me	17780as		
1400-1500	Singapore, SBC Radio One	6155do			
1400-1500	Slovakia, AWR	13595am			
1400-1500	United Kingdom,BBC London	6190af	6195as	7180as	9410va
		9515na	9740va	11365am	11750as
		11865va	11940af	12095va	15070va
		15310as	15575me	17640va	17705va
		17830af	21470af	21660af	
1400-1500	USA, KAIJ Dallas TX	5810am	9815am		
1400-1500	USA, KJES Mesquite NM	11715na			
1400-1500	USA, KTBN Salt Lk City UT	7510am			
1400-1500	USA, Monitor Radio Intl	9355as			
1400-1500	USA, VOA Washington DC	6110as	7215as	9645as	9760as
		15160as	15255as	15395as	15425as
1400-1500	USA, WEWN Birmingham AL	7425na	11875na		
1400-1500	USA, WHRI Noblesville IN	6040am	15105am		
1400-1500	USA, WJCR Upton KY	7490na	13595na		
1400-1500	USA, WRNO New Orleans LA	15420am			
1400-1500 a	USA, WVHA Green Bush ME	11695af			
1400-1500	USA, WWCR Nashville TN	12160am	13845am	15685am	
1400-1500	USA, WYFR Okeechobee FL	6015na	11830na	17750na	
1415-1500 mtwtfa	Bhutan, Bhutan BC Service	5025do			
1430-1500	Australia, Radio	6060pa	6080pa	7260as	9710pa
		11660as	11695pa		
1430-1500 vl	China, China Radio Intl	8660as	11445as	15135as	
1430-1500	Ecuador, HCJB Quito	6080am	12005am	15115am	15295am
		15540am	21455eu		
1430-1500 s	Ghana, Ghana Broadc Corp	3366do			
1430-1500	Myanmar, Radio	5990do	7185do		
1430-1500 mtwhf	Portugal, Radio	21515me			
1430-1500	Romania, R Romania Intl	11775as	15335as	17720as	
1445-1500	Mongolia, R Ulan Bator	7293as	9950as	12000na	

SELECTED PROGRAMS

Sundays

1400 WHRI: Christian Center Church (live). Dr. Lester Sumrall preaches.
1400 WWCR #1: Foursquare Gospel Tidings. J.E. Cartier presents a half-hour of gospel music and meditation.
1400 WWCR #3: The Overcomer Broadcast (live). See S 1100.
1401 BBC (south as) General Feature. Pick of the World. See M 0630.
1405 BBC (am): Human Interest. The Rhythms of Life (6th,13th). See S 0350.
1430 KWHR (Hawaii): Day of Decision. Bob Roman evangelizes from Texas.
1430 WWCR #1: A Temple of Jesus Christ. Cleveland Waters preaches from Philadelphia.

Mondays

1400 Radio for Peace Int l: The Far Right Radio Review. See M 0600.
1400 WHRI: World Harvest (live). An hour of Christian music and information for WHRI supporters.
1400 WWCR #3: The Overcomer Broadcast. See S 1100.
1402 WWCR #1: The Grace Hour (live). Carl Stevens of Baltimore answers listener questions about religion.
1430 KWHR (Hawaii): Music. See S 0230.
1445 BBC (as pac): Popular Music. Ragga with David Rodigan (7th,14th). See S 0445.

Tuesdays

1400 Radio for Peace Int l: CounterSpin. See S 0300.
1400 WHRI: World Harvest (live). See M 1400.
1400 WWCR #3: The Overcomer Broadcast. See S 1100.
1402 WWCR #1: The Grace Hour (live). See M 1402.
1430 BBC (south as) Science and Technology. Medicine 2020 (1st,8th,15th). See T 0445.
1430 KWHR (Hawaii): Music. See S 0230.
1445 BBC (am): Popular Music. Ragga with David Rodigan (1st,8th,15th). See S 0445.

Wednesdays

1400 Radio for Peace Int l: Peace Forum. See S 0430.
1400 WHRI: World Harvest (live). See M 1400.
1400 WWCR #3: The Overcomer Broadcast. See S 1100.
1402 WWCR #1: The Grace Hour (live). See M 1402.
1430 BBC (south as): Background Current Affairs Feature. History Today. See T 0530.
1430 KWHR (Hawaii): Music. See S 0230.

Thursdays

1400 Radio for Peace Int l: The Global Student Voice (biweekly). See M 0200.
1400 Radio for Peace Int l: Working Together (biweekly). See M 0200.
1400 WHRI: World Harvest (live). See M 1400.
1400 WWCR #3: The Overcomer Broadcast. See S 1100.
1402 WWCR #1: The Grace Hour (live). See M 1402.
1430 KWHR (Hawaii): Music. See S 0230.

Fridays

1400 Radio for Peace Int l: My Green Earth. See M 0230.
1400 WHRI: World Harvest (live). See M 1400.
1400 WWCR #3: The Overcomer Broadcast. See S 1100.
1402 WWCR #1: The Grace Hour (live). See M 1402.
1430 BBC (am): Human Interest. From Nairobi to Beijing. See A 1245.
1430 KWHR (Hawaii): Music. See S 0230.
1430 Radio for Peace Int l: University of the Air. See T 2300.

Saturdays

1400 Radio for Peace Int l: Peace Forum. See S 0430.
1400 WHRI: CCM Radio Magazine (6.040). The top contemporary christian music hits and the stories behind them.
1400 WHRI: The Home Education Network (live) (15.105). Terry and Vicki Brady take calls about schooling.
1400 WWCR #1: The Home Education Network (live). Terry and Vicki Brady take calls about schooling.
1400 WWCR #3: Morning Watch Chapel. See S 0300.
1430 KWHR (Hawaii): Children's World (Cantonese). Lutheran Hour.

Looking for a Good Antenna Handbook?

If you'd like a good source of information about antennas, you will be interested in ***THE ANTENNA HANDBOOK*** by Clem Small. Within its 200+, 8-1/2" x 11" pages, there is much material from past "Antenna Topics" columns plus a considerable amount of new material.

It is an excellent source of information for selecting, constructing, understanding, and utilizing your antenna system. Also covered are subjects like the history of antennas, odd and unusual antennas, signal propagation, factors affecting antenna performance, antenna accessories, and antenna troubleshooting.

THE ANTENNA HANDBOOK is available from Grove Enterprises, P.O. Box 98, Brasstown, NC 28902 for $12.95 plus $2 book rate postage ($4.50 UPS)

Propagation Forecasting

Jacques d'Avignon
965 Lincoln Drive
Kingston On K7M 4Z3 Canada

Distributor for ASAPS, propagation software Compuserve 70531,140

International Callsign Directory

The most exhaustive list of tactical callsigns and their identifications ever assembled for shortwave and scanner listeners in a massive, 250 page directory!

Now only $19.95 plus $4 Ups. Order today from Grove Enterprises

www.americanradiohistory.com

Radio Makes a Name for Itself

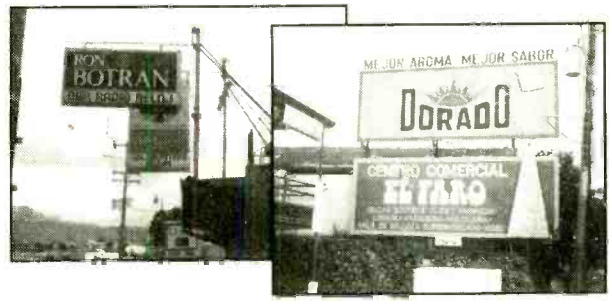
Hospital Vozandes (Voice of the Andes Hospital) is owned and operated by HCJB, the Voice of the Andes. Photo by Ken MacHarg.

By Kenneth D. MacHarg

In the United States we'll sometimes find a *Radio Ridge* or a *Tower Road* which indicates the presence of a radio station studio or a transmitter site.

In Latin America, too, it is quite common to name a street, a shopping center, or even an area of town after some prominent landmark. For example, the community in which we lived for several months in 1990 in Costa Rica was called *El Faro* after the nearby site of El Faro *del Caribe—TIFC.*

Some of Latin America's best-known shortwave stations are thus honored by having nearby sites named after them. As space will permit MT will print pictures of a few such places Rich McVicar and I have encountered in our travels.



Left: Bar Radio Reloj serves thirsty customers along one of San Jose's main arteries. The former Radio Reloj Studios and transmitters were at one time located directly across the street. The studios are now located in downtown San Jose, and the AM and shortwave transmitter site is in the suburb of Desamparados, several miles from this location. In 1990 the site across from the Radio Reloj Bar was used for the station's sister FM station, Sonido 11-20. That facility has now been moved and there is no sign of the former station at this site. But, the bar retains its name. Photos by Ken MacHarg
Right: El Faro Commercial Center is just one-half block from the former studio and transmitter site of TIFC, El Faro del Caribe (The Light House of the Caribbean) in a suburb of San Jose, Costa Rica. The neighborhood behind the center and the station is also known as El Faro. TIFC has since moved its studios along with its AM and shortwave transmitters to a more rural setting.

INTRODUCING THE UNIVERSAL M-400
A totally new concept in code / tone readers!

- Baudot
- Sitor A/B
- ASCII
- Swed-ARQ
- FEC-A
- FAX
- POCSAG
- GOLAY
- ACARS
- DTMF
- CTCSS (PL)
- DCS (DPL)

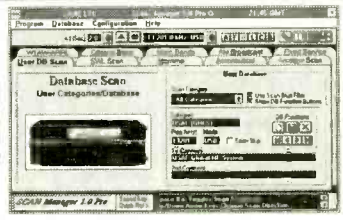
- **A RTTY-reader *and* tone-decoder in one!**
- **Easy to read two-line 40 character LCD.**
- **No computer or monitor required.**

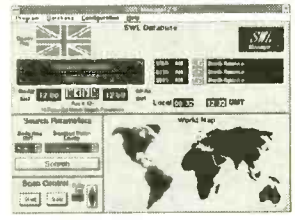
Forget the limitations you have come to expect from most "readers". The self-contained Universal M-400 is a sophisticated decoder *and* tone reader offering an exceptional range of capabilities. The SWL will be able to decode Baudot, SITOR A & B, FEC-A, ASCII and SWED-ARQ. Weather FAX can also be decoded 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 (PL) and DCS is also supported. 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 can run from 12 VDC or with the supplied wall adapter. The American-made Universal M-400 is *the* affordable accessory for every short-wave or scanner enthusiast. **Only $399.95 (+$6 UPS).**

Universal Radio
6830 Americana Pkwy.
Reynoldsburg, OH 43068
◆ Orders: 800 431-3939
◆ Info.: 614 866-4267

FREE CATALOG
This huge 100 page catalog covers everything for the shortwave, amateur and scanner enthusiasts.
Request it today!

Scan Manager 1.0 Pro **NEW!**
Windows-Based HF Scanning, Logging, SWL, and Radio Control Software





Scan Manager 1.0 Pro **SWL Manager 2.0**

Scan Manager 1.0 Pro is a **High-Performance** Windows-Based program designed primarily for the Amateur Radio & SWL Enthusiast. Scan Manager 1.0 Pro **Seemlessly** integrates the NEW version of SWL Manager for truely **Powerful** HF monitoring! Scan Manager 1.0 Pro's Scan Category Concept is based upon the Classification of Services allocated by the ITU. These Classifications (refered to as Scan Categories in Scan Manager) are broken down into the following categories: Aeronautical, Amateur, Broadcasting (SWL), Maritime, Standard Frequency & Time Signals, and Fixed Services. In addition, Scan Manager 1.0 Pro includes the **AM** Broadcast Band, the U.S. Citizens Band, W1AW Schedule (from the ARRL), Miscellaneous (Custom Scanning) and, of course, the User Database Scan Category (Create Custom Scan Categories). The Scan Categories are preprogrammed with the appropriate HF band assignments which makes scanning

Scan Manager 1.0 Pro Features **SWL Manager 2.0**

- **Intuitive** Color Display Screens with 3-D Graphics
- One Click on Tab Selects Scan Category
- Tool Bar with **ToolTip** Captions for ease of use
- **Colorful Graphics** for Tabbed Scan Categories
- Customize User DB Tab with Radio Bitmap (Popular Radio Bitmaps Included)
- Compatible with All Kenwood, Icom, and Yaesu Radios (except FT-767)
- Use Comm Ports 1-4
- Local & GMT Time Displayed on Screen
- **Quickly Launch** your Favorite TNC/Terminal Prgm
- Import Text Files Directly into the User Database
- Display Editable **Spreadsheet** type Views of either the SWL or User Database
- Print **Professional** Quality Reports from the Database
- **One Click** Logging of Scan Frequency to Database
- Help Assistant Provides Quick Access to Help Info
- Control Scan Functions with **Mouse** or **Keyboard**
- One Click Displays SWL Manager's Screen
- Includes **Editable** SWL Database with **Hundreds** of Broadcasts from Dozens of Countries
- **Powerful** Search Capabilities, tells you which Countries are Broadcasting **RIGHT NOW!**
- Displays Country Flag & Loacation of Broadcast Station Headquarters on World Map (Flag Bitmaps Included)
- Displays Local & GMT Time on Screen
- Simple to use with On-Line Help (Help Assistant)
- Display Editable **Spreadsheet** View of SWL Database & Print Two Styles of Database Reports
- Control Scan Functions with **Mouse** or **Keyboard**
- Fully Integrated with Scan Manager 1.0 Pro
- One Click Displays Scan Manager's Screen

Credit Card Orders. (MC, Visa, Amex, or Disc) Call PsL, at **800-242-4775** Ask for Product **#14027, Scan Manager 1.0 Pro.** (800 # for orders **ONLY**. Use address below for ALL other info.)

$69* **Includes Both Programs Integrated**
*Plus S&H: $5 U.S. $6 Canada, $8 Overseas
Call or Write for FREE COLOR Info Kit!

KC4ZGL HAM Software
1548 Cedar Bluff Trail
Marietta, GA 30062 USA
(404) 421-0348
Internet: tony.contrada@atlwin.com

www.americanradiohistory.com

1500 UTC SHORTWAVE GUIDE

11:00 AM EDT
8:00 AM PDT

FREQUENCIES

1500-1600	Australia, Radio	5995pa	6060pa	6080pa	7260as
		9615as	9710pa	11660as	11695pa
		11800pa			
1500-1600 vl	Australia, VL8A Alice Spg	2310do			
1500-1600 vl	Australia, VL8K Katherine	2485do			
1500-1600 vl	Australia, VL8T Tent Crk	2325do			
1500-1600	Bahrain, Radio	6010do			
1500-1600 vl	Canada, CBC N Quebec Svc	9625do			
1500-1600	Canada, CFCX Montreal	6005do			
1500-1600	Canada, CFRX Toronto	6070do			
1500-1600	Canada, CFVP Calgary	6030do			
1500-1600	Canada, CHNX Halifax	6130do			
1500-1600	Canada, CKZN St John's	6160do			
1500-1600	Canada, CKZU Vancouver	6160do			
1500-1600 s	Canada, RCI Montreal	11955na	17820na		
1500-1600	China, China Radio Intl	11815as	15165as		
1500-1600	Costa Rica, R Peace Intl	6200am	9400am	15050am	
1500-1600	Ecuador, HCJB Quito	6080am	12005am	15115am	15540am
		21455eu			
1500-1600 as	Eqt Guinea, R East Africa	9585af			
1500-1600	Guam, TWR/KTWR	11580as			
1500-1600	Italy, AWR Europe	7230eu			
1500-1600 mtwh/vl	Italy, IRRS Milan	7125va			
1500-1600	Japan, NHK/Radio	9535na	11915as	11955as	15355af
1500-1600	Jordan, Radio	15270na			
1500-1600 vl	Liberia, Radio ELBC	7275do			
1500-1600	Malaysia, Radio	7295do			
1500-1600	Malaysia, RTM/Kota Kinab	5980do			
1500-1600	Malaysia, RTM/Kuching	7160do			
1500-1515	Mongolia, R Ulan Bator	7293as	9950as	12000na	
1500-1525	Netherlands, Radio	9890as	13700as	15150as	
1500-1600 occsnal	New Zealand, R NZ Intl	6100pa			
1500-1530	Nigeria, FRCN/Radio	4990do	7285do		
1500-1600	Nigeria, FRCN/Voice of	7255af			
1500-1550	North Korea, R Pyongyang	9325eu	9977na	13785eu	
1500-1600 vl	Palau, KHBN/Voice of Hope	9965as			
1500-1600	Philippines, FEBC/R Intl	11995as			
1500-1530	Romania, R Romania Intl	11775as	15335as	17720as	
1500-1600	Russia, Voice of	4940as	4975as	7305me	9595as
		11775as	11890as	11910as	11945sa
		12025as	12035me	15105eu	15320me
		15400af	15480as	15540me	17570af
		17750me	21740af		
1500-1600	S Africa, Channel Africa	3220af	7240af		
1500-1600 twhf	Seychelles, FEBA Radio	9810as	12090as		
1500-1545 asm	Seychelles, FEBA Radio	12090as			
1500-1600	Singapore, SBC Radio One	6155do			
1500-1600	Sri Lanka, SLBC Colombo	9720as	15425as		
1500-1530	Switzerland, Swiss R Intl	12075as	13635as	15545as	
1500-1600	United Kingdom,BBC London	5965as	5975as	6190af	6195as
		7180as	9410va	9515na	9740va
		11365am	11750as	11775va	11865va
		11940af	12095va	15070va	17705va
		17830af	21470af	21660af	
1500-1530	United Kingdom,BBC London	11860af	15400eu	17880af	21490af
1500-1600	USA, KAIJ Dallas TX	13815am	15725am		
1500-1600	USA, KTBN Salt Lk City UT	15590am			
1500-1600	USA, KWHR Naalehu HI	9930as			
1500-1600	USA, Monitor Radio Intl	9355as			
1500-1600	USA, VOA Washington DC	6110as	7125as	7215as	9645as
		9700as	9760as	15205me	15395as
1500-1600	USA, WEWN Birmingham AL	7425na	11875na		
1500-1600	USA, WHRI Noblesville IN	13760am	15105am		
1500-1600	USA, WJCR Upton KY	7490na	13595na		
1500-1600	USA, WRNO New Orleans LA	15420am			
1500-1600 thas	USA, WVHA Green Bush ME	15665af			
1500-1600	USA, WWCR Nashville TN	12160am	13845am	15685am	
1500-1600	USA, WYFR Okeechobee FL	11705na	11830na	17750na	
1500-1600	Zambia, Christian Voice	4965af			
1520-]530 mtwtf	Estonia, Estonian Radio	5925eu			
1530-1600	Austria, R Austria Intl	11780as			
1530-1600	Finland, YLE/Radio	11900na	15400na		
1530-1545	India, All India Radio	7140as	7412as	9910as	11585me
		11670me			
1530-1600	Iran, VOIRI Tehran	11875as	15260as	17750as	
1530-1600	Lebanon, Wings of Hope	9960va			
1530-1600	Netherlands, Radio	9890as	15150as		
1530-1600	United Kingdom,BBC London	11765as			
1545-1600	Vatican State, Vatican R	9500as	11640as		

SELECTED PROGRAMS

Sundays

1500 KWHR (Hawaii): Christian Center Church (live). Dr. Lester Sumrall preaches.
1500 WHRI: Message to Israel. A program for Jewish listeners.
1500 WWCR #1: Prophetic Word Program. A message of salvation from Dan Kubish of the House of Yaweh.
1500 WWCR #3: Answers for Life. Gospel music and a sermon by Pastor Hoover of Wichita, Kansas.
1515 WHRI: The Bread of Life Broadcast. Brother Ron preaches.
1530 WHRI: Victorious Living. Pastor Wilson Douglas preaches.
1530 WWCR #1: Crossroads Baptist Church. Lloyd Ferguson preaches from Lawrenceville, Georgia.

Mondays

1500 KWHR (Hawaii): Reach Out. Pastor Jerry reaches out with Bible teaching.
1500 WHRI: Music. See S 0000.
1505 WWCR #1: Messianic Minutes. Ted Simon presents five minutes of scriptural interpretation for Jewish listeners.
1510 WWCR #1: Life Issues. John Wilke on events affecting everyday living.
1515 KWHR (Hawaii): The Spiritual Warfare Broadcast. Mickey Bonner evangelizes.
1515 WWCR #1: The Living Waters Broadcast. Father Bob Guste evangelizes from Louisiana.
1520 KWHR (Hawaii): Today's Family Life. Reaching out to families with hope and encouragement with Randy Carlson.
1530 KWHR (Hawaii): Music. See S 0230.
1530 WWCR #1: The Time of Deliverance. Benjamin Smith preaches from the Time of Deliverance Evangelistic Church in Philadelphia.
1545 BBC (eu): Popular Music. Ragga with David Rodigan (7th,14th). See S 0445.
1545 WWCR #1: Wisdom from the Word. From the New Covenant Church in Philadelphia.

Tuesdays

1500 KWHR (Hawaii): Reach Out. See M 1500.
1500 WHRI: Music. See S 0000.
1505 WWCR #1: Messianic Minutes. See M 1505.
1510 WWCR #1: Life Issues. See M 1510.
1515 KWHR (Hawaii): The Spiritual Warfare Broadcast. See M 1515.
1515 WWCR #1: The Living Waters Broadcast. See M 1515.
1520 KWHR (Hawaii): Today's Family Life. See M 1520.
1530 BBC (af) General Feature. Pick of the World. See M 0630.
1530 KWHR (Hawaii): Music. See S 0230.
1530 WWCR #1: The Time of Deliverance. See M 1530.
1545 WWCR #1: Wisdom from the Word. See M 1545.

Wednesdays

1500 KWHR (Hawaii): Reach Out. See M 1500.
1500 WHRI: Music. See S 0000.
1505 WWCR #1: Messianic Minutes. See M 1505.
1510 WWCR #1: Life Issues. See M 1510.
1515 BBC (am) Science and Technology. Medicine 2020 (2nd,9th,16th). See T 0445.
1515 KWHR (Hawaii): The Spiritual Warfare Broadcast. See M 1515.
1515 WWCR #1: The Living Waters Broadcast. See M 1515.
1520 KWHR (Hawaii): Today's Family Life. See M 1520.
1530 KWHR (Hawaii): Music. See S 0230.
1530 WWCR #1: The Time of Deliverance. See M 1530.
1545 WWCR #1: Wisdom from the Word. See M 1545.

Thursdays

1500 KWHR (Hawaii): Reach Out. See M 1500.
1500 WHRI: Music. See S 0000.
1505 WWCR #1: Messianic Minutes. See M 1505.
1510 WWCR #1: Life Issues. See M 1510.
1515 KWHR (Hawaii): The Spiritual Warfare Broadcast. See M 1515.
1515 WWCR #1: The Living Waters Broadcast. See M 1515.
1520 KWHR (Hawaii): Today's Family Life. See M 1520.
1530 KWHR (Hawaii): Music. See S 0230.
1530 WWCR #1: The Time of Deliverance. See M 1530.
1545 WWCR #1: Wisdom from the Word. See M 1545.

Fridays

1500 KWHR (Hawaii): Reach Out. See M 1500.
1500 WHRI: Music. See S 0000.
1505 WWCR #1: Messianic Minutes. See M 1505.
1510 WWCR #1: Life Issues. See M 1510.
1515 KWHR (Hawaii): The Spiritual Warfare Broadcast. See M 1515.
1515 WWCR #1: The Living Waters Broadcast. See M 1515.
1520 KWHR (Hawaii): Today's Family Life. See M 1520.
1530 KWHR (Hawaii): Music. See S 0230.
1530 WWCR #1: The Time of Deliverance. See M 1530.
1545 WWCR #1: Wisdom from the Word. See M 1545.

Saturdays

1500 WHRI: Bible Pathway (13.760). See S 1345.
1500 WHRI: The Home Education Network (live) (15.105). See A 1400.
1500 WWCR #1: Let the Bible Speak. James Hickey with a program from New Testament Christianity in Oklahoma.
1500 WWCR #3: Morning Watch Chapel. See S 0300.
1515 WWCR #1: Eternal Good News. Germaine Lockwood.
1530 KWHR (Hawaii): Music. See S 0230.
1530 WWCR #1: The Showers of Blessings Broadcast. Ed McAbee sermonizes before a live congregation.
1545 KWHR (Hawaii): Faith in Action. See A 1325.
1550 KWHR (Hawaii): Music. See S 0230.

www.americanradiohistory.com

FREQUENCIES

1600-1615	Albania, R Tirana Intl	7155eu	9760eu			
1600-1700	Australia, Radio	5995pa	6060pa	6080pa	7260as	
		9710pa	9770as	9860pa	11660pa	
		11695pa	11800pa			
1600-1700 vl	Australia, VL8A Alice Spg	2310do				
1600-1700 vl	Australia, VL8K Katherine	2485do				
1600-1700 vl	Australia, VL8T Tent Crk	2325do				
1600-1700	Bahrain, Radio	6010do				
1600-1700 vl	Canada, CBC N Quebec Svc	9625do				
1600-1700	Canada, CFCX Montreal	6005do				
1600-1700	Canada, CFRX Toronto	6070do				
1600-1700	Canada, CFVP Calgary	6030do				
1600-1700	Canada, CHNX Halifax	6130do				
1600-1700	Canada, CKZN St John's	6160do				
1600-1700	Canada, CKZU Vancouver	6160do				
1600-1700	China, China Radio Intl	4130af	11575as	15110af		
1600-1700	Costa Rica, R Peace Intl	6200am	9400am	15050am		
1600-1627	Czech Rep, Radio Prague	5930eu	17485af			
1600-1700	Ecuador, HCJB Quito	6080am	12005am	15115am	15540am	
		21455eu				
1600-1700	Ethiopia, Radio	7165af	9560af			
1600-1700	France, Radio France Intl	6175eu	11615af	11700af	12015af	
		15210af	15460af	15530af		
1600-1630	Georgia, Georgian Radio	11910eu				
1600-1700	Germany, Deutsche Welle	9735af	11965af	17800af		
1600-1650	Germany, Deutsche Welle	6170as	7225as	9875as	13690as	
		15595as	17810as			
1600-1700	Guam, AWR/KSDA	9370as				
1600-1615 mt	Guam, TWR/KTWR	11580as				
1600-1630 whfas	Guam, TWR/KTWR	11580as				
1600-1630	Iran, VOIRI Tehran	11875as	15260as	17750as		
1600-1700 mtwh/vl	Italy, IRRS Milan	7125va				
1600-1630	Jordan, Radio	15270na				
1600-1700	Lebanon, Voice of Hope	6280me				
1600-1630	Lebanon, Wings of Hope	9960va				
1600-1700 vl	Liberia, Radio ELBC	7275do				
1600-1700	Malaysia, Radio	7295do				
1600-1625	Netherlands, Radio	9895as	15150as			
1600-1649 occsnal	New Zealand, R NZ Intl	6100pa				
1600-1700	Nigeria, FRCN/Radio	4990do	7285do			
1600-1700	Nigeria, FRCN/Voice of	7255all				
1600-1630 s	Norway, Radio Norway Intl	11850na				
1600-1630	Pakistan, Radio	7425af	9485af	11570af	11710af	
		13590af	15555af			
1600-1700 vl	Palau, KHBN/Voice of Hope	9965as				
1600-1700	Russia, Voice of	7350eu	9480eu	9880af	11630eu	
		11675eu	11775as	11860af	11890as	11910as	11945sa
		11990af	12025as	15105as	15385as	15400af	15480as
		15540me	17570af	17875af	21740af		
1600-1700	S Africa, Channel Africa	3220af	7240af				
1600-1700	S Africa, Trans World R	9500af					
1600-1700	Singapore, SBC Radio One	6155do					
1600-1700	South Korea, R Korea Intl	5975as	6480eu	9515af	9870af		
1600-1630	Sri Lanka, SLBC Colombo	9720as	15425as				
1600-1700	Swaziland, Trans World R	9500af					
1600-1640	UAE, Radio Dubai	13675eu	15320eu	15395me	15435me		
1600-1700	United Kingdom,BBC London	3915as	5975as	6190af	6195va		
	7180as 9410va	9510as	9515na	9740va	11750as		
	11775va 12095va	15070va	15400eu	17830va	21660af		
1600-1615	United Kingdom,BBC London	5965as	6195as	11365am	11865va		
		17705va	21470af				
1600-1630	United Kingdom,BBC London	11860af	11940af				
1600-1700	USA, KAIJ Dallas TX	13815am	15725am				
1600-1700	USA, KTBN Salt Lk City UT	15590am					
1600-1700	USA, KWHR Naalehu HI	6120as					
1600-1700	USA, Monitor Radio Intl	9355af	17510af				
1600-1700	USA, VOA Washington DC	3970af	6110as	7125as	7215as		
	9645as 9700as	9760as	12040af	13710af	15225af		
	15395as 15410af	7785af					
1600-1700	USA, WEWN Birmingham AL	7425na	13615na				
1600-1700	USA, WHRI Noblesville IN	13760am	15105am				
1600-1700	USA, WJCR Upton KY	7490na	13595na				
1600-1700	USA, WRNO New Orleans LA	15420am					
1600-1700	USA, WVHA Green Bush ME	15665eu					
1600-1700	USA, WWCR Nashville TN	12160am	13845am	15685am			
1600-1700	USA, WYFR Okeechobee FL	11705na	11830na	17750na	21500eu		
		21525af	21745eu				
1600-1630	Vietnam, Voice of	9840eu	12020eu	15010eu			
1600-1700	Zambia, Christian Voice	4965af					
1615-1700	United Kingdom,BBC London	3255af	9630af				
1615-1630	Vatican State, Vatican R	6245eu	7250eu	9645eu	11810eu		
1630-1657	Canada, RCI Montreal	7150as	9550as				
1630-1700	Egypt, Radio Cairo	15255af					
1630-1700 mtwhfa	Liberia, Radio ELWA	4760do					
1630-1645	Sweden, Radio	6065eu					
1630-1700	USA, VOA Washington DC	6040eu	15245me	15445af	17735af		
		17895af	19379me				
1630-1700	Zimbabwe, ZBC/Radio 4	3306do	3396do	4828do			
1640-1650 s	Rwanda, Radio	6055do					
1645-1700 mtwhf	Canada, RCI Montreal	9555eu	11935eu	15325eu	17820eu		
1645-1700	Tajikistan, Radio	7245as					
1650-1700 mtwhf	New Zealand, R NZ Intl	6145pa					

SELECTED PROGRAMS

Sundays

1600 WHRI: The Voice of Truth. L. R. Shelton evangelizes from New Orleans.
1600 WWCR #1: Latin Catholic Mass. Father Gommar De Pauw conducts the traditional Latin Mass.
1600 WWCR #3: Apostolic Assembly. Lonnie Wollard preaches from Milltown, Connecticut.
1615 BBC (af) Classical Music. Music of the Motherland (6th,13th). See M 1230.
1630 WHRI: Banner to the Nation. Music and inspiration from David Tucker of Lewiston, Idaho.

Mondays

1600 WHRI: Faith for Today (15.105). Music and inspiration from Milwaukee, Wisconsin.
1600 WHRI: Lester Sumrall Teaching Series (13.760). The head of the Christian Center Church teaches.
1600 WWCR #1: Faith Alive. Steve Onoja speaks from the Chapel of Praise in Houston.
1615 BBC (am) General Feature. Pick of the World. See M 0630.
1615 WWCR #1: Words of Truth. See M 1215.
1630 WHRI: Midnight Cry (15.105). C. Parker Thomas.
1630 WHRI: The Voice of Praise (13.760). See M 0645.
1630 WWCR #1: The Gospel Truth Broadcast. Andy Wommak teaches about marriage, family, and the gospel.
1645 WHRI: The Radio Bible Hour. See M 0600.
1645 WWCR #1: The Living Word. An evangelization by Bobby Hoover of Bethel Church, Mitchellville, Maryland.

Tuesdays

1600 WHRI: Faith for Today (15.105). See M 1600.
1600 WHRI: Lester Sumrall Teaching Series (13.760). See M 1600.
1600 WWCR #1: Faith Alive. See M 1600.
1615 WWCR #1: Day of the Challenge. Gary R. Lightfoot talks about reasons for righteous living.
1630 WHRI: Midnight Cry (15.105). See M 1630.
1630 WHRI: The Voice of Praise (13.760). See M 0645.
1630 WWCR #1: The Gospel Truth Broadcast. See M 1630.
1645 WHRI: The Radio Bible Hour. See M 0600.
1645 WWCR #1: The Living Word. See M 1645.

Wednesdays

1600 WHRI: Faith for Today (15.105). See M 1600.
1600 WHRI: Lester Sumrall Teaching Series (13.760). See M 1600.
1600 WWCR #1: Faith Alive. See M 1600.
1615 BBC (eu) General Feature. Pick of the World. See M 0630.
1615 WWCR #1: Day of the Challenge. See T 1615.
1630 WHRI: Midnight Cry (15.105). See M 1630.
1630 WHRI: The Voice of Praise (13.760). See M 0645.
1630 WWCR #1: The Gospel Truth Broadcast. See M 1630.
1645 WHRI: The Radio Bible Hour. See M 0600.
1645 WWCR #1: The Living Word. See M 1645.

Thursdays

1600 WHRI: Faith for Today (15.105). See M 1600.
1600 WHRI: Lester Sumrall Teaching Series (13.760). See M 1600.
1600 WWCR #1: Faith Alive. See M 1600.
1615 WWCR #1: Day of the Challenge. See T 1615.
1630 WHRI: Midnight Cry (15.105). See M 1630.
1630 WHRI: The Voice of Praise (13.760). See M 0645.
1630 WWCR #1: The Gospel Truth Broadcast. See M 1630.
1645 WHRI: The Radio Bible Hour. See M 0600.
1645 WWCR #1: The Living Word. See M 1645.

Fridays

1600 WHRI: Faith for Today (15.105). See M 1600.
1600 WHRI: Lester Sumrall Teaching Series (13.760). See M 1600.
1600 WWCR #1: Faith Alive. See M 1600.
1615 WWCR #1: Day of the Challenge. See T 1615.
1630 WHRI: Midnight Cry (15.105). See M 1630.
1630 WHRI: The Voice of Praise (13.760). See M 0645.
1630 WWCR #1: The Gospel Truth Broadcast. See M 1630.
1645 WHRI: The Radio Bible Hour. See M 0600.
1645 WWCR #1: The Living Word. See M 1645.

Saturdays

1600 KWHR (Hawaii): Turn Your Radio On. Bill Brasier plays southern gospel music.
1600 WHRI: Bill Rudge Ministries (13.760). Bill Rudge evangelizes.
1600 WHRI: Neal Frisby (15.105). See S 0645.
1600 WWCR #1: Touching the Heart. A message from Women's Aglow of Tennessee.
1600 WWCR #3: Citizens Rights Forum (live). Mark Bozwell of the USA Patriot Network.
1615 WHRI: Bill Rudge Ministries (15.105). See A 1600.
1615 WWCR #1: The Sower. See M 0500.
1629 KWHR (Hawaii): World of Radio. See M 0330.
1629 WHRI: World of Radio (15.105). See A 0500.
1630 WHRI: Shekinah (13.760). Irene Spilotro on family and children.
1630 WWCR #1: The Word of Victory. Joyce Corbitt preaches.
1645 WWCR #1: Bible Gems. Jim Kristoff evangelizes from Indiana.
1645 WWCR #1: Words of Hope. See S 1100.

www.americanradiohistory.com

FREQUENCIES

1700-1800	Australia, Radio	6060pa	6080pa	6090pa	7260as
		9580pa	9710pa	9860pa	11660pa
		11695pa	11880pa		
1700-1800 vl	Australia, VL8A Alice Spg	2310do			
1700-1800 vl	Australia, VL8K Katherine	2485do			
1700-1800 vl	Australia, VL8T Tent Crk	2325do			
1700-1800	Azerbaijan, Voice of	7160eu			
1700-1800	Bahrain, Radio	6010do			
1700-1800	Canada, CFCX Montreal	6005do			
1700-1800	Canada, CFRX Toronto	6070do			
1700-1800	Canada, CFVP Calgary	6030do			
1700-1800	Canada, CHNX Halifax	6130do			
1700-1800	Canada, CKZN St John's	6160do			
1700-1800	Canada, CKZU Vancouver	6160do			
1700-1800	China, China Radio Intl	7405af	9535as	11575af	
1700-1800 as	Costa Rica, AWR Alajuela	13750am			
1700-1800	Costa Rica, R Peace Intl	6200am	9400am	15050am	
1700-1727	Czech Rep, Radio Prague	5930as	15640af		
1700-1800	Ecuador, HCJB Quito	6080am	12005am	15115am	15540am
		21455eu			
1700-1800	Egypt, Radio Cairo	15255af			
1700-1730	France, Radio France Intl	15210af	15460af		
1700-1800 mtwh/vl	Italy, IRRS Milan	7125va			
1700-1800	Japan, NHK/Radio	6150na	9535na	9580as	11840as
		11930as			
1700-1800	Lebanon, Voice of Hope	6280me			
1700-1800 vl	Liberia, Radio ELBC	7275do			
1700-1800	New Zealand, R NZ Intl	6100pa			
1700-1800	Nigeria, FRCN/Radio	3326do	4990do		
1700-1750	North Korea, R Pyongyang	9325eu	9640af	9977af	13785eu
1700-1800	Pakistan, Radio	7485eu	11570eu		
1700-1800 vl	Palau, KHBN/Voice of Hope	9965as			
1700-1800	Poland, Polish R Warsaw	6095eu	7270eu	7285eu	
1700-1800	Russia, Voice of	9480eu	9880af	11630eu	11715me
		11890as	11960af	11990eu	12065me
		15105as	15400af	15480as	17570af
		17875af	21740af		
1700-1800	S Africa, Channel Africa	3220af	7240af		
1700-1800	S Africa, Trans World R	9500af			
1700-1800	Slovakia, AWR	13595am	15620am		
1700-1730	Switzerland, Swiss R Intl	9885af	9905eu	12075me	13635me
1700-1720	Uganda, Radio	4976do			
1700-1800	United Kingdom,BBC London	3255af	5965as	6180eu	6190af
		6195eu	7180as	9410va	9510as
		9740as	11750as	11860af	12095va
		15070va	15400va	17830af	
1700-1715	United Kingdom,BBC London	9515na	17775va		
1700-1745	United Kingdom,BBC London	3915as	9630af		
1700-1730	United Kingdom,BBC London	6005af			
1700-1800	USA, KAIJ Dallas TX	13815am	15725am		
1700-1800	USA, KTBN Salt Lk City UT	15590am			
1700-1800	USA, KWHR Naalehu HI	6120as			
1700-1800	USA, Monitor Radio Intl	9355af	17510af		
1700-1800	USA, VOA Washington DC	3980eu	5900as	5990eu	6045as
		6110as	7150as	7170as	7215as
		9525as	9645as	9690af	9700eu
		9760af	9770af	11870as	11895af
		11920af	11945af	12040af	13710af
		15205as	15410af	15445af	17895af
		19379me			
1700-1800	USA, WEWN Birmingham AL	7425na	13615na		
1700-1800	USA, WHRI Noblesville IN	13760am	15105am		
1700-1800	USA, WJCR Upton KY	7490na	13595na		
1700-1800 smtwhf	USA, WMLK Bethel PA	9465eu			
1700-1800 as/vl	USA, WRMI/R Miami Intl	9955am			
1700-1800	USA, WRNO New Orleans LA	15420am			
1700-1800 mwf	USA, WVHA Green Bush ME	17612af			
1700-1800	USA, WWCR Nashville TN	12160am	13845am	15685am	
1700-1800	USA, WYFR Okeechobee FL	21500eu	21745eu		
1700-1800	Zambia, Christian Voice	4965af			
1700-1800	Zimbabwe, ZBC/Radio 4	3306do	3396do	4828do	
1705-1800	Ghana, Ghana Broadc Corp	3366do			
1715-1800	United Kingdom,BBC London	7160me			
1730-1800	Austria, R Austria Intl	9665me	11780as		
1730-1800	Netherlands, Radio	6020af	9605af	11655af	
1730-1800	Romania, R Romania Intl	11830af	15340af	15365af	17805af
1730-1800	Sweden, Radio	6065eu	13605me	15600af	
1730-1800	Vatican State, Vatican R	7305af	9695af	9725af	11625af
1745-1800 mtwhf	Armenia, Voice of	4810eu	7480eu	9675eu	11960me
1745-1800	Bangladesh, Radio	7190eu	9560as	15520as	
1745-1800	India, All India Radio	7412eu	9650me	9950me	11620eu
		11935af	13750as	15075me	
1745-1800 mtwhf	Swaziland, Trans World R	3200af			

1800-1830	Albania, R Tirana Intl	7230eu	9730eu		
1800-1900	Australia, Radio	6060pa	6080pa	6090pa	9580pa
		9860pa	11660as	11695pa	11880pa
1800-1900 vl	Australia, VL8A Alice Spg	2310do			
1800-1900 vl	Australia, VL8T Tent Crk	2325do			
1800-1900	Bahrain, Radio	6010do			
1800-1900	Bangladesh, Radio	7190eu	9560as	15520as	
1800-1825	Belgium, R Vlaanderen Int	5910eu			
1800-1900	Canada, CFCX Montreal	6005do			
1800-1900	Canada, CFRX Toronto	6070do			
1800-1900	Canada, CFVP Calgary	6030do			
1800-1900	Canada, CHNX Halifax	6130do			
1800-1900	Canada, CKZN St John's	6160do			
1800-1900	Canada, CKZU Vancouver	6160do			
1800-1900	Costa Rica, R Peace Intl	6200am	9400am	15050am	
1800-1900	Ecuador, HCJB Quito	6080am	12005am	15115am	15540am
		21455eu			
1800-1830	Egypt, Radio Cairo	15255af			
1800-1830	Ghana, Ghana Broadc Corp	3366do	4915do		
1800-1845	India, All India Radio	7412eu	9650me	9950me	11620eu
		11935af	13750as	15075me	
1800-1900 mtwh/vl	Italy, IRRS Milan	7125va			
1800-1900	Kenya, Kenya Broadc Corp	4885do	4935do		
1800-1900	Kuwait, Radio	11990na			
1800-1830 mtwhfa	Lebanon, Voice of	6550eu			
1800-1900	Lebanon, Voice of Hope	6280me			
1800-1900	Liberia, Radio ELBC	7275do			
1800-1900	Liberia, Radio ELWA	4760do			
1800-1830	Netherlands, Radio	6020af	9605af	11655af	
1800-1849 mtwhf	New Zealand, R NZ Intl	6100pa			
1800-1830	Nigeria, FRCN/Radio	3326do	4990do		
1800-1830 s	Norway, Radio Norway Intl	5960eu	13805af	15220af	
1800-1830 vl	Palau, KHBN/Voice of Hope	9965as			
1800-1900	Russia, Voice of	7350eu	9480eu	9755as	9880eu
		11630eu	11675eu	11715me	11775as
		11890as	11910as	11945sa	11960af
		15105as	15480as		
1800-1830	S Africa, Trans World R	9500af			
1800-1900 irreg	Sudan, Sudan Natl BC	9200af			
1800-1900	Swaziland, Trans World R	3200af			
1800-1900	United Kingdom,BBC London	3255af	6180eu	6190af	6195eu
		9410va	9740as	11860af	11955au
		12095va	15070va	15400va	17830af
1800-1830	United Kingdom,BBC London	5965as	7160me	9410as	9510as
1800-1815	United Kingdom,BBC London	7180as			
1800-1900	USA, KAIJ Dallas TX	13815am	15725am		
1800-1900	USA, KJES Mesquite NM	15385na			
1800-1900	USA, KTBN Salt Lk City UT	15590am			
1800-1900	USA, KWHR Naalehu HI	13625au			
1800-1900	USA, Monitor Radio Intl	9355me	13770me	15665eu	17510af
1800-1900	USA, VOA Washington DC	3980eu	4875af	6040eu	9760eu
		9770af	11920af	12040af	13680af
		13710af	15205af	15410af	15580af
		17895af	19379me		
1800-1900	USA, WEWN Birmingham AL	7425eu	13615na		
1800-1900	USA, WHRI Noblesville IN	9495am	13760eu		
1800-1900	USA, WJCR Upton KY	7490na	13595na		
1800-1900	USA, WMLK Bethel PA	9465eu			
1800-1900 as/vl	USA, WRMI/R Miami Intl	9955am			
1800-1900	USA, WRNO New Orleans LA	15420am			
1800-1900 mwf	Usa, WVHA Green Bush ME	15745af			
1800-1900 sth	USA, WVHA Green Bush ME	13720eu			
1800-1900	USA, WWCR Nashville TN	12160am	13845am	15685am	
1800-1900	USA, WYFR Okeechobee FL	21500eu	21745eu		
1800-1830	Vietnam, Voice of	9840eu	12020eu	15010eu	
1800-1900	Yemen, Yemeni Rep Radio	9780as			
1800-1900	Zambia, Christian Voice	4965af			
1800-1900	Zimbabwe, ZBC/Radio 4	3306do	3396do	4828do	
1830-1900 t	Belarus, Radio Minsk	5905eu	7210eu	11840eu	11960eu
1830-1900	Kazakhstan, Radio Almaty	5035eu	5260eu	5940eu	5960eu
		5970eu	9505eu		
1830-1900	Netherlands, Radio	6015af	6020af	9605af	9860af
		9895af	15315af	17605af	
1830-1845	Rwanda, Radio	6055do			
1830-1857	S Africa, Trans World R	9525af			
1830-1900	Slovakia, R Slovakia Intl	5915eu	6055eu	7345eu	
1830-1900	United Kingdom,BBC London	6005af	9630af		
1830-1900	Yugoslavia, Radio	6100eu	9720af		
1833-1900	Cote D' Ivoire, RDTV	11920do			
1840-1850	Greece, Voice of	11645af	15650af		
1845-1900 irreg s	Mali, RDTV Malienne	4783do	4835do	5995do	
1850-1900	New Zealand, R NZ Intl	11910pa			

www.americanradiohistory.com

RAMSEY America's #1 Source For Hobby Kits

TONE GRABBER

Grab Touch-Tone numbers right off the air, phone or tape. A simple hook-up to any radio speaker or phone line is all that is required to instantly decipher touch-tone phone numbers or codes. A 256 digit memory stores decoded numbers and keeps its memory even in the event of power loss. An 8 digit LED display allows you to scroll through the memory bank to examine numbers. To make it easy to pick out number groups or codes, a "dash" is inserted between sets of digits that were decoded more than 2 seconds apart. A "central-office" quality crystal controlled decoder is used allowing rapid and reliable detection of numbers at up to 20 digits per second! For a professionally finished look, add our matching case set. Start cracking those secret codes tomorrow with the Tone Grabber!

TG-1 Tone Grabber kit	**$99.95**
CTG Matching case set	**$14.95**
TG-1WT Fully assembled TG-1 and case	**$149.95**

FM RECEIVER/TRANSMITTER

Keep an ear on the local repeater, police, weather or just tune around. These sensitive superhet receivers are fun to build and use. Tunes any 5 MHz portion of the band and have smooth varactor tuning with AFC, dual conversion, ceramic filtering, squelch and plenty of speaker volume. Complete manual details how the rigs work and applications. 2M FM transmitter has 5W RF out, crystal control (146.52 included), pro-specs and data/mike inputs. Add our case sets for a nice finish.

FM Receiver kit	**$34.95**
Specify band: FR-146 (2M), FR-6 (6M), FR-10 (10M), FR-220 (220MHz)	
CFR Matching case set	**$14.95**
FT-146 Two Meter FM trans kit	**$99.95**

SCRAMBLER/DESCRAMBLER

Descramble most scramble systems heard on your scanner radio or set up your own scrambled communication system over the phone or radio. Latest 3rd generation IC is used for fantastic audio quality-equivalent to over 30 op-amps and mixers! Crystal controlled for crystal clear sound with a built-in 2 watt audio amp for direct radio hook-up. For scramble systems, each user has a unit for full duplex operation. Communicate in privacy with the SS-70. Add our case set for a fine professional finish.

SS-70 Scrambler/Descrambler kit	**$39.95**
CSSD Matching case set	**$14.95**
SS-70WT Fully assembled SS-70 and case set	**$79.95**

SCA DECODER

Tap into the world of commercial-free music and data that is carried over many standard FM broadcast radio stations. Decoder hooks to the demodulator of FM radio and tunes the 50-100 kHz SCA subcarrier band. Many radios have a demod output, but if your radio doesn't, it's easy to locate, or use our FR-1 FM receiver kit which is a complete FM radio with a demod jack built-in. These "hidden" subcarriers carry lots of neat programming-from stock quotes to news to music, from rock to easy listening-all commercial free. Hear what you have been missing with the SCA-1.

SCA-1 Decoder kit	**$27.95**
CSCA Matching case set	**$14.95**
FR-1 FM receiver kit	**$24.95**
CRR Matching case for FR-1	**$14.95**

SCANNER CONVERTER

Tune in on the 800-950 MHz action using your existing scanner. Frequencies are converted with crystal referenced stability to the 400-550 MHz range. Instructions are even included on building high performance 900 MHz antennas. Well designed circuit features extensive filtering and convenient on-off/bypass switch. Easy one hour assembly or available fully assembled. Add our matching case set for a professional look.

SCN-1 Scanner converter kit	**$49.95**
CSCN Matching case set	**$14.95**
SCN-1WT Assembled SCN-1 and case	**$89.95**

FULLY WIRED & TESTED

DSP FILTER

What is DSP? DSP allows the "construction" of various filters of great complexity by using computer code. This allows us to have easy access to a variety of filters, each perfectly optimized for whatever mode we are operating. The DSP II has been designed to operate in 10 different modes. Four filters are optimized for reducing interference to SSB phone signals from CW, heterodynes and random noise interference. Four more filters operate as "brick-wall" CW bandpass filters. the remaining two filters are designed for reliable recovery of RTTY and HF packet radio information signals. A single front panel switch selects any of these filters. Easy hookup to rigs speaker jack.

W9GR DSP Filter	**$299.95**
12V DC Power Supply	**$11.95**

BROADBAND PREAMP

Ever wish you could "perk up" your counter to read really weak signals? Or, how about boosting that cable TV signal to drive sets throughout the house, or maybe preamping the TV antenna to pull in that blacked out football game. And, if you're into small broadcasting, boost your transmitter power up to 100 mW! The PR-2 broadband preamp is the answer to all those needs as well as many others. You can use the PR-2 anywhere a high gain, low noise, high power amp is called for: digging out those weak shortwave signals or putting new life into that scanner radio-especially at 800 MHz. The PR-2 has a high power compression point, meaning that it does not overload easily-in fact many folks use it for boosting the power on their FM-10A stereo transmitters. Newly designed microwave MMIC chips from NEC in Japan enable the PR-2 to have gain all the way up to 2 GHz, although we only spec it to 1 GHz-believe it or not, the connector lead length is the limiting factor! Customers tell us the PR-2 outperforms professional lab units by the "big boys" that go for hundreds more. The PR-2 is the ideal general purpose amp you'll wonder how you got along without.

PR-2 Specifications: Gain: 25dB, Noise Figure: 2.5 dB, Input/Output Impedance: 50-75 ohms, Compression point: +18 dBm

PR-2 Broadband Preamp, Fully Wired and Tested **$59.95**

STEREO TRANSMITTER

Run your own Stereo FM radio station! Transmits a stable signal in the 88-108 MHz FM broadcast band up to 1 mile. Detailed manual provides helpful info on FCC regs, antenna ideas and range to expect. Latest design features adjustable line level inputs, pre-emphasis and crystal controlled subcarrier. Connects to any CD or tape player, mike mixer or radio. Includes free tuning tool too! For a pro look add our matching case set with on-board whip antenna.

FM-10A Stereo transmitter kit	**$34.95**
CFM Case, whip ant set	**$14.95**

ACTIVE ANTENNA

Cramped for space? Get longwire performance with this desktop antenna. Properly designed unit has dual HF and VHF circuitry and built-in whip antenna, as well as external jack. RF gain control and 9V operation makes unit ideal for SWLs, traveling hams or scanner buffs who need hotter reception. The matching case and knob set gives the unit a hundred dollar look!

AA-7 Kit	**$28.95**
CAA Matching case & knobset	**$14.95**

AIRCRAFT RECEIVER

Tune into the exciting world of aviation. Listen to the airlines, big business corporate jets, hot-shot military pilots, local private pilots, control towers, approach and departure radar control and other interesting and fascinating air-band communications. You'll hear planes up to a hundred miles away as well as all local traffic. The AR-1 features smooth varactor tuning of the entire air band from 118 to 136 MHz, effective AGC, superheterodyne circuitry, squelch, convenient 9 volt operations and plenty of speaker volume. Don't forget to add our matching case and knob set for a fine looking project you'll love to show. Our detailed instruction manual makes the AR-1 an ideal introduction to two life-long, fascinating hobbies at once-electronics and aviation! See *Kit Planes* magazine (January 1991) or *Popular Electronics* (January 1993) for excellent product reviews of the AR-1.

AR-1 Aircraft Receiver Kit	**$29.95**
C-AR Case and Knobset for AR-1	**$14.95**

INTERCEPTOR

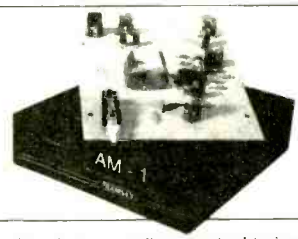
The Interceptor will lock on instantly to the nearest transmitter and allow you to listen with perfect audio quality. Since the Interceptor does not have to search through all frequencies, those quick transmissions that are hopelessly lost on scanners are captured easily. The Interceptor does not need tuning, making it ideal for hands-free surreptitious monitoring of nearby transmissions. The Interceptor is complete self-contained with internal speaker and earphone jack for private listening. Included are: Nicad battery pack, AC/adaptor charger, antenna and earphone. Increase your security and awareness-intercept the communications around you with the Interceptor. Fully wired with 1 year warranty. Covers 30-2000 MHz frequency range, FM deviations from 5 kHz to 200 kHz.

R10 Interceptor,
Fully Wired 1 year warranty **$349.95**

AM BROADCAST TRANSMITTER

High quality, true AM broadcast band transmitter is designed exactly like the big commercial rigs. Power of 100 mW, legal range of up to 1/4 mile. Accepts line level inputs from tape and CD players and mike mixers, tunable 550-1750 kHz. Complete manual explains circuitry, help with FCC regs and even antenna ideas. Be your own Rush Limbaugh or Rick Dees with the AM-1! Add our case set for a true station look.

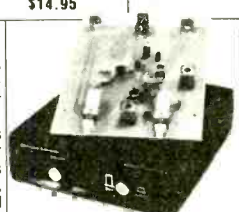
AM-1 Transmitter kit	**$29.95**
CAM Matching case set	**$14.95**



FOXHOUND DIRECTION FINDER

Locate hidden or unknown transmitters fast. The Foxhound direction finder connects to the antenna and speaker jack on any radio receiver, AM or FM from 1 MHz to 1 GHz. The antenna (a pair of dipole telescopic whips) is rotated until the Null meter shows a minimum. A pair of LEDs indicate to turn Left or Right. The Foxhound is ideal to use with a walkie-talkie, if you wish to transmit, go ahead, a build-in T/R switch senses any transmitted RF and switches itself out of circuit while you talk. It doesn't get any easier than this! We provide all parts except for a few feet of 1/2 inch PVC pipe available at any hardware store for a dollar or two. Add our matching case set for a complete finished unit. Be the one with the answers, win those transmitter hunts and track down those jammers, you'll do it all with your Foxhound.

DF-1 Foxhound direction finder kit	**$59.95**
CDF Matching case set for DF-1	**$14.95**
FHT-1 SlyFox Foxhunt transmitter kit	**$129.95**
FHID-1 Voice ID option	**$29.95**
CFHT Heavy duty metal case set for FHT-1	**$29.95**



SHORTWAVE CONVERTER

The SC-1 converter brings the sounds of the world right into your car radio or home stereo (set to AM broadcast band). Front panel push switches let you choose easily between regular AM radio and the shortwave bands. An additional switch allows the selection of any two bands of interest, each 1 MHz wide. Set one range for daytime frequencies and one for nighttime when propagation is different, choose any two frequencies between 3 and 22 MHz. Frequencies are tuned on your AM radio, making it easy to log stations or set presets. A built-in antenna switch automatically switches the existing AM antenna to either the radio or converter, making hook-up easy and fast. As with many of our kits, a handsome matching case and knob set is available to put the finishing touches on your kit.

SC-1 Shortwave Converter Kit	**$27.95**
CSC Matching Case and Knob Set	**$14.95**

SHORTWAVE RECEIVER

Here's a complete shortwave radio guaranteed to inspire awe in any listener. Imagine tuning in the BBC, Radio Moscow, Radio Baghdad and other services with just a couple of feet of antenna. This very sensitive (about a microvolt!) receiver is a true superhet design with AGC, RF gain control and plenty of speaker volume. Smooth varactor diode tuning allows you to tune any 2 MHz portion of the 4 to 11 MHz frequency range, and the kit conveniently runs on a 9 volt battery. Add our matching custom case and knob set to give your radio a finished, polished, look. Amaze yourself-and others-see how you can listen to the world on a receiver you built in an evening.

SR-1 Shortwave Radio Kit	**$34.95**
CSR Case and Knob Set	**$14.95**

ORDERS ONLY CALL 1-800-446-2295

(No tech info at this number)

TECH/ORDER/INFO 716-924-4560 FAX 716-924-4555

TERMS: Satisfaction guaranteed. Examine for 10 days. If not pleased return it in original form for refund. Add $4.95 for shipping, handling and insurance. For foreign orders add 20% for surface mail. COD (U.S. only) add $5.00. Orders under $20 add $3.00 NY residents add 7% sales tax. 90-day parts warranty on kit parts, 1-year parts and labor warranty on wired units

RAMSEY ELECTRONICS, INC.
793 CANNING PARKWAY, VICTOR NY 14564

www.americanradiohistory.com

FREQUENCIES

1900-2000 mtwhf	Argentina, RAE	15345eu			
1900-2000	Australia, Radio	6060pa	6080pa	6150as	7240pa
		7260as	9560as	9580pa	9860pa
		11660pa	11695pa	11880pa	
1900-2000 vl	Australia, VL8A Alice Spg	2310do			
1900-2000 vl	Australia, VL8K Katherine	2485do			
1900-2000 vl	Australia, VL8T Tent Crk	2325do			
1900-2000	Bahrain, Radio	6010do			
1900-2000	Brazil, Radiobras	15268eu			
1900-2000	Bulgaria, Radio	9700eu	11720eu		
1900-2000	Canada, CFCX Montreal	6005do			
1900-2000	Canada, CFRX Toronto	6070do			
1900-2000	Canada, CFVP Calgary	6030do			
1900-2000	Canada, CHNX Halifax	6130do			
1900-2000	Canada, CKZN St John's	6160do			
1900-2000	Canada, CKZU Vancouver	6160do			
1900-2000 vl	China, China Radio Intl	9440af	11515me		
1900-2000	Costa Rica, AWR Alajuela	13750am	15460am		
1900-2000	Costa Rica, R Peace Intl	6200am	9400am	15050am	17910am
1900-1930	Cote D' Ivoire, RDTV	11920do			
1900-2000	Ecuador, HCJB Quito	6080am	12005am	15115am	15490eu
		21455eu			
1900-1930	Finland, YLE/Radio	9730eu	15440af		
1900-1950	Germany, Deutsche Welle	7170af	9670af	9735af	11740af
		11785af	13690af	13790af	
1900-2000	Guatemala, AWR	5980am			
1900-1930	Hungary, Radio Budapest	3955eu	6140eu	7130eu	9835eu
1900-1945	India, All India Radio	7412eu	9650me	9950me	11620eu
		11935af	13750as	15075me	
1900-1910	Israel, Kol Israel	7465na	9435eu	11603na	11685na
		15640af			
1900-2000 mtwh/vl	Italy, IRRS Milan	7125va			
1900-2000	Japan, NHK/Radio	6150as	7140au	9535na	9580au
		11850au			
1900-2000	Kenya, Kenya Broadc Corp	4885do	4935do		
1900-2000	Kuwait, Radio	11990eu			
1900-2000	Lebanon, Wings of Hope	9960va			
1900-2000	Liberia, Radio ELBC	7275do			
1900-2000	Liberia, Radio ELWA	4760do			
1900-1925	Moldova, R Moldova Intl	11580eu			
1900-1925	Netherlands, Radio	6015af	6020af	9605af	9860af
		9895af	15315af	17605af	
1900-2000	New Zealand, R NZ Intl	11910pa			
1900-2000	Nigeria, FRCN/Voice of	7255af			
1900-2000 vl	Papua New Guinea, NBC	4890do	9675do		
1900-2000	Romania, R Romania Intl	9690eu	9750eu	11810eu	11940eu
1900-2000	Russia, Voice of	7350eu	9480eu	9755as	9865af
	9880eu 11630eu	11675eu	11775as	11890as	11910as
	11945sa 11990af	15105as	15400af	15480as	17570af
	17875af				
1900-1915	Rwanda, Radio	6055af			
1900-2000	Slovakia, AWR	15620am			
1900-2000	South Korea, R Korea Intl	5975eu	6480eu	7275as	
1900-2000	Swaziland, Trans World R	3200af			
1900-1930	Switzerland, Swiss R Intl	6165eu			
1900-2000	Thailand, Radio	7200eu	9655eu	11905eu	
1900-1915	Uganda, Radio	4976do	5026do		
1900-2000	United Kingdom,BBC London	3255af	6005af	6190af	6195eu
		7160va	9410va	9630af	9740au
		11955au	12095va	15070va	17830af
1900-2000	USA, KAIJ Dallas TX	13815am			
1900-2000	USA, KTBN Salt Lk City UT	15590am			
1900-2000 as	USA, KVOH Los Angeles CA	17775am			
1900-2000	USA, KWHR Naalehu HI	13625au			
1900-2000	USA, Monitor Radio Intl	15665eu	17510af		
1900-2000	USA, VOA Washington DC	3980eu	6040eu	7375af	7415af
	9525pa 9760af	9770af	11870as	11920af	12040af
	15180as 15205af	15410af	15445af	15580af	19379me
1900-2000	USA, WEWN Birmingham AL	7425eu	13615na	13695eu	15375eu
1900-2000	USA, WHRI Noblesville IN	9495am	13760eu		
1900-2000	USA, WJCR Upton KY	7490na	13595na		
1900-2000	USA, WMLK Bethel PA	9465eu			
1900-2000 as/vl	USA, WRMI/R Miami Intl	9955am			
1900-2000	USA, WRNO New Orleans LA	15420am			
1900-2000 s	USA, WVHA Green Bush ME	15745af			
1900-2000 a	USA, WVHA Green Bush ME	13720eu			
1900-2000 th	USA, WVHA Green Bush ME	15745af			
1900-2000	USA, WWCR Nashville TN	12160am	13845am	15685am	
1900-2000	USA, WYFR Okeechobee FL	21745eu			
1900-1930	Vietnam, Voice of	9840eu	12020eu	15010eu	
1900-2000	Zambia, Christian Voice	4965af			
1900-2000	Zimbabwe, ZBC/Radio 4	3306do	3396do	4828do	
1930-2000	Austria, R Austria Intl	5945eu	6155eu		
1930-2000 mtwhfa	Austria, R Austria Intl	9665me	13730af		
1930-2000	Iran, VOIRI Tehran	7260af	9022eu		
1930-2000	Mongolia, R Ulan Bator	7530as	13670eu	17900eu	
1930-2000	Netherlands, Radio	6020af	9605af	9860af	9895af
		11655af	15315af	17605af	
1930-2000	Poland, Polish R Warsaw	6095eu	6135eu	7285eu	
1930-2000 a	Uganda, Radio	4976do	5026do		
1930-2000	United Kingdom,BBC London	11835af			
1935-1955	Italy, RAI Rome	7275eu	9575eu	11905eu	
1950-2000	Vatican State, Vatican R	4010eu	5882eu	7250eu	

2000-2100	Algeria, R Algiers Intl	11715eu			
2000-2100	Australia, Radio	6060pa	6080pa	6150pa	7260as
		9580pa	9860pa	11660pa	11695pa
		11855as	11880pa		
2000-2100 vl	Australia, VL8A Alice Spg	2310do			
2000-2100 vl	Australia, VL8K Katherine	2485do			
2000-2100 vl	Australia, VL8T Tent Crk	2325do			
2000-2100	Bahrain, Radio	6010do			
2000-2020	Brazil, Radiobras	15268eu			
2000-2100 vl	Canada, CBC N Quebec Svc	9625do			
2000-2100	Canada, CFCX Montreal	6005do			
2000-2100	Canada, CFRX Toronto	6070do			
2000-2100	Canada, CFVP Calgary	6030do			
2000-2100	Canada, CHNX Halifax	6130do			
2000-2100	Canada, CKZN St John's	6160do			
2000-2100	Canada, CKZU Vancouver	6160do			
2000-2100	Canada, RCI Montreal	5995eu	7235eu	11985eu	13650eu
		13670eu	15150eu	15325eu	17820eu
2000-2100	China, China Radio Intl	6950eu	9440af	9920eu	15110af
2000-2100	Costa Rica, R Peace Intl	6200am	9400am	15050am	
2000-2027	Czech Rep, Radio Prague	5930eu	11640pa		
2000-2100	Ecuador, HCJB Quito	6080am	12005am	15540am	
2000-2100	Eqt Guinea, Radio Africa	15186af			
2000-2050	Germany, Deutsche Welle	7170eu	9615eu		
2000-2030	Ghana, Ghana Broadc Corp	3366do	4915do		
2000-2010	Greece, Voice of	9375eu			
2000-2100	Guatemala, AWR	5980am			
2000-2100	Indonesia, Voice of	9675as			
2000-2030	Iran, VOIRI Tehran	7260af	9022eu		
2000-2015 mtwh/vl	Italy, IRRS Milan	7125va			
2000-2100	Kenya, Kenya Broadc Corp	4885do	4935do		
2000-2100	Kuwait, Radio	11990eu			
2000-2100	Lebanon, Wings of Hope	9960va			
2000-2100	Liberia, Radio ELBC	7275do			
2000-2100	Liberia, Radio ELWA	4760do			
2000-2025	Netherlands, Radio	6020af	9605af	9860af	9895af
		11655af	15315af	17605af	
2000-2050	New Zealand, R NZ Intl	11910pa			
2000-2005	Nigeria, FRCN/Radio	3326do	4990do		
2000-2100	Nigeria, FRCN/Voice of	7255af			
2000-2050	North Korea, R Pyongyang	6576eu	9345as	9640af	9977na
2000-2100 vl	Papua New Guinea, NBC	4890do	9675do		
2000-2030	Poland, Polish R Warsaw	6095eu	6135eu	7285eu	
2000-2030 mtwhf	Portugal, Radio	6130af	9780eu	9815eu	15515af
2000-2100	Russia, Voice of	7230eu	9480eu	9755as	9880eu
		11630eu	11675eu	11730na	11890as
		12070eu			
2000-2100 vl	Solomon Islands, SIBC	5020do	9545do		
2000-2015	Swaziland, Trans World R	3200af			
2000-2100	Sweden, Radio	6065eu	9655af		
2000-2030	Switzerland, Swiss R Intl	9770af	9885af	11640af	13635af
2000-2100	Turkey, Voice of	9445eu			
2000-2015	Uganda, Radio	4976do	5026do		
2000-2030	United Kingdom,BBC London	9410va	15070va		
2000-2100	United Kingdom,BBC London	3255af	6005af	6180eu	6190af
		6195eu	7160af	7325va	9410va
		9630af	9740au	11750sa	11835va
		11955au	12095va	15070af	17830af
2000-2100	USA, KAIJ Dallas TX	13815am	15725am		
2000-2100	USA, KTBN Salt Lk City UT	15590am			
2000-2100 as	USA, KVOH Los Angeles CA	17775am			
2000-2100	USA, KWHR Naalehu HI	15405as			
2000-2100	USA, Monitor Radio Intl	13770eu	15665eu		
2000-2100	USA, VOA Washington DC	6040eu	7375af	7415af	9760af
	9770af 11855af	13710af	15205me	15410af	15445af
	15580af 17725af	17755af	19379me		
2000-2100	USA, WEWN Birmingham AL	7425na	13615na	15375eu	
2000-2100	USA, WHRI Noblesville IN	9495am	13760eu		
2000-2100	USA, WJCR Upton KY	7490na	13595na		
2000-2100	USA, WMLK Bethel PA	9465eu			
2000-2100 as/vl	USA, WRMI/R Miami Intl	9955am			
2000-2100	USA, WRNO New Orleans LA	15420am			
2000-2100 as	USA, WVHA Green Bush ME	13720eu			
2000-2100	USA, WWCR Nashville TN	12160am	13845am	15685am	
2000-2100	USA, WYFR Okeechobee FL	17845af	21525af	21745eu	
2000-2030	Vatican State, Vatican R	4005eu	7355af	9645af	11625af
2000-2010	Vatican State, Vatican R	4010eu	5882eu	7250eu	
2000-2030	Zambia, Christian Voice	4965af			
2000-2100	Zimbabwe, ZBC/Radio 3	3306do	3396do	4828do	
2005-2100	Syria, Radio Damascus	12085eu	15095na		
2015-2100 f/vl	Italy, IRRS Milan	7125va			
2015-2045 s	Swaziland, Trans World R	3200af			
2025-2045	Italy, RAI Rome	7235me	9710me	11800me	
2030-2100	Armenia, Voice of	11920na	11960na		
2030-2100	Egypt, Radio Cairo	15375af			
2030-2100 mt	Estonia, Estonian Radio	5925eu			
2030-2100 as	Latvia, Radio	5935eu			
2030-2100 asmtwh	Moldova, R Dniester Intl	11750na			
2030-2100	Netherlands, Radio	9860af	9895af		
2030-2045	Thailand, Radio	9655eu	9755eu	11905eu	
2030-2100	United Kingdom,BBC London	15400eu			
2030-2100 mtwhf	USA, WRMI/R Miami Intl	9955am			
2030-2100	Vietnam, Voice of	9840eu	12020as	15010eu	
2045-2100	India, All India Radio	7412eu	9910au	9950eu	11620eu
		11715pa	15225pa		
2051-2100	New Zealand, R NZ Intl	15115pa			

www.americanradiohistory.com

FREQUENCIES

2100-2200	Australia, Radio	6060pa	6080pa	7240pa	7260as
		9580pa	9660pa	11660pa	11855as
		11880pa	11955pa		
2100-2130 vl	Australia, VL8A Alice Spg	2310do			
2100-2130 vl	Australia, VL8K Katherine	2485do			
2100-2130 vl	Australia, VL8T Tent Crk	2325do			
2100-2115	Bahrain, Radio	6010do			
2100-2125	Belgium, R Vlaanderen Int	5910eu			
2100-2200	Bulgaria, Radio	9700eu	11720eu		
2100-2200	Canada, CFCX Montreal	6005do			
2100-2200	Canada, CFRX Toronto	6070do			
2100-2200	Canada, CFVP Calgary	6030do			
2100-2200	Canada, CHNX Halifax	6130do			
2100-2200	Canada, CKZN St John's	6160do			
2100-2200	Canada, CKZU Vancouver	6160do			
2100-2130	Canada, RCI Montreal	5995eu	7235eu	11690eu	13650eu
		13670eu	15150eu	15325eu	17820eu
2100-2200	China, China Radio Intl	6950eu	9920eu		
2100-2130	China, China Radio Intl	3985eu	15110af		
2100-2200	Costa Rica, R Peace Intl	7385am	9400am	15050am	
2100-2200	Cuba, Radio Havana Cuba	11705eu			
2100-2200	Egypt, Radio Cairo	15375af			
2100-2200	Eqt Guinea, Radio Africa	15186af			
2100-2150	Germany, Deutsche Welle	7115as	9670as	9735af	9765as
		11765af	11785as	15135af	
2100-2200	Guatemala, AWR	5980am			
2100-2130	Hungary, Radio Budapest	3955eu	5935eu	7250eu	9835eu
2100-2200	India, All India Radio	7412eu	9910eu	9950eu	11620au
		11715au	15225au		
2100-2200 f/vl	Italy, IRRS Milan	7125va			
2100-2200	Japan, NHK/Radio	6035eu	7140eu	9580af	11850as
		11865as			
2100-2115	Japan, NHK/Radio	9660as	11915as		
2100-2200	Lebanon, Voice of Hope	6280me			
2100-2200 mtwhfa	Liberia, Radio ELWA	4760do			
2100-2125	Netherlands, Radio	9860af	9895af	11655af	
2100-2200	New Zealand, R NZ Intl	15115pa			
2100-2200	Nigeria, FRCN/Radio	3326do	4990do		
2100-2200 vl	Papua New Guinea, NBC	4890do	9675do		
2100-2200	Romania, R Romania Intl	7195eu	9570eu	9690eu	11940eu
2100-2200	Russia, Voice of	7350eu	9480eu	9530af	9755as
		9820eu	9880eu	11630eu	11680eu
		11730na	11750as	11890as	11980eu
		12070na	13615as		
2100-2115	Sierra Leone, SLBS	3316do			
2100-2200	Slovakia, AWR	6055eu			
2100-2200 vl	Solomon Islands, SIBC	5020do	9545do		
2100-2200	South Korea, R Korea Intl	6480eu	15575eu		
2100-2200	Spain, R Exterior Espana	6125eu			
2100-2200	Syria, Radio Damascus	12085eu	15095na		
2100-2110	Uganda, Radio	4976do	5026do		
2100-2200	Ukraine, R Ukraine Intl	4825eu	5905eu	6010eu	6020eu
		6090eu	7240eu	7285eu	9560eu
		9750eu	11610eu	11780eu	11825eu
		11875eu	11950eu		
2100-2200	United Kingdom,BBC London	3255af	3915as	3915as	5975na
		6005af	6180eu	6190af	6195va
		7325va	9410va	9580as	9740va
		11750sa	11835va	11945as	11955va
		12095va			
2100-2130	United Kingdom,BBC London	9630af	15070af	15400eu	
2100-2200	USA, KAIJ Dallas TX	13815am			
2100-2200	USA, KTBN Salt Lk City UT	15590am			
2100-2200 s	USA, KVOH Los Angeles CA	17775am			
2100-2200	USA, Monitor Radio Intl	13770na	15665pa		
2100-2200	USA, VOA Washington DC	6040eu	6160eu	7375af	7415af
		9535af	9760eu	11870pa	13710af
		15185pa	15205me	15410af	15445af
		15580af	17725af	17735pa	19379me
2100-2200	USA, WEWN Birmingham AL	7425na	13615na	15375eu	
2100-2200	USA, WHRI Noblesville IN	9495am	13760am		
2100-2200	USA, WJCR Upton KY	7490na	13595na		
2100-2200	USA, WMLK Bethel PA	9465eu			
2100-2130 a	USA, WRMI/R Miami Intl	9955am			
2100-2200	USA, WRNO New Orleans LA	15420am			
2100-2200 a	USA, WVHA Green Bush ME	13740eu			
2100-2200	USA, WWCR Nashville TN	9475am	12160eu	13845am	
2100-2200	USA, WYFR Okeechobee FL	17845af	21515af		
2100-2145	USA, WYFR Okeechobee FL	21745eu			
2100-2110	Vatican State, Vatican R	5882eu			
2100-2130	Yugoslavia, Radio	6100na	6185eu		
2100-2200	Zimbabwe, ZBC/Radio 3	3306do	3396do	4828do	
2115-2200	Egypt, Radio Cairo	9900eu			
2130-2200	Australia, Radio	9610as	9645as	15365pa	17860pa
2130-2200 vl	Australia, VL8A Alice Spg	4835do			
2130-2200 vl	Australia, VL8K Katherine	5025do			
2130-2200 vl	Australia, VL8T Tent Crk	4910do			
2130-2200	Finland, YLE/Radio	6120eu	9730eu	11755af	15400af
2130-2200	Iran, VOIRI Tehran	6175au			
2130-2200	Liberia, Radio ELWA	4760do			
2130-2200	Lithuania, Radio Vilnius	9710eu			
2130-2200	Sweden, Radio	6065eu			
2145-2200	Armenia, Voice of	11920na	11960na		

2200 UTC

2200-2300	Australia, Radio	9580pa	9610as	9645as	9660pa
		11660pa	11695pa	11855as	11880pa
		11955pa	13755as	15365pa	17795pa
		17860pa			
2200-2300 vl	Australia, VL8A Alice Spg	4835do			
2200-2300 vl	Australia, VL8K Katherine	5025do			
2200-2300 vl	Australia, VL8T Tent Crk	4910do			
2200-2300 vl	Canada, CBC N Quebec Svc	9625do			
2200-2300	Canada, CFCX Montreal	6005do			
2200-2300	Canada, CFRX Toronto	6070do			
2200-2300	Canada, CFVP Calgary	6030do			
2200-2300	Canada, CHNX Halifax	6130do			
2200-2300	Canada, CKZN St John's	6160do			
2200-2300	Canada, CKZU Vancouver	6160do			
2200-2230	Canada, RCI Montreal	5960am	9755am	11705as	11895am
		13670am	13740am	15305am	
2200-2300	China, China Radio Intl	9880eu			
2200-2300	Costa Rica, R Peace Intl	7385am	9400am	15050am	
2200-2300	Cuba, Radio Havana Cuba	6180na	11960na		
2200-2245	Egypt, Radio Cairo	9900eu			
2200-2300	Eqt Guinea, Radio Africa	15186af			
2200-2300	Guatemala, AWR	5980am			
2200-2230	India, All India Radio	7412eu	9910eu	9950eu	11620au
		11715au	15225au		
2200-2230	Iran, VOIRI Tehran	6175au			
2200-2300 f/vl	Italy, IRRS Milan	7215va			
2200-2215 as/vl	Italy, IRRS Milan	7215va			
2200-2225	Italy, RAI Rome	9710as	11800as	15330as	
2200-2300	Lebanon, Voice of Hope	6280me			
2200-2300	Lebanon, Wings of Hope	9960va			
2200-2300	Malaysia, Radio	7295do			
2200-2300	Malaysia, RTM/Kota Kinab	5980do			
2200-2300	New Zealand, R NZ Intl	15115pa			
2200-2205	Nigeria, FRCN/Radio	3326do	4990do		
2200-2300 vl	Papua New Guinea, NBC	4890do	9675do		
2200-2300	Russia, Voice of	9530af	9720af	11730na	11750as
2200-2215	Sierra Leone, SLBS	3316do			
2200-2300	Slovakia, AWR	11610am			
2200-2235 vl	Solomon Islands, SIBC	5020do	9545do		
2200-2230	South Korea, R Korea Intl	5965eu			
2200-2300	Spain, R Exterior Espana	9675af			
2200-2205	Syria, Radio Damascus	12085na	15095na		
2200-2300	Taiwan, VO Free China	17750eu	21750eu		
2200-2300	Turkey, Voice of	7185me	9445na	11710eu	
2200-2300	UAE, Radio Abu Dhabi	11885na	11970na	13605na	
2200-2300	United Kingdom,BBC London	6195eu	7110as	7325va	9590va
		9890as	11695au	11750sa	11835af
		11955va			
2200-2230	United Kingdom,BBC London	6180eu	9410va	12095eu	
2200-2300	USA, KAIJ Dallas TX	13815am	15725am		
2200-2300	USA, KTBN Salt Lk City UT	15590am			
2200-2300	USA, KWHR Naalehu HI	17510as			
2200-2300	USA, Monitor Radio Intl	13625eu	13770am	15405as	17555sa
2200-2300	USA, VOA Washington DC	7215as	9705as	9770as	11760as
		12080af	13710af	15185au	15290as
		15305as	17735as	17820as	
2200-2230 mtwhf	USA, VOA Washington DC	7340af	7375af	7415af	
2200-2300	USA, WEWN Birmingham AL	7425na	11820eu	13615na	
2200-2300	USA, WHRI Noblesville IN	13760am			
2200-2300	USA, WJCR Upton KY	7490na	13595na		
2200-2300 as	USA, WRMI/R Miami Intl	9955am			
2200-2300	USA, WRNO New Orleans LA	15420am			
2200-2300	USA, WVHA Green Bush ME	9852eu			
2200-2300	USA, WWCR Nashville TN	9475am	12160am	13845am	
2200-2245	USA, WYFR Okeechobee FL	17845af	21525af		
2230-2300	Finland, YLE/Radio	9650na	9665na	11845na	
2240-2250	Greece, Voice of	9375au	9425au		
2245-2300	Ghana, Ghana Broadc Corp	3366do	4915do		
2245-2300	India, All India Radio	9705as	9950as	11745as	13750as
		15145as			
2245-2300 mtwhf	USA, Voice of the OAS	9670na	11835na	15155na	
2245-2300	Vatican State, Vatican R	6150as	7305as	9600au	11830pa

www.americanradiohistory.com

2300 UTC SHORTWAVE GUIDE 7:00 PM EDT 4:00 PM PDT

FREQUENCIES

2300-0000	Australia, Radio	9610as	9660pa	11645as	11660pa
		11695as	11855as	13755as	15365pa
		17795pa	17860pa		
2300-0000 vl	Australia, VL8A Alice Spg	4835do			
2300-0000 vl	Australia, VL8K Katherine	5025do			
2300-0000 vl	Australia, VL8T Tent Crk	4910do			
2300-0000	Bulgaria, Radio	9700na	11720na		
2300-0000 vl	Canada, CBC N Quebec Svc	9625do			
2300-0000	Canada, CFCX Montreal	6005do			
2300-0000	Canada, CFRX Toronto	6070do			
2300-0000	Canada, CFVP Calgary	6030do			
2300-0000	Canada, CHNX Halifax	6130do			
2300-0000	Canada, CKZN St John's	6160do			
2300-0000	Canada, CKZU Vancouver	6160do			
2300-0000	Canada, RCI Montreal	5960am	9755am	11940am	13670am
		15305am			
2300-0000	Costa Rica, AWR Alajuela	5030am	7375am	9725am	13750am
2300-0000	Costa Rica, R Peace Intl	7385am	9400am	15050am	
2300-0000	Egypt, Radio Cairo	9900na			
2300-0000	Germany, Deutsche Welle	7235as	9690as	11705as	
2300-0000	Guam, AWR/KSDA	11980as			
2300-0000	Guatemala, AWR	5980am			
2300-0000	India, All India Radio	9705as	9950as	11745as	13750as
		15145as			
2300-0000 f/vl	Italy, IRRS Milan	7125va			
2300-0000	Japan, NHK/Radio	5965eu	6155eu	7140eu	9580as
		11850as			
2300-0000	Lebanon, Voice of Hope	6280me			
2300-0000	Lebanon, Wings of Hope	9960va			
2300-2330 as	Lithuania, Radio Vilnius	9530na			
2300-0000	Malaysia, Radio	7295do			
2300-0000	Malaysia, RTM/Kota Kinab	5980do			
2300-0000	New Zealand, R NZ Intl	15115pa			
2300-2305	Nigeria, FRCN/Radio.	3326do	4990do		
2300-2350	North Korea, R Pyongyang	11700na	13650na		
2300-0000 vl	Papua New Guinea, NBC	4890do	9675do		
2300-0000	Russia, Voice of	7300na	9530na	9720af	11730na
		11750as			
2300-2317	Sierra Leone, SLBS	3316do			
2300-0000	UAE, Radio Abu Dhabi	11885na	11970na	13605na	
2300-0000	United Kingdom,BBC London	5975na	6175na	6195va	7110as
		7250as	7325va	9580as	9590va
		11750sa	11945as	11955va	
2300-2330	United Kingdom,BBC London	3915as	11835eu		
2300-2330	USA, KAIJ Dallas TX	13815am			
2300-0000	USA, KTBN Salt Lk City UT	15590am			
2300-0000	USA, KWHR Naalehu HI	17510as			
2300-0000	USA, Monitor Radio Intl	13625pa	13770eu	17555sa	
2300-0000	USA, VOA Washington DC	7215as	9705as	9770as	9890as
		11760as	15185au	15290as	15305as
		17735as	17820as		
2300-0000	USA, WEWN Birmingham AL	7425na	15375eu		
2300-0000	USA, WHRI Noblesville IN	5745am			
2300-0000	USA, WJCR Upton KY	7490na	13595na		
2300-0000 as	USA, WRMI/R Miami Intl	9955am			
2300-2330 mtwhf	USA, WRMI/R Miami Intl	9955am			
2300-0000	USA, WRNO New Orleans LA	7355am			
2300-0000	USA, WVHA Green Bush ME	9852eu			
2300-0000	USA, WWCR Nashville TN	9475am	12160am	13845am	
2325-2336	Lebanon, Voice of	6550eu			
2330-0000	Australia, Radio	9645as	9850as	13605as	15240pa
2330-0000 irreg	Belarus, Radio Minsk	9530eu	15180eu	15425eu	
2330-2355	Belgium, R Vlaanderen Int	6030na	13800na		
2330-0000	Netherlands, Radio	6020na	6165na	9845na	
2330-0000	Palau, KHBN/Voice of Hope	15140as			
2330-0000	Vietnam, Voice of	9840eu	12020eu	15010eu	
2335-2345	Greece, Voice of	9375sa	11595sa	11645sa	

SELECTED PROGRAMS

Sundays
2310 BBC (am): East Asia Today. News, analysis, press reviews and reports from BBC correspondents.
2310 Radio Japan: Let's Learn Japanese. See S 0310.
2310 Voice of America (as): VOA Today. Up-to-the-minute news summaries, hourly business and sports updates, interviews on world news events, plus features on topics from movies to medicine.
2325 Radio Japan: Media Roundup. See S 0525.
2330 BBC (am): Short Story. See S 0430.
2330 BBC (as pac): Letter from America. See S 0030.
2345 BBC (am): Write On. See S 0145.
2350 Radio Japan: Viewpoint. See S 0550.
2355 Radio Japan: Tokyo Pop-In. See S 0155.

Mondays
2310 BBC (am): East Asia Today. See S 2310.
2310 BBC (eu): Take Five. See M 0410.
2310 Voice of America (as): VOA Today. See S 2310.
2315 Radio Japan: Today's Top News Asia. See M 1515.
2325 Radio Japan: Profile. See M 1525.
2330 BBC (am): Outlook. See M 1405.
2330 BBC (as pac): The World Today. See M 1645.
2355 Radio Japan: Tokyo Pop-In. See S 0155.

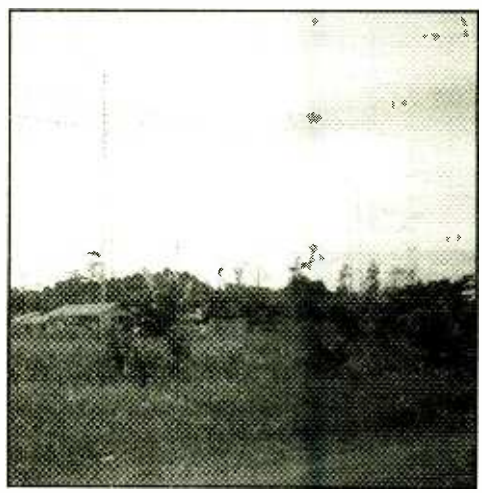
Tuesdays
2310 BBC (am): East Asia Today. See S 2310.
2310 BBC (eu): An A-Z of Composers. Life-stories of some of the lesser known composers.
2310 Voice of America (as): VOA Today. See S 2310.
2315 Radio Japan: Today's Top News Asia. See M 1515.
2325 Radio Japan: Enjoy Japanese. See T 1525.
2330 BBC (am): Outlook. See M 1405.
2330 BBC (as pac): The World Today. See M 1645.
2355 Radio Japan: Tokyo Pop-In. See S 0155.

Wednesdays
2310 BBC (af): Topical Reports. A five-minute current affairs program.
2310 BBC (am): East Asia Today. See S 2310.
2310 Voice of America (as): VOA Today. See S 2310.
2315 Radio Japan: Today's Top News Asia. See M 1515.
2325 Radio Japan: History and Classics. See W 1525.
2330 BBC (am): Outlook. See M 1405.
2330 BBC (as pac): The World Today. See M 1645.
2355 Radio Japan: Tokyo Pop-In. See S 0155.

Thursdays
2310 BBC (am): East Asia Today. See S 2310.
2310 BBC (eu): Take Five. See M 0410.
2310 Voice of America (as): VOA Today. See S 2310.
2315 Radio Japan: Today's Top News Asia. See M 1515.
2325 Radio Japan: Enjoy Japanese. See T 1525.
2330 BBC (am): Outlook. See M 1405.
2330 BBC (as pac): The World Today. See M 1645.
2355 Radio Japan: Tokyo Pop-In. See S 0155.

Fridays
2310 BBC (af): Science Five. See W 0410.
2310 BBC (am): East Asia Today. See S 2310.
2310 BBC (eu): Science Five. See W 0410.
2310 Voice of America (as): VOA Saturday. See S 0010.
2315 Radio Japan: Today's Top News Asia. See M 1515.
2325 Radio Japan: Music and Book Beat. See F 1525.
2330 BBC (am): Outlook. See M 1405.
2330 BBC (as pac): The World Today. See M 1645.
2355 Radio Japan: Tokyo Pop-In. See S 0155.

Saturdays
2310 BBC (af): Spotlight. See S 0410.
2310 BBC (eu): Spotlight. See S 0410.
2310 Radio Japan: Asia Weekly. See S 0110.
2310 Voice of America (as): VOA Sunday. See S 0010.
2311 Radio Japan: Asian News Summary. See S 0111.
2321 Radio Japan: Business Report. See S 0121.
2325 Radio Japan: Entertaining in Asia. See S 0125.
2330 BBC (am): The John Dunn Show. See S 0330.
2340 BBC (as pac): Book Choice. See S 1525.
2346 Radio Japan: Asia Kaleidoscope. See S 0146.
2355 Radio Japan: Tokyo Pop-In. See S 0155.



Radio Impacto was widely reported to have been an antiSandinista and later anti-Noriega radio station financed by the CIA. Today several log periodic, Cubical quad, and Curtain antennas have been installed at this coastal transmitter site by Adventist World Radio, but the store accross the road is still Impacto. Photo by Ken MacHarg.

Your Name in Lights!

... or at least in ink within the *Monitoring Times* Shortwave Guide. Please send us your "best catches" on the worldwide shortwave bands — QSLs, that is — and we will try to use them in future issues of *MT*. Your QSLs will be returned.

www.americanradiohistory.com

Differences in Propagation Forecasting

By Jacques Davignon

Many of you may not be aware that there are two basic types of propagation forecasting techniques: "nowcasting" to see what can be heard at present, and the really "long-term forecasting" or frequency management that you will see published in magazines and used for the planning of new circuits.

The "nowcasting" is used normally on fixed circuits when you have a frequency agility capability and can choose at a moment's notice which frequency you can use on a specific circuit. Think, for example, of the armed forces and organizations that have many frequencies spread across the RF spectrum available for communications.

Long-term forecasting is used for frequency management—finding the best frequency(ies) for a specific circuit or area, and registering these frequencies months ahead of time. For an example of long-term forecasting, think of the broadcasters that have to make decisions months and, in some cases, years ahead of time as to what frequencies to use for a specified target. Another use of long-term forecasting is for planning the construction of new station to serve a specific target area, or for buying time on another station to serve that same target.

When I prepare the published forecasts, I can only assume that the ionosphere will be "quiet" when the publications comes out; there is no way I can forecast exactly what the sun will be doing in a month, much less three months from now! So I prepare the forecasts without taking into account the A and K indices, letting the user make the decision if the predictions will be correct for that period depending on the indices available that day.

In other words, what I am really doing is telling the listener/user: " If the sun follows its *normal*, predicted pattern on the circuit from North America to Australia in July 1996, the Maximum Usable Frequency (**MUF**) should be around 12.0 MHz. Do not expect to find any good signals above that frequency."

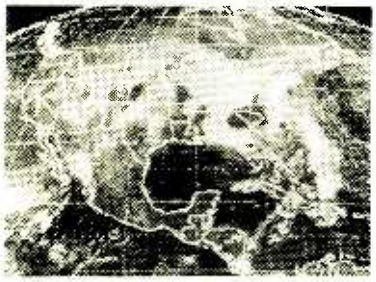
But if I was offering a "nowcasting" service, I would be using a different prediction technique. In this case I would say: "According to the trend of the indices and the actual indices recorded today, the **MUF** on the North America - Australia circuit will be 12.0 MHz and the best frequency (**FOT**) for your use is 9.0 MHz. But you should expect some degradation of your signal on this circuit late in the day because of a possible ionospheric storm that will cause severe aurora."

The A and K can be taken into account if you are doing some "nowcasting" and have a program that will accept one or the other of these indices. If you do "nowcasting" you have to be very careful and not use only the "numbers" recorded for that day. It is necessary to use a mean of the A or K or SSN or Flux to plug in the program. 10 to 15 days of running averages should be sufficient to give you a good set of numbers. There are programs available that use the A and/or K indices that do not cost a fortune: the **DX4CAST** module included in **DXAID** software from *Peter Oldfield* sells for under $50, and **MINIPROP PLUS** from *W6EL, Sheldon C. Shallon*, is under $100. Both are very good programs for this type of nowcasting.

For long range prediction and frequency management there are two well-known and readily available programs. **ASAPS** from **IPS** in Australia—the program I use as the basis of all my forecasting work—and **VOACAP. VOACAP** is a very interesting program to use, but it is definitely not designed for "nowcasting." It uses **IONCAP** (with which some of you may be familiar) as part of the algorithm. **IONCAP** had many glitches, most have now been corrected in **VOACAP.** Neither this program, nor **ASAPS** uses the **A** or the **K** index; they are strictly used for planning purposes and long-term frequency management.

I hope that I have helped to explain the difference between "forecasting/ frequency management" and the more day-to-day "nowcasting" use of propagation forecasting software.

Get A New Image

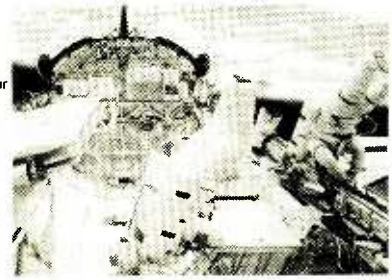


PC HF Facsimile $99

PC HF Facsimile is a simple yet comprehensive short-wave fax system for the IBM PC and compatibles. It includes an FSK demodulator, advanced signal processing software, tutorial audio cassette, and complete reference manual Just plug the demodulator into a serial port, install the software and getting FAX is a snap

PC SSTV $149.95

PC Slow Scan Television is a complete system for sending and receiving full color amateur SSTV The package includes an SSTV FSK modem, SSTV software, image capture utilities and reference manual All popular formats are supported including Robot, Scottie Martin and AVT The system requires a 286, 386 or faster PC with VGA or super VGA display



Have It All For Only $199.95

For a limited time we are offering both software packages with a single FSK modem for under $200 This combination offer will let you send and receive all the popular HF image transmission modes

Call or write for our free catalog. Visa and Mastercard welcomed.

Software Systems Consulting
615 S. El Camino Real, San Clemente, CA 92672
Tel.(714) 498-5784 Fax.(714) 498-0568

Logic Limited Presents
The Franklin Converter

As Low as $ 24.95

With a home computer, a short wave receiver and **The Franklin Converter** you can: Receive, store and image process: Weather satellite photos, **Wefax**, charts and maps. Add **color** to your satellite Photos , just like you see on **T.V.**
Fax pictures and data from news sources!
Color SSTV in over **15 modes!**
Teletype data **(RTTY)**, morse code **(CW), ASCII, NAVTEX BAUDOT, AMTOR** and more.
Added bonus: Audio Spectrum analysis & Tuning Scope
Why pay hundreds more. Get results with The Franklin Converter!

Description	Item #	Price
1. The Franklin Converter 6.0	*RWC1*	*$24.95*
2. Transmit Only plugs inline with TFC	*RTC1****	*$24.95*
3. Both 1 & 2 in serial A/B Switch Box	*RTB1****	*$49.95*

RWC1/ RTC1 $24.95

Order Yours today

RTB1 $49.95

Easy to use Software Included

Allow 4 to 6 weeks for delivery
Priority Shipping Available
Quantity & Club Discounts Available
COD, Check or Money orders
North Carolina Residents add 6%

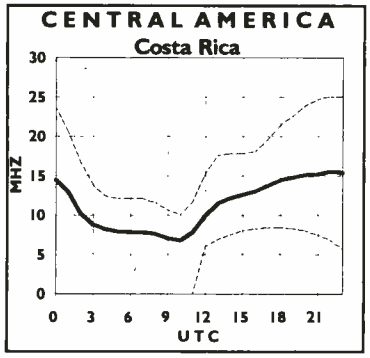
ORDERS
1-800-439-8898

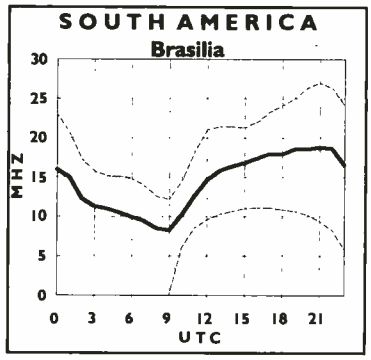
Logic Limited
113 Cascade Street - Morganton, NC 28655

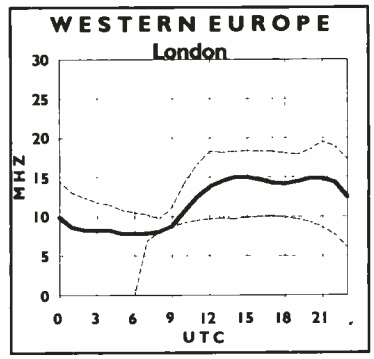
www.americanradiohistory.com

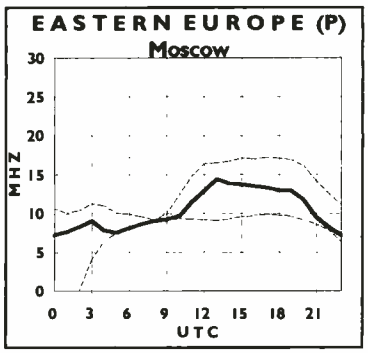
Propagation conditions: Eastern United States

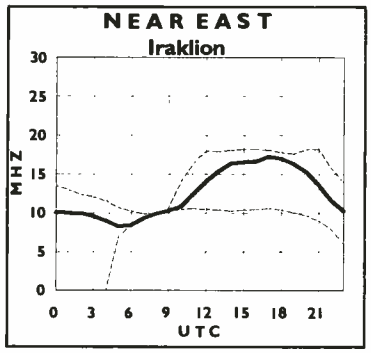
How to use the propagation charts: Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location. Then look for the one most closely describing the geographic location of the station you want to hear. The Sun Spot Number used this month for forcasting purposes is 8.

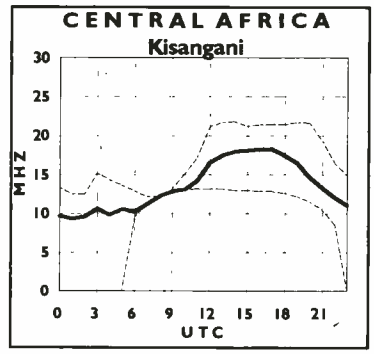


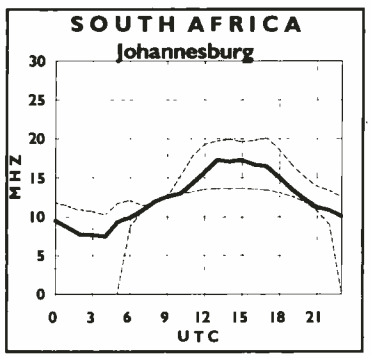


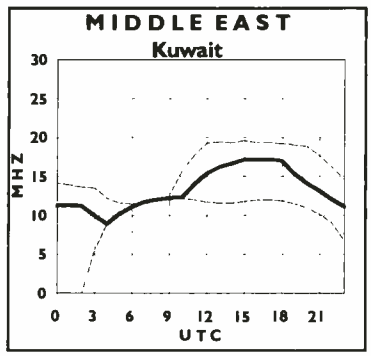


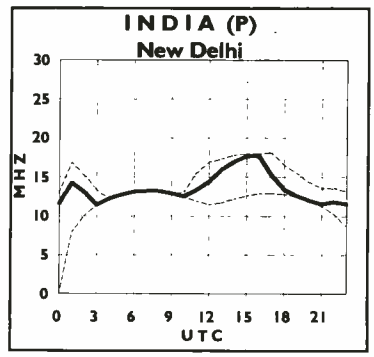


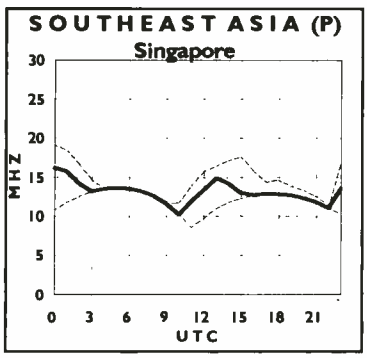


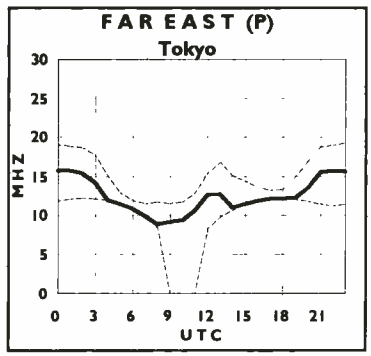


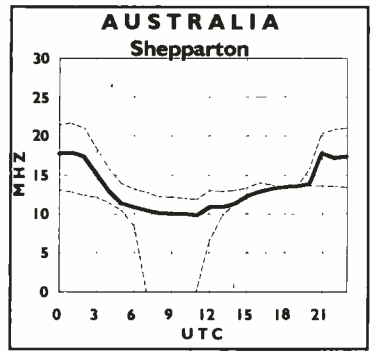








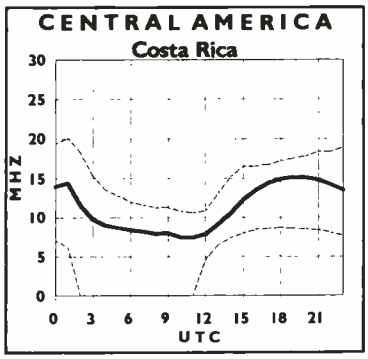


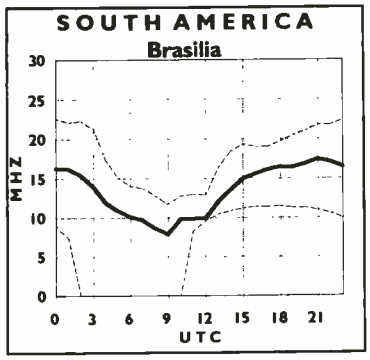


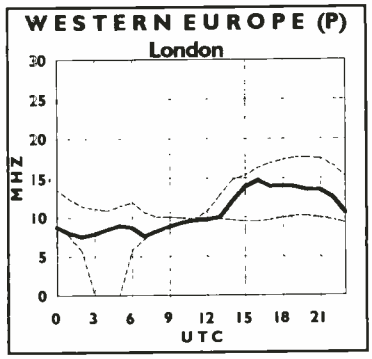
www.americanradiohistory.com

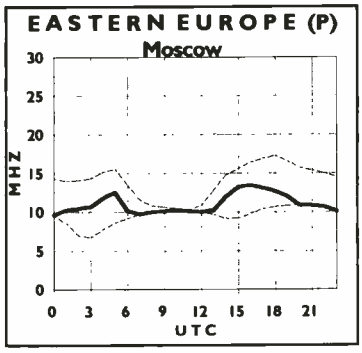
Propagation Conditions: Western United States

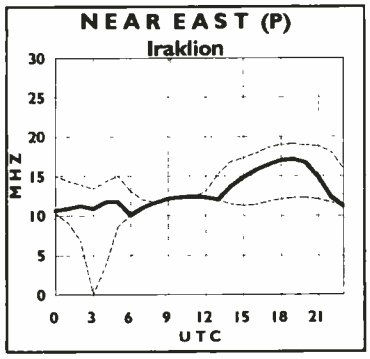
Once you've located the correct charts, look along the horizontal axis of the graph for the time you are listening. The top line of the graph shows the maximum usable frequency (MUF), the heavy middle line is the frequency for best reception, or optimum working frequency (OWF), and finally, the bottom line is the lowest usable frequency (LUF). You will find the best reception along the heavy middle line. Circuits labeled (P) cross the polar auroral zone. Expect poor reception on these circuits during ionospheric disturbances.

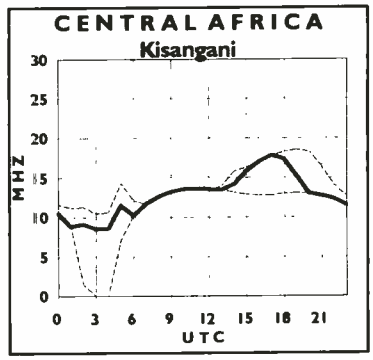


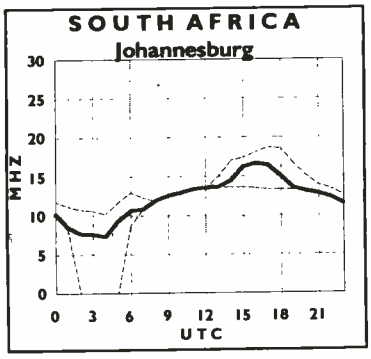


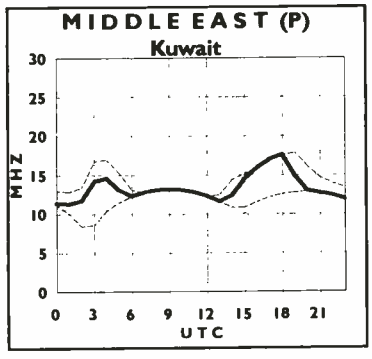


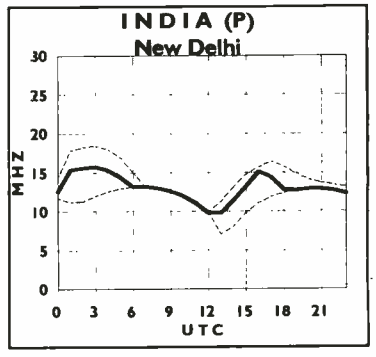


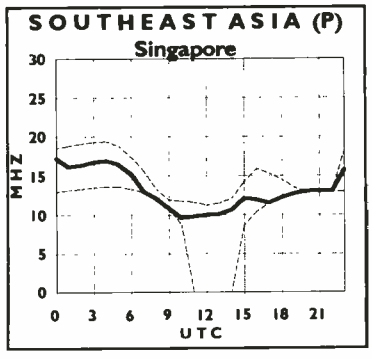


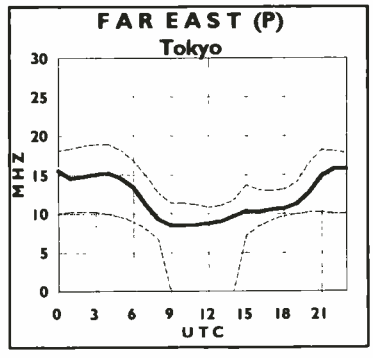


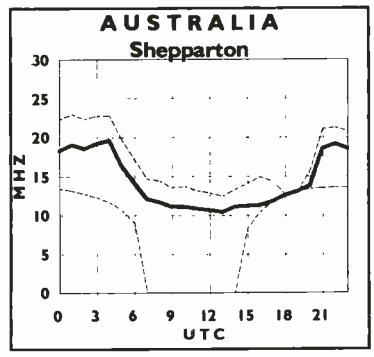












www.americanradiohistory.com

Revive a Five!

By Karl J. Zuk

Just turn a knob and it will start glowing! Thousands of All-American Five tube radios were manufactured in the 40s, 50s, and 60s, by a myriad of manufacturers. Now they wait for kind souls to bring them back to life. In the world of electronics, they are simple poetry, and a wonderful vehicle to teach yourself the basic techniques of radio repair. Look in your attic, go to a garage sale, or check the curbs on trash day. Find some treasure and lots of fun: Revive an All-American Five!

When you begin any radio restoration project, your first considerations should be personal ones. If appearance is important to you, look over the condition of the existing cabinet. If it is made of wood, how hard would it be to refinish? Unrestored plastic cabinet designs often have broken or missing decorative parts, and show the effects of the tube heat. Can it be repaired? What is it worth to you? You must decide.

After you find a rig that you admire on the outside, look carefully at the essential, and hard to replace, parts on the inside. If you have any doubts about the condition of the unit, or you think it may have been tampered with, examine it before you buy it. Try to avoid foreign-made radios for your first attempt. They often employ parts that will be hard to identify or replace.

Post-War All-American Fives restored: A Bakelite RCA 65X1 (left) and a rare Teletone Model 100.

If the antenna coil, the two or more IF transformer cans, and the speaker and its transformer are damaged, they will be quite a challenge to repair. Does it have a complete set of tubes? Has the wiring or components of the radio been tinkered with? Unless you have a schematic diagram for your particular radio's electronics, successfully correcting "modifications" may be difficult. An undisturbed chassis is most desirable. Think of it as a clean slate for your work.

Preliminaries

Before you begin, there are some things you MUST do. (1) DON'T plug it in until you've visually inspected it and made repairs, if necessary, to ensure your safety. NEVER perform physical work on a piece of equipment while it is plugged in.

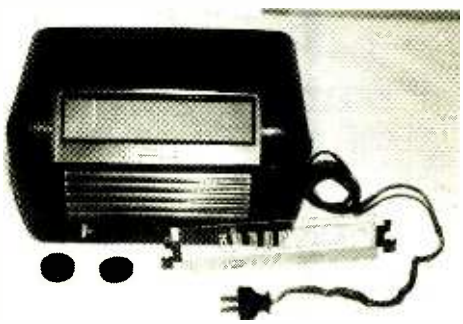
(2) Immediately after removing the chassis from the cabinet, cover the speaker cone with a protective piece of cardboard or wood, and attach it so it won't come off. Old speaker cones can be as fragile as a butterfly's wings. Putting a finger through a speaker cone is a painful lesson! (3) Also, close the tuning capacitor to prevent damage. Distorting a plate of a variable capacitor, so that it touches another when it is tuned, is nearly impossible to bend back in place correctly, and may cause dead spots in the tuning range when the bent plates touch.

(4) Invest some time and draw a diagram of the wiring, and precisely how the dial cord is strung. Note the polarity and values of all capacitors, the values and wattages of all resistors, and how they are connected in the circuit. Some tube sockets have pin numbers etched into the underside of their bases, so you can instantly identify which tab your component is connected to. Your drawing will eliminate panic if you remove a part and forget how it came out. Note where each tube is plugged in. The information you gather will be a useful reference as long as you own the set.

From this point forward, use the care and patience of a skilled surgeon: Take your time. First, you must get the dirt out. Find yourself a small, fine-bristled paint brush and very carefully stroke the dust and dirt away from the metal chassis. Clean both the top and underside of the chassis, but use as little pressure on your strokes as possible. Brush bristles can scratch some plastics, especially transparent pieces, so use a chamois cloth on these items.

Many sets were not manufactured with insulated wire, so it is easy to push two wires together that could create problems later. Avoid getting dust into the tuning capacitor or I.F. cans. If you need to use a cleanser on the outside surface of the cabinet, like soap or other liquids, try it in a small area on the radio's underside first. Paint on glass or plastic dials fronts could disintegrate in your hands.

Now that the unit is clean, remove the five tubes carefully, lifting them delicately from the base, not from the top. Set them aside in a safe place away from your work area. Start with basics: examine the power cord for cracks or damage. Fold a portion of the cord in half. If the insulation shows any sign of cracking, replace it. Check the plug, too.



Picking up the pieces: An RCA 65x1 with dull cabinet finish, dirty dial face, and dangerously decayed A/C line cord.

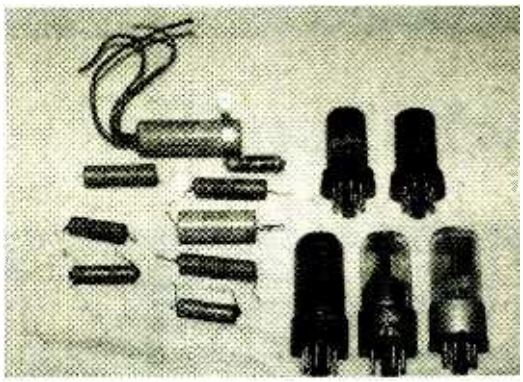
TABLE 1: Tube Reference Chart

Octal	7 pin	Function
12SA7	12BE6	Pentagrid converter/mixer; Mixes 455 kHz I.F. oscillator with RF signal.
12SK7	12BA6	Remote cutoff pentode/class A, IF amp.
12SQ7	12AV6	Twin diode & high mu triode amplifier, 2nd detector, AVC, 1st audio amplifier. Alternate miniature type: 12AT6 (lower gain)
35Z5	35W4	Half wave rectifier with capacitive input filter identical to 35Z4 except 35Z4 has no heater tap for pilot lamps. Converts AC to DC
50L6	50C5	Beam power tube: single tube class A amplifier. Final audio output tube

www.americanradiohistory.com

Corrective Surgery

Some basic tools are necessary to accomplish your work. Find a soldering iron, a fine wire cutter, a needle-nose plier (a right-angle nose can be especially handy,) a wire-stripper, basic straight-head and phillips head screwdrivers, a vacuum-type solder removal device such as a Soldapullt, a volt/ohm meter, and possibly a nutdriver set, as well. An RF generator is handy for final alignment of the radio, but not essential.



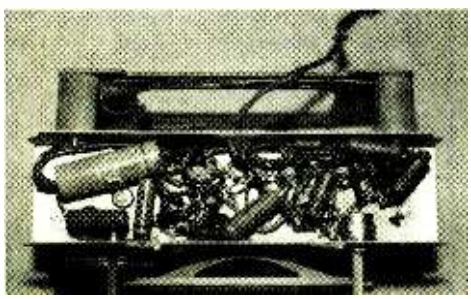
The most vulnerable components—old capacitors and aging tubes.

Your next step, as radio doctor, is to perform a "cap-ectomy." At best, the half-dozen or so paper and electrolytic capacitors now soldered into the circuit are more than twenty years old. For pocket change, replace them, and you'll have a set that's better than new. Wax-covered paper capacitors should be replaced with Sprague Orange Drop equivalents. Dipped in a bright orange sealing epoxy, these polypropylene capacitors are very reliable and come in a great variety of values and voltage ratings. If you can't read the values on the wax-covered original caps, don't be afraid to scrape off a thin layer of wax to reveal the numbers.

Silver mica capacitors, also sealed with an epoxy, can be used to replace smaller value originals. Remember micro micro farads (μμf) are the equivalent of picofarads.

The larger filter capacitors often come in multi-section cylinders that are now unavailable. To replace these, use single value capacitors, one for each section you are replacing, using the original common ground point for all. Read the outside cover of the original to discover the values of each section and follow the wiring color code used. Multi-section, chassis-mounted, metallic can types use symbols etched into their base to describe each pin. Look for small semi-circles, triangles, squares, etc; then match the pin with the value listed on the side of the can.

Single value Sprague TVA series "Atoms," Cornell-Dubilier WBR series, or Mallory TT or TC series capacitors are all fine replacements for these multi-section filters. Be very aware of their polarities—which side is negative ground, and which side is positive—and replace them as originally installed. Capacitors soldered in backwards become small firecrackers, creating an attention-getting pop. Electrolytic capacitors are often the cause when your radio produces a loud hum instead of enjoyable audio.



Before: Old paper and filter capacitors and a crumbling A/C line cord.

Don't overlook the resistors. Use an ohmmeter to check the values of each resistor included in your circuit. They should measure within ten percent (or better) of the values that are indicated by their colored bands. Look all around the resistors to insure that the colors you see are correct. Heat and age can blacken the colored paint, so that only one side of the component may indicate the correct colors. Any resistor that looks dark or slightly burned in the center should be replaced, and you'll add reliability by installing the next larger size. Replace burned half-watters with one watters, and so on.

Mystery surrounds components used in some tube radios known as integrated circuits. These are not the I.C.s you'll find in modern electronic devices. Rectangular in shape, and usually brown or dark red in color, they are about the size of a postage machine stamp, with several wires running out of one edge. A group of capacitors, or resistors, or both are sealed inside.

Designed for manufacturing economy and to save space, they are a restorer's horror, because there are few sources of information about them. If you are lucky, a description of its contents will be indicated on the outside of the package. If not, you can usually approximate what's inside by looking at a typical schematic drawing for an All-American Five and tracing where the integrated circuit is wired in. Our best advice: if they work, don't touch them!

Turn Your Radio On

Now it's time for the big test. Check all the

(Continued on page 114)

Award Winning Filters

Japan Radio NRD 515, 525, 535

Drake SW-8
Sony ICF-2010
Yaesu FRG-100

Kiwa high performance filter kits are designed to improve the above receivers and more. We specialize in custom filter bandwidths (2.5 - 8.0 kHz) using our proven Filter Module technology and Premium Grade filters for outstanding performance.

★ *Winner of the 1994 WRTH award for the most innovative design of accessory equipment.*

Kiwa Electronics
612 South 14th Ave., Yakima WA 98902
509-453-KIWA or 1-800-398-1146
kiwa@wolfe.net (Internet/full catalog)
http://www.wolfe.net/~kiwa

The World of Ham Radio Callsign May 95 Database

You can have the latest US and Foreign callsigns available. 20,000+ software files for amateur radio. AmCall auto-logging station log book included with every CD. Over 1,350 Radio Mods. The latest space photos. The newest releases of amateur software. 1,100 images of lost & missing children. Thousands of SWL frequencies. Published every JAN/MAY/SEP Special rates for clubs, FTP, BBS, & PBBS sysops. DOS & Windows compatible. Can you afford to be without the biggest & best CD for amateur radio? Subscribe and get 3 issues for $99 US, $109 Foreign Single issues $39 plus shipping. USA $3, Overnight USA $10, Foreign Air Mail $5 AmSoft, PO Box 666, New Cumberland, PA 17070-0666 USA, FAX 717-938-6767 Internet: amsoft@epix.net

$39 CD-ROM

VISA MasterCard

AmSoft 717-938-8249

Seeker 800

800mHz Handheld Gain!

Finally there's a Duck with real gain for the 800 mHz band! Even 1/4 wave tuned antennas can't come close to matching Seeker 800's performance. The secret is Seeker 800's patented, 1/2 wave, ground independent, commercial quality design. Significantly improves signal reception on handheld scanners, counters, & cell phones! Only 11.75 inches long! Connects to a standard BNC antenna mount.

only $37.99
plus $5.49 S&H

1-800-950-WARE
Write for a FREE catalog (no calls please)

RADIOWARE
PO Box 1478 Westford MA 01886
(508) 452-5555

www.americanradiohistory.com

DOUG SMITH, W9WI

Who's on First?

Many broadcasters claim to be "first." Your encyclopedia probably lists KDKA Pittsburgh as the first broadcasting station on the air. WWJ Detroit claims to have begun broadcasting in mid-1920, several months before KDKA. WHA in Madison, Wis. claims a start date in 1916. And the earliest claim I can find is that of KCBS San Francisco, which specifies an ancestry dating back to 1909. Who's *really* first? Good question!

WTMT also ran a DX Test on March 13. Don't forget to listen for these tests; they're a great way to add to your log.

In the early 1900s, all radio used Morse Code. Transmitters operated by using a huge spark to generate noise; this noise was turned on and off with a code key. The average American had no interest in listening to Morse Code for entertainment. Radio was strictly for experimenters, ships, and hams.

Some early experimenters tried to transmit voice by connecting a carbon microphone in the antenna lead. It worked—more or less. If you've ever tried to listen to a distant AM station during a severe thunderstorm, you probably have a good idea of what these early voice transmissions sounded like. Obviously, these early voice transmissions would not convince anyone to buy a radio!

In 1912, Edwin Armstrong discovered the phenomena of regeneration. Armstrong's aim was to build a more sensitive receiver for Morse signals, and the regenerative receiver was indeed a mainstay of radio for decades. But regeneration also made it possible to build "continuous-wave" transmitters. These transmitters generate a pure signal, one which doesn't contribute noise to voice transmission.

It didn't take long for experiments with Armstrong's circuit and voice transmission to begin. Radio businesses weren't the only outfits involved—engineering schools and radio amateurs were responsible for many of the early experimental voice stations.

Once an experimenter had his voice transmitter working, the next question had to be, "what do I say?" After all, you can say "Hello, testing" only so many times! Some stations began transmitting music. At the engineering schools of major Midwest universities, stations began transmitting agricultural reports for the benefit of rural amateurs. One such station, 9XM at the University of Wisconsin, received its first license in 1916. On that basis, 9XM's successor WHA-970 claims to be America's first broadcast station.

Other privately-owned stations also dabbled in broadcasts for amateurs. An amateur station in San Jose, California, which later became KQW (and is now KCBS-740 San Francisco) was one such experimenter. Some claim that KCBS is the first station, first going on the air in 1909. Another amateur station, 8MK at the *Detroit News*, (now WWJ-950) began broadcasting three months before KDKA went on the air.

In Pittsburgh, Frank Conrad, an engineer at Westinghouse, had been experimenting with voice transmission. Conrad was an amateur, with the callsign 8XK. Sometime around 1920, Conrad's supervisors realized that people who weren't amateurs were buying radio receivers to listen to 8XK's transmissions. This was too good of an opportunity to pass up. Westinghouse began marketing radios, and took over operation of 8XK to ensure a source of programming for their buyers.

KDKA received its first license, a "limited commercial" license, on October 27, 1920. KDKA proved a success, so Westinghouse applied for licenses for three more stations. These were WJZ Newark, NJ (now WABC-770); WBZ Springfield, MA (now WBZ-1030 Boston); and KYW Chicago (now KYW-1060 Philadelphia). WBZ was the first of these stations to receive a license, on September 15, 1921. On this basis, and because KDKA had been an experimental and amateur station as 8XK, some claim WBZ was the first broadcaster.

You now have the evidence; it's time for a verdict. Who *was* the first broadcast station? Of course, it depends on your definition of a "broadcast" station. Personally, I still consider KDKA first, as they were the first station built specifically to broadcast. But you can now decide for yourself.

■ What about the "K" callsign?

Most broadcast DX enthusiasts know the FCC assigns callsigns starting with the letter "K" to stations west of the Mississippi River, and calls starting with "W" to those east of the river. While this policy dates back to the first radio licensing act in 1912, the Mississippi hasn't always been the dividing line.

In the early days before World War One, most radio stations were either on ships, or used to communicate with ships. So, the land stations were usually located in major port cities. The government issued K callsigns to land stations on the Pacific Coast, and W calls to those on the Great Lakes, the Gulf of Mexico, and the Atlantic. All ships received four-letter calls beginning with K.

But as the 1920s approached, stations began appearing at inland locations. Some kind of dividing line had to be created. The first such line was the eastern border of Montana, Wyoming, Colorado, and New Mexico. It wasn't until early 1923 that the Mississippi was chosen as the W/K dividing line. This explains many of the W calls in the

TABLE 1

CBC International Schedule

Effective May 1, CBC AM transmitters are relaying the following international broadcasters:

1-2am	Radio France International
2-3am	Radio Netherlands
3-3:30am	Radio Sweden
3:30-4am	BBC World Service
4-5am	Deutsche Welle
5-6am	Radio Australia

All times are local at the CBC transmitter. Frequencies to try include: 740 (Toronto), 940 (Montreal), 990 (Winnipeg), 540 (Regina), and 690 (Vancouver).

www.americanradiohistory.com

930 KWOC RUSH IS RIGHT!

KWOC doesn't date back to the early 1920s, but it did put an excellent signal into Tennessee during their DX Test of March 13

West, such as WBAP-820 Ft. Worth, WDAY-970 Fargo, and WIBW-580 Topeka.

The shifting W/K dividing line doesn't explain how KDKA got a K callsign in Pittsburgh, though. What really happened?

For some unknown reason, for several months in late 1920 and early 1921 "limited commercial" stations were assigned ship callsigns—four-letter calls beginning with K. Only three of the limited commercial stations licensed during this period were broadcasters, and KDKA is the only one that survives to this day.

SKIPPING IN

Yet more DX from William McGuire in Maryland:

560 kHz	WIND, Chicago
940 kHz	WMIX, Mt. Vernon, Illinois
1050 kHz	WADC, Parkersburg, W. Va.
1070 kHz	WIBC, Indianapolis; WNCT Greenville, N.C.; WTSO Madison
1170 kHz	WLGO, Lexington, S.C.
1430 kHz	WVAM, Altoona, Penna.

Don't let William have all the fun! Send me your DX, at the Brasstown address.

Bits and Pieces

• A few months ago, I mentioned a relay of some Vatican Radio programs on 1260 in Boston. Now, six more international broadcasters are going to appear on your AM dial. The Canadian Broadcasting Corporation had been signing their AM stations off the air at 1am. They will now operate all night, relaying the signals of major international broadcasters. See the sidebar for the schedule and some frequencies to try.

• "Q: Who changes the lights atop radio antennas?" Martin Theil sent this question from the "Q&A" section of the *Tampa News*. As the paper reports, there are a small number of local crews that specialize in working on broadcast and cellular antenna towers.

Towers with red top beacon lights often require two 620-watt bulbs which cost roughly $50 each and last about a year. (Probably longer outside Florida, where there is so much lightning!) Climbing the tower to replace them takes roughly four hours; tower crews earn roughly $50/hour for their work. FAA regulations require lights on all towers taller than 200 feet.

• A unique situation in Chicago may soon come to an end, according to a *Sun-Times* article sent by William Hassig. Three different stations (WCRW, WEDC, and WSBC) share the 1240 kHz frequency in Chicago. WCRW broadcasts between noon and 3pm, and from 6 to 8pm; WEDC from 1-7am, 9:30-11am; 4:30-6pm; 8-9pm; and 11pm-midnight. WSBC has the frequency for the remaining hours.

WSBC's owners, Diamond Broadcasting, recently sold their FM station (WXRT 93.1) and their other AM station (WSCR 820). They kept the 1240 kHz station, and are now negotiating to buy WCRW and WEDC and merge them into WSBC, eliminating the time-sharing situation.

Time sharing of AM frequencies was popular in the 1930s, when there were many more stations than frequencies. Today, I only know of two other such arrangements on AM. Interestingly, two *new* time sharing arrangements have been authorized on FM in recent years—one in Austin, Texas, and the other in Phoenix, Arizona.

Don't Panic...

. . . if you haven't received your *Monitoring Times* by the beginning of the month. Postal delays do occur, and we must wait until the 10th of the month before sending replacements for lost issues.

Be patient and wait until the 10th; if you still don't have your *MT*, call us at 1-800-438-8155 and we will be happy to send a replacement.

The Worldwide Aeronautical Communications Frequency Directory

This new 260 page book by Robert Evans has quickly become *the* definitive reference for aeronautical DXers worldwide. Second Edition **Only ... $19.95 (+$1)**

The uncontested best book in the field. An invaluable source book. **Monitoring Times**

Comprehensive and fully informative. Applicable to the novice as well as to the advanced monitor. A book second to none. I could go all night with superlatives. **New Zealand DX Times**

Quite simply the best and most authoritative book on aircraft communications. **Short Wave Mag.**

This has to be the most complete treatise on HF, VHF and UHF voice and digital aircraft communications we have seen. Over 2350 discrete frequencies are given exhaustive attention with in-depth explanations of who, what, where and why various communications take place. A bargain at $19.95. **Westlink Report**

universal radio inc.

Universal Radio
6830 Americana Pkwy.
Reynoldsburg, OH 43068
◆ Phone: 800 431-3939
◆ FAX: 614 866-2339

MOUNTS & ACCESSORIES

TPM-6
6" Pedestal Mount. Adjustable with thumb screws. Triple black finish.
$19.95

Extensions... Recommended for use with the TPM6.
T2EXT (2") $2.95
T4EXT (4") $4.95
T6EXT (6") $6.95

$19.95
THTC
Universal Cradle for HT, Cellular Phone, or Scanner. Attaches to the AMPS plate of the TPM6 or similar mounts. Securely holds portables from 1.375" to 2.875" wide.

TRANSEL TECHNOLOGIES
MADE IN USA
123 EAST SOUTH STREET
HARVEYSBURG, OHIO 45032
(800) 829-8321 FAX:(513) 897-0738
Add $5.00 S&H on All Orders!
MasterCard VISA

www.americanradiohistory.com

John Fulford, WA4VPY

Summertime ... and the Listening Is Easy

Well, summer has hit its peak and the low and VHF bands have been showing increasing activity. The FM car radio reveals more and more stations coming in from the West each night. The 162 MHz weather channels are offering weather reports from all over the Southeast.

This is a good time to set our scanners on a known bank of frequencies, such as FBI repeater outputs, point our outside beam antennas (we all have one, right?) to a direction we pick at random, and let it search. A voice-actuated tape recorder, or one of the new scanners that provides channel usage figures, will tell us of openings we might not have been aware of.

Smmer is a good time to hear VHF such as these SC Army Nat'l Guard exercises; MSG Phillip Jones Photographer

Personally, I have been aiming my antennas down towards the Caribbean looking (listening?) for military traffic coming out of Haiti. A lot of Cuban traffic has been monitored in the 36-38 MHz band. One interesting frequency to monitor is 41.000 MHz—one of the main channels used for DEA operations in Panama.

Some of the more interesting low band frequencies monitored recently include:

Caribbean Loggings

Freq	Use
31.725	DUTCH WEST INDIES MILITARY
32.950	U.S. MILITARY--PANAMA
33.000	U.S. NAVY REPEATER--CLEVELAND, OHIO
34.810	U.S. FISH & WILDLIFE
34.830	U.S. FISH & WILDLIFE
36.300	U.S. MILITARY--PANAMA
37.000	U.S. MILITARY--PANAMA
37.050	U.S. MILITARY--ST. CROIX
40.530	"SNOWTEL" METEOR TELEMETRY (sort of federal)
41.500	U.S. MILITARY AIR OPERATIONS-Nationwide
50.350	U.S. MILITARY--USS *Bainbridge* working St. Croix

■ Back Pack Radio

The radios used by the military and some of the various paramilitary groups revolve around the PRC/25 and its solid state cousin, the PRC/77. These are low-powered (less than 5 watts), backpack radios. If you watch any of the Vietnam war movies, such as *Full Metal Jacket* or *Platoon*, this is the radio that is carried on the back of the radioman. Hence, the name backpack (or manpack) radio.

The radio is a marvel of technology. It is one of the first successful attempts at synthesized equipment. The radio covers 30.00 to 75.00 MHz in 50 kHz steps—such as 30.00, 30.05, 30.10, 30.15, etc., all the way up to 75.00 MHz. It uses a subaudible tone of 150 hertz, which is the standard military private line tone. The closest commercial tone is 151.4 Hz, which is also known as 5Z.

For those of you with private line capability on your scanners, the 151.4 Hz tone is close enough to 150.0 Hz for "government work." Set your scanner to search a desired range, say 30.00 to 32.00, with the PL set at 151.4 Hz, and search. The only frequencies that will come through are either legitimate military frequencies or someone using military equipment.

The deviation of these sets is "sort of" wideband. It is a little wider than narrow band and a little narrower than wide band. When I was involved in law enforcement work back in my other lifetime, our agency found some of the smuggling groups using military equipment. The scanners that we were using would skip right over the frequencies if the squelch was set too tight.

These radios are seeing a comeback with the paramilitary groups and others. There is a mobile adaptor for vehicles that will let the set be used as a mobile. Two radios can be set up with the proper intercabling to make a repeater. There is a low band duplexer that shows up at flea markets and surplus sales for the 30-75 MHz range and is designed for the above sets.

The full power mobile sets have output powers of up to fifty watts. These radios can be used with speech scrambling add-ons. The military had their own KW series, which has never been seen at surplus sales—although I have looked. There are several commercial outfits manufacturing their own add-on scramblers. These scramblers are DES quality (Data Encryption Standard). Remember, these were made for the military.

Why have I mentioned these radios in this column? After all, this is the federal, not military, column. The reason is that some of the anti-drug units of our government—both civilian and military—are using this equipment in the anti-drug campaign. There are 1200 channels to choose from. the equipment is readily available, and it will stand up through almost any type of environment.

If one monitors between 30.00 and 35.00 MHz., especially on 30.00 and 30.05 MHz., you will hear the gypsy taxicabs of the New York City area competing with the legitimate U.S. Military users. Or, sometimes it's the military stations on 33.8 MHz that chase off the legitimate Los Angeles Government users.

Courtesy ITT Aerospace

These military man-packs are showing up in the anti-drug campaign and are also popular with paramilitary groups.

www.americanradiohistory.com

These sets are not readily available, but they can be found. The PRC/25 has one tube in the final and cannot go "X-Mode"—the secure speech option. The PRC/77 is all solid-state and is fully secure-speech compatible. A good working PRC/77 with most all of the accessories will command up to 500-600 dollars, but it is well worth it. You will have a radio that is still being used by most of the major Allied Forces of the world and will not be phased out until the next century.

The new version, which is being used in Israel, has been changed somewhat. The two dials on the front—one for the megahertz and the other for the 50 kHz steps—have been replaced with tuning knobs that will read out on a light-emitting diode display and will tune in 25 kHz steps. These make good little communications systems. You can run voice, secure voice, or data, and do it with the look and feel of a real military radio. Or you can use it to impress your neighbors and tell them you are starting your own militia and you are the communications officer.

■ Reader Check-Ins

I received several nice intercepts this month. The first one comes in from someone at NASA, forwarded to us by Keith Stein, who is a staff member for our sister publication, *Satellite Times*.

NASA Headquarters, Washington, D.C.

Freq	Use
170.2450	NASA HEADQUARTERS AUDITORIUM WIRELESS MIKES
171.0450	SAME
408.4000	NASA HEADQUARTERS SECURITY ALPHA 1 BRAVO 5 ALPHA 5 CENTRAL ALPHA 7 DELTA 1 ALPHA 11 DISPATCH
415.2000	FEDERAL PROTECTIVE SERVICE CAR 5,8,51,70,90 EAGLE 2
417.2000	FEDERAL PROTECTIVE SERVICE CAR 16,31,40,41 EAGLE 12
418.0750	NASA HEADQUARTERS SECURITY ALPHA 3 CENTRAL ALPHA 4 DISPATCH ALPHA 5 PAPA 16
461.8750	BOSTON PROPERTIES INC.
463.7250	SAME--NASA Headquarters Building Maintenance

An unknown contributor sent in the following from the Argonne National Laboratory at Lemont, Il. This is an installation of the Department of Energy. I have no idea what each channel is used for, or what, if any, subaudible tones are used.

Argonne National Laboratory

Chan	Freq
01	32.020
02	162.0500
03	162.2250
04	164.2250
05	164.2750
06	164.3750
07	167.8500
08	168.4500
09	169.9500
10	170.0750
11	171.2000
12	171.9500
13	173.0000

Another reader sent in the following list from Arnold Air Force Base, which is near Manchester, Tennessee. This is the home of the USAF Engineering Development Center.

Arnold Air Force Base

Freq	Use
148.225	AIRFIELD--OPERATIONS
148.075	COMMANDER'S NET
148.700	
149.525	
149.975	
150.175	INSTALLATION MAINTENANCE
150.300	BASE CONTRACTORS
150.350	
155.280	AMBULANCE
155.340	HOSPITAL
162.225	
162.275	
163.5125	BASE PAGING
168.525	
173.025	NASA--TV/SPACE SHUTTLE MISSIONS AUDIO
173.5875	BASE MEDICAL/FIRE/CRASH

James Baumgartner of Gulfport, MS, sent in a nice note that a military training mission using the callsign of TULSA 11, 21, 31, etc., was using 149.375 MHz in the AM mode during a tactical training flight out of the **Gulfport Air National Guard** facility this spring. Thanks, James.

For those of you in Georgia, the United States Forestry Service has positions 9, 10, and 11 in the State of Georgia Forestry Commission radios. They are:

Georgia Forestry Commission

Chan	Freq	Use
09	168.775	SIMPLEX
10	169.200	SIMPLEX
11	168.200	SIMPLEX

The annual Fly-In at Oshkosh, Wisconsin, has been held in the late summer/fall the past few years. The Federal Administration usually sets up on site a couple of days before, with their own communications system. They have been using:

FAA at Oshkosh Fly-In

Freq	Use	Tone
172.925	SUITCASE RPTR OUT	136.5 Hz
172.125	SIMPLEX	136.5 Hz

The Federal Aviation Administration uses the following radio configuration pretty much nationwide. Their radio set up is:

FAA Nationwide Frequencies

Chan	Rptr Out	Rptr In
F-1	172.925	169.325
F-2	172.950	169.350
F-3	172.975	169.375
F-4	172.850	169.250
F-5	172.875	169.275
F-6	172.900	169.300
F-7	172.825	169.225
F-8	172.125	SIMPLEX
F-9	172.150	SIMPLEX
F-10	172.175	SIMPLEX
F-11	166.175	SIMPLEX

■ De-Railed?

Down my way here in South Florida, the only passenger train we have left is AMTRAK. I guess it is the same nationwide. I like trains and spent my youth living three blocks from the now-destroyed Florida East Coast Railroad terminal at West Palm Beach. I would go over whenever I could to see the "snowbirds" coming in.

Lately, I have begun to notice 900 MHz antennas being erected every few miles along the AMTRAK line. I have seen the 900 MHz allocations in the database for some time, but have never seen any radio systems. I guess they are now being installed. I wonder if this new 900 MHz system will take away the listening pleasure of those of us who still enjoy monitoring on the 160 MHz train channels?

That's it for this month. I'm getting ready for Atlanta—how about you? Hope to see you there.

FREE SAMPLE COPY!

ANTIQUE RADIO CLASSIFIED

Antique Radio's Largest-Circulation Monthly Magazine

Articles - Classifieds - Ads for Parts & Services
Also: Early TV, Ham Equip., Books, Telegraph, 40's & 50's Radios & more...
Free 20-word ad each month. Don't miss out!
1-Year: $34.95 ($51.95 by 1st Class)
6-Month Trial - $17.95. Foreign - Write.
A.R.C., P.O. Box 802-P10, Carlisle, MA 01741
Or Call: (508) 371-0512

www.americanradiohistory.com

Jean Baker, KIN9DD

The Flight of the Concorde

Welcome aboard, everyone! At the 1994 Convention in Atlanta, we showed a video cassette tape called "How They Fly The Concorde." It sparked quite a bit of interest in the monitors who viewed it, and generated a lot of letters asking for the Concorde to be featured in my column. Time and consultation with three Concorde experts has finally produced this special feature: A look at the fascinating and beautiful supersonic aircraft called Concorde.

I was fortunate to see a Concorde once ... at Kennedy where my aircraft was taxiing in, and a Concorde flight was on the way out to its assigned runway. I had my nose pressed against the window as I watched the graceful aircraft until it was out of sight. Much of the material and photos for this feature, however, were contributed by Bob Burdick (CT), Bob Hubbard (MD), and Bill Battles (NH). It's a good bet that these gentlemen know more about the Concorde than do those fortunate passengers who fly Concorde back and forth across the Atlantic on a regular basis.

Flying the Concorde, a traveler can arrive in New York about the same time as he left London! Photo by Bob Hubbard.

In 1962 the British and French Governments signed an agreement for joint design, development, and manufacture of a supersonic airliner. Concorde's maiden flight was Air France's prototype 001 on 2 March 1969, from Toulouse, France. British Airways soon followed with Concorde 002 from Filton, Bristol, on 9 April 1969. In the beginning of the supersonic transport (SST) passenger age, two prototypes and two pre-production Concordes were followed by 16 production aircraft. Air France and British Airways each have seven now; five in use and two used for standby.

Celebrating 20 years as the world's only operational SST, Concorde still manages to thrill the imagination. Supersonic trans-Atlantic crossings have become routine for those who can afford it. Today, British Airways and Air France are the only two operators of commercial supersonic aircraft. Unfortunately, the Russian version (the TU-144) did not have the longevity that BA and AF are enjoying. Maintenance support problems, and a horrendous in-flight breakup of one of their SSTs at the Paris Air Show some years back contributed to an abrupt end to their program.

The United States' entry into the world of SST flight was to have taken place in 1972. Boeing had planned its 2707-300 to be 62 feet longer than the 747, cruise at Mach 2.7 and seat 250 to 320 passengers. Projected seat-mile operating promised more reasonable fares for long international trips than the 100 seats that Air France and British Airways offer on their smaller aircraft.

President Nixon gave the go-ahead for two prototypes. The federal backing required was to be repaid upon delivery of the three-hundredth aircraft. If as many as 500 were built, the government would realize a $1 billion return on its investment. With 122 orders in hand from 26 airlines, the designer went to work. Then, unfortunately, the Senate voted "no" to project funding.

At present, there are the two round trips daily between LHR (Heathrow Airport, London) and JFK (Kennedy International, New York), and one daily round trip between CDG (De Gaulle Airport near Paris) and JFK. Flights to and from IAD (Dulles Airport, Washington D.C.) have been suspended—unfortunately, probably for good. Concordes are doing a lot of charter service to over 150 destinations around the globe, as well as air show appearances. Also, both airlines offer exotic around-the-world Concorde flights at least once a year (drool!).

The very first Concorde passenger flights were as follows: On 21 January 1976, British Airways' Concorde flew from London Heathrow to Bahrain, and Air France departed Paris for Rio de Janeiro. 24 May 1976 saw the start of service from Paris to Washington, DC, and the New York route was opened on 22 November 1977.

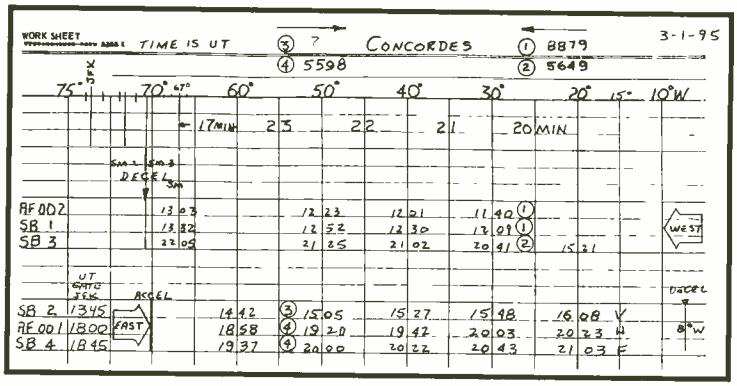
Mexico City was the next recipient of service—a continuation of the Paris-Washington, DC, flight. All of these, with the exception of the Paris/New York and London/New York round trips, are only a memory now.

Singapore Airlines partnered BA for almost three years, and Braniff worked briefly with Air France and British Airways (not supersonically). At one time, these flights continued on to DFW (Dallas-Fort Worth) using a Braniff Airlines crew, and at another time, they continued to Miami. Both of the aforementioned trips were continuations of British Airways flights.

Although there are not a large number of Concordes flying today, they offer many fascinating monitoring opportunities because of their higher speed. With a cruise speed of Mach 2 they span the 10 degrees of latitude between position reports in 20 to 22 minutes!

There are three Atlantic supersonic "tracks" allocated to Concordes. They are located 1 degree apart and are labeled **SIERRA MIKE** (Westbound), **SIERRA NOVEMBER** (Eastbound), and **SIERRA OSCAR**, which

FIGURE 1: *Bob Hubbard uses a worksheet to track the Concordes.*



www.americanradiohistory.com

Charles Bernth snapped this picture of a Falcon 200 biz jet on a short final at FRG.

is reserved for schedule conflicts on Sierra Mike or Sierra November. Since the track defines the latitude, only longitude is involved in a position report.

A common ATC Oceanic clearance would be: "Speedbird Concorde Two cleared (to) London, Flight Level 550-590, Sierra November, Mach 2.0." Clearance for supersonic speed is not given until the aircraft is at a point where its sonic boom will not make landfall; in other words, where it won't rattle someone's dentures or wake the baby! The supersonic acceleration and deceleration points vary according to air temperature and other seasonal changes which affect the propagation of sound.

Concorde is given a block flight level as opposed to a set level. This is due to the fact that the plane continues to climb and accelerate as it crosses the ocean, reaching maximum altitude just prior to deceleration on the other side. Also, operational altitude is above other commercial aircraft and most weather. The "hop" takes approximately 3-1/2 hours. This means that a London to New York trip arrives at about the same time (EDT) as it left, relatively.

Tuning In

Now that we have some background, let's get on with the good stuff—monitoring! Starting with company frequencies at Kennedy, BA can be found on 129.150 and AF is 130.125. Callsigns are relatively easy as they are all or part of the following: "Speedbird Concorde #, Heavy," or Air France Concorde #, Heavy."

For you lucky monitors in the New York and surrounding areas, VHF freqs that Concorde generally utilizes are as follows: outbound trips - New York Departure on 135.900 and 134.550; NY Center on 132.150 and then 125.920; Moncton (Canada) Center on 128.700. Inbound flights can usually be heard on 132.150 (New York Center); New York Approach freqs 134.550, 127.400, 125.700; and Kennedy Tower on 119.100.

HF frequencies transmissions utilized are: 5598, 8906, 8879, 5649, and 13306.

Times to listen for Concorde flights (all times given in UTC): Eastbound trips start with Speedbird 2 leaving JFK at 1345, followed by Air France 001 at 1800 and Speedbird 4, which leaves at the gate at 1845. A note here: if you monitor Concordes you will find that they are very punctual After all, their main selling point is the time savings—at about $3900, one way!

Monitors in most of central and eastern New England should receive good reception as the flight climbs and proceeds on about a 70 degree heading. At Gander (50° West) you dust off the HF receiver, since this is where we go from VHF to HF; Speedbird 2 will be calling his assigned HF freq for a SELCAL check. From here it's a check at 40° and 30° West where it's given over to Shannon Control, sometimes with a frequency change. Incidentally, Shanwick goes over to VHF at 15° West.

Westbound flight monitoring starts with Air France 002 at 30° West at about 1140 on 8879 and then Speedbird 1 at 30° West at 1210. Speedbird 3 usually pops up on 5649 at about 2040—still 20 minutes between checkpoints, isn't that amazing? After the westbound switch to VHF at 50°, monitors face the same situation described above for the eastbound flights, only in reverse. Bob Hubbard has contributed his Concorde worksheet (Fig. 1) as an example of how to follow the schedule flights.

Concorde Trivia

Now let's take a gander (no pun intended) at some very interesting facts about the SSTs:

- Concorde measures 204 in length; however, that stretches by almost 10 inches during flight, due to heating of the airframe.
- The characteristic "droop snoot" nose is lowered to improve pilots' visibility on landing and taking off. Incidentally, Concorde takes off at 220 knots, compared with 165 knots for most subsonic traffic. Landing speeds are also higher; however, in other respects, she performs in much the same way as subsonic aircraft do.
- The fastest flight time New York-London was on 14 April 1990: total flying time 2 hours, 54 minutes, and 30 seconds.
- Concordes' fuselage is *extremely* narrow: only 9 feet, 6 inches. This makes it a tad difficult for the more portly passengers to navigate the isles.
- V_1 (the last chance a pilot has to safely abort a takeoff) is 160 knots; rotation (actual takeoff) is at 195; and the a/c is airborne at 220 kts.
- Yes, both airlines send QSLs. Don't forget to include a couple of IRCs or other form of return postage in your reception report!

Well, I could go on and on and on. But that would take up at least two more columns. If you have any questions on any material that you didn't see here, please drop me a line and I'll try to find the info for you.

Readers' Corner

Charles Bernth contributed the photo of the Falcon 200 on short final at FRG (Farmingdale, NY), as well as the company frequencies for ISP (Islip, NY):

American Airlines:	129.225 & 460.775
Carnival Air	129.375 & 469.5375
USAir	130.050 & 460.700

Please note that American Airlines uses 129.200 and 129.225 quite frequently around the country.

Well, that's it for August. In October, our feature will be on tips for beginning and intermediate monitors, plus lots of contributions to Readers' Corner. See ya'll in the sunny south at the Expo.

As heard about on WHRI, WINB, WWCR, Radio Copan International

Reviewed by Larry Miller in April '93

Introducing---The New

"TINY TENNA"

Indoor Active Antenna

The "TINY TENNA" works on LW, MW, SW, VHF & UHF. It runs on a 9 volt battery or AC adapter. (not included) Great for travelers, vacationers, apartment or condo dwellers, etc.. No frills, nothing fancy...only pure performance and Made in the USA! Complete and easy hook-up for ALL Receivers! Satisfaction Guaranteed!

Special for "MT" Readers!

Only

$19.95*

DWM Enterprises
1709 N. West Avenue
Jackson, MI 49202

*Plus $4 US shipping, $5Canada/Mexico, $6 DX.

CHECK OR MONEY ORDER ONLY, PLEASE. US FUNDS.

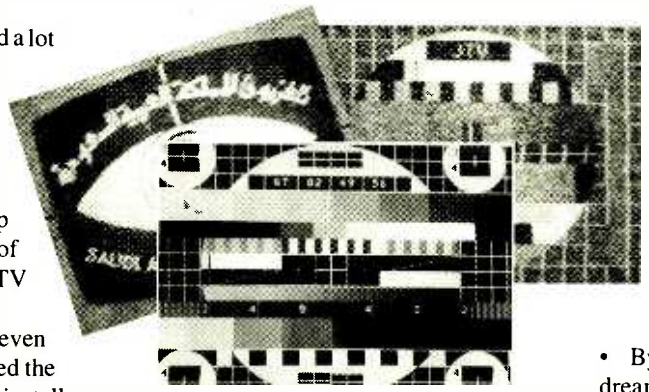
www.americanradiohistory.com

Ken Reitz, KC4GQA

The View from Europe

Those of us in the U.S. who spend a lot of time (and our spouses might say *too much* time) on this intriguing hobby, may feel that we are way ahead of the rest of the world. Don't kid yourself. A less publicized but no less inventive group of Europeans were there every step of the way toward this new satellite TV industry.

In fact, a British experimenter, Steven Birkill, is credited with having reported the first use of a home-built, satellite TV installation. Just months later Americans joined the fray, and a lively race to keep up with industry technology ensued. That was 1976, a time when cable TV meant Community Antenna Television (CATV). This was a way for rural towns to pick up nearby city television stations by all sharing one big antenna system. It was a time before shopping channels, Court TV, or even scrambling. The signals were there for the technological elite—those whose command of electronics served as a key to open this secret communications door.



These three satellite images were captured by Jaap Rusticus back in 1988. At that time, he'd already been experimenting for twelve years.

Experimenter In the Netherlands

Jaap Rusticus, PAOJRK, has been experimenting with satellite reception since 1979. A teacher at a technical school in the Netherlands, Jaap enjoys home-brewing antennas, feeds, and receivers for all manner of satellite signals from digital weather satellites to C and Ku band broadcasting satellites.

Joined by several of his friends, Jaap says, "...our first experiments in TVRO reception consisted of homebrew equipment. The first thing I built was an 11 GHz preamp with two gaas-fets. Then came a commercial radar detection unit which converted the signal to about 400 MHz. I then converted it down with a television tuner, divided it by two, and demodulated the signal with an NE 564.

"My first antennas were 5 foot and 10 foot...At this moment I use the 10-foot dish for digital Meteosat reception. The 5-foot is for analog Meteosat. A 4-foot dish is for reception of the Astra constellation (now four satellites on 19.2 degrees East), and a little 2-foot dish is directed to 19 West where I can see D2MAC transmissions. I also use the 10-foot dish for 4 GHz reception, Intelsats, Gorizont, Arabsat, etc."

Among his latest homebrew projects is a portable 1.7 GHz Yagi antenna consisting of one reflector, one driven element and 16 director elements. He built this to take with him on holiday so as not to miss out on his weather imagery habit. The project, featured in the second quarter issue of *WeatherSat Ink*, shows the careful craftsmanship with which Jaap constructs his equipment. Such elegant work is not done justice by the adjective "homebrew." This hand-held Yagi has a built-in preamp just behind the reflector which feeds a PLL receiver with the image displayed on a 2 x 3 cm monitor screen of an old TV camera. Nice work!

Jaap, a radio amateur for 23 years, just can't get away from electronics. When he's not teaching or homebrewing he enjoys repairing electronic organs.

Featured on these pages are photos Jaap took of various C band signals captured several years ago using his 3-meter dish.

AMSAT News

Two photographs recently showed up in the mailbox from AMSAT's Vice President for Strategic Planning Keith Baker, KB1SF. Both involve the continuing progress on AMSAT's Phase 3-D spacecraft, the most ambitious amateur radio space project ever. In one, Keith (who will be a featured speaker at the Grove Communications Expo in October) is shown giving an on-camera interview to Dave Brody, Segment Producer for the Sci-Fi network program *Inside Space*.

The other photo shows the sense of ingenuity used by hams on this important project. Jeff Zerr is shown displaying his handiwork, which is a completed flight model L-band antenna for Phase 3-D. The antenna is based on a short-backfire design and uses (I am not making this up) an all-aluminum wedding cake baking pan for a reflector. Don't you wish Defense contractors were that inventive?

News Brief

- By the time you read this, the hopes and dreams for the immediate future of DirecTV and USSB will be decided with the launch of DBS-3 scheduled for June. It joins DBS-1, launched December 1993, and DBS-2, launched August 1994 at 101 degrees West. The extra bird will allow DirecTV to add another 30 channels.
- Intelsat has enjoyed the successful launch of both 705 (March 22) and 706 (May 17) from the Ariane launch facility in Kourou, French Guiana. The 705 satellite is operational at 50 degrees West, and the 706 satellite will be located at 53 degrees West. 705 carries programming to Latin America and 706 is said to be used for telephone traffic at the rate of 110,000 conversations simultaneously. I wonder what percentage of those

Jeff Zerr with the L-band antenna for the amateur Phase 3-D satellite. Say, doesn't that look familiar ... ?

www.americanradiohistory.com

Keith Baker interviews Dave Brody of the Sci-Fi network.

calls will be unsolicited requests to sign up for a certain long distance service.

• The FCC has decided to re-examine the issue of Zoning, Covenants, Conditions, and Restrictions relating to the erecting of satellite antennas. The Satellite Broadcasting and Communications Association (SBCA), a pro-TVRO industry lobby, is said to be enthusiastic about the review, hoping the new rules will make it easier for home dish owners to brush aside local covenants and restrictions.

One wonders, though, if the Commission may not see the existence of the wildly popular DBS dishes as an alternative which home owners could choose and which would satisfy the restrictions. Such a decision, while a blow to the TVRO market, could be seen as a compromise for zoning boards and would be very friendly to DBS entities which are dominated by cable interests.

• O Canada! Canadians are feeling really feisty lately. After a high seas donnybrook with the Spanish they're ready to take on anything. Now, it's Country Music Television and DSS; next it'll be the shopping channel. Say, whatever happened to NAFTA, eh?

X*Press Update

In the April issue of *MT* the column lead was on X*Press Information Services, now known as Ingenius. Since then a number of changes have occurred which should be noted. A salesperson with whom I spoke at Ingenius indicated that the service had shipped the last of the General Instrument InfoCipher data receivers (the box which interfaces your VCIIRS and your PC) in May. While no new TVRO services will be added in the immediate future, current TVRO Ingenius customers will continue to be supported by the service. This means that existing InfoCipher 1500R data receivers have become very scarce items.

I hope that Ingenius decides to continue to develop its TVRO market and that the response from this column has allowed them to reconsider the move. In the meantime, if you are not on cable, Ingenius is still available via the DBS programmer, Primestar. To get in touch with your local Primestar franchise dealer call 800-966-9615. You will be asked for your Zip Code and then you'll be given the name and number of your local Primestar company.

Installation fees vary from location to location. My experience is that it will cost from $150-$250 for the initial installation; after that there will be a monthly fee based on video services you use. Once you have Primestar you may call Ingenius and sign up for their information service. There is a one-time charge of $100 for the installation kit which includes the necessary hook-up cables and software. From that point you will be charged $59.40 per year for the service. This means that for $310 you can get a Primestar satellite system, get hooked up to Ingenius with a one year subscription, and enjoy DBS style entertainment. By the way, Ingenius is not offered on DirecTV or USSB systems. Too bad.

If you are already a Primestar subscriber, what in the world are you waiting for? Dial this number now! 800-7PC-NEWS. And I mean it!

And while we're at it, Ingenius announces that technical support is available via the Internet. You can E-mail your support questions to support@ingenius.com. They ask that you include a description of the problem, the version number of the Ingenius software, the make and model of your computer, and your E-mail address. An E-mail response will be sent no later than the next working day. For the Internet deficient: call 800-HELPOUT (800-435-7688) and, finally, you can fax'em at 303-267-4172.

In other Primestar news, Digital Music Express (DMX) will add 10 of its digital music services to the Primestar audio lineup. This is an interim step to the addition of all 120 DMX CD quality audio services which will be offered next year with the launch of Primestar's new higher powered DBS satellite.

Note: For more information on the aforementioned WeatherSat Ink, an excellent, quarterly publication for the weather satellite enthusiast, write WeatherSat Ink, c/o Bluebird Greenhouses, 4821 Jessie Dr., Apex, NC 27502, or call their 24/day FAX line at 919-362-5822. Subscriptions are $18/year USA $23/year foreign. Editor Tom Glembocki, KO4BD, can be reached via the Internet at tomgle@cybernetics.com

Satellite-TV
100% Satisfaction Guarantee
FREE 68 Page Buyer's Guide
Systems from $499
• All Major Brands
• Complete Systems
• Accessories
• Huge Savings
• Easy Installation
• Complete Instruct.
Let Us Help You Select Your New Satellite TV Entertainment System
Over 1 Million Depend on Skyvision®
1-800-334-6455
Int'l 218-739-5231 Fax 218-739-4879
Skyvision®
1050 FRONTIER DRIVE
FERGUS FALLS, MN 56537
YOU CAN
INSTALL OR UPDATE YOURSELF!

SATELLITE COMMUNICATIONS EQUIPMENT
WHOLESALE TO THE PUBLIC!
Uniden
Drake
All Major Brands
C and Ku Systems
SCPC Equipment
INMARSAT Antennas
Echosphere
Orbitron
NEW & USED EQUIPMENT
RMR Electronics Company
32 Mountain Home Road
Londonderry, NH 03053
(603) 434-7445
Scanners and HF Receivers
FREE TECHNICAL ADVICE: 6-11pm EST

NEW
PORTABLE SATELLITE ANTENNA
Complete 2' KU Band System
Introductory Offer $389.95
plus shipping & handling
For FREE information package and pricing of other products
• Call 219-236-5776 •
VISA
Prices & specifications subject to change without notice
R.C. Distributing Company
PO Box 552 • South Bend, IN 46624

www.americanradiohistory.com

Kevin Carey, WB2QMY

The Results Are In!

Way back in March we presented the *Below 500 kHz* survey with an aim towards keeping this column focused on the needs and interests of the readership. Not only did the survey help achieve that goal, but it also told a lot about who we are and what we are doing with the longwave frequencies.

For example, of the 25 survey participants, only a handful used the same receiving equipment, and although "beacons" ranked as the most popular monitoring pursuit, a surprising number of readers also dabble in more exotic aspects of the longwave hobby such as "Natural Radio" or copying NAVTEX transmissions.

Listed below are the results of the survey. I would like to thank each of you that participated. To the best of my knowledge, no survey of this kind has ever been conducted among longwave listeners, and it provided much-needed insight to this unique band.

■ Below 500 kHz survey results

States represented in the survey: Alabama (2), British Columbia, California (3), Illinois, Massachusetts (2), Maryland (2), North Carolina, New York (5), New Mexico, Ohio, Rhode Island, Tennessee, Texas, Utah, Vermont, West Virginia.

Here's a View of PYA (260 kHz), Penn Yan, NY. Photo by Kevin Carey

Receivers used: *(one of each type listed, except where a number follows in parenthesis)*

Realistic DX-440/Sangean ATS-803A (3)
Kenwood R-5000 (2)
Drake R8 (3)
RBL-5 Military
R1401 A/G Military
Japan Radio NRD 535 (2)
Japan Radio NRD 525 (2)
Kenwood TS 930S
Sony SW 77
Yaesu FRG 8800
ITT-Mackay Marine
Kenwood TS 430S
Icom R71A (2)
Kenwood R-1000
Realistic DX-390
Yaesu 1000
Uniden CR2021

Primary Antenna used: *(totals out of 25 respondents)*

Wire Antenna (16)
Ferrite Rod internal (1)
Active Antenna (4)
Loop Antenna (3)
Vertical (1)

How long have you been tuning below 500 kHz? *(totals out of 25 respondents)*

Less than a year (3)
1 to 4 years (5)
5 to 9 years (8)
10 or more years (9)

Have you ever operated a transmitter in the license-free 160 -190 kHz band?

Five respondents have operated a transmitter in this band.

Of the time you spend monitoring, approximately what percentage is spent tuning the longwaves? *(totals out of 25 respondents)*

Less than 10% (8)
25% (10)
50% (4)
More than 70% (3)

Please rank your longwave monitoring interests on a scale of 1 to 5 (with 5 indicating the highest interest): *The total points for each selection are listed below. 125 is the highest possible score for any given selection (5 points X 25 respondents = 125).*

Natural Radio" (0 to 20 kHz): 22 points
OMEGA: 16 points
10-150 kHz Military/Utilities: 32 points
GWEN: 12 points
License-free "Lowfer" band (160-190 kHz): 42 points
Beacons: 90 points
Maritime CW stations: 54 points
European Broadcast stations: 59 points
NAVTEX: 25 points
Other radio interests: Medfer, Unidentified signals, SW DX, AM DXing, V/UHF scanning, Exploring, Below 20 Hertz, 500 kHz Marine, BBC/VOA shortwave.

Please rank your interest in the following sections of the Below 500 kHz column on a scale of 1 to 5 (again, with 5 indicating the highest interest): *The total points for each selection are listed below. 125 is the highest possible score for any given selection (5 points X 25 respondents = 125).*

Mailbag/Reader news: 73 points
Loggings: 79 points
Technical topics: 80 points
Construction projects: 66 points
Receiving Tips: 84 points
Antenna Topics: 83 points
Medfer news: 28 points
QSLs/Beacon Photos 49 points
Mini-reviews of longwave products and publications: 65 points

What do you like most about the Below 500 kHz column? *A representative sample of all comments received are printed below.*

"Well written"
"Helps advance my loggings!"
"Listing calls, freq. & locations of beacons"
"The friendliness of the Editor"
"Loggings & what receivers others use"
"That it exists at all"
"Good reading"
"The high interest in this band & amount of reader input"
"It's not boring. A different topic each month."
"Natural radio topics, earthquake studies"
"Antenna topics, tech. info."
"Broadcast station call letters, frequencies."
"Product reviews & loggings."
"Just about everything."
"Info on dedicated LF antennas."
"Construction projects"

Anything you'd like to see done differ-

www.americanradiohistory.com

ently? *A representative sample of all comments received is listed below.*

"All is fine as is"
"Too few loggings listed"
"More QSL information"
"More low-end loggings"
"Explain what each beacon is used for"
"More tech. info on how to receive better"
"Print more QSLs"
"Nope, just keep up the good work"
"More construction tips"
"Would love to see a return of the LDXA Contest"
"Make column longer"

What other publications do you read for monthly news on longwave monitoring? *The totals for each publication are listed below.*

The Lowdown: 10
Popular Communications: 6
World Radio: 1
QST: 1
Online usenet groups: 1
GeoMonitor: 1

How do you rate the technical level of Below 500 kHz? *The totals for each rating (out of a possible 25) are listed below.*

Just right: 18
Too simple: 5
Sometimes too advanced: 1
Usually too advanced: 1

How do you rate the timeliness of information in Below 500 kHz? *The totals for each rating (out of a possible 25) are listed below.*

Excellent: 13
Good: 10
Fair: 2
Poor: 0

How do you rate the accuracy of the information in Below 500 kHz? *The totals for each rating (out of a possible 25) are listed below.*

Excellent: 16
Good: 9
Fair: 0
Poor: 0

Loggings

This month's loggings are courtesy of first-time contributor Jill Dybka (TN). Jill is using a Realistic DX440 receiver along with its internal ferrite antenna, but has plans to build an external antenna this summer as she learns more about the band.

She has a special interest in QSLing beacons and has even designed her own QSL cards for that purpose. As Jill is a college student, she says most of her listening will have to be during the summer months—a time when conditions can be less than stellar. If her loggings in Table 1 are any indication, she's off to a great start! Thanks, Jill, for your loggings and welcome to the longwaves.

Beacon Loggings

ID	Freq	Location
198	DIW	Dixon, NC
203	DMZ	Dickson, TN
206	GLS	Galveston, TX
209	RN	McMinnville, TN
214	GYN	Gallatin, TN
216	CLB	Wilmington, NC
217	HZD	Huntingdon, TN
221	PED	Springfield, TN
236	GNI	Grand Isle, LA
245	LFB	Lafayette, TN
251	LUG	Lewisburg, TN
260	BVQ	Glasgow, KY
263	DYQ	Greenville, TN
263	FIO	Paducah, KY
289	FK	Hopkinsville, KY
300	C	Mobile Pt. Light Sta., LA
304	BN	Nashville, TN
317	MBT	Murfreesboro, TN
332	ULH	Tullahoma, TN
344	JA	Jacksonville, FL
353	FOA	Flora, IL
358	TNY	Fayetteville, TN
365	PCB	Mt. Pleasant, TN
368	BEQ	Bessemer, AL
379	TL	Tallahasee, FL
379	BRA	Asheville, NC
382	VKS	Vicksburg, MS
391	SWZ	Smyrna, TN
391	DPP	San Juan, PR
413	CBC	Anahuac, TX
417	EOG	Greensboro, AL
426	IZS	Montezuma, GA
426	FTP	Ft. Payne, AL
429	JNM	Monroe, GA
432	MHP	Metter, GA
521	TVX	Greencastle, IN
526	ZLS	Stella Maris, BAH

Loggings courtesy of Jill Dybka (TN)

Going the Distance

If you're a Macintosh user, then you'll want to know about the new Map function that comes bundled inside of System 7.5. It is an easy to use program that allows you to quickly determine the airline distance between any two points on Earth.

This could come in very handy for determining distances to beacons that you hear. While not every city is listed, there is a provision to add cities of your choosing. You simply specify the latitude and longitude coordinates and the program does the rest. (You can determine the exact latitude and longitude coordinates for beacons from a directory, such as the *Aero/Marine Beacon Guide.*)

Lost Manuals

Have you ever found a dream rig at a swap meet, only to discover that the owner has lost the all-important instruction manual? Dave Schwittek, NW2T (NY) recently passed along a copy of the *W7FG Vintage Manuals* catalog. It lists manuals for many of the classics such as Heath, Hallicrafters, Hammarlund, National, and Collins. There are also manuals for popular test equipment, military surplus, and a variety of station accessories. If you're into vintage gear, you'll want to have this catalog handy. The address is W7FG Vintage Manuals, 3300 Wayside Drive, Bartelsville, OK 74006. Their telephone number for inquiries is: (918) 333-7893; for orders: 800-807-6146.

That's it for another month. I'll see you in September!

MAGNETIC DIPOLE BALUN™

- New! For SWL's using dipole antennas.
- Replaces center insulator.
- Matches antenna to coaxial cable.
- Eliminates noise pickup from cable shield.
- Sends static charges direct to ground instead of through the radio.
- Works from 500 KHz to 30 MHz.

Most man-made noise is vertically polarized. So horizontal dipoles give quiet reception. But if the dipole is fed with coaxial cable noise can be picked up on the outer surface of the coax shield and fed down to the radio. Palomar's balun eliminates this.

And it completely eliminates static charge buildup on the antenna. The charges travel down the coax shield to ground — not through the radio.

The balun is weatherproof, rustproof and has an SO-239 connector for coaxial cable (not supplied).

Model MDB-2 $39.95 + $6 shipping/ handling in U.S. & Canada. Sales tax in California.

MasterCard VISA

Send for free catalog that shows our complete line of baluns, antennas, preamplifiers and more.

PALOMAR ENGINEERS
Box 462222, ESCONDIDO, CA 92046
Phone: (619) 747-3343
FAX: (619) 747-3346

www.americanradiohistory.com

Ike Kerschner, N3IK

The Radio Shack HTX-212

Radio Shack recently introduced the HTX-212 two meter FM transceiver. I was already impressed with the published specifications on this rig, so I jumped at the opportunity to obtain one.

My first impression of the '212 was that it was a very solid and compact piece of gear. The front panel layout was neat—excellent, in fact. Every important control is illuminated, the function buttons are raised, easy to locate, and in a logical order. It took only a few minutes to memorize the location and function of each button. I am able to control the '212 fully without taking my eyes off the road! Tandy gets a 10+ for front panel layout on this one.

I was most surprised to see the square hole and molex connector Tandy uses for the microphone connector; I was not sure how that would hold up in mobile service. However, after running the unit mobile for over 3000 miles, the connector has proven itself very strong and trouble free.

The solid feel of the '212 comes from the weight of the heat sink on the back of the unit. That heat sink does the job it was intended to—keeping the '212 cool. Shortly after installing the unit in my van I drove to a mountaintop and kept the rig in operation for over five hours. At no point did the '212 become hot; in fact, it is the coolest running piece of gear I have used in a long time.

Each of the features mentioned in the sidebar is easy to access and use. I did not have a chance to check out the performance specs on a good test bench till I had the rig in use for about five weeks. Subsequent testing proved everything to be as advertised or better.

The only complaint I have about the rig is the method used to switch from transmit to receive on the microphone. Tandy uses a piece of foam rubber instead of a metal spring in the mike switch, with the result that the rig often would not switch properly from transmit to receive without banging the mike on my leg. The problem was remedied by soldering a piece of spring steel, 3/16th-inch wide and one inch long, to a piece of copper-clad pc board cut to fit and epoxied between the microphone's pc board and the switch button, and bending it up about 1/8th-inch.

The HTX-212 is a fantastic rig, and Tandy is to be complimented on the design! Price is in the $300.00 price range. Check it out at your local Radio Shack.

HTX-212 Features

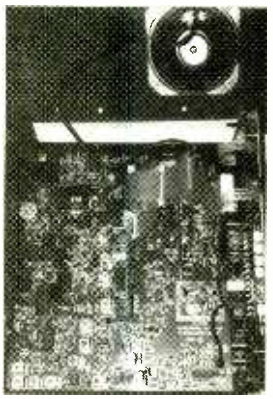
- Two power settings: 45 watt and 10 watt
- True FM modulation for clear, pleasant signal.
- 31 memory channels: one calling freq, 30 standard
- Individually programmable repeater offsets for each memory; default offset for manually tuned frequencies.
- Subaudible tone transmit and receive (CTCSS), required to use some repeaters
- DTMF page with group calling, lets you set a sequence of up to seven DTMF tones to sound an alert tone and open the squelch.
- DTMF transmit and memory, lets you manually send DTMF tones or send DTMF sequences of up to 15 digits from each of six DTMF memories
- Selectable frequency step for tuning or scanning by 5, 10, 12.5, 25, 50, or 100 kHz steps
- Extended band coverage receives from 136 to 174 MHz; transmit includes MARS (Military Amateur Radio Service), and CAP (Civil Air Patrol).
- Dual VFO and duplex modes for two directly-entered frequencies. Allows one VFO to be used as a repeater input frequency and the other as a repeater output frequency for odd split machines.

Ramsey's 20 Meter SX-20 Transceiver Kit

When I saw the advertisement for the SX-20, I thought it might be a fun rig to build and operate. The features that particularly appealed to me were the Direct Digital Synthesis frequency control, and dual VFO's in a 20 meter QRP (10-watt) rig.

The SX-20 also features a built-in iambic keyer with a digital, speed read-out; SSB or CW operation; selectable tuning speeds; and a fairly light weight and compact size.

I was really excited when the kit arrived and could hardly wait to get going on it. I opened the box, and checked every component as per the instructions (everything was there!). Going through the instructions verified this was not a kit for a first-timer—there are about 650 parts to the kit and some decent test gear is required to get it tuned up properly. Additionally, I found an illuminated magnifying glass to be worth its weight in gold during construction.



Following the manual required about 40

www.americanradiohistory.com

hours of building and tune-up time. There were a few problems with the manual. Major among my complaints was a tune-up procedure that was inverted. (When setting bias on the final transistors the sequence went Q1 - Q3 - Q2 instead of Q1 - Q2 - Q3.) And, there were a few errors of omission. A call to Ramsey cleared the problems up and they corrected the manual promptly.

Be warned that good test equipment is required. For example, I recommend using an FS (field strength) meter for tuning the exciter. Listening to the signal on a receiver and trying to peak it as recommended by Ramsey just does not work. In addition, using an analog VOM connected across the speaker is the only way to really peak the receiver decently. Again, Ramsey suggested tuning for loudest signal by ear. My ears are not good enough for that. (We'll cover some testing techniques in more detail in an upcoming column this winter.)

Testing went fairly well except for my carelessness in causing a short that melted the interconnect cable between the main board and the front panel. A call to Ramsey brought the new cable in one day (truly outstanding service). Another feature of Ramsey's service is the courteous and prompt manner their technicians respond to customers' requests—a real treat in this day and age!

With the rig lying on the table, an SSB QSO was had with a W5 in Oklahoma who refused to believe that I was only running ten watts. Subsequent contacts on SSB were made all over the USA, Europe, and South America while using only a simple ground plane antenna.

After installing the rig in the included case, CW contacts were attempted with some success, but I found the tuning to be so fine that it was difficult to determine where the center frequency was, with the result that few contacts were made on CW until I installed the optional filter in the rig. I set the filter for 250 Hz and worked station after station on CW!

The dual VFO's are nice for quickly tuning from one end of the band to the other. I set one in the CW portion and the other in the SSB part of the band, and could switch rapidly from one mode to the other. Of course, the dual VFO's make it easy to work DX when they are working split freqs. My major complaint about the VFO's is that when the power is turned off, they return to 14.125 and 14.225 MHz. I would like to see some memory incorporated into the unit.

The built-in keyer is a dream to use and I found myself actually enjoying using an electronic keyer (by preference, I am a bug man).

Frequency read-out is digital and all functions are controlled by a microprocessor. Changing modes, RIT, AGC, keyer speed, and dial speed are controlled by pushing the proper switch on a membrane panel.

In general, I am very pleased with my SX-20; the receiver is smooth and sensitivity is excellent, audio quality is good and tuning is smooth. I did get a lot of good information out of the instruction manual. If you have some experience building kits and want to get your feet wet in digitally-controlled rigs, this is a good one with which to start.

The unit is available from Ramsey, 793 Canning Parkway, Victor, NY 14564, or phone (716) 924-4560. Kit price is $349.95, wired and tested $429.95.

See ya next month; keep the letters coming. 73 de Ike, N3IK

Rob Leonard's Ham DX Tips

When most people think of August they think of "The Dog Days" and a month of very hot weather. But, if you DX the amateur bands you think of August as "The Mixed Bag Month"—one that holds a little something for everyone, as we hope these tips do.

AWARDS *Monitoring Times* reader and frequent contributor John Reisnauer has begun a new awards program, The U.S. Islands Award Program. The program issues awards for contacts made with U.S. islands located in rivers, lakes, as well as some salt water sources. Complete awards criteria, listing of eligible islands, currently active ones, and applications can be obtained from John for $5 US or 8 IRC's. Write John at: Rt 2 box 2161, Benton City, WA 99320. **CAROLINE ISLANDS** Henry Wong, KH6YK (whose address is 2471 St Louis Dr, Honolulu, HI 96816) will be spending his vacation on Palau Island here from late July to August 25th. Henry will operate all bands 160 to 6 meters plus satellites in both CW and SSB using the callsign KC6YK. **CHINA** BZ1HAM told several amateurs at the Dayton Hamvention that the People's Republic of China's Radio Sports Association will be hosting that country's first-ever ham radio convention slated for the 13th to 16th of October. During that time frame the Association will also operate special events station BT1DX all bands and modes (SSB, CW and RTTY) shortwave. As for the convention itself—times, locations, and how one can attend—these details have yet to be revealed. **CONTESTS** The weekend of the 5th and 6th will be the busiest contest weekend this month with the *Rumanian DX contest* taking place on the SW amateur bands. Rumanian, YO-prefixed amateurs work the world 160 to 10 meters (no WARC bands) CW and SSB. The exchange is callsign and contact number. The *ARRL UHF contest* will be 5 August at 1800 UTC and end at 1800 UTC on 6 August. Operations will mainly be in weak signal portions (SSB and CW) of the UHF and Microwave amateur bands. Popular frequencies to check are 222.110 and 432.110, and you may find some FM operators on 223.500 MHz and 446.000 MHz. The exchange is Maiden Head Grid Square and callsign. The SEANET (or Southeast Asia Net, which began several years ago as a net for hams in and about Southeast Asia and later evolved into an international amateur radio society). 1995 *SSB DX contest* will take place on frequencies 40 to 10 meters. The exchange is callsign and contact number. This contest often produces a number of rare Southeast Asian locations, as amateurs in that part of the world look for contacts with the rest of the world. **DX CONVENTIONS** The 25th and 26th will find the *New Orleans International DX Convention* taking place at the Royal Sonesta Hotel on Bourbon St in the French Quarter of that city. Programs will include presentations about recent DXpeditions to Ghana, Thailand, Belize, Conway Reef, and South Georgia Island near Antarctica, as well as QSLing, operating, antennae, and other DX related topics. Contact Michael Mayer, W5ZPA, 5836 Marcia Ave, New Orleans, LA 70124 or during the day at 504-283-4143 or evenings at 504-524-2129 for more details and costs. September 9th, the annual *W9 DXCC Convention* will be held in Rolling Meadows, IL. Contact K9EC, Michael Zeug, 9N317 Corron Rd, Elgin, IL 60123 for details, fees, and scheduled programs and presentations. **NETS** The *Midwest Used Equipment Net* meets on 7275 kHz Saturdays at 1330 UTC. If you are traveling in a motor home on your vacation you might want to check into the *International Recreational Vehicle Net* which meets 1130 UTC Saturdays on 7233 kHz. **SAUDI ARABIA** 7Z500 will be active from here till June of 1996, taking a year long work assignment here. He operates mostly CW and has been logged on 10105 kHz at approximately 0330 UTC and 14015 kHz at 1830 UTC. QSL to W1AF, Harvard Wireless Club, 6 Linden St, Harvard University, Cambridge, MA 02138 **THAILAND** The Radio Amateur Society of Thailand (RAST, G. P. O. Box 2008, Bangkok, 10501 Thailand) will put the special station HS50A on the air till May 1996, to honor the 50th anniversary of the reign of King Bhumiphol Adulayade, who has the amateur callsign HS1A. Look for this station to be active on all bands 40 to 10 meters, CW, RTTY, and SSB. Also during contests. **UGANDA** Starting in August 5Z4FO will move from Kenya to Uganda and will be using the callsign 5X1MW. Since at the time of this writing, he has not obtained his new address, we do not have QSL route at this time. But he plans to be active on SSB, and RTTY 20, 15, and 10 meters and possibly some 40 and 80 meters later on. **USA** AA4V is active weekends from the Isle of Palms (IOTA reference number NA-110) off the coast of South Carolina, near Charleston Harbor, using the IOTA frequency of 14260 kHz at 1345 UTC. His present address is: Stephen Riechyn, 4710 Meadowood Rd, Columbia, SC 29206, but he plans to move to this island and operate permanently from here soon...

Enjoy the DX and if you do venture out into the heat (or, if you live in the Southern Hemisphere, the cold!) do so cautiously. *73 de Rob*

www.americanradiohistory.com

Anti-Castro Clandestine Using Satellite Feed

Longtime anti-Castro clandestine La Voz del CID is now using satellite technology to distribute some of its programming. *Monitoring Times* Utility World columnist and *Satellite Times* editor Larry Van Horn reports that CID has been spotted using a satellite feed on a Spanish language audio feed on Spacenet 2, Transponder 4, 5.8 MHz audio subcarrier.

Sunshine Radio responds via various addresses.

Prior to the CID audio feed on June 4, the satellite had been relaying programming from another Cuban clandestine, La Voz de la Federacion Mundial de Ex-Presos Politico de Cubanos. Ex-Presos is most famous for a 1992 FCC bust of its Tampa transmitter that resulted in a $8,000 Notice of Apparent Liability against Robert Pisano. In recent years the station has been buying time on licensed USA international broadcasters for the transmission of its programming.

CID has been in the news lately because it had been having financial difficulties. Its formerly 24 hour schedule on 9941.7 kHz has been cut back somewhat as the station attempted to raise funds to support its operations. At times it moves its frequency down about 20 kHz to avoid jamming from Cuba. Apparently the fundraising has been successful enough to finance the satellite programming feed.

Larry played one CID satellite program for me over the telephone. It became clear that this feed was *not* in parallel to the 9941.7 kHz CID shortwave service. It therefore seems that CID and Ex-Presos were using the satellite to feed audio actualities. At press time, the downlink target for these actualities was unclear. Ideas, anyone?

NASWA Covers Pirates

For many years the North American Shortwave Association has been the largest shortwave hobby club in the United States. Despite the fact that they specialize in shortwave broadcast DXing, it has been odd that NASWA's *The Journal* printed pirate QSL data, but no station loggings. During the summer, NASWA announced a policy change. Chris Lobdell will now be editing a one page monthly column on pirate radio. NASWA membership dues are now $26 to North America. The club address is 45 Wildflower Road, Levittown, PA 19057.

Radio Piraña

Jorge of Radio Piraña has probably been the best heard Europirate over the last year in North America. Then, information spread throughout the pirate hobby that he was, unfortunately, permanently ceasing operations from that continent, possibly to resume broadcasts from a location in South America. But, he was consistently heard in May and June well after the deadline for his intercontinental move. In case he stays active after the deadline again, it will pay to check out 13950 kHz between 1900 and 2100 GMT.

Williams' 41/43 Meter Notes

In the March *MT* we mentioned the very useful *41/43 Meter Notes* that had been compiled by Kirk Trummel. This compilation is a very detailed bandscan of the 41 and 43 meter pirate bands, showing licensed broadcasting and utility stations that are active in this range. The data are very useful for pirate DXers who routinely tune frequencies surrounding the 6955 and 7415 kHz hot spots.

In a change of editor, regular Outer Limits contributor Barry Williams is now editing the pirate bandscans. A self-addressed, stamped envelope (SASE) will get you information on this service from Barry at 121 Crestview Drive, Enterprise, AL 36330. Kirk Trummel still edits an exceptionally useful list of maildrops used by all active pirate and clandestine stations with known addres-ses. It's accessed via the in-ternet. A message to Kirk will get you info on this list via his ktrummel@ozarks.sgcl.lib.mo.us address.

More Foreign Pirates

Dan Jacobson of Edmonton, Alberta, sends in a note about the new Greenpeace Party radio station in Taiwan. It's joined a flood of political opposition pirates that operate on that island. This one operates on 97 MHz FM, supposedly using an address via 25F 97 Chung Hsin Road, Section 4, San Chung 241, Taiwan.

Given all of the recent military news from Bosnia and Serbia, it's interesting to note a mini-pirate war underway in nearby Macedonia. According to BBCMS who quoted Deutsche Welle, the Macedonian Ministry of Transport and Communications (FYROM) has "cancelled" the frequencies of 24 private domestic radio stations that "did not have permits." FYROM Communications Minister Dimitar Buzlevsky has said that at least 250 small scale radio and TV stations were operating without licenses. The government plans a continued crackdown.

What We Are Hearing

Your loggings of pirate stations are always welcome for this column. You can send them via PO Box 98, Brasstown, NC 28902. Logging times listed here are in UTC, with frequencies in kHz.

Maildrop addresses used by North American pirates heard by our readers this month include PO Box 452, Wellsville, NY 14895; PO Box 109, Blue Ridge Summit, PA 17214; PO Box 28413, Providence, RI 02908; PO Box 40554, Washington, DC 20016; PO Box 3913, Schenectady, NY 12303; Joe Vincent c/o JRR, PO Box 39, Waterford City, Republic of Ireland; Ostra Porten 29, S-44254 Ytterby, Sweden; and Boite Postale 130, F-92504 Rueil-Malmaision, Cedex, France.

www.americanradiohistory.com

When writing to a pirate, you need to enclose return postage of *three* mint 32¢ stamps to USA addresses and $1 US cash to other countries.

Black Rider Radio- 6965 at 2315. It's hard to classify the programming on this station, since its musical format is diverse. You might hear anything from jazz to new age on this one. Alexander says that at least one of their transmissions was announced as a relay via **KDED.** Addr: Wellsville. (Alexander Pangburn, Alta Loma, CA)

Down East Radio- 6955 at 2300. Oscar Guggins has been active lately. His programs always are dominated by a standup comic with a Maine accent who tells funny jokes about Maine farmers. This station's QSL's always arrive on picture postcards. Addr: Blue Ridge Summit. (George Zeller, Cleveland, OH)

He Man Radio- 7462 at 2200. He Man will never be given an award by feminists, given his continual remarks about women from a self-proclaimed "manly dude" viewpoint. His t-shirts are still for sale via his maildrop for $12.00. Addr: Blue Ridge Summit. (Harold Frodge, Midland, MI; Skip Harwood, Inwood, WV; Dick Pearce, Brattleboro, VT)

Jolly Roger Radio Ireland- 6955 at 2300. The return of **NAPRS** means that we are again hearing European pirate stations via more frequent North American relay transmissions. As the station name implies, this one carries Irish music, along with travel ads for various Eurcpean destinations. Addr: Waterford City. (Harwood)

KXXX- 6956 at 0115. Major Spook of "Extreme Pirate Radio" became a guest on a recent RNI show on **WWCR** when he called in to speak with Johnny Lightning. Addr: None. (Williams; Frodge)

North American Pirate Relay Service- 6955 at 2300. Skip heard Dick Pistek with two different relays of the Irish Jolly Roger station reported above. As we mentioned last month, it is now clear that Dick's "permanent" retirement was of short duration. Addr: Wellsville. (Pearce; Harwood)

Omega Radio- 6955 at 0100. Dick Tator's unique format features Christian hard rock and punk bands, often including interviews with the artists. He livens up the programming with comedy and parody ads. Addr: Blue Ridge Summit. (Harwood)

Outlaw Radio- 6955 at 2315. It is likely that this is a different station from the "Outlaw X" pirate that was last heard in 1990. The new version specializes in classic rock music, with an air raid siren at sign-off. Addr: Providence. (Williams; Pearce)

Primitive Radio- 6955 at 0215. Holden Caulfield's calm voice reads narrative poems between selections of rock and pop music on this philosophical environmental station. They are often one of the domestic stations relayed by NAPRS. Addr: Wellsville. (Zeller)

Dick Pearce's Sam Barto QSL from Bart Sambo.

Radio Albatross International- 15675 at 2000. Given the tragic passing of Michael Goetsch, who was Pirate Mike on this pirate-like show via **Radio Copan** in Honduras, Radio Animal has announced that program production has been suspended indefinitely on this project. Addr: Pittsburgh. (Direct from the station; Pearce)

Radio Doomsday- 6956 at 0100. Nemesis has resumed pirate broadcasting again. This time he has been featuring an elaborate production of rock music, parody sketches including preaching from Rev. Red Slate, and ads for an FCC fire sale of equipment from field offices that are being dismantled. The station has been heard via both North American and European transmitters lately. Addr: Wellsville or Ytterby. (Neil Wolfish, Toronto, Ontario; Williams)

Radio Fusion Radio- 6957 at 0115. We have two *mobile* logs of a transmission from this rap music station. Skip heard them while driving his truck through Maryland, while I heard them while driving my car through southern Ontario. Skip uses a Yaesu FT-900, while I use a Philips DC-777 on the road. Interestingly, one of this station's identifications used the same synthesized computer voice that is a staple on **Radio Is Not Radio.** Addr: Providence. (Harwood, Zeller)

Radio Mindwebs- 7416 at 1515. Although his April 2 log is a little old, Jesse's reception of this one is worth noting. Few other DXers have reported it since then. The programming consisted of repeated announcements of "This is Radio Mindwebs calling pirates." Apparently none answered. Addr: None. (Jesse Rose, Hampton, VA)

Radio USA- 6955 at 0115. Mr. Blue Sky and Joe King are still on the air after 14 years with their punk rock music and comedy material. This is the *real* Radio USA, not one of the imposters. A recent station infosheet said that two transmitters are used, one with 80 watts and another with 120 watts, normally using AM modulation. Addr: Wellsville. (Direct from the station; Zeller)

Sunshine Radio International- 6957 at 2345. Paul points out that this Europirate heavy metal rocker has been announcing a new address during their North American relays. It appears that they use multiple European maildrop services. Addr: France. (Paul Roales, Tulsa, OK; Pangburn)

Up Against the Wall Radio- 6957 at 0130. Owsley's station programs classic rock selections from the late 60's and early 70's, creating a political protest mood of that period. He still is easy to recognize by his "oogah" horn interval signal. Around Memorial Day they relayed a broadcast from the New Zealand pirate **KIWI.** Addr: Providence. (William Hassig, Mt. Prospect, IL; Williams; Harwood)

Voice of the Daleks- We have a correction on the log from Barry Williams and Harold Frodge that ran in the June column as "Voice of the Garlic." A vigorous investigation by many ACE club members with several taped ID's has determined that the station actually uses the Daleks name from the Dr. Who television show. (Nick Grace, Washington, DC; Williams)

Vox America- 6957 at 0030. Most DXers have found their professionally produced mix of rock music, humor, and political commentary to be entertaining. But, their announced policy that $3.00 must be enclosed with reports for QSL's has attracted some negative criticism, particularly since the veries did not arrive right away. Addr: Schenectady. (Rose; Harwood; Williams)

WBNY- 7412 at 1515. Jesse says that the Peoples Committee in Solidarity with Rodent Freedom Fighters should spend a little more money on their transmitter, since their signal was pretty weak this spring. The Washington maildrop offers audio tapes of some of the best stations that use it; an SASE will get you details and prices. Addr: Washington. (Rose)

WREC- 6955 at 0230. P. J. Sparx has been using cameo segments from other pirates on his Radio Free East Coast programming lately, including Phil Muzik of **KNBS** and Rev. Billy Bob Huxley from the **Voice of Laryngitis.** Addr: Wellsville. (Wolfish; Williams)

WRDO Relay- 6955 at 2130. Sometimes a pirate transmitter will simply relay programming from a licensed broadcaster. We had a late spring example with this one, including a rock oldies countdown show. We don't really know which pirate furnished the free relay in this case. Addr: None. (Harwood; Frodge)

WRNK- 7445 at 0400. Peter Pirate's relatively new station plays rock music, and then mentions the complete playlist when the tunes are finished. Barry says that they completely clobbered the Israeli Mossad numbers station that inhabits this frequency. Addr: Wellsville. (Williams)

XEROX, Radio Duplicado- 6955 at 2200. QSL's are now arriving from Bart Sambo's station, which makes fun of an old hoax in the QSL column in NASWA's old *Frendx* bulletin. Appropriately enough, as we see this month, the station's veries feature a picture of longtime NASWA QSL editor Sam Barto. Addr: Wellsville. (Pearce)

HamCall™ CD-ROM
US & International Callsign Lookup
Over **1,186,000** listings and **113** Countries
Now includes new FCC data format containing: U.S. clubs, military stations, reciprocal calls, 687,000 U.S. amateurs, and 392,000 international calls.
ICALL DOS & windows programs look up: name, address, expiration date, birth date, license class, county, lat/long, area code, time zone, grid square, previous call and class, latest FCC transaction. Retrieve by any data element including county on PC; call sign on MAC. Hundreds of new shareware programs are on this disc. For a larger software collection see ad below.
• No hard disk required • Print Labels • Export to hard/disk or floppy • TSR runs from text window, now displays county • Updated every April & Oct • Standing orders accepted • Dealer discount on 25 or more • Latest public domain PC software. Price remains $50.00 plus shipping; $5.00 U.S., $10.00 International.

Newly Updated CD-ROM
Electronics Software Compendium™
The Electronics Software Compendium is a collection of shareware programs and data files that pertain to electronics, broadcasting, amateur radio and SWL activity. Over 25,000 files in total. The disc is updated and issued annually in April. Over 300 megabytes of PC and 50 MB for MAC. Send for your new edition today! The price is still only $25.00 plus shipping; $5.00 U.S., $10.00 International.

Try our call sign server www.buck.com
BUCKMASTER
Route 4, Box 1630 · Mineral, VA 23117
703:894-5777 - 800:282-5628
703:894-9141(Fax)
Internet: info@buck.com

www.americanradiohistory.com

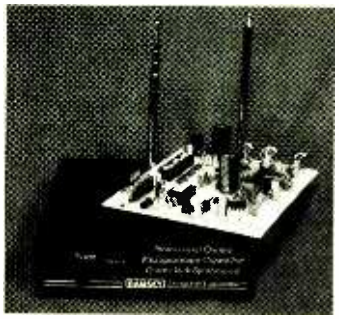
WHAT'S NEW?

BOOK REVIEWS AND NEW PRODUCTS

by Larry Miller

Guest reviewers: Rachel Baughn, Bob Grove, George Zeller

Remote Control Your Scanner



At this point in the summer, you've probably had your fill of yard work. It's no longer a special time spent communing with nature; the mind wanders. There's got to be something better to do than this. You still have to cut the grass, but why not scan or even listen to the BBC while you're doing it?

No need to buy a whole new batch of radios. Put together one of Ramsey's hot new FM25 Synthesized FM Stereo Transmitter kits for back in the radio room and *transmit* your scanner or shortwave radio all around the yard. (With the included modification, you'll be able to transmit well beyond your yard, too, but that's illegal in the U.S.) Just clamp on a set of Walkman-type headsets and you're scanning on the riding mower or keeping tabs on North Korea's domestic service while you're clipping the hedges.

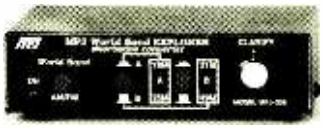
The best thing about the FM25 is that it is PLL-synthesized-stable—you set the frequency using dip switches. No more playing "where's my transmitter?"

The next best thing is that this kit is complete. It comes with everything from printed PC board, components, instructions (so good that even an illiterate like me can put the kit together), power supply, and even case. It takes about an hour to put together.

The price is $129.95 plus $4.50 UPS. You can order yours from Ramsey Electronics (793 Canning Parkway, Victor, NY 14564; 800-446-2295) or from DX Radio Supply, (Box 360, Wagontown, PA 19376; questions 610-273-7823, or 1-800-753-2060 to order).

Shortwave on Your Car Radio?

Without a difficult installation or the purchase of an expensive, specialty radio, you can now listen to shortwave broadcasts on your AM car radio with an easy-to-install shortwave converter. The MFJ World Band Explorer covers the 19, 25, 31, and 49 meter broadcast bands; the push of a button selects the band or returns you to AM/FM reception.



Installation is a matter of plugging the MFJ-306 in between your car radio antenna and the radio antenna jack; connect 12 VDC, and you're ready to listen to shortwave signals! It works on all radios, even those with digital functions. A clarifier knob lets you tune in SW stations that fall between standard AM stations.

The Explorer measures 5" x 1-1/2" x 3-1/2". It is available for $79.95 from MFJ Enterprises, (P.O. Box 94, Mississippi State, MS 39762; 800-647-1800), or MFJ dealers, including Grove Enterprises (800-438-8155).

— RB

American Railroad Radio Frequencies

The new 13th edition of rail scanning's "bible," *The Compendium of American Railroad Radio Frequencies*, is now available. The book is arranged by

railroad type—railroads of the United States and Canada, Industrial Railroads, Transit Systems, and Museums and Tourist Railroads. Under each heading, the railroads are listed alphabetically, complete with frequency, location and usage information.

The Compendium of American Railroad Radio Frequencies (published by Kalmbach Books of Waukesha, WI), is 200 pages and is available for $16.95 from Grove Enterprises (800-438-8155), DX Radio Supply (800-753-2060), and other radio or railroad hobby shops.

WINDOWS Control for Scanners

San Diego-based Radio Control Systems, Incorporated, has introduced ScannerWEAR SoftControl 1.3. The software allows Windows control of your OptoScan456/535-enhanced PRO-2005/6, ICOM R7000/R7100, or AOR 3000/3000A scanner.

Some of the featured functions include memory banks with 100 channels per bank; search ranges including frequency, step, mode and description; data logging to a file with date and time stamp, signal strength, tone and number of hits; spectra analysis; provisions for CTCSS and DCS-controlled scanning with Opto 456/535; birdie control file, unlimited file size, and the ability to import the PerCon FCC database.

The RCSI ScannerWEAR SoftControl 1.3 is $99.00 plus tax and shipping from RCSI, 8125-G, Ronson Road, San Diego, CA 92111, or call 800-560-7234.

Which Way Did He Go?

Tracking radio signals can be a tough job, but with the right radio direction finder, it can become a whole lot easier. Radio Engineers has introduced their Vector-Finder series of VHF radio direction finders.

The Vector-Finder series provide compact, light-weight, active antennas, suitable for use with handheld transceivers and scanners. The design allows for easy stowing for transport in any vehicle. All units operate on the phase-shift technique and interface with any FM receiver or transceiver via the antenna jack and earphone jack.

Several models are available, ranging from the $139.95 VF-142 covering 144-230 MHz with audible response only, to the $289.95 VF-142Q covering 144-500 MHz with audible and LED left/right direction indicator.

Interested? Detailed specification sheets are available for the Vector-Finder series. Contact Radio Engineers, 7969 Engineer Road, Suite 102, San Diego, CA 92111 or call (619) 565-1319.

Listener's Lawbook

Over the past few years, the climate toward radio hobbyists has grown increasingly cool, as reflected in the confusing num-

www.americanradiohistory.com

ber of anti-listening laws that have sprung up across the nation. Hobbyists will welcome the second edition of Frank Terranella's *Listener's Lawbook*, updating current federal and state statutes.

The exact wording of each law is presented, in full legalese. Where needed (and it generally is), this is followed by a commentary by Terranella, who provides explanatory information such as the history and implications of the law, and how it has been applied.

Anyone who owns a scanner, especially if he travels across state lines, would be well advised to be informed about monitoring laws. Here, Terranella has already done the work. A quick look-up chart in the back makes it even easier. *Listener's Lawbook* ($9.95 plus $5 UPS) is published by Grove Enterprises (P.O. Box 98, Brasstown, NC 28902; 800-438-8155).

— RB

Radio Mod Book

Applied Communications and Electronics (ACE) of Winnipeg, Manitoba, has just released the *Radio Modification Handbook*. The spiral-bound book is self-published in what Gerald Hynes of ACE calls his first attempt at in-house publishing. Hynes' business specializes in the repair of scanners, CB's, and shortwave units. He says that the mods described in the book are ones that he has personally performed over the years and verified. The book covers most Radio Shack and Bearcat models.

If you need a quick and easy guide to basic scanner mods, try this one. ACE is offering the *Radio Modification Handbook* for $15.00. Money orders can be sent to ACE, P.O. Box 2623M, Winnipeg, MB., R3C 4B3, Canada.

Antique Radio Collecting

Few of us would doubt that we are enjoying a heyday of radio collecting. Antique shops, swap meets and flea markets burgeon with all manner of "olde tyme radios," from prizes down to pittances. So how does the shopper know a bargain when he sees one?

Collector's Books' glossy ***Collector's Guide to Antique Radios*** guide, 3rd Edition, by Marty and Sue Bunis, is a good start. Hundreds of full-color photos illustrate the thousands of alphabetized listings of American-made, tube-type radios that glowed reassuringly from tabletops for more than half a century.

A brief description, model number, date of manufacture, and average market value accompany the listings. The book is $18.95 plus shipping from Collector Books, (PO Box 3009, Paducah, KY 42002-3009; phone 502-898-6211), and also from Grove Enterprises.

How about a radio in a toy or a model? These are fast becoming collectibles, and a $5 purchase at a yard sale could be worth $15 or even $50! Hang on to it for a few years, and it will be worth even more. The ***Collector's Guide to Novelty Radios*** by Mary Tunis and Robert F. Breed is a comprehensive, fully-illustrated, glossy-color pricing guide. The accompanying decriptions and average market values enable you to spot bargains at the flea market. This guide is $18.95 plus shipping

Computer Aided Scanning

a new dimension in communications from Datametrics

Now Radio Shack PRO 2006 owners for the first time have access to the exciting world of Computer Aided Scanning with the highly acclaimed Datametrics Communications Manager system. Computer Aided Scanning is as significant as the digital scanner was five years ago and is changing the way people think about radio communications.

- The Datametrics Communications Manager provides computer control over the Radio Shack PRO2006 receiver.
- Powerful menu driven software includes full monitoring display, digital spectrum analyzer and system editor.
- Uses innovative Machine State Virtualizer technology (patent pending) hardware interface by Datametrics.
- Comprehensive manual includes step by step instructions, screen displays, and reference information.
- Extends receiver capabilities including autolog recording facilities, 1000 channel capacity per file, and much more.
- Simple 4 step installation - no soldering or modification to normal receiver operations.

Datametrics, Inc

- Computer Aided Scanning system $ 349
- PRO2006 receiver w/interface installed and CAS system $ 749
- Manual and demo disk $15

Requires Radio Shack PRO 2006 receiver and IBM PC with 360K memory (640K for full channel capacity) and parallel (printer) port.

Send check or money order to Datametrics, Inc., 2575 South Bayshore Dr. Suite 8A, Coconut Grove, FL 33133. 30 day return privileges apply.

NEW! **COPYCAT-PRO** IMPROVED!

The ONLY Commercially Available Computer Control Program for the Universal M-7000 & M-8000, AEA's PK-232 and the MFJ-1278 . . .

. . . JUST GOT BETTER!

STANDARD COPYCAT FEATURES

- 32K incoming text buffer
- Pull down menus
- Mouse support *(but not required)*
- 20+ programmable macros
- Runs on any 640K PC Compatible
- 50 page printed manual
- New improved online help

Note: Std. COPYCAT Does Not Support Radio Interface

NEW COPYCAT-PRO FEATURES

- Control BOTH your TNC and radio simultaneously! Send commands to TNC and at same time, send frequency and mode to radio!
- NEW! Multiple pop-up windows for HELP, frequency files, and text editor. Instantly go between any of three windows with single keystrokes.
- Supports ALL SCANCAT frequency file formats, or create your own!
- NEW, easier, "Plain English" MACRO language for control of all radio and TNC functions.
- RADIO SUPPORT for most AOR, KENWOOD, JRC, ICOM, YAESU, plus LOWE's HF-150 and Watkins Johnson's HF-1000

Discover our revolutionary COMPUTER CONTROL PROGRAM for the M-7000 and M-8000, Let COPYCAT free you FOREVER from remembering all those buttons and keys. COPYCAT does it all! Simple "PULL-DOWN" menus control all functions. No more looking through complicated manuals or searching for buttons. ALL commands are in plain English. *PLUS* COPYCAT has a fully editable text buffer, with cut & paste. Save/load/edit/print files. PROGRAMMABLE macros and much more. COPYCAT supports ALL the above units within ONE program. Simply select your units from COPYCAT's EASY-TO-USE menu and GO!

COPYCAT-PRO $79.95 COPYCAT (std) $59.95
upgrades to COPYCAT-PRO $24.95

S/H $5.00 ($7.50 Foreign)

(Be sure and order our serial adapter if you do not have the specially wired cable for the M-7000/8000)
SERIAL CABLE ADAPTERS FOR M-7000 AND M-8000 $24.95.

COMPUTER AIDED TECHNOLOGIES

P.O. Box 18285 Shreveport, LA 71138
Orders Only (318) 636-1234 - FAX (318) 686-0449 (24 hrs)
Live Tech Support - (318) 687-2565 (9 a.m. - 1 p.m. Central M-F)
Mitelime BBS (SCANCAT File Area) (318) 631-3082 (7 p.m. - 6 a.m. Central)
Online support available on GEnie. • E-mail - j.springer7@geis.com

Order direct or contact your favorite dealer

www.americanradiohistory.com

from Collector Books (address above).

The ***Collector's Guide to Transistor Radios*** by Marty and Sue Bunis can guide you to more treasures. Generally speaking, AM-only sets (no FM) are older and worth more. On a hunch, I recently bought an "el cheapo" Juliette brand pocket set for fifty cents; according to this new guide, it may be worth $10 or so. Had I spotted a Regency TR-1 in jade green, I would have earned about $600!

With tube-type radios soaring in value because of collector awareness, the transistor sets are the next wave. The authors say that this is the best time to start investing, before the collectors catch on! $15.95 plus shipping from Collector Books or Grove Enterprises.

—BG

FREE Monitor Service

Shortwave broadcast stations can now dial a number and hear for themselves how they are coming across in the U.S. capital city. Or, a phone call can net you the news on a local Washington, D.C. AM station. For the month of August only, the service will only cost the price of the phone call.

The automatic, remote receiving installation, called ROBOSCAN 2000, is a new project of George Jacobs and Associates, International Consulting Broadcast Engineers. It can be accessed from any touchtone telephone simply by dialing USA Area Code (301) 963-7127. The receiver will ask for a password, which until August 31 will be #12345 for anyone dialing in. To tune the receiver, enter the desired frequency in kHz in the following format #-----#, for any frequency between 150 kHz and 30 MHz. The default mode is wideband AM.

For more information on the system and plans for additional features, contact George Jacobs, 8701 Georgia Ave, Suite 410, Silver Spring, MD 20910-3713; (301) 587-8800, 8801 fax; E-mail gjacobs@ieee.org or compuserve 70751,1236.

— RB

Aero Freq Directory 3rd Edition

Robert Coburn knows how aeronautical data quickly goes out of date, so he is right on top of things with the third edition of the *Aeronautical Frequency Directory*. I've used Bob's directories since the first edition, so I can attest to the quality within their pages.

Covering everything from Air Force GCC, air-to-air refueling, ATC, Airlines, Civil Air Patrol, commercial call signs, search and rescue, and utility mobile stations, edition three lacks nothing. You'll appreciate the complete Air Route Traffic Control Center frequency list, as well as the alphabetical community listings that help you find the freqs you're looking for quickly.

This book is one of the standards for aero monitors. Pick it up today by calling 603-432-2615 or writing Official Scanner Guide, P.O. Box 525, Londonderry, NH 03053. *The Aeronautical Frequency Directory, 3rd Edition* is $21.95. Also available from Grove (800-438-8155).

Understanding ACARS

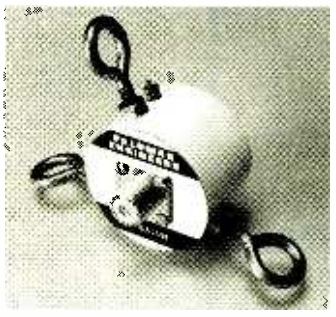
If you've caught the squawking sounds on 131.55 MHz and concluded that they were data bursts, you'd be right. The squawks are from ACARS (Aircraft Communications Addressing and Reporting System), aircraft-based VHF teletypes that send important information about a commercial aircraft's health and welfare to a company station on the ground.

This data is just noise on a scanner, but using one of the widely available ACARS decoders, you can tune into the actual text messages. Ed Flynn's book *Understanding ACARS* is now in its third edition and is a clean and comprehensive guide. He takes a complex subject and makes it possible to understand. Get yourself a decoder and then get this book.

Understanding ACARS is available for $9.95 from Universal Radio Research, 6830 Americana Parkway, Reynoldsburg, Ohio, 43068; 800-431-3939/614-866-2339 fax.

Magnetic Switch Balun

Palomar Engineers has announced its new Magnetic Switch Balun system for 500 kHz to 30 MHz reception. The system consists of the MSB balun and a control box.



The balun itself mounts in the center of a bent dipole, with one dipole leg going north-south, the other east-west; or one leg horizontal and the other vertical. The accompanying control box has a three-position switch that connects the balun to both wires—acting as a bent dipole—or to either one of the two wires—acting as an end-fed longwire.

The antenna therefore has three, switchable, directional patterns to select the best signal. The control box operates from 115v AC and can be placed next to your radio. A coax takes care of sending the signals down to the radio and sending power up to the balun.

The Magnetic Switch Balun with control box is $135 plus $6 shipping/handling; coax cable, antenna wire, and end insulators not included. Contact Palomar Engineers, P.O. Box 462222, Escondido, CA 92046 or call 619-747- 3343.

Kantronics KPC-3 GPS Compatible

Everybody is hooking into the Global Positioning System these days, even Kantronics, who has announced that their KPC-3 TNC now offers GPS capability. To receive and retransmit GPS data, the KPC-3 connects to GPS receivers via an NMEA-0183 interface.

Features include multiple string parsing, storage of outgoing data in tracking buffers, time-slotted location broadcasting based on the GPS clock, remote access, and APRS compatibility. For more information on the KPC-3 version 6 or for upgrading to version 6, contact Kantronics, 1202 E. 23rd Street, Lawrence, Kansas, 66046 or call 913-842-7745.

Books and equipment for announcement or review should be sent to "What's New?" c/o Monitoring Times, P.O. Box 98, 300 S. Hwy 64 West, Brasstown, NC 28902.

www.americanradiohistory.com

ARRL Catalog of Books and Goodies

Hams should be aware that the new ARRL ***Publications Catalog*** is out. This six-page listing includes books, videos, tapes, maps, binders, log books, stationary, and more for the radio amateur. If you're a beginner, planning to upgrade your license, or just need reference materials, this catalog is worth your time. Contact the American Radio Relay League, 225 Main Street, Newington, CT 06111 or call 203-666-1541 (fax 203-665-7531). Following are only a few of the great books to be had ...

Nearly all hams can make use of the digital modes on HF. If you'd like to get started in the digital realm, the ARRL's ***Your HF Digital Companion*** by Steve Ford, WB8IMY, is the book to buy.

Written with the digital beginner in mind, this book focuses on setting up an HF digital station and operating digital modes. "Technospeak" is avoided, replaced by easy-to-understand language and a wry sense of humor. All modes are covered: RTTY, AMTOR, PacTOR, HF packet, CLOVER, and G-TOR.

Your HF Digital Companion retails for $10 (plus $4 UPS; ARRL address above).

While FCC records are readily available from widely published directories and databases, comprehensive lists of amateur repeaters are not. The singular exception is the ***Pocket Repeater Directory*** from the ARRL.

With more than 20,000 entries from the U.S., Canada, Mexico and Central America, even the Virgin Islands and Europe, this handy handful lists input/output frequencies, locations, callsigns and sponsoring organizations for repeaters and even propagation beacons in the 29.5-29.7, 51-54, 144-148, 222-225, 420-450, 902-928 and 1240-1300 MHz bands.

The new 1995-1996 edition is available for $7 from the ARRL or *MT* advertisers including Grove Enterprises (800-438-8155).

Amateur radio has changed quite a bit in the last five years, as reflected in the pages of the ***ARRL Operating Manual***. The new fifth edition talks about VHF and UHF operating, amateur satellites, and HF digital communications modes, as well as information on how to use a repeater autopatch, grayline propagation, and even how to sue a QSL bureau! Every ham should have a copy next to their mike.

Get your copy from your local amateur radio dealer or send a check for $22.00 plus $4.00 shipping ($5 UPS) to ARRL Publication Sales (address above).

— BG

DC Power Supplies

Tripp Lite's PR-series DC power supplies are now available in several amp sizes to match popular 2-way radios on the market. The new lineup includes 12, 20, 30, and 50 amp models, complementing Tripp Lite's existing line and bringing the total of the PR series to more than 18.

Models are available in 3 to 60 amp sizes in different configurations, including rack mount, and both 120V AC and 22/240V AC are supported. The power supplies are housed in compact, dark-metal cabinets with a decidedly professional appearance. They have standard crowbar overvoltage protection, automatic overcurrent protection, and full line isolation to protect your radio gear.

The PR series starts at $33.50. For more information and pricing, contact Tripp Lite, 500 N. Orleans, Chicago, Illinois, 60610-4188, 312-755-5400. E-mail info%tripplite@mcimail.com.

Measuring Equipment from BK Precision

For over forty years, BK Precision Marketing has offered high quality electronic measuring equipment to service and maintenance personnel and to hams. BK markets such things as the Multifunction DC/AC 600A Clamp Meter for measuring AC/DC current and voltage, resistance, and line frequency; the 60 MHz Digital Storage Scope which features cursors, readouts, and RS232; and a new line of Sweep Function Generators with bandwidths from 2 MHz to 20 MHz. For information on any of these high quality devices and more, contact BK Precision, Maxtec International Corp., 6470 W.Cortland Street, Chicago, Illinois, 60635 or phone 312-889-1448.

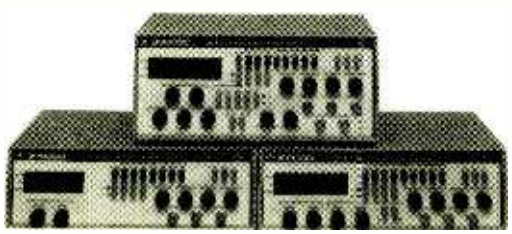
The Phone Book

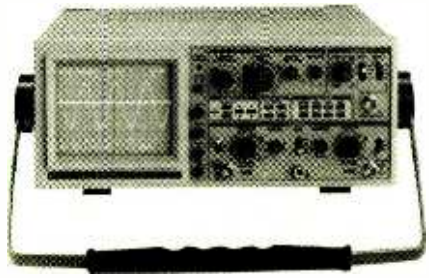
I'm always skeptical when an author decides that he's going to tell all about the nasty world of telephone eavesdroppers, as M.L. Shannon purports to do in *The Phone Book*.

This time, however, I was pleasantly surprised to find information that went beyond hype and titillation and actually gave good, solid technical info. *The Phone Book* has chapters on landline telephones, wiretapping, defenses against tapping, hacking and phreaking, cellular and cordless, data communications, secure communications and the future of phones.

It's a fun book which even lists cordless, aircraft, and cellular frequencies in the appendices. Order your copy for $25.00 plus $3.90 shipping from Lysias Press, P.O. Box 192171, San Francisco, CA 94119.

Measuring Equipment from BK Precision Marketing





www.americanradiohistory.com

The JPS ANC-4 Antenna Noise Canceller

By George Zeller

Local noise is probably the most annoying problem that bothers all DXers. Nearly every one of us has horror stories to tell about the rare station that got covered up by neighborhood power lines, light dimmers, electric fences, computer monitors, etc. Every new modern gizmo seems designed to drive shortwave listeners nuts. Better antennas make matters worse by picking up local noise with greater efficiency.

The best way to avoid this problem is to move—preferably to a remote location where local noise is greatly minimized. But, most of us can't do this, so, when our neighbor fires up his electric drill right during the identification announcement from Radio Paucartambo, we just have to gnash our teeth and live with it.

Well, we *used to* have to live with it. JPS Communications, well known for its excellent digital signal processing audio filters such as the NIR-10, has released the ANC-4 Antenna Noise Canceller "for reducing locally-generated noise." The unit has no DSP circuitry, but instead operates on the principle of antenna phasing.

An attractive black cabinet measuring 2"x6"x4" houses two small indoor antennas, a short telescoping whip, and a three-foot wire. The back panel of the unit is fitted with PL-259 coax connectors for input from an outdoor antenna and output from the ANC-4 to your receiver.

The short antennas pick up local noise sources in your shack. You also have the option of adding an external noise antenna for cancellation of neighborhood noise sources. A low noise amplifier increases the gain of this noise until it matches the strength of the noise from your main antenna. The ANC-4 then adjusts the indoor noise so that it is phased 180° perpendicular to the outdoor antenna noise. The result is magical. Presto, the noise disappears!

It has been noted in practice that it is possible to induce overloading in a very high local RF environment. The trick is not to turn the gain up any higher than necessary to get the noise nulls. JPS also advises using the shortest noise antenna that will obtain a null with the gain set in mid-range, and ensuring that the noise antenna has the same polarization (horizontal or vertical) as your main antenna.

Front panel controls include a power switch that activates a yellow indicator light when the unit is operating, two rotary knobs to control the amplifier gain and noise phase angle, and two pushbuttons. One button varies the angle of phasing to increase the possibility of nulling noise, while the other button selects frequency ranges above or below 20 MHz. The unit requires 150 ma of 11 to 16 volts DC (power supply not included).

Operation

It takes a little practice to use the device, but operation is fairly simple. The gain of the unit is adjusted so that it visibly impacts your receiver's S meter. You are changing the local noise gain from the indoor antennas so that it matches the outdoor antenna noise strength. The phase control is then manipulated until the indoor noise is phased 180° from the outdoor noise. This has two wonderful effects. The S meter noise reading drops substantially, and the audible noise in your speaker vanishes.

This thing really works! It is amazing! The manufacturer claims a typical noise reduction of 40dB. I have noticed that the terrible horizontal oscillator buzz from my lossy local cable TV lines can drop as much as 50dB on my S meter. The beauty of this design is that the noise is cancelled out *before* it enters the AGC of the receiver. The result can be dramatic. A weak DX signal that is completely buried by your neighbor's fish tank heater can jump right into the clear. Copy can instantly leap from 0% to 100%.

The construction quality of the ANC-4 is up to the high standards we expect from JPS. A nice side effect is that the unit can be used as an active antenna when not connected to external antennas. It automatically bypasses itself when used with an amateur transmitter rated up to 150 watts.

Be advised that the ANC-4 is designed to attenuate *local* noise. Sources of noise that are basically band noise such as lightning static and QRM from other transmitters are not reduced by the device. One quirk is that it works less well with the high-priced Watkins Johnson HF-1000 than it does with analog receivers, since the HF-1000 DSP chip transmits RFI hash noise that is picked up by the ANC-4, but that is phased differently from other ambient noise sources. So, an ANC-4 can phase out either the HF-1000 noise or your teenage neighbor's hair dryer, but not both.

I don't get excited about a shortwave product very often, and I'm not in the business of endorsements. But, I highly recommend the ANC-4 in the strongest possible terms. It really does reduce local noise very substantially. The effect is not usually *attenuation*, but it is instead *elimination* of highly annoying local interference sources. Since almost all shortwave listeners are bothered by noise, I think that the ANC-4 should become standard equipment in every shack. It's priced reasonably and is widely available from *MT* advertisers.

JPS Communications, Inc, P.O. Box 97757, Raleigh, NC 27624-7757; (919) 790-1011. The ANC-4 is also available from Grove Enterprises for $174.95 plus $6 UPS.

www.americanradiohistory.com

Last Chance for *Passport* Savings!

Act Now for Grove's Special Pre-Publication Price

"This guide is indispensable... the closest thing to **TV Guide** *for world band radios."* — **New York Times**

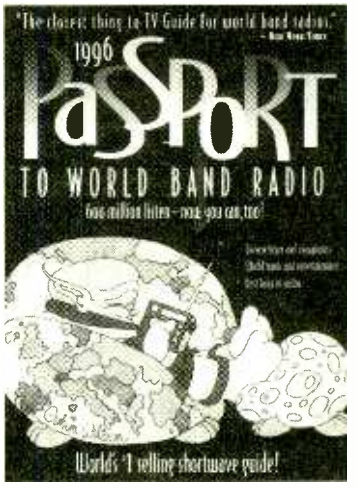
The ultimate radio handbook will show you:

- When and where to listen
- How to listen
- The Buyers Guide to world band radios.
- Worldscan hour-by-hour country-by-country channel-by-channel

Save 35%
Only $16.95
*with FREE shipping to U.S.**

Offer ends August 31, 1995!

Order by this date and by mid-September you'll receive the 1996 Edition of the *Passport to World Band Radio*. After that, the price will be increased to $19.95 plus $6.00 shipping.



Grove Enterprises
300 S. HWY 64 W.
Brasstown, NC 28902

1-800-438-8155 (US & Canada)
(704) 837-9200
(704) 837-2216 (FAX)

*Foreign shipping: Foreign surface printed mail, add $4.50; Air Mail for printed matter for Canada, add $6.00 ($7.50 elsewhere)

CHEEK? The Ultimate Scanner!

The King of Scanners takes this step-by-step, richly illustrated, bench manual beyond everything ever printed on scanner mods. Bill is a perfectionist who will help you convert your scanner into precisely what you've always wanted!

260 pages, large format (lay-flat binding), $24.95 until 6/30/95, then $29.95.

EMERGENCY RADIO!

Scanning News As It Happens — **Norm Schrein**, 214 pages, $14.95

"Excellent..." *Barry Goldwater* "A winner... *911 Magazine*
"Rates a 10!" *Dispatch Magazine* "Irresistible" *Bill Cheek*

SCANNERS & Secret Frequencies

Henry Eisenson

"Must reading." *Electronics Now* "Useful, knowledgeable..." *PopComm*
"A giant undertaking...authoritative" *Monitoring Times* "You can't miss!" *ASG*
"Absolutely the best..." *Norm Schrein*

320 pages, $19.95

INDEX Publishing Group, Inc.
3368 Governor Drive, Suite 273M
San Diego, CA 92122

First book $4 s/h, $2 ea add'l.
CA add 7.75% tax
MO/check via mail, or call.
Credit cards: 800-546-6707

NEW! From The Leader in Computer Radio Monitoring

Introducing ScanStar™ Commercial Edition!

All features of the popular Professional Edition plus:

- o Multi-radio scanning. Search/slave (handoff) and peer strategies.
- o Use any combination of radio type or port. Port sharing for CI-V devices.
- o GUI command center shows activity, history and status of channels in real time. Quickly reconfigure as the action unfolds!
- o Priority system with 256 levels and selectable preemption.
- o High resolution VGA/SVGA/S3 graphics modes: 640X480, 800X600 & 1024X763.
- o Mouse support in all screens (text & GUI) for fast, easy operation.
- o Independent scan windows allow simultaneous, scanning of two programs, 4 radios!
- o Detail event logging for special applications, repeater usage recording, frequency coordination, etc. Data format & sample C program included.
- o 32 bit code for maximum performance on 386, 486 & Pentium processors.

Professional Edition features:

- o Tone controlled scanning & logging with Optoelectronics OS456 & DC440.
- o Scan multiple groups, banks and search ranges all at the same time!
- o Spectrum analysis with hardcopy on R7100, R9000, AR3000, NRD535 and OS456.
- o Monitoring Assistant for easy logging while you explore the bands.
- o Terminal window for TNC, modem, decoder, etc.
- o Background scanning allows you to perform other tasks while scanning.
- o Most features selectable per-channel, including lockout, tape, delay time, dwell time, sound squelch, PL & DPL tones, alarms for high priority channels and much more!
- o File size limited only by computer memory - no preset limits!
- o Comprehensive report printing and data logging

System Requirements:

IBM PC 386/486/586 with 4 MEG RAM, hard disk, VGA/SVGA, mouse, serial port(s), DOS 5/6 or OS/2 2.1/3.0. Cables and level converters not supplied. Windows and 286 not supported.

Supports These Radios & Tone Readers:

OS456, DC440, R7100, R7000, R9000, FRG9600, AR3000, NRD535, NRD525, R8, MR8100.

Commercial Edition $129.97
Professional Edition $79.97

Plus shipping, handling and state sales taxes. Call for upgrade info. 30 day money back guarantee. Call for details. Commercial Edition requires 386 or better.

Signal Intelligence
PO BOX 640891
San Jose CA 95164
1-408-926-5630

FREE DEMO COPY
Download from BBS, 2400-9600 N81, login as "guest"
1-408-258-6462

www.americanradiohistory.com

Bob Parnass, AJ9S

The Radio Shack PRO-26 Portable Scanner:

A Comparison with the Uniden/Bearcat BC3000XLT

When it rains, it pours. No sooner had we reviewed the Uniden/Bearcat BC3000XLT portable scanner (see April 1995 *Monitoring Times*) and declared it great, than Radio Shack unveiled the new PRO-26 and PRO-60 portables. We will review the PRO-60 in a future column.

The PRO-26 is Radio Shack's top line portable, and because it is in the same price class, we elected to compare the PRO-26 with Uniden's top line BC3000XLT. Which one is "better?" Don't turn that page.

For this review, we used a PRO-26 serial number 55003183 and a BC3000XLT with serial number 45000433.

Both the PRO-26 and BC3000XLT are made by Uniden and are triple-up conversion models, but they have different frequency coverage and different features. Both scanners have a bank size of 20 channels, but the PRO-26 has only 200 memory channels compared with the Bearcat's 400 channels. Like most other Radio Shack models, the PRO-26 has 10 Monitor channels which can be used to store the frequencies found during a search.

In both scanners, AM, NFM, and WFM modes are user selectable on all frequencies. The PRO-26 supports step sizes of 5, 12.5, and 25 kHz. A large 6 MHz step size is available while searching through most of the television spectrum, and 200 kHz steps can be used in the 88 - 108 commercial FM broadcast band. In contrast, the BC3000XLT provides steps of 5, 12.5, 25, and 50 kHz.

We discovered "hidden" features, not mentioned in the operating guide, by pressing a combination of keys while turning the BC3000XLT power on. Some, but not all, these keystrokes are described in the PRO-26 owner's manual, which is better written and more comprehensive than the BC3000XLT manual.

■ Physical Description

The PRO-26 is shorter and not as wide as the BC3000XLT, making the Radio Shack portable easier to carry in a jacket pocket. There are two printed circuit boards in the PRO-26 and three boards in the BC3000XLT.

The smaller size comes at the expense of the keyboard, which is smaller and more difficult to use. The PRO-26 LCD display has larger digits and better contrast than the BC3000XLT display. Both models feature backlighting at the press of a key, using an orange light in the PRO-26 and a green light in the BC3000XLT.

How does the new PRO-26 (left) stack up against the BC3000XLT? Read on ...

To conserve space, the PRO-26 uses a 3 cm internal speaker versus the 4 cm speaker in the BC3000XLT.

The PRO-26 plastic belt clip screws into brass threaded inserts on the back cover and is larger than the odd, slide-on clip on the BC3000XLT.

■ Differing Frequency Coverage

The PRO-26 covers 25 - 1300 MHz while the BC3000XLT has a gap in the 550 - 760 MHz UHF television band (TV channels 27 - 61).

Neither model covers the cellular phone bands, but the PRO-26 goes so far as to prevent reception on adjacent frequencies! Russell Keating observes that the PRO-26 will not permit entry of frequencies between 868.85 and 868.98 MHz nor the input frequencies 45 MHz lower. Therefore, he cannot monitor 868.8625, 868.8750, and 868.8875 MHz—frequencies used by the Illinois State Police trunked radio system.

The PRO-26 also censors 894.000 - 896.110 MHz. What the PRO-26 censors, the BC3000XLT tunes handily and the BC3000XLT hears cell images clearly at 1005 MHz. The PRO-26 cannot hear these cell images nearly so well.

The PRO-26 chooses a default step size for each frequency range—a time-saving feature which can sometimes hinder. For example, if you want to program 200.0 MHz into a memory channel, the PRO-26 changes this to 197.75 MHz, the audio carrier frequency of the nearest television channel. Then, you have to change the step size to 5 kHz, open the squelch, and use the direct search to gingerly tune up to 200.0 MHz, store this frequency in a Monitor memory, and initiate the programming mode again to transfer the Monitor memory contents into the Channel memory.

■ Memory Organization

Each of the 200 channels may be locked out, but unlike the BC3000XLT, the PRO-26 wastes time scanning channels programmed with a frequency of 0.0. You can unlock all the channels in the banks you choose by holding the L/O key down for two seconds. Unfortunately, this unlocks empty channels, too. Each memory channel can be programmed with a two-second rescan delay.

The PRO-26 allows but one priority channel instead of 10 priority channels as in the BC3000XLT.

Both models have a selectable attenuator. You can program the attenuator on or off on a per-channel basis and use it during searches, too. There is no way to disable the attenuator on all channels with a single command—a function which could be useful when using the scanner in different places or using different antennas.

When you type in a frequency, the BC3000XLT checks to see if the same frequency is already programmed in memory and displays the memory channel number. There is no query feature in the PRO-26.

The PRO-26 supports a very handy Direct Tuning facility using the up or down arrow keys, but the BC3000XLT does not.

Both models have a WX key which scans preprogrammed NOAA weather channels.

www.americanradiohistory.com

Fast Scanning and Searching

Both the PRO-26 and BC3000XLT scan at rates up to 100 channels per second. Users may choose to scan frequencies in sorted order within each bank, or in order of channel number at a reduced speed.

Each scanner has a single search range, and up to 50 frequencies may be locked out during a search.

As in the BC3000XLT, the PRO-26 Auto Store feature searches a frequency range of your choosing and automatically stores active frequencies into empty channels of selected banks. Both scanners are smart enough to store only frequencies not already programmed in memory.

PRO-26 users can start a direct search up or down from the current display frequency—a feature missing from the BC3000XLT.

Both the PRO-26 and BC3000XLT have a Data Skip feature which works during FM or WFM searches. The BC3000XLT's Data Skip can also be used while scanning memory channels, unlike the PRO-26.

Different Audio

Due to the smaller speaker, the PRO-26 audio is not nearly as crisp as the BC3000XLT, but better than the muffled audio of the PRO-62 (see February *MT* for a review of the PRO-62).

The BC3000XLT provides separate 1/8" jacks on top for external speaker and earphones. Stereo headphones work just fine and audio is heard from both sides, no adapter needed. The PRO-26 has only one jack and it is for old fashioned monaural headphones. Sound is heard only in one earpiece if stereo headphones are used—a drawback.

RF Performance

Our PRO-26 is slightly more sensitive than our BC3000XLT on the VHF-high band and are they are equally sensitive in the 460 and 860 MHz bands.

Some PRO-26 owners complain of interference problems on the VHF-high band, and our PRO-26 has problems there, too. We traced the cause to images, a problem one hopes to avoid in a receiver using up-conversion. The first IF is approximately 380.69 MHz and our PRO-26 hears images of UHF signals 761.375 MHz below their transmitting frequency, so 929.7125 and 929.5625 MHz paging signals appear on 168.3375 and 168.1875 MHz respectively.

If you listen carefully, you can hear the same images on a BC3000XLT, but measurements show they are significantly weaker, by about 15 dB.

Using the PRO-26, we hear the local sheriff's 460.525 MHz repeater weakly on 460.375 MHz at the same time and don't know why. This isn't a problem in the BC3000XLT.

Battery Consumption

The BC3000XLT is supplied with a BP2500 rechargeable NiCd battery pack. Extra packs are handy but expensive. The PRO-26 is powered by four AA penlight cells (not supplied), either alkaline or NiCd—we appreciate the flexibility. Our review PRO-26 arrived during a tornado warning. With no time to charge a NiCd pack, we loaded the PRO-26 with alkalines and placed it into service immediately. State police channels were alive with tornado sightings nearby.

The current consumption of both the PRO-26 and BC3000XLT measured about the same except for the LCD backlight and memory backup. The PRO-26 backlight uses 33 milliamps versus only 20 milliamps in the BC3000XLT. The PRO-26 uses less than 10 microamps of current when turned off compared with 45 microamps in the BC3000XLT—both figures are too small to be significant.

The BC3000XLT's battery-save feature can reduce consumption to a mere 13 milliamps. The PRO-26 manual does not mention a battery-save feature, and our measurements detect no battery-save action.

The same optional wall wart power supply used with the PRO-43 and PRO-62 scanners works with the PRO-26. There are two small jacks on the side of the PRO-26: one for powering the scanner from 9 volts DC, the other for charging the batteries.

PRO-26: Claimed Specifications

Search speed:
Normal mode: 100 steps/sec.
Hyper mode (for 5 kHz steps only): 300 steps/sec.
Scan speed: 50 channels/sec.
Priority sampling: 2 sec.
Rescan delay: 2 or 4 sec.
IF frequencies:
1st IF 380.7 MHz or 254.4 MHz
2nd IF 58.075 MHz.
3rd IF 455 kHz (NFM) or 5.5 MHz (WFM)
Audio power: 250 mw. maximum
Internal speaker: 1-7/16 inch, 8 ohm, dynamic
Max. current drain: 220 ma.
Dimensions: 6-1/16 x 2-5/8 x 1-5/8 in.
Weight: 8.47 oz.

The Bottom Line

Both the PRO-26 and the BC3000XLT are impressive. Each is priced near $400 and offers a lot more features than the PRO-62 and older PRO-43. Consumers who feel strongly about battery flexibility, full coverage of UHF television channels, and who appreciate a smaller scanner may choose the PRO-26.

However, the BC3000XLT has superior image rejection where it counts, crisper audio, more channels, automatic skipping of empty channels, stereo phone jack, battery saver, and other advantages as noted above.

The PRO-26 is available from Grove Enterprises (800-438-8155) for $349.95 plus shipping.

WINDOWS™ Control for Scanners

ScannerWEAR™ SoftControl 1.3
NOW SUPPORTS:
• OptoScan 456/535
• AOR 3000/3000A
ICOM R7000/7100

- Memory banks include 100 channels per bank with frequency, description and mode.
- Search ranges include frequency, step, mode and description.
- Data logging to the file includes date and time stamp, signal strength, tone and number of hits, location*.
- Spectra analysis in real time
- CTCSS & DCS controlled scanning
- OPTOSCAN 456/535 now in stock for $289

ScannerWEAR™ SoftControl STD Windows control for all your basic scanning needs. $39.00 Plus tax & shipping

$99.00 Plus tax & shipping

R•C•S•I
Radio Control Systems, Inc.

CALL (800) 560-7234
Tech Support (619) 560-7008; 10am-4:30pm PST
8125-G Ronson Road, San Diego, CA 92111
VISA, MasterCard, UPS COD

All trademarks the property of their respective owners. * Requires PerCon Database.

www.americanradiohistory.com

Lawrence Magne
Editor-in-Chief
Passport to World Band Radio

Grundig's New Yacht Boy 305

A scant few years ago, few Americans had ever heard of Grundig, except perhaps from trips to Europe. They just weren't players, but that all changed fast once they set up their Lextronix distribution center in California. After offering all manner of Grundig products—TVS, VCRs, stereos and such—they noticed something funny. What was selling best, growing fastest, and making the most money was their line of shortwave radios.

"Experts" had advised them not even to sell Grundig shortwave radios over here, that shortwave was dead—but they found differently. So after discovering which end of the goose really laid the golden eggs, they discontinued everything in their line *except* shortwave, and the rest you know. They're now believed to be selling hundreds of thousands of units per year in North America alone, and claim that the growth rate is increasing.

Problem was, when Grundig first started selling shortwave in North America, it had a line of technologically obsolete portables. A partial exception was the top-of-the-line Satellit 600 (later the 650), but that cost around $1,000 and weighed as much as a suitcase. So, for the past several years, Grundig engineers have been coming up with new and more interesting models, such as the top-end Satellit 700 and the phenomenally successful Yacht Boy 400. Still, Grundig models priced under the 400's $200 street price have been also-ran performers, selling well only because of Lextronix' marketing expertise. Now, that's about to change.

Simplified Version of YB 400

Enter the compact Yacht Boy 305, basically a simplified 400, with a list price of $149.95 but an anticipated street price of under $130. Like the 400, the 305 is made in China—Grundig products from China thus far have held up surprisingly well—and in appearance is clearly out of the same mold. It tunes AM 530-1710 kHz in 9 or 10 kHz increments; FM in 50 or 100 kHz increments, and shortwave from 2300-21850 kHz in 5 kHz increments (only).

You can tune it by direct-frequency keypad entry, up/down slewing, "signal-seek" scanning and 30 channel presets. There are

also selectors to choose meter bands. No tuning knob, though.

For traveling, there's a power lock to keep the set from firing up accidentally in a suitcase, scaring the pea soup out of airline security personnel and running down your batteries. But there is no display illumination for dim hotel rooms and the like—no wake-up feature, either—two minuses for travelers.

The 305 comes with no AC converter, and Grundig doesn't even so much as offer one. But if you call their toll-free number in the United States and Canada, they'll give you the exact model number of the Radio Shack or other adaptor best suited to the radio in question. Or, of course, you can get one from a world band specialty firm. As a consolation prize, the 305 comes with two "C" cells. Not the dinky-zincy batteries tucked in with some radios, but genuine Duracells.

No SSB or Dual Conversion

But, though the 305 looks like the 400, it is clearly a different radio. Yes, its audio quality is similar and commendable, at least on shortwave and AM (FM is only "okay," except through headphones, which also give you stereo). Many radio enthusiasts—although not everyday world band listeners—will miss the 400's single-sideband reception. Most listeners will also miss the useful dual bandwidths found on the 400, but not on the 305. Yet, the 305's single bandwidth is well chosen.

The real drawback is that the 305, unlike the 400, has only single conversion. This means that stations "repeat" at reduced strength—in this instance, 900 kHz down in frequency—possibly creating image interference to the station you're trying to hear. For example, Caracol Colombia on 5075 kHz tends to suffer this sort of internally-generated interference evenings from the BBC World Service on 5975 kHz.

That's the bad news. Less bad is that, although this is definitely a drawback, image rejection on the 305 is virtually as good as we've encountered in a single-conversion receiver. How good? Good enough for most program listeners in the Americas, but not good enough for most DXers, especially those who stalk the 60-meter band.

Superior Weak-Signal Sensitivity

But here's a surprise, sort of. *Surprise*, because the 305 is one of the most sensitive portables around for receiving weak signals; *sort of*, because single-conversion radios often are more sensitive to weak signals than are their more sophisticated double-conversion counterparts. That's one reason why, at first blush, cheap radios can seem better than costlier models.

Grundig has played this card just about as well as it can. Yes, there is image interference, but in North America it should be acceptable to most, and the single-conversion circuitry that's responsible for it is also partially responsible for the set's lower cost and higher sensitivity.

Minor Overloading in North America

If you've been around the track enough times, you're already asking yourself about overloading. The rule is simple: The greater the sensitivity, the greater the propensity to overload, and the 305 is no exception. Our tests within North America unearthed a small amount of cross-modulation, which was remediable by shortening the antenna slightly (the "DX-Local" attenuator is too heavy-handed for much precision). So, for listening in the Western Hemisphere, the 305's helpful sensitivity does not come at a high price in terms of exceeded dynamic range.

In Europe? We weren't able to get hold of a 305 until just after we returned from the delightful European DX Conference in Denmark in June. (Spoil yourself, if you can, and go to next year's gathering in April, when it will be in Florence, Italy!) However, it would

www.americanradiohistory.com

be surprising if the 305 as it is now arranged were not to suffer from excessive cross-modulation in Europe.

Grundig apparently agrees, as they are talking about possibly coming up with a "Euro" version of the 305 that would be tailored to the special requirements of that part of the world.

■ Value Leader, Midwest and West

This is an encouraging development. Until now, most shortwave portables have been designed for the European or Japanese markets, with North America being something of an afterthought. But reception conditions here *are* different. Signals do tend to be weaker than in Europe, so overloading isn't the problem it is there. Desensitizing receivers so they won't overload in Europe, then selling those same models "as is" within the North American market, has never provided best performance results, especially in the Midwest and West Coast.

The bottom line is that the Grundig Yacht Boy 305 adds positively to a trend towards "value" models that are attractive to newcomers and established budget-conscious listeners. Until now, the leaders in the under-$150 category were the Sony ICF-SW30, which has double conversion but is clunky to tune, and the Radio Shack DX-375, which tunes properly, but performs less well. The 305 has now captured the leadership in this price class.

MAGNE'S PRODUCT SUMMARY

■ Drake R8A

Although Drake was expected to commence production of its new R8A receiver sometime in May, as we go to press it is running a month behind expectations. There's no official startup date for production, but presumably it will have taken place by the time you read this.

We are going to wait to test a production unit before reporting on it in fully here, but our initial and very tentative impression with a test-production sample that we are currently evaluating is that the R8A's performance is so close to that of the R8 that the differences border on the inaudible. However, the ergonomics, although still far from ideal, are obviously improved.

In short, for now it's hard to imagine much good reason for replacing a perfectly good R8 with an R8A—a relatively costly exchange—although for first-time buyers the new version is certainly worth the extra $100 over the original. Remember, that's based only on our first quick peek, not the in-depth findings from our laboratory and test panelists, which we'll summarize in a future issue.

■ Lowe HF-250

Production of the Lowe HF-250, the replacement for the current HF-225, reportedly has commenced at their plant in Matlock, England. Listeners, including me, fortunate enough to have tried out a pre-production sample at the Dayton Hamvention and the European DX Conference were generally quite pleased, especially with the audio quality and seeming quietness.

Some minor ergonomic improvements are supposed to be in the making, with the set presumably arriving on the market sometime around July at an as-yet-unspecified price. (Yes, Virginia, its synchronous detector allows for selectable sideband, unlike that of the '225.)

The HF-225 Europa hasn't been forgotten, either. Its replacement, rumored to be the HF-275, is reportedly in the works for release probably sometime later this year.

This equipment review is performed independently by Lawrence Magne and his colleagues in accordance with the policies and procedures of International Broadcasting Services, Ltd. It is completely independent of the policies and procedures of Grove Enterprises, Inc., its advertisers and affiliated organizations.

MAGNETIC SWITCH BALUN™

- **Makes one antenna work like three.**
- **Change patterns with a control switch.**
- **Get best reception for any station .5-30 MHz.**

Consists of the MSB–3 balun and a control box. The balun goes in the center of your "bent dipole". One leg north-south; the other east-west. Or one leg horizontal; the other vertical

The control box switch connects the balun to 1) both wires as a bent dipole, 2) one wire as a longwire, 3) the other wire as a longwire. This gives three directional patterns that you can select at will for the best signal for the frequency and time of day. Use RG–58 or similar coax between balun and control box.

Model MSB–3 $135 + $6 shipping/handling U.S. & Canada. Tax in California. For 115v AC. (Antenna wire and coax cable not included.)

VISA

Send for FREE catalog that shows our complete line of antennas, baluns and more.

PALOMAR ENGINEERS
BOX 462222, ESCONDIDO, CA 92046
Phone: (619) 747–3343
FAX: (619) 747–3346

RADIO DATABASE INTERNATIONAL WHITE PAPER®

reports contain virtually everything found during exhaustive tests of premium shortwave receivers and outdoor antennas. For a complete list, please send a self-addressed stamped envelope to RDI White Papers, Box 300M, Penn's Park PA 18943 USA.

PROFESSIONAL 10 HOUR RECORDER. Built like a **BATTLESHIP.**

- Special Monitoring Times price $149
- BUILT-IN voice activation add $25
- Also available: 12, 14 and 16 hour models
- NOT "improvised" from a consumer model
- Heavy duty commercial recorder
- Full one year warranty
- Dimensions 11.5 x 7 x 2.75

Recorders come with full applications info for scanners, etc.

VIKING INTERNATIONAL
SINCE 1971
150 Executive Park Blvd. #4600
San Francisco, CA 94134
Phone: (415) 468-2066
Fax: (415) 468-2067

FREE 32 page special equipment catalog!

No shipping charges on prepaid orders. COD's OK. Cal. residents add tax. Sorry, no credit cards (all they "do" is increase prices—)

www.americanradiohistory.com

John Catalano, PhD

Scan Manager Pro

Windows never looked so good

Not being content with minding my own business, I will often call the authors of software that I am reviewing and give my opinions on modifications, added features, and even marketing suggestions for the next version. Since I do it as free, friendly advice, at least the authors get their money's worth!

Back in December '94, we looked at an exciting $19.95 program called SWL Manager 1.0. This is a Windows-based radio control and database that I considered to be a real value and very easy to use. After my first experience with SWL Manager, I spoke with the nice people at KC4ZGL Ham Software a number of times. As I wrote in that review, I thought their first product was great, but, as usual, I wanted more.

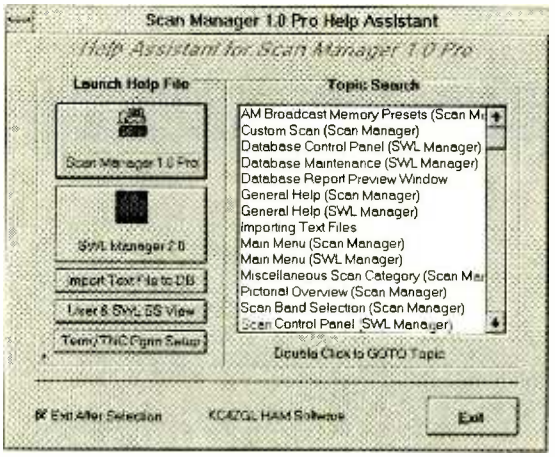


FIGURE 1: *Scan Manager Pro Help Assistant Main Screen*

Improving On Greatness

In my opinion, the program had one glaring omission which prevented it from qualifying as one of "the best of the best": It did not have the ability to control or read the output of a decoder/TNC such as the PK-232. That's all it lacked to be considered a complete monitoring environment. Well, Tony listened carefully and said he would get back to me in a few months. The result is the program we will review today, Scan Manager 1.0 Pro.

Out of the box I knew I had something very different from the original program. It came on a single disk. The new program comes on three, high density disks for a total of approximately 6 megs of hard drive space! Although the program does not give minimum system requirements, I ran it successfully on my small system, a 386DX33 with 4 Meg of RAM and a VGA monitor. Of course, Windows 3.1 is required. Very little written documentation comes with the program—in fact, only a single page. Following those printed installation instructions, the program installed very simply and quickly.

Opening Windows 3.1 indicates that, in addition to Scan Manager 1.0 Pro, Scan Manager Pro Help Assistant is also available (see Figure 1). This program is a graphical interactive "instruction booklet." The user, by clicking one of the individual topics listed in the scroll box, can obtain detailed instructions. The instructions for the main program(s) are called up via the boxes on the left of the screen. This is one of the best "help" systems I have used.

The new program is really two programs; a new version of SWL Manager, plus Scan Manager. Both are run together inside of Scan Manager 1.0 Pro. Clicking on the program starts it running, though I found it takes about one minute from the time you click on the program until you can use it. That seems longer that any other program of its type, possibly due to the extensive use of graphics.

The first time you run the program you have to configure it to your receiver, and to your decoder/TNC, indicating which serial ports are being used and their parameters. It is a very simple procedure and can be changed at any time via pull-down menus and/or icons located at the top of the Main Screen (see Figure 2).

A nice touch is the title box (not shown) which appears next to any icon that the mouse arrow is over. This tells you in words what command the icon (picture) button performs. Pretty nifty, since I know we all hate to dig out the instruction book in the heat of a good DX chasing session. Even digitized images of various receivers are included with the program and appear when you enter your receiver type. The left side of Figure 2 shows a trusty R-71 in all its glory—really unnecessary, but a unique feature showing the future use of multimedia in computing.

The Main Screen is the place where it all happens. It is arranged into five areas. From the top of the screen: Area 1 - local and GMT; Area 2 - Main program choices, database management, program configuration and help file; Area 3 - scan control, receiver mode, database functions, and invoking the SWL Manager; Area 4 - File folder arrangement for pre-programmed bands and database scan; and Area 5 (at bottom) - On-line keyboard/command helpfile.

You can see from Figure 2 that, with the "User Database Scan" file folder chosen, the right side of the screen gives us operational choices. Clicking on the "Scan Category" arrow brings up frequency files to be loaded into the receiver. Via the Database command I have created a category called USAF, which is now the active category. When the scan is started by pressing the space bar, each entry in this file is displayed with its frequency, mode, and comments, and is also sent to the receiver. Pressing the space bar a second time stops the scan. The delay time between entry loading is controlled on the left side of screen Area 3. The scan direction can be changed with the up/down arrows next to the frequency, also in Area 3. The basic functions are very simple to learn and easy to use.

The number of categories and entries is limited only by your hard disk space. The entire database can be viewed and modified in a spreadsheet form by the F5 key. Direct modifications can then be made, cell by cell, as if you were working in Lotus or Excel.

Although historically I have not been a fan of Windows' programs, the graphical interface has been used by this program to help the user, not just for looks. This fact alone makes this program a leading edge product in my opinion.

Where did SWL Manager go? For shortwave broadcast listeners the SWL Manager version 2.0 is perfect. The F6 key brings the now-familiar screen with its country flag, world map location, and search parameters section. Not much has really changed from the $19.95 version 1.0, but it's hard to improve on perfection. For my comments on its use see our previous discussion in the December 1994 *MT*.

www.americanradiohistory.com

What About My Suggestions?

Is there a TNC/Decoder screen in the new Scan Manager 1.0 Pro? Well, these guys have even gone one better. If you have a favorite Windows-based terminal program—say AEA's Pc Pakratt for Windows—with a press of the F2 key it will appear. It can then be sized and run right alongside Scan Manager Pro. See Figure 3. This works very well giving the user instant access to all features and functions of both programs at the same time. Once again, I say that from an ease-of-use point of view, this is the best use of Windows' features that I have seen to date in a radio-related software package.

FIGURE 2: *Main Screen of Scan Manager 1.0 Pro*

If you don't have a TNC program, Scan Manager will default to the Windows port manager. Not as slick as a dedicated TNC program, but it works just fine.

Are There Any Negatives?

Scan Manager 1.0 Pro is an ambitious endeavor. It has crossed a number of boundaries including: a Windows-based total monitoring environment, simultaneous Windows programs, helpfiles in graphical and written forms, and a universal approach that's equally useful to SWLer, utility listeners, and hams. For me, it has met its original design goals very well.

The program behaves very well in the Windows environment. However, make sure you remove all blank lines from the database. If you do leave a blank, the program may indicate "invalid use of null" and stop, unload itself, and return to the Windows screen. To make sure that you will not have a problem, just remove all blank lines using the delete record button.

What would I like to see changed in the *next* version? Although adequate, I would like to see a bit more speed available in the scan mode. In discussions with the software's author, he has purposely omitted any squelch-driven, scan stop feature. I agree with his observation that due to signal conditions on shortwave this feature's use is questionable. But why should the program be aimed only at shortwave? Although it can be used with most shortwave receivers and ham HF rigs, it cannot be used with any VHF/UHF scanners. Perhaps this will change with a new version.

I believe the capability of sorting the database based on fields other than Category, (for example, Comments), would be a valuable feature. And continuing as the grumpy old man, the long (one minute) load times can be irritating. Picky, picky.

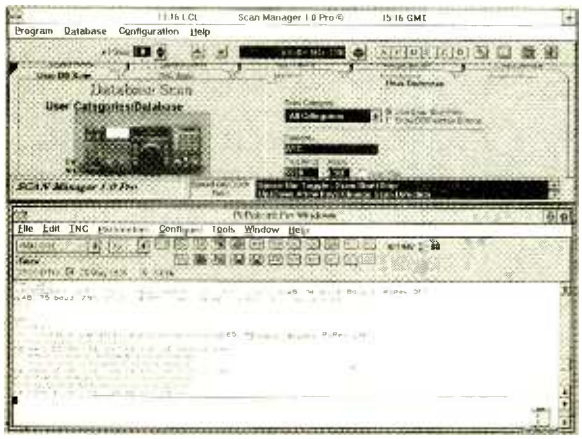


FIGURE 3: *Scan Manager & AEA TNC program Pc Pakratt running together*

Thumbs (and Price) Up?

I was very impressed with the $19.95 SWL Manager 1.0; Scan Manager 1.0 Pro proves lightening can strike twice. It is an excellent program, and at this time, one-of-a-kind in the Windows environment. The price of Scan Manager 1.0 Pro, which includes SWL Manager 2.0 and Scan Manager, is $69 plus S&H. This is a good bit higher than the $19.95 that first caught my attention, but is still priced lower or equal to its competition.

Scan Manager 1.0 Pro is available directly from KC4ZGL Ham Software, 1548 Cedar Bluff Trail, Marietta, GA 30062, or by credit card from 800-242-4775. Check out their ad in *MT* for the latest details and pricing.

Computer Generated RFI

Bob Grove passed a letter on to me from Tom Riley of Massachusetts complaining of being bitten by the dreaded RFI bug. At the up-coming *MT* Convention (now the Grove Communications Expo'95), yours truly will be giving a talk going over the basics of computer generated RFI, understanding its causes, and reviewing some simple ways of reducing it. I'll look forward to meeting each of you and swapping RFI war stories. Meanwhile, Tom is having computer-generated RFI problems when using an AEA Fax2 decoder on a Sony ICF-SW7600. When he uses the decoder and computer with a Kenwood R-2000 he does not experience the same problem.

Well, Tom, going back to basics: keep the antenna lead-in away from the computer and use a shielded feedline. Don't use a long wire or rod antenna as this will pick up the local computer noise better than shortwave signals! You could try using a Radio Shack transformer # 273-1380 between the audio output of the receiver and the input to the decoder. Try starting with these simple solutions before you turn to exorcism. We'll have lots more for you at the Expo on this topic. And we have a lot more programs to look at in the next column. Till then ...

PRO-2035
Hyperscan
Base & Mobile Scanner
$379 Reg. $449
1000 Channels
UPS Shipping Included

PRO-62 $244
HH-200 Channels

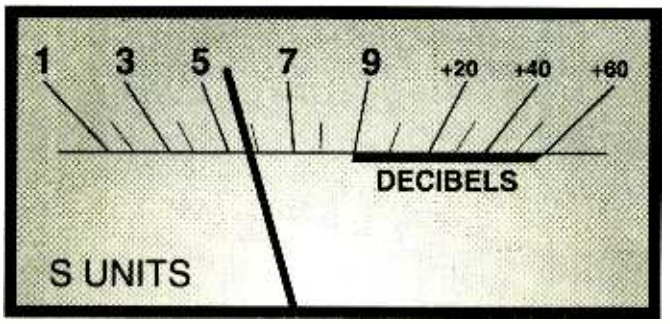
Pioneer Data, Inc.
1515 N. Pacific Hiway
Woodburn, OR 97071
(503) 982-5115

www.americanradiohistory.com

Doug Demaw, W1FB

Understanding Your S Meter

Do receiver S meters lie? The answer to this question can be a simple "yes" or "no," depending upon your understanding of what an S meter is supposed to reveal. Generally speaking, a signal-strength meter provides only a relative indication of how strong or weak an incoming signal might be. The calibration markings on the meter face are meaningless in terms of microvolts of signal energy versus S units, and decibels above and below the standard S9 reference mark on the meter face or bar-graph display.



Despite this fact, many shortwave listeners and radio amateurs accept the meter readings as gospel. So, let's take a closer look at our S meters and try to understand how we can use them more accurately.

Understanding the Meter Scale

In the earlier days of radio some receiver manufacturers (Hammarlund Corp., for example) attempted to provide S-meter circuits that yielded accurate meter readings which were referenced to the strength of the incoming signal versus the microvolts of energy delivered to the receiver by the antenna. The S units (below S9) were based on 6 dB (decibels) per S unit. Decibels are referenced to watts of power, with 0 dB being equivalent to 1 watt. The meter reading above S9 indicated how many dB above S9 the signal would deflect the S-meter needle. An arbitrary 50 microvolts of signal energy provided a reading of S9 in those days, but no longer.

The S-meter scales then (and now) were seldom accurate over the entire coverage range of the receiver. At best, meter accuracy was satisfactory for one band of a multiband receiver. This is because the overall gain of a receiver (RF amplifier through the last IF amplifier) varied from band to band. Therefore, it was not uncommon to have much lower receiver sensitivity on 10 and 15 meters than on 40 or 80 meters. This resulted in lower meter readings at the high end of the HF spectrum, despite an equivalent, incoming signal strength.

Present-day manufacturers use a variety of microvolt references for calibrating their S meters. No two brands of receiver will register the same meter reading for the same input signal level and antenna. Also, the meter readings will vary from band to band, even though the input signal magnitude at the antenna jack is the same.

At this juncture you are probably wondering if S meters have any practical use at all. Indeed they do—at least in terms of making relative measurements. Suppose, for example, that a ham-radio friend has three antennas available for operation on 40 meters. While you are on the air with him he asks you for a comparative signal-strength reading for the three antennas. As he transmits with antennas A, B, and C you observe your S meter and jot down the reading for each antenna. When he stands by, you report that antenna C deflected your meter to S9 plus 10 dB. Antennas A and B caused your meter to read S9. Although antenna C may not have provided a true 10-dB signal increase, the meter did indicate its superiority—at least at your distance from his station.

An accurate signal-increase measurement could have been made, however, if you had used a calibrated step attenuator between the feed line and the antenna jack on your receiver. By adjusting the attenuator to bring his S9 + 10-dB signal down to S9, you could then have reported exactly how many dB of difference there was between the antennas. Figure 1 shows how this can be done. Details for a home-made step attenuator are available in *The ARRL Handbook*.

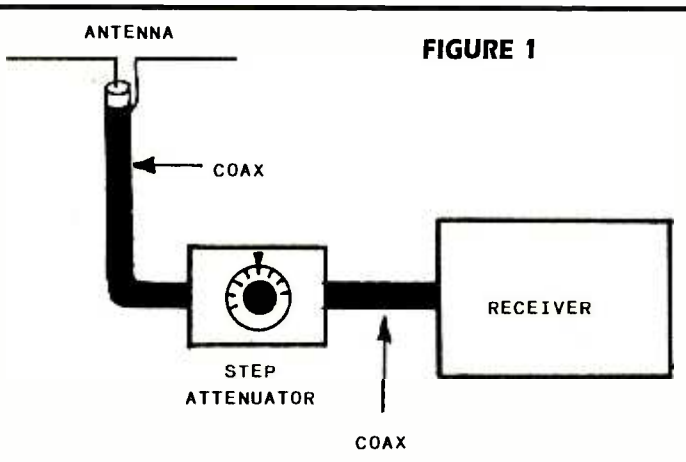


FIGURE 1

A resistive step attenuator can be inserted between the 50-ohm coaxial feed line and the antenna jack of a receiver to permit accurate signal comparisons in dB. A 50-ohm attenuator should be used in a 50-ohm antenna system for best accuracy.

S-Meter Compression

Most modern S-meter circuits are designed to limit the upper scale readings so that the needle doesn't "peg" on very strong signals. This limiting often commences at 25-30 dB above S9, which makes it even more difficult to give comparative reports to another station. A 10-dB signal increase, for example, may barely change the meter reading.

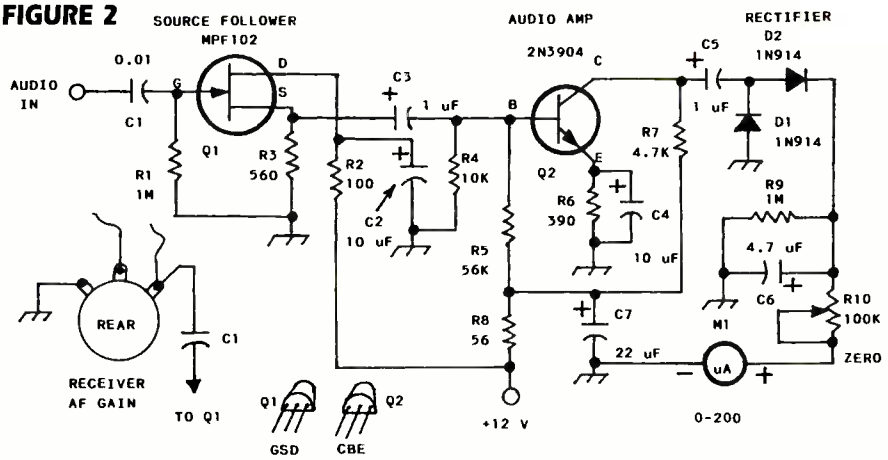
It is in situations of this sort that an attenuator is helpful. The built-in 10- or 20-dB receiver attenuators can often be used to resolve this problem. If your receiver has an AIP (advanced intercept point) switch, it may be used to reduce the signal level, too. The AIP switch disables the RF amplifier stage ahead of the mixer and will reduce the front-end gain by 10 to 20 dB, depending upon the gain of the RF stage. An outboard step attenuator is ideal for this application.

A Home-Made S-Meter Circuit

If you have a receiver that lacks an S-meter, it is a simple matter to build the circuit

www.americanradiohistory.com

FIGURE 2



Schematic diagram of a simple audio-derived S-meter circuit. An etched and drilled PC board for this circuit is available from FAR Circuits.[1] C1 is in µF and is disc ceramic. All other capacitors are electrolytic or tantalum, 16 volts or greater. Other N-channel JFETs may be used at Q1. Q2 can be a 2N2222 or 2N440 if desired. Resistors are 1/4-watt carbon film types. R10 is a 100K-ohm PC-mount miniature control. See text for details about M1.

in Figure 2 and install it in the audio channel of your home-made or store-bought receiver. The circuit may be used with a regenerative, direct-conversion, or superheterodyne receiver because it operates from the audio system. Most superheterodyne receivers use what is called "IF derived AGC," and the S meters are connected to the AGC (automatic gain control) line. Signal energy from the IF (intermediate frequency) amplifiers is rectified to provide AGC control voltage. The same dc voltage is used with dc amplifiers to deflect the S meter.

The Figure 2 circuit employs a JFET at Q1. This source follower presents a high resistance (1 megohm) to the receiver audio sampling point. This prevents the S-meter circuit from loading the audio amplifier. Output from Q1 is amplified by means of Q2. Diodes D1 and D2 convert the audio energy to dc voltage. The stronger the received signal the higher the dc voltage becomes. This causes an increase of current flow through meter M1, thereby deflecting the meter toward the upper end of the scale. R10 sets the meter to zero when no signal or a high noise level is present.

C1 in Figure 2 is connected to the high end of the receiver audio gain control, as shown by the inset drawing. If it were attached to the arm (center lug) of the control there would be a change in the S-meter reading each time the audio level was raised or lowered. Therefore, it needs to be connected as shown.

M1 in Figure 2 can be any new or surplus dc meter that has a 100- or 200-microampere movement. Most edgewise surplus signal-level meters satisfy this requirement. Although I have not tried one in this circuit, I'm sure that a 500-microampere meter would work satisfactorily also.

The S-meter circuit can be tacked together on a piece of perforated board or by using "ugly" or "dead bug" construction methods. Keep the leads short and direct for best performance.

Some Final Thoughts

An understanding of S meters and how they operate will enable you to make more meaningful signal-level comparisons. It's important to remember that a reading of, say, 20 dB over S9 may be obtained from a signal that is only S8, or perhaps 30 dB over S9. It all depends on the receiver design and what the engineers had in mind when they developed the S-meter circuit. The use of an outboard step attenuator will take the mystery out of your signal comparisons.

Notes:

[1] Far Circuits, 18N640 Field Court, Dundee, IL 60118. Phone: (708) 426-2431 after 6 p.m. Send $4.50 for board plus shipping. Ask for the S-meter PC board from *W1FB's QRP Notebook*.[2]

[2] Numerous simple circuits for receivers and transmitters are presented in *W1FB's QRP Notebook*, 2nd edition. Available from the ARRL, Inc., 225 Main St., Newington, CT 06111.

www.americanradiohistory.com

EXPERIMENTER'S WORKSHOP

TWEAK, TUNE, AND MODIFY!

Bill Cheek

Internet: bcheek@cts.com
BBS & FAX: 5:30-1:30 p.m. PDT: 619-578-9247
Compuserve: 74107,1176; FidoNet: 1:202/731

Free-Space Radio Path Analysis for VHF-UHF

Radio waves appear to behave in mysterious and magical fashions, but they perform strictly according to iron-clad physical laws, just like free-fall in gravity. No one understands exactly why gravity works, just as we don't understand why radio waves work. This lack of comprehension does not hinder us, however, from using basic math to predict or calculate the measurable behavior of these phenomena. In a word, measurements and calculations of radio waves can coincide with the same results.

A radio wave transmitted from Point B weakens to a certain level at Point A. The strength of a radio wave can be measured, of course, but it can also be calculated. Measurements are expensive and time-consuming. Calculations are free and quick with a calculator or a computer.

Radio engineer, Kenneth Bullington, extensively studied VHF-UHF radio propagation in the 1940's and discovered how to accurately predict and model its behavior over a variety of conditions[1]. To follow Bullington's work is hairy, but thanks to the computer and other modern developments, you can use these tricky techniques without knowing what you're doing, and still snag valid information about what it takes to receive signals at Point A (your site) from a distant transmitter at Site B.

Many variables affect radio waves between Points A and B, conjuring up an aura of mysticism. Yet, if we know and apply these variables, the result is an easily calculated estimate of actual measurements. These variables will be simplified into two major and several minor ones to make the task of propagation analysis actually kind of fun and exciting. The process gets drawn-out, but I will organize it into bite-sized steps, spread out over a few months, that can be assimilated and applied by anyone. This month we have an easy one.

Free Space Analysis

Radio signals weaken primarily due to a "spreading effect" of the wavefront, on the same principle as the way the illumination of an object decreases the farther it gets from a source of light. This spreading effect, or decay, is most consistent and predictable in "free space," where the earth plane and physical objects are not an influence.

Free space is best understood as follows: (1) there are no obstructions or obstacles between Points A and B, (2) the radio wave between Points A and B comes no closer than 1 wavelength to the earth or other objects. A line of optical sight is generally a good indicator of free space conditions. This reduces the conditions to only two other variables: the distance between Points A and B, and the frequency or wavelength. If free-space conditions exist, then a radio wave can be analyzed as follows:

$$\alpha_{dB} = 10\ \mathrm{Log}_{10}\ \frac{P_t}{P_r} = 10\ \mathrm{Log}_{10}\ \frac{4.1 \times 10^{12} d^2}{\lambda^2}$$

where:

α_{dB} = attenuation, decibels
P_t = power transmitted, watts
P_r = power received, watts
d = distance between antennas, miles
λ = wavelength in centimeters

This bulky formula can be simplified for calculators and computers:

(1) $\alpha_{dB} = 10\mathrm{Log}_{10}\ (4560F^2d^2)$

or (take your choice)

(2) $\alpha_{dB} = 36.6 + 20\mathrm{Log}_{10}\ F + 20\mathrm{Log}_{10}\ d$

where:

α_{dB} = attenuation, decibels
d = distance between antennas, miles
F = Frequency, MHz

Practical Example

Let's calculate the "free space" attenuation of a radio signal from an aircraft operating on 120 MHz at 35,000-ft and 75 miles from your location:

α_{dB} = 36.6+20Log10 F+20Log10 D
α_{dB} = 36.6+20Log10 120+20Log10 75
α_{dB} = 36.6+20(2.08)+20(1.88)
α_{dB} = 36.6+41.60+37.60
α_{dB} = 115.8 dB (*below* transmitted power)

This means the signal at the receiver antenna will be about 116-decibels below whatever is transmitted! Now we can calculate actual Received Power (P_r) to determine if communication is possible.

Let's assume the aircraft transmits 4-watts into an antenna with 3-dB gain, and that your receiver's antenna has 3-dB gain. First, we assess system gains, at +3 dB for each antenna. The 4-watts of transmitter power is 6-dB above a 0-dBW reference of one-watt: (*dB = 10 Log Gain or Loss = 10 Log 4/1 = 6*). So +6-dBW of Tx (transmitter) power added to 6-dB of antenna gains equals 12-dB of system gain to offset some of that 116-dB free-space path loss. Net received power will be 116-dB (loss) - 12-dB (gain) = 104-dB below 1-watt or -104-dBW.

[1] *Proceedings of the IRE* (now IEEE), October, 1947: Propagation of Radio Frequencies above 30 Megacycles

SPREADSHEET CALCULATIONS

Remember the Great Circle spreadsheet calculation from June-95? It has a lot of blanks. We will fill them in over the coming months, starting below.

Free Space Loss, dB
Enter the Frequency (MHz) into Cell E16. Enter distance (mi), A-B, in Cell E47 or let the Great Circle spreadsheet in MT, June-95, do it for you. Then enter the below formula exactly as shown:

E32 =36.6 + 20*LOG(E16) + 20*LOG(E47)

Cell E32 then calculates and displays the free space loss, dB, of the radio wave.

Free Space Received Signal Level, µV
Enter Tx Power (watts) into Cell E23
Enter Rx Antenna Gain (dB) into Cell E18
Enter Tx Antenna Gain (dB) into Cell E21
Enter the below formulas exactly as shown:

E19, E22, E30 (leave blank for now)
E27 =10*LOG(E23)
E28 =E18+E21+E27
E35 =E30+E32+E19+E22
E38 =E35-E28

E41 =SQRT(50*(1/(10^(E38/10))))*10^6

Cell E41 then displays the free space received signal level (RSL) in microvolts (µV).

***The complete Great Circle and VHF-UHF Analysis Spreadsheet** is available for free download from the Hertzian Intercept BBS at (619) 578-9247 before 1:30pm & after 5:30pm, PDT, if you don't want to construct it yourself.*

www.americanradiohistory.com

Now let's convert -104-dBW into watts:

dB = 10 Log Pt/Pr
104 = 10 Log 1 watt/Pr
104 = 10 Log 1/Pr
104 ÷ 10 = Log 1/Pr
10.4 = Log 1/Pr
$10^{10.4}$ = 1/Pr
2.51×10^{10} = 1/Pr
Pr = $1 \div 2.51 \times 10^{10}$ watts, or
Pr = 3.98×10^{-11} watts
(0.0000000000398-watts, 39.8-picowatts, 39.8 trillionths of a watt)

Duh? What's that mean?

Brass Tacks

First convert *received power* to *received signal level* (RSL), a more meaningful figure. Ohms Law is our guide:

$P = E^2 \div R$, so:
3.98×10^{-11} watts = $E^2 \div 50\Omega$
(most comm systems use 50Ω antennas)
$(50\Omega)(3.98 \times 10^{-11}$ watts) = E^2

$1.99 \times 10^{-9} = E^2$

Taking the square root of both sides:

$E = \sqrt{1.99 \times 10^{-9}}$, or

E = 4.46×10^{-5} volts, or = 0.0000446 volts or 44.6-μV (microvolts) or 44.6 millionths of a volt

The threshhold of detection for scanners is about 1-μV (1-millionth of a volt), below which signals will either be noisy or undetectable. Some scanners are better, some worse, but 1-μV is a nominal reference for passable communications, so we can feel pretty good with 45-μV.

Caveat

Free-space formulas apply only to those portions of radio waves that travel in *free space*; applications are thereby limited to situations such as aircraft-to-aircraft, air to ground, ground to air, and space communications. Mountain-top to mountain-top and close range communications might also qualify under the "free space" rule.

Free space is generally that portion of the wavefront that's at least one wavelength away from earth or any obstacle. We engineers use three wavelengths as a rule to be conservative. "Clear Line of sight" is a major property of free space, though not the only one. Next month, we will examine other influences on radio waves.

If you haven't already done so, refer to and save my June-95 column and the Great Circle Spreadsheet. The math we will be using over the next few months will plug straight into that spreadsheet to provide a phenomenal analytical tool for radio wave analysis. This entire concept is treated in detail in my new *Ultimate Scanner* book, if you'd like to get a jump start instead of waiting each month for the next article.

Current-Sensing IC Measures Battery Charge

The prolific IC manufacturer, Maxim of Sunnyvale, CA, has introduced the first complete, current-sensing, integrated circuit to measure the charge and discharge rates of batteries. The MAX471 chip is especially suited for portable equipment with rechargeable batteries, including handheld scanners, ham radios, CB radios, business radios, cellular mobile telephones, etc., thanks to an exceptionally low power requirement of less than 100-μA. The IC with the required simple external circuitry is depicted in Figure 1.

The 2-k resistor on the OUT lug calibrates the signal for proportional 1 volt per ampere of drain or charge current. The SIGN function outputs a (+) or (-) logic to indicate whether the battery is under charge or discharge. Thus, a simple voltmeter can detect and display these outputs, even though Maxim intends for the functions to be fed to an analog-digital (A/D) converter or to a microprocessor for feedback and control of the recharger. The SIGN function can be connected to a bicolor LED with a 2.2-k series resistor to provide visual feedback. A SHUTDOWN control lug is provided to conserve power when conditions are adverse.

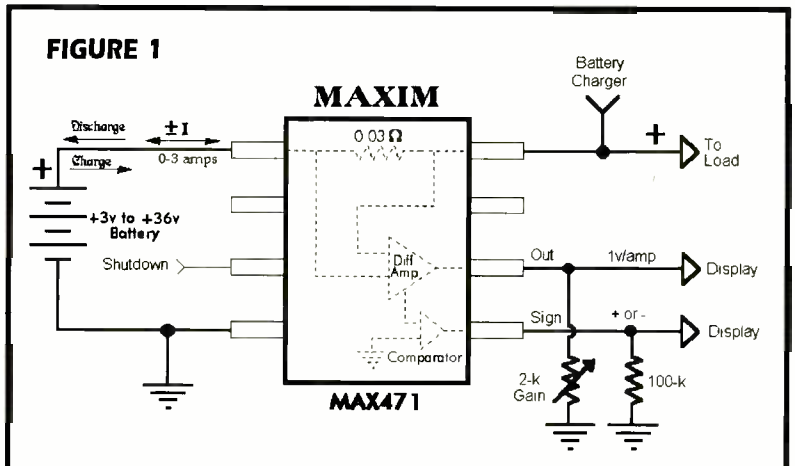
For technical and sourcing information about the MAX471, contact Maxim at 120 San Gabriel Drive, Sunnyvale, CA, 94086 or (408) 737-7600 or FAX (408) 737-7194. DigiKey, (800) 344-4539, is a primary distributor of Maxim IC's, and can usually supply IC data sheets.

There seems nothing special about the MAX471 in a general sense, and if you don't mind higher current drain, a discrete circuit can be built using the internal view of the chip as a guide. Critical components would be the 30 milliohm resistor, and a dual op-amp—one section configured as a differential amplifier and the other as a comparator. These techniques are usually included in the op-amp data sheets and need not be treated in detail here.

Two sections of the LM-324 quad op-amp (RS #276-1711) can be pressed into this service. The 30-milliohm resistor is probably best made from 30-ga wire (RS #278-501, -503, -503) which has a resistance of 103Ω per 1000-ft. 30-milliohms would require just 3-1/2", easily wound into a small coil! 26-ga wire at 41Ω per 1000-ft would have 30 milliohms in just 9", also easily rolled into a small coil.

Mind boggling? Just wait until next month when I give you some super-duper, do-it-yourself techniques for accurately measuring and fabricating fractional ohm resistors. If the implications this month don't open your mind to let your fantasies unwind, next month's will!

FIGURE 1



Current-sensing IC measures battery charge and discharge

Contest Time

Remember my offer for the next eleven months? Submit an idea or a project for this column and if selected, you'll win an autographed copy of my latest book, *The Ultimate Scanner*. Come on, guys 'n gals; help me out! It's going to be a long, cold winter coming down. Somebody get me warmed up, please!

www.americanradiohistory.com

W. Clem Small, KR6A, CET

"UFO" and "Easy-Up" Antennas

If you would really like to check out the pleasures of radio monitoring but think that you aren't able to put up a workable antenna, I offer you hope and a new vision: read on!

It is true that the best shortwave (HF) reception is usually had with antennas mounted high and in the clear, but perhaps you have too little space to put up a good outdoor antenna, or maybe you can't put up *any antenna at all.*

Nevertheless there are many, many interesting shortwave signals from both nearby and distant lands which come booming in to your location strong enough that you can snag them with just about any old antenna you can come by! And, whether you realize it or not, there are probably a number of "antennas" already in your home or office just waiting for you to discover them and put them to work receiving those signals from "far away places with strange sounding names."

Therefore, this month we're going to discuss utilizing some of the things normally found around the house as shortwave receiving antennas. We can call these antennas "UFO" antennas because we get them by Utilizing Familiar Objects as antennas.

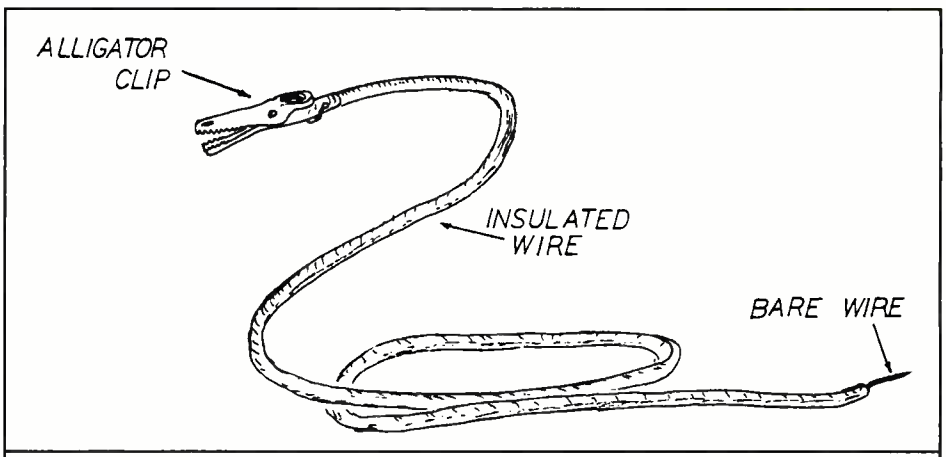


FIGURE 1: ***The alligator-snake wire—sometimes an antenna by itself.***

Get ready, get set...

A useful accessory to have in utilizing familiar objects as antennas is an "alligator-snake." This wire consists of an alligator clip on one end of a length of insulated wire with the wire's other end connected to the antenna input connector of your receiver. The alligator-snake can be from a few feet to several feet long, depending on how far from your receiver you will roam in search of UFO antennas. To make the alligator-snake, remove the insulation from a half-inch or less of each end of the wire and attach one end to an alligator clip, the other to the antenna input of your receiver.

Your first UFO antenna is the alligator-snake itself; often a few feet of wire will perform surprisingly well as an antenna. When the bands are open you may be in for a surprise at the number of stations you will log using only this wire. To avoid disappointment, check the bands when they are likely to produce good signals. On the shortwave band a rough rule-of-thumb is that at night you are more likely to find signals below 10 to 15 MHz; frequencies above 10 or 15 MHz are more active in daylight hours.

The "Propagation Guide" section of *Monitoring Times* can help you predict active frequencies for receiving signals from particular parts of the world. Also remember that, due to the current low sunspot-cycle status, the high end of the HF band is often quite "dead."

Unlimited Free Antennas!

Now you're ready to check out various UFO antennas. Unplug the power cord of an electric lamp and clip the alligator-snake to one prong of its AC plug (note that the lamp stays disconnected from the AC powerline for this application). Now try any *unplugged* appliance in this way—the larger the appliance and the longer the cord the better. Clip to most anything that contains metal, but be careful—never use anything while it is still connected to the power line, and don't connect directly to your phone line.

The possibilities for UFO antennas are many; try clipping the alligator-snake to an aluminum door or window frame, a metal balcony rail, porch rails, a metal desk, even fences running near your house (but never an electric fence!). I had an excellent UFO antenna once just by clipping onto a metal cable used as a dog run cable—the kind where a cable is stretched between poles or buildings and the dog's leash is hooked to a ring that slides along the cable.

People have also reported using such unlikely UFO antennas as a metal rabbit hutch, an aluminum lawn chair, a shopping cart, or extended aluminum extension-ladders. Just recently there was a report of success in using two automobiles, parked end to end on the street, as the two halves of a dipole antenna. Another report tells of using a fire truck with an elevated metal ladder to good advantage. One of the most unusual UFO antennas I've heard of is the use of a column of water squirting from a nozzle of a firefighting boat in a harbor as an antenna!

Many UFO antenna users report not only good reception, but good transmission from their UFO antennas. The most outrageous UFO antenna report I've received was the use of an unfolded wire paper clip as an antenna; the writer claimed it worked for two-way communications on the 10-meter amateur band!

If you have a tall tree near your house it may make a fine UFO antenna. A balun method of connecting a feedline to a tree as a UFO antenna is given in *The Antenna Handbook.**

One reader wrote me that he got good reception by clipping the alligator-snake to the metal finger-stop on his phone dial. Making electrical connections to your phone line can be dangerous and is probably illegal; however, one reader wrote that good reception was had by just wrapping the alligator-snake around the body of the phone with no actual direct connection.

Another indirect-connection UFO antenna can be made by wrapping tinfoil for a length of perhaps 12 inches around your telephone line and clipping the alligator-snake to the

www.americanradiohistory.com

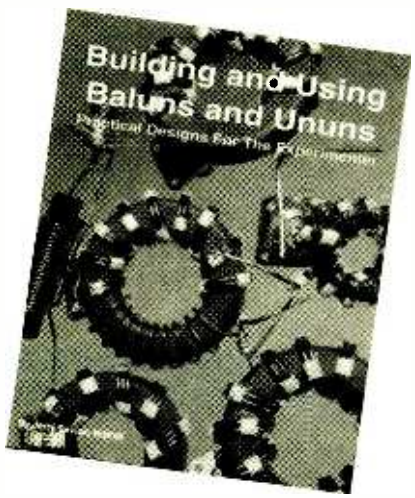
foil. Another version of this tinfoil coupler is to wrap the foil around the AC power cord of your receiver instead of a phone line; make sure that the foil doesn't get near the metal prongs of the AC plug. Also be sure that the cord has no breaks in its insulation where the foil could contact the conductors in the cord.

In Summary

Keep in mind that UFO antennas—although they are not the best performers you can find—often provide a great deal of listening pleasure where space for larger antennas is not available. Happy monitoring!

Baluns and Ununs?

Do you have questions about just what a "balun" or an "unun" is, how to make them, or where we might profit from using them in our antenna systems? Jerry Sevick, W2FMI, has written *the book* on baluns and ununs, with a great deal of practical information on when you need these devices and how to make and use them. In addition to the common 1:1 and 4:1 balun designs you will find 1.5:1, 2:1, 6:1, 9:1 and 12:1 designs.



Appendices in his book also give information on the use of radials and loading coils with antennas. This is a book that communication engineers, technicians and serious radio hobbyists have long needed; if you are "into" antennas you will definitely want *Building and Using Baluns and Ununs.* It is available from: CQ Communications, 76 North Broadway, Hicksville, NY 11801 or 800-853-9797 for $19.95 plus $4.00 S/H.

RADIO RIDDLES

Last month:

Last month I told you that in *Lew McCoy on Antennas* Lew says. "... anything that will conduct RF can be used as an antenna, even a multiband antenna." And I asked "Does that include paper clips, lawn chairs and refrigerators? Or has he lost it and started making wild claims?" Well, Lew is far from "losing it;" in fact, as usual, he's right-on, and this month's column gives ample support for his claim.

This month:

We've been talking about some pretty short antennas this month, but when an antenna technician or engineer talks about an "electrically short antenna" they could be talking about an antenna as short as an inch, or much less, or as long as a mile, or much more! How can this be?

We'll have the answer to this month's riddle and much more in next month's issue of *Monitoring Times*. 'Til then, Peace, DX, and 73.

---

* *The Antenna Handbook: A Guide to Understanding and Designing Antenna Systems*, by Clem Small, available for $12.95 plus $2.50 book-rate postage (or $5.50 UPS) from Grove Enterprises, P.O. Box 98, Brasstown, NC, 28902; phone 704-837-9200.

MAGNETIC LONGWIRE BALUN™

- New! For SWL's using longwire antennas.
- Use coaxial cable from antenna to receiver.
- Low noise reception from 500 KHz to 30 MHz.

Your longwire may be up in the clear but the wire to the radio comes down near the computers, light dimmers, TV sets, fluorescent lights and other sources of noise. This noise is added to the signals you are trying to hear

Add Palomar's MLB-1 balun to your antenna and use coaxial cable to your radio. Coax doesn't pick up noise. Reception is clearer and quieter. The antenna impedance match is improved so your radio gets a stronger signal. Static charges go to ground, not through the radio.

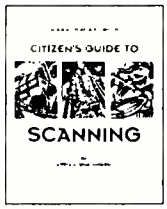
Model MLB-1 $39.95 + $6 shipping/handling in U.S. & Canada. California residents add sales tax

MasterCard VISA

Send for FREE catalog that shows our complete line of antennas, preamplifiers, filters and more.

PALOMAR ENGINEERS
BOX 462222, ESCONDIDO, CA 92046
Phone (619) 747-3343
FAX (619) 747-3346

HEAR ALL THE SCANNER ACTION!



THE CITIZEN'S GUIDE TO SCANNING - A complete tour of what's out there, how to pick it up & understand what you hear **$19.95**

COP TALK! - How to monitor law enforcement comms; police procedure, radio systems, terminology **$17.95**

AIR-WAVES - Hear everything from control towers to airphones, plus terms, tailcode prefixes, airport identifiers, much more! **$17.95**

FIRE CALL! - Fire-fighting action on your scanner! Terms, techniques, organization, much more **$17.95**

SCANNER LISTENER'S HANDBOOK - How to hear more on your scanner radio-complete spectrum explanation! **$14.95**

CRISIS COMMUNICATIONS - Be prepared to follow the next emergency situation on your radio! **$12.95**

SCANNER FORMS - Ten copyable forms for more efficient monitoring: Memory channels, PL data, 8 others **$10.00**

COMPUTERIZED RADIO MONITORING - High tech, high efficiency monitoring from your computer, even when you're not home! **$22.95**

Name

Address

City State Zip

See your radio book dealer or order direct
$ U.S. only • Add $2 s/h ($3 foreign)
$1 each add'l book
Full catalog $1 (free with order)

VISA/MasterCard Orders
Call 1-800-420-0579 (8 am-6 pm CST)

TIARE PUBLICATIONS
P.O. Box 493
Lake Geneva, WI 53147

www.americanradiohistory.com

ASK BOB

ANSWERS TO YOUR RADIO QUESTIONS

Bob Grove, WA4PYQ

Q. *What are CTCSS tones? Are they present all during a transmission or just at the beginning? Is it possible to detect their presence without special equipment? (Lynn Gilliland, Dahlgren, VA)*

A. CTCSS (continuous tone controlled squelch system), sometimes called subaudible tone or "PL" (after the commercially trademarked Private Line system), allows several departments to use the same frequency without having to listen to each other. With the system, a subaudible (typically 60-250 Hz) tone is sent continuously underneath the voice; only radios with squelch set to detect that tone will allow the voice to be heard.

Most two-way radios (and scanners) have small speakers, so those bass notes are not easily heard. You could attach a stereo amplifier to the external audio jack of the scanner, crank up the bass, and hear the tone to determine its presence. An oscilloscope could also be attached to reveal the tone as a continuous sine wave between spoken audio.

Q. *I recently spotted an ad for "Tele-Go" cordless telephone service. You can use it around the house or carry it with you around town. What is it and what frequencies does it use? (Phil Raczka, Twinsburg, OH)*

A. It is simply a portable cellular telephone in the 825-849 MHz (transmit) and 869-894 MHz (receive) range.

Q. *I miss the old shortwave receivers with their analog dials and flywheel tuning. Are there any available today? How did they compare with today's digital radios? Were any of the old Hammarlunds, Collins, and Hallicrafters portable? Are they still available at reasonable prices, or only as antique collectibles? (Ronald Schwartz, Madison, WI)*

A. Those old radios had a great "feel" to them, but such mechanical architecture is now very expensive to manufacture. Modern digital technology is infinitely superior in performance. Hallicrafters made some portables about half a century ago, but most of these brands are now collectibles rather than competitive "usables." But they did sound good, were simpler to operate, and were impressive to see and touch.

The old radios are readily available at hamfests, often at low prices, unless they have been restored by a collector. The Zenith Trans-Oceanic is now enjoying revived popularity as a collectible and often commands unrealistically high prices.

Q. *When I key up my CB transceiver, my adjacent scanner picks up medium- and shortwave stations when I search 25-200 MHz. How come? (Heather Peel, Oakville, ONT)*

A. Your transmitter has driven the RF preamplifier of your scanner into "non-linearity," a distortion which makes it act like a mixer. Now the combination of the 27 MHz CB plus the incoming 1-30 MHz medium- and shortwave signals up-convert into the scanner's tuning range.

The fact that you are also hearing the same signals even higher in frequency is a result of additional mixing products which, like harmonics, repeat the process over and over at gradually reduced levels.

Q. *After reading a recent MT article concerning modifying a scanner, I noticed that there was no warning about being grounded before touching any IC chips. Am I wrong, or is that a good policy? (Ryan McCarthy, North Babylon, LI, NY)*

A. You're right; it's a very good policy. Vacuum tubes are relatively immune to short bursts of high voltage; semiconductors (diodes, transistors, ICs) are far more delicate

Bob's Tips of the Month

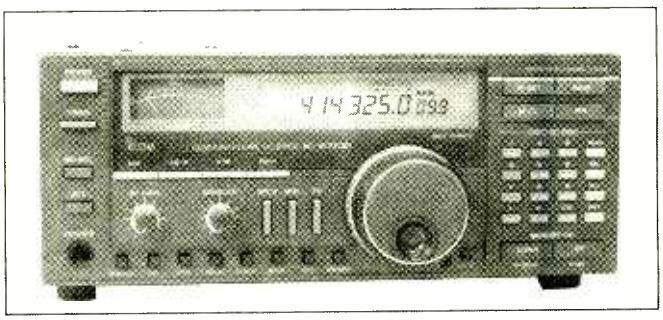
Increasing the IF Output Level on the ICOM R7000/7100

Some customers have complained that the weakest signals receivable on the ICOM R7000 and R7100 receivers do not register as a spike on the Grove SDU-100 spectrum display unit. IF output level may be increased by disconnecting L59, the RF choke which isolates the +9 VDC on the IF output line.

On the R7000, remove the top cover and locate L59 at the right rear of the RF unit next to IC4 between the L/O trap and filter F2. Cut the accessible lead to disable it.

On the R7100, remove the bottom cover and locate L59 about two inches behind the tuning knob, adjacent IC4 and a coax plug. Cut its lead.

If it is desirable to have the +9 VDC restored later to use it with the ICOM video adaptor, the cut lead may be resoldered.



Cutting one lead will increase the IF output level of the R7000/R7100.

www.americanradiohistory.com

Questions or tips sent to "Ask Bob," c/o *MT*, are printed in this column as space permits. If you desire a prompt, personal reply, mail your questions along with a self-addressed stamped envelope (no telephone calls, please) in care of *MT*.

due to the small geometry and low melting point of their internal workings. Most vulnerable of all are CMOS devices, the ICs that caused the industry to require grounding wrist bands on all assembly workers to prevent static discharges.

***Q.** I would like to receive data communications like RTTY (radioteletype) on my shortwave receiver, but my dial only displays whole kilohertz frequencies like 4211 kHz, not fractional frequencies like 4211.5 kHz. Am I out of luck? (Nathan Suiter, Waterloo, IA)*

A. Depending upon the model, you may be able to receive the fractional frequencies even if they aren't being displayed. First, it must have an SSB (USB/LSB) mode. Next, it must have a means of fine tuning between the whole-kilohertz frequencies. This may be the main tuning dial or a separate dial which, when turned, will cause the pitch of the received signal to change although the dial frequency won't change.

***Q.** I have heard a strange sound like water dripping on shortwave frequencies. It seems to be over a wide range of frequencies and lasts for several seconds, often over a period of several minutes. What is it? (James Griswold, Dallas, TX)*

A. At the present time, this enigma seems to be ascribable to one of two, or perhaps both, possible sources (1) Secure voice frequency hopping; or (2) over-the-horizon (OTH) radar tracking of suspected drug vessels on the East Coast. In any case it is most certainly military, and some listeners insist it is coming from Halifax, home of the Canadian Forces.

***Q.** How can I monitor the Motorola mobile data terminals used in police cars? (Charles Tanner, Phoenix, AZ)*

A. You can't. At least no one has ever reported to us successfully doing so. Motorola uses a non-standard protocol, a form of packet data bursts, but without compatibility within the industry, so no one is making a generic decoder, or even including the Motorola protocol in a multimode decoder.

***Q.** Why are there no single-sideband (SSB) CB hand-held radios? (Robert Gallardo, San Jose, CA)*

A. While there is no technical reason they can't be produced, most CB SSB is confined to hard-core DXers, often running illegal power levels and large antenna arrays. A low-powered walkie-talkie would not be very competitive in this arena, and it would cost considerably more than a conventional AM transceiver.

"SOUP UP" YOUR RADIO!

Now there's no need to buy a more expensive radio to get better performance, because we can install new features and add incredible performance to the radio(s) that you already own! Just think of the DX stations you will be able to hear with a truly narrow (2.7 kHz wide) filter for dramatic seperation of closely-spaced SW stations, sharper narrow FM filters, an internal high-gain antenna booster, better MW sensitivity, smoother tuning, alignment and more! You decide what new features/improvements you want, with prices starting at $29.95! These "soup-up" specials are available for all popular SW portables. For more information send a 29 cent stamp and tell us what radios you own, or call **(407) 466-4640.**

Worldcom
P.O. Box 3364, FT Pierce FL 34938

NOTE ON ADVERTISEMENT BELOW:
As of 4/26/94 it became unlawful to market cellular-capable receivers in the U.S. Atlantic Ham Radio assures us it will give a full refund and hold customers harmless from shipping expenses if a purchased unit is returned to the vendor by U.S. Customs.

800MHz Coverage

We have scanners with 800MHz Coverage!

Models available include:

ICOM R9000,R7100, R1, R100, IC-2SRA; Kenwood RZ-1; Yupiteru MVT7100, 7000, 8000; AOR AOR-8000

ATLANTIC HAM RADIO LTD.
(416)636-3636 368 Wilson Ave
(416)631-0747 Downsview, ON
All US orders shipped UPS Air Canada M3H1S9

Do You Have Questions?

Bob Has Answers!

Get the answers from the expert on scanner and shortwave monitoring. Bob Grove's ***Scanner and Shortwave Answer Book*** *is a great addition to your reference library.*

Order BOK5
$12.95
Plus $2 Bookrate or $4.50 UPS

Grove Enterprises
300 S. Hwy. 64 W.
Brosstown, N.C. 28902
1-800-438-8155

Frequency Manager for Shortwave Listeners
The Most Up-to-date Database System

More than 23000 up-to-date freqs. and 10000 callsigns for aero, coast, fixed, embassy, fax, volmet, military aso including the world below 500 kHz
Results of more than 15 years prof. radio monitoring
More than 150 pages descriptions, tables, all HF-systems as a technical handbook integrated in a special help system

special tables for the following topics :
- NATO routing indicators
- routing indicators for AFTN
- all kind of callsigns
- ICAO and weather reporting system
- arabic translations
- HF-systems
- table of system parameters with users
- recognizing PSK
- formats of used telegramms

Mouse controlled software in SAA standard excellent help system
Calculation of antenna direction and distance to most stations, extensive, fast search function

now available :

Broadcast database with more than 13000 sets frequencies, callsign, user, transmission time and language

PC-Frequenz	60 $
Broadcast modul (additional)	20 $
Quarterly update	20 $

(please add 7 $ for airmail)

Ingenieurbüro für Satellitentechnik

Mühlenweg 11 , 24217 Stakendorf
Germany
Tel : 01149 4344 6758
Fax : 01149 4344 5154

www.americanradiohistory.com

(Radio Reflections: cont'd from p. 79)

wiring, above and below the chassis, to make sure that all your connections are good, and no wires or components are touching other objects that will create trouble. Then, carefully replace the five tubes into their correct sockets. Plug in the radio, and turn it on. For added safety, a variable AC transformer will allow you to bring up the power slowly. They are available commercially, or at radio club flea markets. Hopefully, no smoke will appear! You may hear some stations immediately, or just a low hum.

If the tubes do not light up at all, use an ohmmeter and check to see if all your tube's filaments are good. On 8-pin, octal tubes in All-American Fives, the filament appears on pins 2 and 7, except 12SQ7s which are pins 7 and 8. On newer 7-pin miniature types, the filament appears on pins 3 and 4. When in doubt, check a receiving tube manual to verify which pins are used for the filament.

Touch one test probe to each pin. If it reads open, it has a bad filament and needs to be replaced. A good filament should read like a low value resistor. For example, a working 50C5 filament measures around 40 ohms. If they all look good, trace the wiring from the AC cord from filament to filament along the circuit. You'll probably find a break or short.

Hint: if no life is seen from your set, see if the I.F. oscillator is working. Turn on a working radio near the one you are repairing. With both radios on, tune the working set to a frequency above 1000 kHz. Then, tune the problem set 455 kHz lower. Example: good set on 1450 kHz, bad set at 995 kHz. If the oscillator in the bad set is working, it will act like a miniature transmitter and send a signal to the good set.

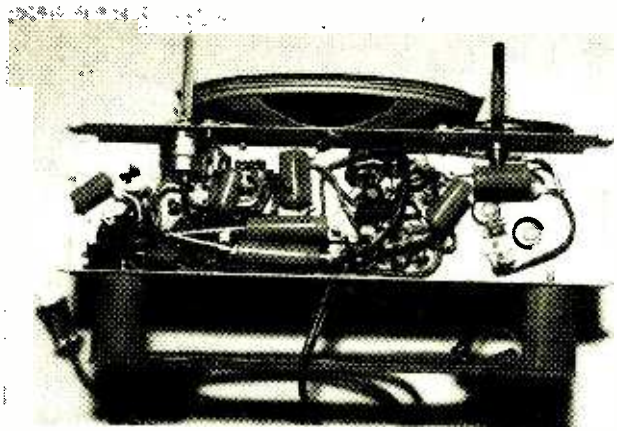
If you don't hear the carrier from the bad set, check your 12SA7/12BE6 or 12SK7/12BA6. If the oscillator is active, but there is no sound from the speaker, try the 50L6/50C5, the final audio output tube. Swap tubes from a good set into the dead one. You should find the source of your grief. Problem solved? It's time for an alignment.

TABLE 2: Resistor Color Code

0	Black	5	Green
1	Brown	6	Blue
2	Red	7	Violet
3	Orange	8	Gray
4	Yellow	9	White

First and second bands are numbers, third band is multiplier.

Examples:
150 ohms: Brown, Green, Brown
1000 ohms: Brown, Black, Red
47,000 ohms (47K ohms): Yellow, Violet, Orange
33,000,000 ohms (33 Meg ohms): Orange, Orange, Blue



After: New "Orange Drops" and single section filter caps along with new A/C line cord assure many years of enjoyment.

If you have an RF generator, close the tuning capacitor and tune the RF generator to the I.F. frequency, 455 kHz, with tone modulation on. You'll see two intermediate frequency (455 kHz) transformer cans, each with a dark grey ferrite core inside showing a slot for a screwdriver. With the RF generator loosely coupled to the radio's wire loop antenna, very gently tune the transformer between the 12SK7/12BA6 and the 12SQ7/12AV6 first by moving the ferrite slug slightly one way or the other with a small, straight head, preferably non-metallic, screwdriver. Try to get the loudest tone possible out of the speaker. Repeat the same procedure with the other transformer. Jog back and forth between the two until you can get the signal no louder. Now you are in tune.

No RF generator? Pick a weak station and adjust to it instead. Then, adjust to another weak station in a different spot on the band to see if you can improve your results.

As a final step, you will probably notice two screws on the side of the tuning capacitor. One will be for fine tuning the built-in loop antenna to the radio's electronics, and the other will be to calibrate where the stations appear across the dial. Adjust the antenna trimmer to a weak station around 1400 kHz for maximum sensitivity. The other trimmer should only be touched if stations appear in the wrong places across the dial. Most radios will tune from 530 kHz up to 1600 kHz or farther.

■ Where to Go for Help

Tube testers are hard to find, so if you get one radio working, you can use it as a basic tube tester for the tube types it uses. If you need tubes and parts, Antique Electronic Supply is the definitive source: 602-820-5411. Also try Fair Radio Sales: 419-227-6573. Capacitors and resistors can be found at Newark Electronics: 312-784-5100. All three offer interesting and useful catalogs. Don't forget the pages of *Monitoring Times* are filled with parts suppliers, so shop around.

Hunting for schematic diagrams? The Sams Photofacts series covers nearly every consumer radio. Antique Electronic Supply has a comprehensive stock of these guides, or you can find them at radio club swap meets or through friends.

Wood cabinets often come to life by cleaning with Murphy's Oil Soap. On plastic finishes, try Meguiar's Mirror Glaze #10 Plastic Polish and #17 Plastic Cleaner available in auto parts stores, or order some Novus 2 polish by calling 800-548-6872. A sacred rule: Never use a cleaner with any type of abrasive on a radio cabinet!

An excellent text filled with information on household radios is Abraham Marcus' *Radio Servicing - Theory and Practice* published by Prentice-Hall. Now out of print, you may be able to find a copy in a local library. Also, the RCA *Receiving Tube Manual* is invaluable. To discover what your radio might be worth, and other interesting information about its origins, consult Marty and Sue Bunis' *Collectors Guide to Antique Radio*. (See this month's "What's New?" column for info.) You'll also enjoy reading the *Antique Radio Classified*, (P.O. Box 2, Carlisle, MA 01741, 508-371-0512), a monthly magazine filled with articles about radio restoration and history, and hundreds of sell and swap ads from collectors all over the world. They offer a 6-month trial subscription for $16.95. The Antique Wireless Association (Box E, Breesport, NY 14816) publishes *The Old Timer's Bulletin* quarterly, filled with fascinating stories, technical information, and ancient radio lore, all for $12 per year. Questions and comments? Please write me via *MT*. Send me an SASE, and I'll mail you a typical schematic of an All-American Five. This brief article is only an introduction to a complex hobby.

Every radio you work on will be a slightly different creature. You might discover a radio that has a mixture of the two varieties of tubes, some octal types, some 7-pin miniatures. Some radios might use variable coils to tune in stations instead of a variable capacitor. Learning takes time, so don't be discouraged if you aren't an instant expert. The more radios you work on, the more experienced and knowledgeable you'll become. Bring them back alive! Revive a five.

www.americanradiohistory.com

Bob's Bargain Bin

Most equipment in **Bob's Bargain Bin** has only slight cosmetic damage. **All equipment comes with a limited warranty and some have the original manufacturer's warranty. UPS ground shipping is free with the purchase of any item.** Quantities limited.

URCV02	SONY ICF-2010	334.95
URCV10	SONY ICF-SW-77	449.95
RCV15D	SONY SW-55	329.95
URCV19	DRAKE SW-8	565.95
URCV25	LOWE HF-150	579.95
USFT02	SCAN-CAT GOLD	89.95
SCN08	BEARCAT 855-XLT	169.95
SCN09	BEARCAT 200-XLT (CELLULAR RESTORABLE)	234.95
SCN17D	PRO-43 (NON-RESTORABLE)	293.95
USCN11	PRO-39 (CELLULAR RESTORABLE)	249.95
USCN14	ICOM R-100	639.95
USCN15-C	ICOM R-7100 (BLOCKED)	1279.95
USCN16	PRO-2026	189.95
USCN23	SPORTCAT 150-XLT	179.95
USCN24	BEARCAT 220-XLT	209.95
USCN28	PRO-2035	359.95
USCN29	BEARCAT 3000-XLT	379.95
USCN30	BEARCAT 9000-XLT	419.95
SCN31	PRO-62	229.95
UVID100	9" CTR MONITOR	89.95
UVID200	9" CTR MONITOR	109.95
TIN01	BEARCAT 100-XLT	149.95
TIN04	PRO-2035 (LIKE NEW)	395.95
TIN05	PRO-2035	385.95
TIN08	ICOM R-100	599.95
TIN14	PRO-2035	359.95
TIN16	SONY SW-55	289.95
TIN17	PRO-62	199.95
TIN18	BEARCAT 700A SCANNER	149.95
TIN20	PRO-2022 (CELLULAR RESTORABLE)	249.95
TIN23	ICOM R-100	599.95
TIN24	GRE SUPER CONVERTER 9001	79.95
TIN26	KENWOOD R-5000 W/INTERFACE/SSB FTR/ CW FTR/AMPLIFER	899.95
TIN27	REGENCY R-4030 (800 MHZ)	189.95
TIN28	SONY SW-7600 W/AC POWER SUPPLY	125.95

ACC118D	STORAGE POUCH FOR INNOVA PWR PACK	9.95
ACC146D	POCKET BANKPACK 100B	10.95
ACC145D	POCKET BANKPACK 100A	7.95
UACC164	SCAN-STAR COMMERCIAL	109.95
UACC39	MFJ-1282B COMMODOR ADAPTER	19.95
UACC40A	MFJ-1289 HI-RES. ENHANCER 5 1/4"	31.95
UACC41	MFJ-5084 ICOM 8 PIN	6.95
UACC42	MFJ-5080 YAESU 8 PIN	6.95
UACC44	MFJ-5026 KENWOOD HT	6.95
UACC45	MFJ-5024 CABLE	6.95
UACC46	MFJ-5086 CABLE	6.95
UACC61	MFJ-1290 AMIGA ADAPTER	29.95
UACC95	AC ADAPTER, 1.2 VOLT	5.95
UANT02	SKYWIRE ANTENNA	29.95
UANT07	SCANTENNA	20.95
UANT09	WIDEBAND DISCONE ANTENNA	80.95
UBOK10B	RADIO TECH MOD VOL 6B	15.95
UBOK22	1994 POLICE CALL BOOK, VOL. 2	5.95
UBOK23	1994 POLICE CALL BOOK, VOL. 3	5.95
UBOK25	1994 POLICE CALL BOOK, VOL. 5	5.95
UBOK27	1994 POLICE CALL BOOK, VOL. 7	5.95
UBOK29	1994 POLICE CALL BOOK, VOL. 9	5.95
UBOK42	HIDDEN SIGNALS ON SATELLITE TV	14.95
UBOK50	3D. ED. WORLD HAM NET DIRECTORY	9.95
UBOK52	U.S. MARITIME FREQUENCY DIRECTORY	17.95
BOK59D	PROPAGATION PROGRAMS GUIDE	5.95
BOK33D	DIR. N. AMERICA MILITARY AVIATION, CENTRAL	24.95
BOK34D	DIR. N. AMERICA MILITARY AVIATION, WESTERN	24.95
UCHT01	COLOR WALL FREQUENCY CHART	6.95
CTR06LD	OPTO 3000A FREQUENCY COUNTER	299.95
UCPL63B	COUPLER, AM/FM TO SCANNER BNC	9.95
UCTR07	OPTO 3300 MINI-COUNTER	95.95
UCTR08	OPTO FREQUENCY SCOUT, VERSION 2	349.95
UDEM01	SOMERSET ELEC. DEMOD. M100	150.95
UDEM01B	SOMERSET ELEC. DEMOD. M100B (W/BAT.)	170.95
UDEM02	SOMERSET ELEC. DEMOD. M200	220.95
UGP22	ICOM GPS	489.95
UPHN03	UNIDEN EXP-9100 CORDLESS PHONE	259.95
UPR-150	LOWE PR-150 PRESELECTOR	309.95
UPWR02	INNOVA POWER PACK	40.95

Grove Enterprises

300 S. Hwy. 64 W., Brasstown, NC 28902;
(800) 438-8155 US & Canada Only;
(704) 837-9200; FAX (704) 837-2216

www.americanradiohistory.com

Memphis Area Shortwave Hobbyists (MASH): P.O. Box 3888, Memphis, TN 38173, Jim Pogue (901)873-4291 or Brandon Jordan 373-8046. Memphis area; SW, MW, FM, TV, utilities, pirates, etc.
Metro Radio System: Julian Olansky, P.O. Box 26, Newton Highlands, MA 02161, (617) 969-3000. New England states; Public Safety. *M.R.S. Newsletter.*
Michigan Area Radio Enthusiasts: Bob Walker, P.O. Box 81621, Rochester, MI 48308. E-mail via Internet MARE/Ken Zichi ab415@leo.nmc.edu. Great Lakes Region. All bands. *Great Lakes Monitor.* $9.50 annual US & Canada. $1 sample.
Minnesota DX Club: Greg Renner, P.O. Box 10703, White Bear Lake, MN 55110, 612-822-1186 for meeting info. Minnesota. All bands. *MDXC Newsletter.* $10 annual.
Monitoring the Long Island Sounds: Ed, 2134 Decker Ave, North Merrick, NY 11566. Primarily scanner, some SWL. 50 mi. radius of LI. Net Tues 8pm 146.805. *Monitoring the Long Island Sounds.*
MONIX (Cincinnati/Dayton Area Monitoring Exchange): Mark Meece, 7917 Third St., West Chester, OH 45069-2212, (513)777-2909. SW Ohio, SE Ind., N Ken; All bands. Meets 2nd Sats 7pm. Net Thurs 9:30 145.210/4.610. No dues.
Mountain NewsNet: James Richardson, P.O. Box 621124, Littleton, CO 80162-1124, (303) 933-2195. Colorado statewide. Public Safety notification group. *Mile High Pages.*
National Radio Club: Paul Swearingen, Publisher, P.O. Box 5711, Topeka, KS 66605-0711, (913)266-5707. Worldwide; AM/FM. *DX News* 30 times yearly, sample for a 29 cent stamp. Annual Labor Day convention.
National Radio Club - DX Audio Service: Ken Chatterton, P.O. Box 164, Mannsville, NY 13661-0164, (315) 387-3583. Worldwide. North American Broadcasters. *DX-Audio Service* (90-min.tape). Sample $3.
North American SW Assoc.: Bob Brown, 45 Wildflower Lane, Levittown, PA 19057, (215) 945-0543. Worldwide; Shortwave broadcast only. *The NASWA Journal.* Regional meetings.
North Central Texas SWL Club: Alton Coffey, 1830 Wildwood Drive, Grand Prairie, TX 75050. North Central TX area; All bands.
Northeast Ohio SWL/DXers: Donald J. Weber, P.O. Box 652, Westlake, OH 44145-0652. NE Ohio; SWBC and utilities. Check for new meeting sked.
Northeast Scanner Club: Les Mattson, P.O. Box 458, Rio Grande, NJ 08242, (609) 423-1603 evenings. Maine thru Virginia; UHF/VHF, public safety, aircraft, military. *Northeast Scanning News (NESN).* $29 annual.
Ontario DX Association: Harold Sellers, General Mgr., P.O. Box 161, Station A, Willowdale, Ontario M2N 5S8, Canada, (416) 853-3169 voice & fax, (416) 444-3526 DX-Change information svce; (905) 841-6490 BBS. Predominantly Province of Ontario; All bands. *DX Ontario.* Meet 3rd Wednesdays, Toronto; bi-monthly, Ottawa.
Pacific NW/BC DX Club: Phil Bytheway, 9705 Mary NW, Seattle, WA 98117, (206) 356-3927. Pacific NW and BC Canada. DXing all bands. *PNBCDXC Newsletter.* Irregular meetings.
Pitt Co SW/Scanner Listeners Club: L. Neal Sumrell, P.O. Box 1818, Winterville, NC 28590-1818. Eastern NC; All bands. *The DX Listener.* Irregular meetings.
Puna DX Club: Jerry Witham, P.O. Box 596, Keaau, HI 96749, (808) 982-9444; Puna, HI; SW and MW. Meet 1st Tuesdays. No dues.
Radio Monitors of Maryland: Ron Bruckman, P.O. Box 394, Hampstead, MD 21074. Maryland, (410) 239-7366; VHF/UHF/HF utilities. *Radio Monitors Newsletter of MD.* Meet irregularly.
RCMA (Radio Communications Monitoring Assn.): Carol Ruth, Gen'l Mgr., P.O. Box 542, Silverado, CA 92676. North America, Europe, Australia; All modes above 30 MHz. *Scanning Journal.*
Regional Communications Network (RCN): Jay Delgado or Public Information Unit, Box 83-M, Carlstadt, NJ 07072-0083. 50 mile radius of NY City; 2-way Radio Public safety notification group.#10 SASE for info.
Rocky Mountain Radio Listeners: Mike Curta, P.O. Box 470776, Aurora, CO 80047-0776. Metro Denver, Colorado. All bands. Meets monthly 2nd or 3rd Sundays 1-4pm, Aurora Central Library.
Sandy River SW Radio DXers Assoc: Duncan or Brenda Steele, R.R. 1, P.O. Box 1560, Norridgewock, ME 04957. Worldwide. *The QSL* - irregular. No dues.
Scanning Wisconsin: Ken Bitter, Dept. MT, S. 67 W. 17912 Pearl Dr., Muskego, WI 53150-9608, (414) 679-9442. Wisconsin. VHF/UHF. *Scanning Wisconsin* ($2 for sample)
Signal Surfer DX Club: Darcy Jabs, RR2, Burns Lake, BC, Canada, V0J 1E0; (604) 694-3760. Canada and worldwide. MW and SW DXing.
Southern California Area DXers (S.C.A.D.S.): Don R. Schmidt, 3809 Rose Ave., Long Beach, CA 90807-4334, (310) 424-4634. California area; AM, FM, TV, scanner and shortwave broadcasting.
Susquehanna Co Scanner Club: Alan D. Grick, P.O. Box 23, Prospect St., Montrose, PA 18801-0023. PA area; Scanning. Meets irregularly.
Toledo Area Radio Enthusiasts: Ernie Dellinger, N8PFA, 6629 Sue Lane, Maumee, OH 43537. NW Ohio and SE Michigan; Shortwave, scanning. amateur. Meets 3rd Thursdays 7pm Holland Big Boy.
Triangle Area Scanner/SW Listening Group: Curt Phillips, KD4YU, P.O. Box 28587, Raleigh, NC 27611. Central NC.
Vancouver Shortwave Association (previously British Columbia Shortwave Listening Club): Box 500, 2245 Eton St., Vancouver, BC Canada V5L 1C9, (604) 255-8987 fax. Shortwave. *LOGJAM.* Meets 3rd Thurs. 7pm at 920 Davie St.
World DX Club: Arthur Ward, 17 Motspur Drive, Northampton, England NN2 6LY (in USA-Richard D'Angelo, 2216 Burkey Drive, Wyomissing, PA 19610). Worldwide.
All bands with emphasis on SW. *Contact.* $20 overseas airmail. Meets every 6 weeks in Reading, UK.
Worldwide TV/FM DXers Association (WTFDA): P.O. Box 514, Buffalo, NY 14205-0514. Worldwide membership; TV DX, FM BC, VHF utilities. *VHF-UHF Digest.* Annual convention. $24 annual in U.S. $2 for sample.
Worldwide Ute News: Rick Baker, ae411@yfn.ysu.edu for info - worldwide membership; non-broadcast under 30 MHz. Free electronic newsletter WUNNEWS, join by sending e-mail to majordomo@phoque.info.uqam.ca with following in e-mail message: "subscribe wunnews." Through World Wide Web: http://sun-gabriel.aero.org:8800/. For paper version: $14.50/yr to Tim Braun, 15915 Smithey Dr., Haymarket, VA 22069.

Monitoring Clubs Outside North America

Associazione Italiana Radioascioto (AIR): C.P. 873, 34100 Trieste, Italy. All wave, utilities, pirates, clandestines, tropicals, lowfers. *Radiorama* (Italian-monthly) Sample 2 IRCs - 70,000 lira + 27,000 via Air Mail. April annual mtg. Tel/Fax: +30 40 421441 Alessandro Groppazzi.
Australian Radio DX Club Inc: P.O. Box 227, Box Hill, Victoria 3128, Australia. SW, MW, Utilities. *Australian DX News.* Sample 2 IRCs or $2US cash.
British DX Club: Colin Wright, 126 Bargery Road, Catford, London, SE6 2LR, United Kingdom. UK and international. SW, MW, AM, FM DXing, pirate and clandestine. *Communication.* L10 UK, L12 Eur, L16 ww. Sample 3 IRCs or $2 US cash. Meets monthly in Twickenham (London).
DX Australia: P.O. Box 422, Moonee Ponds, Victoria 3039, Australia. MW, SW. *DXers Calling.*
DX Club of India: Navin Patel, 1-Dutt Niwas, 809 - M.G. Road, Mulund, Bombay-400 080, India. India; MW/SW/Ham. DX World (quarterly) Rs 50/-, 30 IRCs outside India. 3 IRCs sample.
DX Club Paulista: Marcelo Toniolo Dos Anjos, C. Postal 592, Sao Carlos - SP (Brasil), 13560-970. South America. Shortwave, including utilities. *Actividade DX* (in Portuguese).
Finnish DX Association: Mr. Arto Mujunen, Suomen DX-Liitto, P.O. Box 454, FIN-00101 Helsinki, Finland; +358-0-842146 fax. Finland and worldwide. SW and BCB. *Radiomaailma.*
Friendship DXers Club: Ing. Santiago San Gil Gonzalez, C.DX.A - International, P.O. Box 202, Barinas 5201-a, Estado Barinas, Venezuela. Venezuela and Caribbean. DXing all bands. Cadena DX, YV-2-FSW, Sunday 1130-1330 UTC on 7113 kHz. Venezuelan membership free.
International DX Association: Bedanta Das, 1 - No. Galiahati, Near Night School, Barpeta - 781301, Assam, India.
International Listeners Organization: Kalab Abbas, St. No. 1, H, No.231 Waris Rd, Sheikhupura, Pakistan 39350 South Asia. Broadcasting. *Listener Times.*
International Radio Youth Club: G.M. Mostafa Kamal, Amla Wapda Colony-1, Kushtia-7032, Bangladesh
National Society of Pakistani DXers: Mr. Liaqat Ali, E-161/1, Iqbal Park, Opposite Adil Hospital Defence Housing Society Road, Lahore Cantt., Pakistan. Worldwide. All wave. Has library, meets fortnightly 1400-1800 UTC at library. 4 IRCs for more info.
New Zealand Radio DX League: P.O. Box 3011, Auckland, New Zealand. MW, SW, FM, TV. *New Zealand DX Times.*
New Zealand DX Radio Association: Mr. R. Dickson, 88 Cockerell St., Brookville, Dunedin, New Zealand. MW, SW, amateur and utilities. *Tune-In.*
North Ontago Radio Listener's Club: P.O. Box 179, Oamaru, New Zealand.
Pakistan SW Listeners Club: Mrs. Fatima Naseem, Sultanpura, Sheikhupura , 39350 Pakistan; Pakistan; SWBC.
QSL Club de France: Patrick Frigerio, 40 Rue de Haguenau, 67700 Saverne, France. SWBC, pirates, CB-DX, hams, etc. Courrier (in French). 6 bulletins, 72 FF, EEC=16 IRCs, elsewhere 20 IRCs.
Shortwave Radio Communications Club: Atiqur Rehman, Dawood Street, Khalid Road, Sheikhupura, P.C. 39350 Pakistan. South Asia; MW/SW. *The Amateur* (Urdu language). Meets 1st Fri on SW Complex, S.K.P.
South African DX Club (SADXC): P.O. Box 18008, Hillbrow 2038, South Africa; MW, SW, utilities. $46 annual airmail to US; *The South African Shortwave Listener.*
Southern Cross DX Club Inc.: Stephen Newlyn, G.P.O. Box 1487, Adelaide, SA 5001, Australia. Worldwide and Pacific. All bands. *DX Post.* $25 annual in Australia. Meets last Fridays, 8pm, Thebarton.
Swedish DX Federation (SDXF): Box 3108, S-103 62 Stockholm, Sweden. 10 issues *Eter-Aktuellt.* Membership in Sweden 160 SC annual. SweDX BBS +46-(0)8-53034727; Fidonet 2:201/339; Internet sysop@swedx.ct.se
Stichting ScanSearch Military Aircraft Communications (SC-MAC): Gerbrand Diebels, Roer 29, 5751 TJ Deurne, Netherlands. Military aviation NW Eur (VHF/UHF) and worldwide (HF). *Airlift* (Dutch) bi-monthly. FL 35, up to FL 45 outside Netherlands.
Universal DX League: Mr. Kanwarjit Sandhu, 408, Krishna nagar, Ludhiana 141 001. India. India and Int'l; SW/MW/AM/FM/TV DXing/Pirate and Clandestine. *DX Post* bi-monthly, sample 4 IRCs. Annual 24 IRCs or US$10. SWL net: Sun 0300 UTC on 7080 / 1600 on 14150 SSB, VU3SIO net control.
Viamão DX-Club: Alencar Aldo Fossá, P.O. Box 101, Cunhas Road 1286, Jaguaribe Residential Park, 94400-970 Viamão, Rio Grande Do Sul, Brazil, South America. SWBC. Meets occasionally; multi-lingual.
Wonderful World of Shortwave (WWSW): Baber Shehzad, Chairman, 43-Habib Colony, Bahawalpur - 63108 Pakistan. SW broadcasting. International. *Waves* (quarterly). 5 IRCs Asia & ME; 10 IRCs elsewhere. Meets monthly; biennial int'l mtg.

Umbrella Organizations (no individual memberships)
Association of North American Radio Clubs (ANARC): Richard d'Angelo, 2216, Burkey Drive, Wyomissing, PA 19610. 18 member clubs across North America.
European DX Council (EDXC): Michael Murray, P.O. Box 4, St. Ives, Huntingdon, Cambs PE17 4FE, England. 16 member clubs across Europe.
South Pacific Association of Radio Clubs (SPARC): Arthur Cushen, 212 Earn Street, Invercargill, New Zealand.

www.americanradiohistory.com

SPECIAL EVENT CALENDAR

Date	Location	Club/Contact Person
Aug 4-6	Austin, TX	West Gulf Division Convention / Joe Makeever W5EBJ, 8609 Tallwood Dr, Austin, TX 78759, 512-345-0800
Aug 5	Valparaiso, IN	Porter County ARC / Richard Ard N9QLQ, PO Box 1782, Valparaiso, IN 46384-1782, 219-762-8701
Aug 5	Springfield, MO	Southwest Missouri ARC / Ernie DeCamp, PO Box 11363, Springfield, MO 65808, 417-831-8611
Aug 5-6	Jacksonville, FL	Greater Jacksonville & ARRL SE Div Conv / Wayne Oehlman WB3DBE PO Box 23375, Jacksonville, FL 32241 904-292-0095, Location: Osborn Convention Center junction I-95/ I-10, Sat 9am-5pm, Sun 9am-2pm, Adm $8
Aug 5-6	Jackson Hole, WY	Rocky Mt Div Conv (W.I.M.U. '95) / Warren Morton WS7W, 1341 Trojan Dr, Casper, WY 82609, 307-235-2799
Aug 6	Peotone, IL	Hamfesters Radio Club / Robert Truhlar W9LNQ, 1701 W 101 St, Chicago, IL 60643, 312-238-0544
Aug 6	Randolph, OH	Portage ARC / Joanne Solak KJ3O, 9971 Diagonal Rd, Mantua, OH 44255, 216-274-8240
Aug 6	New Kensington, PA	Skyview Radio Society / Bob Reihms N3NOS, 192 N Washington Rd, Apollo, PA 15613, 412-727-2194
Aug 6	Warrington, PA	Mid-Atlantic ARC / Bob Josuweit WA3PZO, 3341 Sheffield Av, Philadelphia, PA 19136, 215-624-4034
Aug 6	Berryville, VA	Shenandoah Valley ARC / John Kanode N4MM, RFD 1 Box 73A, Boyce, VA 22620, 703-837-1340
Aug 11-13	Charlotte, VT	Burlington ARC / Ralph Stetson KD1R, RR 1, Box 185, Westford, VT 05494, 802-878-6454
Aug 12	Ithaca, NY	Tompkins County ARC Finger Lakes Hamfest 95 / Richard Spingarn N2IYS, 6067 Sirrine Rd, Trumansburg, NY 14886, 607-387-5251, Location: Dryden HS intersection RT 13/38. Talk-in 146.97 (-600), Adm $5
Aug 12-13	Bossier City, LA	Shreveport ARA / Alice Prudhomme KG5ZZ, 171 Sloan Rd, Mansfield, LA 71052, 318-872-5988
Aug 12-13	Hagerstown, MD	Antietam Radio Association **MD/DC QSO Party** / Ted Lawhead Jr WA3AAT, 16712 Tammany Manor Rd, Williamsport, MD 21795. Send logs by Sept 10, 1995, to Antietam RC, PO Box 52, Hagerstown, MD 21741-0052
Aug 12-14	Kingston, ON	**Perseid Meteor Shower** / Philip Gebhardt VA3ACK, 40 Cameron St, Ajax, ON, Canada, L1T 2W2, 905-683-0330. Looking for skeds in 10-meter amateur radio band for meteor scatter contacts.
Aug 13	Charlotte, NC	Charlotte ARC / Buck Escott WB4OTP, PO Box 33582, Charlotte, NC 28233-3582, 704-522-4971, Ext 3330. Location: Roll-A-Round Skate Center, 8830 East W. T. Harris Blvd, Charlotte, NC
Aug 13	Frankfort, KY	Bluegrass ARC, ARRL Central Kentucky / Bill DeVore N4DIT, 112 Brigadoon Pkwy, Lexington, KY 40517, 606-257-3343,. Location: Western Hills HS, Exit 53 off I-64, Adm $6
Aug 13	Cedar Rapids, IA	Cedar Valley ARC / Wayne Kolosik N0UGK, 65 Samoa Dr, Hiawatha. IA 52233, 319-393-4224
Aug 13	Easton, PA	Delaware-Lehigh ARC / Robin Moseley WA3T, 1371 Highland Ct, Allentown, PA 18103, 610-820-0944
Aug 19	Frankfort, NY	Ft Herkimer ARC / Will operate KB2UYI 1400 Z to 2200 Z to commemorate the **Annual Herkimer County Fair**, For certificate send QSL/SWL and 9 X 12 SASE to KB2UYI c/o John Reed, 617 Jeffrey St, Herkimer, NY 13350.
Aug 19	Longview, WA	Lower Columbia ARA / Bob Morehouse KB7ADO, PO Box 906, Longview, WA 98632, 360-425-6076 (eves). Location: Cowlitz County Fairgrounds, Talk-in 147.26+, pl 114.8, 9am-3pm, Adm $3
Aug 19-20	Huntsville, AL	Alabama State Convention / Steve Jones WA4CDG, 823 Baylor Dr, Huntsville, AL 35802, 205-883-5479
Aug 19-20	Vancouver, WA	Clark County ARC / Special Event station at NW Antique Aircraft Club Fly-In, Location: Evergreen Flying Field, east of Vancouver. Look for W7AIA, Certificate QSL: SASE to CCARC, PO Box 1424, VAncouver, WA 98668
Aug 20	Lafayette, IN	Tippecanoe ARA / R. Bruce Stewart N9GKE, 5 Adina Pl, Lafayette, IN 47905, 317-742-2367
Aug 20	Cambridge, MA	MIT Radio Soc & MIT Electronics Research Soc / Steve Fineberg W1GSL, PO Box 397082 MIT Branch, Cambridge, MA 02139-7082. Tailgate electronics, amateur radio FLEA MARKET - 9am-2pm. Albany & Main St. Adm$2. Free parking. Talk-in 146.52, 449.725/444.725 - pl 2A - W1XM/R
Aug 20	Warren, OH	Warren ARA / Al Van Slyke N8IKX, 3931 County Line Tnpk Rd, Southington, OH 44470, 216-889-3378
Aug 25-26	New Orleans, LA	New Orleans International DX Convention / Weston Strauch W5VBX, 2238 Lake Oaks Pkwy, New Orleans, LA 70122, 504-283-4143
Aug 26	Bridgewater, NJ	SCARS Hamfest / Eric Lund NW2P, PO Box 742, Manville, NJ 08835, 908-753-8290. Location: Somerset County 4H Center, Milltown Rd, Talk-in 448.175-
Aug 26	Albuquerque, NM	New Mexico State Convention / Joe Knight W5PDY, 10408 Snow Heights Blvd NE, Albuquerque, NM 87112, 505-299-4581
Aug 26	Albuquerque, NM	Duke City Hamfest / Judith Miller WB5LYJ, PO Box 6552, Albuquerque, NM 87197-6552, 505-821-2771. Location: New Mexico ANG Armory, 600 Wyoming Blvd NE, Open 7am
Aug 26	Syracuse, NY	Radio Amateurs of Greater Syracuse / Vivian Douglas WA2PUU, Box 88, Liverpool, NY 13088. 315-469-0590
Aug 27	Danville, IL	Vermilion County ARA / Gary Denison KA9SKS, 14704 E 2750 N Rd, Danville, IL 217-759-7389
Aug 27	Fowlerville, MI	Livingston ARK / Ray Melosh N8CPO, 4349 E Allen Rd, Howell, MI 48843, 517-546-9209. Location Fowlerville Fair Grounds, Talk-in 146.68-, 8am-3pm, Adm $4
Aug 27	Yonkers, NY	Yonkers ARC Hamfest/Computerfest / John Costa WB2AUL, 195 Woodlands Ave, Yonkers, NY 10703, 914-963-1021. Location: Yonkers Municipal Parking Garage, Main St, Talk-in 146.865, 9am-3pm Adm $5
Aug 27	Oak Brook Terr, IL	Chicago ARC / George at 312-545-3622, or write CARC 5631 W. Irvingpark Rd, Chicago, IL 60634. Location: Park View Dr North from Cermack Rd, one block west of RT 83, Talk-in 147.255+ & 444.825+, 8am-3pm, Adm $5
Aug 27	Woodstock, IL	Tri-County Radio Group / Robert N9KXG, 708-638-1678, or write TCRG PO Box 3107, Skokie, IL 60077-6107. Location: Mc Henry County Fairgrounds, Rt 47 and Country Club Rd, Talk-in 146.52 (simplex), Open 6:30am

Monitoring Times is happy to run brief announcements of radio events open to our readers. Sendyour announcements at least 60 days before the event to:

Monitoring Times Special Events Calendar

P.O. Box 98, Brasstown, NC 28902-0098

INDEX OF ADVERTISERS

www.americanradiohistory.com

STOCK EXCHANGE

Monitoring Times assumes no responsibility for misrepresented merchandise.

Ads for **Stock Exchange** must be received 45 days prior to publication date. All ads must be paid in advance to *Monitoring Times*.
Ad copy must be typed for legibility.

NON-COMMERCIAL SUBSCRIBER RATES: $.25 per word — *Subscribers only!*
All merchandise must be personal and radio-related.

COMMERCIAL RATES: $1.00 per word. Commercial line ads printed in bold type.

1-3/4" SQUARE DISPLAY AD: $50 per issue if camera-ready copy or, $85 if copy to be typeset. Photo-reduction $5 additional charge. For more information on commercial ads, contact Beth Leinbach, 704-389-4007.

"TINY-TENNA!" See display ad page 85 this issue

R-390-A SALES—SERVICE. Information SASE Miltronix, P.O. Box 80041, Toledo, OH 43608.

GE SUPERADIO III, custom designed with up to four noise-free SCA channels. Performance guaranteed. Credit Card orders accepted. (800) 944-0630.

Highest price paid for used scanners! (614) 544-5842.

Just published, Bill Cheek's The Ultimate Scanner (Cheek 3) doesn't just build on his two earlier bestsellers. His new, indispensable bench manual goes further and faster, detailing scanner modification technology including memory enhancements, up to 25,600 channels, cellular restoration, simple ways to automate arduous scanning tasks, signal discrimination, computer interfaces, optimum antennas, autologging "hits," power options, SCA decoders, autorejecting, hacking, and tons more. With a wealth of step-by-step procedures, photos, charts, diagrams, and schematics. Cheek shows us how to *dramatically* improve scanner performance. 250 pages, large format, $29.95 (plus $4.00 S&H: CA add 7.75 % tax). Index Publishing Group. Inc., 3368 Governor Drive, Suite 273 M, San Diego, CA 92122, Order line (800) 546-6707.

FM BROADCASTING. Excellent sound. Transmit many miles. 80-108 MHz. Kit or assembled. Not a bug. For full information (604) 642-2859. R. Scott Communications.

SURVEILLANCE/PRIVACY SECURITY PROTECTION. Catalog $5. Spy Emporium, 6065 Hillcroft, Suite 414, Houston, TX 77081. (713) 774-1000.

EXPERT RADIO REPAIR! $30/hour. Worldcom Technology, (407) 466-4640.

Reconditioned VHF and UHF pagers with charger/amplifier. Can be set up for Monitor Only ($89) or Tone Alert ($195). Excellent for use with FIRE, ESDA, and SKYWARN nets. One year warranty. FYRCOM, LTD. (708) 422-0922.

ICOM R1 scanner/receivers—no cell block—one year warranty—$655—The Spy Store, Inc. (509)626-5949.

ANYONE CAN LEARN MORSE CODE with a DOS PC and CODEMASTER-V from Milestone Technologies. 0-20WPM in 90 days, GUARANTEED. $24.95. Logging software, Milestone LOGMASTER-II, $29.95. (800) 238-8204.

Wanted: ICOM R7100-1 full coverage receiver. Call Bob, (607) 785-3420 after 4 pm (est).

WANTED: Realistic PRO-43 scanner. Gerry, (718) 332-0030, evenings.

Sony ICF-SW77: Near mint condition. Box, manual, accessories. $325, Call Ray (717) 763-9047.

SELL: Recent FRG-100B Receiver, 480 W6XM, (619) 459-5527.

FOR SALE: Mint copy of Radio Nuevo Mundo's *LA DXing* 1992 No. 5; Back issues of *Monitoring Times*, complete years 1992, 1993, 1994. Also NASWA Bulletins, complete years 1992, 1993, Jan thru Oct 1994. $100 takes everything, postpaid. Mary Cole Rt. 4, Box 307; Jasper, TX 75951.

"Spring Cleaning" Drake R-8, $725; Drake SW-8, $475. Both mint, virtually unused. Mark, (415)744-3591.

FOR SALE (Mint Condition): Yaesu FT-5100 dual band transceiver; Mirage B-5030G linear amp. (2 meter); Astron RS20M power supply (20 amp); Phillips heavy duty rotator, thrustbearing, and cable; Cushcraft A270-105 dual band beam antenna; Cushcraft ARX-270 omnidircetional, dual band antenna. Contact Dobbie Love, (704) 888-4798.

Radio Shack PRO-2006, Mint—$285. PRO 43, Design EQ, case, box, manual, mint—$250. Jim (606) 441-9684, WB4ZCD.

GE SUPERRADIO III. Mint Condition, $25. (206) 453-5129.

ICOM R71A, $500 and NRD525 with speaker $500, both pink. Add UPS. Jose Fernandez, Box 3047, Bayamon, PR 00960, (809) 798-7281.

Brand-New, cellular-capable logic board for PRO-2035 scanner (not a converter). $120. Larry, (216) 793-8802.

WANTED: Realistic DX-160 5-band receiver or realistic DX-300. Pay cash! Call Anytime. Larry (409) 299-1897.

Uniden 890XLT with CTCSS/DTMF decoder, new in 1-95, $250. CD-1 CTCSS/DTMF decoder, $125. PRO-2006, like new with mods, $350. John, (907) 337-9157 AK time.

FOR SALE: ICOM R-100, $550 obo. Bearcat 800 scanner, $225, new in box. Call Steve, (603) 267-6086.

DRAKE SW8, 8 months old, like new condition with original box and papers, $645. (817) 772-7558.

Realistic PRO-2006, $290, obo; Bearcat BC890XLT, $190; Kenwood R2000 with VC10 (VHF board) installed, $450. All excellent with manuals, no mods, plus shipping. Doug (206) 472-3478.

PRO-2006, new, cellular capable scanner, $400. PRO-43 hand-held, mint, cellular, military air, leather case, scanner caddy, 9V adapter, $225. David, (601)924-3017.

ANTENNA— Professional Scantenna 25-1500MHz, First $50. SCANNER— AOR-2500 wide range, 2000 channels includes computer software, open 800MHz. First $375. Yaesu FRG-100 Shortwave Receiver. First $395. (407) 260-8392.

PRO-2006 with cellular, $275. Kenwood R-5000, $775. Perfect condition, many extras. (415) 826-1567 days.

www.americanradiohistory.com

This space could be yours!

Contact our advertising manager, Beth Leinbach, at 704-389-4007

HAND-HELD SCANNERS!
MetroWest is your source for:
Bearcat Hand-Helds
Double-Life Battery Packs
Drop-In Chargers
Specialty Antennas
Books
and more
Send for our free catalog
MetroWest, Inc.
822 N. Spring
LaGrange Park, IL 60525
(708) 354-2125
(800) 637-1475

THE COMPLETE GUIDE TO
MILITARY MONITORING
NEW BOOK covers all phases of Military Monitoring. Military Frequencies All Services, U.S. Military Bases, Military Black Projects. Major Air Force Installations, Monitoring Equipment and Systems, Navy/Coast Guard and more.
$19.95 plus $4 Priority Mail ($23.95 total).
UNIVERSAL ELECTRONICS, INC.
4555 Groves Road, Suite 12
Columbus, OH 43232 (614) 866-4605

YOU AIN'T HEARD NOTHIN'...YET!
Largest selection of scanner frequency guides (federal, military, police, aero, etc.); AM/FM/TV broadcast directories; HF "ute" directories; Books on espionage, covert ops., bugging, wiretapping, surveillance, clandestine radio, & more!
BIG FREE CATALOG!
CRB RESEARCH
P.O. Box 56-MT
Commack NY 11725

SHORTWAVE SALE
Tremendous savings throughout the year on all Sangean, Panasonic, and Sony digital shortwave receivers.
NEW
UNIDEN BEARCAT UHF/VHF SCANNING RECEIVERS
BEL RADAR/LASER DETECTORS
DISCOUNT PRICING ON ALL ITEMS
For Prices/Catalog Write or Call:
(818)780-2730
CHILTON PACIFIC LTD.
5632 Van Nuys Blvd., #222,
Van Nuys, CA 91401 USA

Preparing for retirement?
Conservative investment outlook?
Save before you spend?
'directions', our monthly financial news letter is an absolute must!
Annual Subscription $45.00
Sample copy $1.00
2541 Sweetbriar Dr.
Campbell, CA 95008
Voice Mail 1(408) 450-3350

SCANNER S/METERS
Analog S-Meter, completely assembled, wired, tested, and backlit. AGC/Detector board, photo-etched, only 1-1/2" x 1/2". All scanners. You make two solder connections. Please specify Model No. $19.95 + $3.00 S/H
Call or write for free catalog.
(800) 660-1118
CTP 517 Lower Terr. Huntington, WV 25705 (304) 525-6372

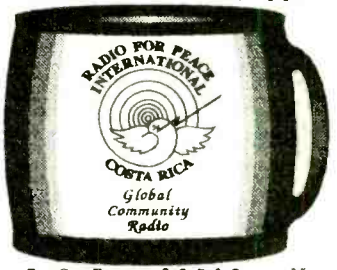
DX Ontario
magazine.
Published monthly. Covering AM, FM, TV, SW, Ham, Scanning, Utilities.
80 pages!
$2.00 for sample
Also available on tape for the blind.
Ontario DX Association
Box 161, Station A
Willowdale, Ontario M2N 5S8
Phone/Fax (905)853-3169
CompuServe 73737,3453

PAN-COM INTERNATIONAL CATALOG
From Amplifiers to Zappers! Over 350 Kits, Plans & Books about Licensed/Unlicensed AM/FM/Cable broadcasting, Ham/CB/SW/lowfer/medfer, surveillance, phone devices, software, MORE. Send $1.00!
PO Box 130-T
Paradise CA 95967

Scanner Cases

Radio Shack PRO-39/43/44	Leather	$29.95
AOR AR1000 (all models)	Leather	$29.95
Trident TR1200/TR2400	Leather	$29.95
AOR AR8000	Leather	$29.95
AOR AR8000	Vinyl	$29.95
Uniden BC-120XLT	Leather	$24.95
Uniden BC-220XLT	Leather	$24.95
Uniden SC-150Y/B	Leather	$24.95
Yupiteru MVT-7100	Leather	$29.95
Yupiteru MVT-7100	Vinyl	$36.95

To order, send check or money order plus S&H:
$2 for leather cases—$1 for vinyl cases
Calif. orders add 8.25% sales tax
Design EQ 415-328-9181
P.O. Box 1245, Menlo Park, CA 94025

RFPI THERMO MUGS
16-oz $10 each, ppd


P.O. Box 20728 - M
PORTLAND, OR 97220

HUGE 100 PAGE CATALOG
- Shortwave Receivers
- Amateur Radio Gear
- Scanners
- RTTY & FAX Equipment
- Books & Accessories

Send $1 to Universal Radio
6830 Americana Pkwy. MT
Reynoldsburg, OH 43068
Tel. 800 431-3939

SCRAMBLER/ DE-SCRAMBLER
Frequency inversion voice scrambler/de-scrambler on photo-etched PC board, 1.9" x 2.6". Only four solder connections. ALL SCANNERS. Wired, tested.
$49.95 + $3.00 S/H
Call or write for free catalog.
(800) 660-1118
CTP 517 Lower Terr. Huntington, WV 25705 (304) 525-6372

SATELLITE RADIO BOOK & GUIDE
NEW BOOK covers all Audio Services, SCPC, Subcarriers, FM², Facsimile, Press Services, Weather Services. Simple how-to-receive instructions. Satellite Radio Guide Included.
$16.95 plus $3 Priority Mail ($19.95 total).
UNIVERSAL ELECTRONICS, INC.
4555 Groves Road, Suite 12
Columbus, OH 43232 (614) 866-4605

RADIO
C. CRANE COMPANY
Radio receivers and antennas of all kinds. Exemplary service.
AM, FM, SW, Scanner, & Auto
Custom cable and receiver modifications
Many exclusive radio products
FREE CATALOG 558 - 10th Street
Fortuna, CA 95540-2350
(707) 725-9000 Fax (707) 725-9060
Orders: 800-522-(TUNE)8863

World Scanner Report
10 issues per year for casual & expert radioists who are committed to rare achievement and excellence in the pursuit of VHF-UHF scanning.

E-Mail: bcheek@cts.com CIS: 74107,1176
Edited and published by Bill Cheek, author of The Ultimate Scanner and the Scanner Modification Handbooks, Vols 1 & 2. SASE for info or $5 for sample issue
$20/½-yr; $35/yr; $65/two-yrs; Canada & other foreign +25% surface or +50% air. US Funds Only: MC/VISA ok
FAX/BBS: (619) 578-9247 6pm-1pm - Voice Only 1:30-5:30pm PST
COMMtronics Engineering
Box 262478 ~ San Diego, CA 92196

POWERFUL
Field tested & proven by Pro's & hobbyists for two years!
COMPUTER INTERFACE for
PRO-2004/5/6 & others
CE-232 Scanner/Computer 2-Way Interface
⇒ AutoPrograms all memory channels in minutes
⇒ AutoLogs and/or prints records of scanner hits
⇒ AutoRejects hits on birdies & undesired freqs
⇒ AutoLookUp and display data per "hit"
⇒ Automated data collection & processing
Open architecture; 3rd party products; tech support & more!
MSDOS 3.1/up or Windows 3.1/up; 512-k RAM & 3Mb free HD space
Kit of parts/PCB, disk, detailed manual $194.95. MC/VISA
More info: FAX or BBS: (619) 578-9247 6pm-1pm, PST
Voice orders/info - same number, 1:30pm-5:30pm, PST, weekdays
COMMtronics Engineering
PO Box 262478; San Diego, CA 92196

Join The Club!
Open to hobbyists worldwide, the CANADIAN INTERNATIONAL DX CLUB is an active promoter of the radio hobby through its monthly newsletter and local chapters.
The Messenger is packed with general coverage information including the broadcast band, shortwave, utilities, scanning, amateur radio and more. Send $2 for a sample bulletin and membership information to:
CIDX
79 Kipps St., Greenfield Park, Quebec, CANADA J4V 3B1

Countermeasures
Subscribe to the monthly NEWSLETTER dedicated to drastically reducing the probability of Electronic Eavesdropping. Keep up to date with this rapidly changing industry. Read technical surveillance and countermeasures product reviews. Read catalogue reviews (save a bundle!). New products, new methods. Learn which products and suppliers to use and which to stay away from.
$24 per year. Money Order (75 cents at post office) allows next day mailing of first issue.
Countermeasures—PO Box 1422 Carmel, CA 93921
Phone 408-624-3609.

Free Catalog!
Scanners, shortwave radios, satellite equipment, antennas, books and accessories from the best manufacturers, at the best prices.
Call or Write:
Grove Enterprises,
P.O. Box 98, Brasstown, NC 28902.
(800) 438-8155; (704) 837-9200;
(704) 837-2216 (FAX)

www.americanradiohistory.com

CLOSING COMMENTS

Bob Grove
Publisher

Internet Phone:

The Successor to Ham Radio

There are several reasons why I have traditionally disliked computers. First, their languages were apparently developed by cyber-recluses with little understanding of communication; second, they interfere with radio reception; and third, hardware and software become obsolescent the moment you purchase them.

I've been a licensed ham radio operator for 44 years, seduced by the mystique of glowing vacuum tubes, nurtured by friendly hams who were glad to see me aspire to the hobby. But my interest in ham radio has waned over the years as I saw talented hobbyists drawn to computers, heard bickering and confrontation over the previously gentle ham bands, and encountered growing numbers of appliance operators with no knowledge or interest of the technical aspects of the hobby.

The allure was gone; the romance of hearing a distant, expectant voice calling "CQ", the art of building home-brew equipment and accessories—gone with the wind. Then, just a couple of months ago, I had a reawakening, an epiphany, so to speak, as I was walking through the office.

My son Bill, our computer manager, was, as usual, talking to his computer. But suddenly I realized the computer was talking back! A distant, friendly, female voice on the other end—somewhere. I asked Bill, "Where is that coming from?" "South Africa" he answered!

Wait just a darned minute; this is a digital device. It has no emotion, no humanity, just zeroes and one, bits. Moments later, I heard a distinct British accent, then French. I stood in awe, almost in reverence. I was experiencing the same excitement, the same captivation, that held me nearly a half century ago. Tears came to my eyes. I knew exactly what was happening: I was witnessing the renaissance of hamming.

The art of communications had come full circle, from the personal analog days, through the impersonal digital age, and now back again to humanization, The enticement was irresistible. Bill knew he had me; he smiled and handed me the mike. I spoke into it and another friendly voice came back to me from another part of the world. It was a magical moment as we chatted, exchanged experiences and discussed our setups.

No license required. No code or theory test. No antenna. No expensive transmitter or receiver. And no static. All for about a dollar an hour. It's called Internet Phone, and it won't be ignored.

Ham radio will always hold a warm spot in my heart; the memories are precious and the experiences are forever. But I believe that amateur radio has had its moment of fame. It was a beacon during the experimental era of radio communications. But now our frequencies are being sold to the highest bidder; interest in home brew, and even parts to build it, are hard to find; equipment is becoming exorbitant to acquire; computers are attracting the interest of the young; public awareness of ham radio is growing more distant.

While I am reluctant to let go of ham radio as I knew it, I bow to the new forms of personal communications. Low earth orbiting satellites will provide worldwide wireless in the near future, but Internet Phone provides hands across the sea now. Let us welcome the new era of intercommunication.

www.americanradiohistory.com

SCANBLASTER™

BLAST your way through the Frequency Spectrum

Featuring the SCOUT and the OPTOSCAN456

ORDER NOW AND RECEIVE FREE DELUXE SCANBLASTER CARRY CASE
While Supplies Last

* Scanner not included

Each **SCANBLASTER™** series includes in the accessory set:

• CX12A	Computer Interface
• N100	FM Notch Filter
• BLP-70	Low Pass Filter
• BHP-800	High Pass Filter
• DB32	UHF/VHF Mini Antenna
• RD27	27 MHZ Antenna
• RD440	440 MHZ Antenna
• RD800	800 MHZ Antenna
• Spectrum	CD-ROM FCC Database
• Utility Disk	SCOUT Download Program
• AC100	Rapid Charge Adaptor
• Cable/Adaptor	SCOUT Reaction Tune Pat. Pend.
• CC30	Carry Case for SCOUT

3 YEAR EXTENDED WARRANTY

SCANBLASTER™ I
Includes:
SCOUT Pat. Pend.
OPTOSCAN456
Accessory Set
$999 (Save $328)

SCANBLASTER™ II
Includes:
SCOUT Pat. Pend.
Accessory Set
$849 (Save $179)

SCANBLASTER™ III
Includes:
OPTOSCAN456
Accessory Set
$699 (Save $179)

SCANBLASTER™ UPGRADE
Accessory Set Only
$459 (Save $120)

* NOTE: OPTOSCAN 456 MAY BE SUBSTITUTED WITH THE NEW OPTOSCAN 535 (FOR THE PRO 2035)

OPTOELECTRONICS®

ORDER LINE
800-327-5912
TEL: 305-771-2050
FAX: 305-771-2052

5821 NE 14th Avenue • Ft. Lauderdale, FL 33334 • Contact Factory for shipping prices. Visa, Master Card, & C.O.D. (cash or money order only)

• OPTOSCAN456 software featured, SCANSTAR COMM'L™ Software also available from: PROBE,® SCANCAT, SCANNERWEAR,™ and RADIO MGR.

All prices and specifications are subject to change without notice or obligation.

www.americanradiohistory.com

Tune Into a World of Excitement!

With ICOM's exclusive line of quality receivers!

Listening is an exciting and interesting activity! ICOM is the leader in the industry offering you the most *complete* line of receivers to choose from. Whether you prefer to listen at home, on the road or even listen out in the field, ICOM's got the right receiver for you. From handhelds to mobiles to base stations, we bring you a world of intrigue, such as:

- Satellites
- Clandestine Stations
- Public Safety
- Air-to-Ground
- Ship-to-Shore
- Military
- CB
- Business
- Hams
- Television
- Worldwide Communications
- Int'l. Aeronautical

Rediscover the world around you with an ICOM quality receiver! Choose the ICOM that meets your listening needs and hear what you've been missing!

Choose the ICOM that matches your listening preferences:

- IC-R9000 Base Station (30 kHz - 1999.8 MHz)*
- IC-R71A Base Station (100 kHz - 30 MHz)
- IC-R7100 Base Station (25 MHz - 799 MHz, 900 MHz - 2000 MHz)*
- IC-R100 Mobile (50 kHz - 799 MHz, 900 MHz - 1300 MHz)*
- IC-R1 Handheld (2 MHz - 799 MHz, 900 MHz - 1300 MHz)*

* The 800-900 MHz band is available for government use only.

◄ 100 kHz — 2000 MHz (2 GHz) ►

ICOM America, Inc. Corporate Headquarters
2380-116th Ave. N.E., Bellevue, WA 98004
Technical Support (206) 454-7619

© 1994 ICOM America, Inc. The ICOM logo is a registered trademark of ICOM, Inc. All stated specifications are subject to change without notice or obligation. All ICOM radios significantly exceed FCC regulations limiting spurious emissions.

ICVRFAM994Y

Call our Brochure Hotline for FREE literature on ICOM radios: (206) 450-6088

ICOM®

www.americanradiohistory.com